City of Garden Grove Focused General Plan Update and Zoning Amendments

Draft Environmental Impact Report

SCH# 2021060714

August 18, 2021

Community STARTS WITH Housing

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Garden Grove Focused General Plan Update and Zoning Amendments Public Review Draft Environmental Impact Report (SCH# 2021060714)

Lead Agency:

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Public Review Draft
August 2021

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1.0 – Introduction

1.1 CEQA and the Purpose of an EIR

The City of Garden Grove (City or Lead Agency) has prepared a Focused General Plan Update ("Focused GPU") and Zoning Code Amendments (collectively, the "Project" or FGPUZA) to establish a vision and policies to shape and manage long-term growth. The City's General Plan was last updated in 2008 and the City is proposing to amend three existing General Plan elements (Housing Element, Land Use Element, and Safety Element), and create a new Environmental Justice Element.[1] In addition, the Project includes several amendments to the City's zoning ordinance in support of the update.

The adoption and implementation of the FGPUZA is defined as a "project" and is subject to review under the California Environmental Quality Act (CEQA) 1970 (Public Resources Code, Section 21000 et seq.), and the State CEQA Guidelines (California Code of Regulations, Section 15000 et. seq.). Accordingly, the City has prepared this environmental impact report (EIR) to assess the long range and cumulative environmental consequences that could result from adoption and implementation of the proposed FGPUZA. This report has been prepared in accordance with the CEQA Statutes and Guidelines and with the City's local rules and procedures for implementing CEQA. It was prepared by professional planning consultants under contract to the City. The City is the Lead Agency for the preparation of this EIR, as defined by CEQA (Public Resources Code, Section 21067), because it has primary discretionary authority with respect to adoption, amendment, and implementation of the proposed General Plan. The content of this document reflects the independent judgment of the City.

CEQA was originally enacted in 1970 and has been amended since. The legislative intent of these regulations is established in Section 21000 of the California Public Resources Code, as follows:

The Legislature finds and declares as follows:

> (a) The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern.
>
> (b) It is necessary to provide a high-quality environment that at all times is healthful and pleasing to the senses and intellect of man.
>
> (c) There is a need to understand the relationship between the maintenance of high-quality ecological systems and the general welfare of the people of the state, including their enjoyment of the natural resources of the state.
>
> (d) The capacity of the environment is limited, and it is the intent of the Legislature that the government of the State take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.

[1] Senate Bill 1000 requires cities to prepare an Environmental Justice Element to identify and address health risks associated with the location of industrial and polluting land uses near residential uses, and to reduce health risks by promoting of physical activities, improved housing conditions, and food access.

(e) Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.

(f) The interrelationship of policies and practices in the management of natural resources and waste disposal requires systematic and concerted efforts by public and private interests to enhance environmental quality and to control environmental pollution.

(g) It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian.

The Legislature further finds and declares that it is the policy of the State to:

h) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.

i) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.

j) Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.

k) Ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions.

l) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.

m) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.

n) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment.

A concise statement of legislative policy, with respect to public agency consideration of projects for some form of approval, is found in Section 21002, quoted below:

> The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects. The Legislature further finds and declares that in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.

1.2 Purpose and Scope

The proposed FGPUZA is a long-range planning program to guide the growth and development within the City's corporate boundaries or "Planning Area". It is intended to communicate the City's vision of its future and to establish a policy framework to govern decision-making concerning the physical development of the community, including assurances that the community at large will be supported by an adequate range of public services and infrastructure systems.
Although it will allow for an overall increase in development potential for the entire Planning Area, the Project would not, by itself, authorize any specific development project or other form of land use approval or any kind of public facilities or capital facilities expenditures or improvements.

The City has prepared a Program EIR to analyze the potential environmental impacts of the FGPUZA. The advantages of a Program EIR include consideration of effects and alternatives that cannot practically be reviewed at the project-level, consideration of cumulative impacts that may not be apparent on a project-by-project basis, the ability to enact citywide mitigation measures, and subsequent reduction in paperwork.

Pursuant to CEQA Guidelines Section 15168, later activities within the scope of the FGPUZA will be reviewed in light of this EIR. Pursuant to CEQA Guidelines Section 15168, if needed, later environmental analysis may focus on those site-specific and localized environmental issues that could not be examined in sufficient detail as part of this Program EIR.

Organization of the Draft Program EIR

The Draft Program EIR (DEIR or Draft EIR) contains the primary analysis of potential environmental impacts discussed in the following seven sections described below

Section 1.0	Introduction.
Section 2.0	Executive Summary: A brief discussion of the project and summary of project impacts, mitigation measures and alternatives.
Section 3.0	Project Description: Provides detailed description of the proposed project and the Environmental Setting/Existing Conditions and project objectives.
Section 4.0	Environmental Impact Analysis: Evaluates project impacts and identifies mitigation measures designed to reduce significant impacts, where applicable. This Section includes 16 chapters, each addressing different topical areas (Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gases, Hazards/Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, and Utilities)
Section 5.0	Alternatives: Provides an analysis of the different alternatives to the proposed project.
Section 6.0	CEQA Conclusions: Provides an analysis of growth-inducing impacts, significant unavoidable environmental impacts, and irreversible environmental change.

The appendices include:

- Appendix A: Notice of Preparation (NOP), including comment letters received and the NOP distribution list
- Appendix B: List of General Plan Update Goals and Policies
- Appendix C: Air Quality, Energy and Greenhouse Gas Analysis Technical Appendices
- Appendix D: Noise Analysis Technical Appendices
- Appendix E: Transportation Impact Analysis

In compliance with Public Resources Code Section 21081.6(a)(1), a mitigation monitoring reporting program (MMRP) will be prepared as a separately bound document that will be adopted in conjunction with the certification of the Final EIR. The MMRP, responses to public comments on the Draft EIR, and any revisions to the Draft EIR will be included in the Final EIR.

Approach to EIR Analysis

The City of Garden Grove Community and Economic Development Department, Planning Services Division, directed and supervised the preparation of an Initial Study (IS) that accompanied the Notice of Preparation for the EIR. The evaluation provided in the IS determined that the Project would have no impact or less than significant impacts in the following environmental issue areas, and, therefore, further analysis in the Draft Program EIR is not required.

- Aesthetics
- Agricultural and Forestry Resources
- Mineral Resources
- Wildfire

The analysis presented in the Initial Study/NOP indicated that the proposed Project has the potential to result in one or more significant direct, indirect, and/or cumulative environmental impacts in the environmental issue areas listed below. Therefore, each of these sixteen (16) environmental issue areas have been analyzed in this Draft Program EIR.

- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems

The approach to the analysis presented in this EIR is programmatic in nature given the broad scope of the General Plan Update. Each environmental issue is analyzed in a similar manner, starting with a discussion of the existing environmental setting, including physical conditions and pertinent planning and regulatory framework. Thresholds of significance are then defined and are used to measure the proposed Project's potential impact to the environment. Thresholds of significance are based on a broad list of questions and impact topics set forth in Appendix G of the State CEQA Guidelines.

The impact analysis provided for each the 16 topical areas examines the broad, long-term environmental effects resulting from implementation of the goals and policies contained in the FGPUZA. The assessment of impacts focuses on how the impact in question could occur and whether the goals, policies or some other aspect of the proposed Project would reduce or ameliorate such impacts. The presence of sensitive environmental resources, hazards in specific areas, and the broad implications of the General Plan throughout the Planning Area are considered in the determination of impact significance. If the analysis indicates that a significant impact could occur, even with the benefits of any proposed goals or policies, mitigation measures are specified.

1.3 Scoping and Public Review

Notice of Preparation

To solicit guidance on the scope and content of the Program EIR, the City of Garden Grove distributed a Notice of Preparation (NOP) to local, county, state, and federal agencies along with interested private organizations and individuals. The NOP was delivered to the State Clearinghouse and the CEQA-required 30-day review period **began on June 30, 2021 and ended on July 30, 2021**.

The purpose of the NOP is to provide agencies and private entities an opportunity to identify concerns regarding the potential impacts of the proposed project, recommend items to be analyzed in the DEIR, and to provide suggestions concerning ways to avoid significant impacts (CEQA Guidelines, § 15082). The NOP is included in Appendix A, along with copies of written comments received during the 30-day public review period for the NOP and the NOP distribution list.

On July 14, 2021, the City conducted a scoping meeting on the NOP. The written comments received on the NOP during the 30-day review period are summarized in Table 1.1 and comments received during the scoping meeting are included in Table 1.2. The comment letters are also included in Appendix A.

Table 1-1
Brief Summary of Comments on the NOP and Initial Study

Commenting Agency/Person	Brief Summary of Comments on the NOP	Section(s) Where Addressed
Southern California Association of Governments (SCAG)/ Rongsheng Luo (7-30-21)	This letter describes SCAG's role as the Regional Transportation Planning Agency under state law and its responsibilities for preparation of the Regional Transportation Plan (RTP), including the Sustainable Communities Strategy (SCS). SCAG provides informational resources to facilitate the consistency of the proposed project with the adopted 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). The letter also identifies applicable goals of Connect SoCal, provides a recommended format for showing project consistency with these goals, and further notes that under CEQA, Lead Agencies have sole discretion in determining a local project's consistency with Connect SoCal. Additional information is also provided about SCAG growth forecasts, the Connect SoCal EIR mitigation measures, and the Regional Housing Needs Allocation.	Land Use and Planning, Population and Housing, Traffic / Transportation
South Coast Air Quality Management District (SCAQMD)/ Lijin Sun (7-20-21 letter)	The letter provides guidance as to how the air quality and greenhouse gas analyses should be conducted in accordance with SCAQMD guidelines and includes reference to several information sources. The letter also provides information on potential mitigation measures.	Air Quality and Greenhouse Gases
Native American Heritage Commission/ Andrew Green (7-1-21 letter)	Acknowledged receipt of the City's NOP and provided regulatory compliance and schedules for Native American Consultation under SB 18 and AB 52.	Cultural Resources, and Tribal Cultural Resources
Orange County Fire Authority/ Robert Distaso (7-16-21 email)	OCFA reviewed the NOP for the Garden Grove General Plan Update and Zone Amendments, OCFA has no comments at this time. OCFA requests to be kept informed about future Environmental projects in the City of Garden Grove.	Public Services
Southwest Regional Council of Carpenters Michell Tsai, Attorney (8-6-21 – late)	This letter starts by indicating that it is submitted on behalf of the Southwest Regional Council of Carpenters (SRCC). It also indicates that a requirement for the local hire of skilled and trained workforce can reduce environmental impacts by reducing the length of vendor trips, reducing greenhouse gas and air pollutant emissions, and providing localized economic benefits.	Air Quality, Greenhouse Gas Emissions

Table 1.2
Scoping Meeting Commenters

Commenting Agency/Person	Summary of Comments
City of Anaheim/ Andy Uk, Planner	No comments, just monitoring the GP process.

Public Review of Draft EIR

Comments from all agencies and individuals are invited regarding the information contained in the Draft Program EIR. In reviewing draft EIRs, the focus by reviewing public agencies and the public should be on the sufficiency of the document in identifying and analyzing the project's potential environmental impacts and the ways in which the project's significant impacts might be avoided or mitigated. (CEQA Guidelines § 15204.) "At the same time, reviewers should be aware that the adequacy of the EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project." (CEQA Guidelines § 15204.)

All comments on the Draft Program EIR are to be submitted to:

Chris Chung, Urban Planner
City of Garden Grove, Community and Economic Development Department
Planning Services Division
11222 Acacia Parkway, Garden Grove, California 92840
Phone: (714) 741-5314
Email: chrisc@ggcity.org
City Hall Hours: 7:30 AM to 5:30 PM Monday through Thursday
and 7:30 AM to 5:00 PM alternating Fridays.
City of Garden Grove Website: ggcity.org/planning

Following the 45-day period of circulation and public review of the Draft Program EIR, all comments and the City's responses to the comments will be incorporated into a Final Program EIR prior to certification of the document by the City of Garden Grove.

Availability of EIR Materials

All materials related to the preparation of this Program EIR, including information incorporated by reference, are available for public review. The Notice of Preparation and the Draft Program EIR are posted on the City's website:

http://www.ggcity.org/planning

To request an appointment to review these materials, please contact Chris Chung (see contact information above).

1.4 Citation

Preparation of this Program EIR and the General Plan Update rely on information from many sources, including the appendix materials previously listed and numerous other references. Pursuant to Section 15148 of the State CEQA Guidelines, citations from the appendix materials and other sources are provided throughout the EIR. Citations are numbered sequentially and inclusive to each environmental impact topic (Sections 4.1 through 4.16). References are located at the end of each section of this DEIR.

2.0 – Executive Summary

This chapter provides a summary of the City of Garden Grove Focused General Plan Update and Zoning Amendments (”FGPUZA” or "Project"), a list of associated environmental issues to be evaluated, a summary of significant impacts and mitigation measures associated with the Project, and a summary of feasible alternatives to the Project, including identification of the environmentally superior alternative.

Project Location

The project location is the City of Garden Grove corporate boundaries (“Planning Area”). The City does not have any county unincorporated territory with its Sphere of Influence. The Planning Area is located in central Orange County, approximately six (6) miles east of the Pacific Ocean and 10 miles west of the Santa Ana Mountains (see Exhibit 2-1, Regional Location). The area within the City’s corporate boundaries total 17.9 square miles (11,464 acres). The City is nine (9) miles west of downtown Long Beach and 25 miles southeast of downtown Los Angeles. Nine (9) cities border the City of Garden Grove: Anaheim, Orange, Santa Ana, Fountain Valley, Westminster, Seal Beach, Los Alamitos, Cypress, and Stanton. Four (4) unincorporated Orange County islands – Southwest Anaheim and three (3) communities within Stanton’s sphere of influence – are located along the City’s northern border. The Planning Area can be seen in Exhibit 3-2 Vicinity Map.

Project Description

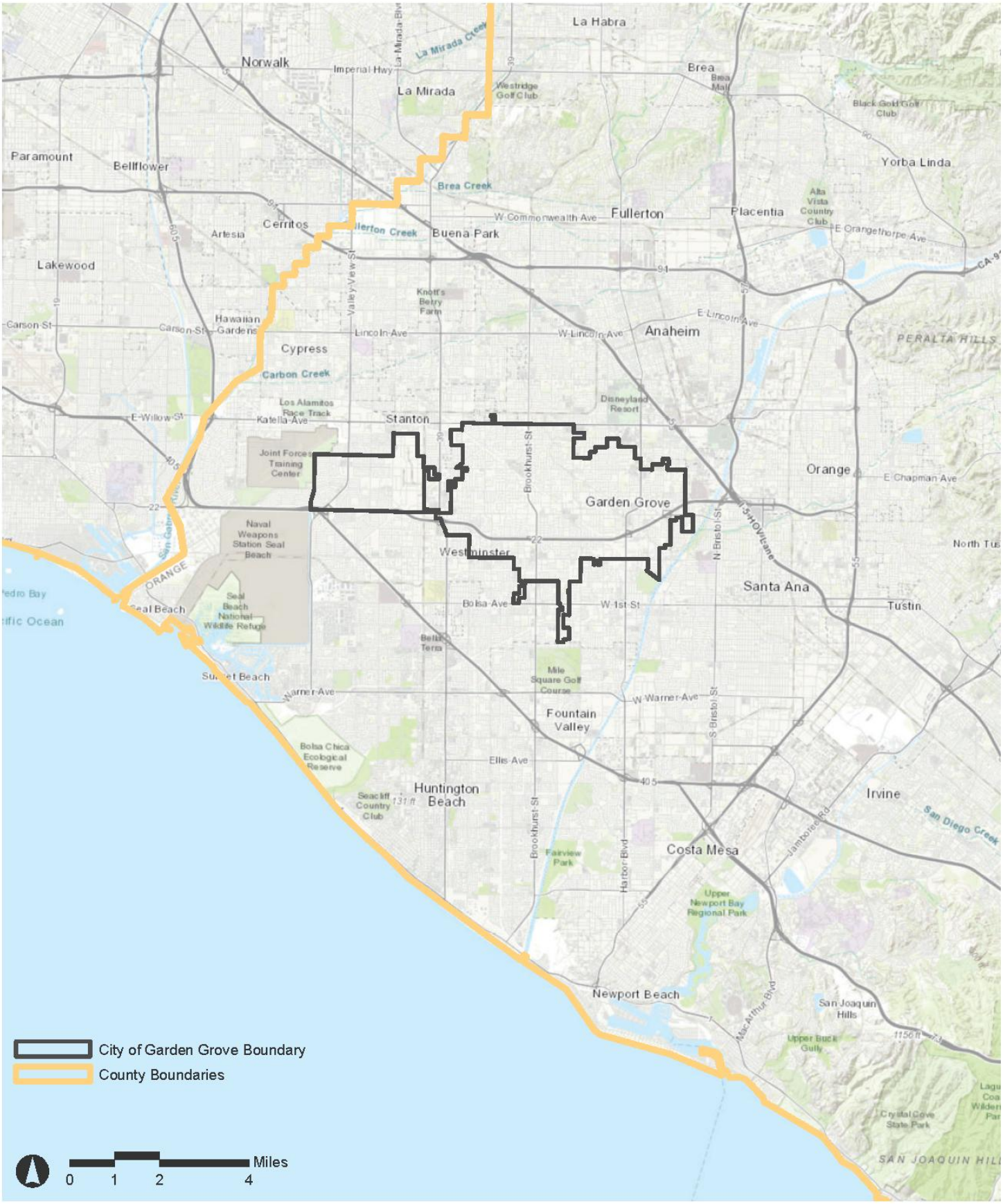
Every city and county in California is required to have a general plan that functions as a comprehensive, long-range policy document. For cities, the general plan guides the physical development of the incorporated city (e.g., city limit) and any land outside city boundaries (e.g., unincorporated sphere of influence area) that has a relationship to the city’s future growth. and development. The City of Garden Grove’s General Plan was last updated in 2008 and the City is proposing to amend the three Elements shown below:

- Housing
- Land Use
- Safety

The City will also prepare an Environmental Justice Element in response to recent State Legislation requiring its preparation. In addition to the General Plan update, the City is proposing various amendments to Title 9 (Land Use) of the Garden Grove Municipal Code in compliance with California Government Code (CGC) Section 65300 et seq. and to make it consistent with the FGPUZA. Therefore, the proposed “Project” that will be evaluated in this document is adoption of both the Focused General Plan Update and Zoning Amendments.

The FGPUZA meets the requirements of CGC Article 5 (Authority for and Scope of General Plans)[1] and addresses anticipated changes to the demographic, economic and environmental conditions in Garden Grove through the year 2040.

[1] CGC Article 5 requires every city and county to have a general plan that functions as a comprehensive, long-range policy document.



Source: Esri World Terrain Base and Reference, 2020.

Exhibit 2-1 Regional Context Map

Focused General Plan Update and Zoning Amendments
Garden Grove, California

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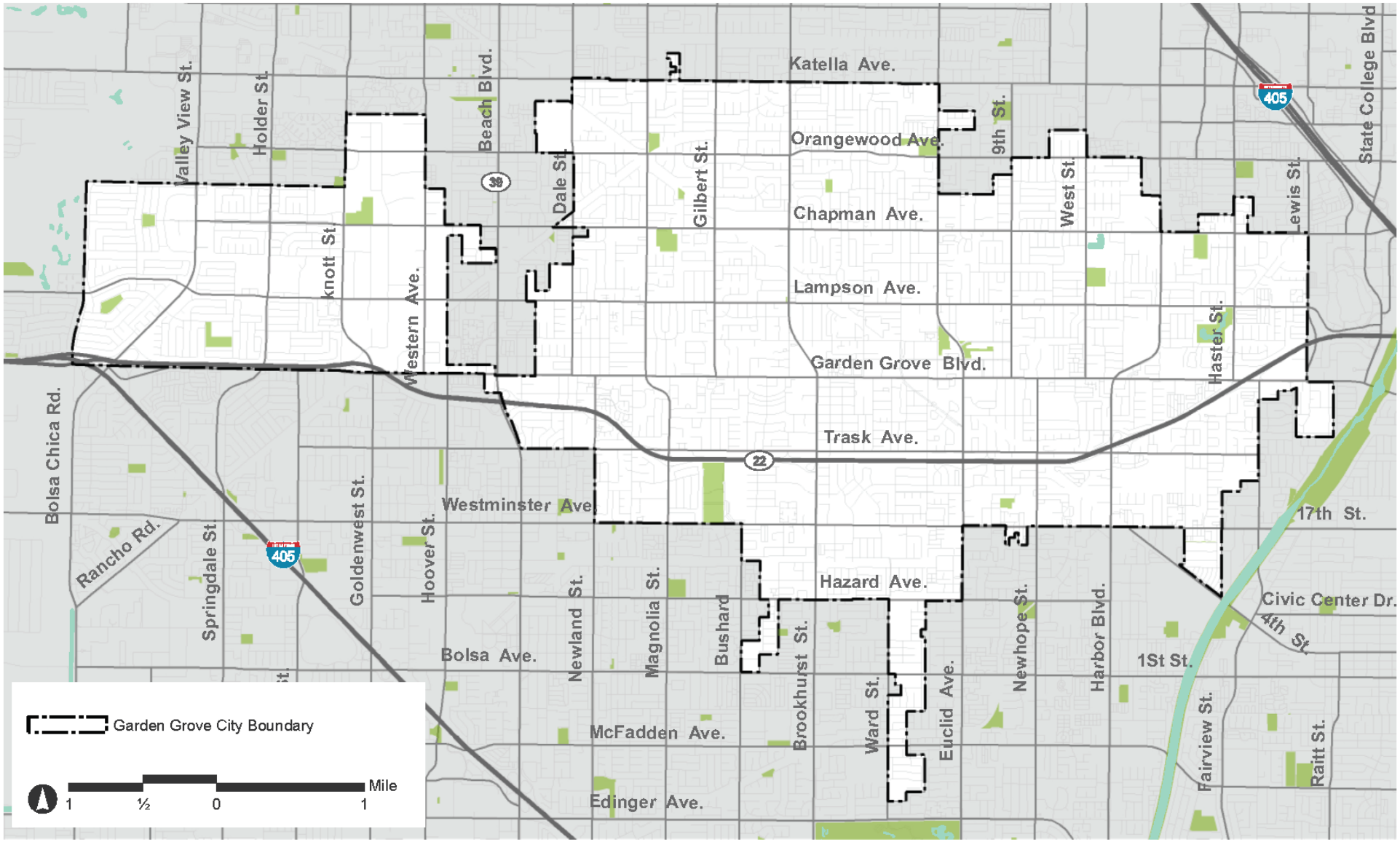

Source: SCAG GIS and MIG, 2021.

Exhibit 2-2 Planning Area

Focused General Plan Update and Zoning Amendments
Garden Grove, California

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Approach to EIR Analysis

An Initial Study (IS) was prepared for the Proposed FGPUZA. Based on the evaluation provided in the IS, it was determined the Project would have no impact or less than significant impacts in the following environmental issue areas:

- Aesthetics
- Agricultural and Forestry Resources
- Mineral Resources
- Wildfire

Therefore, further analysis in the Draft Program EIR is not required for these areas.

Based on the analysis in the Initial Study, the following 16 environmental issues have been analyzed in this Draft Program EIR.

- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems

The approach to the analysis presented in this EIR is programmatic in nature given the broad scope of the FGPUZA. Each environmental issue is analyzed in a similar manner, starting with a discussion of the existing environmental setting, including physical conditions and pertinent planning and regulatory framework. Thresholds of significance are then defined and are used to measure the proposed Project's potential impact to the environment. Thresholds of significance are based on a broad list of questions and impact topics set forth in Appendix G of the State CEQA Guidelines.

The impact analysis provided for each of the 16 environmental issue areas examine the broad, long-term environmental effects resulting from implementation of the goals and policies contained in the FGPUZA. If the analysis indicates that a significant impact could occur, even with the benefits of any proposed goals or policies, mitigation measures are identified and imposed.

Summary of Significant Impacts and Mitigation Measures

For each of the environmental topics listed above, any *"significant"* Project or cumulative impact and associated mitigation measure(s) identified in this EIR are summarized in Table 2-1,

Summary of Potentially Significant Impacts and Recommended Mitigation Measures. The summary chart has been organized to correspond with the more detailed impact and mitigation discussions in chapters 4.1 through 4.16 of this Draft EIR. The chart is arranged in four columns: (1) identified impacts, (2) potential significance without mitigation, (3) mitigation measure(s), and (4) the level of impact significance after implementation of the mitigation measure(s). Because the table does not list impacts that are less than significant, and therefore do not require mitigation, the Impact/Mitigation Measure numbering may be out of sequence.

TABLE 2.1
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND RECOMMENDED MITIGATION MEASURES

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
AIR QUALITY			
Impact AQ-1 – Would the FGPUZA conflict with or obstruct implementation of the applicable air quality plan? Since population growth would occur under the Project's 2040 conditions, the Project would be inconsistent with the 2016 RTP/SCS growth forecasts. The Project could increase the frequency and/or severity of air quality violations in the Basin or otherwise impede attainment of air quality standards in the Basin. This is considered a **potentially significant impact**.	S (Significant)	**See Mitigation Measures AQ-2A through AQ-2C under Impact AQ-2 below.**	SU (Significant and Unavoidable)
Impact AQ-2 – Would the FGPUZA result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard? Due to the built-out nature of the City, construction emissions are speculative with respect to the timing and magnitude of demolition, site preparation, grading, building construction, paving and painting activities that would occur over time. Fugitive dust (PM10) emissions would be greatest during building demolition, site preparation, and grading, due to the disturbances of soil and transport of material and NOx emission would result from the combustion of diesel fuels used to power off road heavy-duty pieces of equipment (e.g.	S	**Mitigation Measure AQ-2A: Require a Project-level Construction Air Quality Assessment for New Discretionary Development Projects.** Prior to a discretionary approval by the City for development projects subject to CEQA (meaning, non-exempt CEQA projects), project applicants shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the City for review and approval. The evaluation shall be prepared in conformance with South Coast Air Quality Management District (SCAQMD) methodology for assessing air quality impacts. If construction-related criteria air pollutants are determined to have the potential to exceed the SCAQMD's adopted thresholds	SU

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
backhoes, bulldozers, excavators, etc). Despite the unknowns, it is plausible that one or more projects developed under implementation of the proposed FGPUZA could exceed one or more of the SCAMD's construction criteria air pollutant thresholds of significance and the impact is **potentially significant and requires mitigation**. As shown in Table 4.1-7 of Chapter 4.1 (Air Quality), the maximum daily operational emissions associated with the 2040 growth under the Project would result in ROG, NOx, CO and PM_{10} emissions that exceed SCAQMD-recommended significance thresholds, even after the application of mitigation measures. This is considered a **potentially significant impact**.		of significance, the City shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during construction activities. These identified measures shall be incorporated into all appropriate construction documents (e.g., construction management plans) submitted to the City and shall be verified by the City. Mitigation measures to reduce construction-related emissions could include, but are not limited to: • Require the selection of specific construction equipment (e.g., specialized pieces of equipment with smaller engines or equipment that will be more efficient and reduce engine runtime). • Require equipment to use alternative fuel sources (e.g., electric-powered and liquefied or compressed natural gas), meet cleaner emission standards (e.g., U.S. EPA Tier IV Final emissions standards for equipment greater than 50-horsepower), and/or utilize added exhaust devices (e.g., Level 3 Diesel Particular Filter). • Limit the idling time of diesel-powered construction equipment to two (2) minutes. • Ensure that construction equipment is properly serviced and maintained to the manufacturer's standards. • Limit on-site vehicle travel speeds on unpaved roads to 15 miles per hour. • Require wheel washers for all exiting trucks or wash off all trucks and equipment leaving the project area. • Require the application of Low-VOC paints to	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		interior and/or exterior surfaces (e.g., paints that meet SCAQMD Rule 1113 "Low-VOC" or "Super-Compliant" requirements). A list of applicable architectural coating manufacturers can be found on the South Coast AQMD's website. **Mitigation Measure AQ-2B: Require a Project-level Operational Air Quality Assessment for New Discretionary Development Projects.** Prior to a discretionary approval by the City for development projects subject to CEQA (meaning non-exempt CEQA projects) project applicants shall prepare and submit a technical assessment evaluating potential project operation air quality impacts to the City for review and approval. The evaluation shall be prepared in conformance with South Coast Air Quality Management District (SCAQMD) methodology in assessing air quality impacts. If operation-related air pollutants are determined to have the potential to exceed the SCAQMD's adopted thresholds of significance, the City shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce operational emissions could include, but are not limited to the following: • New one and two-family dwellings and townhomes shall include electric vehicle infrastructure consistent with Section A4.106.8.1 of the 2019 CalGreen Code. • New multifamily dwellings with 17 or more units	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		shall provide electric vehicle charging spaces capable of supporting electric vehicle supply equipment pursuant to Section A4.106.8.2. • New multifamily dwelling units shall provide bicycle parking pursuant to Section A4.106.9.2. • New non-residential development with more than 10 tenant-occupants shall provide changing/shower facilities for tenant-occupants in accordance with Table A5.106.4.3 of the 2019 CalGreen code. • New non-residential development shall provide designated parking for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles pursuant to the Tier 1 requirements of Table A5.106.5.1.1 of the 2019 CalGreen code. Such parking spaces shall be marked pursuant to Section A5.106.5.1.3 of the 2019 CalGreen code. • New non-residential development shall provide electric vehicle charging spaces capable of supporting electric vehicle supply equipment pursuant to the Tier 1 requirements of Section A5.106.5.3.1 of the 2019 CalGreen code. Such spaces shall be marked pursuant to Section A5.106.5.3.3 of the 2019 CalGreen code. • Site-specific developments with truck delivery and loading areas and truck parking spaces shall include signage as a reminder to limit idling of vehicles while parked for loading/unloading in accordance with California Air Resources Board Rule 2845 (13 CCR Chapter 10 § 2485). • Provide facilities to support electric charging stations per Section A5.106.5.3 (Nonresidential	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Voluntary Measures) and Section A5.106.8.2 (Residential Voluntary Measures) of the 2019 CALGreen Code. • Applicants for future development projects along existing and planned transit routes shall coordinate with the City and Orange County Transportation Authority to ensure that bus pad and shelter improvements are incorporated, as appropriate. **Mitigation Measure AQ-2C: Transportation Demand Management** The City shall require all new residential and non-residential development that meets the following criteria to incorporate measures to meet vehicle trip generation rates that are twenty percent lower than the standard rates as established in the most recent edition of the Institute of Transportation Engineers (ITE) trip generation manual: • New multi-unit development of ten units or more; • New nonresidential development of ten thousand square feet or more; • Additions to nonresidential buildings that are ten thousand square feet or more in size that expand existing gross floor area by ten percent or more; and • Establishment of a new use, change of use, or change in operational characteristics in a building that is ten thousand square feet or more in size that results in an average daily trip increase of more than ten percent of the current use, based on the most recent Institute of Traffic Engineers (ITE) trip generation rates.	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Projects subject to TDM requirements may implement any combination of measures to achieve the twenty percent reduction. Measures may include, but are not limited to: • Connecting the project site to adjacent / nearby bicycle paths; • Long-term bicycle parking; • Bicycle fix-it stations with repair tools and an air pump; • Scheduled mobile bicycle repair service; • Commuter incentives and reward programs; • Parking management strategies, such as reserved vanpool parking and/or preferential carpool parking; • Transit subsidies; • Vanpool subsidies; • Pre-tax transit deduction payroll option; • Pre-tax parking deduction payroll option (for parking at a transit station); • Guaranteed ride home; • Paid parking at prevalent market rates. • Shuttle option; • Telework option; and • On-site amenities (e.g., ATM, day care, cafeteria, exercise facilities, on-site transit pass sales, etc.).	
Impact AQ-3 – Would the FGPUZA expose sensitive receptors to substantial pollutant concentrations?	S	**See Mitigation Measure AQ-2A, Above**	SU (Construction Emissions Only)

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Construction emissions associated with future development activities facilitated under implementation of the proposed FGPUZA could exceed SCAQMD construction LSTs and cancerogenic and non-cancerogenic threshold maintained and recommended by the SCAQMD. This is considered a **potentially significant impact**.			
Impact AQ-5 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to Air Quality? The Project's 2040 growth projection and associated construction and operational emissions could result in population growth that is not consistent with the planning assumptions and emissions levels which exceed SCAQMD-recommended CEQA thresholds of significance. This is a **potentially significant impact.**	S	**See Mitigation Measure AQ-2A through AQ-2C, Above**	SU (Significant and Unavoidable)
GREENHOUSE GAS EMISSIONS			
Impact GHG-1 – Would the FGPUZA generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? As shown in Table 4.6-4, the Project could result in GHG emissions that exceed the adjusted, SCAQMD derived plan-level efficiency metric of 2.6 annual metric tons of CO_2-equivalent greenhouse gases per service population (residences plus employees) in 2040: the GHG emissions estimated for the project are 3.4 annual metric tons per service	S		SU (Significant and Unavoidable)

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
population. This is considered a **potentially significant impact.**			
Impact GHG-2 – Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? As shown in Table 4.6.6, the Project could result in GHG emissions that exceed the 2017 Climate Change Scoping Plan's recommended efficiency metrics. In addition, the Project has the potential to result in growth which is approximately 6.5 times more than the assumed growth in the 2020 RTP/SCS. This is considered a **potentially significant impact**.	S	See Mitigation Measures AQ-2A through AQ-2C	SU (Significant and Unavoidable)

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Would the FGPUZA cause substantial adverse cumulative impacts with respect to greenhouse gases? The Project's 2040 growth projection and associated GHG emissions could exceed the significance threshold applied in this EIR and pose a conflict with the 2017 Climate Change Scoping Plan. This is considered a **potentially significant impact.**	S	**See Mitigation Measures AQ-2A through2C and Mitigation Measures VMT-1 and VMT-2 which are shown below.**	SU (Significant and Unavoidable)
NOISE			
Impact NOISE-3 – Would the project result in generation of a substantial permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? The Noise section states that ordinarily a 1 dB increase in ambient noise levels is not discernible; however, the FGPUZA would contribute to a 1 dB change in modeled traffic noise levels in areas already affected by high noise levels which exceed City guidelines for	S	**See 2030 General Plan EIR Mitigation Measure NOI-2**	SU (Significant and Unavoidable)

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
noise and land use compatibility. Since vehicle trips cannot be guaranteed, and future traffic noise levels would increase by 1dB or more and/or potentially expose noise-sensitive land uses to normally unacceptable noise levels, the impact would a **significant impact**.			
Impact NOISE 4- Would the project cause substantial adverse cumulative impacts with respect to noise or vibration? The FGPUZA would contribute to a cumulative increase in traffic noise levels of 1 dB or more on Garden Grove Boulevard, between Century Boulevard and West Street, and would potentially expose noise-sensitive land uses to normally unacceptable noise levels. This is considered a **potentially significant cumulative impact.**	S	**See 2030 General Plan EIR Mitigation Measure NOI-2**	SU (Significant and Unavoidable)
HYDROLOGY AND WATER QUALITY			
Impact HYDRO-2 – Would the FGPUZA substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management for the basin? The FGPUZA will substantially increase the projected population in the City over those projected in the 2015 WQMP. The local Urban Water Management Plan must be updated every five years and will need to be updated to account for the growth represented by future land uses under the FGPUZA. This is	S	**See Mitigation Measure UTIL-1 below**	LTS (Less than Significant)

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
considered a **potentially significant impact.**			
TRANSPORTATION			
Impact TRANS-2 – Would the project conflict or be inconsistent with CEQA guidelines section 15064.3, subdivision (b)? [regarding VMT] Table 4.14.03 shows the VMT and service population estimates in the Garden Grove area are expected to increase as the housing and population increase. The VMT per service population is forecast to decrease under cumulative "plus project" conditions (21.68) compared to the existing condition (22.56) indicating that the population is expected to travel in a more efficient manner. As shown in Table 4.14-4, the Citywide VMT per Service Population under the "plus project" condition does not exceed the Citywide cumulate no project condition. Although Orange County Transportation Analysis Model (OCTAM) is the best available tool to estimate VMT for the City of Garden Grove (and the City has identified it as the most appropriate tool to estimate VMT as part of their VMT guidelines update), there are factors that may affect how people travel, such as how a person drives or the cost of fuel. Based on	S	**Projects in Zone 1 and Transit Priority Areas (TPAs).** Per the City of Garden Grove Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment projects located in Zone 1 areas and TPAs (with meeting criteria) can be presumed not to have a significant VMT impact and can be screened from VMT analysis. Therefore, no VMT mitigation is necessary for project located in Zone 1 areas. **VMT-1 Zone 2 Projects.** Projects proposed in Zone 2 areas may or may not have a VMT impact and are required to provide further VMT analysis to verify and quantify potential impacts. Mitigation for impacts in Zone 2 areas is likely to be of a lower intensity due to the Zone 2 areas having a more efficient VMT than the county average, but not efficient enough to be lower than the City VMT impact threshold. Potential measures to be identified in the VMT analysis could include, but are not limited to: Incorporate affordable housing into the project; Orient the project toward transit, bicycle and pedestrian facilities; Provide bicycle parking;	SU (Significant and Unavoidable)

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
this uncertainty, for the purposes of the Citywide planning effort the City has concluded that this is a **significant impact and mitigation is required**.		Unbundle parking costs (selling or leasing a parking space separate from the purchase or lease of a multifamily residential unit); Provide parking cash-out programs; Provide car-sharing, bike sharing, and ride-sharing programs; Provide transit passes; and/or Increase project density. **VMT-2 Zone 3 Projects**. Projects proposed in Zone 3 areas would be expected to have a VMT impact and would need further VMT analysis to determine the significance of the impact. Mitigation for impacts in Zone 3 areas is likely to be of a higher intensity than Zone 2 areas due to the VMT inefficiency. Potential measures to be identified in the VMT analysis could include, but are not limited to: • measures identified for Zone 2 areas; • improve or increase access to transit; • increase access to common goods and services, such as groceries, schools, and daycare; • incorporate neighborhood electric vehicle network; • improve pedestrian or bicycle networks, or transit service; • provide traffic calming; • implement roadway pricing;	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• locate the project near transit; • increase the mix of uses within the project or within the project's surroundings; • increase connectivity and/or intersection density on the project site; and/or **VMT-3 Mitigation Exchange or Bank.** The City may evaluate the feasibility of a local or regional VMT impact bank or exchange program. Such an offset program, if determined feasible, would be administered by the City or by a regional agency, and would offer demonstrated VMT reduction strategies through transportation demand management programs, impact fee programs, mitigation banks or exchange programs, in-lieu fee programs, or other land use project conditions that reduce VMT in a manner consistent with state guidance on VMT reduction. If, through onsite changes, a subject project cannot demonstrate consistency with state guidance on VMT reduction, the project can contribute on a pro-rata basis to a local or regional VMT reduction bank or exchange, as necessary, to reduce net VMT impacts.	
Impact TRANS-4-Would the project cause substantial adverse cumulative impacts with respect to transportation and traffic? Future development under the FGPUZA will add housing which could contribute additional traffic on local and regional networks as well as	S	**See Mitigation Measure VMT-1 through VMT-3, above**	LTS

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
hinder compliance with the state and regional VMT reduction goals outlined in SCAG's RTP/SCS. The FGPUZA could have **potentially significant** VMT impacts and mitigation is required.			
UTILITIES AND SERVICE SYSTEMS			
Impact UTIL-1 – Would the FGPUZA require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? The anticipated growth under the FGPUZA is substantial and could require additional water resources. The impact to water supply facilities is **potentially significant and requires mitigation**. In addition, potential impacts to wastewater treatment could be significant. Even with continued implementation of fees to fund planned future wastewater infrastructure expansion, it is possible that growth will occur under the proposed FGPUZA that may result in the need to expand wastewater treatment facilities over time. Since the growth that could occur under the proposed FGPUZA has not yet been integrated into the OCSD's long term facilities planning it is possible that new or expanded facilities may be needed during the 20 year time horizon of the FGPUZA. Potential impacts to wastewater treatment is Considered **potentially significant**.	S	**Mitigation Measure UTL-1:** New developments under the General Plan Update that will be served by local water utility providers will not be approved if they increase water use in excess of what is identified for supply in 2040 under the most recent Urban Water Master Plan for the involved local water provider. **Mitigation Measure UTL-2: Wastewater Treatment.** The City shall not approve new development if it would increase wastewater generation demand in excess of the treatment capacity available and planned for in 2040 as described in the most current master planning document of the Orange County Sanitation District.	LTS

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Impacts to wastewater, stormwater, electric power, natural gas, and telecommunication infrastructure is considered less than significant.			
UTIL-2 – Would there be sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? The FGPUZA is expected to require more water than is currently identified in the most recent UWMP. The imbalance of water supply would likely occur under the "worst case" estimated growth projection for the FGPUZA. Conservation efforts and/or increased supply (from recycled water or other sources) may help offset the new demand created by the anticipated growth; however, the potential impacts to water supply are considered **potentially significant**.	S	**See Mitigation Measure UTIL-1, Above**	LTS
Impact UTIL-3 – Would the FGPUZA result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	S	**See Mitigation Measure UTIL-2, Above**	

Impacts	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Even with continued implementation of fees to fund planned future wastewater infrastructure expansion, it is possible that growth will occur under the proposed FGPUZA that may result in the need to expand wastewater treatment facilities over time. Since the growth that could occur under the proposed FGPUZA has not yet been integrated into the OCSD's long term facilities planning it is possible that new or expanded facilities may be needed during the 20 year time horizon of the FGPUZA. Potential impacts to wastewater treatment is Considered **potentially significant**.			

NOTES:

S = Significant Impact

LTS = Less than Significant Impact

SU = Significant Unavoidable Impact

Alternatives to the Proposed Project

To provide a basis for further understanding of the environmental effects of a proposed project and possible approaches to reducing its identified significant impacts, the CEQA Guidelines require an EIR to also "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

Project Objectives

The Focused GPU and Zoning Amendments include the following objectives for the long-term growth and enhancement of the community:

- *A Safe Community* - Adequately funded, staffed, and equipped police and fire services that provide a timely, effective response to both minor and major public safety concerns. Also, the public safety providers will engage and educate all segments of the community.
- *An Economically Sound Community* - Meet budget challenges by capitalizing on our unique development opportunities and providing enhanced shopping, dining, and entertainment options while improving the aesthetics of the community.
- *A Family-Oriented Community* - Safe, well-kept neighborhoods where all segments of the community feel secure and comfortable, and where residents can feel unburdened from the stresses of the world outside the neighborhood.
- *A Diverse Community* - All segments of the community have a sense of belonging, regardless of race, ethnicity, or age. Also, a community where all feel safe in expressing their uniqueness, while joining and celebrating in their commonality as Americans, Californians, and Garden Grove residents.
- *A Well-Maintained Community* - Public infrastructure (i.e., streets, water and sewer systems, storm drains) that is kept in good working order, but results in few inconveniences and disruptions to users during maintenance. Also, future plans that ensure the continued adequacy and availability of these services as the community changes.
- *An informed Community and Well Administered Community* - Good channels of communication shall exist between the general public, community organizations, service providers and the city government. This provides residents and other interested persons both information and opportunities to provide input on proposals being brought before the City's Boards, Commissions, and Council. In addition, the city government shall be adequately staffed and compensated to meet the service needs and goals of the community. City staff shall be encouraged to learn about and apply the most efficient and effective methods for providing public services to the community.
- *A High-Quality-of-Life Community* - Public facilities and open spaces that are well maintained and adequate for size and nature of the community, as well as provide recreational opportunities for all segments of the community.

Identified Alternatives

Alternative 1: No Project/Existing 2008 General Plan

The No Project/Existing 2008 General Plan Alternative (No Project Alternative) assumes that development would occur within the Planning Area, but only development anticipated under the 2008 General Plan.

The No Project Alternative assumes a continuation of the existing 2008 General Plan. As this alternative would result in a reduction in the amount of development compared to the FGPUZA, and would not include any of the updated goals and policies included in the GPU, it would generally meet the project objectives, but not at the same level as the Project.

Alternative 2: Reduced Mixed-Use Alternative

The Reduced Mixed-Use Alternative reflects a reduced amount of residential units (approximately 30 percent fewer mixed-use units) compared to the proposed Project, and the same amount of non-residential development included in the Project. Development assumptions for this alternative are shown in Table 5-1. This alternative would not meet the City's RHNA objective.

Alternative 3: Increased ADU and Reduced Mixed-Use Alternative

The Increased Accessory Dwelling Unit (ADU) and Reduced Mixed-Use Alternative assumes that the total number of dwelling units under this alternative would be the same as the Project, but there would be a significant increase in the number of ADUs constructed under this alternative (a total of 5,656 ADUs, which would be located throughout the City), with a corresponding reduction in the number of multi-family units located within the corridors of the City. This alternative assumes the same amount of non-residential development as the proposed Project. This alternative also assumes additional policies and incentives to significantly promote and increase the development of ADUs within the Planning Area would be included in the Proposed Housing Element. This alternative would meet the City's RHNA objective.

Environmentally Superior Alternative

Alternative 2, the Reduced Mixed-Use Alternative would result in the least adverse environmental impacts and would therefore be the "environmentally superior alternative." This conclusion is based on the comparative impact conclusions in Table 5-2 and the analysis within this chapter. However, this alternative would not meet the City's RHNA objective.

Table 2-2: Alternatives' Impacts Compared to Project Impacts

Impact/Resource	Alternative 1: No Project/ Existing 2008 General Plan	Alternative 2: Reduced Mixed-Use Alternative	Alternative 3: Increase ADU and Reduce Mixed-Use Alternative
Air Quality	Similar SU	Reduced SU	Similar SU
Biological Resources	Similar LTS	Similar LTS	Similar LTS
Cultural Resources	Similar LTS	Similar LTS	Similar LTS
Energy	Similar LTS	Reduced LTS	Similar LTS
Geology and Soils	Similar LTS	Similar LTS	Similar LTS
Greenhouse Gas Emissions	Similar SU	Reduced SU	Similar SU
Hazards and Hazardous Materials	Similar LTS	Similar LTS	Similar LTS
Hydrology and Water Quality	Similar LTS	Similar LTS	Similar LTS
Land Use	Similar LTS	Similar LTS	Similar LTS
Noise	Similar SU	Reduced SU	Reduced SU
Population and Housing	Reduced LTS	Reduced LTS	Similar LTS
Public Services	Similar LTS	Reduced LTS	Similar LTS
Recreation	Reduced LTS	Reduced LTS	Similar LTS
Transportation	Similar SU	Reduced SU	Similar SU
Tribal Cultural Resources	Similar LTS	Similar LTS	Similar LTS
Utilities and Service Systems	Similar LTS	Reduced LTS	Similar LTS

Source: MIG, 2021
LTS= Less-than-Significant Impacts
SU= Significant and Unavoidable Impacts

Areas of Controversy

Several areas of controversy have arisen during preparation of the City's General Plan. These include higher residential densities, increased housing and VMT, water availability, and local workforce, as outlined below:

Higher Residential Densities. Concerns have been expressed from the public about increasing housing densities which has resulted from the City trying to meet its RHNA. A number of residents made specific comments during the NOP period about increasing densities of multi-family housing and the addition of higher density multi-family housing near their single family neighborhoods.

Increased Housing and VMT. One issue that developed during the EIR process is the inherent conflict between the increased housing goals of the state, as demonstrated by the City's increased RHNA housing allocation, and the state/regional goal to reduce vehicle miles traveled (VMT) as outlined in SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS, otherwise known as "Connect SoCal").

Water Availability. It is unclear if or how local water-serving agencies can provide sufficient supplies of groundwater to support the anticipated growth in housing and non-residential uses under the FGPUZA.

Local Workforce. During the NOP period an attorney for a carpenter's union encouraged the General Plan to promote hiring of a local skilled and trained workforce (i.e., union workers) to reduce environmental impacts by shortening the length of vendor trips, reducing greenhouse gas and air pollutant emissions, and providing localized economic benefits.

3.0 – PROJECT DESCRIPTION

Every city and county in California is required to have a general plan that functions as a comprehensive, long-range policy document. For cities, the general plan guides the physical development of the incorporated city (e.g., city limit) and any land outside city boundaries (e.g., unincorporated sphere of influence area) that has a relationship to the city's future growth and development. The City of Garden Grove's General Plan was last updated in 2008 and the City is proposing to amend the three Elements shown below:

- Housing
- Land Use
- Safety

The City will also prepare an Environmental Justice Element in response to recent State General Plan Law requiring its preparation. (California Government Code (CGC) § 65302(h).) In addition to the General Plan Element update, the City is proposing various amendments to Title 9 (Land Use) of the Garden Grove Municipal Code in compliance with CGC Section 65300 et seq. and to make it consistent with the Focused General Plan Update. Therefore, the proposed "Project" that will be evaluated in this document is adoption of both the Focused General Plan Update and Zoning Amendments (FGPUZA or "Project").

The FGPUZA will ensure that the General Plan and the City's Municipal Code are consistent, meets the requirements of CGC Article 5 (Authority for and Scope of General Plans)[1] and addresses changes to the demographic, economic and environmental conditions in Garden Grove that are anticipated to occur through the year 2030.

3.1 Background

Ensuring the focused Garden Grove General Plan Update reflects the diverse priorities and needs of the community, the General Plan Update program facilitated numerous engagement activities to gather community input. The engagement program included:

- Stakeholder Interviews and Focus Group Meetings
- Housing Element Webpage and Social Media
- Three (2) Community Surveys
- Two (2) Virtual Community Forums
- Six (6) Study Sessions

[1] CGC Article 5 requires every city and county to have a general plan that functions as a comprehensive, long-range policy document. *This font size is very small – was this intentional? MIG – yes, footnotes are supposed to be innocuous…

Stakeholder Interviews and Focus Group Meetings

A series of stakeholder interviews and focus groups meetings were conducted in September 2021, including meetings with:

- City Councilmembers
- Housing and Affordable Housing Developers
- Service Providers and Advocacy Groups
- Neighborhood and Homeowner Associations
- Public Entities and Partners (Education Groups)
- Business Community
- Non-Housing Advocacy Groups (Specific Populations/Special Needs, including Places of Worship)

The interviews' purpose was twofold: inform community members about the Garden Grove General Plan Update, and to gather input regarding Garden Grove's housing and environmental justice challenges and opportunities. Invitations to participate were extended to over 60 local organizations, community groups, and City Council members.

Housing Element Webpage and Social Media

The webpage, https://ggcity.org/housing-element, on the City's website provided detailed information about the Housing, Safety, Land Use, and Environmental Justice Elements. It provides information about the General Plan update process and schedule, involvement opportunities, latest news, community engagement summaries, fact sheets, draft plans and other technical documents. The website provides an opportunity for people to sign up for additional information, which is provided through email.

In addition to the website, the City utilized its Facebook page, Twitter account, Nextdoor account, and Instagram account to advertise upcoming forums, direct access to online surveys, and to solicit input on draft documents.

Community Surveys

Three (3) community surveys were conducted to gather community feedback on housing and environmental justice. During September 2020, an online survey was available to the public in four different languages: English, Korean, Vietnamese, and Spanish. Additionally, staff distributed hard copy surveys to residents at multiple apartment complexes and to participants at the Buena Clinton Youth and Family Center, the Magnolia Park Family Resource Center, and the H. Louis Lake Senior Center. City staff, including those who speak different languages, assisted participants in filling out the surveys. A total of 566 participants living and working in Garden Grove responded to the survey.

Two (2) additional mapping surveys were facilitated: one in October 2020 that focused on housing and land use opportunities and another in May 2021 that focused on environmental justice. The mapping surveys allow participants to input pins to locate housing opportunities and identify location improvements to address community needs. Over 400 participants entered

comments for both online surveys. Each survey was also translated in Korean, Vietnamese, and Spanish.

Virtual Community Forums

Two (2) Virtual Community Forums were facilitated online through the Zoom video conferencing platform. The first forum, held on November 18, 2020, focused on land use and housing opportunities. The second forum was held on April 21, 2021 and focused on environmental justice. Each forum consisted of presentations, interactive polling, and community discussions.

Study Sessions

Six (6) study sessions were held with the City Council, Planning Commission, and the Neighborhood Improvement Conservation Commission. A joint meeting study session with the Planning Commission and the Neighborhood Improvement Conservation Commission was held on September 17, 2020, to provide an overview and introduction to the preparation process for the Housing Element and Environmental Justice Element. A Planning Commission Study Session was held on November 19, 2020, with the meeting focusing on identifying locational housing opportunities to accommodate the Regional Housing Needs Assessment (RHNA). A City Council Study Session was held on December 8, 2020, to introduce the Draft Land Use Alternatives intended to accommodate the RHNA. Another City Council Study Session was held on January 12, 2021, to affirm a Preferred Draft Land Use Plan. Study sessions were additionally held with the Planning Commission on May 20, 2021, and the City Council on May 25, 2021, to solicit comments on the draft housing programs.

3.2 Location

The Planning Area of the General Plan consists of the corporate boundaries of the City of Garden Grove located in central Orange County approximately six miles from the Pacific Ocean to the west and 10 miles west of the Santa Ana Mountains. The area within the City's corporate boundaries total 17.9 square miles (11,464 acres) (See Exhibit 3-1, Regional Context Map). The City does not have any unincorporated County territory within its sphere of influence. The City is nine miles west of downtown Long Beach and 25 miles southeast of downtown Los Angeles. Nine cities border the City of Garden Grove: Anaheim, Orange, Santa Ana, Fountain Valley, Westminster, Seal Beach, Los Alamitos, Cypress, and Stanton. Four unincorporated Orange County islands – Southwest Anaheim and three communities within Stanton's sphere of influence – are located along the City's northern border. (See Exhibit 3-2, Planning Area).

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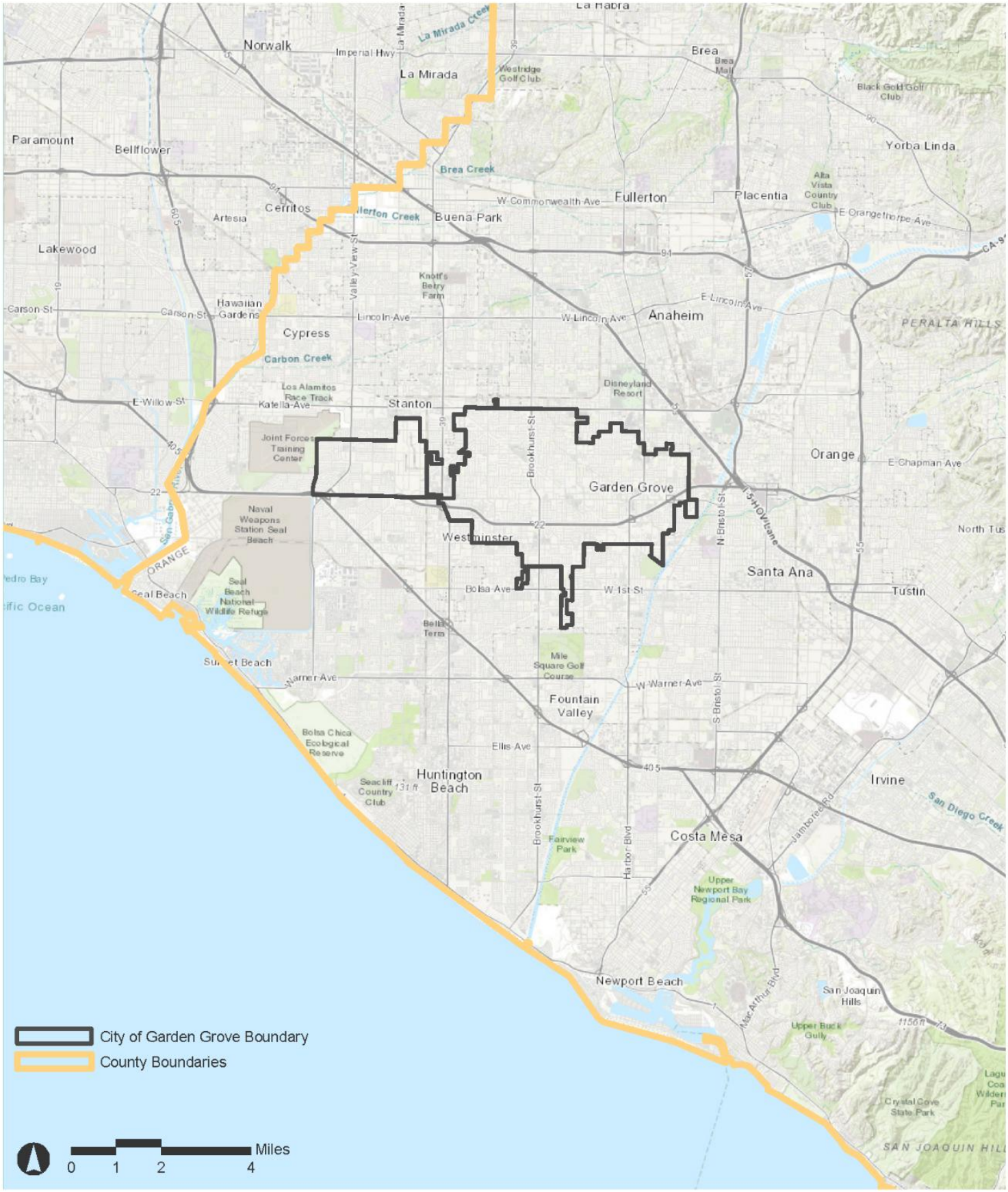

Source: Esri World Terrain Base and Reference, 2020.

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Exhibit 3-1 Regional Context Map

Focused General Plan Update and Zoning Amendments
Garden Grove, California

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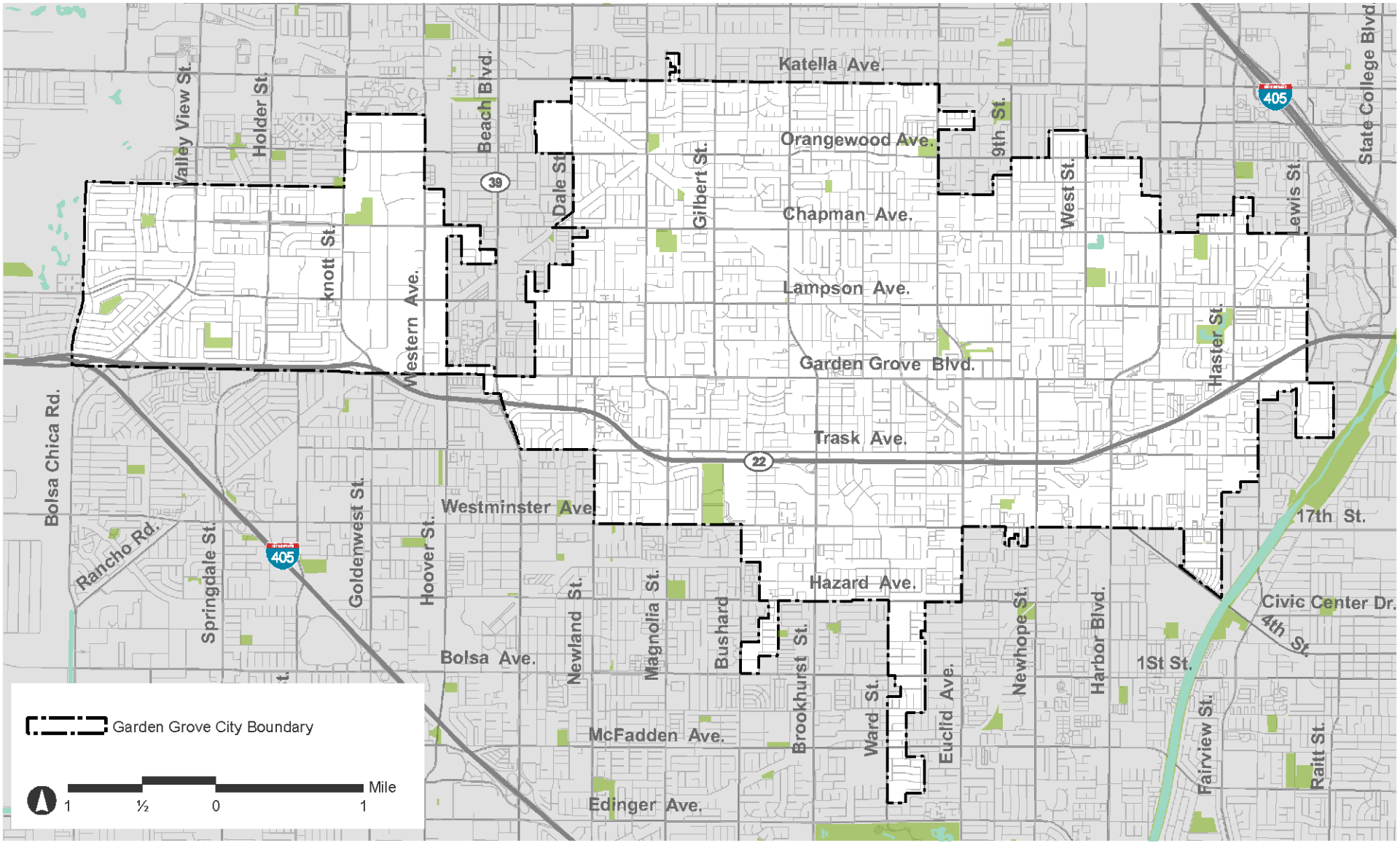

Source: SCAG GIS and MIG, 2021.

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Exhibit 3-2 Project Vicinity Map

Focused General Plan Update and Zoning Amendments

Garden Grove, California

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3.3 Existing Conditions

Environmental Setting

The City of Garden Grove is in the Los Angeles Basin, a coastal alluvial plain nestled between the Santa Monica Mountains, the Pacific Ocean, the Santa Ana Mountains and San Joaquin Hills. Geologically, the city occupies the Central Block area of the Los Angeles Basin adjacent to the Elsinore Fault and Newport-Inglewood Fault. The Santa Ana River, located east and south of the City, carries waters that originate 70 miles northeast in the San Bernardino Mountains, drains the Santa Ana River Watershed, and recharges the Orange County Coastal Plain Groundwater Basin. Watercourses in the City include floodways draining to the Pacific Ocean: the Bolsa Chica Channel, the Anaheim City-Barber Channel, the Westminster Channel, and the East Garden Grove-Winterburg Channel.

Topographically, the City is roughly 89 feet above sea level and the elevation gradually increases from west to east. According to the State Department of Finance, the estimated population of the City in 2020 was 174,801 which makes it the fifth largest among Orange County cities (DOF 2020). The DOF also estimates the City's housing stock consists of 48,257 total units (DOF, 2020). The Esri Infogroup Business Summary identifies 45,766 employees in the City (Esri and Infogroup, 2020). Garden Grove's urban development is part of the Census-defined Los Angeles-Long Beach-Anaheim urban area, a densely developed territory with an area of 1,736 square miles and a total population of 12,563,660 and encompasses residential, commercial, and other non-residential urban land uses of the Los Angeles Basin and adjoining urbanized valleys (UAF 2021).

Major regional transportation routes that carry vehicular traffic (personal vehicles, freight, and buses) are within City borders. The I-405 freeway and the SR-22 freeway converge on the City's western border linking the City to employment centers in Irvine and Long Beach. Arterial roadways of regional importance including Beach Boulevard, Brookhurst Street, Harbor Boulevard, Euclid Street, Valley View Street and Bolsa Chica Road provide multiple access points along the routes of the freeways. The Orange County Transportation Authority provides transit service along bus stops at major arterial roadways. The OC Streetcar introduces passenger railway service between the City and the Santa Ana Regional Transportation Center with the construction of a station located at Harbor Boulevard/Westminster Boulevard anticipated to be completed and in operation by 2022.

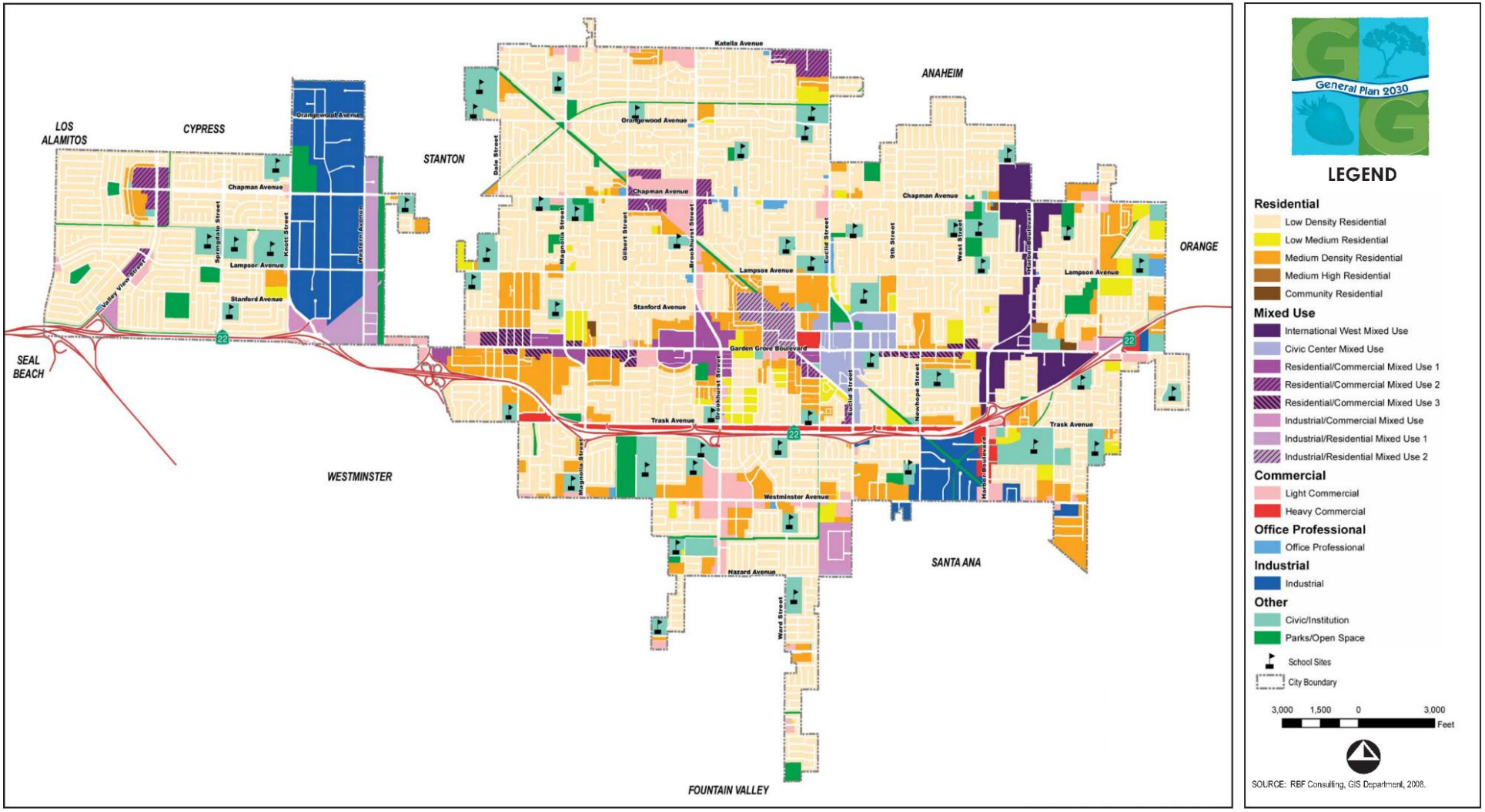
Land Uses

The Planning Area consists of a variety of existing land uses that fall in to six general categories: residential, commercial and industrial, public and institutional, parks and open space, undeveloped (vacant), and other. . Garden Grove' existing land use distribution is noted in Table 3-1. The Existing Land Use Plan is shown as Exhibit 3-3. Specific Plans within the Planning Area include the Community Center Specific Plan (CCSP), the Harbor Corridor Specific Plan (HCSP), and the Brookhurst/Chapman Specific Plan (BCSP).

Table 3-1
Existing Land Use 2020

Existing Land Use Categories	Acres	Dwelling Units	Non-Residential Building Sq. Ft.	Population	Employees	Students
Residential						
Single-Family	4,802.9	26,984	--	103,472	--	--
Accessory Dwelling Units	--	681	--	817	--	--
Multi-Family	909.5	18,964	--	64,910	--	--
Mobile Home Park	133.0	1,628	--	5,602	--	--
Subtotal	**5,845.4**	**48,257**	**--**	**174,801**	**--**	**--**
Commercial and Industrial						
Commercial	719.6	--	9,401,900	--	14,754	--
Office	103.4	--	1,992,800	--	5,592	--
Hotel and Accommodations	77.9	--	2,383,500	--	2,071	--
Light Industrial	560.3	--	6,257,400	--	11,828	--
Warehouse and Outdoor Storage	189.8	--	2,533,900	--	2,334	--
Subtotal	**1,651.0**	**--**	**22,569,500**	**--**	**36,579**	**--**
Public Facilities and Institutions						
Civic Facilities	201.8	--	1,071,800	--	1,499	--
Public Schools	767.4	--	5,055,500	--	5,070	31,094
Private College	10.2	--	104,200	--	134	--
Hospital	13.4	--	500,000	--	813	--
Convalescent Home	13.9	--	186,300	--	440	--
Utilities	25.9	--	99,200	--	163	--
Subtotal	**1,032.6**	**--**	**7,017,000**	**--**	**8,119**	**--**
Parks and Open Space						
Parks and Recreation	156.5	--	--	--	--	--
Cemetery	6.6	--	--	--	--	--
Subtotal	**163.1**	**--**	**--**	**--**	**--**	**--**
Other						
Places of Worship	129.9	--	627,900	--	947	--
Railroad Right-of-Way	19.3	--	--	--	--	--
Other	18.7	--	18,100	--	121	--
Vacant	36.4	--	--	--	--	--
Street/Fwy Right-of-Way	2,567.8	--	--	--	--	--
Subtotal	**2,771.2**	**--**	**646,000**	**--**	**1,068**	**--**
Grand Total	**11,464.1**	**48,257**	**30,232,500**	**174,801**	**45,766**	**31,094**

Source: MIG 2021



Source: City of Garden Grove and RBF, 2008.

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Exhibit 3-3 Existing Land Use Plan

Focused General Plan Update and Zoning Amendments
Garden Grove, California

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3.4 Project Objectives

The Focused GPU and Zoning Amendments include the following objectives for the long-term growth and enhancement of the community:

- *A Safe Community* - Adequately funded, staffed, and equipped police and fire services that provide a timely, effective response to both minor and major public safety concerns. Also, the public safety providers will engage and educate all segments of the community.
- *An Economically Sound Community* - Meet budget challenges by capitalizing on our unique development opportunities and providing enhanced shopping, dining, and entertainment options while improving the aesthetics of the community.
- *A Family-Oriented Community* - Safe, well-kept neighborhoods where all segments of the community feel secure and comfortable, and where residents can feel unburdened from the stresses of the world outside the neighborhood.
- *A Diverse Community* - All segments of the community have a sense of belonging, regardless of race, ethnicity, or age. Also, a community where all feel safe in expressing their uniqueness, while joining and celebrating in their commonality as Americans, Californians, and Garden Grove residents.
- *A Well-Maintained Community* - Public infrastructure (i.e., streets, water and sewer systems, storm drains) that is kept in good working order, but results in few inconveniences and disruptions to users during maintenance. Also, future plans that ensure the continued adequacy and availability of these services as the community changes.
- *An informed Community and Well Administered Community* - Good channels of communication shall exist between the general public, community organizations, service providers and the city government. This provides residents and other interested persons both information and opportunities to provide input on proposals being brought before the City's Boards, Commissions, and Council. In addition, the city government shall be adequately staffed and compensated to meet the service needs and goals of the community. City staff shall be encouraged to learn about and apply the most efficient and effective methods for providing public services to the community.
- *A High-Quality-of-Life Community* - Public facilities and open spaces that are well maintained and adequate for size and nature of the community, as well as provide recreational opportunities for all segments of the community.

3.5 Project Characteristics

The FGPUZA includes goals, policies, and programs that will provide City staff and discretionary bodies with a foundation for decisions for long-range planning related to physical development and public services. The FGPUZA is intended to achieve the planning goals set forth in the Housing, Land Use, Safety, and Environmental Justice elements over the FGUPZA's planning horizon. These amendments establish the development potential for various land uses and serve as a policy guide for determining the future physical development and community services in the City.

Housing Allocation

The mandatory cyclical update (6th Cycle) to the Housing Element is required by State law to accommodate the City's Regional Housing Needs Allocation (RHNA) goal of 19,168 dwelling units. The projected dwelling unit increase during implementation of FGPUZA is 20,242 dwelling units, which represents a roughly 42% increase from the existing 48,257 of dwelling units. The total anticipated number of dwelling units in the City in 2040 is 68,499 dwelling units. Amendments to the Land Use Element and Zoning Changes to Title 9 of the Municipal Code identify the range of development density as well as the areas and sites that would accommodate the RHNA pursuant to State law.

Safety Element

Recent state legislation (SB 379, SB 1035, SB1241) has placed new requirements on how and when cities need to update the safety element, which must be updated to coincide with housing element updates. Efforts to streamline state and local planning include allowing a city to incorporate by reference the local hazard mitigation plan and or other climate adaptation and resilience planning documents in the General Plan. The Garden Grove Safety Element has been updated as necessary to address climate adaptation and resiliency strategies and ensure consistency with the Local Hazards Mitigation Plan adopted by the City in 2020.

Environmental Justice

SB 1000 requires that the City add an Environmental Justice Element and its mandatory contents include identifying policies, goals and objectives to reduce health risks by reducing pollution exposure and improving air quality, promoting physical activity, promoting safe and sanitary homes, and promoting access to health foods, along with promoting civic engagement. The contents of the Environmental Justice Element include mandatory climate change adaptation and resiliency strategies.

General Plan Projections

The proposed Focused General Plan Update has a planning horizon year of 2040, as general plans are required to project a long-term time frame (Government Code Section 65300) for growth build out typically covering a 20-year period. However, an interim planning horizon year of 2030 was also evaluated for consistency with the 6th Cycle 2021-2029 Housing Element in accommodating the Regional Housing Needs Allocation of 19,168 housing units within the housing element planning period between July 1, 2021 and October 15, 2029. Exhibit 3-4 (Proposed Land Use Plan) shows the proposed Land Use Policy Plan under the Focused General Plan Update and Zoning Amendments. Table 3-2 (Proposed General Plan Buildout 2040) estimates that there will be 68,499 dwelling units, 238,619 residents, 29,718,000 building square feet of non-residential uses, and 49,369 jobs in the City by the 2040 General Plan horizon year. Table 3-3 (Potential GPU Growth) provides a comparison of existing 2020

conditions and potential future 2040 conditions. As shown in Table 3-3, buildout under the proposed FGPUZA has the potential to result in up to 20,242 additional dwelling units and would support up to 63,818 additional residents within the Planning Area when compared to existing conditions. However, the General Plan Update would potentially result in a reduction of approximately 514,500 square feet of non-residential building floor area when compared to existing conditions. Although it is projected over the long term that there will be a net reduction of non-residential uses (industrial , commercial etc.) such uses would still continue to develop/redevelop within the Planning Area.

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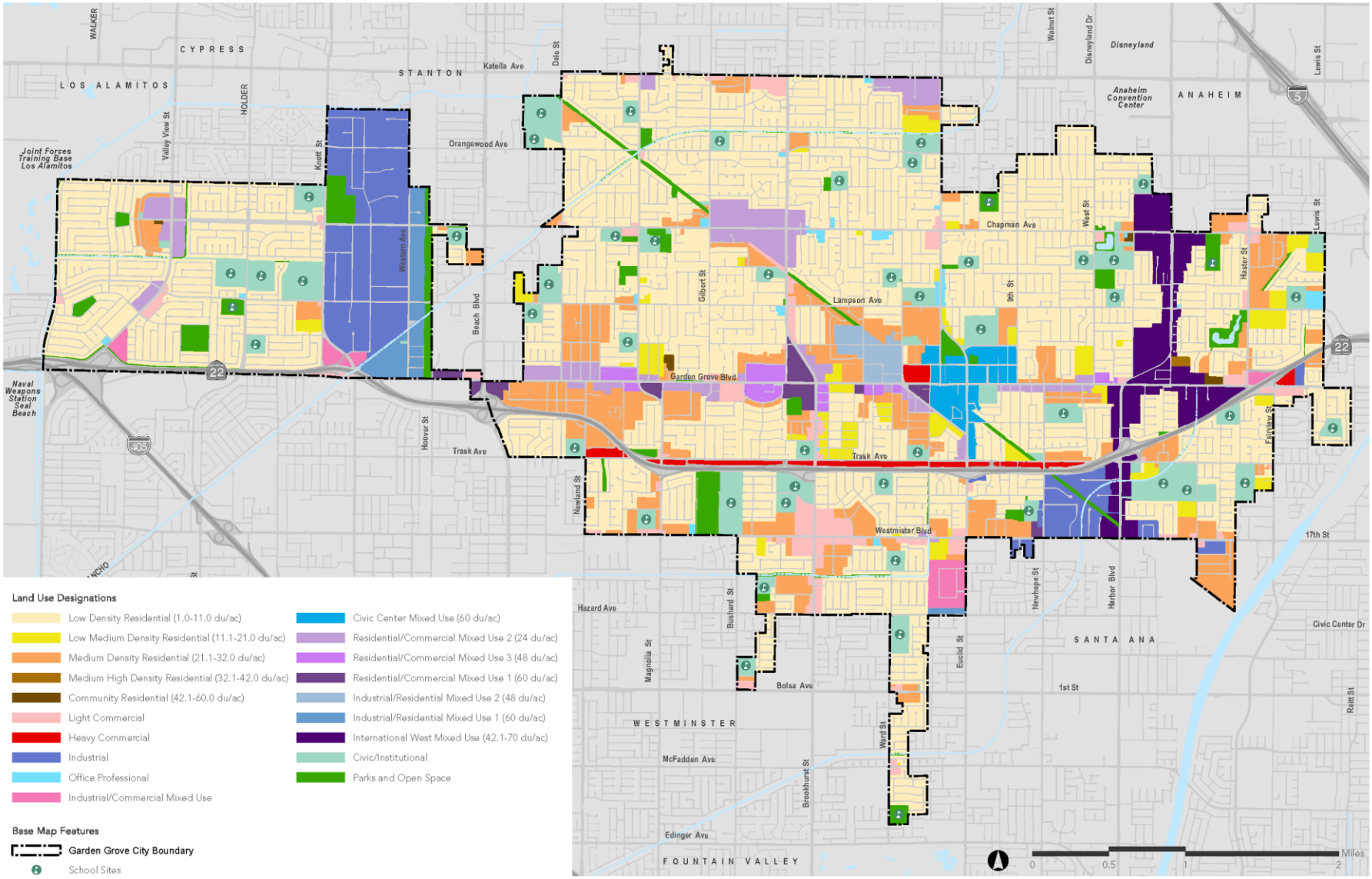

Source: City of Garden Grove and MIG, 2021.

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Exhibit 3-4 Proposed Land Use Plan

Focused General Plan Update and Zoning Amendments
Garden Grove, California

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Table 3-2
Proposed General Plan Buildout 2040

Existing Land Use Categories	Acres	Dwelling Units	Non-Residential Building Sq Ft	Population	Employees	Students
Residential						
Low Density Residential	4,647.0	25,386	--	90,930	--	--
Accessory Dwelling Units	--	2,828	--	3,394	--	--
Low Medium Density Residential	237.7	3,046	--	10,910	--	--
Medium Density Residential	933.4	18,984	--	67,998	--	--
Medium High Density Residential	4.8	104	--	373	--	--
Community Residential	10.4	331	--	1,186	--	--
Subtotal	**5,833.3**	**50,679**	**--**	**174,791**	**--**	**--**
Commercial and Industrial						
Light Commercial	227.7	--	2,921,500	--	5,527	--
Heavy Commercial	70.8	--	694,900	--	1,094	--
Office Professional	36.8	--	831,100	--	1,731	--
Industrial/Commercial Mixed Use	73.2	--	1,264,400	--	2,253	--
Industrial	575.8	--	6,648,000	--	10,442	--
Subtotal	**984.2**	**--**	**12,359,900**	**--**	**21,047**	**--**
Mixed Use						
Residential/Commercial Mixed Use 1	67.8	3,285	488,700	11,766	1,053	--
Residential/Commercial Mixed Use 2	285.7	3,186	2,249,200	11,412	4,578	--
Residential/Commercial Mixed Use 3	64.1	1,671	495,400	5,985	988	--
Industrial/Residential Mixed Use 1	115.4	2,207	1,056,300	7,905	2,148	--
Industrial/Residential Mixed Use 2	61.8	722	1,114,500	2,586	2,047	--
Civic Center Mixed Use	108.7	1,275	1,256,400	4,567	2,578	--
International West Mixed Use	293.3	5,474	4,902,300	19,067	8,223	--
Subtotal	**996.7**	**17,820**	**11,562,800**	**63,829**	**21,615**	**--**
Public Facilities, Parks, and Open Space						
Civic/Institutional	726.5	--	5,795,300	--	6,709	36,080
Parks and Open Space	355.3	--	--	--	--	--
Street/Fwy ROW	2,567.8	--	--	--	--	--
Subtotal	**3,649.7**	**--**	**5,795,300**	**--**	**6,709**	**36,080**
Grand Total	**11,464.0**	**68,499**	**29,718,000**	**238,619**	**49,369**	**36,080**

Source: MIG 2021

Table 3-3
Potential GPU Growth

Development Indicators	Existing Conditions (2020)	Future Buildout Conditions (2040)	Existing to Buildout Change (Numbers)	Existing to Buildout Change (Percentage)
Dwelling Units	48,257	68,499	20,242	41.9%
Population	174,801	238,619	63,818	36.5%
Non-Residential Building SF	30,232,500	29,718,000	(514,500)	-1.7%
Commercial	*9,401,900*	*9,203,300*	*(198,600)*	*-2.1%*
Office	*1,992,800*	*1,941,500*	*(51,300)*	*-2.6%*
Hotels/Motels SF	*2,383,500*	*3,015,700*	*632,200*	*26.5%*
	3,600 rooms	*4,493 rooms*	*893 rooms*	*24.8%*
Industrial	*8,791,300*	*8,508,800*	*(282,500)*	*-3.2%*
Public Facilities/Institutional	*7,663,000*	*7,048,700*	*(614,300)*	*-8.0%*
Employees	45,766	49,369	3,603	7.9%
Students	31,094	36,080	4,986	16.0%

Source: MIG, Inc. 2021 SF = square feet

3.6 Intended Uses of the EIR

The planning framework proposed in the FGPUZA would not result in the immediate construction of any new development nor entitlement of any new project. All new development within the City will continue to be subject to the City's permitting, approval, and public participation processes. Elected and appointed officials along with City Staff will review subsequent project applications for consistency with the General Plan, applicable Specific Plans, and the Municipal Code, and will prepare appropriate environmental documentation to comply with CEQA and other applicable environmental requirements.

Pursuant to Section 15168 of the State CEQA Guidelines, this EIR is a Program EIR. The goals, policies, land use designations, implementation programs, and other substantive components of the General Plan and implementing sections of the Municipal Code comprise the "program" evaluated in this Program EIR. Subsequent activities undertaken by the City and project proponents to implement the General Plan will be examined considering this Program EIR to determine the appropriate level of environmental review required under CEQA. Subsequent implementation activities may include, but are not limited to, the items listed below.

- Updating and approval of Specific Plans and other development plans and planning documents.
- Review and approval of future general plan amendments, specific plans, and zone changes.
- Approval of tentative maps, variances, conditional use permits, and other land use permits and entitlements.
- Approval of development agreements.

- Approval of facility and service master plans and financing plans.
- Approval and funding of public improvement projects.
- Approval of resource management plans.
- Issuance of permits and other approvals necessary for implementation of the General Plan.
- Issuance of permits and other approvals necessary for public and private development projects.

As the Lead Agency, the City also intends this EIR to serve as the CEQA-required environmental documentation for consideration by other Responsible Agencies and Trustee Agencies that may have limited discretionary authority over future project affected by the General Plan. Following certification of this Program EIR and adoption of the General Plan by the lead agency (City of Garden Grove), other agencies may use this Program EIR in the approval of subsequent implementation activities. These agencies may include, but are not limited, to those listed below.

Local Agencies

- City of Anaheim
- City of Cypress
- City of Fountain Valley
- City of Los Alamitos
- City of Orange
- City of Santa Ana
- City of Seal Beach
- City of Stanton
- City of Westminster
- County of Orange

Regional and State Agencies

- Orange County Local Agency Formation Commission (LAFCO)
- Orange County Transportation Authority (OCTA)
- Southern California Association of Governments (SCAG)
- California Department of Fish and Wildlife (CDFW)
- California Department of Conservation
- California Department of Housing and Community Development (HCD)
- California Department of Transportation (Caltrans)
- California Department of Toxic Substance Control (DTSC)
- Regional Water Quality Control Board, Santa Ana Region (RWQCB)
- South Coast Air Quality Management District (SCAQMD)

Federal Agencies

- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Services (USFWS)

3.7 – REFERENCES

California State Department of Finance (DOF). Population and Housing Estimates, 2020. https://www.dof.ca.gov/Forecasting/Demographics/Estimates/ [Accessed January 2021]

MIG. Land Use Data for City of Garden Grove Land Use Element, 2020-2021, most recent version issued March 11, 2021. Prepared by MIG. 2020-2021.

Southern California Association of Governments (SCAG). American Community Survey 2014-2018. Data reported on the SCAG website https://data.census.gov/cedsci/ [Accessed December 2020].

Southern California Association of Governments (SCAG). *Pre-certified Local Housing Data for the City of Garden Grove*. September 2020. https://scag.ca.gov/sites/main/files/file-attachments/gardengrove_he_0920.pdf?1603253897 [Accessed January 2021].

Urban Areas Facts (UAF) https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/ua-facts.html [Accessed January 2021].

4.1 – Air Quality

This EIR chapter provides information on the environmental and regulatory air quality setting of the Planning Area and evaluates the Focused General Plan Update and Zoning Amendment's (FGPUZA) potential short-term and long-term air quality impacts. The methodologies and assumptions used in the preparation of this section utilize the guidance developed by the South Coast Air Quality Management District (SCAQMD, 2019a). Information on existing air quality conditions, federal, and State ambient air quality standards, and pollutants of concern was obtained from the U.S. Environmental Protection Agency (U.S. EPA), California Air Resources Board (CARB), and SCAQMD. This EIR air quality analysis has been closely coordinated with the Energy and Greenhouse Gas analyses in Chapters 4.4 and 4.6, respectively, of this EIR. Please refer to Appendix C for detailed air quality and greenhouse gas emissions estimates (MIG, 2021).

4.1.1 – ENVIRONMENTAL SETTING

Air quality is a function of pollutant emissions and topographic and meteorological influences. The physical features and atmospheric conditions of a landscape interact to affect the movement and dispersion of pollutants and determine its air quality.

South Coast Air Basin

The U.S. EPA and CARB are the federal and State agencies charged with maintaining air quality in the nation and California, respectively. The U.S. EPA delegates much of its authority over air quality to CARB which has geographically divided the State into 15 air basins for the purposes of managing air quality on a regional basis.

The City of Garden Grove is located in the South Coast Air Basin (Basin) which includes Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside counties. The Basin encompasses approximately 6,745 square miles of coastal plains and is bounded by the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east.

Air quality in the Basin is managed by the SCAQMD. The SCAQMD is responsible for bringing air quality within the Basin into conformity with federal and State air quality standards by reducing existing emission levels and ensuring that future emission levels meet applicable air quality standards. SCAQMD works with federal, State, and local agencies to reduce pollutant emissions through adoption and implementation of rules and regulations. Please refer to Section 4.1.2 for a description of the regulatory setting of the Planning Area as it relates to air quality.

Basin Climate and Meteorology

The climate of the Los Angeles region is classified as Mediterranean, but weather conditions within the Basin are also dependent on local topography and proximity to the Pacific Ocean. The climate is dominated by the Pacific high-pressure system that results in generally mild, dry summers and mild, wet winters. This temperate climate is occasionally interrupted by extremely hot temperatures during the summer, hot dry westerly "Santa Ana" winds during the fall, and storms from the Pacific northwest during the winter. In addition to the Basin's topography and

geographic location, El Niño and La Niña patterns in the central Pacific Ocean can also have large effects on weather and rainfall received in the Basin between November and March.

The Pacific high-pressure system drives the prevailing winds in the Basin. The winds tend to blow onshore in the daytime and offshore at night. In the summer, an inversion layer is often created over the coastal areas and increases ozone levels. A temperature inversion is created when a layer of cool air is overlain by a layer of warmer air; this can occur over coastal areas when cool, dense air that originates over the ocean is blown onto land and flows underneath the warmer, drier air that is present over land. In the winter, areas throughout the Basin often experience a shallow inversion layer that prevents the dispersion of surface level air pollutants, resulting in higher concentrations of criteria air pollutants such as carbon monoxide (CO) and oxides of nitrogen (NO_X).

In the fall months, the Basin's weather is often impacted by Santa Ana winds. These winds are the result of a high-pressure system over the Nevada-Utah region that overcomes a westerly wind pattern and forces hot, dry winds from the east to the Pacific Ocean. These winds can be powerful and persistent during these times.

An El Niño condition is a warming of the surface waters of the eastern Pacific Ocean. It is a climate pattern that occurs across the tropical Pacific Ocean that is usually associated with drastic weather occurrences, including enhanced rainfall in Southern California. Conversely, a La Niña condition is the term for cooler than normal sea surface temperatures across the Eastern Pacific Ocean. The Los Angeles region receives less than normal rainfall during La Niña years.

Throughout the Basin, annual average temperatures vary from the low to middle 60s degrees Fahrenheit (^{o} F). Due to a decreased marine influence, the eastern portion of the Basin shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the Basin, with average minimum temperatures of 47° F in downtown Los Angeles and 36° F in San Bernardino. All portions of the Basin have recorded maximum temperatures above 100° F.

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of Basin climate. Humidity restricts visibility in the Basin. The sulfur dioxide is converted to sulfates and is heightened in the air with high relative humidity. The annual average relative humidity within the Basin is 71 percent along the coast and 59 percent inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent with low stratus clouds being a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the Basin's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Rainfall between the months of April and November usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the Basin with frequency being higher near the coast.

The City of Garden Grove's average temperatures range from a high of 84.7 degrees Fahrenheit (^{o} F) in August to a low of 43.1^{o} F in December. Annual precipitation is approximately 13.7 inches falling mostly from December through March (WRCC 2021).

*Sunlight***.** Three-quarters of available sunshine is received in the Basin, while the remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. The shortest day of the year has approximately ten hours of possible sunshine, while the longest day of the year has approximately 14.5 hours of possible sunshine.

Temperature Inversions. In the Basin, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing that effectively acts as an impervious lid to pollutants over the entire Basin. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nighttime radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NO_X and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants within the Basin.

Wind Patterns. The distinctive climate of the Basin is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the southwest with high mountains ringing the rest of the Basin.

Wind patterns across the Basin, including Garden Grove, are characterized by westerly and southwesterly on-shore winds during the day and easterly or northeasterly breeze at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

Regulated Air Pollutants

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for six common air pollutants: ozone (O_3), particulate matter (PM), which consists of “inhalable coarse” PM (particles with an aerodynamic diameter between 2.5 and 10 microns in diameter, or PM_{10}) and “fine” PM (particles with an aerodynamic diameter smaller than 2.5 microns, or $PM_{2.5}$), CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The U.S. EPA refers to these six common pollutants as “criteria” pollutants because the agency regulates the pollutants on the basis of human health and/or environmentally-based criteria and because they are known to cause adverse human health effects and/or adverse effects on the environment (U.S. EPA, 2020a and 2020b).

CARB has also established California Ambient Air Quality Standards (CAAQS) for the six criteria air pollutants regulated by the federal Clean Air Act (the CAAQS are more stringent than the NAAQS), plus the following additional air pollutants due to their known adverse effects on human health or the environment (CARB, 2020a): hydrogen sulfide (H_2S), sulfates (SO_X), vinyl chloride, and visibility reducing particles.

A description of the air pollutants associated with the proposed FGPUZA and its vicinity is provided below. Air pollutants not commonly associated with the existing or proposed sources

in the Planning Area such as hydrogen sulfide and visibility reducing particles, are not described below.

- **Ground-level Ozone**, commonly referred to as smog, is not emitted directly into the atmosphere. It is created from chemical reactions between NO_X and volatile organic compounds (VOCs), also called reactive organic gases (ROG), in the presence of sunlight (U.S. EPA, 2017a). Thus, ozone formation is typically highest on hot sunny days in urban areas with NO_X and ROG pollution. Ozone irritates the nose, throat, and air pathways and can cause or aggravate shortness of breath, coughing, asthma attacks, and lung diseases such as emphysema and bronchitis.
    - **ROG** is a CARB term defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and includes several low-reactive organic compounds which have been exempted by the U.S. EPA (CARB, 2004).
    - **VOCs** is a U.S. EPA term defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. The term exempts organic compounds of carbon which have been determined to have negligible photochemical reactivity such as: methane, ethane, and methylene chloride (CARB, 2004).
- **Particulate Matter**, also known as particle pollution, is a mixture of extremely small solid and liquid particles made up of a variety of components such as organic chemicals, metals, and soil and dust particles (U.S. EPA 2016a).
    - **PM_{10}**, also known as inhalable coarse, respirable, or suspended PM, consists of particles less than or equal to 10 micrometers in diameter (approximately $1/7^{th}$ the thickness of a human hair). These particles can be inhaled deep into the lungs and possibly enter the blood stream, causing health effects that include, but are not limited to, increased respiratory symptoms (e.g., irritation, coughing), decreased lung capacity, aggravated asthma, irregular heartbeats, heart attacks, and premature death in people with heart or lung disease (U.S. EPA 2016a).
    - **$PM_{2.5}$**, also known as fine PM, consists of particles less than or equal to 2.5 micrometers in diameter (approximately $1/30^{th}$ the thickness of a human hair). These particles pose an increased risk because they can penetrate the deepest parts of the lung, leading to and exacerbating heart and lung health effects (U.S. EPA 2016a).
- **Carbon Monoxide (CO)** is an odorless, colorless gas that is formed by the incomplete combustion of carbon-based fuels. Motor vehicles are the single largest source of carbon monoxide in the Basin. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can aggravate cardiovascular disease and cause headaches, dizziness, unconsciousness, and even death (U.S. EPA 2016b).
- **Nitrogen Dioxide (NO_2)** is a by-product of combustion. NO_2 is not directly emitted but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to ozone formation. NO_2 also contributes to the formation of particulate matter. NO_2 can cause breathing difficulties at high concentrations (U.S. EPA, 2016c).
- **Sulfur Dioxide (SO_2)** is one of a group of highly reactive gases known as SO_X. Fossil fuel combustion in power plants and industrial facilities are the largest emitters of SO_2.

Short-term effects of SO_2 exposure can include adverse respiratory effects such as asthma symptoms. SO_2 and other SO_X can react to form PM (U.S. EPA 2016d).

- **Sulfates (SO_4^{2-})** are the fully oxidized ionic form of sulfur. SO_4^{2-} are primarily produced from fuel combustion. Sulfur compounds in the fuel are oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. Sulfate exposure can increase risks of respiratory disease (CARB 2009).
- **Lead** is a metal found naturally in the environment as well as in manufactured products. Mobile sources used to be the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. EPA established national regulations to gradually reduce the lead content in gasoline, and in 1996, lead was banned from gasoline. As a result of these efforts, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically. Lead can adversely affect multiple organ systems of the body and people of every age group. Lead poisoning in young children can cause brain damage, behavioral problems, and liver or kidney damage. Lead poisoning to adults can cause reproductive problems, muscle and joint pain, nerve disorders and kidney disease (CARB 2016a).

Common criteria air pollutants, such as ozone precursors, SO_2, and PM, are emitted by a large number of sources and have effects on a regional basis (i.e., throughout the Basin). Other pollutants, such as hazardous air pollutants (HAPs; described in more detail below under “Toxic Air Contaminants”), toxic air contaminants (TACs; described in more detail below), and fugitive dust, are generally not as prevalent and/or emitted by fewer and more specific sources. As such, these pollutants have much greater effects on local air quality conditions and local receptors.

Ambient Air Quality Standards and Basin Attainment Status

In general, the NAAQS and CAAQS define “clean” air, and are established at levels designed to protect the health of the most sensitive groups in our communities by defining the maximum amount of a pollutant (averaged over a specified period of time) that can be present in outdoor air without any harmful effects on people or the environment. Air pollutant levels are typically described in terms of concentration, which refers to the amount of pollutant material per volumetric unit of air. Concentrations are typically measured in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$).

The U.S. EPA, CARB, and regional air agencies assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories.

- **Attainment**. A region is “in attainment” if monitoring shows ambient concentrations of a specific pollutant are less than or equal to the NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a “maintenance area” for 10 years to ensure that the air quality improvements are sustained.
- **Nonattainment.** If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be classified as nonattainment. Federal and State laws require nonattainment areas to

develop strategies, implementation plans, and control measures to reduce pollutant concentrations to levels that meet, or attain, standards.

- **Unclassified.** An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Table 4.1-1 (Ambient Air Quality Standards and Basin Attainment Status) lists the NAAQS and CAAQS and summarizes the Basin's attainment status.

Table 4.1-1
Ambient Air Quality Standards and Basin Attainment Status

Pollutant	Averaging Time[B]	California Standards[A]		National Standards[A]	
		Standard[C]	Attainment Status[D]	Standard[C]	Attainment Status[D]
Ozone	1-Hour (1979)	--	--	240 µg/m^3	Nonattainment
	1-Hour (Current)	180 µg/m^3	Nonattainment	--	--
	8-Hour (1997)	--	--	160 µg/m^3	Nonattainment
	8-Hour (2008)	--	--	147 µg/m^3	Nonattainment
	8-Hour (Current)	137 µg/m^3	Nonattainment	137 µg/m^3	Pending
PM_{10}	24-Hour	50 µg/m^3	Nonattainment	150 µg/m^3	Attainment
	Annual Average	20 µg/m^3	Nonattainment	--	--
$PM_{2.5}$	24-Hour	--	--	35 µg/m^3	Nonattainment
	Annual Average (1997)	--	--	15 µg/m^3	Nonattainment
	Annual Average (Current)	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
Carbon Monoxide	1-Hour	23,000 µg/m^3	Attainment	40,000 µg/m^3	Attainment
	8-Hour	10,000 µg/m^3	Attainment	10,000 µg/m^3	Attainment
Nitrogen Dioxide	1-Hour	339 µg/m^3	Attainment	188 µg/m^3	Unclassifiable/ Attainment
	Annual Average	57 µg/m^3	Attainment	100 µg/m^3	Attainment
Sulfur Dioxide	1-Hour	655 µg/m^3	Attainment	196 µg/m^3	Attainment
	24-Hour	105 µg/m^3	Attainment	367 µg/m^3	Unclassifiable/ Attainment
	Annual Average	--	--	79 µg/m^3	Unclassifiable/ Attainment
Lead	3-Months Rolling	--	--	0.15 µg/m^3	Nonattainment (Partial)
Hydrogen Sulfide	1-Hour	42 µg/m^3	Attainment	--	
Sulfates	24-Hour	25 µg/m^3	Attainment	--	
Vinyl Chloride	24-Hour	26 µg/m^3	Attainment	--	

Source: CARB 2016b, SCAQMD 2016a, modified by MIG.

(A) This table summarizes the CAAQS and NAAQS and the Basin's attainments status. This table does not prevent comprehensive information regarding the CAAQS and NAAQS. Each CAAQS and NAAQS has its own averaging time, standard unit of measurement, measurement method, and statistical test for determining if a specific standard has been exceeded. Standards are not presented for visibility reducing particles, which are not concentration-based. The Basin is unclassified for visibility reducing particles.

(B) Ambient air standards have changed over time. This table presents information on the standards previously used by the U.S. EPA for which the Basin does not meet attainment.

(C) All standards are shown in terms of micrograms per cubic meter (µg/m^3) rounded to the nearest whole number for comparison purposes (with the exception of lead, which has a standard less than 1 µg/m^3). The actual CAAQS and NAAQS standards specify units for each pollutant measurement.

A= Attainment, N= Nonattainment, U=Unclassifiable.

Toxic Air Contaminants

In addition to criteria air pollutants, the U.S. EPA and CARB have classified certain pollutants as hazardous air pollutants (HAPs) or toxic air contaminants (TACs), respectively. The U.S. EPA has identified 187 HAPs, including substances such as benzene and formaldehyde; CARB also considers particulate emissions from diesel-fueled engines and other substances to be TACs. Since CARB's list of TACs references and includes U.S. EPA's list of HAPs, this EIR uses the term TAC when referring to HAPs and TACs.

TACs can cause severe health effects at very low concentrations (non-cancer effects), and many are suspected or confirmed carcinogens (i.e., can cause cancer) (U.S. EPA 2020b, CARB 2020b). People exposed to TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects such as (but not limited to) reduce immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and/or other health problems (U.S. EPA 2020b, CARB 2020b).

A description of the TACs associated with the proposed FGPUZA and its vicinity is provided below.

- **Gasoline-Powered Mobile Sources.** According to the SCAQMD's *Multiple Air Toxics Exposure Study in the South Coast Air Basin* (SCAQMD, 2021), or MATES V, gasoline-powered vehicles emit TACs, such as benzene, which can have adverse health risks. Gasoline-powered sources emit TACs in much smaller amounts than diesel-powered vehicles. The MATES V study identifies that diesel emissions account for approximately 50% of the total air toxics and cancer risk in the Basin, while Benzene, 1,3-Butadiene, and Carbonyls make up approximately 25% of the cancer risk.
- **Diesel Particulate Matter (DPM)**. Diesel engines emit both gaseous and solid material; the solid material is known as DPM. Almost all DPM is less than 1 µm in diameter, and thus is a subset of $PM_{2.5}$. DPM is typically composed of carbon particles and numerous organic compounds. Diesel exhaust also contains gaseous pollutants including VOCs and NO_x. The primary sources of diesel emissions are ships, trains, trucks, rail yards and heavily traveled roadways. These sources are often located near highly populated areas, resulting in greater DPM related health consequences in urban areas. The majority of DPM is small enough to be inhaled into the lungs and what particles are not exhaled can be deposited on the lung surfaces and in the deepest regions of the lungs where they are most susceptible to injury. In 1998, CARB identified DPM as a toxic air contaminant based on evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure (CARB 2016c).
- **Toxic elements and pollutants** such as butadiene, benzene, perchloroethylene, formaldehyde, acetaldehyde, arsenic, cadmium, and lead are found in the Basin (SCAQMD, 2015). Many toxins such as benzene, butadiene, and lead, are associated with refinery operations such as those that exist in the Basin.

Local Air Quality Conditions

The SCAQMD monitors air quality within the Basin. Existing levels of ambient air quality and historical trends within the Planning Area are best documented by measurements taken by the SCAQMD. The Planning Area is located in SCAQMD Source Receptor Area (SRA) 17 (Central Orange County). Air quality monitoring stations usually measure pollutant concentrations at

varying heights above ground level depending on the monitoring site and the pollutants being monitored. Therefore, air quality is often referred to in terms of ground-level concentrations. The closest air quality monitoring station to the Planning Area is the Anaheim Monitoring Station, located at 1630 Pampas Lane, Anaheim, California (approximately 3.8 miles north of the center of the Planning Area and approximately 1.8 miles to the northernmost edge of the Planning Area). Air quality data for O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ from the Anaheim Monitoring Station for SRA 17 are provided in Table 4.1-2 (Local Air Quality Conditions (2017-2019)).

Table 4.1-2
Local Air Quality Conditions 2017-2019

Pollutant	Ambient Air Standard	Year[(A)]		
		2017	2018	2019
Ozone (O_3)				
Maximum 1-hour Concentration (ppm)		0.090	0.112	0.096
Maximum 8-hr Concentration (ppm)		0.076	0.071	0.082
Number of Days Exceeding State 1-hr Standard	>180 µg/m^3	0	1	1
Number of Days Exceeding State 8-hr Standard	>137 µg/m^3	4	1	1
Days Exceeding Federal 1-hr Standard	>0.124 ppm	0	0	0
Days Exceeding Federal 8-hr Standard	>0.070 ppm	4	1	1
Carbon Monoxide (CO)				
Maximum 1-hr Concentration (ppm)		2.5	2.3	2.4
Maximum 8-hr Concentration (ppm)		2.1	1.9	1.3
Days Exceeding State 1-hr Standard	>23,000 µg/m^3	--	--	--
Days Exceeding Federal/State 8-hr Standard	>10,000 µg/m^3	--	--	--
Days Exceeding Federal 1-hr Standard	>40,000 µg/m^3	--	--	--
Nitrogen Dioxide (NO_2)				
Maximum 1-hr Concentration (ppb)		81.2	66.0	59.4
Annual Arithmetic Mean Concentration (ppb)		14.2	13.7	12.7
Days Exceeding State 1-hr Standard	>180 µg/m^3	--	--	--
Coarse Particulate Matter (PM_{10})				
Maximum 24-hr Concentration (µg/m^3)		128	129	127
Annual Arithmetic Mean (µg/m^3)		26.3	27.2	21.9
Samples Exceeding State 24-hr Standard	>50 µg/m^3	17	13	13
Samples Exceeding Federal 24-hr Standard	>150 µg/m^3	0	0	--
Fine Particulate Matter ($PM_{2.5}$)				
Maximum 24-hr Concentration (µg/m^3)		53.90	54.10	36.10
Annual Arithmetic Mean (µg/m^3)		11.39	11.02	9.32
Samples Exceeding Federal 24-hr Standard	>35 µg/m^3	6	3	3

Source: SCAQMD 2020a, 2020b, 2020c
(A) "--" indicates data are not available.

Existing Emissions Levels in the Planning Area

The Planning Area is bisected by the Garden Grove Freeway / State Route 22 (SR 22), which generally runs in an east-west direction, and Beach Boulevard / State Route 39 (SR 39), which generally runs in a north-south direction. Vehicles traveling along these roadways, as well as other high-volume freeways in the Planning Area's vicinity (e.g., Interstate 405, Interstate 5, etc.) emit emissions that contribute to pollutant concentrations in the City. Emissions from stationary sources (e.g., those found at industrial facilities) and area sources (e.g., painting activities, gas stations, construction sites, etc.) also contribute to pollutant concentrations throughout the City.

The existing residential and non-residential land uses in the Planning Area generate emissions from the following sources:

- **Small "area" sources.** Existing land uses generate emissions from small area sources including landscaping equipment and the use of consumer products such as paints, cleaners, and fertilizers that result in the evaporation of chemicals to the atmosphere during product use.
- **Energy use and consumption**. Existing land uses generate emissions from the combustion of natural gas in building water and space heating equipment, as well as industrial processes.
- **Mobile sources.** Existing land uses generate emissions from vehicles travelling to and from the plan area.

Existing land uses in the Planning Area are summarized in Table 3-1 (Existing Land Use) of the Project Description (see Chapter 3). Existing emissions were estimated using the California Emissions Estimator Model, or CalEEMod, Version 2016.3.2. The existing emissions were estimated using default data assumptions contained within CalEEMod, with the following project-specific modifications:

- **Land Use Development:** The default acreage and square footage for each existing land use within the Planning Area was adjusted to reflect existing development conditions (see Chapter 3, Project Description, Table 3-1).
- **Energy Use and Consumption:** The residential and non-residential default energy intensity factors for electricity and natural gas were sourced from the latest version of CalEEMod, Version 2020.4.0, which are based on the 2019 energy code. The Title 24 energy intensity factors were then adjusted as follows to reflect the lower energy efficiency requirements of the 2013 energy code (CAPCOA 2021). These off-model adjustments are appropriate, as most buildings in the Planning Area were constructed prior to the adoption of both the 2013 (modeled energy efficiency) and 2016 Title 24 building energy efficiency standards, and the energy intensity and adjustment factors utilized in the CalEEMod Version 2020.4.0 reflect the latest and most up-to-date information available.[1]
    - **Single-family Residential:** The single-family residential electrical energy intensity and natural gas energy intensity values were adjusted upwards by a factor of 5.39 and a factor of 1.38, respectively.
    - **Multi-family Residential:** The multi-family residential electrical energy intensity and natural gas energy intensity values were adjusted upwards by a factor of 5.54 and a factor of 1.51, respectively.

[1] The analysis contained in Section 4.1.4 compares existing emissions within the Planning Area against those that could be generated under buildout of the land uses proposed by the FGPUZA. While it is possible that the existing land uses could be built to an efficiency that is less than what was required by the 2013 Title 24 building energy efficiency standard, the use of the 2013 Title 24 building energy standards provide a conservative assessment of potential impacts. Had the existing energy emissions been associated with an earlier energy code standard (e.g., 2008), the emissions reductions attributable to new development occurring under implementation of the FGPUZA would appear greater (because the turnover of older land uses would accommodate more, energy efficient development, which would generate less emissions on average than older land uses). The 2013 Title 24 building energy efficiency standards is reasonable and appropriate, because it reflects an energy efficiency of an older building stock that is most likely overstated (and thus the City does not underestimate / understate impacts in Section 4.1.4).

- **Non-residential:** The non-residential electrical energy intensity and natural gas energy intensity values were adjusted upwards by a factor of 1.17 and a factor of 1.02, respectively.

- **Mobile Sources**
  - **Trip Generation and Distance:** A default CalEEMod run (in CalEEMod version 2020.4.0, which incorporates trip generation rates from the Institute of Transportation Engineers (ITE) 10th Edition, was conducted based on the existing land use types within the City. The weekday and weekend trip generation rates accounted for in the default CalEEMod run were used in conjunction with the default annual vehicle miles traveled (VMT) estimates to derive an average trip distance of approximately 7.90 miles. The average, daily VMT estimate prepared by Fehr and Peers for the existing land uses (6,599,660 miles per day) within the Planning Area, as presented in the VMT Technical Memorandum prepared for the proposed FGPUZA, was then annualized using a multiplication factor of 347 days per year, the same factor used in CARB's 2000-2012 Greenhouse Gas Emissions Inventory, and divided by the average trip distance calculated from the default CalEEMod run (CARB, 2014; Fehr and Peers, 2021).[2] This results in approximately 2,290,082,020 annual VMT. New weekday and weekend trip generation rates were developed for CalEEMod based on the total, annual vehicle trips and initial weekday/weekend trip generation accounted for in CalEEMod.
  - **Emission Factors:** Vehicle emission factors were updated based on derived EMFAC20201 (Version 1.0.1) emission rates for Orange County (South Coast Air Basin) in the Year 2020, consistent with the methodology described in the CalEEMod User's Guide Appendix A (CAPCOA, 2017b).
  - **Fleet Mix:** The fleet mix for all vehicle types was updated based on values contained in CalEEMod Version 2020.4.0.

The emissions generated by current land uses in the Planning Area are shown in Table 4.1-3 (Garden Grove FGPUZA: Existing Land Use Emissions Estimates). The emissions are shown for two scenarios:

- **Year 2020 (current conditions)**, which are based on Year 2020 vehicle fleet characteristics (e.g., vehicle type, age, emission rates), and represent the emissions levels that exist at the time the Notice of Preparation was released for this EIR.
- **Year 2040 (future conditions)**, which are based on Year 2040 vehicle fleet characteristics and represent the projected emissions that existing land uses would generate in the future (assuming no increase in population or change in land uses). This scenario provides an estimate of how emissions would change in the Planning Area as a result of regulations that would reduce motor vehicle emissions in the future, and identifies the potential change in emissions that would occur from the proposed change in land uses that would occur with implementation and buildout of the FGPUZA in Year 2040, as opposed to a change in emissions that would occur from regulatory requirements that would be in place whether or not the FGPUZA is adopted.[3]

[2] The multiplication factor of 347 days accounts for differences in mobile source activity on weekdays and weekends (CARB, 2014). Subsequent Greenhouse Gas Emissions Inventories prepared by CARB have used the same methodology as described in the 2000-2012 inventory.

[3] Fehr and Peers generated an average daily VMT estimate for the "Cumulative No Project" scenario. Therefore, the Year 2040 (Future Conditions) CalEEMod estimates use that VMT value for the purposes

Table 4.1-3
Garden Grove FGPUZA: Existing Land Use Emissions Estimates

Emissions Source	Maximum Daily Pollutant Emissions (Pounds per Day) (A)							
	ROG	NOx	CO	SO_2	PM_{10}		$PM_{2.5}$	
					Dust	Exhaust	Dust	Exhaust
Year 2020 (Current Conditions)								
Area Sources	15,013	1,052	28,649	63	0	3,723	0	3,723
Energy	45	393	198	2	0	31	0	31
Mobile Sources	3,578	3,326	29,591	56	4,746	48	1,184	45
Year 2020 Total(B)	*18,637*	*4,770*	*58,438*	*122*	*4,746*	*3,802*	*1,184*	*3,799*
Year 2040 (Future Conditions)								
Area Sources	15,010	1,051	28,618	63	0	3,723	0	3,723
Energy	45	393	198	2	0	31	0	30
Mobile Sources	2,206	1,198	16,424	44	5,178	17	1,291	16
Year 2040 Total(B)	*17,262*	*2,642*	*45,240*	*110*	*5,178*	*3,771*	*1,291*	*3,770*

Source: MIG 2021, see Appendix D.
(A) Emissions estimated using CalEEMod, V 2016.3.2. Estimates are based on default model assumptions unless otherwise noted in this document. Maximum daily ROG, CO, SO_X emissions occur during the summer. Maximum daily NO_X, PM_{10}, and $PM_{2.5}$ emissions occur during the winter.
(B) Totals may not equal due to rounding.

As shown in Table 4.1-3, there is a decrease in mobile source exhaust emissions between Year 2020 and Year 2040 conditions. This decrease in exhaust emissions is due to improvements in exhaust emission control systems in newer vehicles, along with fewer older vehicles in use. [4] The increase in PM_{10} and $PM_{2.5}$ dust emissions is associated with differing annual VMT estimates between the two scenario years. In actuality, if VMT was held consistent, these values would be the same, because the emission factors associated with paved road dust, tire and break wear, etc. would remain constant year after year.

Sensitive Receptors

Some people are more affected by air pollution than others. Sensitive air quality receptors include specific subsets of the general population that are susceptible to poor air quality and the potential adverse health effects associated with poor air quality. Both CARB and the SCAQMD consider residences, schools, parks and playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes to be sensitive air quality land uses and receptors (SCAQMD, 2019a; CARB, 2005).

The potentially serious detrimental effects caused by even the most common pollutants are of widespread concern. O_3, PM, CO and other pollutants pose a very real threat to health and property in the Basin. The region's high median age implies that major portions of residents are particularly susceptible to respiratory distress from O_3 and PM_{10}. In general, the sensitive air quality receptors within the City of Garden Grove include, but are not limited to:

- Existing low- and medium-density residential receptors within the City;

of assessing potential mobile source emissions, as opposed to the daily VMT estimate generated for the "2020 Existing/Baseline Conditions" scenario (Fehr and Peers, 2021).

[4] For example, the U.S. EPA's Emission Standards Reference Guides indicates light duty vehicles and light duty trucks have the following NOx exhaust emissions at approximately 50,000 miles of use: 1 gram/mile for 1981 to 1993 model year vehicles, 0.4 grams/mile for 1994 to 1999 model year vehicles and will drop to 0.05 grams/mile by 2025 (U.S. EPA, 2016e and 2016f).

- Existing elementary and intermediate schools, and education or institutional facilities;
- Existing medical facilities, such as the Garden Grove Hospital and Medical Center;
- Existing public facilities such as the Boys and Girls Club; and
- Existing parks and recreational facilities, including, but not limited to, Lake School Park, Faylane Park, Magnolia Park, and Westgrove Park.

Existing Air Pollution-Related Health Risks

Sensitive air quality receptors are usually most affected by local sources of air pollution. The I-405 freeway and the SR-22 freeway converge on the City's western border. SR-22 and SR-39 also bisect the Planning Area in east-west and north-south directions, respectively. These roadways carry trucks that emit DPM as they operate and cause localized areas of DPM concentrations. In addition, as noted under "Existing Emissions in the Planning Area", there are several stationary sources located throughout the City. These sources are described below.

Under the State's Air Toxics Hot Spots Information and Assessment Act (AB 2588; see Section 4.1.2) the SCAQMD is required to prepare an annual report of activities related to facilities that emit TACs. According to the SCAQMD's October 2020 Annual Report on AB 2588 Air Toxics Hot Spots Program, there was one facility within the Planning Area, GKN Aerospace Transparency Systems Inc. (SCAQMD Facility ID 140961) that was required to report its emissions to the SCAQMD under AB 2588 (SCAQMD, 2020d). Publicly available data from CARB indicates there are 32 facilities within the Planning Area that report emissions pursuant to AB 2588 (CARB 2021). Please see Appendix D for a full list of emissions and risks from the facilities, as provided by the CARB database.[5]

According to the SCAQMD's MATES V Carcinogenic Risk Map, the Planning Area has an estimated cancer risk ranging between 401 and 450 (SCAQMD, 2021).[6] These cancer risk estimates are orders of magnitude higher than the SCAQMD's significance threshold of 10 cases in one million for cancer risk. These estimates, however, are based upon regional modeling efforts that largely do not account for site specific emission rates and dispersion characteristics that typically result in refined and substantially lower health risk estimates.

CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. While CalEnviroScreen was originally developed as part of Senate Bill (SB) 535 and used to identify disadvantaged communities for the purposes of allocating funding from the State's Cap-and-Trade regulation, its application and scope have expanded over the years. The tool uses environmental, health, and socioeconomic information to produce scores for

[5] Under the AB 2588 Program, larger facilities are subject to individual reporting requirements while facilities that are generally small businesses are industrywide sources. Large facilities in the AB 2588 Program submit an air toxics inventory once every four years. The AB 2588 Program requires air districts to categorize each facility using the reported emissions as either high, intermediate, or low priority to determine if a facility needs to conduct a Health Risk Assessment (HRA) and to determine appropriate program fees. Whereas high priority facilities are required to submit an HRA, intermediate and low priority facilities are not; intermediate priority facilities are required to submit toxic emissions reports and low priority facilities may be exempt from the AB 2588 Program entirely (SCAQMD, 2020d). These differences in reporting requirements are the reason for the discrepancy between the number of facilities reporting their emissions to the SCAQMD and what is contained in the CARB database.

[6] According to the SCAQMD (2021), cancer risk refers to the probability of contracting cancer associated with exposure to a substance. It is expressed as the chance per million population of a cancer case occurring. A risk ranging from 401 to 450 per million means that in a population of one million individuals (exposed over a 70 year lifetime), 401 to 450 additional cancer cases would be expected.

every census tract in the state. The CalEnviroScreen model is made up of four components – two pollution burden components (exposures and environmental effects) and two population characteristics components (sensitive populations and socioeconomic factors). The four components are further divided into 20 indicators. An indicator is a measure of either environmental conditions, in the case of pollution burden indicators, or health and vulnerability factors, in the case of population characteristic indicators.

- **Exposure** indicators are based on the measurements of different types of pollution that people may come into contact with. Exposure indicators include:
    - Air Quality: Ozone
    - Air Quality: $PM_{2.5}$
    - Children's Lead Risk from Housing
    - Diesel Particular Matter
    - Drinking Water Contaminants
    - Pesticide Use
    - Toxic Releases from Facilities
    - Traffic Density
- **Sensitive population** indicators measure the number of people in a community who may be more severely affected by pollution because of their age or health. Sensitive population indicators include:
    - Asthma
    - Cardiovascular Disease
    - Low Birth Weight Infants
- **Environmental effects** indicators are based on the locations of toxic chemicals in or near communities. Environmental effects indicators include:
    - Educational Attainment
    - Housing Burden
    - Linguistic Isolation
    - Poverty
    - Unemployment

Each census tract receives scores for as many of the 20 indicators as possible, and the scores are then mapped so that different communities can be compared. Percentiles are assigned to each census tract based on the census tract's score in relation to the rest of the state. An area with a high percentile is one that experiences a much higher pollution burden than areas with low scores. For example, if a census tract has an indicator in the 40th percentile, it means that indicator's percentile is higher than 40 percent of the census tracts in the state. CalEnviroScreen also provides a total (or cumulative) score, which is the product of multiplying the 10 pollution burden components by the 10 population characteristics. This total / cumulative score helps contextualize how multiple contaminants from multiple sources affect people, while taking into account their living conditions (e.g., nonchemical factors such as socioeconomic and health status). Communities that are within the top 25th percentile for total CalEnviroScreen scores (i.e., scoring in the 75th percentile or higher for the cumulative score) are considered disadvantaged communities pursuant to SB 535 (OEHHA, 2017).

According to the OEHHA CalEnviroScreen 4.0 Map, the Planning Area generally has CalEnviroScreen scores ranging from 40 to 80. The census tracts in westernmost portion of the Planning Area have the lowest CalEnviroScreen scores, while the census tracts in the middle of the Planning Area, along SR-22, tend to have some of the highest scores. The highest CalEnviroScreen scores within the Planning Area are generally located in the vicinity of the SR-

22 and Harbor Boulevard intersection. Several census tracts southwest of the SR-22 and Harbor Boulevard intersection (e.g., census tracts 6059089003, 6059089004, 6059089001 and 0659088902) are disadvantaged communities as defined by SB 535. Census tract 6059088101, which is generally located along Western Avenue in the northwestern portion of the Planning Area, is also a disadvantaged community as defined by SB 535. According to CalEnviroScreen, the "Toxic Releases from Facilities" indicator for these communities is generally above 95, meaning they rank within the top five (5) percent for communities exposed to toxic releases from facilities.

4.1.2 – REGULATORY FRAMEWORK

Federal

Federal Clean Air Act

The Federal Clean Air Act (CAA), as amended, provides the overarching basis for both Federal and State air pollution prevention, control, and regulation. The Act establishes the U.S. EPA's responsibilities for protecting and improving the nation's air quality. The U.S. EPA oversees Federal programs for setting air quality standards and designating attainment status, permitting new and modified stationary sources of pollutants, controlling emissions of hazardous air pollutants, and reducing emissions from motor vehicles and other mobile sources. In 1971, to achieve the purposes of Section 109 of the CAA, the U.S. EPA developed primary and secondary NAAQS. Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and public welfare from air pollutants in the atmosphere.

State

California Clean Air Act

In addition to being subject to Federal requirements, air quality in the state is also governed by more stringent regulations under the California Clean Air Act, which was enacted in 1988 to develop plans and strategies for attaining the CAAQS. As discussed above, in California, both the Federal and State Clean Air acts are administered by CARB. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional level.

In-Use Off-Road Diesel Equipment Program

CARB's In-Use Off-Road Diesel Equipment regulation is intended to reduce emissions of NO_x and PM from off-road diesel vehicles, including construction equipment, operating within California. The regulation imposes limits on idling; requires reporting equipment and engine information and labeling all vehicles reported; restricts adding older vehicles to fleets; and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines or installing exhaust retrofits for PM. The requirements and compliance dates of the off-road regulation vary by fleet size, and large fleets (fleets with more than 5,000 horsepower) must meet average targets or comply with Best Available Control Technology (BACT) requirements beginning in 2014. CARB has off-road anti-idling regulations affecting self-propelled diesel-fueled vehicles of 25 horsepower and up. The off-road anti-idling regulations limit idling on applicable equipment to no more than five minutes, unless exempted due to safety, operation, or maintenance requirements.

On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

CARB's On-Road Heavy-Duty Diesel Vehicles (In-Use) regulation (also known as the Truck and Bus Regulation) is intended to reduce emission of NO_X, PM, and other criteria pollutants generated from existing on-road diesel vehicles operating in California. The regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned, and for privately and publicly owned school buses. Heavier trucks and buses with a GVWR greater than 26,000 pounds must comply with a schedule by engine model year or owners can report to show compliance with more flexible options. Fleets complying with the heavier trucks and buses schedule must install the best available PM filter on 1996 model year and newer engines and replace the vehicle 8 years later. Trucks with 1995 model year and older engines had to be replaced starting in 2015. Replacements with a 2010 model year or newer engine meet the final requirements, but owners can also replace the equipment with used trucks that have a future compliance date (as specified in regulation). By 2023, all trucks and buses must have at least 2010 model year engines with few exceptions.

CARB Stationary Diesel Engines – Emission Regulations

In 1998, CARB identified DPM as a TAC. To reduce public exposure to DPM, in 2000, the Board approved the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Risk Reduction Plan) (CARB 2000). Integral to this plan is the implementation of control measures to reduce DPM such as the control measures for stationary diesel-fueled engines. As such, diesel generators must comply with regulations under CARB's amendments *to Airborne Toxic Control Measure for Stationary Compression Ignition Engines* and be permitted by SCAQMD.

CARB Air Quality and Land Use Handbook

In 1998, CARB identified particulate matter from diesel-fueled engines as a TAC. CARB's Air Quality and Land Use Handbook is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process (CARB, 2005). The CARB Handbook recommends that planning agencies consider proximity to air pollution sources when considering new locations for "sensitive" land uses, such as residences, medical facilities, daycare centers, schools, and playgrounds. Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the Handbook relative to the Planning Area include taking steps to consider or avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day;
- Within 300 feet of gasoline fueling stations; or
- Within 300 feet of dry-cleaning operations (dry cleaning with TACs is being phased out and will be prohibited in 2023). The SCAQMD (Regulation 14, Rule 21) has established emission controls for the use of perchloroethylene, the most common dry-cleaning solvent.

CARB prepared a technical supplement to the Handbook, a *Technical Advisory on Strategies to Reduce Air Pollution Exposure Near High Volume Roadways* (CARB, 2017), that provides recommendations for strategies to minimize exposure of the public to air pollutants due to proximity to high volume roadways, such as reducing traffic emissions and removing pollution from the air.

Air Toxics "Hot Spots" Program

State requirements specifically address emissions of air toxics through Assembly Bill (AB) 1807 (known as the Tanner Bill) that established the State Air Toxics "Hot Spots" Program and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588) (California Health and Safety Code Section 44300 et seq.). Under the Air Toxics Hot Spots Information and Assessment Act of 1987 (or Air Toxics "Hot Spots" Act) and Air Toxics Hot Spots Program, the State (CARB) must collect data on toxic emissions from stationary sources (facilities) throughout the State and ascertain potential health risks that these emissions pose to members of community for developing cancer or for resulting in non-cancer health effects. (California's Children's Environmental Health Protection Act of 1999 California Health and Safety Code Section 39606), also requires explicit consideration of infants and children in assessing risks from air toxics.
Substances regulated under California's Air Toxics Hot Spots Program are defined in statute and include a list of substances developed by the following sources:

- International Agency for Research on Cancer (IARC);
- U.S. EPA;
- U.S. National Toxicology Program (NTP);
- CARB Toxic Air Contaminant Identification Program List;
- Hazard Evaluation System and Information Service (HESIS) (State of California);
- Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986) list of carcinogens and reproductive toxicants (State of California); and
- Any additional substance recognized by the State Board as presenting a chronic or acute threat to public health when present in the ambient air.

On May 6, 2005, the SCAQMD adopted a *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning* containing numerous recommendations focused on land use planning, such as locating sensitive receptors away from substantial sources of TACs and CO hot spots (e.g., high-traffic freeways and roads, distribution centers, refineries, etc.). When locating receptors near large generators of TAC emissions, the SCAQMD recommends conducting CO hot spot analyses and analyzing health risk for these new developments.

Regional

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a Joint Powers Authority under California law, established as an association of local governments and agencies that voluntarily convene as a forum to address regional issues. SCAG encompasses the counties of Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial.

SCAG is designated as a Metropolitan Planning Organization (MPO) and as a Regional Transportation Planning Agency. Under SB 375, SCAG, as a designated MPO, is required to prepare a Sustainable Communities Strategy (SCS) as an integral part of its Regional Transportation Plan (RTP). On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS). The 2016 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. Information contained in Chapter 5: The Road to Greater Mobility and Sustainable Growth of the 2016 RTP/SCS forms the basis for the land use and transportation components of the Air Quality Management Plan (AQMP), and are utilized in the preparation of air quality forecasts and consistency analysis included in the AQMP (SCAG, 2016).

SCAQMD Air Quality Management Plan (AQMP)

Under State law, the SCAQMD is required to prepare an overall plan for air quality improvement, known as an AQMP. The purpose of an AQMP is to bring an air basin into compliance with federal and State air quality standards. The SCAQMD 2016 AQMP was adopted on March 3, 2017. The 2016 AQMP provides new and revised demonstration's for how the SCAQMD, in coordination with federal, State, regional and local governments will bring the Basin back into attainment for the following NAAQS: 2008 8-hour ozone; 2012 annual PM2.5; 2006 24-hour PM2.5; 1997 8-hour ozone; and 1997 1-hour ozone.

To achieve the reductions necessary to bring ambient air quality back into attainment the SCAQMD has identified seven primary objectives for the AQMP, which include:

1. Eliminating reliance on unknown future technology measures to demonstrate future attainment of air quality standards;
2. Calculating and accounting for co-benefits associated with measures identified in other, approved planning efforts (e.g., SCAG RTP/SCS);
3. Developing a strategy with fair-share emission reductions at the federal, State, and local levels;
4. Investing in strategies and technologies that meet multiple objectives regarding air quality, climate change, air toxic exposure, energy, and transportation—especially in disadvantaged communities;
5. Seeking, identifying, and securing significant sources of funding for incentives to implement early deployment and commercialization of zero and near-zero technologies, particularly in the mobile source sector;
6. Enhancing the socioeconomic analysis and selecting the most efficient and cost-effective path to achieve multi-pollutant and -deadline targets; and
7. Prioritize non-regulatory, innovative approaches that can contribute to the economic vitality of the regional while maximizing emission reductions.

The emission forecasts and demonstrations presented in the 2016 AMQP rely heavily on information contained in other planning and strategy documents. For example, the 2016 AQMP's long-term emissions inventory is based on the growth and land uses projections contained in the SCAG's 2016 RTP/SCS. Additionally, the conclusions relating to ozone compliance are based on implementation of measures presented in CARB's Mobile Source

Strategy and SIP strategy. The Mobile Source Strategy outlines a suite of measures targeted at on-road light- and heavy-duty vehicles, off-road equipment, and federal and international sources. A subset of the statewide strategy is a mobile source strategy for the South Coast SIP. Because the SCAQMD has limited authority in regulating mobile source emissions, coordination and cooperation between SCAQMD, CARB, and the U.S. EPA is imperative to meeting the NOx reductions required to meet ozone standards. Although not incorporated specifically from another planning document strategy, the 2016 AQMP also provides numerous control measures for stationary sources (SCAQMD, 2017).

SCAQMD Rules and Regulations

The SCAQMD adopts rules that establish permissible air pollutant emissions and governs a variety of business, processes, operations, and products to implement the AQMP and the various federal and State air quality requirements. In general, rules that would be applicable to Project development include:

- **Rule 401 (Visible Emissions)** prohibits discharge into the atmosphere from any single source of emission for any contaminant for a period or periods aggregating more than three minutes in any one hour that is as dark or darker in shade than that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines.
- **Rule 402 (Nuisance)** prohibits discharges of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- **Rule 403 (Fugitive Dust)** prohibits emissions of fugitive dust from any grading activity, storage pile, or other disturbed surface area if it crosses the project property line or if emissions caused by vehicle movement cause substantial impairment of visibility (defined as exceeding 20 percent capacity in the air). Rule 403 requires the implementation of Best Available Control Measures and includes additional provisions for projects disturbing more than five acres and those disturbing more than fifty acres.
- **Rule 445 (Wood Burning Devices)** prohibits installation of woodburning devices such as fireplaces and wood-burning stoves in new development unless the development is located at an elevation above 3,000 feet or if existing infrastructure for natural gas service is not available within 150-feet of the development.
- **Rule 481 (Spray Coating Operations)** imposes equipment and operational restrictions during construction for all spray painting and spray coating operations.
- **Rule 1108 (Cutback Asphalt)** prohibits the sale or use of any cutback asphalt containing more than 0.5 percent by volume organic compounds which evaporate at 260°C (500°F) or lower.
- **Rule 1113 (Architectural Coatings)** establishes maximum concentrations of VOCs in paints and other applications and establishes the thresholds for low-VOC coatings.
- **Rule 1143 (Consumer Paint Thinners and Multi-Purpose Solvents)** prohibits the supply, sale, manufacture, blend, package or repackage of any consumer paint thinner or multi-purpose solvent for use in the District unless consumer paint thinners or other multi-purpose solvents comply with applicable VOC content limits.
- **Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities)** specifies work practice requirements to limit asbestos emissions from building demolitions and renovation activities, including the removal and associated disturbance of asbestos containing materials. The requirements for demolition and renovation activities include

asbestos surveying, notification, asbestos containing materials removal procedures and time schedules, asbestos containing materials handling and clean-up procedures, and storage, disposal, and land filling requirements for asbestos containing waste materials.

- **Rule 2202 (On-Road Motor Vehicle Mitigation Options)** provides employers with options to reduce mobile source emissions generated from employee commutes. The rule applies to any employer who employs 250 or more employees on a full or part time basis at a worksite for a consecutive six-month period.

Local

<u>The City of Garden Grove General Plan</u>

The Air Quality Element of the Garden Grove General Plan contains the following goals and policies related to air quality:

- Goal AQ-1: Air quality that meets the standards set by the State and Federal governments.
    - Policy AQ-1.1: Coordinate with other agencies in the region, particularly the South Coast Air Quality Management district (SCAQMD) and the Southern California Association of Governments (SCAG) to implement the provisions of the region's Air Quality Management Plan (AQMP), as amended.
    - Policy AQ-1.2: Strive to achieve conformance with the state-mandated congestion management plans (CMPs), transportation demand management (TDM) plans, or other like State or Federally required pollution reduction plans.
    - AQ-IMP-1A: Continue to participate, where possible, in committees involved in the development and implementation of a countywide air quality implementation plan.
    - AQ-IMP-1B: Encourage and assist employers in developing and implementing work trip reduction plans, employee ride sharing, modified work schedules, preferential carpool and vanpool parking, or other trip reduction approach that is consistent with the Air Quality Management Plan for the South Coast Air Basin.
    - AQ-IMP-1C: Continue to implement a TDM ordinance.
- Goal AQ-2: Increased awareness and participation throughout the community in efforts to reduce air pollution and enhance air quality.
    - Policy AQ-2.1: Increase public information activities regarding air quality issues.
    - Policy AQ-2.2 Promote and encourage ride sharing activities within the community.
    - Policy AQ-2.3 Continue to improve existing sidewalks, bicycle trails, and parkways, and require sidewalk and bicycle trail improvements and parkways for new development or redevelopment projects.
    - Policy AQ-2.4: Relieve congestion on major arterials and reduce emissions.
    - Policy AQ-2.5: Separate, buffer, and protect sensitive receptors from significant sources of pollution to the greatest extent possible.
    - AQ-IMP-2A: Establish additional park-and-ride facilities for work and non-work trip reductions.
    - AQ-IMP-2B: Require new development or redevelopment projects to provide pedestrian and bicycle trails access to nearby shopping and employment centers.
    - AQ-IMP-2C: Encourage companies that ship or receive high volumes of goods by commercial truck to limit operations to non-peak traffic periods.

  - AQ-IMP-2D: Continue preventive maintenance and repair of City vehicles and equipment. Investigate the possibility of converting the existing vehicle fleet to clean fuel vehicles.
  - AQ-IMP-2E: Encourage, publicly recognize, and reward innovative approaches that improve air quality.
- Goal AQ-3: A diverse and energy efficient transportation system incorporating all feasible modes of transportation for the reduction of pollutants.
  - Policy AQ-3.1: Cooperate and participate with regional and local efforts to develop an efficient transportation system that reduces vehicle trips and vehicle miles traveled.
  - Policy AQ-3.2: Cooperate in efforts to expand and promote the use of bus, rail, and other forms of transit within the region in order to further reduce pollutants.
  - AQ-IMP-3A Continue to work closely with the Orange County Transit Authority (OCTA) and adjacent cities to establish an alternative transportation system along the OCTA right-of-way, such as the "Go Local" program on the right-of-way between Garden Grove and Santa Ana.
  - AQ-IMP-3B: Support public transit providers to increase funding for alternative modes of travel.
  - AQ-IMP-3C: Participate with public transit providers serving the City and Orange County in a cooperative program to further increase transit services.
  - AQ-IMP-3D: Develop the bicycle routes identified in the Parks, Recreation, and Open Space Element to support the use of bicycles as an alternate mode of transportation.
  - AQ-IMP-3E: Allow or encourage programs for priority parking or free parking in City parking lots for alternative fuel vehicles, especially zero and super ultra low emission vehicles (ZEVs and SULEVs).
  - AQ-IMP-3F: Support the development of alternative fuel infrastructure that is publicly accessible.
- Goal AQ-4: Efficient development that promotes alternative modes of transportation, while ensuring that economic development goals are not sacrificed.
  - Policy AQ-4.1: Review site developments to ensure pedestrian safety and promote nonautomotive users.
  - Policy AQ-4.2: Encourage neighborhood parks and community centers near concentrations of residential areas and include pedestrian walkways and bicycle paths to encourage non-motorized travel.
  - Policy AQ-4.3: Encourage "walkable" neighborhoods with pedestrian walkways and bicycle paths in residential and other types of developments to encourage pedestrian rather than vehicular travel.
  - AQ-IMP-4A: Periodically review parking requirements and revise as necessary with market demands in relation to air quality guidelines.
  - AQ-IMP-4B: Investigate short- and long-term parking strategies at civic and private facilities.
  - AQ-IMP-4C: Require sidewalks through parking lots, bicycle racks near building entrances and other provisions for the safety and convenience of pedestrian and bicycle riders at all commercial, mixed use, and production facilities.
- Goal AQ-5: An improved balance of residential, commercial, industrial, recreational, and institutional uses to satisfy the needs of the social and economic segments of the population. Work towards clean air while still permitting reasonable planned growth.
  - Policy AQ-5.1: Support mixed use developments.
  - Policy AQ-5.2: Encourage infill development projects within urbanized areas that include jobs centers and transportation nodes.

  - Policy AQ-5.3: Promote mixed use development that allows the integration of retail, office, industrial, institutional, and residential uses for the purposes of reducing costs of infrastructure construction and maximizing the use of land.
  - Policy AQ-5.4: Encourage employment centers that are non-polluting or low polluting and do not draw large number of vehicles in proximity to residential uses.
  - Policy AQ-5.5: Avoid locating multiple-family developments close to areas that emit harmful air contaminants.
  - Policy AQ-5.6: Increase residential and commercial densities around bus and/or rail transit stations, and along major arterial corridors.
  - Policy AQ-5.7: Preserve transportation corridors with the potential of high demand or of regional significance for future expansion to meet project demand.
  - AQ-IMP-5A: Encourage mixed use developments that combine residential and commercial or industrial business locations, thereby improving convenience and reducing trip generation.
- Goal AQ-6: Increased energy efficiency and conservation.
  - Policy AQ-6.1: Develop incentives and/or regulations regarding energy conservation requirements for private and public developments.
  - Policy AQ-6.2: Promote energy conservation and disseminate information throughout the community about energy conservation measures.
  - AQ-IMP-6A: Remove barriers for the use of solar energy for residential, commercial, industrial, or institutional uses.
  - AQ-IMP-6B: Research and secure financial assistance and other means to support, provide, and address energy efficient applications such as solar panels, cool roofs, wind energy, building modifications, etc.
  - AQ-IMP-6C: Continue to promote overall energy efficiency at local public facilities and continue preventative maintenance programs.
  - AQ-IMP-6D: Require new development to comply with the energy use guidelines in Title 24 of the California Administrative Code).
  - AQ-IMP-6E: Consider the development and implementation of a residential shade tree program that would provide trees to residents to reduce energy consumption.
  - AQ-IMP-6F: Consider the development and implementation of an urban forest plan to plant additional trees citywide.
  - AQ-IMP-6G: Develop incentives and/or regulations regarding energy conservation requirements for private and public developments.
  - AQ-IMP-6H: Monitor energy conservation or renewable energy generation programs proposed by the State or Federal government, such as California Energy Commission's New Solar Homes Partnership to determine this applicability to new development or redevelopment projects in the City.
- Goal AQ-7: Reduced particulate emissions from paved and unpaved roads, parking lots, and building construction.
  - Policy AQ-7.1: Promote green, open spaces on undeveloped properties.
  - Policy AQ-7.2: Continue to work towards the reduction of particulate emission from grading, construction, street cleaning, demolition, debris hauling, street cleaning, utility maintenance, railroad rights-of-way, and off-road vehicles, to the extent possible, to assist the region in meeting State and Federal standards.
  - Policy AQ-7.3: Support programs that reduce emissions from building materials and methods that generate excessive pollutants through incentives and/or regulations.

- Policy AQ-7.4: Continue to enforce procedures that control dust from building demolition, grading, and construction activities.
- Policy AQ-7.5: Reduce reactive organic compounds and particulate emissions.
- AQ-IMP-7A: Review existing street cleaning policies and equipment, and evaluate modifications to reduce surface sanitation pollution.
- AQ-IMP-7B: Continue to enforce rules and measures of the South Coast Air Quality Management District.

<u>The City of Garden Grove Municipal Code</u>

Chapter 10.10 of the City's Municipal Code sets forth transportation demand management requirements for:

A) Any new or expansion of commercial, industrial, institutional, or other use that is expected to employ 250 or more persons, as determined by improvement plans or by the employee generation factors as provided by City Council resolution.
B) Any existing facility or development for which owner/tenant submits an improvement plan to the City, and after such improvement will be expected to employ 250 or more persons, determined by the procedures used in subsection A of this section.
C) Exempt Projects. Notwithstanding any other provisions of this Code, the following uses and activities shall be specifically exempt from the provisions of this chapter:
    1) Development projects projected to employ fewer than 250 persons.
    2) Temporary construction activities on any affected project, including activities performed by engineers, architects, subcontractors, and construction workers.
    3) Other temporary activities, as defined in the City's current Land Use Code, or as authorized by the Planning Commission, when such temporary activities are for a period not to exceed 30 days and held no more than once a year.

4.1.3 – SIGNIFICANCE THRESHOLDS

Based on the CEQA Guidelines, Appendix G: Items III (a) through (d), implementation of the Project would have a significant impact related to air quality if it would:

A. Conflict with or obstruct implementation of the applicable air quality plan?
B. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
C. Expose sensitive receptors to substantial pollutant concentrations?
D. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?
E. Cause substantial adverse cumulative impacts with respect to air quality?

Regional Significance Thresholds

The significance thresholds in the SCAQMD's *CEQA Air Quality Handbook* were used for evaluating the impacts associated with the implementation of the proposed Project. The SCAQMD has established mass daily thresholds for regional pollutant emissions, as shown in Table 4.1-4.

Table 4.1-4
SCAQMD Regional Emission Significance Thresholds

Air Contaminant	Construction (Maximum Pounds Per Day)	Operation (Maximum Pounds Per Day)
NO_X	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150
CO	550	550
Lead	3	3
Source: SCAQMD 2019b		

Localized Significance Thresholds

In addition to establishing thresholds of significance for emissions of criteria air pollutants on a regional level, the SCAQMD has also developed Local Significance Thresholds (LSTs) that represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standards, which would result in significant adverse localized air quality impacts. The LST methodology takes into account a number of factors, including (1) existing ambient air quality in each Source Receptor Area (SRA); (2) how many acres the project would disturb in a day; and (3) how far project construction and operational activities would take place from the nearest sensitive receptor. Unlike the regional emission significance thresholds presented in Table 4.1-4, LSTs have only been developed for NOx, CO, PM_{10} and $PM_{2.5}$. The construction and operational LSTs for one-acre, two-acre, and five-acre sites in SRA 17 (Central Orange County), the SRA in which the City of Garden Grove is located, are shown in Table 4.1-5 below.

Table 4.1-5
SCAQMD Localized Significance Thresholds for Source Receptor Area 17

Pollutant	Maximum Allowable Emissions (Pounds per Day) as a Function of Receptor Distance (in Feet) from Site Boundary				
	82 Feet	164 Feet	328 Feet	656 Feet	1,640 Feet
ONE-ACRE SITE					
Construction Thresholds					
Nitrogen Oxides (NO_x)	81	83	98	123	192
Carbon Monoxide (CO)	485	753	1,128	2,109	6,841
Particulate Matter (PM_{10})	4	12	28	60	158
Particulate Matter ($PM_{2.5}$)	3	4	9	22	85
Operational Thresholds					
Nitrogen Oxides (NO_x)	81	83	98	123	192
Carbon Monoxide (CO)	485	753	1,128	2,109	6,841
Particulate Matter (PM_{10})	1	3	7	15	38
Particulate Matter ($PM_{2.5}$)	1	1	2	6	21
TWO-ACRE SITE					
Construction Thresholds					

Table 4.1-5
SCAQMD Localized Significance Thresholds for Source Receptor Area 17

Pollutant	Maximum Allowable Emissions (Pounds per Day) as a Function of Receptor Distance (in Feet) from Site Boundary				
	82 Feet	164 Feet	328 Feet	656 Feet	1,640 Feet
Nitrogen Oxides (NO_x)	115	114	125	148	205
Carbon Monoxide (CO)	715	1,041	1,547	2,685	7,493
Particulate Matter (PM_{10})	6	19	35	68	166
Particulate Matter ($PM_{2.5}$)	4	6	11	25	92
Operational Thresholds					
Nitrogen Oxides (NO_x)	115	114	125	148	205
Carbon Monoxide (CO)	715	1,041	1,547	2,685	7,493
Particulate Matter (PM_{10})	2	5	9	17	40
Particulate Matter ($PM_{2.5}$)	1	2	3	6	22
FIVE-ACRE SITE					
Construction Thresholds					
Nitrogen Oxides (NO_x)	183	167	180	202	245
Carbon Monoxide (CO)	1,253	1,734	2,498	4,018	9,336
Particulate Matter (PM_{10})	13	39	55	88	188
Particulate Matter ($PM_{2.5}$)	7	9	15	32	109
Operational Thresholds					
Nitrogen Oxides (NO_x)	183	167	180	202	245
Carbon Monoxide (CO)	1,253	1,734	2,498	4,018	9,336
Particulate Matter (PM_{10})	3	10	14	22	45
Particulate Matter ($PM_{2.5}$)	2	3	4	8	27

Source: SCAQMD 2009, modified by MIG
Note: The localized thresholds for NOx in this table account for the conversion of NO to NO_2. The emission thresholds are based on NO_2 levels, as this is the compound associated with adverse health effects.

Carbon Monoxide "Hot Spots" Thresholds

Historically, to determine whether a project poses the potential for a CO hotspot, the quantitative CO screening procedures provided in the *Transportation Project-Level Carbon Monoxide Protocol* (the Protocol) were used (UCD ITS, 1997). Under the Protocol, a project may worsen air quality if the project increases the percentage of vehicles in cold start modes by two percent or more; significantly increases traffic volumes by five percent or more; or worsens traffic flow, defined for signalized intersections as increasing average delay at intersections operating at level of service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F. With new vehicles and improvements in fuels resulting in fewer emissions, the retirement of older polluting vehicles, and new controls and programs, CO concentrations have declined dramatically in California. As a result of emissions controls on new vehicles, the number of vehicles that can idle and the length of time that vehicles can idle before emissions would trigger a CO impact has increased, so the use of LOS as an indicator is no longer applicable for determining CO impacts.

The SCAQMD does not have a methodology for screening CO hotspots. However, the Bay Area Air Quality Management District (BAAQMD) developed a screening-level analysis for CO hotspots in 2010 which finds that projects that are consistent with the applicable congestion management program, and that do not cause traffic volumes at affected intersections to

increase to more than 44,000 vehicles per hour, would not result in a CO hotspot that could exceed State or Federal air quality standards (BAAQMD, 2017; pg. 3-4). To mirror this approach, SCAQMD performed CO modeling as part of its 2003 AQMP at four busy intersections during morning and evening peak hour periods. The busiest intersection studied in the analysis—Wilshire Boulevard and Veteran Avenue—had 8,062 vehicles per hour during morning peak hours, 7,719 vehicles per hour during evening peak hours, and approximately 100,000 vehicles per day. The 2003 AQMP estimated that the 1-hour CO concentration for this intersection was 4.6 ppm, which is less than a fourth of the 1-hour CAAQS CO standard (20 ppm) (SCAQMD, 2003a). Thus, the BAAQMD screening threshold is generally consistent with the results of the CO modeling conducted for the SCAQMD's 2003 AQMP. Therefore, for purposes of this EIR, the Project would pose the potential for a CO hotspot if it would exceed the BAAQMD's screening traffic level for peak hour intersection traffic volumes (44,000 vehicles per hour) (thereby having the potential to result in CO concentrations that exceed 1-hour State [20 ppm], 1-hour Federal [35 ppm], and/or State and Federal 8-hour [9 ppm] ambient air quality standards for CO).

Toxic Air Contaminant Thresholds

The SCAQMD recommends preparation of a Health Risk Assessment (HRA) for large commercial or industrial projects to determine the specific health risks posed by long-term emissions of TACs from a project. Following OEHHA and SCAQMD guidance, health risks from TAC emissions are estimated based on "Individual Cancer Risk," which is the likelihood that a person exposed to TACs over 70-year lifetime will get cancer or suffer some other "non-cancer" effect (measured by what is called as a "hazard index"). Numerous weighting factors (e.g., age sensitivity factors, breathing rates, etc.) are applied during health risk calculations to account for those members of the public who may be more sensitive to pollution than others (e.g., sensitive receptors). A project is considered to have a significant impact if it results in any of the following:

- A maximum incremental cancer risk greater than or equal to 10 in one million;
- A population-wide cancer burden greater than 0.5 (in areas where cancer risk is greater than or equal to one in a million); or
- A chronic or acute hazard index greater than or equal to 1.0.

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." The opinion also holds that when a project has "potentially significant exacerbating effects on existing environmental hazards" those impacts are properly within the scope of CEQA because they can be viewed as impacts of the project on "existing conditions" rather than impacts of the environment on the project. The Supreme Court provided the example of a project that threatens to disperse existing buried environmental contaminants that would otherwise remain undisturbed. The Court concluded that it is proper under CEQA to undertake an analysis of the dispersal of existing contaminants because such an analysis would be focused on how the project "would worsen existing conditions." The court also found that the limited number of express CEQA provisions that require analysis of the impacts of the existing environment on a project – such as impacts associated with school siting and airports – should be viewed as specific statutory exceptions to the general rule that such impacts are not properly within CEQA's scope.

In another recent Supreme Court Ruling – Sierra Club v. County of Fresno 6 Cal. 5th 502 (2018) – the Supreme Court held that CEQA requires a Lead Agency to make a reasonable effort to provide an appropriate, project-specific context and connection between mass pollutant

emissions estimates (i.e., pounds per day or tons per year) and the potential health impacts associated with such emissions estimates, or to explain what is and is not yet known about the Project's "bare" emissions numbers and their potential adverse health impacts.

Consistent with these court rulings, the impact discussion presented below focuses on the proposed Project's effect on air quality and existing health risks, rather than the effect of existing air quality and its potential risks on the proposed Project's residents. The analysis evaluates whether the proposed Project would create or exacerbate adverse public health risk conditions at sensitive receptor locations, as identified in the SCAQMD's CEQA significance criteria. In addition, in response to the Sierra Club v. County of Fresno ruling, the discussion under Impact AQ-3 identifies the reasons for why it would be speculative to try and transform the potential changes in criteria air pollutant emissions that could occur under the implementation of the proposed FGPUZA into quantifiable, adverse health risks.

4.1.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to conflicts with an applicable air quality plan, cumulatively considerable net increases of criteria pollutants for which the region is in nonattainment, exposure of sensitive receptors to substantial pollutant concentrations, and objectionable odors, which could result from the implementation of the project and recommends mitigation measures as needed to address potentially significant impacts.

Conflicts with Local Air Quality Plan

Impact AQ-1 – Would the FGPUZA conflict with or obstruct implementation of the applicable air quality plan?

Analysis of Impacts

As described in Section 4.1.1, the proposed Project is within the South Coast Air Basin, which is under the jurisdiction of the SCAQMD. Pursuant to the methodology provided in Chapter 12 of the SCAQMD *CEQA Air Quality Handbook*, consistency with the AQMP is affirmed if the Project:

1) Is consistent with the growth assumptions in the AQMP; and
2) Does not increase the frequency or severity of an air quality standards violation, or cause a new one.

Consistency Criterion 1 refers to the growth forecasts and associated assumptions included in the 2016 AQMP. As described under Section 4.1.2, the underlying assumptions used to develop the 2016 AQMP were based on growth projections contained in the SCAG 2016 RTP/SCS. The 2016 AQMP was designed to achieve attainment for all criteria air pollutants within the Basin while still accommodating growth in the region. Projects that are consistent with the AQMP growth assumptions would not interfere with attainment of air quality standards, because this growth is included in the projections used to formulate the AQMP. Therefore, if the growth under the proposed FGPUZA is consistent with the regional population, housing, and employment forecasts identified by SCAG in the RTP/SCS, plan implementation would be consistent with the AQMP, even if emissions could potentially exceed the SCAQMD's recommended daily emissions thresholds.

The proposed Project includes land use designations that support development of up to 68,499 total dwelling units, accommodating a total population of up to 238,619 residents by 2040. The

Planning Area's population would increase by approximately 63,818, from 174,801 in 2020 to 238,619 in 2040. The number of dwelling units would also increase, from 48,257 in 2020 to 68,499 dwelling units in 2040 (an increase of 20,242 dwelling units). Employment within the City limits would increase, from 45,766 jobs in 2020 to 49,369 jobs by 2040, an increase of 3,603 jobs. The 2016 RTP/SCS population and employment projections for the City of Garden Grove, as well as the increase in population and employment that would occur with the implementation of the proposed Project, are shown in Table 4.1-6.

Table 4.1-6
RTP/SCS and FGPUZA Growth Assumptions

Scenario	Net New Population Growth	Net New Employment
Proposed Focused General Plan Update and Zoning Amendment		
Planning Area Total	63,818	3,603
RTC/SCS Growth 2012 – 2040	5,300	6,800
Within Growth Assumptions?	No	Yes
Source: SCAG, 2016; City of Garden Grove 2021.		

As shown in Table 4.1-6, the population growth anticipated in the FGPUZA would exceed SCAG's growth assumptions, while the new employment would not. Therefore, from a population growth standpoint, the proposed FGPUZA would be inconsistent with the AQMP.

Consistency Criterion 2 refers to the CAAQS and NAAQS. As described in Section 4.1.1, the Basin is designated nonattainment for national and state O_3, PM_{10}, and $PM_{2.5}$ standards. The analyses of potential emissions under Impact AQ-2 indicates the FGPUZA could result in significant emissions during construction activities. Some of these pollutants, such as NOx and ROG, are ozone precursor pollutants, and the region is designated non-attainment for ozone. The analysis contained under Impact AQ-2 also indicates that unmitigated operational CO, ROG, NOx, and PM emissions associated with implementation of the proposed FGPUZA would exceed the SCAQMD-recommended CEQA thresholds of significance, which have been designed to bring the region into attainment for CAAQS and NAAQS.

Level of Significance Before Mitigation

Implementation of the proposed FGPUZA would result in population growth that is in excess of that assumed in the AQMP, while employment would be below that assumed in the AQMP. The analysis conducted under Impact AQ-2 demonstrates that the unmitigated net change in operational emissions between existing land uses in 2040 and those proposed by the FGPUZA would exceed the SCAQMD's operational CO, ROG, NOx, and PM CEQA thresholds of significance. Construction activities would also have the potential to exceed SCAQMD-recommended thresholds of significance.

The SCAQMD, in developing its CEQA significance thresholds, considered the emission levels at which a project's individual emissions would be cumulatively considerable (SCAQMD, 2003b; page D-3). Even though the mass amount of emissions attributable to a single project (i.e., pounds per day) does not necessarily contribute to air pollution levels measured throughout the Basin or near the City, the SCAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant. Since the proposed FGPUZA could result in construction and operational emissions that exceed SCAQMD regional CEQA thresholds, the proposed Project could increase the frequency and/or severity of air quality violations in the Basin or otherwise impede

attainment of air quality standards, particularly national and state ozone standards. This is considered a **potentially significant impact**.

Mitigation Measures

See Mitigation Measures AQ-2A through AQ-2C.

Level of Significance After Mitigation

As discussed under Impact AQ-2, the project would implement Mitigation Measures AQ-2A and AQ-2B, which would require the preparation of project-specific air quality studies that address construction and operational emissions, respectively, prior to future development activities. Mitigation Measures AQ-2A and 2B also require the incorporation of project-specific mitigation if project emissions are shown to be above SCAQMD-recommended CEQA significance thresholds. Nonetheless, because it cannot be definitively known or stated at this time that construction and operational emissions from projects occurring under implementation of the FGPUZA would be mitigated such that all criteria air pollutant emissions would be below SCAQMD-recommended thresholds of significance, implementation of the proposed FGPUZA could still increase the frequency and/or severity of air quality violations in the Basin or otherwise impede attainment of air quality standards in the Basin. As such, the proposed FGPUZA would be inconsistent with the AQMP. This impact would be ***significant and unavoidable***.

Cumulatively Considerable Net Increase of Criteria Air Pollutants

Impact AQ-2 – Would the FGPUZA result in a cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard?

Analysis of Impacts

The proposed FGPUZA sets forth the City's vision for the development that would occur over the next approximately 20 years. The FGPUZA's proposed land use designations permit higher development intensity within the City boundaries than compared to the existing General Plan. Criteria air pollutant and other emissions would result from construction activities, and from the operation of residences, businesses, and other land uses within the City.

Project implementation would generate short-term construction and long-term operational emissions of regulated air pollutants (i.e., criteria air pollutants and TACs). These emissions would be released to the ambient air and disperse according to the topographic and meteorological influences that prevail near the Planning Area and in the greater Basin (see Section 4.1.1). The SCAQMD has not adopted plan-level significance thresholds; however, in developing its CEQA significance thresholds, the SCAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable (SCAQMD, 2003b; page D-3). The SCAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant. The SCAQMD maintains regional and localized significance thresholds to assess how individual projects may affect air quality on large and small geographic scales. The potential for construction and operational emissions associated with FGPUZA implementation to impact air quality is discussed below.

Construction Emissions

The proposed FGPUZA would not directly result in construction of any development or infrastructure; however, future development supported by the FGPUZA would result in short-term construction-related criteria pollutant emissions that have the potential to have an adverse effect on air quality. Short-term criteria air pollutant emissions would occur during demolition, site preparation, grading, building construction, paving, and architectural coating activities associated with specific, new development projects. Emissions would occur from use of equipment, worker, vendor and hauling trips, and disturbance of onsite soils (fugitive dust). ROG and NO_X emissions are primarily associated with gas and diesel equipment exhaust and the application of architectural coatings. Fugitive dust emissions (PM_{10} and $PM_{2.5}$) are primarily associated with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT by construction vehicles on- and off-site. Typical construction equipment associated with development and redevelopment projects includes, but is not limited to, dozers, graders, excavators, loaders, and trucks.

Although it is not possible to know the exact type, number, location, or duration of future construction projects, future development activities would generally entail demolition, site preparation, grading, building construction, paving, and painting. Since Garden Grove is generally a built-out city, many new projects in the City will likely require the demolition of existing structures to make room for newer ones. Fugitive dust (PM_{10}) emissions would typically be greatest during building demolition, site preparation, and grading due to the disturbance of soils and transport of material. NO_X emissions would also result from the combustion of diesel fuels used to power off-road heavy-duty pieces of equipment (e.g., backhoes, bulldozers, excavators, etc.). ROG emissions would generally be greatest during architectural coating activities. The types and quantity of equipment, as well as duration of construction activities, would be dependent on project-specific conditions. Larger projects would require more equipment over a longer timeframe than that required for redevelopment of a single, residential home or small residential or mixed-use project.

Given the speculative nature of construction activities that could occur under implementation of the proposed FGPUZA, it is not possible at this time to accurately assess the level of emissions that would be generated by future development and redevelopment activities in the City. It is possible that either no construction could be occurring within the City at any given time, or multiple projects could be occurring simultaneously. Despite these unknowns, it is plausible that one or more projects developed under implementation of the proposed FGPUZA could have the potential to exceed one or more of the SCAQMD's construction criteria air pollutant thresholds of significance (e.g., NOx for a project involving a substantial amount of earthwork during grading, ROG during architectural coating activities, etc.). Therefore, this impact is potentially significant and requires mitigation.

Operational Emissions

If adopted, the proposed FGPUZA would accommodate new residential and non-residential land uses, some of which would involve the redevelopment of existing development. Overall, project implementation would increase residential dwelling units while reducing the non-residential square footage in the City under year 2040 conditions.

The Project would result in long-term regional emissions of criteria air pollutants associated with the operation of area sources, energy sources, and mobile sources. Area source emissions,

which are widely distributed and made of many small emissions sources (e.g., landscaping equipment, consumer products, painting operations, etc.), were modeled according to the size and type of land uses proposed. Energy sources, which include natural gas combustion for heating and other purposes, were also modeled based on the size and type of land uses included in the Project's 2040 growth forecast. Mobile-source emissions were modeled based on the daily vehicle trips that would result from the proposed Project. The net change in emissions of regulated air pollutants that would occur with implementation of the FGPUZA was modeled using CalEEMod, V. 2016.3.2. The net change in operational emissions for the Project was modeled based on the Project's 2040 growth projection, using default data assumptions provided by CalEEMod, with the following project-specific modifications:

- **Land Use Development:** The default acreage and square footage for proposed development intensities within the Planning Area were adjusted to reflect proposed development conditions (see Chapter 3, Project Description, Table 3-2 and Table 3-3).
- **Area Sources:** Woodstoves and hearths were excluded from new development pursuant to SCAQMD Rule 445.
- **Energy Use and Consumption:** The residential and non-residential default energy intensity factors for electricity and natural gas were sourced from the latest version of CalEEMod, Version 2020.4.0, which are based on the 2019 energy code. Low-rise apartments, congregate care, and hotel land uses were assumed to be built to the 2019 energy code given they comprise the greatest amount of land use changing under the proposed FGPUZA conditions. Mid-rise apartments, public schools, office buildings, industrial land uses, general retail, and single-family housing land uses, which are anticipated to see some growth / redevelopment, are all anticipated to see moderate improvements to energy efficiency over the next approximately 20 years and were assumed, on average, to be built to 2016 energy code standards. The hospital, private university, and warehousing land uses were assumed to have nominal improvements to energy efficiency and remain being built, on average, to the 2013 energy code standards. These adjustments were made consistent with the factors presented in the CalEEMod User Manual Appendix E, and are appropriate, because they capture the proposed nature of redevelopment that could occur under implementation of the proposed FGPUZA. The following describes the factors used to adjust the energy intensity factors the 2019 energy code to reflect the 2016 and 2013 standards, respectively.
    - **Single-family Residential:** The single-family residential electrical energy intensity and natural gas energy intensity values were adjusted upwards by a factor of 1.13 and a factor of 1.26, respectively.
    - **Multi-family Residential (Mid-rise Apartments):** The multi-family residential electrical energy intensity and natural gas energy intensity values for mid-rise apartments were adjusted upwards by a factor of 1.18 and a factor of 1.44, respectively.
    - **Non-residential:** The non-residential electrical energy intensity and natural gas energy intensity values were adjusted upwards by a factor of 1.05 and a factor of 1.01, respectively, to meet the 2016 energy code standards. The adjustment factors described in Section 4.1.1 were used for the land uses that were assumed to remain built to the 2013 energy code standards.
- **Mobile Sources**
    - **Trip Generation and Distance:** As described in Section 4.1.1, an average trip distance of approximately 7.90 miles was derived from a default CalEEMod run. This trip distance was used in conjunction with the average, daily VMT estimate

prepared by Fehr and Peers for the proposed land uses (7,801,908 miles per day) and a multiplication factor of 347 days per year, the same factor used in CARB's 2000-2012 Greenhouse Gas Emissions Inventory, to derive an annualized VMT estimate of approximately 2,707,262,076 annual VMT (CARB, 2014; Fehr and Peers, 2021). New weekday and weekend trip generation rates were developed for CalEEMod based on the total, annual vehicle trips and initial weekday/weekend trip generation accounted for in CalEEMod.

- **Emission Factors:** Vehicle emission factors were updated based on derived EMFAC20201 (version 1.0.1) emission rates for Orange County (South Coast Air Basin) in the Year 2040, consistent with the methodology described in the CalEEMod User's Guide Appendix A (CAPCOA, 2017b).
- **Fleet Mix:** The fleet mix for all vehicle types was updated based on values contained in CalEEMod Version 2020.4.0 for the year 2040.

The net change in long-term operational emissions that would be generated by the Project is shown in Table 4.1-7. As explained in Section 4.1.1, under the "Existing Emissions Levels in the Planning Area" discussion, the net change in emissions evaluated in this EIR is based on the difference between the existing land uses under future year 2040 conditions and the proposed Project land uses under 2040 growth conditions.

As shown in Table 4.1-7, maximum daily operational emissions associated with 2040 conditions with the Project exceed the SCAQMD's recommended regional pollutant thresholds for all pollutants except SOx and CO. The primary sources responsible for the increases in emissions are area sources and mobile sources. For example, area sources (gas fireplaces and landscaping equipment) and mobile sources account for approximately 85% of the NOx emissions estimated to occur under buildout conditions of the proposed FGPUZA. It is worth noting that the net increases in mobile and area source emissions would generally be enough, independently, to exceed the applicable SCAQMD thresholds.

Whereas the increases in mobile source emissions are directly attributable to increases in VMT, the increases in area sources would be due to a combination of factors, including reapplication of architectural coatings, use of consumer products (e.g., cleaning products), emissions from natural gas hearths, and landscaping equipment. The following explains the primary area sources responsible for increases in ROG and NOx.

- Approximately 412 of the 486 pounds per day increase in ROG area source emissions, or 85% of the increase, would be associated with additional use of consumer products.
- All of the increase in NOx area source emissions (i.e., 333 pounds per day) would be associated with the operation of natural gas hearths in new residential development.

As described in Section 4.1.1, the South Coast Air Basin is designated nonattainment for national and state ozone standards, and NOx and ROG are ozone precursor pollutants. Additionally, the proposed FGPUZA would also result in operational CO, PM_{10}, and $PM_{2.5}$ emissions that exceed SCAQMD thresholds, which are also pollutants for which the region is designated nonattainment (CO is in attainment/maintenance). The exceedances of SCAQMD operational thresholds for ROG, NOx, PM_{10}, and $PM_{2.5}$ represent a potentially significant impact that require mitigation.

Table 4.1-7
2040 Project Growth Forecast Operational Emissions (Unmitigated)

Emissions Scenario	Maximum Daily Pollutant Emissions (Pounds per Day)[A]									
	ROG	NO_X	CO	SO_2	PM_{10}			$PM_{2.5}$		
					Dust	Exhaust	Total	Dust	Exhaust	Total
Project Growth Forecast Operational Emissions in Year 2040										
Area Sources[B]	15,496	1,384	28,759	63		3,749	3,749		3,749	3,749
Energy Sources	53	461	226	3	0	37	37	0	37	37
Mobile Source	2,369	1,286	17,639	47	5,561	18	5,579	1,386	17	1,404
Total[C]	17,918	3,131	46,624	113	5,561	3,804	9,365	1,386	3,803	5,190
Existing Land Uses Year 2040 Condition[D]										
Area Sources	15,010	1,051	28,618	63	0	3,723	3,723	0	3,723	3,723
Energy Sources	45	393	198	2	0	31	31	0	31	31
Mobile Source	2,206	1,198	16,424	44	5,178	17	5,195	1,291	16	1,307
Total[C]	17,262	2,642	45,240	110	5,178	3,771	8,949	1,291	3,770	5,061
Net Change in Emissions Levels										
Area Sources	486	333	141	0	0	26	26	0	26	26
Energy Sources	8	68	28	1	0	6	6	0	6	6
Mobile Source	163	88	1,215	3	383	1	384	95	1	97
Total[C]	656	489	1,384	3	383	33	416	95	33	129
SCAQMD CEQA Threshold	55	55	550	150	150			55		
Threshold Exceeded?	**Yes**	**Yes**	**Yes**	No	**Yes**			No		

Source: MIG, 2021 (see Appendix D) and SCAQMD 2019b.

(A) Emissions estimated using CalEEMod, V 2016.3.2. Estimates are based on default model assumptions unless otherwise noted in this document. Maximum daily ROG, CO, SOX emissions occur during the summer. Maximum daily NOx, PM_{10}, and $PM_{2.5}$ emissions occur during the winter.

(B) The FGPUZA area source emissions assume landscaping emissions would be held constant between no-project conditions in 2040 (i.e., continued operation of existing land uses) and conditions proposed by the FGPUZA. The City of Garden Grove is generally built out, and the types of redevelopment that would occur under implementation of the FGPUZA would generally involve more intensive, vertical development. The FGPUZA would not increase the area in the City that would be required to be maintained by landscaping equipment.

(C) Totals may not equal due to rounding.

(D) See Table 4.1-3.

Level of Significance Before Mitigation

Construction Emissions. As discussed above, construction emissions associated with future development activities facilitated under implementation of the proposed FGPUZA could exceed SCAQMD-recommended CEQA significance thresholds for regional criteria air pollutant emissions. This is considered a **potentially significant impact.**

Operational Emissions. As shown in Table 4.1-7, the modeled, maximum daily operational emissions in 2040 with the Project would result in CO, ROG, NOx, PM_{10} and $PM_{2.5}$ emissions that exceed SCAQMD-recommended CEQA significance thresholds. This is considered a **potentially significant impact.**

Mitigation Measures

Mitigation Measure AQ-2A: Require a Project-level Construction Air Quality Assessment for New Discretionary Development Projects.

Prior to a discretionary approval by the City for development projects subject to CEQA (meaning, non-exempt CEQA projects), project applicants shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the City for review and approval. The evaluation shall be prepared in conformance with South Coast Air Quality Management District (SCAQMD) methodology for assessing air quality impacts. If construction-related criteria air pollutants are determined to have the potential to exceed the SCAQMD's adopted thresholds of significance, the City shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during construction activities. These identified measures shall be incorporated into all appropriate construction documents (e.g., construction management plans) submitted to the City and shall be verified by the City. Mitigation measures to reduce construction-related emissions could include, but are not limited to:

- Require the selection of specific construction equipment (e.g., specialized pieces of equipment with smaller engines or equipment that will be more efficient and reduce engine runtime).
- Require equipment to use alternative fuel sources (e.g., electric-powered and liquefied or compressed natural gas), meet cleaner emission standards (e.g., U.S. EPA Tier IV Final emissions standards for equipment greater than 50-horsepower), and/or utilize added exhaust devices (e.g., Level 3 Diesel Particular Filter).
- Limit the idling time of diesel-powered construction equipment to two (2) minutes.
- Ensure that construction equipment is properly serviced and maintained to the manufacturer's standards.
- Limit on-site vehicle travel speeds on unpaved roads to 15 miles per hour.
- Require wheel washers for all exiting trucks or wash off all trucks and equipment leaving the project area.
- Require the application of Low-VOC paints to interior and/or exterior surfaces (e.g., paints that meet SCAQMD Rule 1113 "Low-VOC" or "Super-Compliant" requirements). A list of applicable architectural coating manufacturers can be found on the South Coast AQMD's website.

Mitigation Measure AQ-2B: Require a Project-level Operational Air Quality Assessment for New Discretionary Development Projects.

Prior to a discretionary approval by the City for development projects subject to CEQA (meaning non-exempt CEQA projects) project applicants shall prepare and submit a technical assessment evaluating potential project operation air quality impacts to the City for review and approval. The evaluation shall be prepared in conformance with South Coast Air Quality Management District (SCAQMD) methodology in assessing air quality impacts. If operation-related air pollutants are determined to have the potential to exceed the SCAQMD's adopted thresholds of significance, the City shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce operational emissions could include, but are not limited to the following:

- New one and two-family dwellings and townhomes shall include electric vehicle infrastructure consistent with Section A4.106.8.1 of the 2019 CalGreen Code.
- New multifamily dwellings with 17 or more units shall provide electric vehicle charging spaces capable of supporting electric vehicle supply equipment pursuant to Section A4.106.8.2.
- New multifamily dwelling units shall provide bicycle parking pursuant to Section A4.106.9.2.
- New non-residential development with more than 10 tenant-occupants shall provide changing/shower facilities for tenant-occupants in accordance with Table A5.106.4.3 of the 2019 CalGreen code.
- New non-residential development shall provide designated parking for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles pursuant to the Tier 1 requirements of Table A5.106.5.1.1 of the 2019 CalGreen code. Such parking spaces shall be marked pursuant to Section A5.106.5.1.3 of the 2019 CalGreen code.
- New non-residential development shall provide electric vehicle charging spaces capable of supporting electric vehicle supply equipment pursuant to the Tier 1 requirements of Section A5.106.5.3.1 of the 2019 CalGreen code. Such spaces shall be marked pursuant to Section A5.106.5.3.3 of the 2019 CalGreen code.
- Site-specific developments with truck delivery and loading areas and truck parking spaces shall include signage as a reminder to limit idling of vehicles while parked for loading/unloading in accordance with California Air Resources Board Rule 2845 (13 CCR Chapter 10 § 2485).
- Provide facilities to support electric charging stations per Section A5.106.5.3 (Nonresidential Voluntary Measures) and Section A5.106.8.2 (Residential Voluntary Measures) of the 2019 CALGreen Code.
- Applicants for future development projects along existing and planned transit routes shall coordinate with the City and Orange County Transportation Authority to ensure that bus pad and shelter improvements are incorporated, as appropriate.

Mitigation Measure AQ-2C: Transportation Demand Management
The City shall require all new residential and non-residential development that meets the following criteria to incorporate measures to meet vehicle trip generation rates that are twenty percent lower than the standard rates as established in the most recent edition of the Institute of Transportation Engineers (ITE) trip generation manual:

- New multi-unit development of ten units or more;
- New nonresidential development of ten thousand square feet or more;
- Additions to nonresidential buildings that are ten thousand square feet or more in size that expand existing gross floor area by ten percent or more; and
- Establishment of a new use, change of use, or change in operational characteristics in a building that is ten thousand square feet or more in size that results in an average daily trip increase of more than ten percent of the current use, based on the most recent Institute of Traffic Engineers (ITE) trip generation rates.

Projects subject to TDM requirements may implement any combination of measures to achieve the twenty percent reduction. Measures may include, but are not limited to:

- Connecting the project site to adjacent / nearby bicycle paths;
- Long-term bicycle parking;
- Bicycle fix-it stations with repair tools and an air pump;
- Scheduled mobile bicycle repair service;
- Commuter incentives and reward programs;
- Parking management strategies, such as reserved vanpool parking and/or preferential carpool parking;
- Transit subsidies;
- Vanpool subsidies;
- Pre-tax transit deduction payroll option;
- Pre-tax parking deduction payroll option (for parking at a transit station);
- Guaranteed ride home;
- Paid parking at prevalent market rates.
- Shuttle option;
- Telework option; and
- On-site amenities (e.g., ATM, day care, cafeteria, exercise facilities, on-site transit pass sales, etc.).

Level of Significance After Mitigation

Construction Emissions. As described in the preceding analysis, there is uncertainty regarding the specific nature of construction activities that would be facilitated under implementation of the proposed FGPUZA. Despite the implementation of Mitigation Measure AQ-2A, which requires the preparation of project-specific air quality analysis prior to the construction of any new development and incorporation of mitigation if emissions levels are shown to be above SCAQMD-recommended thresholds of significance, it cannot be definitively known or stated at this time that all future development projects occurring under implementation of the proposed FGPUZA would be able to reduce potential construction criteria air pollutant emissions to levels that are below SCAQMD thresholds. Therefore, with regard to criteria air pollutant emission

generated during construction activities, this impact would be **significant and unavoidable** even with the incorporation of feasible mitigation measures.

Operational Emissions. As described in the preceding analysis, there is uncertainty regarding the specific nature of operational activities that would be facilitated under implementation of the proposed FGPUZA. Despite the implementation of Mitigation Measure AQ-2B, which requires the preparation of project-specific air quality analysis prior to the construction of any new development and incorporation of mitigation if emissions levels are shown to be above SCAQMD-recommended thresholds of significance, it cannot be definitively known or stated at this time that all future development projects occurring under implementation of the proposed FGPUZA would be able to reduce potential criteria air pollutant emissions to levels that are below SCAQMD thresholds. The City would also implement Mitigation Measure AQ-2C to reduce exhaust emissions of NO_X and other pollutants from vehicles; however, since specific development projects are unknown, it is not possible to know the quantity of emissions that would be reduced by Mitigation Measure AQ-2C. Therefore, the emissions reductions that would be achieved by Mitigation Measures AQ-2B and AQ-2C cannot be accurately quantified at this time and, therefore, have been excluded from the mitigated emissions estimates. While the implementation of Mitigation Measures AQ-2B and AQ-2C would reduce emissions of CO, ROG, NOx, PM_{10}, and $PM_{2.5}$, it cannot be definitively known or stated at this time that all future development projects occurring under implementation of the proposed FGPUZA would be able to reduce potential operational criteria air pollutant emissions to levels that are below SCAQMD thresholds. Therefore, this impact would be **significant and unavoidable** even with the incorporation of feasible mitigation measures.

Exposure of Sensitive Receptors to Pollutants

Impact AQ-3 – Would the FGPUZA expose sensitive receptors to substantial pollutant concentrations?

Analysis of Impacts

Development under the Project could expose existing and new sensitive receptors to substantial concentrations of criteria air pollutants and TAC emissions that pose adverse health effects. The potential for the proposed FGPUZA to expose sensitive receptors to substantial pollutant concentrations is evaluated below.

CO Hotspots

Based on the TIA prepared for the proposed FGPUZA (see Appendix E), the maximum number of vehicles moving through any study analysis zone under the Project's 2040 conditions would be less than 15,000 vehicles per hour at any intersection along Garden Grove Boulevard (during AM and PM peak hours) (Counts Unlimited, 2019). This level of traffic is substantially below the screening threshold of 44,000 vehicles per hour for a CO hotspot analysis (See Section 4.1.3). Therefore, the Project would not cause or significantly contribute to CO concentrations that exceed State or Federal ambient air quality standards for CO. This impact would be less than significant.

Construction Emissions

As discussed under Impact AQ-2, future development activities under the FGPUZA would generate emissions, including emissions of DPM (a TAC), during construction activities. These emissions would occur intermittently over the approximately 20-year period associated with the Project. Although specific details regarding project development within the Planning Area are not known at this time, it is possible that one or more projects developed under the proposed FGPUZA could have the potential to exceed SCAQMD LSTs and thresholds of significance for cancerogenic and non-cancerogenic health risks (see Section 4.1.3).[7]

Operational Emissions

In addition to criteria air pollutant and TAC emissions on a local scale, receptor exposure to elevated concentrations of criteria air pollutants (e.g., CO, O_3, and PM) is capable of causing adverse health effects on heart, lung, and other organ systems. As described under Impact AQ-2, the proposed FGPUZA would generate cumulatively considerable operational criteria air pollutant emissions for which the region is designated nonattainment (i.e., ROG, NOx, and PM); however, these operational criteria air pollutant emissions would not expose receptors to substantial operational pollutant concentrations, as described below.

In the amicus brief filed by the SCAQMD on the California Supreme Court's decision in *Sierra Club versus County of Fresno*, the SCAQMD noted that, "[it] takes a large amount of additional precursor emissions [e.g., NOx] to cause a modeled increase in ambient ozone levels… a project emitting only 10 tons per year of NOx or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models used to determine ozone levels…" (SCAQMD 2015). Although implementation of the FGPUZA is anticipated increase ROG, NOx and PM emissions within the Planning Area and greater SCAG region, any analysis linking potential adverse health risks to corresponding pollutant concentrations would be speculative for several reasons.

First to estimate potential adverse health effects from regional emissions, it is necessary to have information on the sources of the ozone and PM emissions, such as the location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors exposed to the emissions (SCAQMD 2015). While the general nature of the emissions sources occurring with implementation of the proposed FGPUZA is known (i.e., area source, energy source, mobile source), the specific location of these sources within the Planning Area is not known, nor is other information, including source emission rate, exit velocity, operating characteristics (e.g., daytime or nighttime, seasonal or steady-state), etc.

Second approximately 98% of CO emissions, 99 percent of the ROG emissions, 86 percent of the NOx emissions, and 95-99 percent of the PM emissions estimated to occur under net 2040 growth would be from area and mobile sources (i.e., vehicle trips) that would be dispersed roadways throughout the Planning Area and beyond that would be subject to varying meteorological and topographical influences. These emissions would be subject to small scale

[7] In addition to criteria air pollutant emissions on a regional scale and TAC emissions on a local scale, receptor exposure to elevated concentrations of criteria air pollutants (e.g., CO, O_3, and PM) is capable of causing adverse health effects on heart, lung, and other organ systems. As described under Section 4.1.3, the LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standards, which would result in significant adverse localized air quality impacts.

air patterns, such as those formed as wind passes between buildings and other anthropogenic features (e.g., cars), creating eddies and other turbulence that affect pollutant transport.

Third, as mentioned previously, the SCAQMD has stated (SCAQMD 2015, pgs. 10-11):

> *"For the so-called criteria pollutants, such as ozone, it may be more difficult to quantify health impacts . . . It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources . . . Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes . . . However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP* [Air Quality Management Plan] *showed that reducing NOx by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_X or VOC emissions from relatively small projects."*

Finally, adverse health effects associated with receptor exposure to criteria air pollutant concentrations is cumulative in nature. In other words, any potential health effects associated with FGPUZA operational emissions would also need to be considered in light of background pollutant emissions. As discussed previously in this EIR chapter, there are many efforts being undertaken at the state and regional level to reduce criteria air pollutant emissions from stationary and mobile sources. These actions are anticipated to reduce pollutant concentrations throughout the Planning Area and Basin over the next few decades. Therefore, even if the proposed FGPUZA does increase emissions in and in proximity of the Planning Area, criteria air pollutant concentrations in the region could still be lower in the future than they are currently due to the advancement of cleaner technologies.

As described above, it would be speculative to transform the mass increase in ROG, NO_X, and PM emissions that could occur with implementation of the proposed FGPUZA into quantifiable health risks for several specific reasons, including the uncertain location of emission points, velocity of emissions, the meteorology and topography of the area (which could affect the transport rate and photochemical reactions needed to produce ozone), background criteria air pollutant emissions in the future, and the location of receptors in relation to emission sources. However, given that the Project's operational emissions are far less than that modeled by the SCAQMD for its 2012 AQMP,[8] which showed a relatively minor increase in criteria air pollutant concentrations for a large mass amount of emissions, mass operational emissions associated with implementation of the proposed FGPUZA would not result in emissions that would expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.

[8] The Project's net change in mitigated ROG and NOx emissions would be approximately 0.30 tons per day and 0.2 tons per day, respectively. These values for ROG and NOx are approximately 0.16% and 0.06% of the mass daily emissions identified by the SCAQMD in its amicus brief that were estimated to change ozone levels by 9 parts per billion.

Exacerbation of Existing Sources of Pollution

Project growth would generally add new residential development in the city and could place new sensitive receptors in proximity to existing sources of emissions, such as SR-22 and local stationary sources of emissions.

Per the recent ruling in the by the California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015), projects are not required to analyze how existing conditions might impact a project's future users or residents. As such, this analysis does not focus on potential, future receptor exposure to existing emissions from existing sources of pollutants in and near the Planning Area. Rather, it focuses on the incremental increase in pollutant concentrations and associated impacts (including adverse health impacts) that could occur if existing operations were to change as a result of Project growth.

The proposed FGPUZA generally focuses on adding new residential development in the City. As shown in Table 3-3 of the Project Description, full buildout of the proposed FGPUZA would decrease the amount of non-residential building space by approximately half a million square feet, with approximately 282,500 square feet of that reduction coming from industrial land uses. In general, the types of activities and emissions associated with the operation of industrial land uses pollute more (e.g., TACs, including DPM, NOx, etc.) on a local level than residential land uses. Therefore, while implementation of the proposed FGPUZA would increase the amount of criteria air pollutants generated by the land uses withing the Planning Area (see Table 4.1-7), it would reduce the quantity of land uses that generate the greatest quantity of localized emissions. The proposed FGPUZA would not result in, nor substantially exacerbate, substantial pollutant concentrations at sensitive receptor locations.

Level of Significance Before Mitigation

CO Hotspots. The proposed FGPUZA would not exceed the screening threshold of 44,000 vehicles per hour. Therefore, it would not result in a CO hotspot. This impact would be less than significant.

Construction Emissions. As discussed under the preceding analysis and Impact AQ-2, construction emissions associated with future development activities facilitated under implementation of the proposed FGPUZA could exceed SCAQMD construction LSTs and cancerogenic and non-cancerogenic thresholds maintained and recommended by the SCAQMD. This is considered a **potentially significant impact.**

Operational Emissions. The proposed FGPUZA would not result in a net change of criteria air pollutant emissions that would expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.

Exacerbation of Existing Sources of Pollutants. Implementation of the proposed FGPUZA would not exacerbate existing sources of pollutants in and near the Planning Area. This impact would be less than significant.

Mitigation Measures

See Mitigation Measure AQ-2A.

Level of Significance After Mitigation

CO Hotspots. Not applicable.

Construction Emissions. There is uncertainty regarding the specific nature of construction activities under the proposed FGPUZA. Despite the implementation of Mitigation Measure AQ-2A, which requires the preparation of project-specific air quality analysis prior to the construction of any new development and incorporation of mitigation if emissions levels are shown to be above SCAQMD-recommended thresholds of significance for cancerogenic and non-cancerogenic risks, as well as SCAQMD LSTs, it cannot be definitively known or stated at this time that all future development projects occurring under implementation of the proposed FGPUZA would be able to reduce potential risks and localized construction air pollutant emissions to levels that are below SCAQMD thresholds. Therefore, with regard to localized criteria air pollutant and TAC emissions generated during future construction activities, this impact would be ***significant and unavoidable*** even with the incorporation of feasible mitigation measures.

Operational Emissions. Not applicable.

Exacerbation of Existing Sources of Pollutants. Not applicable.

Objectionable Odors

Impact AQ-4 – Would the FGPUZA result in other emissions such as those leading to odors adversely affecting a substantial number of people?

Analysis of Impacts

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.). The Project does not support such sources, and there are no such active sources in or near the Planning Area (the Operating Industries, Inc. landfill is closed).

Construction occurring within the Planning Area could produce odors from fuel combustion or solvents/paints used. These odors would be temporary, quickly disperse, and would not affect a substantial number of people.

Under 2040 conditions, the Project would increase the amount of residential and non-residential development in the City, including multi-family development that could be located close to retail, restaurant, and other commercial land uses that may generate localized sources of odors that may or may not be objectionable to nearby residential land uses.

The Project does not in and of itself permit or authorize any new, major sources of potential odors (e.g., wastewater treatment plant), and odor impacts would be less than significant with standard environmental review practices.

Level of Significance Before Mitigation

The potential impacts associated with objectionable odors under the proposed FGPUZA would be less than significant.

Mitigation Measures

None required.

Level of Significance After Mitigation

No applicable.

Cumulative Impacts

Would the FGPUZA cause substantial adverse cumulative impacts with respect to Air Quality?

Analysis of Impacts

As described in Section 4.1.1, the South Coast Air Basin is designated nonattainment for national and State O_3 standards, national and State $PM_{2.5}$ standards, and national PM_{10} standards. The SCAQMD, in developing its CEQA significance thresholds, considered the emission levels at which a project's individual emissions would be cumulatively considerable (SCAQMD, 2003b; page D-3). The SCAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant.

Level of Significance Before Mitigation

The Project's 2040 conditions would be inconsistent with the 2016 RTP/SCS growth forecasts and, as discussed under Impact AQ-2, could result in construction (e.g., ROG and NO_X) and operational (CO, ROG, NO_X, PM_{10}, and $PM_{2.5}$) emissions that exceed the SCAQMD's recommended regional CEQA thresholds. Although the mass amount of emissions attributable to a single project (i.e., pounds per day) does not necessarily contribute to air pollution levels measured within the Basin and in or near the City, the SCAQMD, in developing its CEQA significance thresholds, considered the emission levels at which a project's individual emissions would be cumulatively considerable (SCAQMD 2003b; page D-3). The SCAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant. Since conditions under the FGPUZA would be inconsistent with current AQMP projections and could lead to construction and operational emissions that exceed SCAQMD regional CEQA thresholds, the proposed Project could increase the frequency and/or severity of air quality violations in the Basin or otherwise impede attainment of air quality standards, particularly national and state O_3 and PM_{10} standards. This is considered a **potentially significant impact**.

Mitigation Measures

See Mitigation Measures AQ-2A through AQ-2C.

Level of Significance After Mitigation

The Project would be inconsistent with the 2016 RTP/SCS growth forecast and result in emissions that could increase the frequency and/or severity of air quality violations in the Basin, or otherwise impede attainment of air quality standards. Therefore, this impact would be ***significant and unavoidable***.

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List of Acronyms, Abbreviations, and Symbols

Acronym / Abbreviation	Full Phrase or Description
AB	Assembly Bill
AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CO	Carbon monoxide
DPM	Diesel particulate matter
EIR	Environmental Impact Report
GVWR	Gross vehicle weight rating
H_2S	Hydrogen sulfide
HAP	Hazardous Air Pollutants
HRA	Health Risk Assessment
I	Interstate
lbs	Pounds
LOS	Level of Service
LST	Localized Significance Threshold
m^3	Cubic meter
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NO	Nitrogen oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NTP	United State National Toxicology Program
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
PM	Particulate matter
ppb	Parts per billion
ppm	Parts per million
$PM_{2.5}$	Fine particulate matter
PM_{10}	Coarse particulate matter
ROG	Reactive organic gases
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_4^{2-}	Sulfates
SO_x	Oxides of sulfur
SRA	Source Receptor Area
TAC	Toxic Air Contaminants
TIA	Traffic Impact Analysis

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
V.	Version
VMT	Vehicle Miles Traveled
VOC	Volatile organic compounds
µg	Micrograms
%	Percent
° C	Degrees Celsius
° F	Degrees Fahrenheit

4.2 – Biological Resources

This EIR chapter addresses impacts associated with implementation of the Focused General Plan Update and Zoning Amendments (FGPUZA) on biological resources. Specifically, this chapter analyzes whether the FGPUZA would: cause a substantial adverse effect on special status wildlife species; have a substantial effect on any riparian habitat/sensitive natural communities; have a substantial adverse effect on state or federally protected wetlands; interfere substantially with wildlife movement or use of wildlife nurseries; conflict with local policies protecting biological resources; or conflict with the provision of an adopted habitat conservation plan.

4.2.1 – ENVIRONMENTAL SETTING

The City is relatively flat with elevations ranging from 32 feet above mean sea level (AMSL) in the western portion of the City up to 122 feet AMSL in the eastern portion of the City. There are no significant natural open spaces within the Planning Area. The closest natural open space areas are the County-owned preserve lands around Irvine Park, located approximately 8 miles to the east and the open space lands associated with the Santa Ana Mountains located approximately 13 miles to the east. The Pacific Ocean is located approximately 8 miles to the southwest of the Planning Area. The Planning Area is completely urbanized and almost entirely built out with few vacant properties located sparsely through the City. However, there are several parks and open space areas throughout the Planning Area. According to the Garden Grove General Plan 2030 Conservation Element, biological resources in Garden Grove are almost non-existent due to the urban nature of the City and surrounding areas. However, it is understood that the incorporation of natural and altered biotic habitats, as well as associated flora and fauna, is important in providing a high quality of life for residents. Parks, vegetated streetscapes, large trees, and neighborhoods support plant life and are home to small animals and birds (Garden Grove 2008). Specific issues related to biological resources are discussed in detail below.

Wildlife and Sensitive Species

Wildlife known to occur within the Planning Area consists of avian, reptile, and mammal species that occupy urban areas. The “sensitive” or “special” label denotes a species as a State or Federally listed threatened or endangered species and/or a potential candidate for threatened or endangered listing. Table 4.2-1 (Federally- and State-Listed Species and other Special Status Species) lists Federally- and State-listed species known to occur in the Planning Area, as identified by the CNDDB (CNDDB, 2020). The Planning Area is located on the Anaheim 7.5-minute series United States Geological Survey (USGS) topographic quadrangle map. The United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Native Plant Society (CNPS), California Natural Diversity Database (CNDDB) recorded the following species in Table 4.2-1 as historically occurring within 1-mile of the Planning Area (but not within the Planning Area). These species have low potential to occur or are not expected to occur within the Planning Area due to the marginal suitable habitat available or lack of habitat.

Table 4.2-1
Federal- and State-Listed Species and other Special Status Species

Type	Scientific Name	Common Name	Federal, State, or Other Status	Potential to Occur
Amphibians	*Spea hammondii*	Western spadefoot	SSC	Low*
Birds	*Buteo swainsoni*	Swainson's hawk	ST	Low*
	Ardea alba	great egret	None	Low*
	Charadrius montanus	mountain plover	SSC	Low*
	Coccyzus americanus occidentalis	western yellow-billed cuckoo	SE	Low*
	Icteria virens	yellow-breasted chat	SSC	Low*
	Setophaga petechia	yellow warbler	SSC	Low*
	Polioptila californica californica	coastal California gnatcatcher	FT, SSC	Low*
	Laterallus jamaicensis coturniculus	California black rail	ST, FP	Low*
	Athene cunicularia	burrowing owl	SSC	Low*
	Contopus cooperi	olive-sided flycatcher	SSC	Low*
	Pyrocephalus rubinus	vermilion flycatcher	SSC	Low*
Fish	*Oncorhynchus mykiss irideus*	steelhead	FE	Low*
Insects	*Bombus crotchii*	Crotch bumble bee	CE	Low*
	Euphydryas editha quino	quino checkerspot butterfly	FE	Low*
Mammals	*Eumops perotis californicus*	western mastiff bat	SSC	Low*
Reptiles	*Anniella stebbinsi*	Southern California legless lizard	SSC	Low*
	Phrynosoma blainvillii	coast horned lizard	SSC	Low*
Plants	*Centromadia parryi* ssp. *australis*	southern tarplant	1B.1	Low*
	Symphyotrichum defoliatum	San Bernardino aster	1B.2	Low*
	Nasturtium gambelii	Gambel's water cress	1B.1	Low*
	Atriplex parishii	Parish's brittlescale	1B.1	Low*
	Astragalus hornii var. *hornii*	Horn's milk-vetch	1B.1	Low*
	Juglans californica	southern California black walnut	4.2	Low*
	Sidalcea neomexicana	salt spring checkerbloom	2B.2	Low*
	Abronia villosa var. *aurita*	chaparral sand-verbena	1B.1	Low*
	Camissoniopsis lewisii	Lewis' evening-primrose	3	Low*

SSC = Species of Special Concern; FP = Federal Protected; SP = State Protected; FT = Federal Threatened; ST = State Threatened; FE = Federal Endangered; SE = State Endangered; Candidate Endangered; 1B.1 = Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California; 1B.2 = Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California; 2B.2 = Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California; 3 = Plants about which we need more information; 4.2 = Plants of limited distribution; fairly threatened in California.

*Due to the densely developed urban setting of Garden Grove, primarily consisting of no natural biological communities, this species would have low potential to occur.

Sensitive Natural Communities and Habitats

Regionally sensitive natural communities or habitat types are an important indicator of the existence of sensitive species. According to the California Natural Diversity Database (CNDDB) and as described above, there are no sensitive natural communities or habitats within the Planning Area.

Riparian/Wetland Habitats

Wetlands are areas of soil that are saturated with moisture for all or a portion of the year. Wetlands serve not only as nodes on avian and aquatic migratory routes but also provide a unique habitat for a variety of local species. Wetlands and waters are regulated by federal, state, and local agencies, as described in Section 4.2.2 below. The USFWS maintains the National Wetlands Inventory (NWI) and Wetlands Mapper System to identify the location of wetlands and riparian habitat. NWI maps are intended to provide general reference only and do not define the jurisdictional limits for any wetland regulatory program. In addition, 40 Code of Federal Regulations section 120.2(3)(xvi) states that "the term *wetlands* means areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

As shown in the NWI, the Planning Area has limited wetland and riparian habitat. There is a channelized tributary of the Santa Ana River in the northwest portion of the Planning Area (Barber City Channel) that is classified as "R4SBCr" (Riverine Intermittent Streambed Seasonally Flooded Artificial Substrate). The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 parts per thousand or greater. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water. The Intermittent Subsystem includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent. Streambeds include all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide. Surface water is present for extended periods especially early in the growing season but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface. The Artificial Substrate Modifier describes concrete-lined drainage ways, as well as Rock Bottom, Unconsolidated Bottom, Rocky Shore and Unconsolidated Shore where the substrate material has been emplaced by humans.

As also shown in the NWI, there are two locations in the eastern portion of the Planning Area that have riparian and/or wetland habitat. The first location is a 10.41-acre Freshwater Pond located at Twin Lakes Park which is classified as "PUBHx" (Palustrine Unconsolidated Bottom Permanently Flooded Excavated). The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ppt. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2.5 m (8.2 ft) at low water; and (4) salinity

due to ocean-derived salts less than 0.5 ppt. The Unconsolidated Bottom class includes all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%. Water covers the substrate throughout the year in all years. The Excavated Modifier is used to identify wetland basins or channels that were excavated by humans. The second location is the "West Street Basin" located southeast of the intersection of West Street and Chapman Avenue. This location includes two Freshwater Ponds totaling 3.24 acres which are classified as "PUBHx" (Palustrine Unconsolidated Bottom Permanently Flooded Excavated) and 2.96 acres of Freshwater Forested/ Shrub Wetland which is classified as "PFOCx" (Palustrine Forested Seasonally Flooded Excavated). The Forested Class is characterized by woody vegetation that is approximately 20 feet (6 meters) tall or taller. Surface water is present for extended periods especially early in the growing season but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

4.2.2 – REGULATORY FRAMEWORK

Federal

Endangered Species Act (FESA) (1973). FESA, as amended, provides the regulatory framework for the protection of plant and animal species (and their associated critical habitats), which are formally listed, proposed for listing, or candidates for listing as endangered or threatened under FESA. FESA has the following four major components: (1) provisions for listing species, (2) requirements for consultation with the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA NMFS), (3) prohibitions against "taking" (meaning harassing, harming, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct) of listed species, and (4) provisions for permits that allow incidental "take". FESA also discusses recovery plans and the designation of critical habitat for listed species. Section 7 requires Federal agencies, in consultation with, and with the assistance of the USFWS or NOAA NMFS, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Both the USFWS and NOAA NMFS share the responsibility for administration of FESA.

Federal Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.), Title 50 Code of Federal Regulations (CFR) Part 10. The MBTA prohibits taking, killing, possessing, transporting, and importing of migratory birds, parts of migratory birds, and their eggs and nests, except when specifically authorized by the Department of the Interior. As used in the act, the term "take" is defined as meaning, "to pursue, hunt, capture, collect, kill or attempt to pursue, hunt, shoot, capture, collect or kill, unless the context otherwise requires." With a few exceptions, most birds are considered migratory under the MBTA. Disturbances that cause nest abandonment and/or loss of reproductive effort or loss of habitat upon which these birds depend would be in violation of the MBTA.

The Clean Water Act Sections 404 and 401. The United States Army Corps of Engineers (USACE) and the United States Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under section 404 of the Clean Water Act (CWA) (33 USC 1344). Waters of the United States are defined in Title 33 CFR Part 328.3(a) and include a range of wet environments such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. The lateral limits of jurisdiction in those waters may be divided into three categories – territorial seas, tidal waters, and non-tidal waters – and is

determined depending on which type of waters is present (Title 33 CFR Part 328.4(a), (b), (c)). Activities in waters of the United States regulated under section 404 include fill for development, water resource projects (e.g., dams and levees), infrastructure developments (e.g., highways, rail lines, and airports) and mining projects. Section 404 of the CWA requires a federal permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from section 404 regulation (e.g., certain farming and forestry activities).

Section 401 of the CWA (33 U.S.C. 1341) requires an applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a water quality certification from the state in which the discharge originates. The discharge is required to comply with the applicable water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. The EPA has delegated responsibility for the protection of water quality in California to State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs).

The National Pollutant Discharge Elimination System (NPDES). This program requires permitting for activities that discharge pollutants into waters of the United States. This includes discharges from municipal, industrial, and construction sources. These are considered point-sources from a regulatory standpoint. Generally, these permits are issued and monitored under the oversight of the SWRCB and administered by each regional water quality control board. Construction activities that disturb one acre or more (whether a single project or part of a larger development) are required to obtain coverage under the state's General Permit for Dischargers of Storm Water Associated with Construction Activity. All dischargers are required to obtain coverage under the Construction General Permit. The activities covered under the Construction General Permit include clearing, grading, and other disturbances. The permit requires preparation of a Storm Water Pollution Prevention Plan (SWPPP) and implementation of Best Management Practices (BMPs) with a monitoring program. The project will require coverage under the Construction General Permit.

State

California Endangered Species Act (CESA) (1984). CESA expands on the original NPPA and enhanced legal protection for plants, but the NPPA remains part of the California Fish and Game Code (CFGC). To align with FESA, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into CESA as threatened species but did not do so for rare plants. Thus, these laws provide the legal framework for protection of California-listed rare, threatened, and endangered plant and animal species. The California Department of Fish and Wildlife (CDFW) implements NPPA and CESA, and its Wildlife and Habitat Data Analysis Branch maintains the California Natural Diversity Database (CNDDB), a computerized inventory of information on the general location and status of California's rarest plants, animals, and natural communities. During the CEQA review process, the CDFW is given the opportunity to comment on the potential of the proposed Project to affect listed plants and animals.

Fully Protected Species and Species of Special Concern. The classification of "fully protected" was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibian and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The CFGC sections (fish at §5515, amphibian and reptiles at §5050, birds at §3511, and mammals at §4700) dealing with "fully protected" species states that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully

protected species," although take may be authorized for necessary scientific research. This language makes the "fully protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFW to authorize take resulting from recovery activities for state-listed species.

Species of special concern (SSC) are broadly defined as animals not listed under FESA or CESA, but which are nonetheless of concern to the CDFW because they are declining at a rate that could result in listing or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by CDFW, land managers, consulting biologist, and others. It is intended to focus attention on these species to help avert the need for costly listing under FESA and CESA and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, as well as focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.

California Fish and Game Code Sections 3503 and 3513. According to section 3503 of the CFGC, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird (except English sparrow (*Passer domesticus*) and European Starling (*Sturnus vulgaris*). Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the MBTA, prohibiting the take or possession of any migratory non-game bird. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by CDFW.

California Fish and Game Code Sections 1600-1603. Under section 1602 of CFGC, CDFW has authority over any proposed activity that may substantially modify a river, stream, or lake. CDFW requires notification for any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. The CDFW typically considers a river, stream, or lake to include its riparian vegetation, but it may also extend to its floodplain. The term "stream", which includes creeks and rivers, is defined in the CCR as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life". This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Riparian is defined as "on, or pertaining to, the banks of a stream"; therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself".

If the CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement (LSAA) will be prepared, which includes reasonable conditions necessary to protect those resources. The applicant may then proceed

with the activity in accordance with the final LSAA. Section 1602 does not extend to isolated wetlands and waters, such as small ponds not located on drainages.

Native Plant Protection Act (1977) (CFGC §§ 1900 through 1913). The NPPA enacted the CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA is administered by the CDFW, which has the authority to designate native plants as endangered or rare and to protect them from "take."

Sensitive Plants – California Native Plant Society. The California Native Plant Society (CNPS), a non-profit plant conservation organization, publishes and maintains an Inventory of Rare and Endangered Vascular Plants of California. The Inventory assigns plants to the following categories:

- 1A Presumed extinct in California;
- 1B Rare, threatened, or endangered in California and elsewhere;
- 2 Rare, threatened, or endangered in California but more common elsewhere;
- 3 Plants for which more information is needed – A review list; and
- 4 Plants of limited distribution – A watch list.

Additional endangerment codes are assigned to each taxon as follows:

- .1 Seriously endangered in California (over 80% of occurrences threatened/high degree of immediacy of threat).
- .2 Fairly endangered in California (20-80% occurrences threatened).
- .3 Not very endangered in California (<20% of occurrences threatened or no current threats known).

Plants on Lists 1A, 1B, and 2 of the CNPS Inventory consist of plants that qualify for listing by CDFW and/or other state agencies (e.g., California Department of Forestry and Fire Protection). As part of the CEQA process, such species should be fully considered, as they meet the definition of threatened or endangered under the NPPA and Sections 2062 and 2067 of the CFGC. CRPR 3 and 4 species include plants that need more demographic study or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for state listing, and CNPS and CDFW recommend that these species be evaluated for consideration during the preparation of CEQA documents.

Sensitive Natural Communities. Sensitive natural communities are habitats that are either unique in constituent components, of relatively limited distribution in the region, or of particularly high wildlife value. These communities may or may not necessarily contain special-status species. Sensitive natural communities are usually identified in local or regional plans, policies, or regulations, or by the CDFW or the USFWS. The CNDDB identifies several natural communities as rare, which are given the highest inventory priority. Impacts to sensitive natural communities and habitats must be considered and evaluated under the CEQA (CCR: Title 14, Div. 6, Chap. 3, Appendix G)

Natural Community Conservation Planning Act. The Natural Community Conservation Planning (NCCP) program of the CDFW takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. The NCCP program, established pursuant to the 1991 NCCP Act (Fish and Game Code 2003) is broader in its orientation and objectives than CESA or FESA. While CESA and FESA are designed to identify and protect

species that have already declined in significant numbers, the NCCP program seeks to prevent species listing by focusing on the long-term stability of wildlife and plant communities. The CVMSHCP also serves as an NCCP for a variety of habitats.

Section 401 of the Clean Water Act. RWQCBs regulate activities in "waters of the state", including wetlands, through section 401 of the CWA. "Waters of the state" are defined by the Porter-Cologne Water Quality Control Act (see below) as "any surface water or groundwater, including saline waters, within the boundaries of the state." While the USACE administers permitting programs that authorize impacts to "waters of the US", any USACE permit authorized for a project would be invalid unless the RWQCB has issued a project-specific water quality certification or waiver of water quality. A water quality certification requires a finding by the RWQCB that the activities permitted by the USACE will not violate water quality standards individually or cumulatively over the term of the issued USACE permit.

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Act (Porter-Cologne Act) (California Water Code section 13260) requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the "waters of the state" to file a report of discharge" with the RWQCB through an application for waste discharge. The RWQCB protects all waters in its regulatory scope but has special responsibility for isolated wetlands and headwaters. These water bodies have high resource value, are vulnerable to filling, and may not be regulated by other programs (e.g., section 404 of the CWA).

Local

City General Plan. The existing City General Plan does not have any goals or policies that address biological resources. For a similar reason, the proposed 2021 FGPUZA also does not contain any new goals or policies regarding these resources.

4.2.3 – SIGNIFICANCE THRESHOLDS

As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the proposed General Plan Update could result in a significant impact if it would:

A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

C. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

F. Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

G. Would the project cause substantial adverse cumulative impacts with respect to biological resources?

4.2.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to biological resources which could result from the implementation of the Project and recommends mitigation measures as needed to reduce potentially significant impacts.

Special Status Species Protections

Impact BIO-1 – Would the FGPUZA have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Analysis of Impacts

Due to the densely developed urban setting of Garden Grove, primarily consisting of no natural biological communities, sensitive species would have little to no potential to occur within the Planning Area. The existing 2008 General Plan and the proposed 2021 General Plan Update do not contain goals or policies concerning biological resources that would negatively impact special-status species. Therefore, it is not expected that any new impacts would occur to special-status species as part of implementation of this FGPUZA. It should also be noted that future development would have to comply with established laws and regulations regarding the protection of biological resources when proposed (e.g., migratory bird treaty act).

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Sensitive Natural Communities

Impact BIO-2 – Would the FGPUZA have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Analysis of Impacts

Due to the densely developed urban setting of Garden Grove, natural biological communities, sensitive riparian habitat or other sensitive natural communities would have little to no potential to occur within the Planning Area. The existing 2008 General Plan and the proposed 2021 FGPUZA do not contain goals or policies concerning biological resources that would negatively impact any riparian habitat or other sensitive natural community. Therefore, it is not expected that any new impacts would occur to sensitive riparian habitat or other sensitive natural communities as part of implementation of this FGPUZA. It should also be noted that future development would have to comply with established laws and regulations regarding the

protection of riparian or sensitive communities when proposed (e.g., state streambed alteration agreements).

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Wetland Conservation

Impact BIO-3 – Would the FGPUZA have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Analysis of Impacts

The 2021 FGPUZA does not contain any new goals or policies concerning biological resources that would allow for adverse impacts to state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.). The existing General Plan already contains several protection measures for water resources and water quality, and requires compliance with federal, state, and local laws concerning protection of waterways within the Planning Area. In addition, it is not anticipated that new development under the FGPUZA would remove or otherwise impact any wetland resources in the City. Therefore, it is not expected that any new impacts would occur to state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) as part of implementation of this FGPUZA.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Fish and Wildlife Movement

Impact BIO-4 – Would the FGPUZA interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Analysis of Impacts

Due to the densely developed urban setting of Garden Grove, primarily consisting of no natural biological communities, there are no identified protected wildlife corridors or protected wildlife nursery sites within the Planning Area. The existing 2008 General Plan and the proposed 2021 FGPUZA do not contain goals or policies concerning biological resources that would negatively impact fish and wildlife movement. In addition, future development would have to comply with established laws and regulations regarding the protection of migratory or sensitive wildlife (e.g., migratory bird treaty act).Therefore, no significant impacts to fish and wildlife movement would be expected as part of implementation of the 2021 FGPUZA.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Conflicts with Local Biological Resources Plans

Impact BIO-5 – Would the FGPUZA conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Analysis of Impacts

The 2021 FGPUZA does not conflict with any local policies or ordinances protecting biological resources. Further, the existing 2008 General Plan and the proposed 2021 FGPUZA do not contain goals or policies concerning biological resources that would negatively impact fish and wildlife movement. In addition, the City Municipal Code contains Tree Ordinance Number 522 which was passed by the City Council on September 5, 1961 which addresses the protection, maintenance, removal, and planting of trees in streets, parks, and other public places. Therefore, no conflict would be expected with existing Local Biological Resources Plans with implementation of the 2021 FGPUZA.

Level of Significance Before Mitigation

No impact.

Mitigation Measures

None required.

Habitat Conservation Plans

Impact BIO-6 – Would the FGPUZA conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Analysis of Impacts

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans within or that affect the Planning Area. Because of this, the 2021 FGPUZA does not contain any goals or policies that address these types of plans. Therefore, the FGPUZA would not result in any conflicts with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Level of Significance Before Mitigation

No impact.

Mitigation Measures

None required.

Cumulative Impacts

Impact BIO-7 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to Biological Resources?

Analysis of Impacts

The FGPUZA will not contribute to substantial adverse cumulative impacts to biological resources, as the FGPUZA is primarily in a developed urban area and natural areas are not targeted for development. In addition, future development would have to comply with established laws and regulations regarding the protection of biological resources as appropriate. Therefore, cumulative impacts to biological resources from future development under the FGPUZA are expected to be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

4.2.5 - REFERENCES

City of Garden Grove. *Garden Grove General Plan 2030: Conservation Element*. May 2008.

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4.3 – Cultural Resources

This EIR chapter addresses potential impacts to historic and archaeologic resources associated with implementation of the Focused General Plan Update and Zoning Amendments (FGPUZA). The chapter will evaluate whether the FGPUZA will cause a substantial adverse change in the significance of a historic resource, destroy a unique archaeological resource, or disturb human remains.

4.3.1 – ENVIRONMENTAL SETTING

The City of Garden Grove was founded on agriculture but has evolved from rows of farmland and ranch style homes to a mixture of commercial centers, condominiums, and a growing urban skyline (Garden Grove, 2008a). The City's evolution of building form has also been influenced by Korean and Vietnamese culture. Cultural and historic resources, sites, and districts have a valuable physical component to the community's heritage. Below is a discussion of the City's known historic resources and archaeological resources.

Native American History

Prior to European contact in the 1700s, the Planning Area was inhabited by the Gabrieleño Indian Tribe for many thousands of years. Development began in the Garden Grove area in the latter half of the 19th century. but the surrounding area is known to contain archaeological resources that pre-date Spanish and Mexican land grants. Additionally, the Planning Area is located close to the modern route of the Santa Ana River. The river in prehistory changed its course with winter floods and would likely have flowed over the alluvial soils in the Planning Area. Native Americans would have used the natural resources of the Santa Ana River and its tributaries as a source of water and food. It is almost certain the Planning Area would have been utilized heavily by the indigenous people living in this area for thousands of years. The Planning Area likely contains archaeological resources that pre-date Spanish and Mexican land grants, dating back thousands of years and reflecting Native American settlement patterns. Given the long history of Native American settlement in the region, there is a moderate to high probability of finding archaeological resources, including tribal cultural resources, in the Planning Area.

Archaeological Resources

One prehistoric site (Site CA-ORA-392) has been identified within Garden Grove's municipal boundaries, and an additional twelve historic archaeological sites (Sites CA-ORA-1260H through -1270H and CA-ORA-1307) dating from the early 1900s have been found (Garden Grove, 2008b). The prehistoric site is located under a residential development and consists of shellfish remains from food debris, stone tools and stone flakes from manufacturing stone tools. The historic archaeological sites are primarily locations of historic trash in association with residences and commercial structure dating from the 1900s (Garden Grove, 2008b). Potential impacts to Tribal Cultural Resources are also addressed in Section 4.15.

European History

Spanish soldiers commanded by Gaspar de Portola first encountered what is now Orange County as they made their way north across California in 1769. During their journey, the soldiers camped on a wide grassy plain east of present-day Garden Grove. They named the area the Santa Ana Valley and claimed the state of California as a possession of Spain. The Santa Ana Valley was divided into ranchos as some of the soldiers settled in the area.

In 1822, Mexico gained independence from Spain, and California became a province of Mexico. It was the treaty of Guadalupe Hidalgo in 1848, at the end of the Mexican-American War, that made all of California a territory of the United States of America. In 1850, California became the 31st state in the union.

A businessman named Abel Stearns bought large tracts of land in Southern California in 1868 and divided some of it into smaller lots to sell to settlers. In 1874, Alonzo Cook purchased 160 acres of land in the area for about $15 an acre. Recognized as Garden Grove's Founding Father, he later donated land north of Main Street and Garden Grove Boulevard for use as the site of the first schoolhouse and post office. Cook suggested the name "Garden Grove" for the school and surrounding village.

By the time Orange County incorporated in 1889, the Garden Grove area had a population of about 200. It continued as a quiet farming community into the 20th Century, when in 1905, the Pacific Electric Railroad came through Garden Grove. The railroad brought tourists, visitors, and before long, more settlers. Soon after came the first telephone, gas and electric services for the residents near Main Street. During the next 40 years, agriculture continued as the town's main economy. Although ideally located in the center of the county, Garden Grove's growth was slowed by two disasters during those years. The first was in 1916, when the center of town was flooded and came under about four feet of water after days of heavy rains. Then, in 1933, another disaster damaged the old town section of Garden Grove when an earthquake struck. Following each of these catastrophes, however, the residents joined in spirit and labor to repair the damage and continue the progress of Garden Grove.

World War II had an important impact on city growth. Servicemen who had visited California during their training for war came back to settle and raise their families. Available land and low prices caused a sudden building boom, making Garden Grove the fastest growing city in the nation in the 1950s. As the area grew, its rural nature changed to a more modern society and the need for city government was evident.

Residents formally decided to incorporate their town on June 18, 1956, to become the City of Garden Grove. At the time of the 1960 census, Garden Grove had a population of nearly 44,000. Today, the population is over 170,000. That makes Garden Grove the fifth largest city in Orange County and the 18th largest in the State (City of Garden Grove, 2021).

Historic Resources

Examples of historical resources include a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources; a resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code; or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code, § 5024.1, Title 14 CCR, Section 4852) including the following:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

The Planning Area includes many architecturally distinctive or historic buildings, historic points of interest, and landmarks. A 1986 historic and architectural inventory (Comprehensive Historical and Architectural Resources Inventory) documented 132 buildings as locally-significant resources (Garden Grove, 1986). Three structures, the Stanley House within Heritage Park, the Harry A. Lake House, and the Reyburn House, are candidates for nomination to the *National Register of Historic Places*. The Stanley House is designated as Orange County Historical Site No. 13. The preservation of these locally significant resources should be considered as the City continues to urbanize and as past traditions merge with future growth (Garden Grove, 2008b).

Landmarks are unique structural or natural features in a community. They are typically visible from a distance and often used as a reference point. They evoke feelings of familiarity with a particular area and help in establishing identity. The following five landmarks are important to the community and contribute towards Garden Grove's identity, and are shown in **Exhibit 4.3-1** (Corridors, Entries, and Landmarks).

- **Clock Tower:** Located in the Village Green Park, this structure serves as a entrance monument at the north end of the Civic Center.
- **Hyatt Hotel (Plaza Alicante):** This 17-story hotel is connected to a 10-story office building converted into additional hotel rooms by a 160-foot glass atrium. The building is located at the north end of Harbor Boulevard.
- **Crystal Cathedral:** The City's most prominent landmark. The 236-foot steeple of highly polished stainless steel prisms is visible from nearby freeways and adjacent cities.
- **Stanley Ranch Museum and Heritage Park:** The Stanley Ranch house, and general store are notably visible along Euclid Street with a water tank and windmill on the grounds.
- **Main Street:** Main Street, located off Euclid Street, Is an old time pedestrian shopping street that has maintained its character and "hometown" feel. (Garden Grove, 2008a)

4.3.2 – REGULATORY FRAMEWORK

Federal

National Historic Preservation Act of 1966. Enacted in 1966, the National Historic Preservation Act (NHPA) (16 U.S.C §§ 470 et seq.) declared a national policy of historic preservation and instituted a multifaceted program, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the National Register of Historic Places (NRHP), established the position of State Historic Preservation Officer (SHPO), provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assist Native American tribes in preserving their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP).

NHPA establishes the nation's policy for historic preservation and sets in place a program for the preservation of historic properties by requiring federal agencies to consider effects to significant cultural resources (i.e. historic properties) prior to undertakings**.**

Section 106 of the Federal Guidelines. Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the NRHP and that the ACHP and SHPO must be afforded an opportunity to comment, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800, on such undertakings.

LEGEND

Corridors

- Primary Corridors
- Secondary Corridors

Entries

- Primary Entry
- Secondary Entry
- Special District Entry

Landmarks

1. Stanley Ranch Museum at Heritage Park
2. Crystal Cathedral
3. Hyatt Hotel
4. Clock Tower Village Green Park
5. Main Street

http:/

Exhibit 4.3-1 Corridors, Entries, and Landmarks

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

MIG

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National Register of Historic Places. The NRHP was established by the NHPA of 1966 as "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment." The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, or association. A property is eligible for the NRHP if it is significant under one or more of the following criteria:

Criterion A: It is associated with events that have made a significant contribution to the broad patterns of our history.

Criterion B: It is associated with the lives of persons who are significant in our past.

Criterion C: It embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.

Criterion D: It has yielded, or may be likely to yield, information important in prehistory or history.

Cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP unless they satisfy certain conditions. In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

Native American Graves Protection and Repatriation Act of 1990. The NAGPRA of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation

State

California Environmental Quality Act (CEQA). CEQA provides criteria to evaluate whether a building, structure, object, or site is significant. Under CEQA Guideline §15064.5(a), historic resources include the following: (1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4850 et seq.) (2) A resource included in a local register of historical resources, as defined in §5020.1(K) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of §5024.1 (g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant. (3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be

considered to be an historical resource, providing the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historic Resources (Pub. Res. Code §5024.1, Title 14 CCR, Section 4852) including the following: (A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (B) Is associated with the lives of persons important in our past; (C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or (D) Has yielded, or may be likely to yield, information important in prehistory or history. (4) The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to §5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in §5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be a historical resource as defined in Public Resources Code §5020.1(j) or 5024.1. In accordance with CEQA, properties designated or eligible at all levels are deserving of protection by a lead agency when any undertaking proposes to demolish or alter any such property.

California Register of Historical Resources. Created in 1992 and implemented in 1998, the California Register of Historical Resources (CRHR) is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate properties that are to be protected, to the extent prudent and feasible, from substantial adverse change (CA Public Resources Code)." Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks (CHLs) numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys, or designated by local landmarks programs may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on NRHP criteria (Public Resources Code):

Criterion 1: It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

Criterion 2: It is associated with the lives of persons important in our past.

Criterion 3: It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.

Criterion 4: It has yielded, or may be likely to yield, information important in history or prehistory.

Resources nominated to the CRHR must retain enough of their historic character or appearance to be recognizable as historic resources and to convey the reasons for their significance. It is possible that a resource whose integrity does not satisfy NRHP criteria may still be eligible for listing in the CRHR. A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Resources that have achieved significance within the past 50 years also may be eligible for inclusion in the CRHR, provided that enough

time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource.

California Historical Landmarks (CHLs). CHLs are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource must also be approved for designation by the County Board of Supervisors or the City or Town Council in whose jurisdiction it is located, be recommended by the State Historical Resources Commission, or be officially designated by the Director of California State Parks. The specific standards in use now were first applied in the designation of CHL No. 770. CHLs No. 770 and above are automatically listed in the CRHR.

To be eligible for designation as a Landmark, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California); or
- Associated with an individual or group having a profound influence on the history of California. A prototype of, or an outstanding example of, a period, style, architectural movement or construction or one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder.

California Points of Historical Interest. California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest (Point or Points) designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the CRHR. No historic resource may be designated as both a Landmark and a Point. If a Point is later granted status as a Landmark, the Point designation will be retired. In practice, the Point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance.

To be eligible for designation as a Point, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type within the local geographic region (city or county).
- Associated with an individual or group having a profound influence on the history of the local area.
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder.

Native American Heritage Commission, Public Resources Code Sections 5097.9–5097.991. Section 5097.91 of the Public Resources Code (PRC) established the Native American Heritage Commission (NAHC), whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Under Section 5097.9 of the PRC, a state policy of noninterference with the free expression or exercise of Native American religion was articulated along with a prohibition of severe or irreparable damage to Native American

sanctified cemeteries, places of worship, religious or ceremonial sites or sacred shrines located on public property. Section 5097.98 of the PRC specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner. Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

California Native American Graves Protection and Repatriation Act of 2001. Codified in the California Health and Safety Code Sections 8010–8030, the California Native American Graves Protection Act (NAGPRA) is consistent with the federal NAGPRA. Intended to "provide a seamless and consistent state policy to ensure that all California Indian human remains, and cultural items be treated with dignity and respect," the California NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this process. The act also provides a process for non–federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

Senate Bill (SB) 18. California Government Code, Section 65352.3 incorporates the protection of California traditional tribal cultural places into land use planning for cities, counties, and agencies by establishing responsibilities for local governments to contact, refer plans to, and consult with California Native American tribes as part of the adoption or amendment of any general or specific plan proposed on or after March 1, 2005. SB18 requires public notice to be sent to tribes listed on the Native American Heritage Commission's SB18 Tribal Consultation list within the geographical areas affected by the proposed changes. Tribes must respond to a local government notice within 90 days (unless a shorter time frame has been agreed upon by the tribe), indicating whether or not they want to consult with the local government. Consultations are for the purpose of preserving or mitigating impacts to places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code that may be affected by the proposed adoption or amendment to a general or specific plan.

Assembly Bill (AB) 52. Assembly Bill (AB) 52 was approved by Governor Jerry Brown on September 25, 2014. AB 52 amended California Public Resources Code (PRC), Section 5097.94, and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources (TCRs) must be considered under CEQA and required additional Native American consultation in certain circumstances. Specifically, AB 52 requires the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report.

Section 1(a)(9) of AB 52 establishes that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment." Effects on TCRs should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (PRC Section 21080.3.2(a)). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3(a)).

Health and Safety Code, Sections 7050 and 7052. Health and Safety Code Section 7050.5 declares that, in the event of the discovery of human remains outside a dedicated cemetery, all

ground disturbances must cease, and the county coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

Penal Code, Section 622.5. Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

Local

City General Plan. The Conservation Element of the City's existing General Plan specifies the following Goals, Policies, and Implementation Programs for the community's historic buildings and features:

Goal CON-7 Significant historical, architectural, archeological, and cultural value resources shall be preserved and protected.

Policy CON-7.1 Preserve and protect Garden Grove's significant historical, archaeological and cultural value resources.

Policy CON-7.2 Preserve Garden Grove's significant historic resources to promote community identity, stability, and aesthetic character.

Policy CON-7.3 Encourage private and public preservation activities for the education and enjoyment of present and future generations.

CON-IMP-7A Preserve significant archeological sites in conformance with Public Resources Code Section 21083.2 or Section 21084.1, as applicable.

CON-IMP-7B Determine appropriate zoning and land development guidelines in order to protect historic resources from incompatible development.

CON-IMP-7C Develop a process for the preservation of historic buildings with clear data by property regarding its historic significance. Look for innovative ways to preserve these buildings by possibly creating an historic area in which to relocate the buildings.

CON-IMP-7D Review proposals for the development of properties abutting historic resources to ensure that land use or new construction does not detract from the architectural characteristics and environmental setting of the historic resource.

CON-IMP-7E Encourage the restoration of historic properties through financial incentives and public and private loan and grant funding programs.

CON-IMP-7F Encourage new commercial development or renovations to existing commercial structures in historic areas to be compatible with existing historic architectural character.

CON-IMP-7G Design public facilities to minimize adverse impacts on historic resources.

CON-IMP-7H Preserve significant trees such as the Stone Pines that were saved as part of the hotel development on the south side of Chapman, west of Harbor Boulevard.

4.3.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As identified in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

B. Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

C. Disturb any human remains, including those interred outside of dedicated cemeteries?

D. Would the project cause substantial adverse cumulative impacts with respect to cultural resources?

4.3.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to historic resources, archaeological resources, and human remains which could result from the implementation of the FGPUZA and recommends mitigation measures as needed to reduce potentially significant impacts.

Historic Resources

Impact CUL-1 – Would the FGPUZA cause a substantial adverse change in the significance of a historic resource pursuant to Section 15064.5?

Analysis of Impacts

There are no built environment structures which are currently listed on either the NRHP or the CRHR within the City. Three structures, the Stanley House within Heritage Park, the Harry A. Lake House, and the Reyburn House, are eligible for inclusion the National Register of Historic Places, and by extension, are assumed to also be eligible for inclusion on the CRHR. The Stanley House is designated as Orange County Historical Site No. 13. Additionally, five local landmarks are considered significant to the City, and are highly visible locations, often used as a reference point, as well as establishing the identity of the City. These landmarks are:

- Clock Tower
- Hyatt Hotel (Plaza Alicante)
- Crystal Cathedral
- Stanley Ranch Museum and Heritage Park
- Main Street

Although there are two cemeteries, Magnolia Memorial Park, and Christ Cathedral Memorial Gardens, within the Planning Area, only Magnolia Memorial Park dates from a historic period. The graves and monuments within the cemetery may have the potential to be considered historic resources under CEQA.

The Planning Area has a long-established history of settlement and although many of the oldest buildings in the City were destroyed by an earthquake in 1933 or have since been replaced, the City still contains numerous known historic era structures on its local register, and it is likely that many other historic structures exist which may be eligible for inclusion on a historic register.

Future development under the FGPUZA may result in adverse impacts or removal of historic buildings or resources.

The Conservation Element of the current General Plan contains Goal CON-7, Policies CON-7.1 through 7.3 and Implementation Programs CON-IMP-7B through 7H. These goals, policies and implementation programs ensure that significant historical and architectural cultural value resources are preserved and protected by adherence to existing laws, development of appropriate zoning and land development guidelines, consideration of the development of a historic area, review of all development proposals to ensure new construction is in keeping with the historic character of adjacent buildings, providing funding for public and private preservation, encouraging future development in historic areas to be designed in a compatible way, and ensure that public facilities have a minimal impact on historic resources.

It should be noted the proposed FGPUZA updates the Housing, Land Use, and Safety Elements and creates a new Environmental Justice Element. No other changes are being made to the General Plan. However, the existing goals and policies in the Conservation Element will continue to adequately protect historical resources in the City.

The existing Conservation Element goals, policies, and implementation programs as well as the City's development review process serve to protect existing resources, by assessing the historic significance of public and private buildings, consider the establishment of historic area, and promote historic resources. These goals and policies, with regulatory compliance, and the City's development requirements to review CEQA documents for impacts to historic resources, will help reduce potential impacts by future development within the Planning Area, and help protect significant historic resources.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Archaeological Resources

Impact CUL-2 – Would the FGPUZA cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Analysis of Impacts

Prior to European contact, the Planning Area was inhabited by the Gabrieleño Indian Tribe for many thousands of years. Development began in the Garden Grove area in the latter half of the 19th century, but the surrounding area is known to contain archaeological resources that pre-date Spanish and Mexican land grants. Additionally, the Planning Area is located near the modern route of the Santa Ana River. The river, in its natural state, would have frequently changed course into one of many intermittent channels that fan out across the alluvial plain, likely into at least the eastern half of the Planning Area. Floods would have caused the river to have flowed over the alluvial soils in the Planning Area. Native Americans would have used the natural resources of the Santa Ana River and its tributaries as a source of water and food. It is almost certain the Planning Area would have been utilized heavily by the indigenous people living in this area for thousands of years.

One prehistoric site and an additional twelve historic period archaeological sites are known within the City's boundaries. The prehistoric site (CA-ORA-392) is located under a residential

development and consists of shellfish remains from food debris, stone tools and stone flakes from manufacturing stone tools.

The historic period sites (CA-ORA-1260H through -1270H and CA-ORA-1307) all date from the early 1900s and are primarily locations of historic trash in association with residences and commercial structures.

Much of the City is heavily developed, greatly reducing the potential for the discovery of cultural resources. However, some areas within the Planning Area that could have potential for discovery of resources include undeveloped land, and prior development with shallow foundations that is anticipated for redevelopment in the FGPUZA.

The Conservation Element of the City's current General Plan contains Goal CON-7, Policy CON-7.1 and Implementation Program CON-IMP-7A which can identify and protect significant tribal cultural/archaeological resources. It should be noted that TCRs can encompass large areas and resources that are more broad or regional compared to archaeological resources which usually refer to more isolated deposits or collections of artifacts in specific locations (see also Section 4.15, Tribal Cultural Resources).

It should be noted the proposed FGPUZA only updates the Housing, Land Use, and Safety Elements while creating a new Environmental Justice Element. Since the Conservation Element is not being updated, Goal CON-7, Policy CON-7.1 and Implementation Program CON-IMP-7A will help the City to continue to adequately protect archaeological resources in the City.

As a result of AB52/SB18 notification there were no tribes for consultation. The Gabrieleno Band of Mission Indians - Kizh Nation was the only entity that responded and they requested that they be notified of future development takes place (i.e. development proposals.They did not request any additional mitigation or policies be implemented into the new FGPUZA, and consultation was closed with the tribe on June 22, 2021. A complete discussion of tribal outreach is included in Section 4.15 (Tribal Cultural Resources).

The General Plan Update goals and policies serve to protect existing and undiscovered resources by incorporating the need for cultural resource protection. In addition, development projects are subject to the City's standard review procedures and the City has a standard condition of approval requiging that if, during construction, paleontological or archeological resources are found, all attempts will be made to preserve them in place or leave in an undisturbed state in compliance with applicable law. With these goals and policies, and the City's development requirements to review CEQA documents for impacts to archaeological resources, potential impacts to archaeological resources by future development within the Planning Area will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Human Remains

Impact CUL-3 – Would the FGPUZA disturb any human remains, including those interred outside of formal cemeteries?

Analysis of Impacts

There are two formal cemeteries within Garden Grove: Magnolia Memorial Park, and Christ Cathedral Memorial Gardens. Magnolia Memorial Park dates from a historic period, and contains historic era burials. Both these cemeteries have established boundaries, and it is unlikely that burials at these cemeteries would be found outside the established boundaries. However, Native Americans have occupied this region for thousands of years, and it is possible that human remains could be discovered during excavation for development, especially on previously undisturbed land.

Section 7050.5 of the California Health and Safety Code (CHSC) requires that, if human remains (or remains that may be human) are discovered on a project site during grading or earthmoving, the construction contractors, project archaeologist, and/or designated Native American Monitor shall immediately stop all activities within 100 feet of the find. The project proponent must then immediately inform the County Coroner and the City of the find. The coroner is permitted to examine the remains under CHSC Section 7050.5(b) to determine if the remains are those of a Native American. If human remains are determined as those of Native American origin, the applicant must comply with the state relating to the disposition of Native American burials that fall within the jurisdiction of the Native American Heritage Commission (NAHC) as outlined in Public Resources Code Section (PRC) 5097. The coroner then contacts the NAHC to determine the Most Likely Descendant (MLD) who will conduct an inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site. The disposition of the remains is to be overseen by the MLD to determine the most appropriate means of treating the human remains and any associated grave artifacts, in consultation with the property owner and the lead agency (in this case the City of Garden Grove). CEQA requires the City and any project developer, including the City if it is a public works project, to comply with the CHSC Section 7050.5 and PRC 5097 if human remains are found during excavation.

Compliance with existing state regulations (CHSC Section 7050.5 and PRC 5097) with respect to disturbing human remains, including those interred outside of a formal cemetery, would result in less than significant impacts from implementation of the Project.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Cumulative Impacts

Impact CUL-4 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to cultural resources?

Analysis of Impacts

The Planning Area and surrounding area have been occupied by Native Americans for thousands of years, and the region has been inhabited by European settlers since the late 1800's. The City of Garden Grove contains three historic buildings that have the potential to be listed on State and National historic registers and 132 historic buildings and structures that are listed on a local historic register. It is also anticipated that many additional buildings at this point may also be eligible for listing on the City's local register, and thus would be considered historic resources under CEQA.

Additionally, there is a potential for archaeological resources to exist within the Planning Area, particularly in the few remaining undeveloped areas of the City, or where existing foundations are shallow, and where archaeological resources, including human remains, could remain under below the prior level of disturbance.

On a cumulative level, impacts to cultural resources from both the City and the surrounding jurisdictions (i.e. the cities of Anaheim, Cypress, Fountain Valley, Los Alamitos, Orange, Santa Ana, Seal Beach, Stanton, and Westminster) should be considered. These jurisdictions contain numerous cultural resources which, as with all cultural resources, are non-renewable. Damaging, disturbing, or destroying cultural resources results in a permanent loss of resources that can never be replaced, and future projects with impacts to cultural resources from all surrounding jurisdictions contribute to the cumulative impact to cultural resources.

The Conservation Element of the current General Plan contains Goal CON-7, Policies CON-7.1 through 7.3 and Implementation Programs CON-IMP-7A through 7H, which aim to ensure that historically significant buildings, properties and archaeological sites are identified and preserved.

The Open Space and Conservation Element of the proposed FGPUZA contains goals and policies which will identify, preserve, and protect the City's cultural resources and ensure that potential resources are analyzed and protected.

Consistent with federal and state laws, the General Plans of the surrounding jurisdictions have similar goals and policies to protect cultural resources within their boundaries as well. Finally, state law requires the City and surrounding jurisdictions to notify Native American representatives if tribal human remains are found.

By adopting the General Plan Update goals and policies, following required laws and regulations, and continuation of the City's required CEQA review of all development projects created by the FGPUZA, the potential cumulative impacts to cultural resources will be minimized, and future development in the City of Garden Grove under the FGPUZA will not make a significant contribution to any cumulative regional impacts on cultural resources.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

4.3.5 - REFERENCES

California Health and Safety Code, Section 7050.5.

California Public Resources Code Section 5097.

California State Parks, 2021. California Register of Historical Resources. https://ohp.parks.ca.gov/ListedResources/ (website accessed April 20, 2021)

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4.4 – Energy

This section addresses energy impacts associated with implementation of the Focused General Plan Update and Zoning Amendments (FGPUZA). Energy resources are closely tied to impacts discussed in the Air Quality and Greenhouse Gas (GHG) sections of this document, Sections 4.1 and 4.6, respectively. Many of the data presented herein are derived from the air quality emissions modeling conducted for the Project. Refer to Appendix C for detailed air quality and GHG emissions estimates and information on energy usage (MIG, 2021).

4.4.1 – ENVIRONMENTAL SETTING

Energy is primarily categorized into three areas: electricity, natural gas, and fuels used for transportation. According to the U.S. Energy Information Administration (U.S. EIA), California is the most populous state in the United States (U.S.), representing 12 percent of the total national population, has the largest economy, and is second only to Texas in total energy consumption. However, California has one of the lowest per capita energy consumption levels in the U.S. This is a result of California's mild climate, extensive efforts to increase energy efficiency, and implementation of alternative technologies. California leads the nation in electricity generation from solar, geothermal, and biomass resources (USEIA, 2021a).

Electricity

In 2019, the California electric system generated 277,704 gigawatt-hours (GWh) of electricity. Approximately 72 percent of this generation occurred in-state (200,475 GWh), while approximately 28% was imported to the California system but generated outside the state (77,229 GWh) Non-carbon dioxide emitting electric generation sources (nuclear, large hydroelectric, and renewables like solar and wind) produced 57% of the total system electricity generation in 2018 (CEC, 2021). In 2019, Orange County consumed approximately 19,460 GWh of electricity, about 7% of the state's total electricity generated that year (CEC, 2021a).

Southern California Edison (SCE) is the utility provider in Garden Grove. In the 2017 fiscal year, SCE sold approximately 85,399 GWh of electricity to its end uses (i.e., within SCE's entire service area) (SCE, 2020a); approximately 48% of the electricity that SCE delivered to customers came from carbon-free resources, including solar energy (approximately 16%, wind energy (approximately 11%), and geothermal energy (approximately 6%) (SCE, 2020b).

Based on the CalEEMod emissions estimates prepared for the Project (see Section 4.1.1 and Appendix C), the existing development in the Planning Area is estimated to consume approximately 648 GWh of electricity per year. Based on a service population (SP)[1] of 220,567, the City's per capita energy consumption in 2020 was 2,936 kilowatt-hours (KWh) per year per service population (KWh/yr/SP).

[1] Service Population (SP) is defined as the sum of the number of residents and number of jobs supported by the FGPUZA (CAPCOA, 2010). As shown in Table 3-3 of the Project Description, the Planning Area currently supports approximately 174,801 residents and approximately 45,766 employees, which sums to a SP of 220,567.

Natural Gas

California accounts for less than one percent of total U.S. natural gas reserves and production; however, almost two-thirds of California households use natural gas for home heating (USEIA 2021a). In 2019, California consumed about 13,158 million therms of natural gas.[2] Orange County consumed approximately 623 million therms of natural gas in the same year, accounting for approximately 5% of statewide consumption (CEC, 2021).

The Southern California Gas Company (SoCalGas) provides natural gas service to the project site. SoCalGas is the principal distributor of natural gas in Southern California and provides natural gas for residential, commercial, and industrial markets. The annual natural gas sale to all markets in 2019 was approximately 7,498 million therms (CEC, 2021).

Based on the CalEEMod emissions estimates prepared for the project (see Section 4.1.1 and Appendix C), existing development in the Planning Area is estimated to consume approximately 1.54 million therms per year (or approximately 1,538,765 MMBTUs). Based on a service population of 220,567 this works out to approximately 70 therms/yr/SP (or approximately 7.0 MMBTUs/yr/SP).

Transportation

California's transportation sector consumed approximately 80.3 MMBTUs of energy per capita in 2018, which ranked 30th in the nation (USEIA, 2021b). Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet state-specific formulations required by CARB.

According to the Board of Equalization, statewide taxable sales figures indicate a total of 15,365 million gallons of gasoline and 3,086 million gallons of diesel fuel were sold in 2019 (CEC, 2021). Although exact estimates are not available by County, retail fuel outlet survey data indicates Orange County accounted for approximately 9.1% and 3.1% of total statewide gasoline and diesel sales, respectively, in 2019 (CEC, 2020).

Based on data contained in the "Garden Grove Housing Element Update Vehicle Miles Traveled (VMT) Analysis" prepared by Fehr and Peers for the proposed FGPUZA, the existing land uses in the Planning Area are estimated to travel approximately 6,599,660 miles on a daily basis (Fehr and Peers, 2021). Annualizing this daily VMT estimate using a multiplication factor of 347 days per year, the same factor used in CARB's 2000-2012 Greenhouse Gas Emissions Inventory, yields an existing annual VMT estimate of approximately 2,290,082,020.

4.4.2 – REGULATORY FRAMEWORK

Federal

Federal Energy Policy and Conservation Act. In 1975, Congress enacted the Federal Energy and Policy Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards.

[2] One therm is equal to approximately 100,000 British thermal units (BTUs) or 0.1 million BTUs (MMBTU).

Energy Independence and Security Act of 2007. On December 19, 2007, the Energy Independence and Security Act of 2007 was signed into law. In addition to setting increased Corporate Average Fuel Economy (CAFE) standards for motor vehicles, the act also includes the following provisions related to energy efficiency:

- Renewable fuel standards (RFS)
- Appliance and lighting efficiency standards
- Building energy efficiency

This federal legislation requires ever-increasing levels of renewable fuels to replace petroleum. The United States Environmental Protection Agency (U.S. EPA) is responsible for developing and implementing regulations to ensure transportation fuel sold in the United States contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel produces, and other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act of 2007 (EISA), the RFS program was expanded in several key ways that laid the foundation for achieving significant reductions of GHG emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the nation's renewable fuels sector. The updated program is referred to as RFS2 and includes the following:

- EISA expanded the RFS program to include diesel, in addition to gasoline;
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- EISA established new categories of renewable fuel and set separate volume requirements for each one; and
- EISA required the U.S. EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHG than the petroleum fuel it replaces (U.S. EPA 2015).

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Federal Vehicle Standards. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of carbon dioxide (CO_2) in model year 2025, on an average industry fleetwide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (U.S. EPA and NHTSA, 2016).

In August 2018, The USEPA and NHTSA released a notice of proposed rulemaking called Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule). This rule would modify the existing CAFE standards and tailpipe carbon dioxide emissions standards for passenger cars and light trucks and establish new standards covering model years 2021 through 2026. SAFE standards are expected to uphold model year 2020 standards through 2026 (NHTSA 2018).

In April 2020, the U.S. EPA and NHTSA issued the SAFE Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Final SAFE Rule) that relaxed federal greenhouse gas emissions and fuel economy standards. The Final SAFE Rule relaxed federal greenhouse gas emissions and Corporate Average Fuel Economy (CAFE) standards to increase in stringency at approximately 1.5 percent per year from model year (MY) 2020 levels over MYs 2021–2026. The previously established emission standards and related “augural” fuel economy standards would have achieved approximately 4 percent per year improvements through MY 2025. The Final SAFE Rule affects both upstream (production and delivery) and downstream (tailpipe exhaust) CO_2 emissions (CARB, 2020) and has been challenged by 23 states. The litigation is ongoing.

State

Title 24 Energy Standards. The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings in 1978 in response to a legislative mandate to reduce energy consumption in California. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficienct technologies and methods.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CalGreen Code). The purpose of the CalGreen Code is to “improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality.” The CalGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC).

CalGreen contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to, exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning of projects over 10,000 square feet. Two tiers of voluntary measures apply to nonresidential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, adopted May 9, 2018, went into effect on January 1, 2020 and improve upon existing standards, focusing on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and Indoor Air Quality (IAQ) requirements; and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 Building Energy Efficiency Standards are approximately 53 percent more efficient than the 2016 Title 24 Energy Standards for residential development and approximately 30 percent more efficient for non-residential development.

Executive Order B-30-15, Senate Bill 32, and Assembly Bill 197 (Statewide Interim GHG Targets). California EO B-30-15 (April 29, 2015) set an "interim" statewide emission target to reduce greenhouse emissions to 40 percent below 1990 levels by 2030, and directed state agencies with jurisdiction over GHG emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels. Specifically, the EO directed CARB to update the Scoping Plan to express this 2030 target in metric tons.

To achieve this ambitious target, Governor Brown identified five key goals for reducing GHG emissions in California through 2030:

- Increase the amount of renewable electricity provided state-wide to 50 percent.
- Double energy efficiency savings achieved in existing buildings and make heating fuels cleaner.
- Reduce petroleum use in cars and trucks by up to 50 percent.
- Reduce emissions of short-lived climate pollutants.
- Manage farms, rangelands, forests, and wetlands to increasingly store carbon.

AB 197 (September 8, 2016) and SB 32 (September 8, 2016) codified into statute the GHG emissions reduction targets of at least 40 percent below 1990 levels by 2030 as detailed in EO B-30-15. AB 197 also requires additional GHG emissions reporting that is broken down to sub-county levels and requires CARB to consider the social costs of emissions impacting disadvantaged communities.

Senate Bill 375 (Sustainable Communities and Climate Protection Act). In January 2009, California SB 375 went into effect known as the Sustainable Communities and Climate Protection Act. The objective of SB 375 is to better integrate regional planning of transportation, land use, and housing to reduce greenhouse gas emissions and other air pollutants. SB 375 tasks CARB to set GHG reduction targets for each of California's 18 regional Metropolitan Planning Organizations (MPOs). Each MPO is required to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP). The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs to be adopted in September 2010. The proposed reduction targets for the Southern California Association of Governments (SCAG) region were eight percent by year 2020 and 13 percent by year 2035. In September 2010 and February 2011, the eight percent and the 13 percent targets were adopted, respectively.

On April 4, 2012, SCAG's Regional Council adopted the *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy: Towards a Sustainable Future.* The 2012 RTP/SCS included a strong commitment to reduce emissions from transportation sources to comply with SB 375. The document contained a host of improvements to the region's multimodal transportation system. These improvements included closures of critical gaps in the network that hinder access to certain parts of the region, as well as the strategic expansion of the transportation system where there is room to grow in order to provide the region with greater mobility. The RTP/SCS demonstrated the region's ability to attain and exceed the GHG emission-reduction targets set forth by the CARB, and outlined a plan for integrating the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands.

SCAG's Regional Council adopted an update to the 2012 RTP/SCS on April 7, 2016, the *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (2016 RTP/SCS). The 2016 RTP/SCS expands upon the 2012 RTP/SCS's goal of balancing future mobility and housing needs with economic, environmental, and public health goals. Included in the 2016 RTP/SCS are 13 major initiatives primarily focused around preserving and maintaining the existing transportation system, expanding and improving mass transit (with a specific emphasis on passenger rail), decreasing reliance on vehicular modes of transportation through the expansion of pedestrian and bicycle infrastructure, and focusing new growth around transit. Through proactive land use planning and improvements to the transportation network, implementation of the 2016 RTP/SCS will result in an 8% reduction in GHG emissions per capita by 2020, an 18% reduction by 2035, and a 21% reduction by 2040 when compared with 2005 levels. These reductions meet or exceed the State's mandate, which require an 8% reduction by 2020 and 13% by 2035.

In March 2018, CARB established new regional GHG reduction targets for SCAG and other MPOs in the state (CARB, 2018). The new SCAG targets are an 8% reduction in per capita passenger vehicle GHG reductions by 2020 and a 19% reduction by 2035. On May 7, 2020, SCAG adopted "Connect SoCal", the 2020-2045 RTP/SCS, for federal transportation conformity purposes only. On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt Connect SoCal, and the addendum to the Connect SoCal Program Environmental Impact Report. Connect SoCal is designed to meet the regional GHG reduction targets for SCAG that were identified by CARB in 2018.

Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path toward a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies and between the people whose collaboration can improve the quality of life for Southern Californians. Connect SoCal contains 10 primary goals, as detailed below:

1. Encourage regional economic prosperity and global competitiveness.
2. Improve mobility, accessibility, reliability, and travel safety for people and goods.
3. Enhance the preservation, security, and resilience of the regional transportation system.
4. Increase person and goods movement and travel choices within the transportation system.
5. Reduce greenhouse gas emissions and improve air quality.
6. Support healthy and equitable communities.
7. Adapt to a changing climate and support an integrated regional development pattern and transportation network.
8. Leverage new transportation technologies and data-driven solutions that result in more efficient travel.
9. Encourage development of diverse housing types in areas that are supported by multiple transportation options.
10. Promote conservation of natural and agricultural lands and restoration of habitats.

Connect SoCal's "Core Vision" centers on maintaining and better managing the transportation network for moving people and goods, while expanding mobility choices by locating housing, jobs, and transit closer together and increasing investment in transit and complete streets. The Core Vision includes: Sustainable Development, System Preservation and Resilience, Demand and System Management, Transit Backbone, Complete Streets, and Goods Movement.

From 2016 to 2045, Connect SoCal anticipates approximately 64 percent of household and 74 percent of new jobs will occur in Priority Growth Areas (PGAs). Connect SoCal's PGA's – Job Centers, Transit Priority Areas (TPAs), High Quality Transit Areas (HQTAs),[3] Neighborhood Mobility Areas (NMAs), Livable Corridors, and Spheres of Influences (SOIs) – account for only 4 percent of the region's total land areas but will accommodate the aforementioned growth statistics. As shown in Figure 2 of the "Garden Grove Housing Element Update Vehicle Miles Traveled (VMT) Analysis" prepared for the FGPUZA by Fehr and Peers, most of the northern, eastern, and southern portions of the Planning Area are within TPAs. These TPAs within the City are also HQTAs

Renewables Portfolio Standard Program. In 2002, California established its Renewables Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent of retail sales by 2017. The *2003 Integrated Energy Policy Report* recommended accelerating that goal to 20 percent by 2010, and the *2004 Energy Report Update* further recommended increasing the target to 33 percent by 2020. The state's *Energy Action Plan* also supported this goal. In 2006 under Senate Bill 107, California's 20 percent by 2010 RPS goal was codified. The legislation required retail sellers of electricity to increase renewable energy purchases by at least one percent each year with a target of 20 percent renewables by 2010. Publicly owned utilities set their own RPS goals, recognizing the intent of the legislature to attain the 20 percent by 2010 target.

[3] HQTAs are corridor-focused PGAs within half-a-mile of an existing or planned fixed guideway transit stop or a bus transit corridor where buses pick passengers up at a frequency of every 15 minutes (or less) during peak commuting hours.

On November 17, 2008, Governor Schwarzenegger signed Executive Order S-14-08 requiring "[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed CARB, under its AB 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In October 2015, Governor Brown signed Senate Bill 350 to codify ambitious climate and clean energy goals. One key provision of SB 350 is for retail sellers and publicly owned utilities to procure "half of the state's electricity from renewable sources by 2030."

The State's RPS program was further strengthened by the passage of SB 100 in 2018. SB 100 revised the State's RPS Program to require retail sellers of electricity to serve 50% and 60% of the total kilowatt-hours sold to retail end-use customers from renewable energy sources by 2026 and 2030, respectively, and requires 100% of all electricity supplied come from renewable sources by 2045.

Executive Order B-55-18. On September 10, 2018, Governor Brown signed Executive Order B-55-18, to achieve carbon neutrality by moving California to 100% clean energy by 2045. This Executive Order also includes specific measures to reduce GHG emissions via clean transportation, energy efficient buildings, directing cap-and-trade funds to disadvantaged communities, and better management of the state's forest land.

Low Carbon Fuel Standard Regulation. CARB initially approved the LCFS regulation in 2009, identifying it as one of the nine discrete early action measures in the *2008 Scoping Plan* to reduce California's GHG emissions. The LCFS regulation defines a Carbon Intensity, or "CI," reduction target (or standard) for each year. The initial LCFS regulation required a reduction of at least 10 percent in the CI of California's transportation fuels by 2020. In 2018, CARB approved amendments to the LCFS regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030, adding new crediting opportunities to promote ZEV adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. Under the 2018 amendments, the LCFS regulation now requires a reduction of at least 20 percent in CI by 2030 and beyond.

Assembly Bill 1493, Advanced Clean Cars Program, EO B-48-18, and EO N-79-20. With the passage of AB 1493 (Pavley I) in 2002, California launched an innovative and pro-active approach for dealing with GHG emissions and climate change at the state level. AB 1493 requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks from 2009 through 2016. Although litigation was filed challenging these regulations and the U.S. EPA initially denied California's related request for a waiver, a waiver was granted. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 among light-duty vehicles.

In January 2012, CARB approved the Advanced Clean Cars (ACC) Program (formerly known as Pavley II) for model years 2017-2025. The components of the ACC program are the Low-Emission Vehicle (LEV) regulations and the ZEV regulation. The Program combines the control of smog, soot, and global warming gases with requirements for greater numbers of zero-emission vehicles into a single package of standards. By 2025, new automobiles under California's ACC Program will emit 34 percent less global warming gases and 75 percent less smog-forming emissions.

Executive Order B-48-18, issued by Governor Brown in January 2018, establishes a target to have five million ZEVs on the road in California by 2030. This Executive Order is supported by

the State's 2018 ZEV Action Plan Priorities Update, which expands upon the State's 2016 ZEV Action Plan. While the 2016 plan remains in effect, the 2018 update function as an addendum, highlighting the most important actions State agencies are taking in 2018 to implement the directives of Executive Order B-48-18.

EO N-79-20, issued by Governor Newsom in September 2020, set a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035. It also set a goal that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks. In addition, this EO set a goal to transition to 100 percent zero-emission off-road vehicles and equipment in the state by 2035 where feasible.

Local

City General Plan. The City's existing Air Quality Element and Conservation Element contain the following goals and policies related to energy:

- Goal AQ-2: Increased awareness and participation throughout the community in efforts to reduce air pollution and enhance air quality.
    - Policy AQ-2.2 Promote and encourage ride sharing activities within the community.
    - Policy AQ-2.3 Continue to improve existing sidewalks, bicycle trails, and parkways, and require sidewalk and bicycle trail improvements and parkways for new development or redevelopment projects.
    - Policy AQ-2.4: Relieve congestion on major arterials and reduce emissions.
    - AQ-IMP-2A: Establish additional park-and-ride facilities for work and non-work trip reductions.
    - AQ-IMP-2B: Require new development or redevelopment projects to provide pedestrian and bicycle trails access to nearby shopping and employment centers.
    - AQ-IMP-2D: Continue preventive maintenance and repair of City vehicles and equipment. Investigate the possibility of converting the existing vehicle fleet to clean fuel vehicles.
- Goal AQ-3: A diverse and energy efficient transportation system incorporating all feasible modes of transportation for the reduction of pollutants.
    - Policy AQ-3.1: Cooperate and participate with regional and local efforts to develop an efficient transportation system that reduces vehicle trips and vehicle miles traveled.
    - Policy AQ-3.2: Cooperate in efforts to expand and promote the use of bus, rail, and other forms of transit within the region in order to further reduce pollutants.
    - AQ-IMP-3A Continue to work closely with the Orange County Transit Authority (OCTA) and adjacent cities to establish an alternative transportation system along the OCTA right-of-way, such as the "Go Local" program on the right-of-way between Garden Grove and Santa Ana.
    - AQ-IMP-3B: Support public transit providers to increase funding for alternative modes of travel.
    - AQ-IMP-3C: Participate with public transit providers serving the City and Orange County in a cooperative program to further increase transit services.
    - AQ-IMP-3D: Develop the bicycle routes identified in the Parks, Recreation, and Open Space Element to support the use of bicycles as an alternate mode of transportation.

  - AQ-IMP-3E: Allow or encourage programs for priority parking or free parking in City parking lots for alternative fuel vehicles, especially zero and super ultra-low emission vehicles (ZEVs and SULEVs).
  - AQ-IMP-3F: Support the development of alternative fuel infrastructure that is publicly accessible.
- Goal AQ-4: Efficient development that promotes alternative modes of transportation, while ensuring that economic development goals are not sacrificed.
  - Policy AQ-4.1: Review site developments to ensure pedestrian safety and promote nonautomotive users.
  - Policy AQ-4.2: Encourage neighborhood parks and community centers near concentrations of residential areas and include pedestrian walkways and bicycle paths to encourage non-motorized travel.
  - Policy AQ-4.3: Encourage “walkable” neighborhoods with pedestrian walkways and bicycle paths in residential and other types of developments to encourage pedestrian rather than vehicular travel.
  - AQ-IMP-4A: Periodically review parking requirements and revise as necessary with market demands in relation to air quality guidelines.
  - AQ-IMP-4B: Investigate short- and long-term parking strategies at civic and private facilities.
  - AQ-IMP-4C: Require sidewalks through parking lots, bicycle racks near building entrances and other provisions for the safety and convenience of pedestrian and bicycle riders at all commercial, mixed use, and production facilities.
- Goal AQ-5: An improved balance of residential, commercial, industrial, recreational, and institutional uses to satisfy the needs of the social and economic segments of the population. Work towards clean air while still permitting reasonable planned growth.
  - Policy AQ-5.1: Support mixed use developments.
  - Policy AQ-5.2: Encourage infill development projects within urbanized areas that include jobs centers and transportation nodes.
  - Policy AQ-5.3: Promote mixed use development that allows the integration of retail, office, industrial, institutional, and residential uses for the purposes of reducing costs of infrastructure construction and maximizing the use of land.
  - Policy AQ-5.6: Increase residential and commercial densities around bus and/or rail transit stations, and along major arterial corridors.
  - Policy AQ-5.7: Preserve transportation corridors with the potential of high demand or of regional significance for future expansion to meet project demand.
  - AQ-IMP-5A: Encourage mixed use developments that combine residential and commercial or industrial business locations, thereby improving convenience and reducing trip generation.
- Goal AQ-6: Increased energy efficiency and conservation.
  - Policy AQ-6.1: Develop incentives and/or regulations regarding energy conservation requirements for private and public developments.
  - Policy AQ-6.2: Promote energy conservation and disseminate information throughout the community about energy conservation measures.
  - AQ-IMP-6A: Remove barriers for the use of solar energy for residential, commercial, industrial, or institutional uses.
  - AQ-IMP-6B: Research and secure financial assistance and other means to support, provide, and address energy efficient applications such as solar panels, cool roofs, wind energy, building modifications, etc.
  - AQ-IMP-6C: Continue to promote overall energy efficiency at local public facilities and continue preventative maintenance programs.

  - AQ-IMP-6D: Require new development to comply with the energy use guidelines in Title 24 of the California Administrative Code.
  - AQ-IMP-6E: Consider the development and implementation of a residential shade tree program that would provide trees to residents to reduce energy consumption.
  - AQ-IMP-6F: Consider the development and implementation of an urban forest plan to plant additional trees citywide.
  - AQ-IMP-6G: Develop incentives and/or regulations regarding energy conservation requirements for private and public developments.
  - AQ-IMP-6H: Monitor energy conservation or renewable energy generation programs proposed by the State or Federal government, such as California Energy Commission's New Solar Homes Partnership to determine this applicability to new development or redevelopment projects in the City.
- Goal CON-1: Garden Grove's water resources shall be conserved to ensure equitable amounts of clean water for all users.
  - Policy CON-1.2: Reduce the waste of potable water through efficient technologies, conservation efforts, and design and management practices, and by better matching the source and quality of water to the user's needs.
  - Policy CON-1.3: Promote water conservation in new development or redevelopment project design, construction, and operations.
  - Policy CON-1.6: Continue to educate citizens in water conservation and encourage its practice.
  - CON-IMP-1A: Assist the efforts of the water districts to reduce waste and increase reuse of water and wastewater through integrated planning of programs and complementary land use and building regulations.
  - CON-IMP-1B: Require on-site infiltration whenever feasible for new development or redevelopment projects.
  - CON-IMP-1C: Promote site appropriate, low-water-use, and drought tolerant native plants city-wide.
  - CON-IMP-1E: Develop a landscape palette for use by developers, homeowners, etc., that specifies drought tolerant planting and water saving irrigation systems.
  - CON-IMP-1F: Promote cost-saving conservation measures such as low-flow fixtures, waterless urinals, and other techniques that extend scarce supplies for all homes and businesses.
  - CON-IMP-1G: Assess and remove barriers to integrated water planning and sustainable water technologies for new development or redevelopment projects.
  - CON-IMP-1H: Provide incentives to new development or redevelopment projects that incorporate water efficient design and technologies.
  - CON-IMP-1I: Explore available funding opportunities for existing homeowners and business owners who would like to upgrade to water efficient technologies.
  - CON-IMP-1J: Encourage water conservation for new development or redevelopment projects through business rebates, or plumbing maintenance programs.
  - CON-IMP-1K: Encourage water agencies to conduct irrigation training workshops for homeowners and professionals.
- Goal CON-3: Reduce total waste diverted to treatment or disposal at the waste source and through re-use and recycling.
  - Policy CON-3.1: Update as appropriate and continue to implement the Source Reduction and Recycling Element (SRRE) for the City.

  - Policy CON-3.2: Investigate a Citywide recycling program and hazardous waste drop-offs to provide optimal recycling opportunities for homeowners and businesses.
  - Policy CON-3.3: Encourage business material reuse through waste exchange.
  - Policy CON-3.4: Encourage the use of materials with minimal impacts to the environment for new development or redevelopment projects in the City.
  - Policy CON-3.5: Continue to maintain and enhance the public education program developed by Garden Grove Sanitation District that addresses waste management and proper household waste sorting and handling.
  - CON-IMP-3A: Establish targets for materials reduction.
  - CON-IMP-3B: Encourage materials recycling during renovation or demolition of old buildings.
  - CON-IMP-3C: Encourage participation in the CalMAX program, which is a free service offered by the Integrated Waste Management Board. The program conserves energy, resources, and landfill space by helping businesses and organizations find alternatives to the disposal of valuable materials or wastes through waste exchange.
  - CON-IMP-3D: Encourage the use of recycled or rapidly renewable materials, and building reuse and renovation over new construction, where feasible.
  - CON-IMP-3E: Research funding opportunities for new development or redevelopment projects that incorporate building reuse and use of recycled materials.
- Goal CON-4: Reduce per-capita non-renewable energy waste and city-wide peak electricity demand through energy efficiency and conservation.
  - Policy CON-4.1: Integrate energy efficiency and conservation requirements that exceed State standards into the development review and building permit processes.
  - Policy CON-4.2: Create incentives such as expedited permit processing, technical assistance, and other methods that will encourage energy efficiency technology and practices.
  - Policy CON-4.3: Integrate energy efficiency and conservation technologies and practices into new City facilities and, where feasible, existing buildings as well as City functions.
  - Policy CON-4.4: Provide public information, marketing, and education to support energy efficiency and energy conservation.
  - CON-IMP-4A: Adopt Energy Efficiency Standards for new and remodeled buildings that exceed Title 24 building standards.
  - CON-IMP-4B: Create a tree-planting program that provides for the planting of appropriate, water efficient trees in residential, commercial, and civic areas that will reduce city-wide energy needs the heat-island effect through natural cooling.
- Goal CON-5: Reduce dependency on non-renewable energy resources through the use of local and imported alternative energy sources.
  - Policy CON-5.1: Integrate technically and financially feasible renewable energy resources requirements into development and building standards through adopted Renewable Energy Building Standards.
  - Policy CON-5.2: Promote renewable energy use through regulations, incentives, and available funding opportunities.
  - Policy CON-5.3: Create opportunities for the purchase and development of local renewable energy resources.
  - CON-IMP-5A: Work with local electric providers to allow purchase and sale of renewable energy.

  - CON-IMP-5B: Continue to identify and remove regulatory or procedural barriers to producing renewable energy in building and development codes, design guidelines, and zoning ordinances.
  - CON-IMP-5C: Work with related agencies such as fire, water, and health that may impact the use of alternative technologies.
  - CON-IMP-5D: Develop protocols for alternative energy storage such as biodiesel, hydrogen, and/or compressed air.
  - CON-IMP-5E: Continue to allow passive or active solar design elements and systems and protection from shading by neighboring structures and trees.
  - CON-IMP-5F: Ensure all new and remodeled City facilities incorporate Renewable Energy Building Standards into the facilities.
  - CON-IMP-5G: Encourage renewable technologies through streamlined planning and development rules, codes, and processes.
  - CON-IMP-5H: Provide incentives such as expedited processing for facilities that use renewable sources for energy production.
  - CON-IMP-5I: Work with State and federal agencies to inform the public of, and possibly secure tax exemptions, tax rebates, or other financial incentives for new facilities.
  - CON-IMP-5J: Develop and utilize renewable energy and clean generation technologies such as solar, wind, biogas, tidal, cogeneration, and fuel cells to power City facilities using tax-free low-interest loans and other available financial options.
- Goal CON-6: Green Building programs achieve water and energy efficiency, minimize raw resource consumption, and reduce the amount of waste placed in landfills while improving human health and quality of life in the City.
  - Policy CON-6.1: The City shall promote improvement in the health and productivity of new buildings, by understanding and training building personnel in new construction practices and the use of alternative or recycled building materials.
  - Policy CON-6.2: Provide information, marketing, training, and education to the public to support green building activities.
  - CON-IMP-6A: Seek out educational or other training opportunities for planning and building personnel to learn new construction practices, including the use of alternative building materials.
  - CON-IMP-6B: Develop educational materials that can be made available to the public regarding green building activities, new construction practices, and/or alternative building materials:

4.4.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the Project could result in a significant impact if it would:

A. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

B. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

C. Cause substantial adverse cumulative impacts with respect to energy?

4.4.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related energy impacts.

Energy Consumption

Impact ENG-1 – Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption or energy resources, during project construction or operation?

Analysis of Impacts

Implementation of the Project would increase the demand for electricity and natural gas within the Planning Area and gasoline consumption in the region during construction and operation of new land use developments.

Electricity

Construction Use. Temporary electric power would be required at various construction sites throughout the city as growth occurs under the Project. Electricity would be consumed by lighting and electronic equipment (e.g., computers) located in trailers used by construction crews, and by small, off-road equipment (e.g., compressors) used during development activities. However, the electricity used for such activities would be temporary and would have a negligible contribution to the overall energy consumption in the City.

Operational Use. Development facilitated under the FGPUZA would require electricity for multiple uses, including, but not limited to: building heating and cooling, lighting, appliance use (e.g., washer, dryer, microwave, etc.), and other electronics (e.g., televisions).

As described in Section 4.1.1, CalEEMod was used to estimate project emissions from energy uses. Electricity generation was estimated in CalEEMod by adjusting the CalEEMod default values to reflect compliance with the 2013 Title 24 Building Code efficiencies for 2020, and a blend of 2013, 2016, and 2019 Title 24 Building Code efficiencies for FGPUZA growth in 2040.[4] Table 4.4-1 summarizes changes in electricity consumption that would occur over the next approximately 20 years of growth envisioned by the FGPUZA.

[4] While it is possible that the existing (2020) land uses could be built to an efficiency that is less than what was required by the 2013 Title 24 building energy efficiency standard, the use of the 2013 Title 24 building energy standards provide a conservative assessment of potential impacts. Had the existing energy consumption estimates been associated with an earlier energy code standard (e.g., 2008), the energy consumption reductions attributable to new development occurring under implementation of the FGPUZA would appear greater (because the turnover of older land uses would accommodate more, energy efficient development, which would generate less emissions on average than older land uses). The 2013 Title 24 building energy efficiency standards for 2020 is reasonable and appropriate, because it reflects an energy efficiency of an older building stock that is most likely overstated. The blend (2013, 2016, and 2019) of energy code standards for 2040 is reflective of land use turnover that would occur under implementation of the proposed FGPUZA. Land uses that are anticipated to see little to no change are assumed to remain built to the 2013 energy code standards, while land uses that anticipated to see more change are anticipated to have energy improvements, because the new structures would be more energy efficient.

Table 4.4-1
Estimated Operational Change in Electricity Consumption (2020 vs. 2040)

Metric	Electricity Consumption (MWh)		
	2020	2040	Change
Total Electricity Consumption	647,597	694,240	+46,643
Service Population (SP)	220,567	287,988	+67,421
Electricity Consumption Efficiency (MWh/yr/SP)	2.94	2.41	-0.53
Source: MIG, 2021 (see Appendix D).			

As shown in Table 4.4-1, electricity consumption in the Planning Area in 2040 is expected to increase by approximately 46,643 MWh when compared to 2020 conditions; however, on an efficiency basis, electricity consumption would decrease by approximately 18% from 2.94 MWh/yr/SP to 2.41 GW/yr/SP. Although growth would be occurring within the Planning Area under the FGPUZA, new development and land use turn over would be required to comply with statewide mandatory energy requirements outlined in Title 24, Part 6, of the California Code of Regulations (the CALGreen Code), which would decrease estimated electricity consumption in new and/or retrofitted structures. For this reason, the electrical energy that would be consumed by the Project is not considered unnecessary, inefficient, or wasteful. It is noted the energy and consumption estimates provided above do not consider any energy savings that would be realized with the implementation of policies in the FGPUZA that have been incorporated with the intent of reducing GHG emissions (see Section 4.6) and the incorporation of Mitigation Measures AQ-2A, AQ-2B, and AQ_2C, which reduce construction and operational emissions (see Section 4.1).

Natural Gas

Construction Use. Substantial natural gas consumption is not anticipated to occur during construction activities implementing the FGPUZA. Fuels used for construction would generally consist of diesel and gasoline, which are discussed in the next subsection. Potential natural gas use during construction activities associated with Project growth would not substantially contribute to overall energy consumption in the City, and would not be unnecessary, inefficient, or wasteful.

Operational Use. Natural gas consumption by development associated with the FGPUZA would be required for various purposes, such as space and water heating in buildings. CalEEMod was used to estimate natural gas consumption associated with FGPUZA implementation. Table 4-6.2 summarizes estimated changes in natural gas consumption over the next approximately 20 years of growth envisioned by the FGPUZA.

Table 4.4-2
Estimated Operational Change in Natural Gas Consumption (2020 vs. 2040)

Metric	Natural Gas Consumption (MMBtu)		
	2020	2040	Change
Total Natural Gas Consumption	1,538,765	1,806,543	267,778
Service Population (SP)	220,567	287,988	67,421
Natural Gas Consumption Efficiency (kBtu/yr/SP)	6.98	6.27	-0.70
Source: MIG, 2021 (See Appendix D)			

Based on the demand calculations shown in Table 4.4-2, which assume the average energy efficiency of structures in the City would meet a blend of 2013, 2016, and 2019 Title 24 CALGreen efficiency requirements by 2040, natural gas consumption in the Planning Area in 2040 is expected to increase by approximately 267,778 MMBtu as compared to 2020 conditions. On an efficiency basis, natural gas consumption is estimated to decrease by approximately 10% from 6.98 MMBTU/yr/SP to 6.27 MMBTU/yr/SP. This indicates that, although overall natural gas consumption is anticipated to increase under implementation of the FGPUZA, the manner in which natural gas consumption would occur would be more efficient.

Although growth would occur within the Planning Area over the next approximately 20 years, new development and land use turnover would be required to comply with statewide mandatory energy requirements outlined in Title 24, Part 6, of the California Code of Regulations (the CALGreen Code), which would decrease estimated natural gas consumption in new and/or retrofitted structures. For these reasons, natural gas consumption by proposed land uses in the FGPUZA is not considered to be unnecessary, inefficient, or wasteful. It is noted the energy consumption estimates provided above do not consider any energy savings that would be realized with the implementation of policies in the FGPUZA that have been incorporated with the intent of reducing GHG emissions (see Section 4.6) and the incorporation of Mitigation Measures AQ-2A, AQ-2B, and AQ_2C, which reduce construction and operational emissions (see Section 4.1).

Diesel and Gasoline Fuel

Construction Use. Diesel and gasoline fuels, also referred to as petroleum in this subsection, would be consumed during construction activities as the City grows under the Project. Fuel use by construction equipment would be the primary energy resource consumed during development activities, and VMT associated with the transportation of construction materials (e.g., deliveries) and worker trips would also result in petroleum consumption. Whereas on-site, heavy-duty construction equipment and delivery trucks would predominantly use diesel fuel, construction workers would generally rely on gasoline-powered vehicles to travel to and from construction sites. State regulations such as LCFS would reduce the carbon intensity of transportation-related fuels, and all construction projects would be required to comply with CARB's Airborne Toxic Control Measures, which restrict heavy-duty diesel vehicle idling to five minutes. Since petroleum use during construction would be temporary at each location and required to conduct development activities, it would not be unnecessary, wasteful, or inefficient.

Operational Use. Vehicle fuel consumption associated with FGPUZA implementation would occur over the next approximately 20 years and would primarily be attributable to people traveling to or from the City for work, shopping, school, or other reasons. The amount of diesel

and gasoline vehicle fuel consumption in the City under existing 2020 and forecasted 2040 growth conditions is shown in Table 4.4-3.

Table 4.4-3
Estimated Vehicle Fuel Consumption Changes (2020 vs. 2040)

Metric	Vehicle Fuel Consumption (Gallons)		
	2020	2040	Change
Total Diesel Consumption	12,367,036	12,488,408	121,372
Total Gasoline Consumption	94,432,240	86,721,208	-7,711,032
Total Petroleum Consumption	106,799,276	99,209,616	-7,589,659
Service Population	220,567	287,988	67,421
Petroleum Consumption Efficiency (gal/yr/SP)	484	344	-140
Source: MIG, 2021 (See Appendix D)			

As shown in Table 4.4-3, diesel and gasoline fuel consumption in 2040 with the Project is anticipated to be approximately 12,488,408 and 86,721,208 gallons, respectively. Compared to 2020, this represents approximately 121,372 more gallons of diesel fuel consumed, annually, and approximately 7,711,032 fewer gallons of gasoline fuel consumed, annually.[5] On a service population basis, overall petroleum consumption is expected to decrease by approximately 29%, from 484 gallons of fuel/yr/SP in 2020 to 344 gallons of fuel/yr/SP in 2040. Although VMT is anticipated to increase slightly over the next approximately 20 years, VMT per SP is estimated to decrease during the same time period and fuel consumption would generally decrease as vehicle fuel efficiency increases to meet state GHG reduction goals.[6,7]

There are numerous regulations in place that require and encourage fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and ZEVs in California. In addition, per the requirements identified in SB 375, CARB adopted a regional goal for the SCAG or reducing per-capita GHG emissions from 2005 levels by 8% by 2020 and 19% by 2035 for light-duty passenger vehicles. As such, actual fuel consumption in the City of Garden Grove could be lower in 2040 than estimated in Table 4.4-3.

Vehicle fuel use in the Planning Area is generally anticipated to decrease over the next approximately 20 years on a per capita basis due to land use decisions made by the City, increased access to available modes of transportation, and because of improvements to fuel

[5] These estimates are based on average fuel economy in Orange County during the 2040 calendar year.

[6] EIR fuel consumption estimates do not take into account EO N-79-20, issued by Governor Newsom in September 2020, which set a goal that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035.

[7] As shown in Table 2 of the Garden Grove Housing Element Update Vehicle Miles Traveled (VMT) Analysis Technical Memorandum prepared for the Project by Fehr and Peers, the FGPUZA would decrease the VMT per SP from 22.56 under Existing Conditions to 21.68 under Cumulative Plus Project conditions (Fehr and Peers, 2021). This represents an approximately 4% decrease in VMT per SP.

efficiency standards enacted at the state-level.[8] In addition, vehicle fuel consumption in the City would be a small fraction of statewide use. As such, petroleum consumption associated with implementation of the General Plan Update would not be considered unnecessary, inefficient, or wasteful. It is noted the fuel consumption estimates provided above do not consider any fuel savings that would be realized with the implementation of policies in the FGPUZA that have been incorporated with the intent of reducing GHG emissions (see Section 4.6) and the incorporation of Mitigation Measures AQ-2A, AQ-2B, and AQ_2C, which reduce construction and operational emissions (see Section 4.1).

Level of Significance Before Mitigation

As described above, the consumption of electricity, natural gas, and vehicle fuel resources would be necessary to accommodate the planned level of growth envisioned by the Project. The Project supports redevelopment of existing land uses with newer, more efficient development that would reduce energy consumption compared to existing conditions. In addition, the Project supports higher density, mixed use development that reduces VMT and fuel consumption as compared to lower intensity development, which generally does not provide the same accessibility to complementing land uses as mixed-use development. For example, mixed-use developments may have a restaurant or grocery store below residential units, which would reduce vehicle trips when compared to a stand-alone residential development that is further away from a restaurant or grocery store. As shown above, the use of energy resources in the Planning Area would become substantially more efficient over time with the change in land uses envisioned by the Project and the application of more stringent regulations that reduce energy usage. For these reasons, the Project would not result in the unnecessary, inefficient, or wasteful use of energy resources. It is noted the energy and fuel consumption estimates provided above do not consider any energy savings that would be realized with the implementation of policies in the FGPUZA that have been incorporated with the intent of reducing GHG emissions (see Section 4.6) and the incorporation of Mitigation Measures AQ-2A, AQ-2B, and AQ_2C, which reduce construction and operational emissions (see Section 4.1). This impact would be less than significant.

Mitigation Measures

N/A

Level of Significance After Mitigation

N/A

Renewable Energy

Impact ENG-2 – Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

[8] As described in the Garden Grove Housing Element Update Vehicle Miles Traveled (VMT) Analysis Technical Memorandum prepared for the Project by Fehr and Peers, “the VMT per service population is forecast to decrease… indicating that the population is expected to travel in a more efficient manner. The improvement in travel efficiency is the result of people making fewer trips and traveling shorter distances due to increase availability of active modes of transportation and better accessibility to destinations by all modes of transportation” (Fehr and Peers, 2021).

Analysis of Impacts

The Project would not conflict with nor obstruct state or local plans adopted for the purposes of increasing renewable energy or energy efficiency. In addition, as described in Section 4.4.2, the proposed FGPUZA incorporates various policies that are directed toward improving renewable energy generation and energy efficiency. For example, Policy CON-4.1 calls for the integration of energy efficiency and conservation requirements that exceed State standards into the development review and building permit processes. Implementation Action CON-IMP-5F also stipulates that all new and remodeled City facilities incorporate renewable energy building standards into the facilities. For a full listing of FGPUZA policies that related to energy efficiency, please see Section 4.4.2 and Section 4.6.2.

The Title 24 Building Code contains energy efficiency standards for residential and non-residential buildings. These standards address electricity and natural gas efficiency in lighting, water, heating, and air conditioning, as well as the effects of the building envelope (e.g., windows, doors, walls and rooves, etc.) on energy consumption. The latest update to these standards, codified in the 2019 Title 24 Building Code, requires the installation of solar panels on new residential development under three stories. The City would enforce the 2019 Title 24 Building Code during design review and project approval processes. Other state plans, such as increasing the RPS portfolio, and increasing fuel efficiency and the number of electric vehicles on the road, would be implemented at the state level. The Project would not impede the implementation of any of these actions.

Level of Significance Before Mitigation

Since the Project would comply with applicable State standards and not impede any plan related to increasing renewable energy or energy efficiency, this impact would be less than significant.

Mitigation Measures

N/A

Level of Significance After Mitigation

N/A

Cumulative Impacts

Would the project cause substantial adverse cumulative impacts with respect to energy?

Analysis of Impacts

The analysis presented in Impact ENG-1 and ENG-2 is cumulative in nature. As described in the analyses, the Project would not result in the unnecessary, inefficient, or wasteful use of energy resources nor would it conflict with or obstruct a state or local plan for increasing renewable energy or energy efficiency. It is noted the energy and fuel consumption estimates provided above do not consider any energy savings that would be realized with the implementation of policies in the FGPUZA that have been incorporated with the intent of reducing GHG emissions (see Section 4.6) and the incorporation of Mitigation Measures AQ-2A, AQ-2B, and AQ_2C, which reduce construction and operational emissions (see Section 4.1).

Level of Significance Before Mitigation

Project implementation would not result in a substantial adverse cumulative impact with respect to energy. This impact would be less than significant.

Mitigation Measures

N/A

Level of Significance After Mitigation

N/A

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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
AB	Assembly Bill
ACC	Advanced Clean Cars
Btu	British Thermal Unit
CalEEMod	California Emissions Estimator Model
Cal-EPA	California Environmental Protection Agency
CalGreen Code	California Green Building Standards Code
CARB	California Air Resources Board
CAFE	Corporate Average Fuel Economy
CBSC	California Building Standards Commission
CCR	California Code of Regulations
CEC	California Energy Commission

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
CEQA	California Environmental Quality Act
CI	Carbon Intensity
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
EISA	Energy Independency and Security Act
EO	Executive Order
GHG	Greenhouse Gas
GPU	General Plan Update
GWh	Gigawatt-hours
IAQ	Indoor Air Quality
HQTA	High Quality Transit Area
KWh	Kilowatt-hours
LCFS	Low Carbon Fuel Standard
LEV	Low-Emissions Vehicle
MMBTUs	Million British Thermal Units
MPO	Metropolitan Planning Organization
NHTSA	National Highway Safety Administration
NMA	Neighborhood Mobility Area
PGA	Priority Growth Area
PV	Photovoltaic
RFS	Renewable Fuel Standards
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SAFE	Safer Affordable Fuel-Efficient Vehicles Rule
SB	Senate Bill
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SoCalGas	Southern California Gas Company
SOI	Sphere of Influence
SP	Service Population
TIA	Traffic Impact Assessment
TPA	Transit Priority Area
U.S.	United States
USEIA	United State Energy Information Administration

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
Yr	Year
ZEV	Zero Emission Vehicle

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4.5 – Geology and Soils

This EIR chapter addresses geology and soils impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter will analyze potential substantial adverse effects from earthquake fault rupture, strong seismic ground shaking, seismic-related ground failure including liquefaction, landslides, soil erosion or loss of topsoil or unstable soil, direct or indirect impacts from being located on expansive soil, soils incapable of adequately supporting the use of septic tanks, and direct or indirect impacts to paleontological resources and unique geological features.

4.5.1 – ENVIRONMENTAL SETTING

Seismic Activity

Southern California is well known for its many earthquake faults and high level of seismic activity. The region straddles two tectonic plates, the North American Plate and the Pacific Plate. Movement along this boundary has resulted in many earthquakes from the region's numerous faults. Although the City of Garden Grove is located in the seismically active Southern California region, no Alquist-Priolo Earthquake Fault Zones have been identified in the City (DOC, 2019). Although not mapped as an Alquist-Priolo Fault Zone, the closest potentially active Quaternary fault is the Los Alamitos fault, approximately 1.6 miles to the west of the City. The closest Alquist-Priolo Fault Zone is the Newport-Inglewood-Rose-Canyon fault, 3.2 miles southwest of the City. The San Andreas Fault, approximately 42 miles away at its closest point to the City, has the highest probability of generating a maximum credible earthquake in California. As discussed below, seismic threats of particular concern in Garden Grove are liquefaction and seismically inducted settlement of underlying soils.

Ground Shaking

Ground shaking is the movement of the earth's surface in response to a seismic event and, in general, is the primary cause for the collapse of buildings and other structures, injury, and loss of life from earthquakes. The intensity of the ground shaking is a function of the magnitude of the earthquake, distance from the fault movement, the characteristics of the surface and subsurface, geology, and the different types of buildings[1] a community may contain. Because of the Planning Area's proximity to several previously-identified active faults and because of the prevalent, motion-susceptible alluvial soils that underlie the community, the Planning Area will most likely experience earthquake-related ground shaking in the future. Structural vulnerabilities in older buildings that are less earthquake resistant are most likely to contribute to the largest source of injury and economic loss as a result of an earthquake. This ground shaking could result in local seismic hazards such as landslides, liquefaction, settlement/expansive soils, subsidence, and soil erosion within the Planning Area. These hazards are discussed in detail below.

Liquefaction and Landslides and

Liquefaction and Landslides represent two common seismically-induced hazards. Liquefaction is a phenomenon that occurs when water-laden, loose, and cohesionless soils are subject to

[1] Residential buildings range from wood frame single family detached units to mixed-use or multifamily multi-story buildings, commercial buildings, tilt-up concrete light industrial warehouses of different heights, and steel frame multi-story office buildings.

intense seismic shaking and form a quicksand- or fluid-like soil condition below the ground surface. As a result, structural damage may occur as building foundations lose ground support and fail. Liquefaction typically occurs in areas where the groundwater is less than 30 feet from the surface and where the soils are composed of predominantly poorly consolidated fine sand. Soil liquefaction is a seismically-induced form of ground failure, which has been a major cause of earthquake damage in Southern California. A majority of the Planning Area is subject to liquefaction, as shown in Exhibit 4.5-1 (Liquefaction Zones).

A landslide is the downhill movement of masses of earth material under the force of gravity. The factors contributing to landslide potential are steep slopes, unstable terrain, and proximity to earthquake faults. Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. Given that the area is relatively flat and there are no hillsides or cliffs in the vicinity, seismically-induced slope failure and landslide are not considered threats of particular concern in the Planning Area.

Settlement/Expansive Soils

Settlement of the ground may occur in poorly consolidated or particular soils or improperly compacted fills during earthquake shaking, though the problem could also arise during heavy rains. As a consequence, structural damage may take place. Expansive soils tend to swell with soil moisture increase and shrink during soil moisture decrease. The volume changes that the soils undergo in this repetitive process can stress and damage slabs and foundations if precautionary measures are not taken. Differential settlement can result from expansive soils if a foundation is constructed on two materials having different settling/expansion characteristics, such as rock and soil. With respect to dynamic settlement, the Planning Area includes areas of moderate and high dynamic settlement potential as defined in Table 18-1-B of the Uniform Building Code. As shown in Exhibit 4.5-2 (Dynamic Settlement), the areas of moderate potential are located in the northwest and eastern portions of the Planning Area, while the areas of high potential are located in the central portion of the Planning Area, generally near Euclid Street.

Subsidence

Subsidence is the lowering of the land surface caused by a variety of man-made and natural causes. Subsidence can be caused by the natural compaction of soil due to passage of time, ground shaking due to strong vibrations by earthquakes, and by underground erosion from rapid groundwater flow or excessive groundwater withdrawal. Subsidence, in the form of compaction of an aquifer, is one of the consequences of excessive groundwater withdrawal. The water itself supports part of the load of the overlying materials and keeps the grains of the aquifer loosely packed. When water is removed from the intergranular spaces, the weight of the overlying rocks packs the grains of soil together more closely. This cannot only permanently reduce the capacity of the aquifer, but also cause serious lowering, or subsidence, of the ground overlying the aquifer. Areas most vulnerable to this type of subsidence are those underlain by loose, compressible clay-rich soils, in an area with excessive groundwater withdrawal and general lowering of the water table. Currently, over half of the City's water supply comes from local groundwater wells accessing the Santa Ana River groundwater basin; therefore, subsidence relating to excessive groundwater withdrawal is a potential hazard (Garden Grove, 2008a), especially in areas with compressible clay-rich soils.

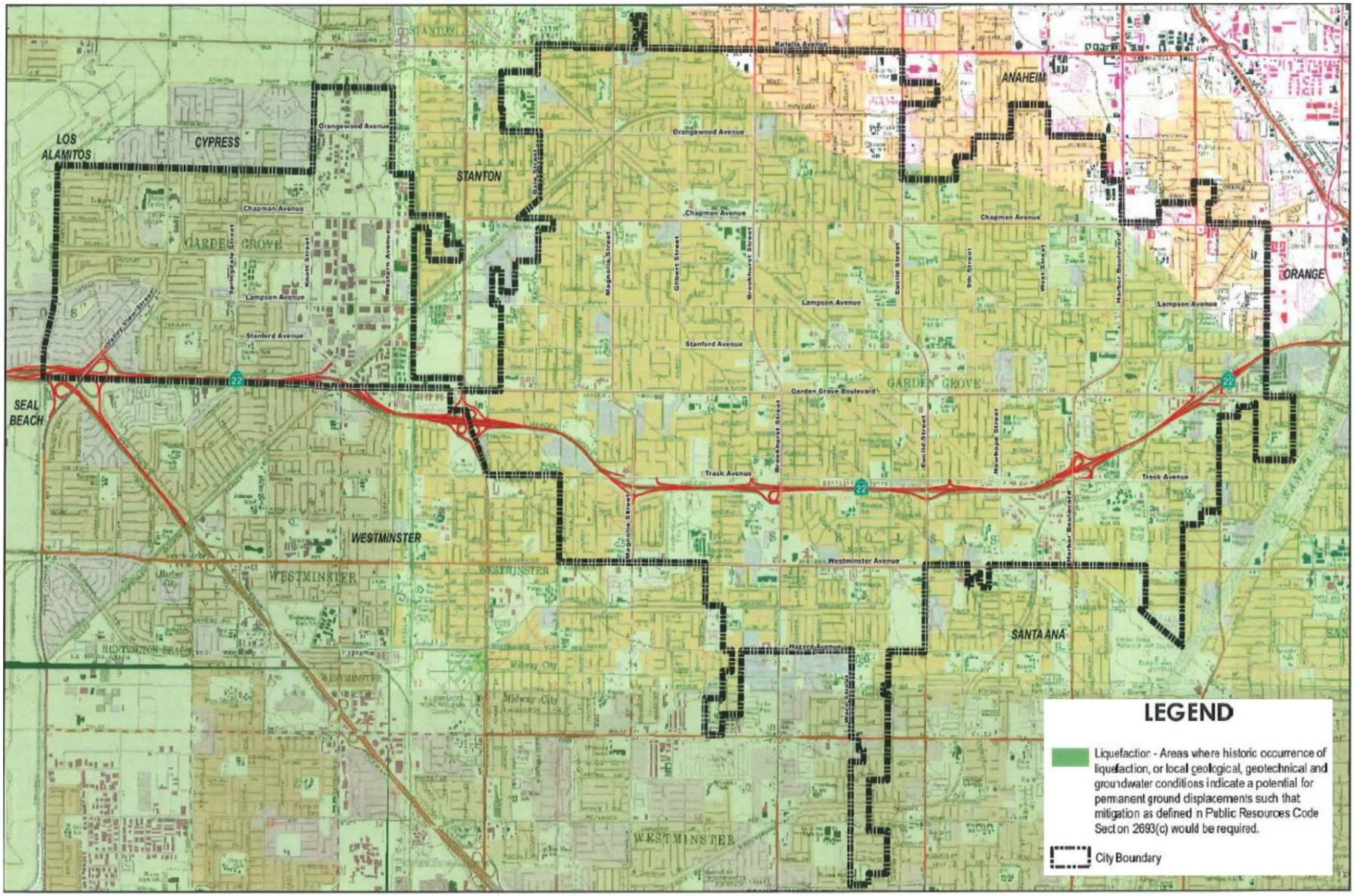

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Exhibit 4.5-1 Liquefaction Zones

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Garden Grove, California

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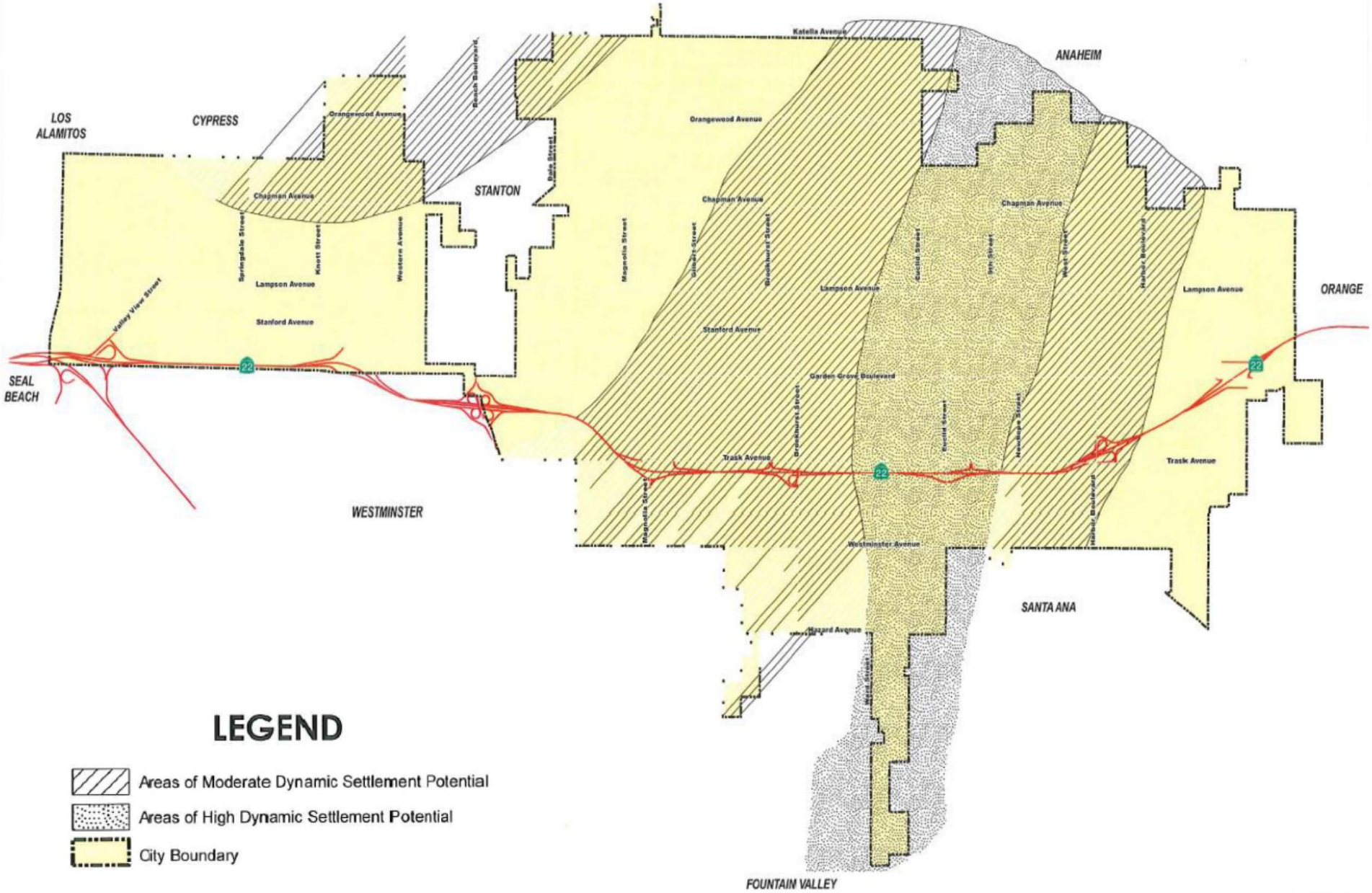

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Exhibit 4.5-2 Dynamic Settlement

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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Soil Erosion

Erosion is a natural process that occurs over time and can be caused by either wind or water moving over soils. The natural erosion process is an important factor in building up fertile valley soils. However, soil erosion can become a problem when human activities accelerate the rate at which soils are removed. Non-point sources including impervious surfaces, unsound farming practices, over-grazing, construction activities, and road construction (particularly unpaved roads) can all accelerate the rate at which soils are removed from hillsides. Point sources such as industrial wastewater discharges, mining activities, wastewater treatment plants, commercial and residential land uses, and agricultural operations can affect erosion rates through increased storm water velocity, disturbance of natural drainage patterns, and water discharges. Soil erosion can leave silt-choked streams, gullied hillsides, and damaged farmland. Erosion may be a concern in the Planning Area, especially during initial grading stages of future development under the proposed Project, as it can damage onsite and offsite improvements by removing surficial topsoil materials.

Paleontological Resources

Paleontology is a branch of geology that studies prehistoric life forms mainly plant and animal fossils. Paleontological resources represent a limited, non-renewable, and impact-sensitive scientific and educational resource. As defined in this section, paleontological resources are the fossilized remains or traces of multi-cellular invertebrate and vertebrate animals and multi-cellular plants, including their imprints, from a previous geologic period. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities. Paleontological resources preserve an aspect of Southern California's scientific prehistory that is important in understanding the development of the region as a whole. The difficulty in protecting these resources is not knowing their exact location until sometimes irreversible damage occurs. Protection of these sites can be achieved by estimating the probability of finding such resources in the project area, looking for formations in which they occur, and taking precautions, such as construction monitoring in areas with equivalent or similar formations, to avoid damaging sites. However, there are no known such sites within the Planning Area that have been identified as containing paleontological resources.

4.5.2 – REGULATORY FRAMEWORK

Federal

National Earthquake Hazards Reduction Program. Established by Congress in 1977, the National Earthquake Hazards Reduction Program (NEHRP) leads the federal government's efforts to reduce the fatalities, injuries, and property losses caused by earthquakes. The four basic NEHRP goals are:

- Develop effective practices and policies for earthquake loss reduction and accelerate their implementation.
- Improve techniques for reducing earthquake vulnerabilities of facilities and systems.
- Improve earthquake hazards identification and risk assessment methods, and their use.

- Improve the understanding of earthquakes and their effects.

In its initial NEHRP authorization, and in subsequent reauthorizations, Congress has recognized that several key federal agencies can contribute to earthquake mitigation efforts.

Federal Antiquities Act of 1906. Protects paleontological resources on federal lands under Subsection 8.16.2.

State

Alquist-Priolo Earthquake Fault Zoning Act. The Alquist-Priolo Special Studies Zones Act was signed into law in 1972 (in 1994 it was renamed the Alquist Priolo Earthquake Fault Zoning Act.) The primary purpose of the Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The Act requires setbacks from State-designated active faults, and well-defined minor faults, from affecting overlying or adjacent properties. The act dictates that cities and geologists are to delineate “Earthquake Fault Zones” along faults that are “sufficiently active” and “well defined.” The boundary of an “Earthquake Fault Zone” is generally about 500 feet along the predicted fault expression or trace. Local jurisdictions typically withhold development permits for sites within an Earthquake Fault Zone until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting.

Seismic Hazard Mapping Act. The Alquist-Priolo Earthquake Fault Zoning Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. In 1990 the State passed the Seismic Hazards Mapping Act (SHMA), which addresses non-surface fault rupture earthquake hazards, including strong ground shaking, liquefaction and seismically induced landslides. The California Geological Survey (CGS) is the principal State agency charged with implementing the Act. Pursuant to the SHMA, the CGS is directed to provide local governments with seismic hazard zone maps that identify areas susceptible to liquefaction, earthquake-induced landslides and other ground failures. The goal is to minimize loss of life and property by identifying and mitigating seismic hazards. The seismic hazard zones delineated by the CGS are referred to as “zones of required investigation.” Site-specific geological hazard investigations are required by the SHMA when construction projects fall within these areas.

Natural Hazards Disclosure Act. The Natural Hazards Disclosure Act requires that sellers of real property and their agents provide prospective buyers with a "Natural Hazard Disclosure Statement" when the property being sold lies within one or more State-mapped hazard areas.

California Building Code. The state regulations protecting structures from seismic hazards are contained in the California Code of Regulations, Title 24 (the California Building Code (CBC)), which is updated on a triennial basis. These regulations apply to public and private buildings in the State. Provisions of the CBC address (among other topics) fire safety, access for disabled persons, and seismic-resistant construction design.

California Environmental Quality Act (CEQA). California Environmental Quality Act (CEQA) has a single directive on paleontology in Appendix G – the Environmental Checklist Form, in which it asks whether the project would "directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." Requires that impacts to paleontological resources be assessed and mitigated on all discretionary projects, public and private under Subsection 8.16.2.2

California Public Resources Code Chapter 1.7, Section 5097.5 (Stats. 1965, c. 1136, p. 2792). Defines any unauthorized disturbance or removal of a fossil site or fossil remains on public land as a misdemeanor and specifies that state agencies may undertake surveys,

excavations, or other operations as necessary on state lands to preserve or record paleontological resources under Subsection 8.16.2.2

Regional

South Coast Air Quality Management District Rules. Rule 403 requires the implementation of best available dust control measures (BACM) during active operations capable of generating fugitive dust. Rule 403.1 is a supplemental rule to Rule 403 and is applicable to man-made sources of fugitive dust. The purpose of this rule is to reduce fugitive dust and resulting PM_{10} emissions from man-made sources. Rule 403.1 requires a Fugitive Dust Control Plan approved by South Coast AQMD or an authorized local government agency prior to initiating any construction/earth-moving activity. These requirements are only applicable to construction projects with 5,000 or more square feet of surface area disturbance.

Local

City General Plan. The City's existing General Plan specifies the following Goals, Policies, and Implementation Programs for geology, earthquake faults, seismic-related impacts, and soil constraints:

Safety Element

Goals, policies and implementation actions listed below that pertain to geologic/seismic hazards are included in the Safety Element update that is part of the FGPUZA.

Goal SAF-4: Community members must be made aware of potential environmental hazards, how they should prepare for these instances, and how they should respond.

Policy SAF-4.1: Advise and provide information to the public regarding the availability of local area environmental studies, sources of hazard information, and public services.

Policy SAF-4.2: Continue and expand the public awareness programs conducted by the Fire Department, and other agencies as appropriate.

Policy SAF-4.3: Provide the public with information identifying accessible evacuation routes for fire, geologic, and other hazards.

SAF-IMP-4A: Keep the public informed as to the location of important emergency facilities, such as Reception Centers and Point of Distributions (PODS).

SAF-IMP-4B: Continue to develop and conduct public education and awareness programs and seminars, which promote individual fire prevention and safety.

SAF-IMP-4C: Identify and promote locations where information on public safety is available to the public.

SAF-IMP-4D: Provide and inform the public of available educational guides promoting structural and nonstructural earthquake safety. This includes natural gas safety, water heater bracing, and installation of automatic natural gas shut-off valves in buildings; and retrofitting of older buildings and securing nonstructural elements of a building to prevent the falling or throwing of objects.

Goal SAF-6: Minimize risk associated with seismic activity and geologic conditions to people.

Policy SAF-6.1: Avoid or minimize to the greatest extent feasible, hazards resulting from development on unstable ground conditions.

Policy SAF-6.2: Encourage rehabilitation or elimination of structures susceptible to collapse or failure in an earthquake. Historic buildings shall be treated with special consideration in order to ensure their preservation.

Policy SAF-6.3: Ensure that new structures are seismically safe through the proper design and construction. The minimum level of design necessary would be in accordance with seismic provisions and criteria contained in the most recent version of the State and County Codes. Construction shall require effective oversight and enforcement to ensure adherence to the earthquake design criteria.

SAF-IMP-6A: Protect public health and safety through the appropriate identification and rehabilitation of public facilities.

SAF-IMP-6B: Adopt the most current versions of State or County building, or other relevant, codes.

SAF-IMP-6C: All new development with the exception of detached single-family homes, shall be subject to the preparation and submittal of a site specific geology report prepared by a registered geologist or soils engineer to the City Building Services Division for approval.

Conservation Element (soil erosion)

Goal CON-2: Protect and improve water quality.

Policy CON-2.1: Enhance water infiltration throughout watersheds by decreasing accelerated runoff rates and enhancing groundwater recharge. Whenever possible, maintain or increase a site's pre-development infiltration to reduce downstream erosion and flooding.

Policy CON-2.2 Encourage practices that enable water to percolate into the surrounding soil, instead of letting sediment, metals, pesticides and chemicals runoff directly into the storm drain system, creeks, or regional flood control facilities.

Policy CON-2.6 Design, construct, and maintain City buildings, landscaped areas, roads, bridges, drainages, and other facilities to minimize the volume of toxics, nutrients, sediment, and other pollutants in stormwater flows, and continue to improve road maintenance methods to reduce erosion and sedimentation potential.

4.5.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As identified in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:

    i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or

based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

B. Result in substantial soil erosion or the loss of topsoil?

C. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

D. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial direct or indirect risks to life or property?

E. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

F. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

G. Would the project cause substantial adverse cumulative impacts with respect to geology and soils?

4.5.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to geology and soils which could result from the implementation of the project and recommends mitigation measures as needed to reduce significant impacts.

Potential Substantial Adverse Effects

Impact GEO-1 – Would the FGPUZA directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; strong seismic ground shaking; seismic-related ground failure, including liquefaction; or landslides?

Analysis of Impacts

The Planning Area is in a seismically active area. The greater Los Angeles region straddles two tectonic plates, and many fault zones are in the area. However, no Alquist-Priolo Earthquake Fault Zones are mapped within the City. The closest potentially active Quaternary fault is the Los Alamitos fault, approximately 1.6 miles to the west of the City. The closest Alquist-Priolo fault is the Newport-Inglewood-Rose-Canyon fault, 3.2 miles southwest of the City. The San Andreas Fault is located approximately 42 miles north of the City.

The San Andreas Fault has the highest probability of generating a maximum credible earthquake in the region, causing significant seismic effects. The Newport-Inglewood-Rose-Canyon fault and the Los Alamitos fault are also likely to have the potential to cause strong seismic ground shaking or seismic-related ground failure, or liquefaction in the City.

Liquefaction hazards are present through the majority of the City, and extend into the neighboring cities of Cypress, Fountain Valley, Los Alamitos, Orange, Santa Ana, Seal Beach, Stanton, and Westminster.

There are no landslide zones mapped within the FGPUZA, and there are no significant slopes which could have the potential for landslide risks.

Due to its location and physical conditions, future development in the Planning Area would be subject to geologic and seismic constraints which may represent a potentially significant impact on future structures.

The Safety Element of the current General Plan contains Goals SAF-4 and SAF-6; Policies SAF-4.1 through 4.3 and SAF-6.1 through 6.3; and Implementation Program SAF-IMP-4A through 4D, and SAF-IMP-6A through 6C. These Goals, Policies, and Implementation Programs help reduce the potential for impacts related to earthquakes. The current General Plan Goals acknowledge the potential risks from seismic activity by making residents aware of potential environmental hazards, the risks associated with seismic activity, how they should prepare for these instances, and how they should respond, as well as minimizing risks associated with seismic activity and geologic conditions to people and property. The Policies and Implementation Programs of the current General Plan ensure that the information on seismic risks, safe practices, emergency facilities, and evacuation routes are available through public awareness programs, as well as ensuring safety through seismic rehabilitation of existing structures, avoiding unstable ground for development and incorporating seismically safe designs into new buildings and structures.

It should be noted the proposed FGPUZA only updates the Housing, Land Use, and Safety Elements, while creating a new Environmental Justice Element. Since the other portions of the Safety Element that deal with geologic and seismic hazards are not being modified, Goals SAF-4 and SAF-6 and their policies and implementation plans will continue to adequately protect people and structures in the City from geologic and seismic hazards. Future development on properties affected by the Zoning Code Amendments will also be required to prepare site specific geotechnical assessments and design development to account for onsite geologic and soil constraints.

In addition to the General Plan, the City of Garden Grove has adopted the California Building Standards Code, which includes requirements on building design and construction based on seismic constraints and expected groundshaking and ground failure throughout California. During the City's existing development review process, proposed private projects are evaluated against the seismic design constraints of all pertinent building codes.

With implementation of the General Plan goals and policies, and all applicable building codes, potential impacts related to geologic and seismic constraints on future development within the Planning Area will be reduced to less than significant levels.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Impact GEO-2 – Would the FGPUZA Result in substantial soil erosion or the loss of topsoil?

Analysis of Impacts

The Planning Area is characteristically flat and highly developed. Nondeveloped areas of the Planning Area include City parks, school fields, and landscaping around buildings. There is no significant anticipated erosion resulting from steep slopes, or from wind and rain in areas of exposed soils.

Project development resulting from implementation of the FGPUZA have the potential to expose topsoil, or other local soils. As a result, local soils may be subject to erosion or loss of topsoil during development.

The Regional Water Quality Control Board (RWQCB) regulates the discharge of storm water from municipalities and activities within their jurisdiction including construction. The City is a signatory of the Orange County Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharge. The requirements include guidance and regulations for construction related erosion control, including the preparation of a Stormwater Pollution Prevention Plan (SWPPP) for projects which would disturb one or more acres. The requirements also include appropriate best management practices (BMPs) that should be included to help prevent substantial soil erosion or the loss of topsoil.

The City's Municipal Code, Chapter 6.40.050 ensures the City will review all project plans and impose conditions as required to safeguard water quality prior to the issuance of either a building permit or grading plan approval. The City's development review process will evaluate proposed development against established BMPs and other water quality-related guidelines, many of which are designed to control runoff and erosion.

The Conservation Element of the current General Plan contains Goal CON-2, Policies CON-2.2, 2-3, and 2.2.6 help conserve soil resource and encourage methods to reduce potential erosion from offsite runoff from new development. In addition, Safety Goal 6, Implementation Program SAF-IMP-6C requires new development to prepare and submit site specific geology reports prepared by a registered geologist or soils engineer to the City Building Services Division for approval. These reports will help assure that potentially hazardous soil conditions and the potential for offsite erosion is fully evaluated. It should be noted the proposed FGPUZA only updates the Housing, Land Use, and Safety Elements while creating a new Environmental Justice Element. Since the Conservation Element is not being updated, this goal, policies, and implementation plans will continue to adequately protect downstream properties from soil erosion within the City. In addition, future development on properties affected by the Zoning Code Amendments will also be required to prepare site specific geotechnical assessments and design development to account for onsite geologic and soil constraints, including erosion potential.

Level of Significance Before Mitigation

With implementation of the General Plan goals and policies, water quality regulatory permitting requirements, and guidelines for erosion control in the municipal code, potential impacts related to erosion from future development within the Planning Area will be reduced to less than significant levels.

Mitigation Measures

None required.

Impact GEO-3 – Would the FGPUZA be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Analysis of Impacts

As previously indicated, the Planning Area contains soil constraints. The underlying geology within the FGPUZA is comprised of alluvial deposits, formed from alluviated valleys, and floodplains. The Los Alamitos, Newport-Inglewood-Rose-Canyon, and San Andreas Faults, in the surrounding area have the potential of causing severe ground shaking in the City.

The Garden Grove area has experienced moderate ground shaking in the past from regional earthquakes. Liquefaction zones are mapped within the FGPUZA, and future seismic activity has the potential to result in severe ground shaking with the potential of causing lateral spreading, subsidence, or liquefaction.

Landslides zones are not mapped within the City, and there are no steep slopes suggesting that landslides are likely within the FGPUZA.

The Planning Area includes areas of moderate settlement[2] potential as well as area with moderate potential for expansive soils. As shown in Exhibit 4.5-2 the areas of moderate potential are located in the northwest and eastern portions of the Planning Area.

As over half of the City's water supply comes from local groundwater wells accessing the Santa Ana River groundwater basin, subsidence relating to excessive groundwater withdrawal is a potential hazard.

Due to the presence of local and regional faults and soil conditions, portions of the City may experience subsidence, lateral spreading, or collapse during strong seismic events in addition to the potential for liquefaction. These seismic-related conditions could affect structures and their occupants of future development under the FGPUZA.

The Safety Element of the current General Plan contains Goal SAF-6; Policies SAF-6.1 through 6.3; and Implementation Program SAF-IMP-6A through 6C. These elements work to minimize risks associated with seismic activity and geologic conditions to people and property, and ensure safety through seismic rehabilitation of existing structures, avoiding unstable ground for development, incorporating seismically safe designs into new buildings and structures, and the preparation of site-specific geotechnical reports where necessary. In addition, Safety Goal 6, Implementation Program SAF-IMP-6C requires new development to prepare and submit site specific geology reports prepared by a registered geologist or soils engineer to the City Building Services Division for approval. These reports will help assure that potential for hazardous geologic and soil conditions on new development sites is fully evaluated.

In addition to the General Plan, the State Building Code (SBC), CBC, have guidelines on building design and construction based on onsite soil constraints. During the City's existing development review process, proposed private projects are evaluated in light of actual onsite geologic or soil constraints and all pertinent building codes.

With implementation of the General Plan goals and policies and all applicable building codes, potential impacts related to seismically induced constraints on future development within the Planning Area will be reduced to less than significant levels.

[2] Areas where soils may be subject to displacement or settlement during moderate to severe groundshaking events.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Expansive Soils

Impact GEO-4 – Would the FGPUZA be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial direct or indirect risks to life or property?

Analysis of Impacts

As previously indicated, the Planning Area contains a number of soil constraints. The underlying geology within the FGPUZA is comprised of alluvial deposits, formed from alluviated valleys, and floodplains. In areas where soils have a high clay content, the potential exists for expansion when the soil becomes saturated with water. This type of soil constraint could affect structures and their occupants of future development under the FGPUZA.

The Safety Element of the current General Plan contains Goal SAF-6; Policies SAF-6.1 through 6.3; and Implementation Program SAF-IMP-6A through 6C. These elements work to minimize risks associated with geologic conditions to people and property, and ensure safety through rehabilitation of existing structures, avoiding unstable ground for development, incorporating geologically safe designs into new buildings and structures, and the preparation of site-specific geotechnical reports where necessary. In addition, Safety Goal 6, Implementation Program SAF-IMP-6C requires new development to prepare and submit site specific geology reports prepared by a registered geologist or soils engineer to the City Building Services Division for approval. These reports will help assure that potential for hazardous soil conditions, including expansive soils, on new development sites is fully evaluated.

In addition to the General Plan, the State Building Code has guidelines on building design and construction based on onsite soil constraints. During the City's development review process, proposed private projects are evaluated against the seismic design constraints of all pertinent building codes.

With implementation of the General Plan goals and policies and all applicable building codes, potential impacts related to expansive soils on future development within the Planning Area will be reduced to less than significant levels.

Level of Significance Before Mitigation

Mitigation Measures

None required.

Alternative Waste Water Systems

Impact GEO-5 – Would the FGPUZA have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Analysis of Impacts

As previously indicated, the Planning Area contains a number of soil constraints. The underlying geology within the FGPUZA is comprised of younger alluvial deposits, formed from alluviated valleys, and floodplains. Seismic constraints and local geology may impact the placement of septic or similar wastewater treatment systems within the Planning Area.

The Safety Element of the current General Plan contains Goal SAF-6; Policies SAF-6.1 and 6.3; and Implementation Program SAF-IMP-6B and 6C. These elements work to minimize risks associated with geologic conditions to people and property, and ensure avoiding unstable ground for development, and the preparation of site-specific geotechnical reports where necessary. In addition, Safety Goal 6, Implementation Program SAF-IMP-6C requires new development to prepare and submit site specific geology reports prepared by a registered geologist or soils engineer to the City Building Services Division for approval. These reports will help assure that onsite soils can support alternative waste water systems if proposed for new development sites in the future.

In addition to the General Plan, the State Building Code (SBC) and CBC have guidelines on building design and construction based on seismic constraints and expected ground shaking and ground failure throughout California. During the City's development review process, proposed private projects are evaluated against the seismic and soil design constraints of all pertinent building codes, including those requiring septic or alternative wastewater treatment systems. The City typically requires this information be provided in a soils constraints or geotechnical constraints report signed by a registered engineer or geologist.

Level of Significance Before Mitigation

With implementation of the General Plan goals and policies and all applicable building codes, potential impacts related to septic tanks or alternative wastewater disposal systems on future development within the Planning Area will be reduced to less than significant levels.

Mitigation Measures

None required.

Paleontological Resources

Impact GEO-6 – Would the FGPUZA directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Analysis of Impacts

As previously indicated, the Planning Area contains predominantly younger alluvial deposits from geologically recent flood plain deposits. These younger alluvial deposits are from the Holocene Epoch (11,700 years ago to modern day). The site is a developed area, and geological analysis does not reveal the presence of, or potential for, unique geological features.

Alluvial deposits, particularly from the Pleistocene Epoch (2,580,000 to 11,700 years ago) can contain fossilized material. The Society of Vertebrate Paleontology state that vertebrate fossils are significant nonrenewable paleontological resources that are afforded protection by federal, state, and local environmental laws and guidelines, invertebrate fossils are not. There is potential for invertebrate fossils to be present in soils within the Planning Area. However, invertebrate fossils would not generally constitute a significant resource. Vertebrate fossils are rarer, and fossils generally are unlikely to be within younger alluvial deposits.

The City's development review process would require research and technical analysis to determine if a site contains identified or possible paleontological or unique geologic resources.

Because of the low potential for paleontological discovery, the existing General Plan does not contain any goal, policies, or implementation programs relative to paleontological resources. The City has the following standard condition of approval relative to paleontological resources that it applies to new development when appropriate: "During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place and leave in an undisturbed state in compliance with applicable laws and regulations."

Level of Significance Before Mitigation

Less that significant.

Mitigation Measures

None required.

Cumulative Impacts

Impact GEO-7 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to Geology and Soils?

Analysis of Impacts

The Planning Area is in a seismically active area. The greater Los Angeles region straddles two tectonic plates, and many fault zones are in the area. The Los Alamitos fault, and the Newport-Inglewood-Rose-Canyon are close to the City. The San Andreas Fault is further north of the City, but has the highest probability of generating a maximum credible earthquake in the region, causing significant seismic effects. The Newport-Inglewood-Rose-Canyon and the Los Alamitos fault, are likely to have the potential to cause strong seismic ground shaking or seismic-related ground failure, or liquefaction in the City.

Liquefaction hazards are present through the majority of the City, and extend into the neighboring cities of Cypress, Fountain Valley, Los Alamitos, Orange, Santa Ana, Seal Beach, Stanton, and Westminster. In areas where soils have a high clay content, the potential exists for expansion when the soil becomes saturated with water. This type of soil constraint could affect structures and their occupants of future development under the FGPUZA.

There are no landslide zones mapped within the FGPUZA, and there are no significant slopes which could have the potential for landslide risks.

Due to its location and physical conditions, future development in the Planning Area would be subject to geologic and seismic constraints which may represent a potentially significant impact on future structures, and could affect previously undiscovered paleontological resources as well.

State law requires that the Safety Elements of city general plans, including Garden Grove, address potential geologic and seismic constraints. The Safety Element of the current General Plan contains Goals 6 and 7 and their attendant policies and implementation plans that acknowledge potential seismic-related risks, promote active redevelopment to remove structures vulnerable to seismic activity; and allow funding for seismic retrofitting, as well as ensuring that large developments and critical facilities are subject to soils analysis and seismic review, and that the City will continue adopt the seismic standards of the Uniform Building Code (UBC), which has since merged with other building codes to become the International Building

Code (IBC), and be proactive in amending its own standards based on new seismic research and technologies.

The General Plans for the surrounding cities and the County General Plan are all required to identify potential risks from geologic and seismic conditions and contain goals and policies to address these risks and protect the public. These goals and policies are intended to be consistent with state law and are similar to those of Garden Grove's General Plan. In addition to local general plans, the State Building Code (SBC) and CBC have guidelines on building design and construction based on seismic constraints and expected ground-shaking and ground failure throughout California.

In these ways, potential cumulative impacts to future development from geologic, seismic, and soil constraints will be minimized, and future development in the City of Garden Grove under the FGPUZA will not make a significant contribution to any cumulative regional impacts on geologic, seismic, soil, or paleontological resources.

Level of Significance Before Mitigation

Less Than Significant.

Mitigation Measures

None required.

4.5.5 – REFERENCES

California Department of Conservation, 1997. Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5-Minute Quadrangles, Orange County, California (https://maps.conservation.ca.gov/cgs/informationwarehouse/ website accessed April 22, 2021).

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United States Geological Services, 2021. U.S. Quaternary Faults. (https://www.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf website accessed April 22, 2021).

4.6 – Greenhouse Gases

This section describes the existing greenhouse gases (GHG) setting for the Planning Area; identifies associated regulatory requirements; evaluates the potential GHG and climate change impacts of the proposed Focused General Plan Update and Zoning Amendments (FGPUZA); and identifies mitigation measures related to implementation of the Project. The methodologies and assumptions used in the preparation of this section follow guidance from the South Coast Air Quality Management District (SCAQMD). Information on existing GHG emissions levels and applicable Federal and State regulations were obtained from the U.S. Environmental Protection Agency (U.S. EPA), California Air Resources Board (CARB), and SCAQMD. This GHG analysis has been closely coordinated with the Air Quality and Energy analyses in Sections 4.1 and 4.4 of this EIR. Please refer to Appendix C for detailed air quality and GHG emissions estimates (MIG, 2021).

4.6.1 – ENVIRONMENTAL SETTING

Climate Change

Climate change is the distinct change in measures of climate over a long period of time. Climate change can result from natural processes and from human activities. Natural changes in the climate can be caused by indirect processes such as changes in the Earth's orbit around the Sun or by direct changes within the climate system itself (i.e. changes in ocean circulation). Human activities can affect the atmosphere through emissions of gases and changes to the planet's surface. Emissions affect the atmosphere directly by changing its chemical composition, while changes to the land surface indirectly affect the atmosphere by changing the way the Earth absorbs gases from the atmosphere. Elements that indicate that climate change is occurring on Earth include:

- Rising of global surface temperatures by 1.3° Fahrenheit (°F) over the last 100 years
- Changes in precipitation patterns
- Melting ice in the Arctic
- Melting glaciers throughout the world
- Rising ocean temperatures
- Acidification of oceans
- Range shifts in plant and animal species

Climate change is tied to the Earth's greenhouse effect. The greenhouse effect is a natural occurrence that helps regulate the temperature of the planet, and without it, life as we know it on Earth would not exist. Human activities since the beginning of the industrial revolution (approximately 150 years) have been adding to the natural greenhouse effect by increasing the gases in the atmosphere that "trap" energy, thereby contributing to an average increase in the Earth's temperature. Human activities that enhance the greenhouse effect are detailed below.

Greenhouse Gases

Gases that "trap" heat in the atmosphere and affect regulation of the Earth's temperature are known as "greenhouse gases". Many chemical compounds in the Earth's atmosphere exhibit the GHG property. GHG allow sunlight to enter the atmosphere freely. When the sunlight strikes the Earth's surface, it is either absorbed or reflected back toward space. Earth, or materials near the Earth's surface, that have absorbed energy from sunlight warm up during the daytime and emit infrared radiation back toward space during both the daytime and nighttime hours. GHG absorb this long-wave, infrared radiation and help keep the energy in the Earth's atmosphere.

GHG that contribute to climate regulation are a different type of pollutant than criteria or hazardous air pollutants because climate regulation is global in scale, both in terms of causes and effects. Some GHG are emitted to the atmosphere naturally by biological and geological processes such as evaporation (water vapor), aerobic respiration (carbon dioxide, or CO_2), and off-gassing from low-oxygen environments such as swamps or exposed permafrost (methane or CH_4). However, GHG emissions from human activities such as fuel combustion (e.g., CO_2) and refrigerants use (e.g., hydrofluorocarbons, or HFCs) significantly contribute to overall GHG concentrations in the atmosphere, climate regulation, and global climate change. Human production of GHG has increased steadily since pre-industrial times (approximately pre-1880), and atmospheric CO_2 concentrations have increased from a pre-industrial value of 280 parts per million (ppm) in the early 1800s to approximately 419 ppm in April 2021 (NOAA, 2021). The effects of increased GHG concentrations in the atmosphere include increasing shifts in temperature and precipitation patterns and amounts, reduced ice and snow cover, sea level rise, and acidification of oceans. These effects in turn will impact food and water supplies, infrastructure, ecosystems, and overall public health and welfare.

The 1997 United Nations' Kyoto Protocol international treaty set targets for reductions in emissions of four specific GHG—CO_2, CH_4, nitrous oxide (N_2O), and sulfur hexafluoride (SF_6)—and two groups of gases—HFCs and perfluorocarbons (PFCs). These GHG are the primary GHG emitted into the atmosphere by human activities. Water vapor is also a common GHG that regulates the Earth's temperature; however, the amount of water vapor in the atmosphere can change substantially from day to day, whereas other GHG emissions remain in the atmosphere for longer periods of time. Black carbon consists of particles emitted during combustion; although a particle and not a gas, black carbon also acts to trap heat in the Earth's atmosphere. The most common GHG are described below.

- **Carbon Dioxide (CO_2)** is emitted and removed from the atmosphere naturally. Animal and plant respiration involves the release of CO_2 from animals and its absorption by plants in a continuous cycle. The ocean-atmosphere exchange results in the absorption and release of CO_2 at the sea surface. CO_2 is also released from plants during wildfires. Volcanic eruptions release a small amount of CO_2 from the Earth's crust. Human activities that affect CO_2 in the atmosphere include burning of fossil fuels, industrial processes, and product uses. Combustion of fossil fuels used for electricity generation and transportation are the largest source of CO_2 emissions in the United States. When fossil fuels are burned, the carbon stored in them is released into the atmosphere entirely as CO_2. Emissions from industrial activities also emit CO_2 such as cement, metal, and chemical production and use of petroleum produced in plastics, solvents, and lubricants.
- **Methane (CH_4)** is emitted from human activities and natural sources. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies,

soils, and wildfires. Human activities that cause CH_4 releases include fossil fuel production, animal digestive processes from farms, manure management, and waste management. It is estimated that 50% of global CH_4 emissions are human generated. Releases from animal digestive processes at agricultural operations are the primary source of human-related CH_4 emissions. CH_4 is produced from landfills as solid waste decomposes. CH_4 is a primary component of natural gas and is emitted during its production, processing, storage, transmission, distribution, and use. Decomposition of organic material in manure stocks or in liquid manure management systems also releases CH_4. Wetlands are the primary natural producers of CH_4 because the habitat is conducive to bacteria that produce CH_4 during decomposition of organic material.

- **Nitrous Oxide (N_2O)** is emitted from human sources such as agricultural soil management, animal manure management, sewage treatment, combustion of fossil fuels, and production of certain acids. N_2O is produced naturally in soil and water, especially in wet, tropical forests. The primary human-related source of N_2O is agricultural soil management due to use of synthetic nitrogen fertilizers and other techniques to boost nitrogen in soils. Combustion of fossil fuels (mobile and stationary) is the second leading source of N_2O, although parts of the world where catalytic converters are used (such as California) have significantly lower levels than those areas that do not.
- **Sulfur Hexafluoride (SF_6)** is commonly used as an electrical insulator in high-voltage electrical transmission and distribution equipment such as circuit breakers, substations, and transmission switchgear. Releases of SF_6 occur during maintenance and servicing as well as from leaks of electrical equipment.
- **Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs)** are entirely human made and are mainly generated through various industrial processes. These types of gases are used in aluminum production, semiconductor manufacturing, and magnesium production and processing. HFCs and PFCs are also used as substitutes for ozone-depleting gases like chlorofluorocarbons (CFCs) and halons.

In 1997, the U.S was a signatory to the Kyoto Protocol; however, the treaty was not sent to Congress for ratification. Thus, while a signatory to the Kyoto Protocol, the U.S. is not an official party to this international agreement and is not subject to any emission reductions goals established pursuant to the Kyoto Protocol. Although the U.S. is not a party to this agreement, the GHG targeted for reduction by the Kyoto Protocol are also targeted under federal and State GHG reporting and emissions reduction programs.

GHG can remain in the atmosphere long after they are emitted. The potential for a particular greenhouse gas to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO_2, which has a GWP of one. By comparison, CH_4 has a GWP of 25, which means that one molecule of CH_4 has 25 times the effect on global warming as one molecule of CO_2. Multiplying the estimated emissions for non-CO_2 GHG by their GWP determines their CO_2 equivalent (CO_2e), which enables a project's combined GWP to be expressed in terms of mass CO_2 emissions. The GWP and estimated atmospheric lifetimes of the common GHG are shown in Table 4.6-1 (Global Warming Potential (GWP) of Common GHG (100-Year Horizon)).

Table 4.6-1
Global Warming Potential (GWP) of Common GHG (100-Year Horizon)

GHG	GWP[(A)]	GHG	GWP[(A)]
Carbon Dioxide (CO_2)	1	Perfluorocarbons (PFCs)	
Methane (CH_4)	25	CF_4	6,500
Nitrous Oxide (N_2O)	298	C_2F_6	9,200
Hydrofluorocarbons (HFCs)		C_4F_{10}	7,000
HFC-23	14,800	C_6F_{14}	7,400
HFC-134a	1,430	Sulfur Hexafluoride (SF_6)	22,800
HFC-152a	140		
HCFC-22	1,700		

Source: CARB 2014
(A) GWPs are based on the United Nations Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report.

Climate Change and California

The 2009 California Climate Adaptation Strategy prepared by the California Natural Resources Agency (CNRA) identified anticipated impacts to California due to climate change through extensive modeling efforts. General climate changes in California indicate that:

- California is likely to get hotter and drier as climate change occurs with a reduction in winter snow, particularly in the Sierra Nevada Mountain Range.
- Some reduction in precipitation is likely by the middle of the century.
- Sea levels will rise up to an estimated 55 inches.
- Extreme events such as heat waves, wildfires, droughts, and floods will increase.
- Ecological shifts of habitat and animals are already occurring and will continue to occur (CNRA, 2009).

It should be noted that changes are based on the results of several models prepared under different climatic scenarios; therefore, discrepancies occur between the projections and the interpretation. The potential impacts of global climate change in California are detailed below.
In January 2018, the CNRA adopted *Safeguarding California Plan: 2018 Update*, which builds on nearly a decade of adaptation strategies to communicate current and needed actions State government should take to build climate change resiliency. It identifies hundreds of ongoing actions and next steps that State agencies are taking to safeguard Californians from climate impacts within a framework of 81 policy principles and recommendations. The 2018 update also has two new chapters and incorporates a feature showcasing the many linkages among policy areas. A new “Climate Justice” chapter highlights how equity is woven throughout the entire plan (CNRA, 2018).

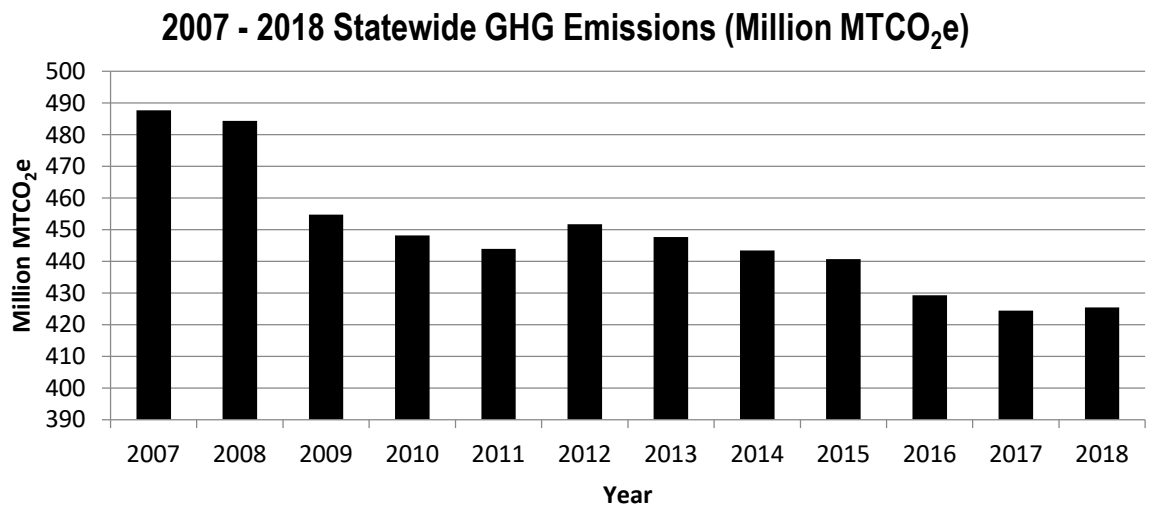
Statewide GHG Emissions

CARB prepares an annual statewide GHG emission inventory using regional, State, and federal data sources, including facility-specific emissions reports prepared pursuant to the State’s Mandatory GHG Reporting Program. The statewide GHG emission inventory helps CARB track progress towards meeting the State’s Assembly Bill (AB) 32 GHG emissions target of 431 million metric tons of CO_2 equivalents ($MTCO_2e$), as well as establish and understand trends in

GHG emissions[1]. Statewide GHG emissions for the 2007 to 2018 time period are shown in Table 4.6-2.

Table 4.6-2
2007-2018 Statewide GHG Emissions (in Million $MTCO_2e$)

Scoping Plan Sector	Year											
	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Agriculture	35	35	33	34	34	36	34	35	33	33	32	33
Commercial/Residential	44	44	45	46	46	44	44	38	39	41	41	41
Electric Power	114	120	101	90	89	98	91	89	85	69	62	63
High GWP	11	12	12	14	15	16	17	18	19	19	20	21
Industrial	90	90	87	91	89	89	92	92	90	89	89	89
Recycling and Waste	8	8	9	9	9	9	9	9	9	9	9	9
Transportation	186	175	168	165	162	161	161	163	166	170	171	170
Total Million $MTCO_2e$[(A)]	***488***	***484***	***455***	***448***	***444***	***452***	***448***	***443***	***441***	***429***	***424***	***425***



Source: CARB 2019
(A) Totals may not equal due to rounding. CARB inventory uses GWPs based on the United Nations' IPCC's 4th Assessment Report.

As shown in Table 4.6-2, statewide GHG emissions have generally decreased over the last decade, with 2018 levels (425 million $MTCO_2e$) approximately 12% less than 2007 levels (488 million $MTCO_2e$) and below the State's 2020 reduction target of 431 million $MTCO_2e$. The transportation sector (170 million $MTCO_2e$) accounted for more than one-third (approximately 40.%) of the state's total GHG emissions inventory (425 million $MTCO_2e$) in 2018.

Existing Planning Area GHG Emissions

The existing land uses within the Planning Area contribute to existing city, regional, and statewide GHG emissions. The Planning Area's existing GHG emissions, presented below in Table 4.6-3 (Existing (2020) GHG Emissions in the Planning Area), were estimated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. GHG emissions generated within the Planning Area primarily come from the area, energy, and mobile sources

[1] CARB approved use of 431 million $MTCO_2e$ as the state's 2020 GHG emission target in May 2014. Previously, the target had been set at 427 million $MTCO_2e$.

described in Section 4.1.1, Air Quality (Environmental Setting), as well as the following additional sources specific to GHG emissions:

- **Energy use and consumption:** Emissions generated from purchased electricity and natural gas. As estimated using CalEEMod, the existing land uses in the Planning Area use and consume approximately 647,597,172 kilowatt hours (kWh) of electricity per year and 1,538,764,790 kilo-British Thermal Units (kBtus) of natural gas per year.
- **Solid waste disposal:** Emissions generated from the transport and disposal of waste generated by land uses. CalEEMod estimates approximately 91,946 tons of solid waste are generated per year by the people working and living within the Planning Area.
- **Water/wastewater:** Emissions from electricity used to supply water to land uses, and treat the resulting wastewater generated. As estimated in CalEEMod, existing land uses within the Planning Area use approximately 10,143 million gallons of water per year.

The Planning Area's existing GHG emissions were estimated using default emissions assumptions provided by CalEEMod, with the Project-specific modifications described in Section 4.1.1 and below:

- **Mobile Sources.** CalEEMod does not estimate N_2O emissions from on-road vehicle travel or off-road construction sources. To account for this, CalEEMod emissions estimates were adjusted as follows:
    - N_2O emissions were estimated for the Project by comparing the ratio of CO_2 and N_2O emissions from the on-road vehicle sector contained in the State's most recent GHG inventory (CARB, 2020). In 2018, passenger car CO_2 and N_2O emissions estimates for the on-road transportation sector were 151.2 and 0.005 million metric tons, respectively (N_2O emissions are therefore equal to approximately 0.003% of CO_2 emissions for this sector).
- **Energy use and consumption:** In addition to natural gas usage, the existing land uses in the Planning Area would generate indirect GHG emissions from electricity use. Southern California Edison (SCE) provides electricity service in the City of Garden Grove. The CalEEMod default GHG intensity values for this electric service provider are from 2012 and do not represent existing and future reductions in GHG intensity that have been achieved under the State's Renewable Portfolio Standard (RPS, see Section 4.6.2). To account for this, CalEEMod default assumptions regarding energy use were adjusted as follows:
    - The SCE GHG intensity value was reduced based on an increase in renewable energy mix from 20% underestimated Year 2012 conditions (the CalEEMod default data year) to 32% under existing conditions (2020, based on 2019 available data from SCE). This adjustment reduced the estimated amount of CO_2 produced by the existing SCE energy mix from approximately 702 pounds/megawatt-hour (lbs/MWh) to 532 lbs/MWh (SCE, 2019).
    - Electricity generation emission factors for CH_4 (0.033 lbs/MWh) and N_20 (0.004 lbs/MWh) were obtained from the U.S. EPA's EGRID database for year 2019, the last year for which data was available at the time this EIR was prepared (U.S. EPA, 2021).

The Planning Area's existing GHG emissions are summarized in Table 4.6-3 (Existing Land Use GHG Emissions Estimates) below. The emissions are shown for two scenarios:

- **Year 2020 (Current Conditions)**, which are based on Year 2020 vehicle fleet characteristics (e.g., vehicle type, age, emission rates), and represent the emissions levels that existed at the time the FGPUZA was prepared.
- **Year 2040 (Future Conditions)**, which are based on Year 2040 vehicle fleet characteristics and RPS energy goals (60% renewable energy) and represent the projected emissions that existing land uses would generate in the future (assuming no increase in population or change in land uses including the anticipated growth in the FGPUZA). This scenario provides an estimate of how emissions would change in the Planning Area as a result of regulations that would reduce motor vehicle emissions in the future. Thus the potential change in emissions that would occur from the proposed change in land uses that would occur with implementation and buildout of the FGPUZA in Year 2040 can be distinguished from the change in emissions that would occur from regulatory requirements that would be in place whether or not the FGPUZA is adopted.

Table 4.6-3
Existing Land Use GHG Emissions Estimates

Source	GHG Emissions (Metric Tons / Year)			
	CO_2	CH_4	N_2O	Total $MTCO_2e$
Existing Land Use Operational Emissions in Year 2020 (Current Conditions)				
Area	15,850	16	0.3	16,358
Energy	238,381	11	2.7	239,461
Mobile	853,447	53	28.3	863,208
Waste	18,664	1,103	0.0	46,240
Water	32,443	222	5.4	39,599
Total Existing GHG[(A)]	1,158,785	1,405	36.8	1,204,867
Service Population (SP)[(B)]				220,567
Existing GHG Efficiency ($MTCO_2e$ / SP)				5.5
Existing Land Use Operational Emissions in Year 2040 (Future Conditions)				
Area	15,850	16	0.3	16,358
Energy	126,338	11	2.7	127,418
Mobile	672,300	28	22.3	679,641
Waste	18,664	1,103	0.0	46,240
Water	10,716	222	5.4	17,872
Total Existing GHG[(A)]	843,868	1,380	30.8	887,529
Service Population (SP)[(B)]				220,567
Existing GHG Efficiency ($MTCO_2e$ / SP)				4.0

Source: MIG, 2021 (see Appendix D)
(A) Totals may not equal due to rounding.
(B) Service Population is defined as the sum of the number of residents and number of jobs supported by the FGPUZA (CAPCOA, 2010).

4.6.2 – REGULATORY FRAMEWORK

International and Federal

International Regulation and the Kyoto Protocol. In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the "United Nations' Framework Convention on Climate Change" agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHG in the United States. The plan currently consists of more than 50 voluntary programs for member nations to adopt.

Federal Regulation and the Clean Air Act. On December 7, 2009, the U.S. EPA issued an endangerment finding that current and projected concentrations of the six Kyoto GHGs in the atmosphere (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) threaten the public health and welfare of current and future generations. This finding came in response to the Supreme Court ruling in *Massachusetts v. EPA*, which found that GHGs are pollutants under the Federal Clean Air Act. As a result, the U.S. EPA issued its GHG Tailoring Rule in 2010, which applies to facilities that have the potential to emit more than 100,000 $MTCO_2e$. In 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146), finding that the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a "major" source required to obtain a permit pursuant to the "Clean Air Act's Prevention of Significant Deterioration" or "Title V" operating permit programs. The U.S. EPA's Greenhouse Gas Reporting Program requires facilities that emit 25,000 $MTCO_2e$ or more of GHG to report their GHG emissions to the U.S. EPA to inform future policy decisionmakers.

The Current Administration. Former President Trump and the U.S. EPA during the time of the Trump administration stated their intent to halt various federal regulatory activities to reduce GHG emissions. President Biden, who took office in January 2021, and his administration have begun to strengthen federal policy once again around GHG emissions on a national level. California and other states are still challenging some federal actions undertaken during the time of the Trump administration that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. The timing and consequences of these types of federal decisions and potential responses from California and other states are speculative at this time.

The United States participates in the United Nations Framework Convention on Climate Change. While the United States signed the Kyoto Protocol, which would have required reductions in GHGs, Congress never ratified the protocol. The federal government chose voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science. In 2015, the Paris Agreement was adopted, which aims at keeping global temperature rise this century below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit temperature increase above an additional 1.5 degrees Celsius. The Agreement was signed by President Obama in April 2016, but the agreement does not contain enforcement provisions that would require U.S. Senate ratification. On November 4, 2019, Former President Trump formally began the process to leave the Paris Climate Agreement. In accordance with Article 28 of the Paris Agreement, that process was complete on November 4, 2020. As one of his first acts in the Oval Office, President Biden signed an executive order to have the United States rejoin the Paris Climate Agreement. At this

time, there are no federal regulations or policies pertaining to GHG emissions that directly apply to the project.[2]

Federal Vehicle Standards. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the U.S. EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.
In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, U.S. EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleetwide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the U.S. EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018–2027 for certain trailers, and model years 2021–2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons (MT) and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (U.S. EPA and NHTSA, 2016).

In August 2018, The USEPA and NHTSA released a notice of proposed rulemaking called Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule).

On September 27, 2019, the U.S. EPA and the NHTSA published the SAFE Vehicles Rule Part One: One National Program" (84 Fed. Reg. 51,310 (Sept. 27, 2019.). The Part One Rule revoked California's authority to set its own greenhouse gas emissions standards and set zero emission vehicle mandates in California. As a result of the loss of the zero emission vehicles (ZEV) sales requirements in California, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years (CARB 2019b).

[2]Though the U.S. EPA announced the Clean Power Plan on August 3, 2015, which sets standards for power plants and customizes goals for states to cut their carbon pollution, the U.S. Supreme Court stayed implementation of the Plan on February 9, 2016, pending further judicial review.

In April 2020, the U.S. EPA and NHTSA issued the SAFE Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Final SAFE Rule) that relaxed federal greenhouse gas emissions and fuel economy standards. The Final SAFE Rule relaxed federal greenhouse gas emissions and Corporate Average Fuel Economy (CAFE) standards to increase in stringency at approximately 1.5 percent per year from model year (MY) 2020 levels over MYs 2021–2026. The previously established emission standards and related "augural" fuel economy standards would have achieved approximately 4 percent per year improvements through MY 2025. The Final SAFE Rule affects both upstream (production and delivery) and downstream (tailpipe exhaust) CO_2 emissions (CARB, 2020) and has been challenged by 23 states. The litigation is ongoing.

State

Assembly Bill 32 (California Global Warming Solutions Act) and Related GHG Goals. In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 establishes the caps on statewide greenhouse gas emissions proclaimed in Executive Order (EO) S-3-05 and established the timeline for meeting State GHG reduction targets. The deadline for meeting the 2020 reduction target is December 31, 2020.

As part of AB 32, CARB determined 1990 GHG emissions levels and projected a "business-as-usual" (BAU)[3] estimate for 2020, to determine the amount of GHG emission reductions that would need to be achieved. In 2007, CARB approved a statewide 1990 emissions level and corresponding 2020 GHG emissions limit of 427 million $MTCO_2e$ (CARB 2007). In 2008, CARB adopted its *Climate Change Scoping Plan*, which projects 2020 statewide GHG emissions levels of 596 million $MTCO_2e$ and identifies numerous measures (i.e., mandatory rules and regulations and voluntary measures) that will achieve at least 174 million $MTCO_2e$ of GHG reductions and bring statewide GHG emissions to 1990 levels by 2020 (CARB 2009).

EO B-30-15, 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, set a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. To achieve this ambitious target, Governor Brown identified five key goals for reducing GHG emissions in California through 2030:

- Increase renewable electricity to 50 percent.
- Double energy efficiency savings achieved in existing buildings and make heating fuels cleaner.
- Reduce petroleum use in cars and trucks by up to 50 percent.
- Reduce emissions of short-lived climate pollutants.
- Manage farms, rangelands, forests, and wetlands to increasingly store carbon.

By directing State agencies to take measures consistent with their existing authority to reduce GHG emissions, EO B-30-15 establishes coherence between the 2020 and 2050 GHG reduction goals set by AB 32 and seeks to align California with the scientifically established GHG emissions levels needed to limit global warming below two degrees Celsius.

To reinforce the goals established through EO B-30-15, Governor Brown signed Senate Bill (SB) 32 and AB 197 on September 8, 2016. SB 32 made the GHG reduction target (to reduce GHG emissions by 40 percent below 1990 levels by 2030) a requirement, as opposed to a goal.

[3] BAU is a term used to define emissions levels without considering reductions from future or existing programs or technologies.

AB 197 gives the Legislature additional authority over CARB to ensure the most successful strategies for lowering emissions are implemented, and requires CARB to, "protect the State's most impacted and disadvantaged communities …[and] consider the social costs of the emissions of greenhouse gases."

CARB Scoping Plan. The CARB Scoping Plan is the comprehensive plan primarily directed at identifying the measures necessary to reach the GHG reduction targets stipulated in AB 32. The key elements of the 2008 Scoping Plan were to expand and strengthen energy efficiency programs, achieve a statewide renewable energy mix of 33 percent, develop a cap-and-trade program with other partners (including seven states in the United States and four territories in Canada) in the Western Climate Initiative, establish transportation-related targets, and establish fees (CARB 2009). CARB estimated that implementation of these measures will achieve at least 174 million $MTCO_2e$ of reductions and reduce statewide GHG emissions to 1990 levels by 2020 (CARB 2009).

In a report prepared on September 23, 2010, CARB indicated 40 percent of the reduction measures identified in the Scoping Plan had been secured (CARB 2010). Although the cap-and-trade program began on January 1, 2012 (after CARB completed a series of activities dealing with the registration process, compliance cycle, and tracking system), covered entities did not have an emissions obligation until 2013. In August 2011, the Scoping Plan was reapproved by CARB with the program's environmental documentation.

On February 10, 2014, CARB released the public draft of the "First Update to the Scoping Plan." "The First Update" built upon the 2008 Scoping Plan with new strategies and recommendations and identified opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments (CARB 2014). "The First Update" defined CARB's climate change priorities over the next five years and set the groundwork to reach post-2020 goals set forth in Executive Orders S-3-05 and B-16-12. It also highlighted California's progress toward meeting the 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. "The First Update" evaluated how to align the State's long-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. "The First Update" to the Scoping Plan was approved by the Board on May 22, 2014.

The second update to the scoping plan, the 2017 Climate Change Scoping Plan update (CARB 2017), was adopted by CARB in December 2017. The primary objective for the 2017 Climate Change Scoping Plan is to identify the measures required to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030) established under EO B-30-15 and SB 32. The 2017 Climate Change Scoping Plan identifies an increased need for coordination among State, regional, and local governments to realize the potential for GHG emissions reductions that can be gained from local land use decisions. It notes that emissions reductions targets set by more than one hundred local jurisdictions in the state could result in emissions reductions of up to 45 million $MTCO_2e$ and 83 million $MTCO_2e$ by 2020 and 2050, respectively. To achieve these goals, the 2017 Scoping Plan Update includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons per capita by 2050. The major elements of the 2017 Climate Change Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks.
- LCFS, with an increased stringency (18 percent by 2030).

- Implementation of SB 350, which expands the RPS to 50 percent and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Senate Bill 375 (Sustainable Communities and Climate Protection Act). In January 2009, California SB 375 went into effect known as the Sustainable Communities and Climate Protection Act. The objective of SB 375 is to better integrate regional planning of transportation, land use, and housing to reduce sprawl and ultimately reduce greenhouse gas emissions and other air pollutants. SB 375 tasks CARB to set GHG reduction targets for each of California's 18 regional Metropolitan Planning Organizations (MPOs). Each MPO is required to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP). The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs to be adopted in September 2010. The proposed reduction targets for the Southern California Association of Governments (SCAG) region were to reduce per capita GHG emissions by eight percent by year 2020 and 13 percent by year 2035, when compared to a year 2005 baseline. In September 2010 and February 2011, the eight percent and the 13 percent targets were adopted, respectively.

On April 4, 2012, SCAG's Regional Council adopted the *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy: Towards a Sustainable Future.* The 2012 RTP/SCS included a strong commitment to reduce emissions from transportation sources to comply with SB 375. The document contained a host of improvements to the region's multimodal transportation system. These improvements included closures of critical gaps in the network that hinder access to certain parts of the region, as well as the strategic expansion of the transportation system where there is room to grow in order to provide the region with greater mobility. The RTP/SCS demonstrated the region's ability to attain and exceed the GHG emission-reduction targets set forth by the CARB, and outlined a plan for integrating the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands.

SCAG's Regional Council adopted an update to the 2012 RTP/SCS on April 7, 2016, the *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (2016 RTP/SCS). The 2016 RTP/SCS expands upon the 2012 RTP/SCS's goal of balancing future mobility and housing needs with economic, environmental, and public health goals. Included in the 2016

RTP/SCS are 13 major initiatives primarily focused around preserving and maintaining the existing transportation system, expanding and improving mass transit (with a specific emphasis on passenger rail), decreasing reliance on vehicular modes of transportation through the expansion of pedestrian and bicycle infrastructure, and focusing new growth around transit. Through proactive land use planning and improvements to the transportation network, implementation of the 2016 RTP/SCS will result in an 8% reduction in GHG emissions per capita by 2020, an 18% reduction by 2035, and a 21% reduction by 2040 when compared with 2005 levels. These reductions meet or exceed the State's mandate, which require an 8% reduction by 2020 and 13% by 2035.

In March 2018, CARB established new regional GHG reduction targets for SCAG and other MPOs in the state (CARB, 2018). The new SCAG targets are an 8% reduction in per capita passenger vehicle GHG reductions by 2020 and a 19% reduction by 2035. On May 7, 2020, SCAG adopted "Connect SoCal", the 2020-2045 RTP/SCS, for federal transportation conformity purposes only. On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt Connect SoCal, and the addendum to the Connect SoCal Program Environmental Impact Report. Connect SoCal is designed to meet the regional GHG reduction targets for SCAG that were identified by CARB in 2018.

Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path toward a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies and between the people whose collaboration can improve the quality of life for Southern Californians. Connect SoCal contains 10 primary goals, as detailed below:

1. Encourage regional economic prosperity and global competitiveness.
2. Improve mobility, accessibility, reliability, and travel safety for people and goods.
3. Enhance the preservation, security, and resilience of the regional transportation system.
4. Increase person and goods movement and travel choices within the transportation system.
5. Reduce greenhouse gas emissions and improve air quality.
6. Support healthy and equitable communities.
7. Adapt to a changing climate and support an integrated regional development pattern and transportation network.
8. Leverage new transportation technologies and data-driven solutions that result in more efficient travel.
9. Encourage development of diverse housing types in areas that are supported by multiple transportation options.
10. Promote conservation of natural and agricultural lands and restoration of habitats.

Connect SoCal's "Core Vision" centers on maintaining and better managing the transportation network for moving people and goods, while expanding mobility choices by locating housing, jobs, and transit closer together and increasing investment in transit and complete streets. The

Core Vision includes: Sustainable Development, System Preservation and Resilience, Demand and System Management, Transit Backbone, Complete Streets, and Goods Movement.

From 2016 to 2045, Connect SoCal anticipates approximately 64 percent of household and 74 percent of new jobs will occur in Priority Growth Areas (PGAs). Connect SoCal's PGA's – Job Centers, Transit Priority Areas (TPAs), High Quality Transit Areas (HQTAs),[4] Neighborhood Mobility Areas (NMAs), Livable Corridors, and Spheres of Influences (SOIs) – account for only 4 percent of the region's total land areas, but will accommodate the afore mentioned growth statistics. As shown in Figure 2 of the "Garden Grove Housing Element Update Vehicle Miles Traveled (VMT) Analysis" prepared for the FGPUZA by Fehr and Peers, most of the northern, eastern, and southern portions of the Planning Area are within TPAs. These TPAs within the City are also HQTAs.

Senate Bill 350 (Clean Energy & Pollution Reduction Act) and Senate Bill 100. SB 350 was signed into Law in September 2015 and establishes tiered increases to the RPS. The Bill requires 40% of the state's energy supply to come from renewable sources by 2024, 45% by 2027, and 50% by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures. SB 100, signed by Governor Brown on September 10, 2018, increased the RPS requirement for 2030 from 50% to 60%.

Assembly Bill 1493. With the passage of AB 1493 (Pavley I) in 2002, California launched an innovative and pro-active approach for dealing with GHG emissions and climate change at the state level. AB 1493 requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks from 2009 through 2016. Although litigation was filed challenging these regulations and the U.S. EPA initially denied California's related request for a waiver, a waiver was granted. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 among light-duty vehicles. In January 2012, CARB approved the Advanced Clean Cars (ACC) program (formerly known as Pavley II) for model years 2017 through 2025. The components of the ACC program are the Low-Emission Vehicle (LEV) regulations and the ZEV regulation. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards.

Executive Order B-30-15, Senate Bill 32 & Assembly Bill 197 (Statewide Interim GHG Targets). California EO B-30-15 (April 29, 2015) set an "interim" statewide emission target to reduce greenhouse emissions to 40% below 1990 levels by 2030, and directed state agencies with jurisdiction over GHG emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels. Specifically, the EO directed CARB to update the Scoping Plan to express this 2030 target in metric tons. AB 197 (September 8, 2016) and SB 32 (September 8, 2016) codified into statute the GHG emissions reduction targets of at least 40% below 1990 levels by 2030 as detailed in EO B-30-15. AB 197 also requires additional GHG emissions reporting that is broken down to sub-county levels and requires CARB to consider the social costs of emissions impacting disadvantaged communities.

[4] HQTAs are corridor-focused PGAs within half-a-mile of an existing or planned fixed guideway transit stop or a bus transit corridor where buses pick passengers up at a frequency of every 15 minutes (or less) during peak commuting hours.

Executive Order B-55-18. Governor Brown issued EO B-15-18 on September 10, 2018, which directs the State to achieve carbon neutrality as soon as possible and no later than 2045, and achieve and maintain net negative emissions thereafter.

Title 24 Energy Standards. The California Energy Commission (CEC) first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality." The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC).

CALGreen contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to exterior light pollution reduction, wastewater reduction by 20%, and commissioning of projects over 10,000 square feet. Two tiers of voluntary measures apply to non-residential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, adopted May 9, 2018, will go into effect on January 1, 2020 and improve upon existing standards, focusing on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and Indoor Air Quality (IAQ) requirements, and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 standards also propose several smaller improvements in energy efficiency.

Center for Biological Diversity v. California Department of Fish and Wildlife. In its decision in *Center for Biological Diversity v. California Dept. of Fish and Wildlife* (*Newhall*) 62 Cal.4th 204 (2015), the California Supreme Court set forth several options that lead agencies may consider for evaluating the cumulative significance of a proposed project's GHG emissions:

1. A calculation of emissions reductions compared to a BAU scenario based upon the emissions reductions in CARB's Scoping Plan, including examination of the data to determine what level of reduction from BAU a new land use development at the proposed location must contribute in order to comply with statewide goals.
2. A lead agency might assess consistency with AB 32's goals by looking to compliance with regulatory programs designed to reduce GHG emissions from particular activities.
3. Use of geographically specific GHG emission reduction plans to provide a basis for tiering and streamlining of project-level CEQA analysis.
4. A lead agency may rely on existing numerical thresholds of significance for GHG emissions, though use of such thresholds is not required.

Local

City General Plan. The City's Air Quality Element, Conservation Element, and Safety Element contain the following goals and policies related to global climate change and greenhouse gas emissions:

- Goal AQ-2: Increased awareness and participation throughout the community in efforts to reduce air pollution and enhance air quality.
    - Policy AQ-2.2 Promote and encourage ride sharing activities within the community.
    - Policy AQ-2.3 Continue to improve existing sidewalks, bicycle trails, and parkways, and require sidewalk and bicycle trail improvements and parkways for new development or redevelopment projects.
    - Policy AQ-2.4: Relieve congestion on major arterials and reduce emissions.
    - AQ-IMP-2A: Establish additional park-and-ride facilities for work and non-work trip reductions.
    - AQ-IMP-2B: Require new development or redevelopment projects to provide pedestrian and bicycle trails access to nearby shopping and employment centers.
    - AQ-IMP-2D: Continue preventive maintenance and repair of City vehicles and equipment. Investigate the possibility of converting the existing vehicle fleet to clean fuel vehicles.
- Goal AQ-3: A diverse and energy efficient transportation system incorporating all feasible modes of transportation for the reduction of pollutants.
    - Policy AQ-3.1: Cooperate and participate with regional and local efforts to develop an efficient transportation system that reduces vehicle trips and vehicle miles traveled.
    - Policy AQ-3.2: Cooperate in efforts to expand and promote the use of bus, rail, and other forms of transit within the region in order to further reduce pollutants.
    - AQ-IMP-3A Continue to work closely with the Orange County Transit Authority (OCTA) and adjacent cities to establish an alternative transportation system along the OCTA right-of-way, such as the "Go Local" program on the right-of-way between Garden Grove and Santa Ana.
    - AQ-IMP-3B: Support public transit providers to increase funding for alternative modes of travel.
    - AQ-IMP-3C: Participate with public transit providers serving the City and Orange County in a cooperative program to further increase transit services.
    - AQ-IMP-3D: Develop the bicycle routes identified in the Parks, Recreation, and Open Space Element to support the use of bicycles as an alternate mode of transportation.
    - AQ-IMP-3E: Allow or encourage programs for priority parking or free parking in City parking lots for alternative fuel vehicles, especially zero and super ultra low emission vehicles (ZEVs and SULEVs).
    - AQ-IMP-3F: Support the development of alternative fuel infrastructure that is publicly accessible.
- Goal AQ-4: Efficient development that promotes alternative modes of transportation, while ensuring that economic development goals are not sacrificed.
    - Policy AQ-4.1: Review site developments to ensure pedestrian safety and promote nonautomotive users.

  - Policy AQ-4.2: Encourage neighborhood parks and community centers near concentrations of residential areas and include pedestrian walkways and bicycle paths to encourage non-motorized travel.
  - Policy AQ-4.3: Encourage "walkable" neighborhoods with pedestrian walkways and bicycle paths in residential and other types of developments to encourage pedestrian rather than vehicular travel.
  - AQ-IMP-4A: Periodically review parking requirements and revise as necessary with market demands in relation to air quality guidelines.
  - AQ-IMP-4B: Investigate short- and long-term parking strategies at civic and private facilities.
  - AQ-IMP-4C: Require sidewalks through parking lots, bicycle racks near building entrances and other provisions for the safety and convenience of pedestrian and bicycle riders at all commercial, mixed use, and production facilities.
- Goal AQ-5: An improved balance of residential, commercial, industrial, recreational, and institutional uses to satisfy the needs of the social and economic segments of the population. Work towards clean air while still permitting reasonable planned growth.
  - Policy AQ-5.1: Support mixed use developments.
  - Policy AQ-5.2: Encourage infill development projects within urbanized areas that include jobs centers and transportation nodes.
  - Policy AQ-5.3: Promote mixed use development that allows the integration of retail, office, industrial, institutional, and residential uses for the purposes of reducing costs of infrastructure construction and maximizing the use of land.
  - Policy AQ-5.4: Encourage employment centers that are non-polluting or low polluting and do not draw large number of vehicles in proximity to residential uses.
  - Policy AQ-5.5: Avoid locating multiple-family developments close to areas that emit harmful air contaminants.
  - Policy AQ-5.6: Increase residential and commercial densities around bus and/or rail transit stations, and along major arterial corridors.
  - Policy AQ-5.7: Preserve transportation corridors with the potential of high demand or of regional significance for future expansion to meet project demand.
  - AQ-IMP-5A: Encourage mixed use developments that combine residential and commercial or industrial business locations, thereby improving convenience and reducing trip generation.
- Goal AQ-6: Increased energy efficiency and conservation.
  - Policy AQ-6.1: Develop incentives and/or regulations regarding energy conservation requirements for private and public developments.
  - Policy AQ-6.2: Promote energy conservation and disseminate information throughout the community about energy conservation measures.
  - AQ-IMP-6A: Remove barriers for the use of solar energy for residential, commercial, industrial, or institutional uses.
  - AQ-IMP-6B: Research and secure financial assistance and other means to support, provide, and address energy efficient applications such as solar panels, cool roofs, wind energy, building modifications, etc.
  - AQ-IMP-6C: Continue to promote overall energy efficiency at local public facilities and continue preventative maintenance programs.
  - AQ-IMP-6D: Require new development to comply with the energy use guidelines in Title 24 of the California Administrative Code).
  - AQ-IMP-6E: Consider the development and implementation of a residential shade tree program that would provide trees to residents to reduce energy consumption.

  - AQ-IMP-6F: Consider the development and implementation of an urban forest plan to plant additional trees citywide.
  - AQ-IMP-6G: Develop incentives and/or regulations regarding energy conservation requirements for private and public developments.
  - AQ-IMP-6H: Monitor energy conservation or renewable energy generation programs proposed by the State or Federal government, such as California Energy Commission's New Solar Homes Partnership to determine this applicability to new development or redevelopment projects in the City.
- Goal CON-1: Garden Grove's water resources shall be conserved to ensure equitable amounts of clean water for all users.
  - Policy CON-1.2: Reduce the waste of potable water through efficient technologies, conservation efforts, and design and management practices, and by better matching the source and quality of water to the user's needs.
  - Policy CON-1.3: Promote water conservation in new development or redevelopment project design, construction, and operations.
  - Policy CON-1.6: Continue to educate citizens in water conservation and encourage its practice.
  - CON-IMP-1A: Assist the efforts of the water districts to reduce waste and increase reuse of water and wastewater through integrated planning of programs and complementary land use and building regulations.
  - CON-IMP-1B: Require on-site infiltration whenever feasible for new development or redevelopment projects.
  - CON-IMP-1C: Promote site appropriate, low-water-use, and drought tolerant native plants city-wide.
  - CON-IMP-1D: Restore and promote native plant use at the Civic Center and the development of similar landscaping for all public facilities.
  - CON-IMP-1E: Develop a landscape palette for use by developers, homeowners, etc., that specifies drought tolerant planting and water saving irrigation systems.
  - CON-IMP-1F: Promote cost-saving conservation measures such as low-flow fixtures, waterless urinals, and other techniques that extend scarce supplies for all homes and businesses.
  - CON-IMP-1G: Assess and remove barriers to integrated water planning and sustainable water technologies for new development or redevelopment projects.
  - CON-IMP-1H: Provide incentives to new development or redevelopment projects that incorporate water efficient design and technologies.
  - CON-IMP-1I: Explore available funding opportunities for existing homeowners and business owners who would like to upgrade to water efficient technologies.
  - CON-IMP-1J: Encourage water conservation for new development or redevelopment projects through business rebates, or plumbing maintenance programs.
  - CON-IMP-1K: Encourage water agencies to conduct irrigation training workshops for homeowners and professionals.
- Goal CON-2: Protect and improve water quality.
  - Policy CON-2.1: Enhance water infiltration throughout watersheds by decreasing accelerated runoff rates and enhancing groundwater recharge. Whenever possible, maintain or increase a site's pre-development infiltration to reduce downstream erosion and flooding.
  - Policy CON-2.2: Encourage practices that enable water to percolate into the surrounding soil, instead of letting sediment, metals, pesticides and chemicals runoff directly into the storm drain system, creeks, or regional flood control facilities.

  - CON-IMP-2C: Research the potential to expand the use of alternative waste disposal methods such as gray water systems, composting toilets, waterless urinals, and other techniques — and community systems to help reduce the potential for contaminants to pollute water bodies and create human health hazards.
  - CON-IMP-2D: Minimize impervious services for new development, and incorporate technologies such as pervious paving, landscaped roofs, planter boxes, and rainwater capture and reuse.
- Goal CON-3: Reduce total waste diverted to treatment or disposal at the waste source and through re-use and recycling.
  - Policy CON-3.1: Update as appropriate and continue to implement the Source Reduction and Recycling Element (SRRE) for the City.
  - Policy CON-3.2: Investigate a Citywide recycling program and hazardous waste drop-offs to provide optimal recycling opportunities for homeowners and businesses.
  - Policy CON-3.3: Encourage business material reuse through waste exchange.
  - Policy CON-3.4: Encourage the use of materials with minimal impacts to the environment for new development or redevelopment projects in the City.
  - Policy CON-3.5: Continue to maintain and enhance the public education program developed by Garden Grove Sanitation District that addresses waste management and proper household waste sorting and handling.
  - CON-IMP-3A: Establish targets for materials reduction.
  - CON-IMP-3B: Encourage materials recycling during renovation or demolition of old buildings.
  - CON-IMP-3C: Encourage participation in the CalMAX program, which is a free service offered by the Integrated Waste Management Board. The program conserves energy, resources, and landfill space by helping businesses and organizations find alternatives to the disposal of valuable materials or wastes through waste exchange.
  - CON-IMP-3D: Encourage the use of recycled or rapidly renewable materials, and building reuse and renovation over new construction, where feasible.
  - CON-IMP-3E: Research funding opportunities for new development or redevelopment projects that incorporate building reuse and use of recycled materials.
- Goal CON-4: Reduce per-capita non-renewable energy waste and city-wide peak electricity demand through energy efficiency and conservation.
  - Policy CON-4.1: Integrate energy efficiency and conservation requirements that exceed State standards into the development review and building permit processes.
  - Policy CON-4.2: Create incentives such as expedited permit processing, technical assistance, and other methods that will encourage energy efficiency technology and practices.
  - Policy CON-4.3: Integrate energy efficiency and conservation technologies and practices into new City facilities and, where feasible, existing buildings as well as City functions.
  - Policy CON-4.4: Provide public information, marketing, and education to support energy efficiency and energy conservation.
  - CON-IMP-4A: Adopt Energy Efficiency Standards for new and remodeled buildings that exceed Title 24 building standards.

  - CON-IMP-4B: Create a tree-planting program that provides for the planting of appropriate, water efficient trees in residential, commercial, and civic areas that will reduce city-wide energy needs the heat-island effect through natural cooling.
- Goal CON-5: Reduce dependency on non-renewable energy resources through the use of local and imported alternative energy sources.
  - Policy CON-5.1: Integrate technically and financially feasible renewable energy resources requirements into development and building standards through adopted Renewable Energy Building Standards.
  - Policy CON-5.2: Promote renewable energy use through regulations, incentives, and available funding opportunities.
  - Policy CON-5.3: Create opportunities for the purchase and development of local renewable energy resources.
  - CON-IMP-5A: Work with local electric providers to allow purchase and sale of renewable energy.
  - CON-IMP-5B: Continue to identify and remove regulatory or procedural barriers to producing renewable energy in building and development codes, design guidelines, and zoning ordinances.
  - CON-IMP-5C: Work with related agencies such as fire, water, and health that may impact the use of alternative technologies.
  - CON-IMP-5D: Develop protocols for alternative energy storage such as biodiesel, hydrogen, and/or compressed air.
  - CON-IMP-5E: Continue to allow passive or active solar design elements and systems and protection from shading by neighboring structures and trees.
  - CON-IMP-5F: Ensure all new and remodeled City facilities incorporate Renewable Energy Building Standards into the facilities.
  - CON-IMP-5G: Encourage renewable technologies through streamlined planning and development rules, codes, and processes.
  - CON-IMP-5H: Provide incentives such as expedited processing for facilities that use renewable sources for energy production.
  - CON-IMP-5I: Work with State and federal agencies to inform the public of, and possibly secure tax exemptions, tax rebates, or other financial incentives for new facilities.
  - CON-IMP-5J: Develop and utilize renewable energy and clean generation technologies such as solar, wind, biogas, tidal, cogeneration, and fuel cells to power City facilities using tax-free low-interest loans and other available financial options.
- Goal CON-6: Green Building programs achieve water and energy efficiency, minimize raw resource consumption, and reduce the amount of waste placed in landfills while improving human health and quality of life in the City.
  - Policy CON-6.1: The City shall promote improvement in the health and productivity of new buildings, by understanding and training building personnel in new construction practices and the use of alternative or recycled building materials.
  - Policy CON-6.2: Provide information, marketing, training, and education to the public to support green building activities.
  - CON-IMP-6A: Seek out educational or other training opportunities for planning and building personnel to learn new construction practices, including the use of alternative building materials.
  - CON-IMP-6B: Develop educational materials that can be made available to the public regarding green building activities, new construction practices, and/or alternative building materials.

- Goal SAF-10: A robust, climate-responsive community prepared to anticipate, adapt to, and mitigate impacts stemming from climate change.
  - Policy SAF-10.9: Investigate all potential strategies to reduce greenhouse gas emissions from municipal operations, private businesses, and residences..
  - Policy SAF-10.10: Encourage mixed use development throughout the city to implement land use strategies to encourage jobs/housing proximity, promote transit-oriented development, and encourage high density development along major corridors, which encourages walking, bicycling and the use of public transit systems.
  - Policy SAF-10.11: Encourage infill, redevelopment, and higher density development consistent with the goals and policies of the Land Use Element.
  - Policy SAF-10.12: Encourage new developments to integrate housing with civic and retail amenities (jobs, schools, parks, shopping opportunities) to help reduce VMT resulting from discretionary automobile trips.
  - SAF-IMP 10E: Support residential energy efficiency and weatherization programs for new and existing buildings.
  - SAF-IMP 10F: Design new buildings to use less cooling through passive heat and cooling techniques.
  - SAF-IMP 10J: Consider evaluating the feasibility of implementing a wastewater or recycle water facilities.
  - SAF-IMP 10N: Consider preparing a climate action plan that outlines the specific activities the City will undertake to reduce greenhouse gas emissions.
  - SAF-IMP 10P: Promote limiting idling time for commercial vehicles, including delivery and construction vehicles, consistent with the SCAQMD idling regulations.
  - SAF-IMP 10Q: Continue implementing the City's Urban Forestry Management Plan goals and objectives, which will assist in reducing carbon dioxide, energy use, and improve air quality.
  - SAF-IMP 10R: Encourage the use of available energy saving measures that exceed the minimum Title 24 requirements for residential and commercial projects.
  - SAF-IMP 10S: Educate the public, schools, other jurisdictions, professional associations, business and industry about reducing GHG emissions.
  - SAF-IMP 10T: Continue to replace traffic lights, streetlights, and other electrical uses to energy efficient bulbs and appliances.
  - SAF-IMP 10U: Encourage the purchase of Energy Star equipment and appliances for municipal and private.
  - SAF-IMP 10V: Evaluate the feasibility of incorporating on-site renewable energy production, including installation of photovoltaic cells or other solar options, for existing City facilities.

    SAF-IMP 10W: Explore the feasibility of purchasing City fleet vehicles that use alternatives fuels or technology, such as low and zero emission vehicles.
  - SAF-IMP 10Z: Continue to promote the City's employee rideshare program, which includes matching potential carpoolers and incentives for purchasing low and zero emissions vehicles.
  - SAF-IMP 10AA: Continue to promote the City's Recycle Garden Grove program to reduce solid waste in landfills.
  - SAF-IMP 10AB: Continue to promote and educate the public on the State's mandatory commercial and residential organics recycling requirements to divert organic waste at landfills.

- SAF-IMP 10AC: Develop a strategy to reduce greenhouse gas emissions citywide consistent with other City policy objectives. Consider developing a climate action plan or other document that defines that strategy. Actions that may be considered as part of the strategy may include:
    - On-site renewable energy generation capabilities for larger-scale commercial, industrial, institutional, and multi-family residential developments.
    - Actions that will move Garden Grove toward zero-net energy over a longer time frame
    - Enhanced transit connections to the streetcar station once it is operational
    - Outreach to local businesses to identify measures they can pursue to reduce emissions associated with deliveries, production, cooking (for restaurants), and other business practices
    - Coordination with local schools to reduce traffic congestion/idling vehicles during pick-up and drop-off times

City 2008 General Plan Environmental Impact Report. The City's 2008 General Plan Update Programmatic EIR included the following mitigation measures to reduce GHG emissions:

- Mitigation Measure AQ-2: The City of Garden Grove shall consider adopting a Climate Protection Action Plan, which would establish a Citywide inventory of greenhouse gases for Existing, General Plan Buildout and Year 1990 conditions. The Climate Action Protection Plan shall outline a set of enforceable strategies to ensure the City meets the requirements of Assembly 32, as well as the directives outlines in Executive Order S-3-05.
- Mitigation Measure AQ-3: The City of Garden Grove shall require all new residential development of more than six dwelling units to participate in the California Energy Commission's New Solar Homes Partnership (this program provides rebates to developers of six dwelling units or more who offer solar power on 50 percent of the new units) and new or major renovations of commercial or industrial development (that exceeds a certain square foot maximum) shall incorporate renewable energy generation to provide the maximum feasible amount of the project's energy needs.
- Mitigation Measure AQ-4: The City of Garden Grove shall require that all new dwellings install Energy Star rated appliances and the most energy-efficient water heaters and air conditions systems that are feasible. The City of Garden Grove shall also require all new buildings and major renovations to use energy efficient lighting (indoor and outdoor) that reduces electricity use by substantially more than current State Building Code requirements.

4.6.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in the CEQA Guidelines, implementation of the Project would have a significant impact related to GHG emissions if it would:

A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

B. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?

Would the project cause substantial adverse cumulative impacts with respect to greenhouse gasesIn order to provide guidance to local lead agencies on determining the significance of GHG emissions in their CEQA documents, the SCAQMD convened the first GHG Significance Threshold Working Group (Working Group) meeting on April 30, 2008 (SCAQMD 2008). To date, the Working Group has convened a total of 15 times, with the last meeting taking place on September 28, 2010 (SCAQMD 2010). Based on the last Working Group meeting, the SCAQMD identified an interim, tiered approach for evaluating GHG emissions The following describes the basic structure of the SCAQMD's tiered, interim GHG significance thresholds:

Tier 1 consists of evaluating whether or not the project qualifies for applicable CEQA exemptions.

Tier 2 consists of determining whether or not a project is consistent with a greenhouse gas reduction plan. If a project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.

Tier 3 consists of using screening values at the discretion of the Lead Agency; however, the Lead Agency should be consistent for all projects within its jurisdiction. The following thresholds were proposed for consideration:

a. 3,000 $MTCO_2e$/yr for all land use types; or

b. 3,500 MTCO2e/yr for residential; 1,400 MTCO2e/yr for commercial; 3,000 MTCO2e/yr for mixed use projects.

Tier 4 has three options for projects that exceed the screening values identified in Tier 3:

Option 1: Reduce emissions from business-as-usual by a certain percentage (currently undefined).

Option 2: Early implementation of applicable AB 32 Scoping Measures.

Option 3: For plan-level analyses, analyze a project's emissions against an efficiency value of 6.6 $MTCO_2e$/yr/SP by 2020 and 4.1 $MTCO_2e$/yr/SP by 2035. For project-level analyses, analyze a project's emissions against an efficiency value of 4.8 and 3.0 $MTCO_2e$/yr/SP for the 2020 and 2035 calendar years, respectively.

The FGPUZA plans for growth through 2040, five years before the SCAQMD's latest Tier 4 interim efficiency target year (2035) identified above. Therefore, to evaluate the Project's GHG emissions against future GHG reduction goals, the plan-level efficiency target has been adjusted based on the GHG reduction targets of SB 32, which sets a target of 40 percent below 1990 levels by 2030, and Executive Order S-03-05, which sets a goal of 80 percent below levels by 2050. The resulting, interpolated efficiency target for the year 2040 is 2.6 $MTCO_2e$/yr/SP.[5]

[5] To remain on track with future GHG reduction goals, it is necessary to identify the efficiency target for 2040. Pursuant to existing legislation and executive orders, GHG emissions are required to be reduced to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050 – meaning a 40 percent reduction would need to occur between 2030 and 2050 compared to 1990 levels. 2040 is the halfway point between 2030 and 2050; thus, half the reductions that need to occur between 2030 and 2050 should be achieved by 2040 (i.e., GHG emissions should be 60 percent below 1990 levels by 2040). Using the efficiency metric for 2020, 6.6 $MTCO_2e$/yr/SP (the same efficiency as 1990 pursuant to AB 32 reduction requirements) and multiplying through by 40 percent (i.e., 60 percent below 1990 levels) results in a derived efficiency metric of 2.6 $MTCO_2e$/yr/SP for year 2040. The City is not applying or proposing to use 2.6 $MTCO_2e$/yr/SP as a CEQA GHG significance threshold for general use; rather, it is only intended for use in this document based on the FGPUZA's horizon.

4.6.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to GHG emissions and potential conflicts with a plan, policy, or regulation adopted for the purposes of reducing GHG emissions which could result from the implementation of the Project and recommends mitigation measures as needed to reduce potentially significant impacts.

GHG Emissions

Impact GHG-1 – Would the FGPUZA generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Analysis of Impacts

Implementation of the FGPUZA would result in construction and operational activities that would generate GHG emissions. As described in more detail below, the GHG emissions generated by the growth envisioned under the FGPUZA would exceed SCAQMD thresholds and result in a significant and unavoidable impact even with the inclusion of all feasible mitigation measures.

GHG Emissions

As explained in more detail in Section 4.1, Air Quality, and shown in Table 3-3 of the Project Description, the planned land use changes that could occur under buildout conditions of the FGPUZA would result in an additional 20,242 dwelling units and 68,818 residents, while decreasing non-residential building square space by approximately 514,500 square feet. However, employment is still expected to increase due to changes in land use, with the land uses proposed by the FGPUZA accommodating an additional 3,603 jobs. The growth facilitated under implementation of the FGPUZA would result in construction activities that would generate GHG emissions primarily from fuel combustion in equipment during demolition, site preparation, grading, building construction, paving, and architectural coating activities and in worker, vendor, and haul trips to and from future development projects. Construction activities would occur intermittently at different sites within the Planning Area over the next approximately 20 years. Generally, the SCAQMD recommends amortizing construction GHG emissions over a 30-year period since construction activities for a project typically only occur towards the start of a project and cease to emit GHG upon the completion of construction activities. This normalizes construction emissions so that they can be grouped with operational emissions and compared to appropriate thresholds, plans, etc. As described under Impact AQ-2, there is uncertainty regarding the timing and methods of construction activities that would occur for future development projects. Construction activities would cease to emit GHG upon completion, unlike operational emissions that would be continuous year after year until the development is decommissioned. For reasons discussed in Impact AQ-2, construction emissions were not estimated for the proposed FGPUZA.

The existing and proposed land uses envisioned by the FGPUZA would result in operational GHG emissions, primarily from mobile, energy, and area sources. Mobile sources, including vehicle trips to and from land uses within the City, would result primarily in emissions of CO_2, with emissions of CH_4 and NO_2 also occurring in minor amounts. In addition to mobile sources, GHG emissions would also be generated from natural gas usage, electricity use, water conveyance and use, wastewater treatment, and solid waste disposal. Natural gas use would result in the emission of two GHGs: CH_4 (the major component of natural gas) and CO_2 (from

the combustion of natural gas). Electricity use associated with both the physical usage of the development, as well as the energy needed to transport water/wastewater, would result in the production of GHGs if the electricity is generated through non-renewable sources (i.e., combustion of fossil fuels). Solid waste generated by land uses within the Planning Area would contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy when transporting and managing the waste. In addition, landfilling, the most common waste management practice, results in the release of CH_4 from the decomposition of organic materials.

Potential operational GHG emissions resulting from operation of the land uses proposed by the FGPUZA were estimated using CalEEMod, Version 2016.3.2. The modeling assumes Project growth consistent with the land use development intensities described in Impact AQ-2. The modeling is based on default data assumptions contained in CalEEMod, with the project-specific modifications described under Impact AQ-2, as well as the following adjustments to default model assumptions:

- **Mobile Sources.** CalEEMod does not estimate N_2O emissions from on-road vehicle travel or off-road construction sources. To account for this, CalEEMod emissions estimates were adjusted as follows:
    - N_2O emissions were estimated for the FGPUZA by comparing the ratio of CO_2 and N_2O emissions from the on-road vehicle sector contained in the State's most recent GHG inventory (CARB, 2020). In 2018, statewide CO_2 and N_2O emissions estimates for the on-road transportation sector were 151.2 and 0.005 million metric tons, respectively (N_2O emissions are therefore equal to 0.003% of CO_2 emissions for this sector).
- **Energy Use and Consumption:** The GHG intensity value utilized in the modeling is based on an estimated SCE carbon emission factor that reflects SCE's compliance with SB 100, which requires 60% of the total kilowatt-hours sold to retail end-use customers be served by renewable energy sources by 2030.

The total unmitigated GHG emissions estimated to occur under projected 2040 growth conditions are shown below in Table 4.6-4 and compared against the potential GHG emissions that could exist in 2040 if the FGPUZA were not approved.[6] The SCAQMD recommends the use

[6] Although CEQA generally requires an evaluation of impacts associated with project implementation against the conditions that exist at the time the Notice of Preparation (NOP) is published, CEQA Guidelines Section 15125(a)(2) allows a lead agency to, "…use projected future conditions (beyond the date of project operations) baseline as the sole baseline for analysis only if it demonstrates with substantial evidence that use of existing conditions would be either misleading or without informative value to decision makers and the public." Existing conditions GHG emissions for Year 2020 (current baseline conditions)) and Year 2040 (future conditions) have been provided in Section 4.1.1. As shown in Table 4.6-3 and described in Section 4.1.1, the existing land uses within the Planning Area would benefit from regulatory actions at the State level (i.e., vehicle and fuel efficiency standards and cleaner electricity), which would continue to reduce emissions over the next approximately 20 years, even if the FGPUZA is not approved or implemented. Therefore, to provide a conservative assessment of emissions associated with implementation of the proposed FGPUZA, GHG emissions associated with operation of the existing land uses in 2040 are compared against those proposed under the FGPUZA in 2040 to paint a more accurate picture of how the land uses proposed by the FGPUZA could change emissions in the Planning Area. This provides a more conservative assessment of emissions because the existing land use GHG emissions in 2020 were greater than those shown for the existing land uses shown in 2040 (see Table 4.6-3). Comparing the existing land use GHG emissions under 2040 conditions to proposed FGPUZA emissions (2040) is more informative than comparing the existing land use GHG emissions under 2020 conditions to proposed FGPUZA emissions.

of an efficiency threshold for plan-level analysis in which potential emissions levels are considered in terms of how many GHG emissions would be produced by each resident and employee using a project's facilities. Thus, the adjusted 2040 project-level efficiency target of 2.6 $MTCO_2e$/yr/SP is the primary factor considered in evaluating the significance of the FGPUZA's GHG emissions changes.

As shown in Table 4.6-4, the Planning Area would emit approximately 969,862 $MTCO_2e$ annually by 2040. Dividing by the Planning Area's service population (287,988 residents and employees) results in an efficiency metric of 3.4 $MTCO_2e$/yr/SP for 2040. Although this GHG efficiency level does not meet the adjusted target for 2040 (2.6 $MTCO_2e$/yr/SP), it does show an appreciable reduction from existing and future baseline conditions. Specifically, the GHG efficiency occurring under 2040 with the FGPUZA would be approximately 38% less than existing 2020 conditions and 16% less than 2040 conditions without the FGPUZA.

The primary source of FGPUZA GHG emissions would be mobile sources, which represent approximately 76% of total annual GHG emissions occurring under 2040 growth conditions. The unmitigated mobile source emission estimates are conservative, since they do not take into account land use interactions (e.g., residential land use proximity to commercial land uses) and transit amenities (e.g., bus routes) that would likely reduce the number of vehicle trips generated in the Planning Area and the quantity of VMT occurring with the FGPUZA in 2040. The next highest source of FGPUZA GHG emissions would be energy sources, which would represent approximately 15% of total annual GHG emissions.

The City's existing General Plan Air Quality Element and Conservation Element, and proposed Safety Element, include goals and policies that encourage sustainable and green development that reduce energy-related GHG emissions. Implementation of the proposed FGPUZA would generally involve redeveloping portions of the City with mixed-use development in areas that are well served (and will be well served) by transit amenities in the future (see Impact GHG-2 for additional discussion regarding redevelopment in High Quality Transit Area (HQTAs).

The City's existing General Plan and the proposed FGPUZA contain numerous goals, policies, and strategies that highlight the City's intent to grow sustainably. For example, as shown under Section 4.6.2, the City would consider preparing a climate action plan (or similar document) that identifies the City's long-term strategy for reducing city-wide GHG emissions (Policy SAF-IMP 10N and SAF-IMP 10AC). The City would also encourage the use of available energy saving measures that exceed the minimum Title 24 energy requirements for residential and commercial projects (Policy SAF-IMP 10R). By encouraging future development within the City to be more energy efficient, it would also reduce GHG emissions associated with energy consumption, because less energy would be consumed. In addition, the implementation actions such as SAF-IMP 10T involve energy efficiency improvements to atypical, non-land use sources, such as traffic lights and street lights. Implementing policies such as this, as well as SAF-IMP 10V and SAF-IMP 10Z, highlight the City's intent to continue conducting municipal operations in a manner that reduces energy consumption and associated GHG emissions. In implementing the City's existing General Plan policies and those proposed in the FGPUZA, the City would function as a leader within the city-limits on how operations can be conducted in an efficient and sustainable manner.

It is not possible at this time to quantify the GHG emissions reductions that could be realized through the implementation of the FGPUZA. For example, it cannot be assured some of the policy considerations (e.g., adopting a climate action plan or similar document) would be implemented, or the degree to which specific policies would reduce GHG emissions. The

specific timing and rate at which policies are implemented would also have an effect on the quantity of GHG emissions that would be reduced. For example, the specific GHG emissions reduction measures associated with SAF-IMP 10R and SAF-IMP 10U would be dependent on the number of projects, building type/intensities, and/or the amounts by which projects exceed minimum Title 24 energy requirements.

Level of Significance Before Mitigation

As shown in Table 4.6-4, the FGPUZA's 2040 growth projection would result in GHG emissions that exceed the adjusted SCAQMD derived plan-level efficiency metric. This is considered a **potentially significant** impact.

Table 4.6-4
Unmitigated FGPUZA GHG Emissions

Source	GHG Emissions ($MTCO_2e$ / Year)		
	Existing Land Uses (2040)[(A)]	FGPUZA Land Uses (2040)	Net Change
Area	16,358	21,202[(B)]	+4,845
Energy	127,418	145,021	+17,602
Mobile	679,641	734,925	+55,283
Waste	46,240	47,374	+1,134
Water	17,872	21,341	+3,468
Total[(C)]	887,529	969,862	+82,332
Service Population (SP)	220,567	287,988	+67,421
$MTCO_2e$/yr/SP	4.0	3.4	-0.6
SCAQMD Tier 4 2020 Plan Level Efficiency Threshold	--	6.6	--
SCAQMD Tier 4 Adjusted 2040 Plan Level Efficiency Threshold	--	2.6	--
Exceeds Threshold?	**--**	**Yes**	**--**

Source: MIG, 2021 (see Appendix D).

(A) See Table 4.6-3 for existing GHG emissions in the Planning Area.

(B) The FGPUZA area source emissions assume landscaping emissions would be held constant between no-project conditions in 2040 (i.e., continued operation of existing land uses) and conditions proposed by the FGPUZA. The City of Garden Grove is generally built out, and the types of redevelopments that would occur under implementation of the FGPUZA would generally involve more intensive, vertical development. The FGPUZA would not increase the area in the City that would be required to be maintained by landscaping equipment.

(C) Totals may not equal due to rounding.

Mitigation Measures

See Mitigation Measures AQ-2A through AQ-2C.

Level of Significance After Mitigation

Although it is anticipated that the implementation of the policies in the FGPUZA would reduce city-wide GHG emissions, it cannot be assured at this time that these reductions would be sufficient enough to meet the interpolated SCAQMD efficiency metric of 2.6 $MTCO_2e$/yr/SP. In addition, As described in Section 4.1, Air Quality, there is uncertainty regarding the specific nature of the construction and operational activities that would be facilitated under implementation of the proposed FGPUZA. Mitigation Measure AQ-2A and AQ-2B require the preparation of project-specific construction and operational air quality analysis and incorporation of mitigation if emissions levels are shown to be above SCAQMD-recommended thresholds of significance. Mitigation Measure AQ-2C reduces exhaust emissions of NO_X and other pollutants from vehicles, including GHG emissions. It cannot be definitively known or stated at this time what level of emissions reductions future development projects occurring under implementation of the proposed FGPUZA would achieve via the implementation of these mitigation measures. While the implementation of Mitigation Measures AQ-2A, AQ-2B, and AQ-2C would reduce GHG emissions, it cannot be definitively known or stated at this time if future emissions in the City would be reduced to levels that are below SCAQMD thresholds. Therefore, this impact would be **significant and unavoidable** despite the implementation of policies in the FGPUZA that have been incorporated with the intent of reducing GHG emissions and the incorporation of Mitigation Measures AQ-2A, AQ-2B, and AQ_2C.

Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of greenhouse gases?

Impact GHG-2 – The proposed project would conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of greenhouse gases.

Analysis of Impacts

CARB Scoping Plan

As discussed under Section 4.6.2, the 2017 Climate Change Scoping Plan is CARB's primary document used to ensure State GHG reduction goals are met. The plan identifies an increasing need for coordination among State, regional, and local governments to achieve the GHG emissions reductions that can be gained from local land use planning and decisions. The major elements of the 2017 Climate Change Scoping Plan, which is designed to achieve the State's 2030 GHG reduction goal, are listed in Section 4.6.2. Nearly all of the specific measures identified in the 2017 Climate Change Scoping Plan would be implemented at the state level, with CARB and/or another state or regional agency having the primary responsibility for achieving required GHG reductions. The Project, therefore, would have limited ability to directly conflict with any of the specific measures identified in the 2017 Climate Change Scoping Plan.

Nonetheless, the overarching goal of the 2017 Climate Change Scoping Plan is to achieve a 40% reduction in GHG emissions below 1990 levels by the Year 2030. To achieve this statewide goal, the 2017 Climate Change Scoping Plan recommends a statewide efficiency metric of six metric tons per capita by 2030 and two metric tons per capita by 2050. These statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the State.

Under an unmitigated scenario, implementation of the proposed FGPUZA is estimated to result in a GHG emission efficiency of 4.06 MTCO2e per capita in Year 2040.7 Project growth would result in emissions that exceed the 2017 Climate Change Scoping Plan adjusted statewide 2040 metric of 4.0 MTCO2e per capita employed for this EIR.8 To meet the interpolated CARB Scoping Plan efficiency target of four MTCO2e per capita, the City would need to further reduce its FGPUZA Year 2040 GHG emissions presented in Table 4.6-4 by approximately 15,386 MTCO2e, which may be achievable through the implementation policies in the FGPUZA policies and Mitigation Measures AQ-2A through AQ-2C but cannot be confirmed or verified at this time for the reasons discussed under Impact GHG-1.

SCAG 2020 RTP/SCS

The primary goal of SCAG's 2020-2045 RTP/SCS is to reduce GHG emissions from automobiles and light trucks by 19% per capita by 2035 (when compared to a 2005 baseline; see Section 4.6.2 for a description of the SCAG 2020-2045 RTP/SCS). Table 4.6-5 (Transportation GHG Emissions and VMT Per Capita), below, compares the existing 2020 and 2040 VMT and transportation-related GHG emissions per capita in the Planning Area.

As shown in Table 4.6-5, under unmitigated 2040 conditions, the proposed FGPUZA would result in an approximately 13% reduction in VMT per capita and an approximately 38% reduction in transportation GHG per capita, as compared to 2020 conditions. Year 2005 conditions are not known, but are presumed to have a higher (i.e., less efficient) per capita consumption value than 2020 conditions.

Table 4.6-5
Transportation GHG Emissions and VMT Per Capita

Metric	2020	2040 Growth	Percent Change
FGPUZA Unmitigated VMT and Transportation GHG			
Population	174,801	238,619	37%
Annual VMT	2,290,082,020	2,707,262,076	18%
Annual VMT per capita	13,101	11,346	-13%
Transportation GHG	898,302	734,925	-15%
Transportation GHG per capita	4.9	3.1	-38%
Source: Fehr and Peers, 2021 and MIG, 2021 (see Appendix D)			

Although the FGPUZA would result in a per capita transportation GHG emission reduction that would exceed the 2040 goal identified by CARB (19% reduction in transportation GHG emissions per capita as compared to 2005 conditions), the FGPUZA would be inconsistent with the SCAG 2020 RTP/SCS because the growth envisioned in the FGPUZA exceeds the growth envisioned in the SCAG 2020 RTP/SCS.

[7] As shown in Table 4.6-4, the proposed FGPUZA is estimated to have an emissions level of approximately 969,862 $MTCO_2e$ in the Year 2040 under unmitigated conditions. Dividing by the anticipated Planning Area population in the Year 2040 (i.e., 238,619 people) results in an efficiency metric of approximately 4.06 $MTCO_2e$ per capita. a

[8] The FGPUZA plans for growth through Year 2040. Therefore, the 2040 statewide efficiency metric is linearly derived from the State's 2030 (6 $MTCO_2e$ per capita) and 2050 (2 $MTCO_2e$ per capita) targets.

The FGPUZA's increase in population (approximately 63,818 people) in the Planning Area by 2040 exceeds the 2020 RTP/SCS population growth assumptions for the City (+9,800 people from 2016 to 2045). However, the FGPUZA's increase in employment in Planning Area (approximately 3,603 workers) is within the 2020 RTP/SCS employment growth assumption (+10,400 workers from 2016 to 2045). Since the growth envisioned in the FGPUZA is inconsistent with the conditions under which the SCAG 2020 RTP/SCS was developed, the additional, transportation-related GHG emissions generated as a result of FGPUZA implementation could exceed that considered during development of the SCAG 2020 RTP/SCS, even though the majority of the land use changes / growth envisioned by the FGPUZA would be located in HQTAs.[9] As such, the overall per capita transportation GHG emission reductions that would need to be achieved by the FGPUZA would have to far exceed those originally identified for the region by CARB. More growth in the Planning Area means more emissions and, therefore, greater emissions reduction would have to occur in the City for the per capita transportation GHG emissions to meet the same mass emissions benchmark.

Level of Significance Before Mitigation

As discussed above the FGPUZA's unmitigated GHG emissions would: 1) not be consistent with the CARB Scoping Plan's interpolated per capita GHG efficiency metric, and 2) not be consistent with the 2020 RTP/SCS. This is considered a **potentially significant** impact.

The FGPUZA's potential increase in population growth (approximately 63,818 people) is approximately 6.5 times more than the assumed growth in the 2020 RTP/SCS (9,800 people), while the reduction in unmitigated transportation GHG per capita (38%) is approximately two times more than CARB's target set for the SCAG region (19% reduction in transportation GHG per capita). This indicates that although the FGPUZA would increase the per capita mobile source GHG efficiency, the overall growth anticipated under implementation of the FGPUZA would be substantially more than that planned for in the 2020 RTP/SCS. Although the City's FGPUZA Housing Element sets goals that are in line with the overarching goals of the 2020 RTP/SCS (e.g., locating housing near transit, constructing mixed-use in HQTAs, etc.), the residential growth (and associated VMT and GHG emissions) would be far greater than that accounted for in the 2020 RTP/SCS. This is considered a **potentially significant** impact.

Mitigation Measures

See Mitigation Measures AQ-2A through AQ-2C.

Level of Significance After Mitigation

As discussed under Impact GHG-1, twhile it is anticipated that the implementation of the policies in the FGPUZA and the incorporation of Mitigation Measures AQ-2A through AQ-2C would reduce city-wide GHG emissions, it cannot be assured at this time that these reductions would be sufficient enough to meet the interpolated GHG emissions efficiency metric of four $MTCO_2e$ per capita associated with the CARB 2017 Scoping Plan. In addition, the residential growth and associated GHG emissions under the FGPUZA would be far greater than that accounted for in the 2020 RTP/SCS. Therefore, the FGPUZA would conflict with the overarching goal of the CARB Scoping Plan, which is designed to achieve the State's 2030 GHG reduction goal and set

[9] As described in Section 4.6.2, areas such as TPAs and HQTAs are the types of locations in which growth is primarily planned for in the 2020 RTP/SCS.

the State's course for meeting additional, future GHG emission reduction goals, as well as the 2020 RTP/SCS because overall GHG mobile source emissions within the Planning Area would exceed that accounted for in the 2020 RTP/SCS' baseline assumptions. This impact would be **significant and unavoidable.**

Cumulative Impacts

Would the FGPUZA cause substantial adverse cumulative impacts with respect to greenhouse gases?

Analysis of Impacts

As stated in Section 4.6.4, global climate change is the result of GHG emissions worldwide; individual projects do not generate enough GHG emissions to influence global climate change. Thus, the analysis of GHG emissions is by nature a cumulative analysis focused on whether an individual project's contribution to global climate change is cumulatively considerable. As described under Impact GHG-1 and GHG-2, the Project would result in GHG emissions that exceed the significance thresholds applied in this EIR and conflict with the 2017 Climate Change Scoping Plan and 2020 RTP/SCS.

Level of Significance Before Mitigation

Potentially Significant.

Mitigation Measures

See Mitigation Measures AQ-2B through AQ-2E and GHG-1A through GHG-1D.

Level of Significance After Mitigation

Significant and Unavoidable.

4.6.5 REFERENCES

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List of Acronyms, Abbreviations, and Symbols	
Acronym, Symbol, Abbreviation	**Description**
AB	Assembly Bill
ACC	Advanced Clean Cars
BAU	Business-As-Usual
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBSC	California Building Standards Commission
CEC	California Energy Commission
CFC	Chlorofluorocarbon
C_H4	Methane
CNRA	California Natural Resources Agency
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
EIR	Environmental Impact Report
EO	Executive Order
EV	Electric Vehicle
FGPUZA	Focused General Plan Update and Zoning Amendment
GHG	Greenhouse Gases
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HQTA	High Quality Transit Area
IAQ	Indoor Air Quality
LCFS	Low Carbon Fuel Standard

List of Acronyms, Abbreviations, and Symbols	
Acronym, Symbol, Abbreviation	**Description**
LEV	Low-Emission Vehicle
NMA	Neighborhood Mobility Area
MMBTU	Million British Thermal Units
MPO	Metropolitan Planning Organization
$MTCO_2e$	metric tons of CO_2 equivalents
MWh	Megawatt-hours
N_2O	Nitrous Oxide
PGA	Priority Growth Area
PFC	Perfluorocarbon
ppm	parts per million
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SF_6	Sulfur Hexafluoride
SOI	Sphere of Influence
SP	Service Population
TDM	Transportation Demand Management
TPA	Transit Priority Area
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Travelled
Working Group	SCAQMD GHG Significance Threshold Working Group
ZEV	Zero Emission Vehicle
ZNE	Zero Net Energy
°F	Degrees Fahrenheit
%	Percent

4.7 – Hazards and Hazardous Materials

This EIR chapter addresses hazards and hazardous materials impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes hazards and hazardous materials impacts identified by the CEQA Guidelines: whether the FGPUZA will create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; will create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; will emit hazardous emissions or handle hazardous materials within close proximity of existing or planned schools will be located on a site which is included on a list of hazardous materials sites; will result in a safety hazard or excessive noise from a nearby airport; will impair implementation or physically interfere with an adopted emergency response plan or evacuation plan; or will expose people or structures to significant risks from wildfire.

4.7.1 – ENVIRONMENTAL SETTING

Hazardous Materials

Many common service facilities produce hazardous waste such as gasoline stations and dry cleaners. The California Environmental Protection Agency's (EPA's) Toxic Release Inventory Program manages a database of facilities that emit toxic chemicals known to be harmful to human health and tracks hazardous waste transporters. The State of California categorizes hazardous waste generators as either Small Quantity Generators (SQG) or Large Quantity Generators (LQG). SQGs in the Planning Area produce up to 2,200 pounds of hazardous waste per month, while LQGs in the Planning Area produce more than 2,200 pounds of waste per month. In addition, hazardous waste can be transported by air, rail, highway, or water.

Active and open hazardous materials sites within the Planning Area are summarized in Table 4.7-1 (Hazardous Materials Contamination Sites). Table 4.7-1 includes information from the Department of Toxic Substance Control EnviroStor database (Department of Toxic Substances Control, 2020) which is a data management system for tracking cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites. In addition, the California State Water Resources Control Board's (SWRCB) Geotracker database (CSWRCB, 2020) is a data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. The U.S. Environmental Protection Agency Superfund Enterprise Management System database (US EPA, 2020) was also accessed for land within the Planning Area. According to these sources, there are no active federal Superfund sites within the Planning Area. However, there are 7 open Cleanup Program sites and 10 open Leaking Underground Storage Tank (LUST) Cleanup sites within the Planning Area. There is also a land disposal site, the Longsdon Pit Landfill, that is currently inactive. According to GeoTracker, there are another 139 LUST Cleanup sites in the Planning Area that are closed or completed. A designation of "open" status indicates that there is an ongoing case that has been opened by a regulatory agency and the site is undergoing assessment, remediation, or site monitoring. A "closed" status indicates that a regulatory agency has determined that no further remediation activities are required.

Table 4.7-1
Hazardous Materials Contamination Sites

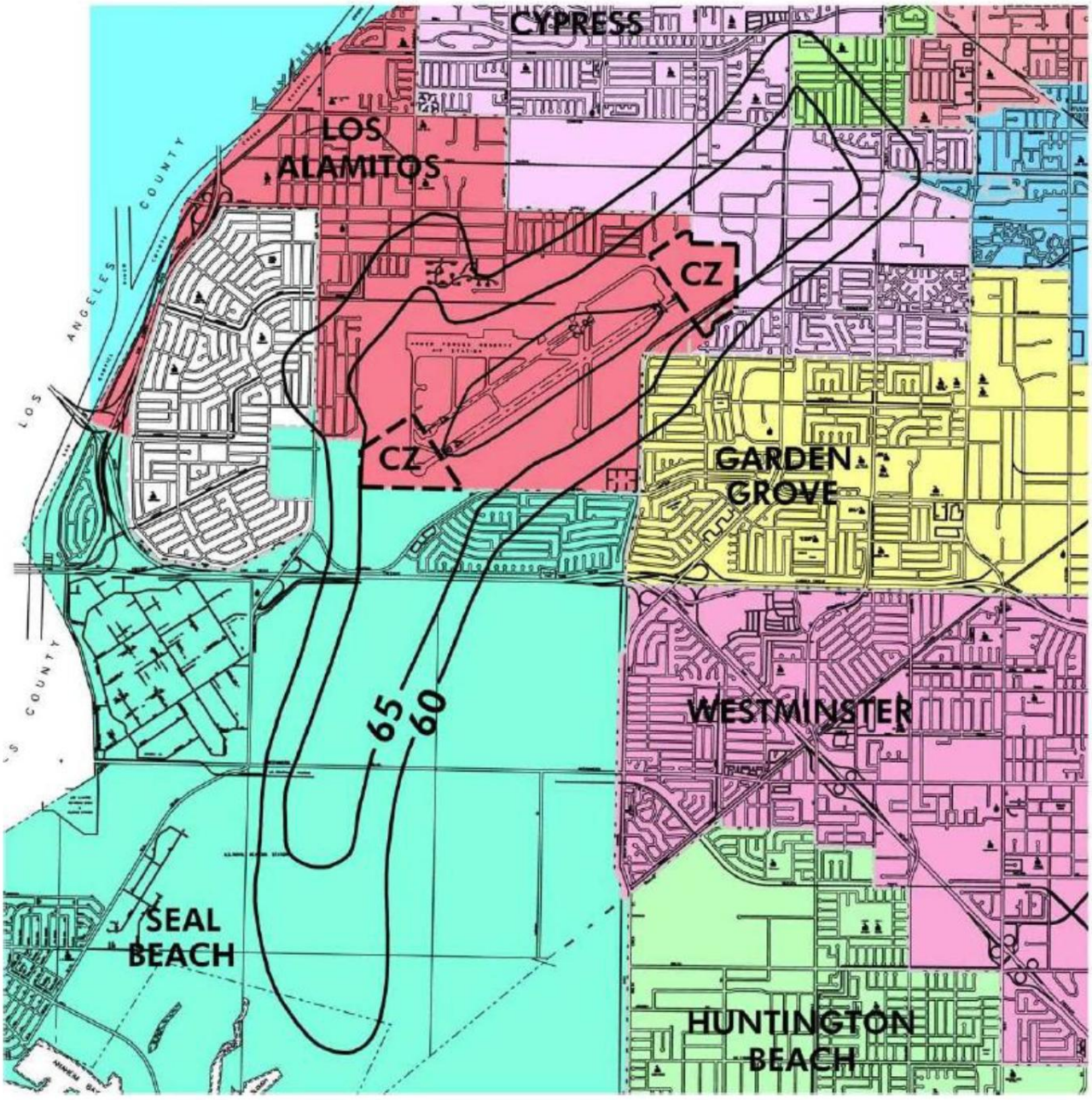
Facility Name	Address	Type of Case	Clean-Up Status
Air Industries Corporation	12570 Knott St	Cleanup Program Site	Open – Inactive
Arco #3016	12422 Valley View St	LUST Cleanup Site	Open – Remediation
Arco #5202	12502 Harbor Blvd	LUST Cleanup Site	Open – Verification Monitoring
Arco #6160	13361 Harbor Blvd	LUST Cleanup Site	Open – Verification Monitoring
Arco# 81994	12931 Garden Grove Blvd	LUST Cleanup Site	Open – Eligible for Closure
Bazz Houston Company	12700 Western Ave	Cleanup Program Site	Open – Assessment and Interim Remedial Action
Brookhurst Katella Associates	11011 Brookhurst St	Cleanup Program Site	Open – Inactive
California Target Entp. #009	11926 Garden Grove Blvd	LUST Cleanup Site	Open – Remediation
Cham Cal Engineering	12722 Western Ave	Cleanup Program Site	Open – Assessment and Interim Remedial Action
Family Oil Co Station #2	12491 Haster St	LUST Cleanup Site	Open – Verification Monitoring
Holiday Cleaners	6086 Chapman Ave	Cleanup Program Site	Open – Remediation
Ideal Uniform Rental Service	13811 A Better Way	Cleanup Program Site	Open – Site Assessment
Linfinity Microelectronics	11652 Markon Dr	Cleanup Program Site	Open – Site Assessment
Mobil #18-B4W	12422 Valley View St	LUST Cleanup Site	Open – Remediation
Shell Oil	6022 Chapman Ave	LUST Cleanup Site	Open – Verification Monitoring
Super Stop Dairy Mart	10521 Bolsa Avenue	LUST Cleanup Site	Open – Verification Monitoring
Your Cleaner & Laundry	5234 Lampson Ave	Cleanup Program Site	

Source: Department of Toxic Substances Control, *EnviroStor,*; California State Water Resources Control Board, *GeoTracker;* US Environmental Protection Agency, *Superfund Enterprise Management System Database,* (accessed November 2020).

Airport Hazards

The Joint Forces Training Base, Los Alamitos (JFTB Los Alamitos) is located immediately adjacent to the western edge of the Planning Area. The Orange County Airport Land Use Commission adopted the *Airport Environs Land Use Plan for the Joint Forces Training Base Los Alamitos* (AELUP) to safeguard the general welfare of the inhabitants within the vicinity of the airport and to ensure the continued operation of the airport. Specifically, the AELUP seeks to protect the public from the adverse effects of aircraft noise, to ensure that people and facilities are not concentrated in areas susceptible to aircraft accidents, and to ensure that no structures or activities adversely affect navigable airspace (OCALUC, 2016). The implementation of the AELUP forestalls additional urban encroachment on the airport and allows for its continued operation. The plan affects the Cities of Anaheim, Buena Park, Cypress, Garden Grove, Huntington Beach, La Palma, Los Alamitos, Seal Beach, Stanton and Westminster, as well as unincorporated areas of the County of Orange. Additionally, per Federal Aviation Regulation (FAR) Part 77, Section 77.9 notice to the Federal Aviation Administration (FAA) is required for any proposed structure more than 200 feet Above Ground Level (AGL) of its site within any jurisdiction. Notices to the FAA provide a basis for evaluating project impacts on operational procedures and air navigation. To coincide with the FAA regulations, the ALUC also requires notification of all such proposals, as described in detail in Section 4.7.2.

As shown in Exhibit 4.7-1 (Notification Area for JFTB Los Alamitos), the western third of the Planning Area is within the AELUP and FAR Part 77 Notification Area. As shown in Exhibit 4.7-2 (Height Restriction Zone for JFTB Los Alamitos), the area known as West Garden Grove is located within the Obstruction Imaginary Surfaces area for JFTB Los Alamitos. As shown in Exhibit 4.7-3 (JFTB Los Alamitos Impact Zones), a small portion of the Planning Area located in the northwest corner of West Garden Grove is located within the 60/65 CNEL noise contour impact zone for the airport.



Note: County Unincorporated areas are shown in white.

LEGEND

20,000' Radius

CITY BOUNDARIES

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Exhibit 4.7-1 Hazardous Waste Contamination Sites

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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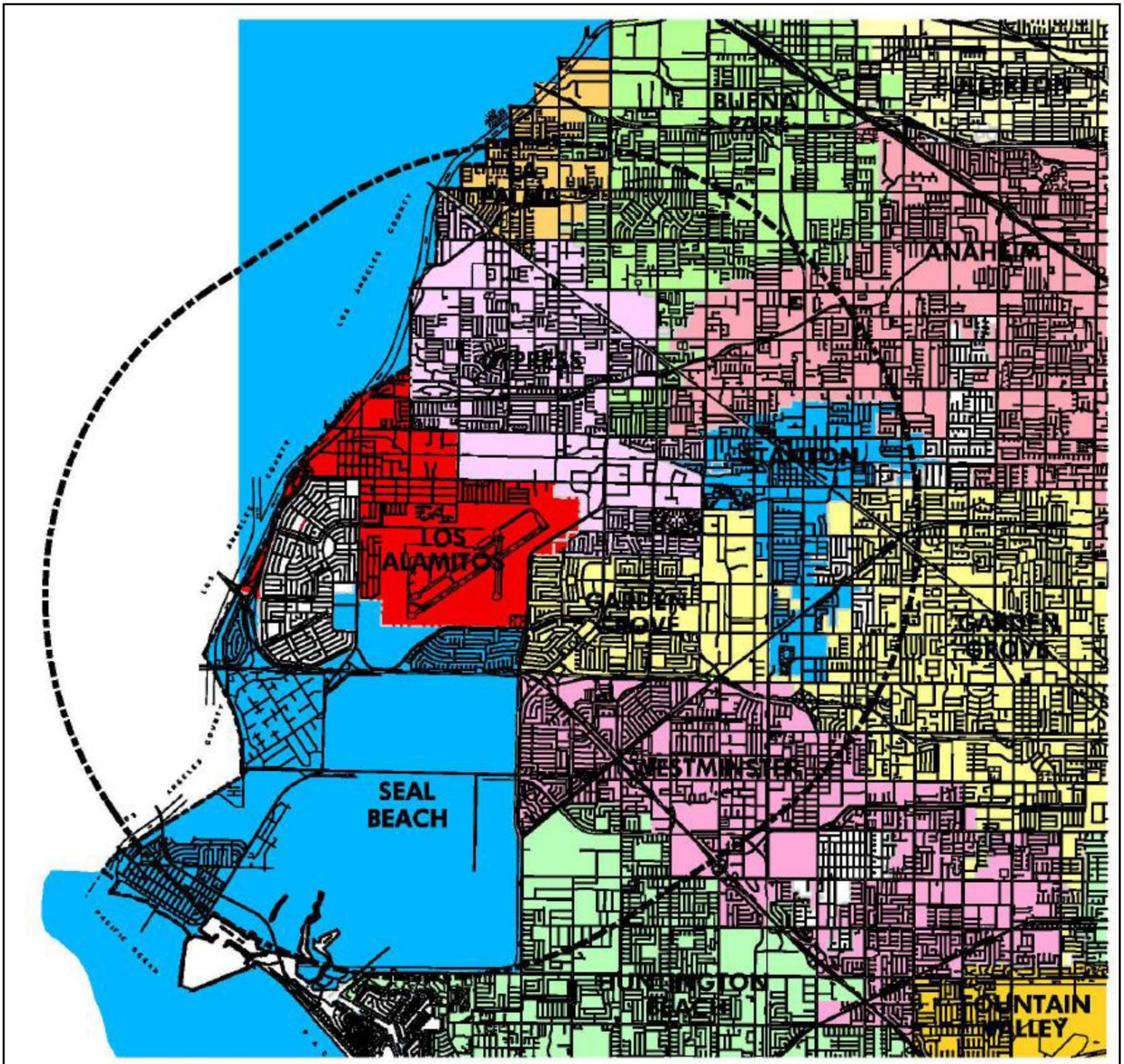

Note: County Unincorporated areas are shown in white.

LEGEND

- 20,000' Radius
- CITY BOUNDARIES

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Exhibit 4.7-2 Notification Area for JFTB Los Alamitos

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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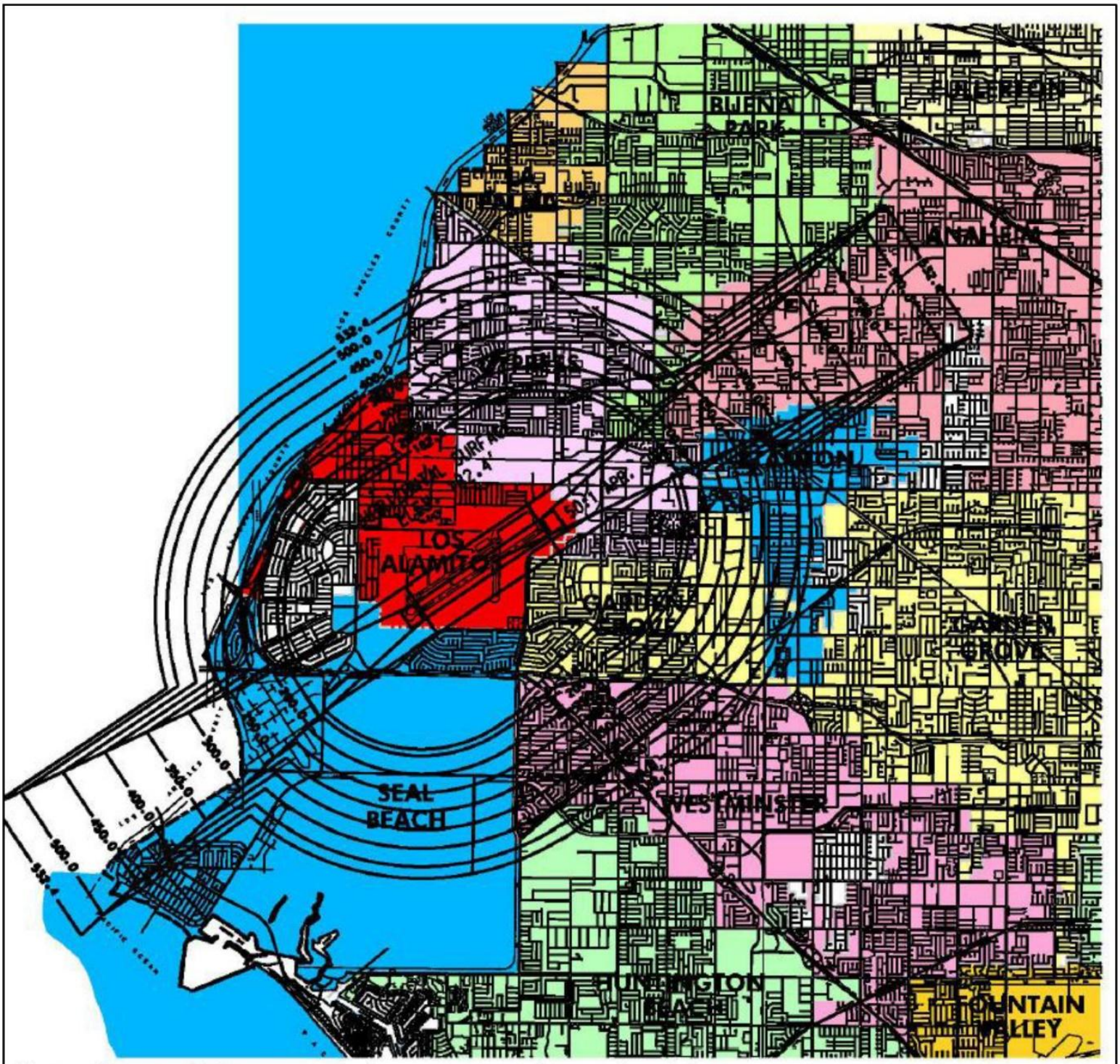

Note: County Unincorporated areas are shown in white.

LEGEND

- 20,000' Radius
- CITY BOUNDARIES

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Exhibit 4.7-3 Height Restriction Zone JFTB Los Alamitos

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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Wildfire Hazards

Generally, the greatest potential for wildfire hazards occurs in areas adjacent to abundant natural vegetation. Although there is a possibility of a large urban fire in Orange County, there are no hillsides or other open spaces in the City with natural vegetation that could represent a significant risk of wildfire. The only fire-related risk in the Planning Area is isolated urban structure fires. There are no areas of the City designated as "Very High Fire Hazard Severity" (VHFS) Zones. Developments within the City are subject to the County's Fire Authority requirements and the State Fire Code (2016) which is adopted by the City.

4.7.2 – REGULATORY FRAMEWORK

Federal

U.S. Environmental Protection Agency (EPA). Regulates chemical and hazardous materials use, storage, treatment, handling, transport, and disposal practices; protects workers and the community (along with CalOSHA, see below) and integrating the Federal Clean Water Act and Clean Air Act into California Legislation.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Adopted in 1980, CERCLA was developed to remove contamination of water, air, and land resources from past chemical disposal practices. Also known as the "Superfund Act," CERCLA contains a list of sites referred to as Superfund sites, where there is an imminent threat to human health. CERCLA collects taxes from the chemical and petroleum industries to clean abandoned or uncontrolled hazardous sites using short term and long-term responses techniques.

The Resources Conservation and Recovery Act (RCRA). Federal law that regulates hazardous wastes from a 'cradle-to-grave' approach, meaning that all hazardous wastes are tracked and strictly regulated from generation to disposal, and waste generators are required to report use or transport of hazardous wastes to the EPA. Hazardous waste generators range from small producers such as dry cleaners and automobile repair facilities to larger producers such as hospitals and manufacturing operations. The EPA categorizes Small Quantity Generators (SQG) as those facilities that produce between 100 and 1,000 kilograms (kg) of hazardous waste per month. Facilities producing less than 100 kg of hazardous waste per month are not subject to RCRA. Large Quantity Generators (LQG) produce 1,000 kg or more hazardous waste per month. LQG and SQG facilities are subject to the storage and transportation requirements of RCRA.

The Federal Emergency Planning and Community Right-To-Know Act (EPCRA). Enacted to inform communities and residents of chemical hazards in their area, this Act requires the US EPA maintain and publish a list of toxic chemical releases, known as the Toxic Release Inventory (TRI). Facilities required to report include industrial uses that manufacture, process, or use significant amounts of chemicals. Reporting includes types and amounts of chemicals that are released each year into the air, water, and land or transferred off-site. Listing as a TRI facility doesn't necessarily mean that releases are harmful to humans or the environment.

Federal Occupational Safety and Health Administration (OSHA). Establishes and enforces Federal regulations related to health and safety of workers exposed to toxic and hazardous materials. OSHA also sets health and safety guidelines for construction activities and manufacturing facility operations.

U.S. Department of Transportation (DOT). Regulates the shipment of hazardous material. DOT also administers the Hazardous Materials Transportation Uniform Safety Act (HMTUSA) to clarify conflicting state, local, and federal regulations. HMTUSA requires the Secretary of Transportation to promulgate regulations for the safe transport of hazardous material in intrastate, interstate, and foreign commerce. The Secretary also retains authority to designate materials as hazardous (along with EPA) when they pose unreasonable risks to health, safety, or property.

Standardized Emergency Management System and National Incident Management System (SEMS). According to the State's SEMS, local agencies have primary authority regarding rescue and treatment of casualties and making decisions regarding protective actions for the community. When a major incident occurs the first few moments are critical in terms of reducing loss of life and property. First responders must be sufficiently trained to understand the nature and the gravity of the event to minimize the confusion that inevitably follows catastrophic situations. This on-scene authority rests with the local emergency services organization and the incident commander.

Federal Aviation Regulations Part 77 (FAR Part 77). In adopting criteria for building height restrictions and airspace protection in the vicinities of airports, the Commission considered only one standard and that was Federal Aviation Regulations Part 77 (FAR Part 77) entitled, "Objects Affecting Navigable Airspace" (OCALUC, 2016). These regulations are the only definitive standard available and the standard most generally used. In order to ensure that buildings which might affect the continued operations of airports are not built in their vicinities, the Commission has incorporated the standards for determining obstructions and FAR Part 77 definitions, of the "imaginary and notification surfaces" for airports, as the guidelines for height limits.

Imaginary and Notification Surfaces. The "imaginary surfaces" are defined by means of elevations, heights and slopes in relation to individual airports, the spaces above which are reserved to air navigation. In addition to the "imaginary surfaces", the Commission will use all of the FAR Part 77.23 standards along with the results of FAA aeronautical studies, or other studies deemed necessary by the Commission, in order to determine if a structure is an "obstruction." See Exhibit D2 of Appendix D to view the Height Restriction Zone for JFTB, Los Alamitos. Building or structural heights are limited to the distance between the ground elevation of the site and an elevation that has been determined will not adversely affect an airport or aeronautical operations, nor navigational-aid siting criteria, including interference with navigational-aids or published flight paths and procedures. The FAA uses the 100:1 notification surface to help identify projects that may interfere with airport operations. A project exceeding the 100:1 notification surface is not necessarily incompatible, but rather requires that the FAA be notified so they can conduct an aeronautical study. Projects that penetrate the 100:1 notification surface must file form 7460-1 with the FAA. See Exhibit D1 of Appendix D to view the FAR Part 77 Notification Area for JFTB, Los Alamitos.

In its aeronautical studies, the FAA determines if a project is considered an Obstruction or a Hazard to Air Navigation. A Determination of No Hazard to Air Navigation does not automatically equate to a Consistency determination by the ALUC. The FAA may conclude in its aeronautical study that a project is an Obstruction but not a Hazard to Air Navigation. The Commission may find a project Inconsistent based on an Obstruction determination. The Commission may utilize criteria for protecting airspace and aircraft traffic patterns at individual airports which may differ from those contained in FAR Part 77, should evidence of health, welfare, or air safety surface sufficient to justify such an action.

State

California Occupational Safety and Health Administration (CalOSHA). Responsible for promulgating and enforcing State health and safety standards and implementing Federal OSHA Laws. For example, CalOSHA's regulatory scope includes provisions to minimize the potential for release of asbestos and lead during construction and demolition activities.

California Environmental Protection Agency (Cal EPA). The Cal EPA implements and enforces a statewide hazardous materials program known as the Certified Unified Program Agency (CUPA) established by Senate Bill 1802 to enable counties and local government to enforce the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans
- Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs
- California Uniform Fire Code, Hazardous Materials Management Plans, and Hazardous Material Inventory Statements

CUPAs are accountable for carrying out responsibilities previously handled by approximately 1,300 different state and local agencies.

CalEPA Office of Emergency Services (CalEPA/OES). Cal/EPA establishes regulations governing the use of hazardous materials in the State to protect air, water, and soil. OES coordinates State and local agencies and resources for educating, planning, and warning citizens of hazardous materials and related emergencies, including organized response efforts in case of emergencies.

CALFIRE, Office of the State Fire Marshal (CAL FIRE-OSFM). The Office of the State Fire Marshal evaluates and provides technical assistance for the Hazardous Material Management Plan (HMMP), the Hazardous Materials Inventory Statement (HMIS) and the Aboveground Petroleum Storage Act (APSA) Programs. The HMMP and HMIS Program are closely tied to the Business Plan Program.

California Fire Code. The City of Garden Grove has adopted the 2016 California Fire Code, with amendments to address specific local conditions and needs. These provisions include construction standards and fire hydrant requirements, road widths and configurations designed to accommodate the passage of fire trucks and engines, and requirements for the handling and storage of hazardous materials.

California Hazardous Waste Control Law. The California Hazardous Waste Control Law is administered by the California EPA to regulate hazardous wastes. Although the Hazardous Waste Control Law is generally more stringent than RCRA, until the federal EPA approves the California Hazardous Waste Control Program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both the state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements

for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills. The California Code of Regulations (CCR) 22 CCR Section 66261.10 provides that waste has “hazardous” characteristics if it has the following effects: [a](1) a waste that exhibits the characteristics may: (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.

According to 22 CCR (Article 11, Chapter 3), substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, contaminated, or are being stored prior to proper disposal. Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances (e.g., gasoline, hexane, and natural gas) are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric (battery) acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal, which reacts violently with water) may cause explosions or generate gases or fumes.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as “mixed wastes.” Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents, such as bacteria or viruses (22 CCR 66251.1 et seq.).

California Department of Toxic Substances Control (DTSC). DTSC regulates hazardous substances and wastes, oversees remedial investigations, protects drinking water from toxic contamination, and warns the public that could potentially be exposed to listed carcinogens. DTSC evaluates and provides technical assistance for the Hazardous Waste Generator Program, including Onsite Treatment (Tiered Permitting) and the Resource Conservation Recovery Act (RCRA). In addition, EnviroStor is DTSC’s data management system for tracking cleanup, permitting, enforcement and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further. There are no open investigations in the Planning Area (DTSC EnviroStor).

Underground Tank Regulations. Title 23, Division 3, Chapter 16 (Underground Tank Regulations) of the California Code of Regulations identifies the regulations applicable to new and existing underground storage tanks. These regulations establish monitoring, maintenance, reporting, abatement, and closure procedures for all underground storage tanks in the state. These regulations are administered by the Los Angeles Regional Water Quality Control Board.

California Highway Patrol (CHP). The CHP has primary regulatory responsibility for the transportation of hazardous wastes and materials.

Cortese List. California Government Code Section 65962.5 established the "Cortese List", which requires state agencies to compile a list of all properties affected by hazardous waste and

develop a framework for how they will continue to be monitored and addressed by the State. A site's presence on the list has bearing on the local permitting process as well as on compliance with the California Environmental Quality Act (CEQA). This statute was enacted over 20 years ago, and some of the provisions refer to agency activities that are no longer being implemented and in some cases the information to be included in the Cortese List does not exist.

California Porter Cologne Water Quality Control Act. Division 7 of the California Water Code (Water Code) identifies the enforcement and implementation rights of the Regional Water Quality Control Board to remedy discharges to surface waters or groundwater that would or could violate water quality standards. Standard remedies include issuance of Cease and Desist Orders and cleanup and abatement procedures.

Code of Regulations Title 22. Title 22 of the California Code of Regulations contains all applicable State and Federal laws governing hazardous wastes in the State. Title 22 is more stringent and broader in its coverage of wastes than Federal law. Chapter 51 (Site Remediation) identifies the minimum standards of performance for site investigations and response actions performed by the private sector in site cleanup efforts.

Hazardous waste is any waste with properties that make it potentially dangerous or harmful to human health or the environment. Hazardous waste is defined in one of two ways. Waste is considered hazardous if it appears on one of the five lists created pursuant to the Federal Resource Conservation Recovery Act (RCRA). The lists are known as the F-, K-, P-/U-, and M-lists and reflect non-specific source waste, source-specific waste, discarded commercial chemical products, discarded mercury-containing products, respectively. A waste may also be categorized as hazardous if it exhibits one of the four characteristics of hazardous materials: ignitibility, corrosivity, reactivity, and toxicity. Because of its toxicity, solid wastes containing certain levels of lead are considered hazardous and must be handled, transported, and disposed of in accordance with Federal and State law. In California, two thresholds have been established by State regulation to determine if a waste is hazardous due to its lead content. The Total Threshold Limit Concentration (TTLC) establishes a threshold of 1,000 milligrams (mg) of lead per one kilogram (kG) of waste. The Soluble Threshold Limit Concentration (STLC) establishes a threshold of 5 mg of lead per liter (L) of waste extract solution. Hazardous Waste must be disposed of at Class I landfills that are specifically designed to accept hazardous waste.

California Asbestos Standards in Construction. The California Division of Occupational Safety and Health (Cal/OSHA) enforces the California Asbestos Standards in Construction (8 CCR Section 1529). These standards regulate exposure to asbestos in all construction work including demolition of structures. These regulations establish entry and exit procedures after working in asbestos contaminated areas and establish specific control measures designed to protect workers depending on the type of asbestos they are handling. Such procedures include minimum air circulations, use of respirators, wetting of materials, clothing laundering, construction and demolition equipment requirements, and shielding specifications. Notification procedures are also in place that require building owner and employee noticing as well as external and internal hazard signage. All asbestos workers are required to complete training programs and register as an asbestos contractor, depending on the type of asbestos being removed. Medical examination requirements are also required to monitor worker health, generally on an annual basis.

California Construction Safety Orders for Lead. Title 8, Section 1532.2 (Lead) of the California Code of Regulations establishes the requirements for any construction worker who may be exposed to lead during demolition or salvage, removal or encapsulation, new construction, and cleanup activities. The construction safety orders establish an action level of

30 micrograms of lead per cubic meter (μg/cm^3) of air calculated over an 8-hour time-weighted average without regard for the use of a respirator, meaning this is the limit where safety protocols must be initiated, such as use of a respirator. Under no circumstance may a worker be exposed to 50 μg/cm^3 over an 8-hour weighted period. These regulations require implementation of engineering and work practice controls such as respiratory protection, protective clothing, housekeeping, hygiene practices, and signage requirements to meet worker exposure limits. Medical monitoring and training requirements are also identified.

Assembly Bill 2948. In response to the growing statewide concern of hazardous waste management, State Assembly Bill 2948 (Tanner 1986) enacted legislation authorizing local governments to develop comprehensive hazardous waste management plans. The intent of each plan is to ensure that adequate treatment and disposal capacity is available to manage the hazardous wastes generated within its jurisdiction.

Hazardous Materials Business Plan (CERS Annual Submittal). In 1986, the California Governor's Office of Emergency Services (Cal OES) established the Hazardous Materials Business Plan (HMBP) Program, which prevents or minimizes damage to the public and the environment from a release of hazardous materials. Under the Program, California businesses that handle hazardous materials were required to submit an HMBP each year. Assembly Bill 1429, which was passed on July 9, 2019, would require a business with a facility that is not required to submit Tier II information pursuant to the above-mentioned federal provision and is not subject to the provisions governing those aboveground storage tanks to submit its business plan once every three years, instead of annually. However, the Los Angeles County Code of Ordinance, Section 12.64.030 still requires all hazardous materials handlers operating under the jurisdiction of Los Angeles County must electronically certify, or submit an updated HMBP, including the hazardous materials inventory, site map, contingency plan, and the employee training plan information via the Statewide information management system which is also known as the California Environmental Reporting System (CERS).

Emergency Services Act. Under the Emergency Services Act, the State of California developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an integral part of the plan, which is administered but the Governor's Office of Emergency Services. The Office of Emergency Services coordinates the responses of other agencies, including the EPA, California Highway Patrol, Regional Water Quality Control Boards, Air Quality Management Districts, and county disaster response offices.

The Emergency Planning Community Right-to-Know Act. The Emergency Planning Community Right-to-Know Act requires facilities to disclose to the State and Local Emergency Planning Committee the quantities and type of toxic chemicals stored. To avoid multiple reports to various agencies, the California Health and Safety Code requires notification of chemical inventory to the Administering Agency (DTSC). Notification of chemical inventory is accomplished through completion of a Hazardous Materials Business Plan and inventory.

Regional

Regional Water Quality Control Board (RWQCB). One of nine regional boards in the State, the Orange County Regional Water Quality Control Board (RWQCB) protects surface and groundwater quality from pollutants discharged or threatened to be discharged to the Waters of the State. The RWQCB issues and enforces National Pollutant Discharge Elimination System (NPDES) permits and regulates leaking underground storage tanks and other sources of groundwater contamination.

Orange County and Los Angeles Counties Airport Land Use Commissions. The main goal of the Airport Land Use Commission (ALUC) is to protect the public health, safety and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to extensive noise and safety hazards within areas around airports. The City of Garden Grove is in Orange County but is adjacent to an air facility in Los Angeles County.

South Coast Air Quality Management District (SCAQMD). The SCAQMD regulates the demolition of buildings and structures that may contain asbestos. The SCAQMD is vested with the authority to regulate airborne pollutants through both inspection and law enforcement and is to be notified 10 days in advance of any proposed demolition or abatement work.

South Coast Air Quality Management District Rule 1403. Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities) specifies work practices to limit asbestos emissions from building demolition and renovation activities including the removal and disturbance of asbestos containing material (ACM). This rule is generally designed to protect uses surrounding demolition or renovation activities from exposure to asbestos emissions. Rule 1403 requires of any facility being demolished or renovated for the presence of all friable and Class I and Class II non-friable ACM. Rule 1403 also establishes notification procedures, removal procedures, handling operations, and warning label requirements.

Environmental Site Assessment (ESA) Procedures. A Phase I ESA is the initial investigation phase of a process established by the American Society for Testing and Materials Standards (ASTM), as adequate due diligence by new purchasers of properties or their lenders prior to site development. Phase I ESAs must be completed prior to property development by private parties to establish that the buyer has exercised due diligence in purchasing the site. If a Phase I ESA indicates evidence of site contamination, a Phase II ESA would be required prior to site development. The Phase II ESA includes collection of original samples of soil, groundwater, or building materials to measure and analyze quantities of various contaminants. The most frequent substances tested for are petroleum hydrocarbons, heavy metals, pesticides, solvents, asbestos, and mold. Appropriate cleanup levels for each contaminant, based on current and planned land use, would be determined in accordance with professional procedures adopted by the lead agency (e.g., DTSC, RWQCB, SCAQMD, CUPA).

County

Orange County Fire Authority (OCFA), Certified Unified Program Agency (CUPA). The OCFA is a CUPA under the state that administers the following programs within Orange County; the Hazardous Waste Generator Program, the Hazardous Materials Release Response Plans and Inventory Program, the California Accidental Release Prevention Program (Cal-ARP), the Aboveground Storage Tank Program and the Underground Storage Tank Program. CUPAs and Program Agencies (PAs) throughout the state created a partnership and formed the California CUPA Forum. Together, members of the California CUPA Forum and representatives of local, state and federal agencies established the Unified Program Administration and Advisory Group (UPAAG) to effectively address policy decisions, training and problem solving. The UPAAG's goals and objectives are listed in the UPAAG Strategic Plan. The Unified Program consolidates the administration, permit, inspection, and enforcement activities of the following environmental and emergency management programs:

- Aboveground Petroleum Storage Act (APSA) Program
- Area Plans for Hazardous Materials Emergencies
- California Accidental Release Prevention (CalARP) Program

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- Hazardous Material Management Plan (HMMP) and Hazardous Material Inventory Statements (HMIS) (California Fire Code)
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs
- Underground Storage Tank Program

State agency partners involved in the implementation of the Unified Program are responsible for setting program element standards, working with CalEPA to ensure program consistency and providing technical assistance to CUPAs and PAs. The following state agencies are involved with the Unified Program:

Multi-Hazard Functional Plan. The County's Emergency Plan addresses the planned response to extraordinary emergency situations associated with natural and human caused disasters, technological incidents and national security operations. Individuals and departments assigned emergency responsibilities within this plan will have prepared appropriate supporting plans and related Standard Operating Procedures.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. The Orange County Fire Authority administers the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program for the City of Garden Grove. Senate Bill 1082 (1993) established the "Unified Hazardous Waste and Hazardous Materials Management Regulatory Program." The Unified Program consolidates, coordinates, and makes consistent the following hazardous materials and hazardous waste programs (Program Elements):

- Hazardous Waste Generation (including onsite treatment under Tiered Permitting);
- Aboveground Petroleum Storage Tanks (only the Spill Prevention Control and Countermeasure Plan or "SPCC");
- Underground Storage Tanks (USTs);
- Hazardous Material Release Response Plans and Inventories;
- California Accidental Release Prevention Program (Cal ARP); and
- Uniform Fire Code Hazardous Material Management Plans and Inventories.

Household Hazardous and E-Waste Program. The Orange County Sanitation District has established the Household Hazardous and Electronic Waste (E-Waste) Collection Program to provide County residents a legal and cost-free way to dispose of unwanted household chemicals that cannot be disposed of in the regular trash. The Household Hazardous Waste Program allows residents to dispose of the following household chemicals and E-waste.

- Household Chemicals
- Motor oil, oil filters, brake fluid
- Used antifreeze
- Paint, paint thinner, turpentine
- Cleaners with acid or lye
- Pesticides or herbicides
- Household batteries or car batteries

- Pool chemicals
- CRTs, old TVs, misc. electronics
- Mercury thermometers or thermostats
- Fluorescent light bulbs
- Used needles or sharps (In a Sharps container or sturdy box labeled "SHARPS")
- Unwanted or expired prescriptions

Local

City Local Hazards Mitigation Plan. The City has adopted a Local Hazards Mitigation Plan which provides natural hazard mitigation strategies to reduce the impacts concentrated at large employment and industrial centers, public infrastructure, and critical facilities. The measures were created to be integrated into future building code updates and General Plan Safety Element updates. The mitigation measures are therefore implemented by conformance with building code and regulation.

City General Plan. The updated Safety (SAF) and Land Use (LU) Elements included in the FGPUZA contain the following goals and policies related to emergency plans, evacuation, hazardous materials, and airport hazards:

Goal SAF-4 Community members must be made aware of potential environmental hazards, how they should prepare for these instances, and how they should respond.

Policy SAF-4.1: Advise and provide information to the public regarding the availability of local area environmental studies, sources of hazard information, and public services.

Policy SAF-4.2: Continue and expand the public awareness programs conducted by the Fire Department, and other agencies as appropriate.

Policy SAF-4.3: Provide the public with information identifying accessible evacuation routes for fire, geologic, and other hazards.

Goal SAF-5: Public harm from fire and health emergencies shall be minimized.

Policy SAF-5-1: Continue to develop and enforce construction and design standards related to fire prevention.

Policy SAF-5.2: Ensure that the City has adequate resources to respond to health and fire emergencies, such as Fire Stations, personnel, and equipment.

Goal SAF-9: Minimize he threat to the public health and safety, and to the environment posed by a release of hazardous materials.

Policy SAF-9.1: Continue to strictly enforce Federal, State, and local laws and regulations related to the use, storage, and transportation of toxic, explosive, and other hazardous and extremely hazardous materials to prevent unauthorized discharges.

Policy SAF-9.2: Develop an educational awareness program for residents and businesses about the dangers of hazardous materials that urges the minimum use, proper storage and management of, and accurate disposal of hazardous materials.

Goal LU-17: Protection of land uses from impacts associated with the Joint Forces Training Base (JFTB) Los Alamitos.

Policy LU-17.1: Prohibit structures that are determined to be a "hazard" by the Federal Aviation Administration within the Airport Environs Land Use Plan area.

Policy LU-17.2: Allow development consistent with Airport Environs Land Use Plan.

LU-IMP-17A Consult with the Airport Land Use Commission to ensure consistency with the scope and intent of the Airport Land Use Commission Law (Public Utilities Code Section 21670, et seq.).

4.7.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

D. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

F. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

G. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

H. Would the project cause substantial adverse cumulative impacts with respect to hazards and hazardous materials?

4.7.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to hazards and hazardous materials which could result from the implementation of the General Plan Update and recommends mitigation measures as needed to reduce potentially significant impacts.

Transport, Use, and Disposal Hazards

Impact HAZMAT-1 – Would the FGPUZA create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Analysis of Impacts

Implementation of the proposed General Plan Update would result in an increase in residential dwelling units within the Planning Area.

Construction of future development under the FGPUZA would likely involve the use and disposal of chemical agents, solvents, paints, and other hazardous materials associated with construction activities. The amount of these chemicals present during construction would be limited, would be used and disposed in compliance with existing government regulations, and would not be considered a significant hazard. Typical Best Management Practices (BMPs) to control hazardous materials during construction include proper labeling and storage, removal of materials once completed, and offsite vehicle maintenance.

Operational hazardous materials associated with new residential uses could include, for example, liquid chemical products (e.g., household cleaners), used motor oil, building maintenance supplies, paints and solvents, pesticides, or other similar materials. The limited quantity of such products would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

The existing Safety Element of the General Plan contains Goal SAF-9 and policies SAF-9.1 and SAF-9.2 to assure future development would not result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. These will remain unchanged in the FGPUZA.

Future commercial or light industrial development within the Planning Area could involve the storage, use and disposal of potentially hazardous materials, including building maintenance supplies, paints and solvents, pesticides and herbicides for landscaping and pest control, vehicle maintenance products, and similar substances. The City would require all new development to follow applicable regulations and guidelines regarding the storage, handling and disposal of hazardous waste. In addition, all hazardous materials are required to be stored and handled according to manufacturer's directions and local, state, and federal . law. Since the FGPUZA mainly addresses residential and mixed-use development, its potential impacts related to hazardous materials will be further limited.

Given the extensive existing federal, State, and local hazardous materials regulations already in place, the proposed FGPUZA would not create a significant hazard to the public or the environment from hazardous materials transport, storage, use, and disposal. Impacts would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Hazardous Materials

Impact HAZMAT-2 – Would the FGPUZA create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Analysis of Impacts

As shown in Table 4.7-1, several hazardous materials releases have been reported within the Planning Area. Additionally, there may potentially be other unreported releases within the Planning Area or in areas adjacent to the Planning Area. It is possible that contaminants in soil or groundwater could expose future construction workers, residents, workers or other members of the public to potential hazards. Although the FGPUZA largely addresses residential and mixed use development, it does involve some expanded industrial uses which may handle, store, or utilize hazardous materials. However, the potential for soil contamination for any proposed new development would be addressed through compliance with all local, state and federal law and the continued application of existing General Plan Safety Element goals and policies that address and resolve underground contamination, as explained below.

The existing Safety Element of the General Plan includes Goal SAF-9 and policies SAF-9.1 and SAF-9.2 to assure future development would not result in significant environmental impacts regarding accidents involving hazardous materials.

Demolition of existing structures in the Planning Area would involve removal and disposal of existing building materials. Some older buildings may contain hazardous air-borne materials, such as asbestos containing materials or lead based paint. If not properly abated, these materials could negatively impact construction workers or members of the public. The South Coast Air Quality Management District (SCAQMD) regulates the demolition and renovation of buildings and structures that may contain asbestos, and the manufacture of materials known to contain asbestos. The SCAQMD is vested with authority to regulate airborne pollutants through both inspection and law enforcement, and is to be notified 10 days in advance of any proposed demolition or abatement work. SCAQMD regulations must always be followed when removing asbestos or demolishing buildings.

If contaminated soils are found during grading, work must be halted and the appropriate regulatory agency or agencies contacted depending on the nature of the contamination. Typically a contractor or the local CUPA would assist in identifying any unknown materials, and if necessary the state Department of Toxic Substances Control (DTSC) would be consulted to identify and implement appropriate characterization and remediation procedures.

The implementation of the FGPUZA will not result in other reasonably foreseeable upset and accident conditions. With continued adherence to the requirements of the General Plan Safety Element and compliance with established local, State and federal environmental site assessment procedures potential impacts related to upset and accident conditions involving the release of hazardous materials into the environment would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Hazardous Emissions

Impact HAZMAT-3 – Would the FGPUZA emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Analysis of Impacts

There are several schools within the Planning Area boundaries. New development within the Planning Area under the FGPUZA is expected to be primarily residential, although it will also include, commercial, and light industrial uses. None of these uses are expected to generate hazardous emission or involve the handling of hazardous or acutely hazardous materials, substances, or waste, including areas within one-quarter mile of existing or proposed schools. Hazardous materials associated with construction of new uses would include vehicle fuels, paints, solvents, insulation and caulking materials, etc. Hazardous materials associated with the operation of new residential and commercial uses could include, for example, liquid chemical products (e.g., household cleaners), used motor oil, building maintenance supplies, paints and solvents, and pesticides. However, the limited quantity of such products would not generate significant hazardous air emissions or involve the use of acutely hazardous materials that could pose a significant threat to the environment or human health. New or expanded industrial uses may transport, store, handle, or dispose of a wider range of hazardous materials compared to residential and commercial uses. The industrial use of hazardous materials is regulated at several levels including local, state, and federal agencies. The Orange County Fire Authority (OCFA), as the local CUPA, regulates businesses in the County, including Garden Grove, which utilize hazardous materials. When necessary, the OCFA consults and coordinates with other agencies regarding hazmat issues, including DTSC, RWQCB, and the State Environmental Protection Agency (CEPA).

The existing Safety Element of the General Plan contains Goal SAF-9 and policies SAF-9.1 and SAF-9.2 to assure future development would not result in significant environmental impacts regarding accidents involving hazardous materials, including near schools. In addition, the proposed FGPUZA contains no additional goals and policies relative to hazards and hazardous materials.

New development within the Planning Area could use and dispose of chemical agents, solvents, paints, and other hazardous materials associated with construction activities. The amount of these chemicals present during construction would be limited, would comply with existing government regulations, and would not be considered a significant hazard. In addition, individual discretionary development applications would be required by the City to undergo a project-specific CEQA review which would include an evaluation of a project's potential impacts on any nearby schools. Therefore, impacts of the FGPUZA would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Hazardous Material Sites

Impact HAZMAT-4 – Would the FGPUZA be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Analysis of Impacts

As shown in Table 4.7-1, there are several known open contamination sites within the Planning Area that have or had contamination requiring remediation. According to the California EPA and the DTSC, however, there are no Cortese Sites, as defined in Government Code section 65962.5, listed in the City of Garden Grove (CalEPA 2021, DTSC 2021). Future development under the FGPUZA will also be required to comply with applicable federal, state, and local laws and regulations regarding hazardous materials depending on the type of use and materials to be used.

The existing Safety Element of the General Plan includes Goal SAF-9 and policies SAF-9.1 and SAF-9.2 to assure future development would not result in significant environmental impacts regarding sites within the City contaminated by hazardous materials.

If future redevelopment is proposed at any of these contamination sites, potential contamination (if not already remediated) would be addressed through the City's development review requirements in accordance with the General Plan Safety Element policies and in compliance with applicable state and federal regulations.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Airports

Impact HAZMAT-5 – For a FGPUZA located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the FGPUZA result in a safety hazard or excessive noise for people residing or working in the FGPUZA area?

Analysis of Impacts

The Joint Forces Training Base, Los Alamitos (JFTB) is just west of the Planning Area. In 2016 the Orange County Airport Land Use Commission (ALUC) adopted the *Airport Environs Land Use Plan for the Joint Forces Training Base Los Alamitos* (AELUP) to protect the public around the JFTB while ensuring its continued operation. In addition, Federal Aviation Regulation (FAR) Part 77, Section 77.9 requires notice to the Federal Aviation Administration (FAA) be given for any proposed structure with a height of more than 200 feet Above Ground Level in areas covered by the AELUP. Section 4.7.1 above the western third of the Planning Area is within the AELUP and FAR Part 77 Notification Area and the area known as West Garden Grove is located within the Obstruction Imaginary Surfaces (OIS) area for the JFTB. In addition, the northwest corner of West Garden Grove is within the 60/65 CNEL noise contour impact zone for the JFTB.

The existing Land Use Element of the existing General Plan contains Goal LU-16 and its policies LU-16.1 and LU-16.2 to assure future development will be consistent with the AELUP and FAA Part 77 requirements through ALUC. These will remain unchanged in the FGPUZA.

If future redevelopment is proposed in the western portion of the Planning Area subject to JFTB restrictions, limitations under the AELUP and FAA Part 77 would be addressed through standard Conditions of Approval (COAs) during the City's development review requirements. These COAs would be in accordance with the General Plan Safety Element policies and in

compliance with applicable federal regulations regarding airports. With regulatory compliance, impacts will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Adopted Response and/or Evacuation Plans

Impact HAZMAT-6 – Would the FGPUZA impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Analysis of Impacts

As described in the City's Hazard Mitigation Plan[1], all major public streets serve as principal evacuation routes including but not limited to: (north-south) Beach Boulevard (Highway 39), Katella Avenue, Chapman Avenue, Lampson Avenue, Garden Grove Boulevard, Trask Avenue, Westminster Avenue, Hazard Avenue, Bolsa Avenue, McFadden Avenue (west-east) Dale Street, Magnolia Street, Gilbert Street, Brookhurst Street, Euclid Street, Harbor Boulevard, and the SR-91 Freeway (City 2019). These principal access ways are all well-maintained and will support an evacuation function, however, in any evacuation, the exact emergency routes used would depend on a number of variables, including the type, scope, and location of the incident.

The existing Safety Element of the General Plan contains Goal SAF-4 and Policy SAF-4.3 to assure future development would not conflict with emergency planning or evacuation. These will remain unchanged in the FGPUZA.

While it is possible that there may be temporary and limited circulation changes that may be required during discrete periods of time associated with specific construction projects, these changes would be temporary and would be of a nature that still allowed evacuation in the event of an emergency. During construction, development that affects public streets typically prepare Traffic Control Plans (TCPs) to demonstrate how they will control traffic around the site if lanes must be closed or blocked in any way. Emergency access would be maintained to all properties within the project limits and the surrounding vicinity during construction. Therefore, impacts on emergency access would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Wildland Fires

Impact HAZMAT-7 – Would the FGPUZA expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

[1] The City is also part of the Orange County Regional Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan

Analysis of Impacts

The City is not adjacent or in the general vicinity of any natural areas due to its urban setting, and the Planning Area does not contain any designated "Very High Fire Hazard Zones according to the State Department of Forestry and Fire Protection (CSG 2021, CDFFP 2021). Therefore, the City will not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

The existing Safety Element of the General Plan contains Goals SAF-4 and SAF-5 and corresponding policies and implementation programs to assure future development would not be threatened by urban or wildfires. The proposed FGPUZA does not contain any additional goals or policies relative to wildfires although the Safety Element update is focused on increased heat and fire events that may result from climate change.

With continued compliance with State codes and Fire Authority design and construction guidelines, the proposed FGPUZA would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Impacts will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Cumulative Impacts

Impact HAZMAT-8 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to hazards and hazardous materials?

Analysis of Impacts

Impacts related to hazards and hazardous materials are generally site specific and not cumulative in nature because each project area has unique considerations that would be subject to uniform site development and construction standards. As such, the potential for cumulative impacts is limited. Impacts associated with potential fire hazards occur at individual building sites. These effects are site-specific, and impacts would not be compounded by additional development within the urban setting of the Planning Area.

The existing Safety Element of the General Plan contains Goals 4, 5, 9, and 16 and corresponding policies to assure future development would not result in significant environmental impacts regarding emergency plans, evacuation, hazardous materials, and airport hazards.

Compliance with the requirements of local, state, and federal law in addition to the General Plan Safety Element described above would result in impacts from hazards and hazardous materials that would be less than significant. Therefore, implementation of the proposed FGPUZA would not result in any cumulatively considerable impacts regarding these issues.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

4.7.5 - REFERENCES

State of California

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4.8 – Hydrology and Water Quality

This EIR chapter addresses hydrology and water quality impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Issues of interest are hydrology and water quality impacts identified by the CEQA Guidelines. Specifically, this chapter analyzes whether the FGPUZA will: violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality; will substantially decrease groundwater supplies or interfere substantially with groundwater recharge; will substantially alter the existing drainage on- or off-site, create or contribute runoff water that would exceed existing stormwater drainage system capacity, or impede or redirect flood flows; whether the FGPUZA will risk release of pollutants due to inundation; or will conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.8.1 – ENVIRONMENTAL SETTING

Watershed

The North OC (NOC) Watershed Management Area (WMA) encompasses 241,000 acres (376 square miles) in Northern Orange County. The NOC WMA is bordered by Los Angeles County to the North and West and to the East by San Bernardino County. The three watersheds in this area are the San Gabriel River/Coyote Creek, Anaheim Bay-Huntington Harbor and the Santa Ana River. All three watersheds lie within the Santa Ana Regional Water Quality Control Board boundary. The NOC WMA includes all of the cities of Anaheim, Brea, Buena Park, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, La Habra, La Palma, Los Alamitos, Placentia, Seal Beach, Stanton, Villa Park, Westminster, and Yorba Linda, and portions of the cities of Costa Mesa, Orange, Newport Beach, and Santa Ana, as well as unincorporated areas of Orange County (Orange County, 2020a).

Groundwater

The City has thirteen active wells that draw water from the OC Basin (Garden Grove, 2015). The OC Basin underlies the northerly half of Orange County beneath broad lowlands. The OC Basin covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, and the Pacific Ocean to the southwest. The OC Basin's boundary extends to the Orange County-Los Angeles Line to the northwest, where groundwater flows across the county line into the Central Groundwater Basin of Los Angeles County. The total thickness of sedimentary rocks in the OC Basin is over 20,000 feet, with only the upper 2,000 to 4,000 feet containing fresh water. The Pleistocene or younger aquifers comprising this Basin are over 2,000 feet deep and form a complex series of interconnected sand and gravel deposits. The OC Basin's full volume is approximately 66 million acre-feet (MAF). There are three major aquifer systems that have been subdivided by OCWD, the Shallow Aquifer System, the Principal Aquifer System, and the Deep Aquifer System. These three aquifer systems are hydraulically connected as groundwater is able to flow between each other through intervening aquitards or discontinuities in the aquitards. The Shallow Aquifer system occurs from the surface to approximately 250 feet below ground surface. Most of the groundwater from this aquifer system is pumped by small water systems for industrial and agricultural use. The Principal Aquifer system occurs at depths between 200 and 1,300 feet below ground surface. Over 90 percent of groundwater production is from wells that are screened within the Principal Aquifer system. Only a minor amount of groundwater is

pumped from the Deep Aquifer system, which underlies the Principal Aquifer system and is up to 2,000 feet deep in the center of the OC Basin.

Surface Waters

Surface water in the Planning Area generally flows from northeast to southwest towards the Pacific Ocean or into the Santa Ana River's main Orange County tributary, Santiago Creek. The West Orange County Water Board (WOCWB), a Joint Powers Agency, manages surface water deliveries from Metropolitan Water District of Southern California to five (5) of its member agencies. These member agencies are the Cities of Garden Grove, Fountain Valley (no voting rights), Huntington Beach, Westminster, and Seal Beach. WOCWB oversees the maintenance of two (2) feeder pipelines that connect to the treated surface water supply. These pipelines have a capacity of 21 cubic feet per second (cfs) and 45 cfs. Each of the member agencies has contributed to the capital cost for the capacity of the feeder pipelines and directly pays the Municipal Water District of Orange County (MWDOC) for the use of water (Garden Grove, 2015). The MWDOC manages water supplies from the Metropolitan Water District of Southern California (MWD or Met) along with other water sources for its customers in Orange County.

Topography and Drainage

The Planning Area lies in the NOCWMA of the OC Basin. The Orange County Flood Control District (OCFCD) maintains the larger stormwater conduits in the area which direct urban runoff to the nearest wash, creek, or river. The OCFCD storm drains eventually discharge to the Santa Ana River and finally the Pacific Ocean.

Flooding and Dam Inundation

The major flooding threat in Orange County and Garden Grove is the Santa Ana River and its tributaries. In 1938, the Santa Ana River flooded parts of Anaheim, Santa Ana, and Garden Grove, reportedly killing more than 50 people. Although the Prado Dam helped to substantially reduce potential flood damage after that time, the 1969 storm caused the largest dollar loss in Orange County history. The Santa Ana River is maintained by the U.S. Army Corps of Engineers Los Angeles District and Orange County Flood Control District. Despite the Corps' extensive efforts at flood control protection, it appears that portions of the County, which would not be inundated by the river overflow during the 100-year event, could be subject to flooding from overflow of storm water drainage facilities that are presently inadequate for carrying the 100-year discharge.

The East Garden Grove-Wintersburg Channel and Ocean View Channel system is one of the underlying channel systems of the Santa Ana River floodplain. This drainage system does not have the capacity to contain the 100-year flood because the channel banks and levees are overtopped at several locations. In addition to the Santa Ana River, other areas subject to flooding during severe storms include the area adjacent to Atwood Channel, Brea Creek Channel, Carbon Canyon Channel, Capistrano Beach Storm Channel, El Modena Irvine Channel, Fullerton creek Channel, Hickey Canyon Storm Channel, Houston Storm Channel, Horno Creek Channel, Modjeska Canyon, Silverado Canyon, Niguel Storm Drain, Oso Creek Channel, San Juan Creek Channel, Santiago Creek Channel, and Trabuco Creek Channel. In the north-central portion of the County, areas adjacent to Santiago Creek and Collins Channel may be inundated (Orange County, 2020b).

As shown in Exhibit 4.8-1 (Flood Zones), most of the Planning Area faces minimal flood hazards. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps

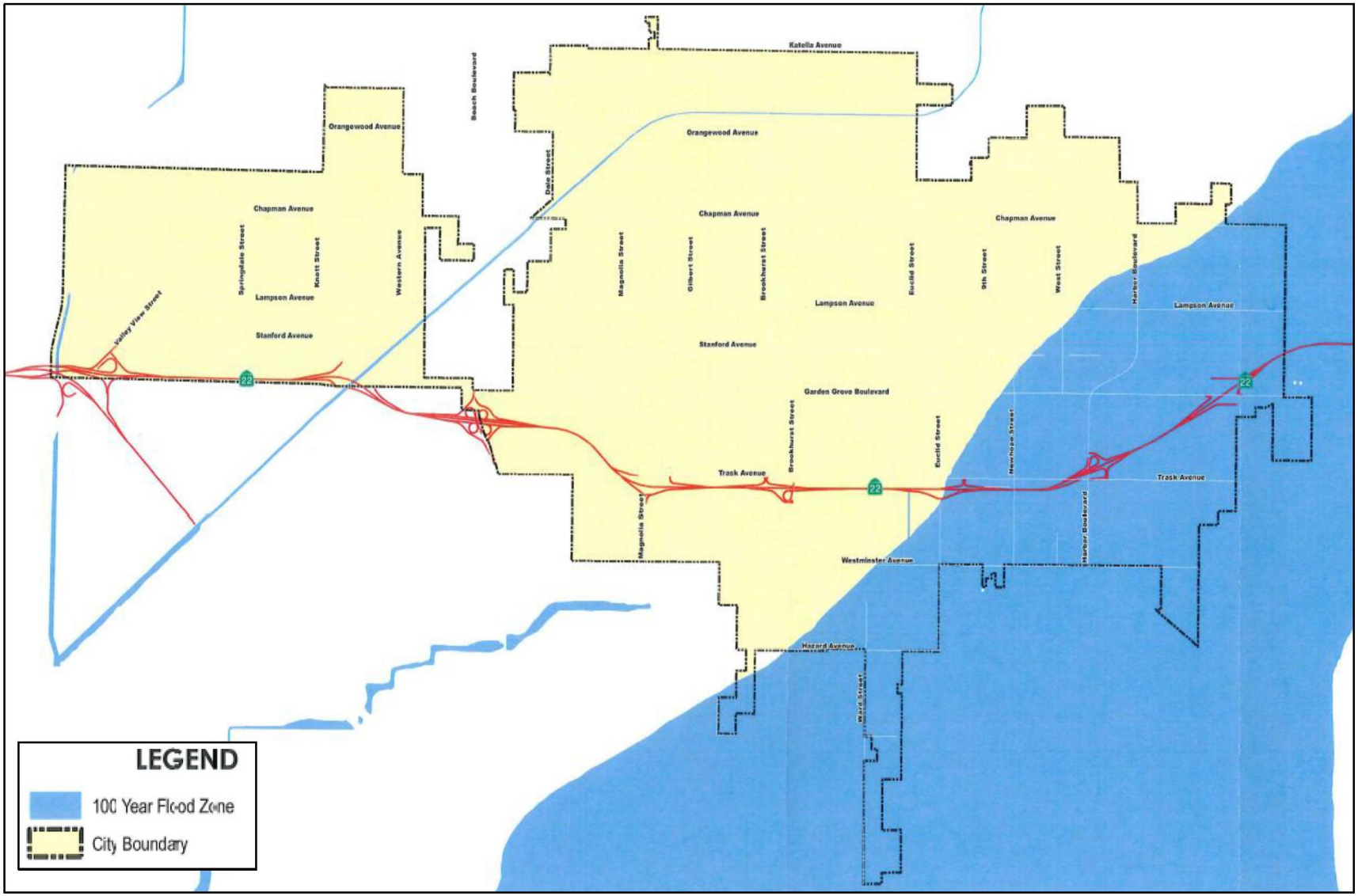

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Exhibit 4.8-1 Flood Zones

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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covering the Planning Area, the western two thirds of the Planning Area lies within Zone X which is designated as areas determined to have minimal flood hazards, areas protected from a 100-year flood by levees, or areas with a 0.2 percent chance of flooding (i.e., 500-year flood). However, the eastern third of the Planning Area is listed as Zone A which represents areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage (i.e., 100-year flood zone).

Much of the eastern third of the Planning Area is in the dam inundation area for Prado Dam. The dam and its reservoir are maintained by the Army Corp of Engineers (Corps) and were constructed in 1941. The dam is in Riverside County, approximately two miles west of Corona and on the lower Santa Ana River approximately 30.5 miles upstream from the confluence with the Pacific Ocean. Prado Dam and Reservoir serve as the principal regulating structure on the Santa Ana River and comprise more than 11,500 acres, out of which 4,100 acres are riparian habitat, 4,823 acres are recreation areas, and 2,400 acres are owned by the Orange County Water District. The Corps owns 9,100 acres in the Basin. The reservoir has a capacity of 217,000 acre-feet (Army Corps of Engineers, 2020). The Army Corps of Engineers has characterized Prado Dam as a high urgency risk (Insurance Journal, 2020).

Stormwater Runoff

Given the mostly built out nature of the Planning Area, existing pollutants are mainly oil and grease, suspended solids, trash, nutrients, bacteria, and household hazardous wastes. The City of Garden Grove Public Works Department is only responsible for constructing and maintaining the Belgrave flood channel and the storm drains within the City. The Orange County Flood Control District is responsible for constructing and maintaining all other regional flood control channels located in the City. The system is designed to control the movement of rainwater to a safe location where it can re-charge our natural and man-made water supplies. Most of the collected rainwater is directed to a flood control channel where it flows to the ocean. Two important planning considerations in regard to storm drain planning include: 1) ensuring adequate capacity to collect and carry storm water is available, and 2) working to reduce pollutants in storm water. The City of Garden Grove has in the past been subjected to extensive street flooding and occasional property damage, particularly during the 1960s and earlier. Major floods occurred in 1938, 1969, 1978, and 1983, affecting various parts of the City. During peak winter storms, localized flooding damages properties and hinders travel along certain arterial streets. To accommodate new growth and revitalization, the City has continued to maintain and replace aging storm drain systems and minimize the adverse effects of urbanization upon drainage and flood control facilities. When it rains, pollutants such as trash, litter, silt, automotive chemicals, animal waste, and other contaminants are washed into the storm drains.

4.8.2 – REGULATORY FRAMEWORK

Federal

Clean Water Act. The Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges (known as “point sources”) into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff, the principal nonpoint source. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they

can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water". Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones.

Major CWA programs include water quality standards, anti-degradation policy, waterbody monitoring and assessment, total maximum daily loads (TMDLs), the National Pollutant Discharge Elimination System (NPDES) permit program for point sources, Section 319 program for nonpoint sources, Section 404 program regulating filling of wetlands and other waters, Section 401 state water quality certification, and the state revolving loan fund (SRF).

Federal Emergency Management Agency (FEMA). The Federal Emergency Management Agency (FEMA) creates maps classifying levels of flood risk or flood zones for designated areas. The maps are called Flood Insurance Rate Maps (FIRMs) and are utilized to determine the need and rate of flood insurance. Flood zones are determined based on historical data on the likelihood of flood inundation. The 100-year flood zone, also classified as Zones A, AO and AE, is the area of flooding expected to occur every 100 years.

NPDES Program. The National Pollutant Discharge Elimination System (NPDES) program requires permitting for activities that discharge pollutants into waters of the United States. This includes discharges from municipal, industrial, and construction sources. Generally, these permits are issued and monitored under the oversight of the State Water Resources Control Board (SWRCB) and administered by each regional water quality control board. A brief discussion of these permit types is presented below:

Municipal: Municipal separate storm sewer systems (MS4) are issued permits based on the size of the municipality. MS4 permit requirements include reduction of pollutant discharges to the 'maximum extent practicable' and protection of water quality. Requirements also include identification of major outfalls and pollutant loads and control of discharges from new development and redevelopment. To address these objectives, municipalities are required to prepare stormwater management plans. Although the NPDES program does not regulate nonpoint sources of pollution, the Santa Ana RWQCB has other programs in place to address nonpoint sources.

Industrial*:* The State Water Resources Control Board issues the Industrial General Permit that regulates discharges from 10 broad categories of industrial activities. The permit requires preparation of a Storm Water Pollution Prevention Plan (SWPPP) and monitoring program to implement water quality objectives through use of the best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT).

Construction: Construction activities that disturb one acre or more (whether a single project or part of a larger development) are required to obtain coverage under the State's General Permit for Dischargers of Storm Water Associated with Construction Activity. The activities covered under the Construction General Permit include clearing, grading, and other disturbances. The permit requires preparation of a SWPPP and implementation of Best Management Practices (BMPs) with a monitoring program.

State

Porter-Cologne Act (California)*.* Under the Porter-Cologne Water Quality Control Act (Porter-Cologne) the State Water Resources Control Board (SWRCB) has authority over State water rights and water quality policy. Porter-Cologne also established nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level. RWQCBs engage in a number of water quality functions in their respective regions. The Santa Ana RWQCB manages water quality for Garden Grove and the central and northern portions of Orange County.

Sustainable Groundwater Management Act. On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline. SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt Groundwater Sustainability Plans (GSPs) for crucial groundwater basins in California.

NPDES Regulations. The federal Clean Water Act allows individual States to operate their own NPDES programs provided such programs meet minimum Federal requirements. As an MS4 operator, Orange County must obtain and implement NPDES permits for both the Santa Ana Regional Water Quality Control Board (SAR; North and Central Orange County) and the San Diego Regional Water Quality Control Board (SDR; South Orange County) regions. As the Principal Permittee on both SAR and SDR NPDES Permits, the County guides development and implementation of the Program, collaborating regularly with Co-permittees to ensure compliance and prevent ocean pollution. The current Santa Ana Regional NPDES Permit, Order No. R8-2009-0030 as amended by Order No. R8-2010-0062, became effective on November 8, 2010 and is in the process of being revised by the SAR board. The San Diego Regional Water Quality Control Board (RWQCB) adopted Order R9-2013-0001 on May 8, 2013. This Order, which was amended in February of 2015 to include areas of South Orange County, requires local government, in each of the region's Watershed Management Areas (WMAs) to develop Water Quality Improvement Plans (WQIPs).

The objective of Order No. R8-2010-0062 is to protect the beneficial uses of receiving waters in Orange County. To meet this objective, the Order requires that the Orange Countywide Stormwater Quality Management Plan (SQMP) specify Best Management Practices (BMPs) that would be implemented to reduce the discharge of pollutants in stormwater to the maximum extent practicable. Further, Permittees are to assure that stormwater discharges from the MS4 shall neither cause nor contribute to the exceedance of water quality, standards and objectives nor create conditions of nuisance in the receiving waters, and that the discharge of non-storm water to the MS4 has been effectively prohibited.

Permit No. CAS004001 requires implementation of a Stormwater Quality Management Plan, which provides specific guidelines to control, reduce and monitor discharges of waste to storm drain systems. The emphasis of the Stormwater Quality Management Plan is pollution prevention through education, public outreach, planning and implementation as source control BMPs first and structural and treatment control BMPs second.

Standard Urban Stormwater Mitigation Plan (SUSMP). The Standard Urban Stormwater Mitigation Plan (SUSMP) was developed as part of the Santa Ana Regional Water Quality Control Board's Municipal Stormwater Program. The Standard Urban Stormwater Mitigation Plan addresses stormwater pollution from certain types of new development and redevelopment. The Standard Urban Stormwater Mitigation Plan specifies the minimum required Best Management Practices (BMPs) that must be used for a designated project. Additional BMPs may be required on certain targeted categories of projects based on these regulations at the discretion of the City of Garden Grove. Applicable project applicants are required to incorporate appropriate Standard Urban Stormwater Mitigation Plan requirements into their development plans.

California Water Plan. Required by the California Water Code Section 10005(a), the California Water Plan, prepared by the State Department of Water Resources (DWR), is the state government's strategic plan for managing and developing water resources statewide for current and future generations and provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The California Water Plan, which is updated every five years, presents basic data and information on California's water resources, including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The California Water Plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the state's water needs. The goal for the California Water Plan Update is to meet California Water Code requirements, while receiving broad support among those participating in California's water planning, and serving as a useful document for the public, water planners throughout the state, legislators, and other decision-makers.

Colbey-Alquist Floodplain Management Act. The Colbey-Alquist Floodplain Management Act encourages local governments to plan, adopt and enforce land use regulations for floodplain management, in order to protect people and property from flooding hazards. This act also identifies requirements which jurisdictions must meet in order to receive state financial assistance for flood control.

State Resolution No. W-4976. In recent years, the State of California has been experiencing dry weather conditions due to less rainfall in the area, thus, causing a statewide drought emergency. In an effort to promote water conservation efforts, Resolution No. W-4976 was adopted by the California Public Utilities Commission on February 27, 2014 to establish procedures for water conservation measures in order to ensure a reduction in consumption. Since many water utility agencies or companies secure their water supply from multiple sources, including water wholesaler, surface water and/or ground water; the adoption of this mandate has affected how water utility districts plan their service distribution while encountering various levels of water supply adjustments within each service areas.

Urban Water Management Plans (UWMPs). These plans are prepared by urban water suppliers every five years. They support the suppliers' long-term resource planning to ensure that adequate water supplies are available to meet existing and future water needs. The requirements for UWMPs are found in two sections of California Water Code, §10610-10656 and §10608. Every urban water supplier that either provides over 3,000 acre-feet of water annually, or serves more than 3,000 urban connections is required to submit an UWMP. Within UWMPs, urban water suppliers must: assess the reliability of water sources over a 20-year planning time frame; describe demand management measures and water shortage contingency plans; report progress toward meeting a targeted 20 percent reduction in per-capita (per-person) urban water consumption by the year 2020; and discuss the use and planned use of recycled water. The information collected from the submitted UWMPs is useful for local, regional, and statewide water planning.

California Green Building Standards Code. The California Green Building Standards Code (CALGreen Code), Part 11 of the California Building Standards Code (Title 24) is designed to improve public health, safety, and general welfare by utilizing design and construction methods that reduce the negative environmental impact of development and to encourage sustainable construction practices. The CALGreen Code provides mandatory direction to developers of all new construction and renovations of residential and non-residential structures with regard to all aspects of design and construction, including, but not limited to, site drainage design, stormwater management, and water use efficiency. Required measures are accompanied by a

set of voluntary standards designed to encourage developers and cities to aim for a higher standard of development.

Low Impact Development. The State of California adopted sustainability as a core value for all California Water Boards' activities and programs on January 20, 2005. Low Impact Development (LID) practices benefit water supply and contribute to water quality protection by taking a different approach to development and using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The amount of impervious surface, infiltration, water quality, and infrastructure costs can all be addressed by LID techniques, tools, and materials. LID practices include: bioretention facilities or rain gardens, grass swales and channels, vegetated rooftops, rain barrels, cisterns, vegetated filter strips, and permeable pavements.

Water Quality Management Plans (WQMPs). The MS4 Permit requires that a WQMP be prepared for all projects within the Santa Ana RWQCB. A Model WQMP has been developed to aid the County of Orange, the Orange County Flood Control District, and cities of Orange County (the Permittees) and development project proponents with addressing post-construction urban runoff and stormwater pollution from new development and significant redevelopment projects that qualify as Priority Projects. The criteria for defining a "Priority Project" is provided in the Model WQMP. The Model WQMP describes the process that Permittees will employ for developing a Project WQMP for individual new development and significant redevelopment projects. A Project WQMP is a plan for minimizing the adverse effects of urbanization on site hydrology, runoff flow rates and pollutant loads. Development of a Model WQMP to provide guidance for preparation of a Project WQMP is required by the two National Pollutant Discharge Elimination System (NPDES) permits held jointly by the Permittees administered by two Regional Water Quality Control Boards. The permits also require development of Conceptual or Preliminary WQMPs prior to submission of a Project WQMP.

Regional

Santa Ana Regional Basin Plan. The California legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality, including the Porter–Cologne Act and portions of the CWA, to the SWRCB and its nine RWQCBs. The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for implementation of state and federal regulations. The nine RWQCBs throughout California adopt and implement Basin Plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The Santa Ana RWQCB is responsible for the protection of the beneficial uses of waters within the coastal watersheds of southwestern San Bernardino County, western Riverside County, and northwestern Orange County, including the Planning Area. The Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240–13247). The Santa Ana RWQCB Basin Plan must conform to the policies set forth in the Porter-Cologne Act as established by the SWRCB in its state water policy. The Porter-Cologne Act also provides the RWQCBs with authority to include within their basin plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

More specifically, the Basin Plan: (i) identifies beneficial uses for surface and ground waters, (ii) includes narrative and numerical water quality objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and

(iii) describes implementation programs and other actions that are necessary to achieve the water quality objectives established in the Basin Plan.

The Basin Plan is continually being updated to include amendments related to implementation of TMDLs of potential pollutants or water quality stressors, revisions of programs and policies within the Orange County RWQCB region, and changes to beneficial use designations and associated water quality objectives.

Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended). For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs one acre or more of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The Construction General Permit requires the development and implementation of a stormwater pollution prevention plan (SWPPP), which would include and specify water quality BMPs designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. Routine inspection of all BMPs is required under the provisions of the Construction General Permit, and the SWPPP must be prepared and implemented by qualified individuals as defined by the SWRCB.

Activities that disturb over half an acre of land require coverage under the Construction General Permit. Waste Discharge Requirements for the Discharge of Groundwater from Construction and Project Dewatering to Surface Waters in the Santa Ana Regional Basin (Santa Ana RWQCB Order No. R8-2018-0069). This general order is intended to authorize discharges of treated or untreated groundwater generated from permanent or temporary dewatering operations or other applicable wastewater discharges not specifically covered in other general or individual NPDES permits. Discharges from facilities to waters of the United States that do not cause, have the reasonable potential to cause, or contribute to an in-stream excursion above any applicable state or federal water quality objectives/criteria or cause acute or chronic toxicity in the receiving water are authorized discharges in accordance with the conditions set forth in this Order. To demonstrate coverage under the order, dischargers must submit documentation to show that the discharge would not cause or contribute to a violation of any applicable water quality objective/criteria for the receiving waters, or any other discharge prohibition listed in the order. In addition, discharges must perform reasonable potential analysis using a representative sample of groundwater or wastewater to be discharged. The sample shall be analyzed and the data compared to the water quality screening criteria for the constituents listed in the order, and if results show exceedance of water quality screening criteria, the discharge will be required to treat the wastewater to acceptable standards prior to discharge.

Local

City General Plan. The City General Plan City's existing General Plan contains the following goals and policies that address water resources, water-related hazards, and water quality:

Infrastructure Element

Goal INFR-3: Storm drain service levels shall be maintained and/or improved throughout the City.

Policy INFR 3.1: Cooperate with local, State, and Federal flood control agencies to reduce the potential for flood damage in the City.

Policy INFR 3.2: Continue to maintain and replace aging storm drain systems to ensure the provision of these services to all areas of the community.

Policy INFR 3.3: Minimize the adverse effects of urbanization upon drainage and flood control facilities.

Policy INFR 3.4: Improve the storm drain system in a way that respects the environment.

INFR-IMP-3A Continue to participate in the NPDES permit program.

INFR-IMP-3B Require new development and redevelopment projects (greater than one acre) to provide a Water Quality Management Plan.

INFR-IMP-3C Use natural features such as bioswales, wildlife ponds, and wetlands for flood control and water quality treatment when feasible.

INFR-IMP-3D Continue to require the implementation of adequate erosion control measures for development or redevelopment projects in order to minimize sedimentation damage to drainage facilities.

INFR-IMP-3E Utilize development fees, redevelopment funds, drainage fees and other funding sources to assure that development of drainage facilities corresponds with development within the City.

INFR-IMP-3F Identify and improve areas experiencing localized storm drainage problems for storm drain improvements. INFR-IMP-3G Update the City's Master Plan of Drainage, as necessary.

Goal INFR-4: The City is committed to improved water quality resulting from storm and urban water runoff from existing and future development.

Policy INFR-4.1: Provide sufficient levels of storm drainage service to protect the community from flood hazards and minimize the discharge of materials into the storm drain system that are toxic or which would obstruct flows.

Policy INFR-4.2: Fund and undertake storm drain improvement projects as identified in the City of Garden Grove Capital Improvement Plan.

Policy INFR-4.3: Cooperate in regional programs to implement the National Pollutant Discharge Elimination System program.

Policy INFR-4.4: Develop an industrial/commercial inspection program to comply with the requirements of the National Pollutant Discharge Elimination System program.

Policy INFR-4.5: Conduct routine preventative maintenance activities related to municipal activities that are considered effective Best Management Practices (BMP) for pollutant control.

Policy INFR-4.6: Work with other agencies to develop a program for Model Maintenance Procedures for Public Agency Activities to address municipal activities' pollution prevention and treatment.

Policy INFR-4.7: Perform drainage facility and infrastructure maintenance activities to comply with the requirements of the National Pollutant Discharge Elimination System program.

Policy INFR-4.8: Consider structural measures or source control programs for the following drainage areas that would provide enhanced water quality benefits beyond what can be achieved through routine measures employed to meet NPDES permit requirements:

- Wintersburg Channel Drainage Area
- Anaheim Barber Channel Drainage Area

- Bolsa Chica Drainage Area

Policy INFR-4.9: Identify key properties throughout the City with substantial land area that may be subject to future development or redevelopment that could incorporate water quality features.

INFR-IMP-4A Continue to participate in education and public information activities to present a consistent message on storm water pollution prevention. The education should inform public and municipal staff about the origins and causes of storm water pollution and promote behavioral changes to control pollutants at the sources. Outreach can include, but is not limited to:

- Public service announcements through its cable television productions
- Community newsletters
- Recycling and water pollution brochures
- Utility bill inserts
- City-sponsored events with litter and debris clean-up
- 24-hour water pollution reporting hotline
- City website postings or educational materials

INFR-IMP-4B Continue to participate with other agencies on public education and outreach materials for countywide distribution to focus on public education and business activities with the potential to pollute. Distribute Best Management Practices (BMP) guidance for business activities, including but not limited to, mobile detailing, pool maintenance, restaurant cleaning operations, and automotive service centers.

INFR-IM-4C Consider implementing targeted local public information and outreach efforts for restaurant operations, landscape and concrete construction contractors, and school outreach programs.

INFR-IMP-4D Continue to implement the City's residential informational and outreach program by providing homeowners with Best Management Practices (BMP) to address high threat activities, such as, but not limited to:

- Disposal of garden waste
- Disposal of household hazardous waste
- Disposal of pet waste
- Garden care and maintenance
- Vehicular repair and maintenance
- Vehicular washing

INFR-IMP-4E Prepare informational brochures that explain the best methods to reduce runoff containing pollutants from residential areas. Distribute the brochures to existing residents, homeowner associations, and new residential development.

INFR-IMP-4F Consider whether the industrial/commercial inspection should be an expansion of the existing inspection program or the development of a new inspection process. The inspection program shall include, but not be limited to:

- Inventory and develop database of industrial facilities based on filed business permits

- Inventory and develop database of commercial facilities, such as automobile repair stations, mobile washing operations, pool maintenance operations, landscapers, painting, etc
- Prioritize and inspect industrial and commercial facilities based on high-, medium-, or low-threat to water quality
- Conduct inspections to ensure compliance with ordinances and NPDES permit requirements
- Provide informational brochures explaining Best Management Practices (BMP) for the industrial/commercial facility inspectors to distribute

INFR-IMP-4G Continue to annually report the City's activities as part of its submittal to the Santa Ana Region Water Quality Control Board. Activities the City should report on include, but are not limited to:

- Litter Control
- Solid Waste Collection/Recycling
- Drainage Facility Maintenance
- Catch Basin Stenciling
- Street Sweeping
- Household Hazardous Waste Collection
- Emergency Spill Response
- Fertilizer and Pesticide Maintenance
- Fixed-Facility Inspections
- Sewer System Operation and Maintenance

INFR-IMP-4H Continue to review and update procedures, activities, and staff training to comply with the Model Maintenance Procedures for Public Agency Activities program, as necessary.

INFR-IMP-4I Review and update the litter control program, as necessary, and consider the findings and recommendations of the Orange County PRFD.

INFR-IMP-4J Continue to implement the City's illegal discharge and illicit connection elimination program.

INFR-IMP-4K Consider the potential opportunities for the Wintersburg Channel Drainage Area:

- Address sediment buildup downstream from Twin Lakes Park
- Increase size and effectiveness of the water quality feature in Twin Lakes Park
- Potential significant opportunities for incorporating water quality features into future development along the Harbor Corridor area/International West Focus Area
- Clean-up and protect channel in vicinity of area schools to reduce trash and debris accumulation
- Consider school fields and park sites for detention and/or retarding basins

INFR-IMP-4L Consider the potential opportunities for the Anaheim Barber Drainage Area:

- Improve/restore channels to enhance aesthetics and treatment potential

- Potential significant opportunities for incorporating water quality features into future development in the area
- Clean-up and protect channel in vicinity of area schools to reduce trash and debris accumulation
- Consider school fields and park sites for detention and/or retarding basins

INFR-IMP-4M Consider the potential opportunities for the Bolsa Chica Channel Drainage Area:

- Improve/restore channels to enhance aesthetics and treatment potential
- Potential significant opportunities for incorporating water quality features into future development in the area
- Clean-up and protect channel in vicinity of area schools to reduce trash and debris accumulation
- Consider school fields and park sites for detention and/or retarding basins

INFR-IMP-4N Consider incorporating water quality features into new or redevelopment projects with sufficient land area. These features could address both project-specific and other local impacts.

Conservation Element (soil erosion)

Goal CON-2: Protect and improve water quality.

Policy CON-2.1: Enhance water infiltration throughout watersheds by decreasing accelerated runoff rates and enhancing groundwater recharge. Whenever possible, maintain or increase a site's pre-development infiltration to reduce downstream erosion and flooding.

Policy CON-2.2: Encourage practices that enable water to percolate into the surrounding soil, instead of letting sediment, metals, pesticides and chemicals runoff directly into the storm drain system, creeks, or regional flood control facilities.

Policy CON-2.3: Educate the public about water quality and engage the public and agencies to improve water quality.

Policy CON-2.4: Continue to comply with Federal, State, and regional governments and agencies to protect and improve the quality of local and regional groundwater resources available to the City.

Policy CON-2.5: utilize available resources to monitor land uses draining into water sources and water recharge areas, to prevent potential contamination from hazardous or toxic substances such as pesticides from homes, and golf courses, cleaning agents, swimming pool chemicals, and road oil.

Policy CON-2.6: Design, construct, and maintain City buildings, landscaped areas, roads, bridges, drainages, and other facilities to minimize the volume of toxics, nutrients, sediment, and other pollutants in stormwater flows, and continue to improve road maintenance methods to reduce erosion and sedimentation potential.

CON-IMP-2A: Support programs to maintain pathogen and nutrient levels at or below target levels set by the Regional Water Quality Control Board, including the efforts of agencies, and community groups to address pathogen, sediment, and nutrient management in the urban watershed.

CON-IMP-2B: Utilize Integrated Pest Management (IPM) practices for City facilities. Develop a maintenance program for all City facilities that specifies least toxic methods. Minimize the need for toxic materials by designing and constructing facilities and landscaping to be durable, easily maintained, and pest resistant.

CON-IMP-2C: Research the potential to expand the use of alternative waste disposal methods such as gray water systems, composting toilets, waterless urinals, and other techniques — and community systems to help reduce the potential for contaminants to pollute water bodies and create human health hazards.

CON-IMP-2D: Minimize impervious services for new development, and incorporate technologies such as pervious paving, landscaped roofs, planter boxes, and rainwater capture and reuse.

CON-IMP-2E: Support local storm water and community watershed group efforts to inform the public about practices and programs to minimize water pollution.

CON-IMP-2F: Provide programs that encourage public participation, education, and appropriately designed development to curb water pollution in the City.

Safety Element (Flood Hazards)

Goal SAF-7: Minimize injury and loss of life, damage to public and private property and infrastructure, and economic and social disruption caused by inundation and flood hazards.

Policy SAF-7.1: Continue to implement adopted flood control programs and regulations.

Policy SAF-7.2: Improve defensive measures against 100-year, or other State-defined scenario, flood conditions through land use and design, such as increased pervious surfaces, on-site water capture and re-use, minimized building footprints, etc.

Policy SAF-7.3: Continue to monitor regional flood hazard improvements in the Santa Ana River Basin area to understand impacts to the 100-year storms within the City.

Policy SAF-7.4: Encourage methods that place limits on land use activities in flood hazard areas and timely repair and maintenance of necessary flood control structures.

Policy SAF-7.5: Monitor projections for and actual sea level rise to the extent it will impact properties along the Santa Ana River, and work with the U.S. Army Corps of Engineers and other agencies to proactively guard against anticipated flood hazards.

SAF-IMP-7A: Continue to update, as appropriate, and enforce provisions in the City of Garden Grove Flood Management Ordinance, regarding development in flood prone areas.

SAF-IMP-7B: Encourage use of Low Impact Development (LID) methods that capture and treat water on-site, therefore, reducing flows to storm drain system.

SAF-IMP-7C: Maintain and improve capacity levels of storm drainage service, where appropriate.

SAF-IMP-7D: Update the City's Master Plan of Drainage.

City Municipal Code. Section 6.40 of the City's Municipal Code addresses stormwater quality and runoff pollution control measures, while Section 14.40 addresses water conservation programs.

4.8.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As identified in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

B. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

C. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would; (i) result in substantial erosion or siltation on-or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows?

D. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

E. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

F. Would the project cause substantial adverse cumulative impacts with respect to hydrology and water quality?

4.8.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to hydrology and water quality which could result from the implementation of the FGPUZA and recommends mitigation measures as needed to reduce potentially significant impacts to less-than-significant levels.

Degradation of Groundwater Quality

IMPACT HYD-1 - Would the FGPUZA violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Analysis of Impacts

According to the Orange County Public Works Department, water quality in the Planning Area and surrounding jurisdictions is regulated by a number of federal, state, and county laws and regulations. The Planning Area is located within the North OC Watershed Management Area (WMA), which encompasses 241,000 acres (376 square miles) in Northern Orange County. The NOC WMA is bordered by Los Angeles County to the North and West and to the East by San Bernardino County. The three watersheds in this area are the San Gabriel River/Coyote Creek, Anaheim Bay-Huntington Harbor and the Santa Ana River. All three watersheds lie within the Santa Ana Regional Water Quality Control Board boundary. The NOC WMA includes the cities of Anaheim, Brea, Buena Park, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington

Beach, La Habra, La Palma, Los Alamitos, Placentia, Seal Beach, Stanton, Villa Park, Westminster, and Yorba Linda, and portions of the cities of Costa Mesa, Orange, Newport Beach, and Santa Ana, as well as unincorporated areas of Orange County (Orange County, 2020a).

The City of Garden Grove is a co-permittee in the Orange County National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit. To comply with the MS4 permit and reduce stormwater pollution, the City has implemented the following measures: Plan Review and implementation of Construction and Post-Construction Water Quality Best Management Practices (BMPs) for Development and Redevelopment; Low Impact Development (LID) Ordinance; and Regenerative Street Sweeping. Typical BMPs include site and street sweeping, bio-swales and straw-wattles during construction, covering exposed soils, etc. In addition, the Garden Grove Sanitary District monitors and manages wastewater conditions such as sewer overflows, line blockages by fats, oils, grease, and tree roots within the City to assure it meets the RWQCB requirements for waste discharges.

2021 General Plan Update. The proposed FGPUZA does not contain any new goals or policies that address overall water quality, waste discharge, or stormwater requirements. However, the Infrastructure Element of the existing General Plan contains a number of goals and policies related to water quality from various sources. Goal INFRA-4 and Policies INFR-4.3, 4.4, 4.7, 4.8, and 4.9 commit the City to continued efforts to protect and improve water quality both from existing development as well as new development that would occur. In addition, Implementation Programs INFRA-IMP-4B through -4N require public education about and enforcement of Best Management Practices (BMPs) for various types of land uses in the City.

Similarly, Goal CON-2 in the Conservation Element of the existing General Plan and its Policies CON-2.1 through CON-2.6 and its Implementation Plans CON-IMP-2A through -2F help promote efforts throughout the City to improve both surface and groundwater quality. For example, CON-IMP-2A encouraging programs to maintain pathogen and nutrient levels at or below target levels set by the Santa Ana Regional Water Quality Control Board.

With implementation of the existing General Plan Infrastructure, Conservation, and Safety Elements goals and policies related to water quality, regulatory compliance, and the City's development review process, potential impacts related to local and regional water quality from future development within the Planning Area will be reduced to less than significant levels. Therefore, the FGPUZA would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. Impacts would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Impacts to Groundwater Supply and Recharge

IMPACT HYD-2 – Would the FGPUZA substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Analysis of Impacts

Garden Grove's water supply comes from two sources; imported water from Metropolitan Water District of Southern California (Met), and local groundwater. The City's Water Services Division operates 13 active wells with a total capacity of 39,850 gallons per minute (GPM) and has four imported water connections. (Garden Grove, 2020). The OC Basin underlies the northerly half of Orange County beneath broad lowlands. The OC Basin covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, and the Pacific Ocean to the southwest. The OC Basin's boundary extends to the Orange County-Los Angeles Line to the northwest, where groundwater flows across the county line into the Central Groundwater Basin of Los Angeles County. The total thickness of sedimentary rocks in the OC Basin is over 20,000 feet, with only the upper 2,000 to 4,000 feet containing fresh water. The Pleistocene or younger aquifers comprising this Basin are over 2,000 feet deep and form a complex series of interconnected sand and gravel deposits. The OC Basin's full volume is approximately 66 million acre feet (MAF). There are three major aquifer systems that have been subdivided by OCWD, the Shallow Aquifer System, the Principal Aquifer System, and the Deep Aquifer System. These three aquifer systems are hydraulically connected as groundwater is able to flow between each other through intervening aquitards or discontinuities in the aquitards. The Shallow Aquifer system occurs from the surface to approximately 250 feet below ground surface. Most of the groundwater from this aquifer system is pumped by small water systems for industrial and agricultural use. The Principal Aquifer system occurs at depths between 200 and 1,300 feet below ground surface. Over 90 percent of groundwater production is from wells that are screened within the Principal Aquifer system. Only a minor amount of groundwater is pumped from the Deep Aquifer system, which underlies the Principal Aquifer system and is up to 2,000 feet deep in the center of the OC Basin.

Groundwater is pumped from thirteen active wells located throughout the City. MWDOC wholesales imported water to the City from the Metropolitan Water District (MWD)through four imported water connections. The MWD treats water supplied to the City at the Diemer Filtration Plant in northern Orange County. The City's water distribution system is connected to Metropolitan transmission mains at four locations along the northern and eastern sides of the City. The City also operates eight storage and distribution reservoirs at five sites with a combined capacity of 53 million gallons (MG). The storage volume is the equivalent of more than two days average use and is more than adequate for peaking demands and firefighting needs. The storage system is supported with 17 booster pumps located at the reservoir sites. The booster pumps have a total capacity of 44,500 gallons per minute (gpm), which is more than enough to keep the system pressurized under peak flow conditions. The City also maintains nine emergency interconnections with neighboring water systems. The City's distribution system pressures are managed to ensure that water pressure is within acceptable ranges for both domestic use and fire flow demands. Peak demands can be met with combinations of increased pressure rates and water from storage tanks.

In recent years, Southern California's urban water demand has been largely shaped by the efforts to comply with the SBx7-7. This law requires all California retail urban water suppliers serving more than 3,000 acre-feet per year (AFY) or 3,000 service connections to achieve a 20 percent water demand reduction (from a historical baseline) by 2020. The City has been actively engaged in efforts to reduce water use in its service area to meet the 2015 interim 10 percent reduction and the 2020 final water use target. Meeting this target is critical to ensure the City's eligibility to receive future state water grants and loans.

In April 2015 Governor Brown issued an Emergency Drought Mandate as a result of one of the most severe droughts in California's history, requiring a collective reduction in statewide urban water use of 25 percent by February 2016, with each agency in the state given a specific

reduction target by DWR. In response to the Governor's mandate, the City is carrying out more aggressive conservation efforts. It is also implementing higher (more restrictive) stages of its water conservation ordinance in order to achieve its demand reduction target of 20 percent set for the City itself and the Regional Alliance of all participating MWDOC utility agencies (discussed later in Section 2.5).

In addition to local water conservation ordinances, the City has engaged in activities that range from being a signatory member of the California Urban Water Conservation Council's (CUWCC) Best Management Practices (BMP) Memorandum of Understanding since 2000 to ongoing water audit and leak detection programs. The City has also partnered with MWDOC on educational programs, indoor retrofits and training. These efforts have been part of statewide water conservation ordinances that require watering landscape watering, serving water in restaurants and bars, and reducing the amount of laundry cleaned by hotels. Further discussion on the City's water conservation ordinance is covered in Section 5 Water Supplies Contingency Plan.

This section analyzes the City's current water demands by customer type, factors that influence those demands, and projections of future water demands for the next 25 years. In addition, to satisfy SBx7-7 requirements, this section provides details of the City's SBx7-7 compliance method selection, baseline water use calculation, and 2015 and 2020 water use targets.

According to the 2020 UWMP, the City's service area has a 2020 population of 176,635, an increase from the 2015 population of 176,467. Overall, the UWMP estimates population to increase by 5.1% over the 20-year period from 2020 to 2040. Most of the growth is projected to be from densification of existing communities and new residential uses being multi-story units. Table 4.10-1 (City Growth Projections) shows the UWMP population projections from 2020 to 2040 within the City's service area. Similarly, the total number of dwelling units in the City is expected to increase by 4.0% in the next 20 years from 48,763 in 2020 to 50,690 in 2040. Table 4.10-1 also shows the population and housing growth projected under the proposed FGPUZA is considerably higher than that estimated in the 2020 UWMP (+53k pop and almost +18k units).

Table 4.8-1
City Growth Projections

Growth Characteristic	2020 Existing	2040 Projected	Difference (Percent)
2020 UWMP Estimates[1]			
Population	176,635	185,599	+8,964 (+5.1%)
Dwelling Units[2]	48,763	50,690	+1,927 (+4.0)
FGPUZA Estimates			
Population	174,801	238,619	+63,818 (+36.5%)
Dwelling Units	48,257	68,499	+20,242 (+41.9%)
2040 Difference - FGPUZA to UWMP			
Population			+53,020
Dwelling Units			+17,809

[1] Source: Tables 3-2 and 3-3, City UWMP 2020

[2] Includes single family, duplex, triplex, apartment, condo, townhouse, mobile home, etc., recreational vehicles, vans, etc. are included if is primary place of residence. Does not include group quartered units, cars, railroad box cars, etc.

The City has little vacant land remaining and based on the 2030 General Plan, the City is expected to reach complete build out conditions by 2040. To accommodate future growth, the proposed updated Housing Element identifies the following three categories for future development: vacant parcels; focus areas; and accessory dwelling units.

According to the 2020 UWMP, water use within the City's service area has been relatively stable in the past decade with an annual average of 23,717 acre-feet for potable use; note that there has been a slight downward trend in the second half of the decade. In FY2019-20, the City's water use was 21,979 AF of potable water (groundwater and imported). There is currently no recycled water use within the City's service area. In FY2019/20 the City's water use profile was comprised of 64.8% residential use, 24.5% commercial/industrial/ institutional, 2.9% large landscape/irrigation, with non-revenue water and other uses comprising about 7.7%. The City's service area is almost completely developed and the 2020 UWMP concluded the City was projected to add minimum land use and small population increase. Water demand is likely to increase 2.8% over the next 5 years based on the UWMP. In the longer term, water demand is projected to increase 0.9% from 2025 through 2045. The low projected demand is primarily due to assumed continued water conservation savings. The 2020 UWMP projects potable water use for 2040 will be 22,744 AF (Table 4-3, UWMP 2020).

However, the previous Table 4.10-1 indicated that the population and housing growth projected under the proposed FGPUZA would be considerably higher than that estimated in the 2020 UWMP (+53k pop and almost +18k units).

The City updated its Water Master Plan (WMP) in 2020 which examined the capacity of the City's water supply system to identify any future supply deficits. Table ES-2 of the 2020 WMP indicate that in 2040 the City's water system will be able to provide 48,850 gallons per day (gpd) on a maximum day demand compared to a projected demand of 21,100 gpd. The WMP therefore shows a substantial surplus of available groundwater that can be supplied compared to projected future demand by 2040 (Table ES-2, WMP 2020).

Orange County Groundwater Management

The Orange County Water District (OCWD) adopted its first Groundwater Management Plan (GMP) in 1989 and the latest update was completed in 2015. The GMP sets forth basin management goals and objectives and describes how the basin is managed, including a description of basin hydrogeology, water supply monitoring programs, management and operation of recharge facilities, water quality protection and management, and natural resource and collaborative watershed programs. Basin management goals are to: (1) protect and enhance groundwater quality; (2) protect and increase the sustainable yield of the basin in a cost-effective manner; and (3) increase the efficiency of District operations.

In 2014, the State Legislature passed the California Sustainable Groundwater Management Act (SGMA). The law provides authority for agencies to develop and implement groundwater sustainability plans (GSP) or alternative plans that demonstrate the basin is being managed sustainably. On January 1, 2017, the OCWD, City of La Habra, and Irvine Ranch Water District submitted the Basin 8-1 Alternative to the California Department of Water Resources. Elements to be included in GSPs as described in the California Water Code (§10727.2, 10727.4, and 10727.6) have been incorporated into the Alternative. Prior to the Alternative, OCWD provided five groundwater management plans. The first was published in 1989 and its last was published in 2015. Like its predecessors, the Basin 8-1 Alternative will be updated every five years per SGMA requirements.

The Santa Ana River Watermaster report is required by the Stipulated Judgment (Judgment) in the case of Orange County Water District v. City of Chino, et al., Case No. 117628-County of Orange. The Watermaster annually compiles the basic hydrologic and water quality data necessary to determine compliance with the provisions of the Judgment. The data include records of stream discharge (flow) and quality for the Santa Ana River (River) at Prado Dam and at Riverside Narrows as well as discharges for most tributaries, flow and quality of non-tributary water entering the River, rainfall records at locations in or adjacent to the Watershed, and other data that may be used to support the determinations of the Watermaster.

2021 General Plan Update. The proposed FGPUZA does not contain any new goals or policies that address groundwater supply or recharge. However, the existing General Plan Infrastructure and Conservation Elements include several goals and policies related to water supplies, most or all of which comes from local groundwater.

The existing Conservation Element Goal CON-1 and its Policies CON-1.1 through CON-1.6 recommend a number of actions to reduce water use (thus freeing up existing supplies) both for surface and groundwater, as well as educating the public about careful use of water. These goals and policies are supported by various Implementation Plans CON-IMP-1A through -1K. For example, CON-IMP-1A encourages the City to assist the efforts of the local water districts to reduce water use and increase reuse of water and wastewater through integrated planning of programs and complementary land use and building regulations.

In addition, the Infrastructure Element Goal INFR-1 and its Policies INFR-1.1 through 1.3 and Implementation Program INFR-IMP-1A direct the City to replace its aging water system, improve the water system to serve future demand, and update the City's Water Systems Master Plan.

All of these goals, policies, and programs help increase water efficiency thus decreasing water demand in the Planning Area. Conservation efforts that increase water efficiency and reduce the overall demand for water can contribute greatly to the long-term sustainability of the City's water supply, most of which is supplied by local groundwater.

The local Urban Water Management Plan must be updated every five years and will need to be updated to account for the growth represented by future land uses under the FGPUZA. This issue is also discussed in Section 4.16 on Utilities – Water Systems. **Mitigation Measure UTL-1** has been proposed to assure the growth projections of the FGPUZA will be incorporated into and addressed in the UMWP of the water serving agency of the Planning Area.

Level of Significance Before Mitigation

Potentially Significant.

Mitigation Measures (from Section 4.16 Utilities)

UTL-1 **Water Demand Management.** New development will not be approved if they increase water use in excess of what is identified for supply in 2040 under the most recent Urban Water Management Plan for the involved local water provider.

With the inclusion of **Mitigation Measure UTL-1**, the impact would be reduced to a less than significant level.

Impacts to Drainage Patterns, Erosion, Siltation, or Water Quality

IMPACT HYD-3 – Would the FGPUZA substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would; (i) result in substantial erosion or siltation on-or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Analysis of Impacts

Erosion/Siltation. The Planning Area is located within the North OC Watershed Management Area (WMA), which encompasses 241,000 acres (376 square miles) in Northern Orange County. The NOC WMA is bordered by Los Angeles County to the North and West and to the East by San Bernardino and Riverside Counties. The three watersheds in this area are the San Gabriel River/Coyote Creek, Anaheim Bay-Huntington Harbor and the Santa Ana River. All three watersheds lie within the Santa Ana Regional Water Quality Control Board boundary. The NOC WMA includes the cities of Anaheim, Brea, Buena Park, Cypress, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, La Habra, La Palma, Los Alamitos, Placentia, Seal Beach, Stanton, Villa Park, Westminster, and Yorba Linda, and portions of the cities of Costa Mesa, Orange, Newport Beach, and Santa Ana, as well as unincorporated areas of Orange County (Orange County, 2020a).

The overall development pattern of the City has been established for many years and is not likely to change dramatically in the future with respect to stormwater runoff or increase in impervious surfaces. Implementation of the FGPUZA will continue existing trends and patterns, and sites that contain drainages will be evaluated in the CEQA and planning review processes to determine the most appropriate way to accommodate existing drainages. Similar to the overall development pattern, the overall drainage pattern and system of drainage and flood control channels will likely continue similar to existing conditions and will not adversely affect the capacity of the existing drainage system.

Future development under the FGPUZA will result in grading of vacant land or the demolition and regrading of developed land. Under either of those conditions erosion from wind and water can occur, especially if disturbed soils are left exposed for long periods of time. The existing Garden Grove General Plan includes goals and policies to control erosion during new development and/or redevelopment (See Conservation Element Goal CON- 2 and Policies 2.1, 2.2 and 2.6 in Section 4.8.2, above)n addition, the City's development review procedures require new projects to be consistent with regulations of federal and state agencies regarding best management practices (BMPs) to protect water quality including erosion control. By implementing these goals and policies and continuing to implement the City's development review process, the FGPUZA will have less than significant impacts to drainage patterns as they relate to erosion and siltation.

Increased Runoff. As outlined above, the overall development pattern of the City has been established for many years and is not likely to change dramatically in the future. A key design consideration of all new development is to not increase offsite downstream runoff by retention or

detention onsite and by implementing low impact development where practical. As also outlined above, the existing Garden Grove General Plan includes goals and policies regarding natural and established drainages and protecting downstream properties relative to new development (See Conservation Element Goal CON- 2 and Policies 2.1 through 2.6 and Infrastructure Goal INFR 4 and Policies 4.1,4.3 and 4.5 in Section 4.8.2, above). In addition, the City's development review procedures require new projects to be consistent with flood control regulations of federal and state agencies to protect downstream properties. Implementing these goals and policies, and continuing to implement the City's development review process, will result in the FGPUZA having less than significant impacts regarding increases in runoff.

Increased Pollution. The preceding sections conclude that future development under the FGPUZA will have less than significant impacts in terms of altering drainage patterns, increasing erosion and siltation, and increasing downstream runoff. These are all key factors that lead and contribute to water quality pollution. Also, since the City is almost completely developed the Project is not expected to result in substantial increased run-off, erosion or siltation. In addition. as older areas redevelop it is very possible that runoff pollution will decrease since current federal and state requirement with respect to water quality Therefore, the FGPUZA will have less than significant impacts in terms of increased water pollution within the Planning Area.

Affect Flood Flows. Exhibit 4.8-1 (Flood Zones) above shows Federal Emergency Management Agency (FEMA) flood mapping zones for the Planning Area. As shown in Exhibit 4.8-1, most of the Planning Area faces minimal flood hazards. According to the FEMA Flood Insurance Rate Maps covering the Planning Area, the western two thirds of the Planning Area lies within Zone X which is designated as areas determined to have minimal flood hazards, areas protected by levee from a 100-year flood, or areas with a 0.2 percent chance of flooding. However, the eastern third of the Planning Area is listed as Zone A which represents areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Since nearly all of the Planning Area is developed there will be little or no change with respect to existing drainage patterns, volumes or stormwater flows. Future development proposal under the FGPUZA will be designed to work within the existing drainage system or will be required to enhance or modify drainage facilities so that system capacity is maintained. Therefore, the FGPUZA will have less than significant impacts relative to altering flood flows

2021 General Plan Update. The proposed FGPUZA does not contain any new goals or policies that address water quality, increased runoff, erosion, or other water pollution. However, the Infrastructure Element of the existing General Plan contains a number of goals and policies related to erosion as it relates to water quality. Goal INFR-3 and its Policies INFR-3.1 through -3.4 commit the City to maintain and upgrade the City's storm drain system as necessary which includes controls for erosion and siltation which can reduce channel capacities. This goal and policies are supported by Implementation Programs INFR-IMP-3A through -3F. For example, INFR-IMP-3D requires continued implementation of adequate erosion control measures for new development or reconstruction projects to minimize sedimentation damage to drainage facilities, while INFR-IMP-3G requires the City to update its Master Plan of Drainage as necessary.

In addition, Infrastructure Element Goal INFR-4 and its Policies INFR-4.3, 4.4, 4.7, 4.8, and 4.9 commit the City to continued efforts to protect and improve water quality, including reduced sedimentation, both from existing development as well as new development that would occur. In addition, Implementation Programs INFRA-IMP-4B through -4N require public education about

and enforcement of Best Management Practices (BMPs) for various types of land uses in the City.

Similarly, Goal CON-2 in the Conservation Element of the existing General Plan and its Policies CON-2.1 through CON-2.6 and its Implementation Plans CON-IMP-2A through -2F help promote efforts throughout the City to improve downstream runoff and pollution control including erosion (See Section 4.8.2 above for text of goals and policies).

Based on the preceding analysis, the future development under the FGPUZA and City development review process will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on- or off-site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems; (d) provide substantial additional sources of polluted runoff; or (e) Impede or redirect flood flows. Therefore, impacts will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant.

Pollutant Risk from Site Inundation

IMPACT HYD-4 – Would the FGPUZA result in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Analysis of Impacts

Flood Hazard. As shown in Exhibit 4.8-1, most of the Planning Area faces minimal flood hazards. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps covering the Planning Area, the western two thirds of the Planning Area lies within Zone X which is designated as areas determined to have minimal flood hazards, areas protected by levee from a 100-year flood, or areas with a 0.2 percent chance of flooding. However, the eastern third of the Planning Area is listed as Zone A which represents areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. These areas of the Planning Area are already mostly developed. The proposed FGPUZA does not include approval of any site specific development proposal at this time and its implementation would not increase the flood hazard in the area. Therefore, the risk of release of pollutants as a result of flooding is considered less than significant.

Dam Failure. Much of the eastern third of the Planning Area is in the dam inundation area for Prado Dam. The dam and its reservoir are maintained by the Army Corp of Engineers (Corps)

and were constructed in 1941. The dam is in Riverside County, approximately two miles west of Corona and on the lower Santa Ana River approximately 30.5 miles upstream from the confluence with the Pacific Ocean. Prado Dam and Reservoir serve as the principal regulating structure on the Santa Ana River and comprise more than 11,500 acres, out of which 4,100 acres are riparian habitat, 4,823 acres are recreation areas, and 2,400 acres are owned by the Orange County Water District. The Corps owns 9,100 acres in the Basin. The reservoir has a capacity of 217,000 acre-feet (Army Corps of Engineers, 2020). The Army Corps of Engineers has characterized Prado Dam as a high urgency risk and is in the process of repairing and improving the dam (Insurance Journal, 2020). The proposed FGPUZA does not include any changes to the existing General Plan that would increase the risk of inundation from dam failure or release of pollutants during dam inundation.

Tsunami. The City and Planning Area are located more than 8 miles inland of the Pacific Ocean. Therefore, the City has minimal to no risk from tsunamis and there is little potential for significant release of pollutants within the Planning Area from a tsunami.

Seiche. A seiche is a standing wave generated during earthquakes within enclosed bodies of water like reservoirs and lakes. The only enclosed body of water in the Planning Area is the Twin Lakes reservoir located at Haster Basin Recreational Park just southwest of the intersection of Lampson Avenue and Haster Street. In 2013, as part of the Haster Retarding Basin, Pump Station, and Recreational Field Project, the existing reservoir was reconstructed to increase its capacity and create added flood protection for the community. This reservoir is empty most of the year and only temporarily stores storm water before draining into the ground beneath. Therefore, the likelihood of an earthquake causing a seiche at this location is minimal. In addition, the proposed FPGUZA does not include any changes to this facility or the surrounding area that could result in the likelihood of seiche increasing. Therefore, seiches represent a very low risk to Planning Area residents so there is little potential for significant release of pollutants within the Planning Area due to seiches.

Pollutant Release. The preceding analysis demonstrates the City and Planning Area have a very low risk of pollutants being released during flooding, dam failure, tsunami, or seiche within the region. Impacts are therefore less than significant.

The proposed FGPUZA does not contain any new goals or policies that address water quality, increased runoff, erosion, or other water pollution. However, the existing General Plan Safety Element has Goal SAF-7 which requires the City to minimize injury and loss of life, damage to public and private property and infrastructure, and economic and social disruption caused by inundation and flood hazards. This goal is supported by Policies SAF-7.1 through SAF-7.4 as well as Implementation Plans SAF-IMP-7A through -7D (See Section 4.8.2 for the text of the policies). Due to the relatively low risk to the Planning Area from dam failure, tsunami, and seiche, there is little potential for significant release of pollutants from these other sources, so impacts are less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant.

Project Compliance with Water Quality and Groundwater Management Plans

IMPACT HYD-5 – Would the FGPUZA conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Analysis of Impacts

Water Quality Control Plan. The Santa Ana RWQCB is responsible for the protection of the beneficial uses of waters within the coastal watersheds of southwestern San Bernardino County, western Riverside County, and northwestern Orange County, including the Planning Area. The Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240–13247). The Orange County RWQCB Basin Plan must conform to the policies set forth in the Porter-Cologne Act as established by the SWRCB in its state water policy. The Porter-Cologne Act also provides the RWQCBs with authority to include within their basin plan water discharge prohibitions applicable to particular conditions, areas, or types of waste. More specifically, the Basin Plan: (i) identifies beneficial uses for surface and ground waters, (ii) includes narrative and numerical water quality objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (iii) describes implementation programs and other actions that are necessary to achieve the water quality objectives established in the Basin Plan.

The Basin Plan is continually being updated to include amendments related to implementation of TMDLs of potential pollutants or water quality stressors, revisions of programs and policies within the Orange County RWQCB region, and changes to beneficial use designations and associated water quality objectives. The current General Plan and the proposed FGPUZA both require the City and future development within the Planning Area to be consistent with the Basin Plan. Therefore, the FGPUZA will not conflict with or obstruct implementation of a water quality control plan.

Groundwater Management Plan. In 2014 the governor signed the Sustainable Groundwater Management Act (SGMA) into law which requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt Groundwater Sustainability Plans (GSPs) for crucial groundwater basins in California. The two local Watermasters are currently in the process of determining if it will form or join a GSA to prepare GSPs for their respective groundwater basins. Once the GSPs are developed, the UWMP of the local water-serving agency/company will need to bring their UWMP into compliance or consistency with the GSPs. See additional information in Impact HYD-2 on Orange County groundwater management.

2021 General Plan Update. The proposed FGPUZA does not contain any new goals or policies that address surface water or groundwater management. However, the existing General Plan

Infrastructure and Conservation Elements include several goals and policies related to water supplies, most or all of which comes from local groundwater.

The existing Conservation Element Goal CON-1 and its Policies CON-1.1 through CON-1.6 recommend a number of actions to reduce water use (thus freeing up existing supplies) both for surface and groundwater, as well as educating the public about careful use of water. These goals and policies are supported by various Implementation Plans CON-IMP-1A through -1K. For example, CON-IMP-1A encourages the City to assist the efforts of the local water districts to reduce water use and increase reuse of water and wastewater through integrated planning of programs and complementary land use and building regulations.

In addition, the Infrastructure Element Goal INFR-1 and its Policies INFR-1.1 through 1.3 and Implementation Program INFR-IMP-1A direct the City to replace its aging water system, improve the water system to serve future demand, and update the City's Water Systems Master Plan.

All of these goals, policies, and programs help increase water efficiency thus decreasing water demand in the Planning Area. Conservation efforts that increase water efficiency and reduce the overall demand for water can contribute greatly to the long-term sustainability of the City's water supply, most of which is supplied by local groundwater.
Under **Mitigation Measure UTL-1**, the City will inform the local water serving agencies of its change in land use and growth projections under the FGPUZA. This information will then contribute to the planning process of the two Watermasters and the subsequent GSPs for groundwater management in this region. Therefore, the FGPUZA will not conflict with or obstruct implementation of a sustainable groundwater management plan.

Level of Significance Before Mitigation

Potentially Significant.

Mitigation Measures (see Section 4.16 Utilities or Impact HYDRO-2 above)

Level of Significance After Mitigation

Less Than Significant with implementation of **Mitigation Measure UTL-1**

Cumulative Impacts

Would the FGPUZA cause substantial adverse cumulative impacts with respect to hydrology and water quality?

Analysis of Impacts

The Planning Area and surrounding communities contain water-related hazards. They also contain surface and groundwater resources that must be protected. State law requires that the Safety Elements of city general plans, including Garden Grove, address potential flooding, erosion, changing drainage patterns, and other water-related hazards. In addition, the General Plan Infrastructure and Conservation Elements identify ways the City will coordinate with other agencies to protect surface and groundwater. The Safety Element also contains goals and policies which acknowledge these potential risks and require structures and infrastructure to provide adequate levels of safety for the community.

In addition, the General Plans for the surrounding cities and the County General Plan are all required to identify potential risks from flooding, geologic and seismic conditions and contain goals and policies to address these risks and protect the public. These goals and policies are intended to be consistent with state law and are similar to those of Garden Grove's General Plan. In addition to local general plans, various state laws including CEQA require the City as a lead agency to identify potential hazards related to new development as well as protect important water resources as development occurs in the future. Local water districts must prepare Urban Water Management Plans and Groundwater Sustainability Plans are required to provide long-term protection for both surface and groundwater supplies for the region.

In these ways, potential cumulative impacts to future development from flooding and water-related hazards will be minimized, and the protection of important regional water resources will be protected. Therefore, future development in the City of Garden Grove under the proposed FGPUZA will not make a significant contribution to any cumulative regional impacts on flooding or other water-related hazards and protect surface and groundwater resources in the future.

Less Than Significant with implementation of General Plan goals and policies protecting the public from water-related hazards and carefully managing important water resources consistent with state law. Under **Mitigation Measure UTL-1**, the City will inform the local water serving agencies of its change in land use and growth projections under the FGPUZA. This information will then contribute to the planning process of the two Watermasters and the subsequent GSPs for groundwater management in this region.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required for cumulative impacts.

4.8.5 - REFERENCES

City of Garden Grove. *Garden Grove General Plan 2030: Infrastructure Element*. May 2008.

City of Garden Grove. *2020a. Urban Water Management Plan (UWMP)*. June 29, 2020.

City of Garden Grove. *2020b. Water Management Plan (WMP)*. August 2020.

Orange County Public Works. (2020a) *Our Watersheds*. Web: https://www.ocwatersheds.com/programs/ourws/ [Accessed November 2020].

Orange County Public Works. (2020b) *Local Flood Hazard*. Web: https://cms.ocgov.com/gov/pw/flood/safety/protection/hazard.asp [Accessed November 2020].

4.9 – Land Use and Planning

This EIR chapter addresses land use and planning impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes land use and planning impacts identified by the CEQA Guidelines: whether the FGPUZA will physically divide an established community or cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

4.9.1 – ENVIRONMENTAL SETTING

According to the State Department of Finance (DOF), the estimated population of the City in 2020 was 174,801 which makes it the fifth largest among Orange County cities (DOF 2020). The DOF also estimates the City's housing stock consists of 48,257 total units (DOF, 2020). The Esri Infogroup Business Summary identifies 45,766 employees in the City (ESRI and Infogroup, 2020). Garden Grove's urban development is part of the Census-defined Los Angeles-Long Beach-Anaheim urban area, a densely developed territory with an area of 1,736 square miles and a total population of 12,563,660 and encompasses residential, commercial, and other non-residential urban land uses of the Los Angeles Basin and adjoining urbanized valleys (UAF 2021). The City is almost fully built out. Most of the land within the City has been developed (over 99 percent) and redevelopment is occurring throughout the City. Existing land uses within the Planning Area are discussed below.

Existing Land Uses

Existing land uses in the Planning Area are divided into six general categories: residential, commercial and industrial, public and institutional, parks and open space, undeveloped (vacant) and other. Garden Grove's existing land use distribution is noted in Table 4.9-1 (Existing Land Use 2020). The Existing Land Use map is shown as Exhibit 4.9-1 (Existing Land Use 2020). There are a total of 11,464.1 acres in the Planning Area. As of 2020, the City's existing land uses are 65.7% residential (5,845.4 acres), 18.6% commercial and industrial (1,651 acres), 11.6% public facilities and institutions (1,032.6 acres), 1.8% parks and open space (163.1 acres), and 2.3 % uses designated as other (2,771.2 acres). There are an estimated 48,257 dwelling units within the Planning Area as of 2020 and approximately 30.2 million square feet of non-residential building area. The Planning Area currently has a population of 174,801 residents.

Table 4.9-1
Existing Land Use 2020

Existing Land Use Categories	Acres	Dwelling Units	Non-Residential Building Sq. Ft.	Population	Employees	Students
Residential						
Single-Family	4,802.9	26,984	--	103,472	--	--
Accessory Dwelling Units	--	681	--	817	--	--
Multi-Family	909.5	18,964	--	64,910	--	--
Mobile Home Park	133.0	1,628	--	5,602	--	--
Subtotal	**5,845.4**	**48,257**	**--**	**174,801**	**--**	**--**
Commercial and Industrial						
Commercial	719.6	--	9,401,900	--	14,754	--
Office	103.4	--	1,992,800	--	5,592	--
Hotel and Accommodations	77.9	--	2,383,500	--	2,071	--
Light Industrial	560.3	--	6,257,400	--	11,828	--
Warehouse and Outdoor Storage	189.8	--	2,533,900	--	2,334	--
Subtotal	**1,651.0**	**--**	**22,569,500**	**--**	**36,579**	**--**
Public Facilities and Institutions						
Civic Facilities	201.8	--	1,071,800	--	1,499	--
Public Schools	767.4	--	5,055,500	--	5,070	31,094
Private College	10.2	--	104,200	--	134	--
Hospital	13.4	--	500,000	--	813	--
Convalescent Home	13.9	--	186,300	--	440	--
Utilities	25.9	--	99,200	--	163	--
Subtotal	**1,032.6**	**--**	**7,017,000**	**--**	**8,119**	**--**
Parks and Open Space						
Parks and Recreation	156.5	--	--	--	--	--
Cemetery	6.6	--	--	--	--	--
Subtotal	**163.1**	**--**	**--**	**--**	**--**	**--**
Other						
Places of Worship	129.9	--	627,900	--	947	--
Railroad Right-of-Way	19.3	--	--	--	--	--
Other	18.7	--	18,100	--	121	--
Vacant	36.4	--	--	--	--	--
Street/Fwy Right-of-Way	2,567.8	--	--	--	--	--
Subtotal	**2,771.2**	**--**	**646,000**	**--**	**1,068**	**--**
Grand Total	**11,464.1**	**48,257**	**30,232,500**	**174,801**	**45,766**	**31,094**

Source: MIG 2021

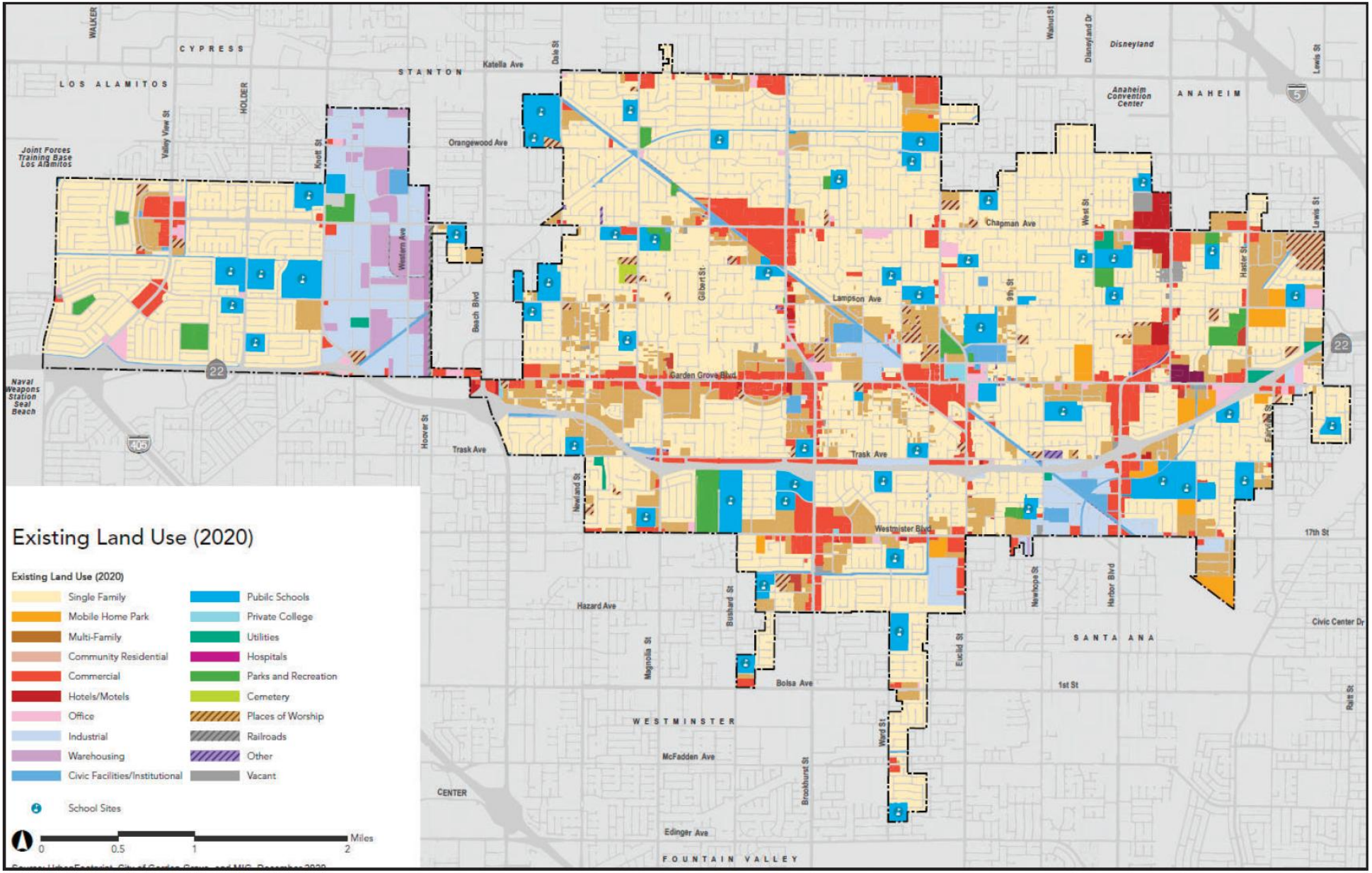

Exhibit 4.9-1 Existing Land Use (2020)

Focused General Plan Update and Zoning Amendments
Garden Grove, California

MIG

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4.9.2 – REGULATORY FRAMEWORK

A number of regional plans influence land use planning in the City of Garden Grove. Regional plans/policies created by planning agencies such as the Southern California Association of Governments (SCAG) and the South Coast Air Quality Management District (SCAQMD) are discussed below.

Southern California Association of Governments (SCAG) Regional Plans and Policies. The Southern California Association of Governments (SCAG) is responsible for regional planning in the southern California area. SCAG provides a framework to coordinate local and regional decisions regarding future growth and development and prepares future growth forecasts for the region. As the designated Metropolitan Planning Organization (MPO) for the area, SCAG is mandated by the Federal government to research and develop plans for transportation, growth management, hazardous waste management, and air quality based on the regional growth projections. As SCAG is the largest MPO in the United States, it has subregional councils of government to provide for the subregions' land use and transportation planning at a more local level. The sub-regional council for Garden Grove is the Orange County Council of Governments (OCCOG).

<u>2020-2045 Regional Transportation Plan/Sustainable Communities Strategy</u>

The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (2020 RTP/SCS) known as Connect SoCal, is a long-term vision of how the region will address regional transportation and land use challenges and opportunities. The 2020 RTP/SCS identifies goals, which are intended to help carry out the vision for improved mobility, a strong economy, and sustainability. The guiding policies for the 2020 RTP/SCS are intended to help focus future investments on the best-performing projects and strategies to preserve, maintain, and optimize the performance of the existing transportation system.

South Coast Air Quality Management Plan. In addition to SCAG, the South Coast Air Management District (SCAQMD) is responsible for the production of a regional Air Quality Management Plan (AQMP) and has prepared multiple AQMPs to accomplish the goal of an annual five-percent reduction in air pollutant emissions. The most recent AQMP was published and adopted in 2017 (AQMD 2016). The AQMD is currently in the process of developing the next AQMP.

Local

City General Plan Update. The proposed updated Land Use Element of the City's General Plan contains the following overall goals that address land use and planning. Please note that this section does not include all the policies and implementation plans that support each goal – those would make this section overly long and difficult to follow). The full set of proposed general plan goals, policies and implementation actions included in the FGPUZA can be found in Appendix B.

Goal LU-1: The City of Garden Grove is a well-planned community with sufficient land uses and intensities to meets the needs of anticipated growth and achieve the community's vision.

Goal LU-2: Stable, well-maintained residential neighborhoods in Garden Grove.

Goal LU-3: Higher-density residential development along major thoroughfares i and in areas well served by public transit, retail and service businesses, public services, and public gathering places.

Goal LU-4: Uses compatible with one another.

Goal LU-5: Economically viable, vital, and attractive commercial centers throughout the City that serve the needs of the community.

Goal LU-6: Revitalization of aging, underused or deteriorated commercial corridors, centers, and properties .

Goal LU-7: Industrial areas that contribute in terms of jobs and economic impacts they provide.

Goal LU-8: The OCTA Right-Of-Way offers great potential for alternative transportation systems, as well as for recreation or parklands that could benefit the residents of Garden Grove.

Goal LU-9: Creation of a tourism- and entertainment-related destination area that will benefit all residents, businesses, and visitors.

Goal LU-10: Develop transit-oriented development and create a transit hub around the OC Streetcar stop (Harbor Transit Center) at Harbor Boulevard and Westminster Avenue.

Goal LU-11: Restoration of the Civic Center as the heart of the City.

Goal LU-12: Maintenance and completion of the redevelopment and revitalization of the Brookhurst/Chapman commercial area.

Goal LU-13: Specific Plans that provide tailored planning and development directions for focus areas.

Goal LU-14: Transition and sensitive treatments on properties along the City's corporate boundary to provide compatibility.

Goal LU-15: Rationalized corporate boundaries, with the City having flexibility to annex unincorporated areas or de-annex areas of the City that have a closer relationship either with the City of Garden Grove or adjacent cities.

Goal LU-16: Resolution of the problems created by County islands adjoining the City.

Goal LU-17: Protection of land uses in the City of Garden Grove from impacts associated with the Joint Forces Training Base (JFTB) Los Alamitos.

Goal LU-18: Preservation of City quality and character through compliance with relevant codes and regulations.

City Municipal Code. Chapters 9.04 through 9.54 in Title 9 of the City's Municipal Code address various Land Use topics.

4.9.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Physically divide an established community?

B. Causes a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

C. Cause substantial adverse cumulative impacts with respect to land use and planning?

4.9.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to land use and planning that could result from the implementation of the FGPUZA and recommends mitigation measures as needed to reduce potentially significant impacts.

Established Communities

Impact LAND-1 – Would the FGPUZA physically divide an established community?

Analysis of Impacts

The physical division of an established community typically refers to the construction of a physical feature (such as new freeway, railway, or other large transportation project) or the removal of a means of access (such as a bridge) that would impede or restrict movements within a community.

The Land Use Element of the existing General Plan contains Goal LU-2 and its Policies LU-2.1 through LU-2.7 which are aimed at preserving existing neighborhoods while Goal LU-4 and its Policies LU-4.1 though LU-4.8 encourage the City to develop adjacent land uses that are compatible with each other.

In addition, the FGPUZA is a policy document designed to direct long-term growth within the Planning Area and does not propose major circulation changes that would restrict access to specific areas or neighborhoods within the City. Goal 1 and its Policy 1.1 of the Housing Element of the FGPUZA is to preserve residential neighborhoods throughout the City.

Therefore, implementation of the FGPUZA would not physically divide an established community (or established neighborhoods).

Level of Significance Before Mitigation

Less Than Significant.

Mitigation Measures

No mitigation is required.

Plan Conflicts

Impact LAND-2 – Would the FGPUZA cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Analysis of Impacts

This section includes a discussion of potential conflicts between the FGPUZA and applicable planning documents, which are described in Section 4.9.2 above. It should be noted that policy conflicts do not, in and of themselves, constitute a significant environmental impact. However, a policy inconsistency is considered to be a significant adverse environmental impact when it is related to a policy adopted for the purpose of avoiding or mitigating an environmental effect and it is anticipated that the inconsistency would result in a significant adverse *physical* impact directly or indirectly. Please note that planning documents that pertain to specific technical topics (e.g., Air Quality) are discussed in those topical sections of this Draft EIR.

The 2020-2045 RTP/SCS was based on the land uses and growth projections of the existing General Plan. Although the proposed FGPUZA growth will not match SCAG's regional plans once the City has adopted the FGPUZA, it will transmit its new growth numbers to SCAG and those estimates will be incorporated into the ongoing revisions to the RTP/SCS, thereby achieving balance and consistency between the two plans.

Consistency with Connect SoCal (2020-2045 RTP/SCS)

In September 2020 SCAG adopted "Connect SoCal" which is a new term for its 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Connect SoCal builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health. Table 4.9-2, Consistency with SCAG Connect SoCal Goals, provides a consistency analysis between the ten Connect SoCal goals and the City's proposed General Plan Update. Table 4.9-2 demonstrates that the proposed General Plan Update is consistent with the ten goals and environmental justice guidelines of the SCAG Connect SoCal document.

Table 4.9-2
Consistency with SCAG Connect SoCal Goals

Connect SoCal Goal[1]	General Plan Consistency Analysis[2]
Goal #1: Encourage regional economic prosperity and global competitiveness	**Consistent.** The Updated Land Use Element contains the following goals that will help achieve Connect SoCal Goal 1: **Goal LU-1:** The City of Garden Grove is a well-planned community with sufficient land uses and intensities to meet the needs of anticipated growth and achieve the community's vision. **Goal LU-5:** Economically viable, vital, and attractive commercial centers throughout the City that serve the needs of the community. **Goal LU-6:** Revitalization of aging, underused or deteriorated commercial corridors, centers, and properties.. **Goal LU-7:** Industrial areas that contribute in terms of jobs and economic impacts they provide.**oal LU-9:** Creation of a tourism- and entertainment-related destination area that will benefit all residents, businesses, and visitors. **Goal LU-11:** Maintenance and completion of the redevelopment and revitalization of the Brookhurst/Chapman commercial area.
Goal #2: Improve mobility, accessibility, reliability and travel safety for people and goods **Goal #3:** Enhance the preservation, security, and resilience of the regional transportation system **Goal #4:** Increase person and goods movement and travel choices within the transportation system	**Consistent.** The Circulation Element contains the following goals that will help achieve Connect SoCal Goals 2-4: **Goal CIR-1:** A transportation system that maximizes freedom of movement and maintains a balance between mobility, safety, cost efficiency of maintenance, and the quality of the City's environment. **Goal CIR-2:** Improved traffic flows along the Garden Grove Freeway, as well as improved access along the Freeway, within the City of Garden Grove. **Goal CIR-3:** Minimized intrusion of commuter traffic on local streets through residential neighborhoods.

Connect SoCal Goal[1]	General Plan Consistency Analysis[2]
	Goal CIR-4: A reduction in vehicle miles traveled in order to create a more efficient urban form. **Goal CIR-5:** Increased awareness and use of alternate forms of transportation generated in, and traveling through, the City of Garden Grove. **Goal CIR-8:** Minimized impacts associated with truck traffic through the City, as well as the parking locations of these vehicles. **Goal CIR-10:** Participation in regional transportation planning efforts to address interjurisdictional issues, and maintain competitive advantage in capital improvement funding programs, as appropriate. **Goal CIR-11:** Continued compliance with regional congestion management, transportation demand, traffic improvement, air quality management, and growth management programs. **Goal CIR-12:** A Citywide development phasing and monitoring program, as required by Measure M. **Goal CIR-13:** Use of the OCTA right-of-way for alternative transportation systems.
Goal #5: Reduce greenhouse gas emissions and improve air quality	**Consistent.** The Updated Safety Element contains the following goal and policies related to climate resiliency that will help achieve Connect SoCal Goal 5: **Goal SAF-10:** A robust, climate-responsive community that is prepared to anticipate, adapt to, and mitigate impacts on the City stemming from climate change**.** **Policy SAF-10.1:** Integrate climate change hazards, adaptation, and resiliency into the update of City plans, regulatory codes, and policies. **Policy SAF-10.2:** Integrate climate change research guidance and adaptation planning into City operations, services, and public infrastructure development, including capital improvements. **Policy SAF-10.3:** Evaluate, identify, and implement strategies to reduce the negative effects of climate change on the health of disadvantaged communities and socially vulnerable populations lacking adaptive capacities (e.g., elderly, very young, low- income households, etc.). **Policy SAF-10.4:** Set up systems to predict and communicate with the public about heat waves and severe storm events, suggest protective actions, coordinate response, and designate cooling centers and emergency shelters. **Policy SAF-10.5:**Identify critical facilities such as schools, hospitals, fire and police stations, and cooling centers/emergency shelters that may require redundant electric power backup systems. **Policy SAF-10.6:** Encourage new development and redevelopment to incorporate design features to reduce the impact of extreme heat events on the community. **Policy SAF-10.7:**Consider the possibility of constrained future water supplies due to long term climate change impacts on water supplies and require enhanced water conservation and water quality

Connect SoCal Goal[1]	General Plan Consistency Analysis[2]
	protection measures for new construction and retrofits. **Policy SAF-10.8**: Contribute to and participate in ongoing climate change prevention programs at the regional, State, and Federal levels. **Policy SAF-10.9**: Investigate all possible strategies to reduce greenhouse gas emissions from municipal operations, private businesses, and residences. **Policy SAF-10.10**:Encourage mixed-use development throughout the City consistent with the goals and policies of the Land Use Element in order to encourage jobs/housing proximity, promote transit-oriented development, and encourage high density development along major corridors, which encourages walking, bicycling and the use of public transit systems. **Policy SAF-10.11:**Encourage infill, redevelopment, and higher density development consistent with the goals and policies of the Land Use Element. **Policy SAF-10.12:**Encourage new developments to integrate housing with civic and retail amenities (jobs, schools, parks, shopping opportunities) to help reduce VMT resulting from discretionary automobile trips.
Goal #6: Support healthy and equitable communities	**Consistent.** The proposed Environmental Justice Element contains the following goal and policies that will help achieve address Connect SoCal Goal 6: **Goal EJ-1:** Reduce concentration of pollution sources in a manner that seeks to eliminate them as unique health risk to residential neighborhoods and disadvantaged communities. **Policy EJ-1.2: Minimizing Pollution Burdens.** Require new residential development and encourage established residential units near industrial uses or transportation corridors to include building design features, equipment, and/or site planning measures to protect occupants from pollution. **Policy EJ-1.3: Roadway Air Pollution and Noise.** Mitigate impacts on residential neighborhoods immediately adjacent to SR-22 freeway from noise impacts and air pollutants from traffic and vehicle emissions, including use of landscape

Connect SoCal Goal[1]	General Plan Consistency Analysis[2]
	buffers and sound walls, and similar strategies. **Policy EJ-1.4: Industrial Pollution.** Reduce pollution exposure in residential neighborhoods and sensitive receptor by limiting industrial operations or restricting polluting land uses that generate substantial hazardous materials and air pollutants. **Policy EJ-1.5: Agency Consultation.** Consult with State, federal, and Orange County agencies to assist in improving, identifying, prohibiting, enforcing, and mitigating against concentration of pollution sources. **Policy EJ-1.6: Public Education.** Develop community programs to improve public awareness of State, regional and local agencies, resources, and plans to assist with air quality and other environmental quality concerns. **Goal EJ-2:** Underserved areas, disadvantaged communities, and areas with lower economic and educational resources are accessible to public services and community facilities.
Goal #7: Adapt to a changing climate and support an integrated regional development pattern and transportation network	**Consistent.** The Safety Element contains Goal SAF-10 and attendant policies on climate resiliency to help achieve Connect SoCal Goal 7 as outlined in the response to SCAG Goal# 5 above.
Goal #8: Leverage new transportation technologies and data-driven solutions that result in more efficient travel	**Consistent.** The Circulation Element contains the following goals that will help achieve Connect SoCal Goal 8: **Goal CIR-5:** Increased awareness and use of alternate forms of transportation generated in, and traveling through, the City of Garden Grove. **Goal CIR-11:** Continued compliance with regional congestion management, transportation demand, traffic improvement, air quality management, and growth management programs. **Goal CIR-13:** Use of the OCTA right-of-way for alternative transportation systems.
Goal #9: Encourage development of diverse housing types in areas that are supported by multiple transportation options	**Consistent.** The Land Use (LU) and Circulation (CIR) Elements contain the following goals that will help achieve Connect SoCal Goal 9: **Goal LU-1: (Well-Planned Growth with a Mix of Uses)** The City of Garden Grove is a well-planned community with sufficient land uses and intensities to meet the needs of anticipated growth and achieve the community's vision. **Goal CIR-1:** A transportation system that maximizes freedom of movement and maintains a balance between mobility, safety, cost

Connect SoCal Goal[1]	General Plan Consistency Analysis[2]
	efficiency of maintenance, and the quality of the City's environment.
Goal #10: Promote conservation of natural and agricultural lands and restoration of habitats	**Consistent.** The City has no agricultural lands or current farming operations. The City also has no significant biological habitat but does require all development to comply with applicable regulations of various resource agencies if habitat such as large trees or vacant land is developed. In these ways the City addresses habitat issues of concern in Connect SoCal Goal 10.
In addition, SCAG encouraged the City to examine Environmental Justice per Senate Bill 1000. Local jurisdictions in California with disadvantaged communities are required to develop an Environmental Justice (EJ) Element or consider EJ goals, policies, and objectives in their General Plans when updating two or more General Plan Elements. SCAG staff recommends cities review the Environmental Justice Technical Report and the updated Environmental Justice Toolbox, which is a resource document to assist local jurisdictions in developing EJ-related goals and policies regarding solutions for EJ-related community issues.	**Consistent.** The City's Environmental Justice Element contains a number of goals and policies that will improve environmental justice in the City, as outlined in the response to SCAG's Goal #6 above.

[1] The name of the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy
[2] Includes the related Policies and Implementation Plans of the cited Goals

Summary and Conclusions. The FGPUZA will change land uses, housing, and growth projections for the City. While these changes are consistent with SCAG's RHNA directives, they may not be fully consistent with SCAG's 2020 RTP/SCS because the increase in housing will also increase local VMT (See Chapter 4.14 – Transportation – for discussion and analysis of project-related increases in VMT). Once the next RTC/SCS is adopted (likely in 2024) it will accommodate the new land uses that will be included in the City's updated General Plan. The City cannot feasibly resolve this inconsistency in adopted plans at this time, but it can accommodate anticipated future growth at the local level. Therefore, potential land use impacts of future development under the FGPUZA are considered to be consistent with the Connect SoCal goals as shown in Table 4.9-2. Impacts are less than significant, and no mitigation is required.

Existing City of Garden Grove General Plan (2030)

The FGPUZA is a focused update to the existing 2030 General Plan. The changes to the Land Use Element include updates to goals, policies, and programs, land use designations, the stated intent of each designation, and certain development standards. The FGPUZA includes goals, policies, and programs that will provide City staff and discretionary bodies with a foundation for decisions for long-range planning related to physical development and public services. The FGPUZA is intended to achieve the planning goals set forth in the Housing, Land Use, Safety, and Environmental Justice elements over the long-term. The amendments to these sections establish development potential for various land uses and serve as a policy guide for determining the appropriate physical development and community services in the City. In

addition, the proposed zoning amendments will make future land uses more consistent with General Plan designations. The FGPUZA builds upon many of the goals identified in the 2030 General Plan. The 2030 General Plan Land Use goals are listed below: the FGPUZA goals, programs and policies that support the following 2030 General Plan Land Use Element goals are shown in parentheses:

Well-Planned Growth with a Mix of Uses

- Goal LU-1: The City of Garden Grove is a well-planned community with sufficient land uses and intensities to meet the needs of anticipated growth and achieve the community's vision. *(FGPUZA Goal LU-1; Policy LU-1.1; Policy LU-1.11; Policy LU-3.1; Policy LU-15.6)*

Neighborhood Preservation

- Goal LU-2: Stable- well-maintained residential neighborhoods in Garden Grove. *(FGPUZA Policy LU-1.3; Policy LU-2.1; Policy LU-2.3; Goal LU-5; Policy LU-5.1)*

Multi-Family Developments

- Goal LU-3: Add higher density residential development adjacent to major thoroughfares in the City. *(FGPUZA Goal LU-2; Policy LU-2.4; Policy LU-2.7)*

Land Use Compatibility

- Goal LU-4: The City seeks to develop uses that are compatible with one another. *(FGPUZA Goal LU-5; Policy LU-5.1; Goal LU-1; Policy LU-1.2; Policy LU-2.1; Policy LU-3.2; Goal ED-1; Policy ED-1.2; Policy ED-1.3; Policy LU-3.11; Goal LU-9; Policy LU-9.2)*

Vital Commercial Centers

- Goal LU-5: Economically viable, vital, and attractive commercial centers throughout the City that serve the needs of the community. *(FGPUZA Goal LU-3; Policy LU-3.1; Policy LU-3.2; Policy LU-3.3; Policy LU-3.5)*

Revitalization of Commercial Corridors and Aging Commercial Centers

- Goal LU-6: Revitalization of aging, underused or deteriorated commercial corridors, center, and properties in the City. *(FGPUZA Goal LU-3; Policy LU-3.1; Policy LU-3.2; Policy LU-3.3; Policy LU-3.5)*

High Quality Industrial Areas

- Goal LU-7: The City values its industrial areas as an important contributor to a well-planned community and for the jobs and economic impacts they provide. *(FGPUZA Goal OS-4; Policy OS-4.5; Policy OS-4.9)*

OCTA Right-of-Way

- Goal LU-8: The OCTA Right-of-Way offers great potential for alternative transportation systems, as well as for recreation or parklands that could benefit the residents of Garden Grove. *(FGPUZA Goal LU-9; Policy LU-9.1; Policy LU-9.2; Goal LU-10; Policy LU-10.7)*

Focus Area A (International West)

- Goal LU-9: Creation of a tourism- and entertainment-related destination area in the City that will benefit all of the City of Garden Grove. *(FGPUZA Goal LU-10; Policy LU-10.1; Policy LU-11.5; Policy LU-10.5; Policy LU-10.6*

- Goal LU-10 Develop transit-oriented development and create a transit hub around the OC Streetcar stop (Harbor Transit Center) at Harbor Boulevard and Westminster Avenue.

Focus Area E1 (Civic Center)

- Goal LU-11: Restoration of the Civic Center as the heart of the City. *(FGPUZA Goal LU-10; Policy LU-10.5; Policy LU-10.6)*

Focus Area 1 (Brookhurst Street and Chapman Avenue)

- Goal LU-12: Maintenance and completion of the redevelopment and revitalization of the Brookhurst/Chapman commercial area. *(FGPUZA Goal LU-10; Policy LU-10.1; Policy LU-11.5; Policy LU-10.5; Policy LU-10.6)*

Specific Plans

- Goal LU-13: Specific Plans area a useful planning tool to provide additional planning and development directions for finite areas in the City. *(FGPUZA Goal LU-10; Policy LU-10.5; Policy LU-10.6)*

Development in Adjacent Jurisdictions

- Goal LU-14: The City understand that development on lands adjacent to the City's corporate boundary can profoundly affect Garden Grove residents and businesses. *(FGPUZA Goal LU-10; Policy LU-10.1; Policy LU-11.5; Policy LU-10.5; Policy LU-10.6)*

Annexation/De-Annexation Areas

- Goal LU-145: The City seeks rationalized corporate boundaries and may choose to annex or de-annex areas of the City that have a closer relationship either with the City of Garden Grove or adjacent cities. *(FGPUZA Goal LU-10; Policy LU-10.5; Policy LU-10.6)*

County Islands

- Goal LU-16: Resolution of the problems created by County islands adjoining the City. *(FGPUZA Goal LU-10; Policy LU-10.1; Policy LU-11.5; Policy LU-10.5; Policy LU-10.6)*

Joint Forces Training Base (JFTB) Los Alamitos

- Goal LU-17: Land use patterns in the City of Garden Grove must be protected from impacts associated with the Joint Forces Training Base (JFTB) Los Alamitos. *(FGPUZA Goal LU-10; Policy LU-10.5; Policy LU-10.6)*

Code Enforcement

- Goal LU-178: The quality and character of the City is preserved an enhanced by compliance with relevant codes and regulations. *(FGPUZA Goal LU-10; Policy LU-10.1; Policy LU-11.5; Policy LU-10.5; Policy LU-10.6)*

The FGPUZA would support the existing Land Use Element goals established in the 2030 General Plan. The implementation of the FGPUZA would not cause a significant environmental impact due to a conflict with any land use policy adopted for the purpose of avoiding or mitigating an environmental effect.

Zoning and Subdivision Ordinances

The existing zoning ordinance and subdivision ordinance details land use regulations and development standards within the City. Consistent with State law, the Zoning Ordinance is

proposed to be updated with the FGPU to make the two planning documents consistent. These revisions would ensure that development standards would be consistent with the future development patterns identified within the FGPUZA.

As demonstrated by the preceding analysis, the implementation of the FGPUZA would not cause a significant environmental impact due to a conflict with any land use policy adopted for the purpose of avoiding or mitigating an environmental effect.

Level of Significance Before Mitigation

Less Than Significant.

Mitigation Measures

No mitigation is required.

Cumulative Impacts

Impact LAND-3 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to land use and planning?

Analysis of Impacts

Anticipated population growth in Orange County would result in land use changes at the regional level; the 2020-2045 RTP/SCS anticipates significant population and housing growth within the Orange County region – an increase of approximately 190,400 residents, 77,600 households, and 168,500 jobs between 2020 and 2040. Implementation of the FGPUZA would result in additional lands designated for future housing units and non-residential square footage, which would help to meet the anticipated regional demand by directing development within the City. The FGPUZA also includes several policies to ensure that long-term sustainable development considers air quality, health of residents, existing infrastructure networks, and services. The FGPUZA also includes goals and policies to balance development with the preservation of environmental systems and open space areas. Additionally, as specific development projects are proposed under the FGPUZA, site specific environmental evaluations would occur which would evaluate potential environmental impacts, including land use impacts, and identify mitigation measures, if required. Therefore, the implementation of the FGPUZA would not cause a substantial adverse cumulative impact with respect to land use and planning.

Level of Significance Before Mitigation

Less Than Significant.

Mitigation Measures

No mitigation is required.

4.9.5 – REFERENCES

City of Garden Grove. *City of Garden Grove 2030 General Plan: Land Use Element*. https://ggcity.org/planning/general-plan [Accessed April 2020].

State of California Department of Finance. E-1 Population Estimates for Cities, Counties, and the State - January 1, 2019, and 2020. https://www.dof.ca.gov/forecasting/demographics/estimates/e-1/ [Accessed April 2021].

4.10 – Noise

The following section of the EIR provides pertinent background information on the nature of sound and vibration transmission; describes the existing noise environment in the Planning Area; summarizes applicable noise guidelines, standards, and regulations; and evaluates potential noise and vibration impacts that could result from implementation of the Focused General Plan Update and Zoning Amendments (FGPUZA). Where necessary, this section includes mitigation measures that would reduce potentially significant noise and vibration impacts associated with the Project.

4.10.1 – FUNDAMENTALS OF ENVIRONMENTAL ACOUSTICS

Noise is generally defined as unwanted sound and is widely recognized as a form of environmental degradation. Airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. The frequency (pitch), amplitude (intensity or loudness), and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as “noisy” or annoying.

Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor. Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear.

Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, and so on. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50\ decibels + 50\ decibels\ \neq 100\ decibels$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 * \ 10\,log\left(10^{\left(\frac{50}{10}\right)} + \ 10^{\left(\frac{50}{10}\right)}\right) = 53\ decibels$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

Sound Characterization

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz, most of the sounds humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter, known as the "A-weighting" or "A-weighted sound level," filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. See Table 4.10-1 for a list of common noise sources and their A-weighted noise levels.

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (L_{eq}) descriptor is used to represent the average character of the sound over a period of time. The L_{eq} represents the level of steady-state noise that would have the same acoustical energy as the time-varying noise measured over a given time period. L_{eq} is useful for evaluating shorter time periods over the course of a day. The most common L_{eq} averaging period is hourly, but L_{eq} can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L_{01}, L_{10}, L_{50}, and L_{90} descriptors represent the sound levels exceeded 1%, 10%, 50%, and 90% of the time the measurement was performed. The L_{90} value usually corresponds to the background sound level at the measurement location.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable due to the fact that household noise has decreased as people go to bed and sleep. Noise exposure over the course of an entire day is described by the day/night average sound level, DNL (or L_{dn}), and the community noise equivalent level, or CNEL, descriptors. Both descriptors represent the 24-hour noise exposure in a community or area. For DNL, the 24-hour day is divided into a 15-hour daytime period (7 AM to 10 PM) and a 9-hour nighttime period (10 PM to 7 AM), and a 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level would contribute as much to the overall day-night average as a 55-dBA daytime sound level. The CNEL descriptor is similar to DNL, except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7 PM to 10 PM). The artificial penalties imposed during DNL and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods.

Table 4.10-1
Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet flyover at 1,000 feet	105	
	100	
Gas lawn mower at 3 feet	95	
	90	
Diesel truck at 50 feet at 50 mph	85	Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noise urban area, daytime	75	
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	65	Normal speech at 3 feet
Heavy traffic at 300 feet	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher next room
	45	
Quiet urban nighttime	40	Theater, large conference room
Quiet suburban nighttime	35	
	30	Library
Quite rural nighttime	25	Bedroom at night
	20	
	15	Broadcast/recording studio
	10	
	5	
Typical threshold of human hearing	0	Typical threshold of human hearing

Source: Caltrans 2013

Sound Propagation

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise-generating source. The strength of the source is often characterized by its “sound power level.” Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, the sound pressure level at a specific point (e.g., a property line or a receiver) can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal “point” source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates or decreases by 6 dB with each doubling of distance from the point source. In contrast, a “line” source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source, however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors

affecting the predicted sound pressure level are often lumped together into a term called "excess attenuation." Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

Noise Effects

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports.

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it with the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

Groundborne Vibration and Noise

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, landslides) or humans (e.g., machinery, traffic, trains, construction equipment). Vibration sources are usually characterized as continuous such as factory machinery or transient such as car horns or backup bells.

As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency; however, unlike airborne sound, there is no standard way of measuring and reporting amplitude. Vibration amplitudes can be expressed in terms of velocity (inches per second) or

discussed in dB units in order to compress the range of numbers required to describe vibration. Vibration impacts to buildings are usually discussed in terms of peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Vibration can impact people, structures, and sensitive equipment. The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Groundborne vibration can also disrupt the use of sensitive medical and scientific instruments, such as electron microscopes.

Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities. Next to pile driving, grading activity has the greatest potential for vibration impacts if large bulldozers, large trucks, or other heavy equipment are used.

Groundborne noise is noise generated by vibrating building surfaces such as floors, walls, and ceilings that radiate noise inside buildings subjected to an external source of vibration. The vibration level, the acoustic radiation of the vibrating element, and the acoustical absorption of the room are all factors that affect potential groundborne noise generation.

4.10.2 – EXISTING NOISE AND VIBRATION ENVIRONMENT

The City's existing General Plan Noise Element identifies vehicle traffic as the primary contributor to the City's ambient noise environment. Other sources of noise that affect ambient noise levels in the City include aircraft overflights, rail activities, and commercial and industrial land use operations.

This description is still accurate. The principal noise source within the Planning Area is from vehicular traffic, including automobiles, trucks, buses, and motorcycles. The level of noise generated by vehicular traffic generally varies according to the volume of traffic, the percentage of trucks, and average traffic speed. Traffic volumes and therefore traffic noise levels are generally highest along major roadways in and near the City, including Interstate 405 (I-405), State Route (SR) 22, Chapman Avenue, Garden Grove Boulevard, Westminster Avenue, Knott Avenue, Magnolia Street, Brookhurst Street, and Harbor Boulevard. In addition to motor vehicle noise, the Union Pacific Railroad (UPRR) provides rail freight spur line service in western Garden Grove and there are at -grade rail crossings on Garden Grove Boulevard, Lampson Avenue, Chapman Avenue, and Western Avenue.

The closest airport to the City is Joint Forces Training Base (JFTB) Los Alamitos, located near western Garden Grove.[1] According to the Airport Environs Land Use Plan (AELUP) for JFTB Los Alamitos, certain parts of western Garden Grove are located within the airport's approved noise contour zones. Specifically, in the northwestern corner of the City, the residential area located west of Blackmer Street, north of Amy Street, west of Casper Street, and north of Belgrave Avenue is within or adjacent to the 60 CNEL airport noise contour (AELUP Noise Impact Zone II), and the area west of Manley Street and north of Santa Gertrudes Avenue is within or adjacent to the 65 CNEL airport noise contour (AELUP Nosie Impact Zone I).

[1] Portions of the City's western and northwestern boundaries are located 0.5 miles or closer from JFTB Los Alamitos. This distance is as measured from the City's boundary to the airport's closest runway centerline.

Measured Ambient Noise Levels

The existing ambient noise levels in the Planning Area were monitored in May 2021 (MIG 2021; see Appendix C). Ambient noise levels were measured with a Larson Davis SoundTrack LxT Type 1 sound level meter. Ambient noise measurements were collected in 1-minute intervals. Conditions during the monitoring were generally clear and sunny during the daytime, with a daily high of approximately 85 degrees. Winds were generally calm during the monitoring.

The ambient noise monitoring conducted for this EIR included one (1) long-term (LT) and 11 short-term (ST) measurements at locations selected to:

- Provide direct observations of existing noise sources in the vicinity of the Planning Area;
- Determine ambient noise levels in the vicinity of the Planning Area; and
- Evaluate potential project noise levels at nearby sensitive receptors (see "Noise Sensitive Receptors" below).

The ambient noise monitoring locations are shown on Figure 4.10-1 and described below.

- **LT-01** was adjacent to Civic Center Drive and Garden Grove Boulevard, near City Hall in the eastern part of the Planning Area. This location was approximately 145 feet from the centerline of Garden Grove Boulevard. The ambient noise levels measured at location LT-01 are considered representative of the CNEL on segments Garden Grove Boulevard that have a mix of commercial, residential, and civic/institutional land uses.
- **ST-01A** was near the intersection of Chapman Avenue and Valley View Street, in the western part of the Planning Area. This location was approximately 60 feet from the centerline of Valley View Street. The ambient noise levels measured at location ST-01A are considered representative of background daytime noise levels in commercially developed areas of the City.
- **ST-01B** was in the center of the Eastgate Plaza shopping center parking lot at the intersection of Chapman Avenue and Valley View Street, in the western part of the Planning Area. The ambient noise levels measured at ST-01B are considered representative of background daytime noise levels in a commercial shopping plaza situated along major roadways.
- **ST-01C** was located in the employee parking and loading area of the Eastgate Plaza shopping center at the intersection of Chapman Avenue and Valley View Street, in the western part of the Planning Area. The ambient noise levels measured at ST-01C are considered representative of background daytime noise levels in a commercial shopping plaza.
- **ST-02** was located at the intersection of Chapman Avenue and Western Avenue, in the western part of the Planning Area. The ambient noise levels measured at ST-02 are considered representative of background daytime noise levels in commercial areas along major roadways in the City.
- **ST-03** was on Anaconda Avenue, approximately 800 feet west of Western Avenue, in the western part of the Planning Area. The ambient noise levels measured at ST-03 are considered representative of background daytime noise levels from commercial and light industrial/manufacturing land uses in the City.

- **ST-04** was near the intersection of Garden Grove Boulevard and Western Avenue, in the western part of the Planning Area. This location was approximately 55 feet from the centerline of Garden Grove Boulevard. The ambient noise levels measured at ST-04 are considered representative of background daytime noise levels on segments Garden Grove Boulevard with commercial land uses as well as areas of the City near SR 22.

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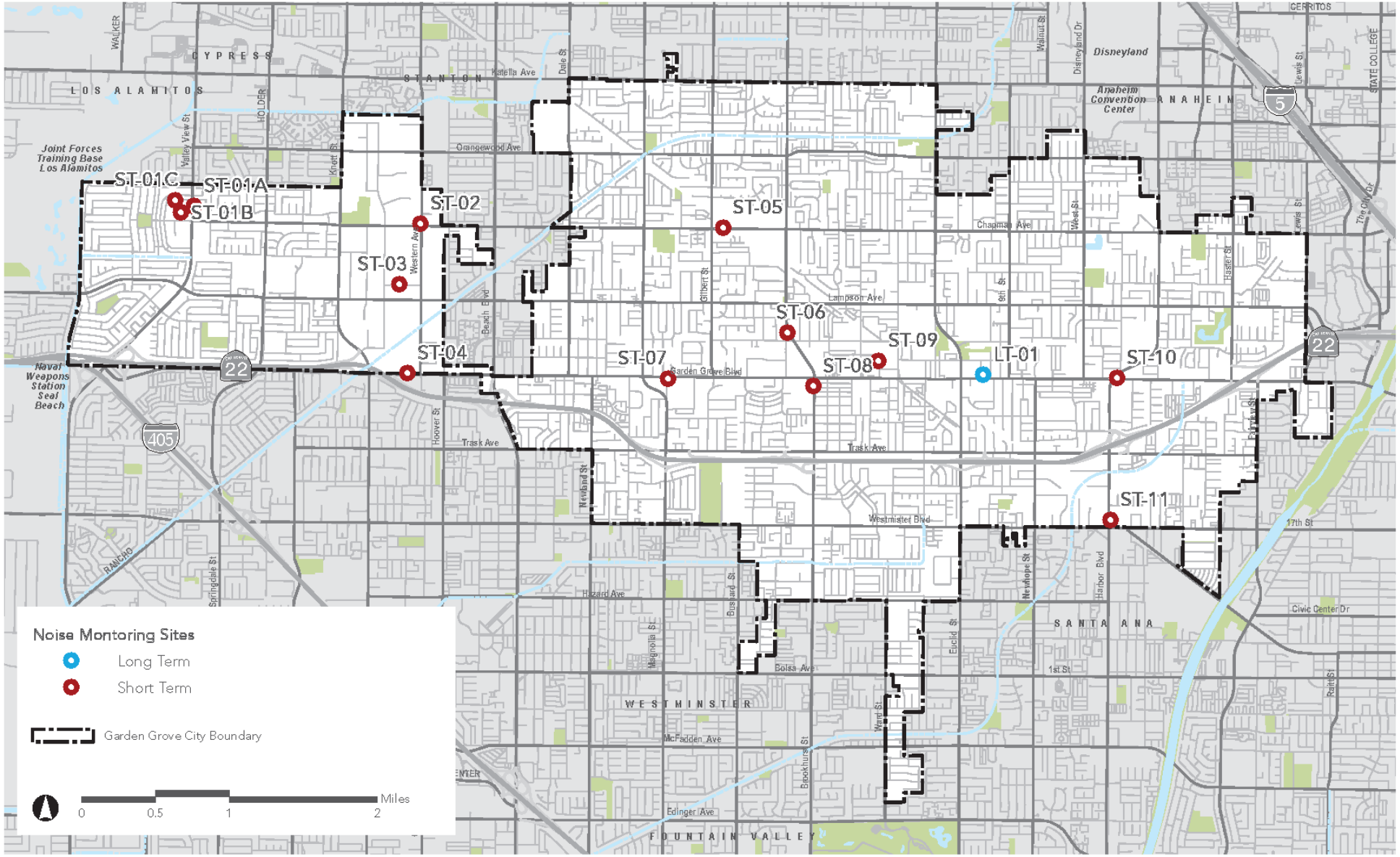

Source: SCAG GIS and MIG, 2021.

Exhibit 4.10-1: Ambient Noise Monitoring

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- **ST-05** was near the intersection of Chapman Avenue and Gilbert Street, in the eastern part of the Planning Area. This location was approximately 58 feet from the centerline of Chapman Avenue. The ambient noise levels measured at ST-05 are considered representative of background daytime noise levels on segments of major roadways with commercial land uses.
- **ST-06** was adjacent to Brookhurst Street, in the Brookhurst Way cul-de-sac, in the western part of the Planning Area. this location was approximately 60 feet from the centerline of Brookhurst Street. The ambient noise levels measured at ST-06 are considered representative of background daytime noise levels on segments of major roadways with a mix of commercial and residential land uses.
- **ST-07** was at the intersection of Garden Grove Boulevard and Cannery Street, in the eastern part of the Planning Area. This location was approximately 50 feet from the centerline of Garden Grove Boulevard. The ambient noise levels measured at ST-07 are considered representative of background daytime noise levels on segments of Garden Grove Boulevard with commercial land uses.
- **ST-08** was adjacent to a commercial parking lot near the intersection of Garden Grove Boulevard and Brookhurst Street, in the eastern part of the Planning Area. This location was approximately 65 feet from the centerline of Brookhurst Street. The ambient noise levels measured at ST-08 are considered representative of background daytime noise levels near major intersections in the City.
- **ST-09** was at the intersection of Joy Street and Acacia Street, in the eastern part of the Planning Area. The ambient noise levels measured at ST-09 are considered representative of background daytime noise levels from commercial and light industrial/manufacturing land uses in the City.
- **ST-10** was at the intersection of Garden Grove Boulevard and Harbor Boulevard, in the eastern part of the Planning Area. This location was approximately 65 feet from the centerline of Garden Grove Boulevard and 90 feet from the centerline of Harbor Boulevard. The ambient noise levels measured at ST-10 are considered representative of background daytime noise levels near major intersections in the City.
- **ST-11** was near the intersection of Westminster Ave and Harbor Boulevard, in the eastern part of the Planning Area. This location was approximately 55 feet from the centerline of Harbor Boulevard. The ambient noise levels measured at ST-11 are considered representative of background daytime noise levels near major intersections in the City.

Based on observations made during the ambient noise monitoring, the existing noise environment in the Planning Area consists primarily of localized and regional transportation noise sources, including local traffic and aircraft overflights. Away from major arterial and collector roads, aircraft overflight and local residential/commercial land use operations are the primary contributors to the local ambient noise environment. Table 4.10-2 and Table 4.10-3 summarize the results of the ambient noise monitoring conducted for this EIR.

Table 4.10-2
Summary of Measured Long-Term Ambient Noise Levels (dBA) in the Planning Area

Site	L_{min}	L_{max}	Measured L_{eq} Range (dBA)[(A)]			24-Hour CNEL
			Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM	
LT-01	38.7	88.3	58.8 – 64.0	57.0 – 58.9	48.7 – 57.1	62.6

Source: MIG (see Appendix E)
(A) Values are the lowest and highest measured average hourly values during the listed time period.

Table 4.10-3
Summary of Short-Term Ambient Noise Levels (dBA) in the Planning Area

Location	Start Time[(A)]	Duration	Measured Noise Level (dBA)							
			L_{eq}	L_{min}	L_{max}	$L_{1.6}$	$L_{8.3}$	L_{25}	L_{50}	L_{90}
ST-01A	9:00 AM	30 Minutes	69.0	56.1	87.9	76.3	72.5	69.3	66.4	64.4
ST-01B	12:21 PM	30 Minutes	56.3	49.5	70.6	63.4	58.5	56.5	54.8	53.3
ST-01C	1:00 PM	15 Minutes	49.1	45.2	62.5	55.0	50.5	49.2	48.1	47.5
ST-02	9:38 AM	30 Minutes	62.8	59.6	76.6	69.4	64.0	62.6	61.8	61.5
ST-03	10:20 AM	45 Minutes	71.0	62.5	82.1	77.6	74.9	71.8	68.9	67.2
ST-04	11:32 AM	30 Minutes	72.5	51.5	89.2	79.5	76.7	74.1	68.2	64.1
ST-05	11:37 AM	30 Minutes	68.9	53.0	84.8	74.9	72.8	70.0	66.9	64.8
ST-06	1:28 PM	30 Minutes	68.4	49.9	77.0	74.8	72.6	70.0	66.4	64.2
ST-07	12:41 PM	15 Minutes	73.0	51.2	99.5	76.7	72.1	68.8	64.9	61.9
ST-08	1:53 PM	15 Minutes	75.9	57.7	97.9	83.2	75.0	72.9	69.9	67.8
ST-09	10:51 AM	30 Minutes	63.1	56.8	80.3	72.4	65.5	62.3	58.8	58.3
ST-10	10:03 AM	30 Minutes	68.6	55.4	86.7	75.3	71.7	69.2	66.7	64.7
ST-11	9:23 AM	30 Minutes	72.7	54.4	84.9	80.5	76.8	73.9	69.5	66.5

Source: MIG (see Appendix D)
(A) Monitoring occurred on May 21 (ST-01A, ST-02, ST-03, ST-04, ST-06, ST-07, and ST-08) and May 24, 2021 (ST-01B, ST-01C, ST-05, ST-09, ST-10, and ST-11).

As shown in Table 4.10-2 and Table 4.10-3, daytime noise levels were generally lowest near residential and other areas away from major roadways (LT-01, ST-01C, ST-06) ST-2, ST-3, ST-4, and ST-09), and highest near major road segments and active light industrial/manufacturing operations (ST-03, ST-04, ST-07, ST-08, ST-10, and ST-11).

Discussion on the Influence of Shelter in Place Orders on Ambient Noise Monitoring

As shown in Table 4.10-2, the CNEL measured approximately 150 feet from Garden Grove Boulevard was 62.2 CNEL. These ambient noise measurements reflect the actual environmental conditions present during the monitoring. It is possible that May 2021 traffic volumes on roadways in the Planning Area were below typical conditions due to State public health orders limiting gatherings, school openings, non-essential travel, and other activities intended to control the spread of COVID-19. These restrictions may have reduced traffic volumes on major highways by 20% to 40% in 2020 (Caltrans, 2020a, ITE, 2020, and U.C.

Davis 2020); however, it is unknown what effect these orders had on traffic volumes during the May 2021 ambient noise monitoring.

Traffic noise modeling conducted for the City's existing 2008 General Plan EIR estimated the distance to the 65 CNEL contour for the segment of Garden Grove Boulevard between Euclid Street and Newhope Street to be 129 and 160 feet under Year 2008 and Year 2030 conditions, respectively. Therefore, the measured ambient noise level is considered to be generally consistent with modeled traffic noise levels (within approximately 2 dBA).

The California Department of Transportation (Caltrans) considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans 2013). Assuming traffic volumes could be at least approximately 20% higher would, therefore, result in an approximate change in measured noise levels of 0.8 dBA, assuming vehicle traffic is the sole source of noise influencing a measurement and the vehicle fleet mix does not change substantially. This is not considered a substantial change from measured noise levels.

Existing (2020) and Future (2040) Baseline Traffic Noise Levels

Existing (Year 2020) traffic noise levels were computed using the U.S. Department of Transportation Federal Highway Administration's (FHWA) Traffic Noise Model (TNM), Version 3.0. The model uses traffic volume, vehicle mix, vehicle speed, roadway geometry, and other variables to compute 24-hour traffic noise levels at user-defined receptor distances from the roadway center. The TNM modeling conducted for this EIR incorporates worst-case assumptions about motor vehicle traffic and noise levels; specifically, calculations are based on "hard" site conditions and do not incorporate any natural or artificial shielding.

Information on existing average daily traffic volumes was obtained for a subset of roadway segments from the vehicle miles travelled (VMT) analysis prepared for the Project (Fehr and Peers, 2021a and 2021b). Traffic noise levels were estimated for typical daytime (7 AM to 7 PM), evening (7 PM to 10 PM), and nighttime (10 PM to 7 AM) hours using hourly distributions collected during traffic counts within the City. The mix of automobiles (95%), medium trucks (2%), heavy duty trucks (1%), and motorcycles (2%) assigned to the roadway system was determined based on EMFAC2021 vehicle populations for the Orange County (South Coast) sub area. Roadway segments were modeled as straight-line segments without any flow controls. Modeled noise levels, therefore, represent free-flow traffic conditions. Vehicles were assumed to travel the posted speed limit on each modeled roadway segment.

The VMT analysis prepared for the FGPUZA also includes an analysis of future traffic conditions that would occur in Year 2040 based on continued implementation of the City's current General Plan at the land use development intensities permitted by the current General Plan. The future baseline Year 2040 traffic noise levels were estimated using the same methodology as described for the existing year 2019 traffic noise analysis. Traffic noise levels were computed using TNM, Version 3.0 and the same roadway geometry factors assumed for 2019 traffic noise levels; however, traffic volumes and fleet mix percentages were updated based on road segment volumes from the VMT analysis and EMFAC2021 vehicle populations for Year 2040.

Modeled traffic noise levels for existing (Year 2020) and future (Year 2040) baseline traffic noise levels are shown in Table 4.10-4. Please refer to Appendix D for detailed information on existing 2020 and future 2040 traffic noise modeling assumptions.

Table 4.10-4
Existing (2020) and Future (2040) Baseline Traffic Noise Levels

Road / Segment	Year 2020		Year 2040		Net Change	
	ADT	CNEL[(A)]	ADT	CNEL[(A)]	ADT	CNEL
Brookhurst Street						
North of Garden Grove Boulevard	39,808	70.0	42,766	70.5	2,958	0.5
North of Trask Avenue	52,057	71.0	53,300	71.3	1,243	0.3
Chapman Avenue						
East of Springdale Street	9,315	65.1	7,105	64.1	-2,210	-1.0
West of Magnolia Street	18,230	66.7	14,977	66.0	-3,253	-0.7
West of Euclid Street	19,140	67.0	17,916	66.9	-1,224	-0.1
West of Harbor Boulevard	15,412	65.9	12,929	65.3	-2,483	-0.6
Euclid Street						
North of Acacia Parkway	39,217	69.9	39,482	70.1	265	0.2
South of Garden Grove Boulevard	43,300	70.6	44,848	70.9	1,548	0.3
Garden Grove Boulevard						
West of Dale Street	26,158	68.5	29,009	69.1	2,851	0.6
East of Gilbert Street	32,330	69.0	34,301	69.4	1,971	0.4
West of Century Boulevard	25,284	67.8	24,216	67.8	-1,068	0.0
West of West Street	31,681	69.2	28,268	68.9	-3,413	-0.3
West of Haster Street	28,783	68.7	32,261	69.4	3,478	0.7
Harbor Boulevard						
North of Garden Grove Boulevard	34,268	69.2	40,594	70.1	6,326	0.9
South of Garden Grove Boulevard	37,356	69.5	42,386	70.2	5,030	0.7
Magnolia Street						
North of Garden Grove Boulevard	34,316	69.2	31,549	69.0	-2,767	-0.2
North of Garden Trask Avenue	34,983	69.2	35,095	69.4	112	0.2
Trask Avenue						
East of Magnolia Street	21,932	67.2	23,041	67.6	1,109	0.4
East of Brookhurst Street	19,623	66.8	23,120	67.7	3,497	0.9
Westminster Avenue						
East of Brookhurst Street	33,809	70.9	34,573	71.2	764	0.3

Source: MIG, 2021 (see Appendix E)
(A) CNEL values are as estimated 50 feet from the center of the nearest travel direction).

Railroad Noise Levels

According to the City's General Plan EIR (pg. 5.4-27), the UPRR provides rail freight spur line service in western Garden Grove in the area generally bounded by Knott Avenue on the west, the City boundary on the north, Beach Boulevard on the east, and Garden Grove Boulevard on the south." There are several at grade crossings in the City, including on Garden Grove Boulevard, Lampson Avenue, Chapman Avenue, and Western Avenue. Existing land uses along the rail corridor consist of commercial and light industrial buildings that are generally setback approximately 190 feet or more from the center of the railroad track.

Railroad noise is generated from a variety of sources. The locomotive engine's propulsion system generates noise from mechanical and electrical systems as well as exhaust pipes. The interaction of wheels with the track produces various noises, particularly where the wheel encounters a flaw or defect along smooth wheel / track surfaces. Finally, train horns and railroad

crossing warning devices generate short but loud (up to 105 dBs for train horns) alerts pursuant to federal safety regulations. The 2018 California State Rail Plan acknowledges that freight train service will increase over time and could double by 2030 or 2040 (Caltrans, 2018).

Other Non-Transportation Noise Sources

Non-transportation sources also contribute to the City's existing noise environment. Commercial and industrial land uses located throughout the City (but primarily along key roadways like Garden Grove Boulevard), schools and outdoor park and recreation facilities, and residential land uses generate noise from daily operations of landscaping equipment, stationary sources such as heating, ventilation, and air conditioning (HVAC) equipment, business deliveries, solid waste pickup services, etc. Such sources are considered a local source of noise that only influences the immediate surroundings. Large event facilities can also generate non-transportation noise sources that influence the surrounding environment.

Noise Sensitive Receptors

Noise-sensitive receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. Residential areas, motels and hotels, hospitals and health care facilities, school facilities, and parks are examples of noise receptors that could be sensitive to changes in existing environmental noise levels. In general, potential noise-sensitive receptors within the City include:

- Existing low- and medium-density residential receptors within the City;
- Existing elementary and intermediate schools, and education or institutional facilities;
- Existing medical facilities, such as the Garden Grove Hospital and Medical Center;
- Existing public facilities such as the Boys and Girls Club; and
- Existing parks and recreational facilities, including, but not limited to, Lake School Park, Faylane Park, Magnolia Park, and Westgrove Park.

In addition to existing sensitive noise receptors, the proposed FGPUZA would increase development density to provide for new residential and mixed use residential and commercial opportunities in certain areas of the City. Although the FGPUZA does not directly add new industrial projects to the City, it is possible that new industrial development could occur in the City in the future.

4.10.3 – REGULATORY FRAMEWORK

Federal

Federal Transit Administration (FTA). No federal regulations apply to noise or vibration from the proposed project, but the FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual* document sets groundborne vibration annoyance criteria for general assessments. The criteria vary by the type of building being subjected to the vibrations, and the overall number of vibration events occurring each day. Category 1 buildings are considered buildings where vibration would interfere with operation, even at levels that are below human detection. These include buildings with sensitive equipment, such as research facilities and recording studios. Category 2 buildings include residential lands and buildings where people sleep, such as hotels and hospitals. Category 3 buildings consist of institutional land uses with primarily daytime uses.

The FTA standards vary for "frequent" events (occurring more than 70 times per day, such as a rapid transit project), "occasional" events (occurring between 30 to 70 times per day), and "infrequent" events (occurring less than 30 times per day). The FTA's vibration annoyance criteria are summarized in Table 4.10-5.

Table 4.10-5
FTA Ground-Borne Vibration Impact Criteria for General Assessment

Land Use Category/Type	Impact Level (Velocity Decibels)		
	Frequent Events	Occasional Events	Infrequent Events
Category 1 – Buildings with sensitive equipment	65 VdB	65 VdB	65 VdB
Category 2 – Buildings where people sleep	72 VdB	75 VdB	80 VdB
Category 3 – Institutional buildings	75 VdB	78 VdB	83 VdB
Source: FTA 2018			

State

California Building Standards Code. The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that sets forth various construction and building requirements. Part 2, California Building Code, Section 1207, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies. Specifically, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room.

California Green Building Standards Code. The California Green Building Standards Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section 5.507 establishes the following requirements for nonresidential development that may be applicable to the Project.

- Section 5.507.4.1.1 sets forth that buildings exposed to a noise level of 65 dBA L_{eq} (1-hour) during any hour of operation shall have exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composting sound transmission class (STC) rating of at least 45 (or an outdoor indoor transmission class [OITC] of 35), with exterior windows of a minimum STC of 40.
- Section 5.507.4.2 sets forth that wall and roof assemblies for buildings exposed to a 65 dBA L_{eq} pursuant to Section 5.507.4.1.1 shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA L_{eq} in occupied areas during any hour of operation. This requirement shall be documented by an acoustical analysis documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

California Department of Transportation (Caltrans). The California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual provides a summary of vibration criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans 2020). Chapters Six and Seven of this manual summarize

vibration detection and annoyance criteria from various agencies and provide Caltrans' recommended guidelines and thresholds for evaluating potential vibration impacts on buildings and humans from transportation and construction projects. These thresholds are summarized in Table 4.10-6 and Table 4.10-7.

Table 4.10-6
Caltrans' Vibration Threshold Criteria for Building Damage

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.12 to 0.2
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans 2020		

Table 4.10-7
Caltrans' Vibration Threshold Criteria for Human Response

Human Response	Maximum PPV (in/sec)	
	Transient	Continuous
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very disturbing	--	3.6 (at 2 Hz) to 0.4 (at 20 Hz)
Source: Caltrans 2020		

Local

City of Garden Grove General Plan. The City's General Plan Noise Element identifies existing and projected noise sources in the City and contains policies and programs to achieve and maintain noise levels compatible with various types of land uses, as well as prevent high noise levels in sensitive areas. The General Plan Noise Element includes the following goals, policies, and implementation programs:

- **Goal N-1 Noise considerations must be incorporated into land use planning decisions.**
    - Policy N-1.1 Require all new residential construction in areas with an exterior noise level greater than 55 dBA to include sound attenuation measures.
    - Policy N-1.2 Incorporate a noise assessment study into the environmental review process, when needed for a specific project for the purposes of identifying potential noise impacts and noise abatement procedures.
    - Policy N-1.3 Require noise reduction techniques in site planning, architectural design, and construction, where noise reduction is necessary consistent with the

standards in Tables 7-1 and 7-2, Title 24 of the California Code of Regulations, and Section 8.47 of the Municipal Code.

- Policy N-1.4 Ensure acceptable noise levels are maintained near schools, hospitals, convalescent homes, churches, and other noise sensitive areas.
- Policy N-1.5 Require the design of mixed use structures to incorporate techniques to prevent the transfer of noise and vibration from the commercial to residential use.
- Policy N-1.6 Encourage commercial uses in mixed use developments that are not noise intensive.
- Policy N-1.7 Avoid locating noise-sensitive land use in existing and noise-impacted areas.
- N-IMP-1A Maintain a technical resource for builders, developers, and operators of construction equipment that discusses a variety of sound attenuation measures (e.g., temporary noise attenuation fences, preferential location of equipment, use of current technology and types of noise suppression equipment), the amount of noise reduction each produces, and how to combine them to meet City requirements.
- N-IMP-1B Require that new commercial, industrial, any redevelopment project, or any proposed development near existing residential land use demonstrate compliance with the City's Noise Ordinance prior to approval of the project.
- N-IMP-1C Implement noise mitigation by placing conditions of approval on development projects, and require a clear description of mitigation on subdivision maps, site plans, and building plans for inspection purposes.
- N-IMP-1D Require construction activity to comply with the limits established in the City's Noise Ordinance.
- N-IMP-1E Require buffers or appropriate mitigation of potential noise sources on noise sensitive areas.
- N-IMP-1F Require that vehicle access to commercial properties that are located adjacent to residential parcels or other noise sensitive uses be located at the maximum practical distance from these uses.
- N-IMP-1G Encourage truck deliveries to commercial or industrial properties abutting residential or noise sensitive uses after 7:00 AM and before 10:00 PM.
- N-IMP-1H Orient residential units away from major noise sources, particularly in mixed use projects.
- N-IMP-1I Encourage the location of balconies and operable windows of residential units in mixed use projects away from arterials and other major noise sources.
- N-IMP-1J Review the noise performance standards in the Zoning Code to determine if additional or modified standards are necessary to address mixed use development, particularly along major arterial roadways, or address and mitigate noise-generating land uses.
- N-IMP-1K Enforce the Noise Ordinance to ensure that stationary noise and noise emanating from construction activities, private development, and/or special events are minimized.
- N-IMP-1L Continue to enforce noise abatement and control measures.

- **Goal N-2 Maximized efficiency in noise abatement efforts through clear and effective policies and ordinances.**
    - Policy N-2.1 Incorporate noise considerations into land use planning decisions by establishing acceptable limits of noise for various land uses throughout the community.
    - Policy N-2.2 Fully integrate noise considerations into land use planning decisions to prevent new noise/land use conflicts.
    - Policy N-2.3 Incorporate noise reduction features for items such as but not limited to parking and loading areas, ingress/egress point, and refuse collection areas, during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses.
    - Policy N-2.4 Permit only those new development or redevelopment projects that have incorporated appropriate mitigation measures, so that standards contained in the Noise Element or adopted ordinance are met.
    - Policy N-2.5 Ensure the effective enforcement of City, State, and Federal noise levels by all appropriate City Divisions.
    - N-IMP-2A Require a noise impact evaluation for projects, if determined necessary through the environmental review process. Should noise abatement be necessary, the City shall require the implementation of mitigation measures based on a technical study prepared by a qualified acoustical professional.
    - N-IMP-2B Consider establishing a periodic noise monitoring program to identify progress in achieving noise abatement and to perform necessary updating of the Noise Element and community noise standards.
    - N-IMP-2C Amend, and combine if deemed appropriate, ordinances and policies relating to noise control. The amended ordinance(s) shall more clearly address mitigation of noise conflicts between adjacent uses, construction noise, noise associated with maintenance equipment (e.g., leaf blowers, street sweepers, etc), hours of operation of construction or maintenance equipment, noise standards, abatement, enforcement, procedures, and other like issues.
    - N-IMP-2D Use code enforcement to enforce the appropriate noise standards in the City's noise ordinance(s).
    - N-IMP-2E Use the Police unit to enforce the appropriate noise standards in the State's motor vehicle code.
    - N-IMP-2F Require that new equipment purchased by the City of Garden Grove comply with noise performance standards.
    - N-IMP-2G Disseminate information to the public regarding City noise regulations and programs, the health effects of high noise levels, means of mitigating such levels, as well as abatement and enforcement procedures.
    - N-IMP-2H Coordinate with California Occupational Safety and Health Administration (Cal-OSHA) to provide information on occupational noise requirements within the City.
    - N-IMP-2I Examine the potential to establish a Violators Fee for persons requiring a second call/visit for violating the noise ordinance(s).

- **Goal N-3 Minimized noise impacts from freeways, ensuring that City and State interior and exterior noise standards are not exceeded.**
    - Policy N-3.1 Encourage Caltrans to meet the State standard of 65 dBA CNEL for exterior noise levels for the Garden Grove Freeway (SR-22) and the San Diego Freeway (I-405).
    - Policy N-3.2 Encourage Caltrans to keep the interior residential noise levels below the State standard of 45 dBA CNEL, where appropriate and feasible.
    - N-IMP-3A Continue to work with Caltrans to ensure that similar soundwalls or other appropriate mitigations to those installed along the Garden Grove Freeway (SR-22) be provided where the San Diego Freeway (I-405) abuts residential areas or areas with sensitive receptors within the City.
    - N-IMP-3B Encourage Caltrans to develop a range of sound attenuation alternatives to mitigate noise impacts from the San Diego Freeway (I-405).

- **Goal N-4 Minimize noise impacts for residential uses and noise sensitive receptors along the City's arterial streets, ensuring that City and State interior and exterior noise levels are not exceeded.**
    - Policy N-4.1 Examine the feasibility of implementing sound attenuation measures along the City's arterial streets. Prioritize the areas in need of sound attenuation based on degree of sensitivity, excess of maximum allowable standards, length of time the noise impact has existed, and the number or residential uses or sensitive receptors impacted.
    - Policy N-4.2 Minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures (e.g., shifting travel lanes away from impacted units, adding bike ways, etc.).
    - Policy N-4.3 Discourage through traffic on residential local streets to reduce noise.
    - N-IMP-4A Install sound attenuation measures, including but not limited to, retrofitting existing residential units or sensitive receptors with double-glazed windows and sound insulation; construction of sound walls and landscaping, use of low walls and landscaped berms, enclose courtyards, rubberized asphalt, or relocation of driveways.
    - N-IMP-4B Develop a streamlined process to expedite approval of noise reducing techniques identified in the noise ordinance(s).
    - N-IMP-4C Ensure the inclusion of noise mitigation measures in the design of new roadway projects in the City of Garden Grove.
    - N-IMP-4D Provide for continued evaluation of truck movements and routes in the City to provide effective separation from residential or other noise sensitive land uses.
    - N-IMP-4E Conduct periodic noise monitoring and abatement to identify sound levels on residential local streets that may be affected by increased traffic volumes and speed limits.

- **Goal N-5 Minimize noise impacts on residential areas from rail and/or transit operations.**
    - Policy N-5.1 Continue to encourage the Southern Pacific Transportation Company to schedule trains during the daylight hours, when possible.
    - Policy N-5.2 Require noise attenuation measures for residential construction in areas affected by the 65 dBA CNEL railroad noise contour. Sound attenuation measures shall reduce interior noise to a maximum of 45 dBA CNEL. These measures shall be applicable to all residential construction in a railroad noise impact area, both for new structures and for renovations, remodels, and building additions.
    - Policy N-5.3 Work with the Orange County Transit Authority (OCTA) in the development of the OCTA right-of-way or other rail/transit lines to ensure that noise attenuation measures are addressed in the selection of the rail or vehicle technology for use along the right-of-way or rail/transit line, and in the siting, design, and construction of stations.
    - N-IMP-5A Require the Orange County Transit Authority (OCTA) to comprehensively analyze and mitigate the noise impacts associated with transit development of the OCTA right-of-way or other rail/transit lines.

- **Goal N-6 Maintain or work to reduce noise levels associated with the Joint Forces Training Base (JFTB) Los Alamitos.**
    - Policy N-6.1 Coordinate with the Airport Land Use Commission to monitor any expansion plans and/or increased activities at the Joint Forces Training Base (JFTB) Los Alamitos.
    - N-IMP-6A Support development at the Joint Forces Training Base (JFTB) Los Alamitos that adheres to the Airport Environs Land Use Plan (AELUP) and the City of Garden Grove and State noise requirements or ordinances.

The City's noise and land use compatibility matrix and municipal code standards referenced in Noise Element Goal N-1 Policy N-1.3 are reproduced below as Table 4.10-8 (below) and 4.10-9 (see discussion under "City Municipal Code").

Table 4.10-8
Garden Grove General Plan Noise and Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure Limit (CNEL or DNL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low-Density Single-Family, Duplex, Mobile Homes	60	70	75	75+
Residential - Multi-Family	65	70	75	75+
Transient Lodging - Motels, Hotels	65	70	80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	70	70	80	80+
Auditoriums, Concert Halls, Amphitheaters	N/A	70	N/A	70+
Sports Arenas, Outdoor Spectator Sports	N/A	75	N/A	75+
Playgrounds, Neighborhood Parks	70	N/A	75	75+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	70	N/A	80	80+
Office Buildings, Business Commercial and Professional	70	77.5	85+	N/A
Industrial, Manufacturing, Utilities, Agriculture	75	80	85+	N/A
Source: City of Garden Grove, 2008, Table 7-1.				

In addition to the General Plan Noise Element goals, policies, and implementation programs identified above, the City's General Plan EIR also includes the following mitigation measures related to noise control:

- **City General Plan EIR Mitigation Measure NOI-1:** The City shall impose one or more of the following noise reduction measures or any other measures on future construction activities that may occur under the General Plan Update to ensure compliance with General Plan policies and the City's noise standards:

    - During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receptors. All construction equipment shall use available noise suppression devices and properly maintained mufflers.
    - All internal combustion engines used in the project area shall be equipped with the type of muffler recommended by the vehicle manufacturer. In addition, all

equipment shall be maintained in good mechanical condition to minimize noise created by faulty or poorly maintained engine, drivetrain, and other components.

- Construction noise reduction methods (i.e., shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment) shall be required depending on the proximity of sensitive receptors to the construction noise source. Staging of construction equipment and unnecessary idling of equipment shall be avoided whenever feasible. "Feasible," as used here, means that the implementation of this measure would not have a notable effect on construction operations or schedule.

- **City General Plan EIR Mitigation Measure NOI-2:** To ensure compliance with the City's exterior and interior noise standards, all new development that may occur under the General Plan Update shall include noise reduction design measures (i.e., attenuation barriers, double pane windows, sound attenuating building walls, incorporate architecturally attenuating features, landscaping, etc.) where conditions exceed the Noise and Land Use Compatibility Criteria "Normally Acceptable" noise exposure levels.

- **City General Plan EIR Mitigation Measure NOI-3:** To ensure compliance with the City's exterior and interior noise standards, all new stationary sources shall include noise reduction practices (i.e., mufflers, well maintained mechanical equipment, etc.) where conditions exceed the regulations within the *Municipal Code*. In addition, areas adjacent to sensitive receptors that are in excess of the City's Noise Ordinance (i.e., parking lots, public trash receptacles, truck delivery areas, etc.), shall implement applicable noise attenuation features (i.e., attenuation wall, mufflers, etc.).

- **City General Plan EIR Mitigation Measure NOI-4:** To ensure compliance with the City's exterior and interior noise standards, all new mixed use areas shall include noise reduction practices (i.e., well maintained mechanical equipment, increased building insulation, upgraded party wall-to-floor ceiling assembly acoustical treatments, etc.) where conditions exceed the regulations within the *Municipal Code* for residential uses. In addition, where outdoor activities exceed the City's Noise Ordinance (i.e., parking lots, public trash receptacles, truck delivery areas, etc.), applicable noise attenuation features (i.e., attenuation wall, mufflers, etc.) shall be implemented.

City Municipal Code

Municipal Code Title 8 (Peace, Safety, and Morals), Chapter 8.47 Noise Control), includes the City's standards related to noise.

Section 8.47.040 (Ambient Base Noise Levels) establishes ambient base noise levels for different land uses that are to be used for determining if noise levels exceed that allowed by the Municipal Code. These ambient base noise levels are summarized in Table 4.10-8. If the actual measured ambient noise levels at the land use under review exceed the ambient base noise level, Municipal Code Section 8.47.040 allows the actual measured ambient noise level to be used as the basis for determining whether or not the subject noise exceeds the noise level allowed by the Municipal Code. In addition, in situations where two adjoining properties exist within two different land use designations, the most restrictive ambient base noise level shall apply. Finally, Section 8.47.040 permits any noise level that does not exceed the ambient base

noise level established by the Municipal Code (see Table 4.10-9) or the actual measured ambient noise level by 5 dBA, as measured at the property line of the noise generating property.

Table 4.10-9
Garden Grove Municipal Code – Ambient Base Noise Levels

Use Categories	Use Designations	Ambient Base Noise Level	Time of Day
Sensitive	Residential	55 dBA	7 AM – 10 PM
		50 dBA	10 PM – 7 AM
Conditionally Sensitive	Institutional	65 dBA	Anytime
	Office-Professional	65 dBA	Anytime
	Hotels and Motels	65 dBA	Anytime
Non-Sensitive	Commercial	70 dBA	Anytime
	Commercial/Industrial (within 150 feet of residential)	65 dBA	7 AM – 10 PM
		50 dBA	10 PM – 7 AM
	Industrial	70 dBA	Anytime
Source: City of Garden Grove Municipal Code Section 8.47.040			

Section 8.47.050 (General Noise Regulation) establishes that is unlawful for any person to willfully make, continue, or cause to be made or continued, any loud unnecessary, or unusual noise that disturbs the peace or quiet of any neighborhood or causes discomfort or annoyance to any person of normal sensitiveness (Section 8.47.050 (A)). The criteria the City shall use in determining whether a violation of the provisions of this section exist shall include, but not be limited to (Section 8.47.050 (B)): the level of the noise; the frequency of occurrence of the noise, whether the nature of the noise is usual or unusual; the level and intensity of the background noise, if any; the proximity of the noise to residential sleeping facilities; the nature and zoning of the area within which the noise emanates; the density of the inhabitation of the area within which the noise emanates; the density of the inhabitation of the area within which the noise is received; the time of the day or night the noise occurs; and the duration of the noise. Regarding the duration of noise, the City uses the following criteria (Section 8.47.050 (C)) :

- The noise standard for a cumulative period of more than 30 minutes in any hour
- The noise standard plus five (5) dBA for a cumulative period of more than 15 minutes in any hour;
- The noise standard plus 10 dBA for a cumulative period of more than five (5) minutes in any hour;
- The noise standard plus 15 dBA for a cumulative period of more than one (1) minute in any hour; or
- The noise standard plus 20 dBA for any period of time.

If the actual measured ambient noise level exceeds any of the first four categories above, the cumulative period applicable to said category shall be increased to reflect the measured ambient noise levels. If the actual measured ambient noise level exceeds the fifth category above, the maximum allowable noise level for this category shall be increased to reflect the actual measured maximum ambient noise level (Section 8.47.050 (D)).

Section 8.47.060 (Special Noise Sources) establishes specific requirements for certain specific noise sources. These requirements are summarized in Table 4.10-10.

Table 4.10-10 Garden Grove Municipal Code Special Noise Sources		
Noise Source[(A)]	**Noise Source Description**	**Standard Applied[(B)]**
Radios, Television Sets, and Similar Devices (Section 8.74.060 A.)	The use or operation of any radio receiving set, musical instrument, stereo equipment, television set, or other machine or device for the producing or reproducing of sound by any person in a residential area between 10 PM of one day and 7 AM of the following day.	Noise shall not disturb the peace, quiet, and comfort of any person of normal sensitiveness residing in the area per Municipal Code Section 8.47.050 (A). Any noise level exceeding the ambient base noise level at the property line of any property (or if a condominium or apartment house, within any adjoining apartment) by more than five (5) decibels shall be deemed to be a prima facie evidence of a violation of the provisions of this section.
Musical Instruments (Section 8.74.060 B.)	The use of any drum or other instrument or of any kind for the purpose of attracting attention by the creation of noise within the City (excluding licensed parades or other activities authorized by the City).	Noise from such sources is considered unlawful.
Machinery, Equipment, Fans, and Air Conditioning (Section 8.74.060 C.)	Operation of any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device.	Equipment noise levels shall not exceed either the ambient base noise level or the actual measured ambient noise level by more than five (5) decibels.
Construction of Buildings and Projects (Section 8.74.060 D.)	The operation of equipment or performance of any construction or repair work on buildings, structures, or projects, or the operation of any pile driver, power shovel, pneumatic hammer, derrick, power hoist or any other construction type device between the hours of 10 PM of one day and 7 AM the next day in a manner that a person of normal sensitiveness is caused discomfort, or annoyance.	Activity is unlawful in or within 500 feet of residential area. Emergency operations are not included in this restriction.

Table 4.10-10 Garden Grove Municipal Code Special Noise Sources		
Noise Source[(A)]	**Noise Source Description**	**Standard Applied[(B)]**
Vehicle Repairs (Section 8.74.060 E.)	Repair, rebuilding, or testing any motor vehicle within a residential area in a manner that a person of normal sensitiveness residing in the area is caused discomfort or annoyance.	Activity is unlawful. Emergency operations are not included in this restriction.
Motor Driven Vehicles (Section 8.74.060 F.)	Operation of any motor driven vehicle within the City in a manner that a person of normal sensitiveness residing in the area is caused discomfort or annoyance.	Activity is unlawful. Emergency operations are not included in this restriction. The operation of a vehicle upon any public highway, street, or right-of-way is also excluded from this standard.
Amplified Sound (Section 8.74.060 G.)	The installation or use of sound amplifying equipment use by any person other than personnel of law enforcement or government agencies.	Equipment must be registered at least seven days prior to the date of intended use and approved by the City's Zoning Administrator.
Waste Haulers, Commercial Sweepers, and Leaf Blowers (Section 8.74.060 H.)	The use of any refuse compacting, processing or collection vehicle, parking lot sweeper, or leaf blower in a commercial, industrial, or office complex area within 150 feet of residential property between the house of 10 PM of one day and 7 AM the following day.	Activity is unlawful.
Loading/Unloading (Section 8.74.060 I.)	The loading or unloading of any vehicle, or operation of dollies, carts, forklifts, or other wheeled equipment in any commercial or industrial area of the City that abuts or is located adjacent to any residential property between the hours of 10 PM on one day and 7 AM the following day.	Source shall not disturb the peace or quiet of the residential neighborhood.
Source: Garden Grove Municipal Code Section 8.47.060, modified by MIG		

Section 8.47.070 establishes that certain activities are exempt from the provisions of the City's noise control requirements including emergency activities, community activities (e.g., community events, outdoor gatherings, and school activities), and motor vehicle and aircraft operations or any other activity whose regulation is preempted by state or federal law.

4.10.4 – SIGNIFICANCE THRESHOLDS

Per the CEQA Guidelines, Project implementation would have a significant impact related to noise or vibration if it would result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b) Generation of excessive groundborne vibration or groundborne noise levels; or

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

With regard to criteria (a), the proposed Project would result in a significant construction and/or operational noise impact if it would:

- Conflict with or violate any applicable provision of Municipal Code Title 8, Chapter 8.47 (Noise Control)
- Conflict with or violate any applicable standard or policy in the City's General Plan Noise Element
- Generate operational traffic noise levels that increase ambient noise levels at off-site locations by:
    - 5 dBA or more where the ambient noise level would change from normally acceptable to conditionally acceptable;
    - 3 dBA or more where the existing ambient noise would change from conditionally acceptable to normally unacceptable; or
    - 1 dBA or more where the existing ambient noise level is already normally unacceptable.

With regard to criterion (b), the proposed Project would result in a significant construction and/or operational vibration impact if it would:

- Generate construction-related vibration levels that exceed Caltrans' guidance for potential building damage (see Table 4.10-6); or
- Generate construction-related vibration levels that exceed FTA or Caltrans' criteria for human annoyance (see Table 4.10-7).

With regard to criterion (c), the proposed Project would expose people living or working in the Plan Area to excessive airport-related noise levels if it would conflict with JFTB Los Alamitos AELUP or otherwise expose people to excessive airport-related noise levels from a private air facility.

4.10.5 – IMPACTS AND MITIGATION MEASURES

This section describes potential noise and vibration impacts associated with implementation of the FGPUZA and recommends mitigation measures as needed to address potentially significant impacts.

Noise-related impacts can be divided into short-term construction-related impacts and long-term noise exposure impacts. Construction-related impacts are based on construction activities likely to occur in conjunction with future development anticipated by the FGPUZA. Long-term noise exposure is associated with major noise sources (e.g., traffic, trains, other transit, aircraft, and stationary sources) and changes in noise levels that may occur in the City as a result of implementation of the growth levels identified in the planning document.

Existing Noise Regulations

Impact NOISE-1 – Would the project result in generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Analysis of Impacts

Project implementation would involve construction that would result in temporary noise generation, primarily from the use of heavy-duty construction equipment. Individual construction projects would be spread throughout the City; however, no two projects would likely occur in close proximity contemporaneously. In addition, construction equipment would be spread throughout a work area and may not operate concurrently in the same area of the work site at the same time.

The proposed FGPUZA primarily supports higher density residential and mixed-use developments, as well as transient lodging (i.e., motels and hotels), but reduces single-family dwelling units and non-residential building square footage within the Planning Area. As described in Chapter 3, Project Description (see Table 3-1, Table 3-2, and Table 3-3), the proposed FGPUZA is estimated to result in an increase in dwelling units (+20,242, including accessory dwelling units, multi-family dwelling units, and mixed use residential/commercial dwelling units) in the Planning Area over an approximately 20-year period, while also reducing commercial and industrial land uses (-514,500 square feet) in the Planning Area. Although the FGPUZA results in a net decrease in commercial and industrial land uses, new commercial and industrial projects could still occur in the City in the future. The FGPUZA is expected to increase population (+63,818 residents) and jobs (+3,603 jobs) in the City.

The FGPUZA would focus new development along major corridors (e.g., Garden Grove Boulevard, Harbor Boulevard) and key focal points (e.g., intersection of Western Avenue and Garden Grove, intersection of Euclid Street and Garden Grove Boulevard). While low density residential land uses would remain the predominant land use in the City, key changes in land uses include an emphasis on mixed use residential/commercial development along Garden Grove Boulevard and other key travel corridors. Although the Project would focus on new development in certain areas, future individual construction and development projects could occur throughout the Planning Area over the approximately 20-year span of the FGPUZA. These projects could occur on any property (based on land uses allowed by the FGPUZA) and could affect existing or future land uses, including potentially sensitive residential, commercial, park, or school land uses that may or may not currently be present near future development

areas. Thus, this analysis addresses the potential for the Project to result in temporary construction noise impacts, wherever they might occur.

Since individual project-specific information is not available at this time, potential short-term (construction-related) noise impacts can only be evaluated based on the typical construction activities associated with residential, commercial, and industrial development. Potential construction source noise and vibration levels were developed based on methodologies, reference noise levels, typical equipment usage, and other operating factors documented and contained in the Federal Highway Administration's (FHWA) Construction Noise Handbook (FHWA 2006), Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment document (FTA 2018), and Caltrans' Transportation and Construction Vibration Guidance Manual (Caltrans 2013). Reference levels are noise emissions for specific equipment or activity types that are well-documented and for which their usage is common practice in the field of acoustics.

Construction activities associated with potential development projects could include: staging, demolition, site preparation (e.g., land clearing), fine and mass grading, utility trenching, foundation work (e.g., excavation, pouring concrete pads, drilling for piers), material deliveries (requiring travel along City roads), building construction (e.g., framing, concrete pouring, welding), paving, coating application, and site finishing work. In general, these activities would involve the use of worker vehicles, delivery trucks, dump trucks, and heavy-duty construction equipment such as (but not limited to) backhoes, tractors, loaders, graders, excavators, rollers, cranes, material lifts, generators, and air compressors. These types of construction activities would generate noise and vibration from the following sources:

- Heavy equipment operations at different work areas. Some heavy equipment would consist of mobile equipment such as a loader and excavator that would move around work areas; other equipment would consist of stationary equipment (e.g., cranes or material hoists/lifts) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems, and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produces higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.
- Vehicle trips, including worker, vendor, and haul truck trips. These trips are likely to primarily occur on key arterial roads and travel corridors such as, but not limited to, SR-22, Garden Grove Boulevard, Chapman Avenue, Valley View Street, Western Avenue, Euclid Street, and Harbor Boulevard.

Table 4.10-11 presents the noise levels associated with the typical types of construction equipment that could be used in the Planning Area for future individual projects.

Table 4.10-11
Typical Construction Equipment Noise Levels (dBA)

Equipment	Reference Noise Level at 50 Feet (L_{max})[(A)]	Percent Usage Factor[(B)]	Predicted Noise Levels (L_{eq}) at Distance[(C)]					
			50 Feet	100 Feet	200 Feet	300 Feet	400 Feet	500 Feet
Auger Drill Rig	85	0.2	78	72	66	62	60	58
Backhoe	80	0.4	76	70	64	60	58	56
Boring Jack Power Unit	80	0.5	77	71	65	61	59	57
Bulldozer	85	0.4	81	75	69	65	63	61
Compact roller	80	0.2	73	67	61	57	55	53
Compressor	80	0.4	76	70	64	60	58	56
Concrete Mixer	85	0.4	81	75	69	65	63	61
Crane	85	0.16	77	71	65	61	59	57
Delivery Truck	84	0.4	80	74	68	64	62	60
Excavator	85	0.4	81	75	69	65	63	61
Front End Loader	80	0.4	76	70	64	60	58	56
Generator	82	0.5	79	73	67	63	61	59
Horizontal Boring Hydraulic Jack	80	0.25	74	68	62	58	56	54
Impact Pile Driver (low)	95	0.2	88	82	76	72	70	68
Impact Pile Driver (high)	101	0.2	94	88	82	78	76	74
Man Lift	85	0.2	78	72	66	62	60	58
Paver	85	0.5	82	76	70	66	64	62
Pneumatic tools	85	0.5	82	76	70	66	64	62
Pumps	77	0.5	74	68	62	58	56	54
Roller	85	0.2	78	72	66	62	60	58
Scraper	85	0.4	81	75	69	65	63	61
Tractor	84	0.4	80	74	68	64	62	60
Vacuum Truck	85	0.4	81	75	69	65	63	61

Sources: Caltrans 2013a and FHWA 2010

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans, 2009: L_{eq} (hourly) = L_{max} at 50 feet – 20log (D/50) + 10log (UF), where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

Construction noise impacts generally occur when construction activities occur in areas immediately adjoining noise sensitive land uses, during noise sensitive times of the day, or when construction durations last over extended periods of time. Demolition, site preparation, and grading phases typically result in the highest temporary noise levels due to the use of heavy-duty equipment such as bulldozers, excavators, graders, loaders, scrapers, and trucks. As shown in Table 4.10-11, the worst-case L_{eq} and L_{max} noise levels associated with the operation of construction equipment are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate at the same time and in close proximity. The concurrent operation of two or more pieces of construction equipment would result in noise levels of approximately 85 to 88 dBA at a distance of 50 feet from equipment operating areas[2].

The magnitude of each individual future project's temporary and periodic increase in ambient noise levels would be dependent upon a number of project-specific factors that are not known at this time, including: the amount and type of equipment being used; the distance between the area where equipment is being operated and the location of the specific land use or receptor where noise levels are being evaluated; the time of day construction activities are occurring; the presence or absence of any walls, buildings, or other barriers that may absorb or reflect sound waves; the total duration of the construction activities; and the existing ambient noise levels near construction areas. For example, a noise level of 88 dBA L_{max} would be similar to typical L_{max} levels measured throughout the Planning Area, but sustained L_{eq} levels of 85 dBA could be approximately 10 to 20 dBA above daytime ambient conditions in areas of the City near major roadways (e.g., ST-01A, ST-01B, ST02, ST-04 to ST-08, ST-10, and ST-11, see Table 4.13-2), and up to approximately 20 to 35 dBA above daytime ambient conditions in areas of the City away from major roadways (e.g., LT-01, ST-01C, ST-03, and ST-09, see Table 4.10-2). Typically, sustained construction noise levels of 80 to 85 dBA or higher would require the implementation of construction noise control practices such as staging area restrictions (e.g., siting staging areas away from sensitive receptors), equipment controls (e.g., covered engines and use of electrical hook-ups instead of generators), and/or the installation of temporary noise barriers of sufficient height, size (length or width), and density to achieve targeted noise reductions.

The City's existing General Plan Noise Element focuses on allowing City residents to enjoy quiet neighborhoods and outdoor activities and includes policies that protect residents from excessive noise levels (including construction noise) that could disturb and disrupt human activities and affect the physical and psychological health of individuals. Table 4.10-12 summarizes the existing General Plan Noise goals and policies that address construction noise within the City. These goals and policies will not change under the FGPUZA.

[2] As shown in Table 4.10-11, a single bulldozer provides a sound level of 81 dBA Leq at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA Leq and when three identical sound levels are combined, the noise level increases to 86 dBA Leq. These estimates assume no shielding or other noise control measures are in place at or near the work areas.

Table 4.10-12
Existing General Plan Policies Pertaining to Construction Noise

Plan Element	Goal	Policy/Program	How does the General Plan Avoid or Reduce the Impact?	Applicable Significance Criteria
Noise	N-1 Noise considerations must be incorporated into land use planning decisions.	N-1.2: Noise Enforcement. Incorporate a noise assessment study into the environmental review process, when needed for a specific project for the purposes of identifying potential noise impacts and noise abatement procedures.	Requires non-exempt discretionary projects to assess and minimize potential construction noise impacts on sensitive land uses.	a) Generate a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of applicable standards in the local general plan or noise ordinance.
		N-IMP-1D Require construction activity to comply with the limits established in the City's Noise Ordinance.	Enforces provisions of the Garden Grove Municipal Code that are intended to control loud and unnecessary noises that may affect and/or be a detriment to residents' public health, comfort, convenience, safety, welfare, and prosperity.	a) Generate a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of applicable standards in the local general plan or noise ordinance.

Noise Element Goal N-1, Policy N-1.2, and Implementation Program N-IMP-1D 6 establish the overall goal and intent of the City to protect noise sensitive uses by limiting construction noise levels. Although neither the Garden Grove Municipal Code or proposed FGPUZA establish specific, numeric noise standards (e.g., 90 dBA L_{eq}) for construction activities, the General Plan sets forth a requirement to assess and minimize construction noise levels as part of the development review process. Furthermore, Garden Grove Municipal Code Section 8.74.060 D. limits the hours of construction activities in or within 500 feet of a residential area to the hours of 7 AM to 10 PM. Finally, General Plan EIR Mitigation Measure NOI-1 requires the City to impose noise reduction measures on construction activities to ensure compliance with General Plan policies and municipal code standards, including placing and operating equipment away from sensitive receptors, maintaining equipment in food work order, and installing temporary barriers around stationary noise sources. The City's existing Municipal Code requirements and General Plan policies would ensure construction activities do not occur during the most sensitive time

periods (e.g., evening and nighttime periods) and require future discretionary projects to assess and minimize construction noise levels consistent with City goals, policies, and code standards.

Level of Significance Before Mitigation

Future development under the FGPUZA would result in construction activities that could temporarily increase ambient noise levels in the vicinity of the project by 10 dB or more. The City's existing General Plan policies and Municipal Code requirements would ensure construction activities do not occur during the most sensitive time periods (i.e., nighttime periods) and require future discretionary projects to assess and minimize construction noise levels consistent with City goals, policies, and code standards. This impact is considered less than significant.

Mitigation Measures

None required.

Impact NOISE-2 – Would the project result in generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Analysis of Impacts

Project implementation could have the potential to change the existing amounts and types of land uses within the City. These potential land use changes could increase the number of residents and employees. This possible increase in population and employment could lead to increased vehicle traffic on the local roadway system, which could result in traffic-related noise levels that pose land use compatibility issues or result in a substantial permanent increase in traffic-related noise levels throughout the Planning Area. Project implementation could also involve increases in stationary noise and other sources of noise within the Planning Area. These potential effects are evaluated below.

Increases in Traffic and Rail Noise Levels

Although the FGPUZA does not authorize any specific development project or increase in existing vehicular traffic levels, the City contracted with a professional transportation engineering firm (Fehr and Peers) to conduct a VMT assessment for the proposed FGPUZA land use changes (Fehr and Peers, 2021). The travel demand modeling prepared for the Project provides a sufficient level of detail to generally evaluate the potential future increases in traffic-related noise levels on certain roadway segments associated with anticipated Project growth.

Future 2040 FGPUZA traffic noise levels were computed using the same methodology (TNM Version 3.0) and data sources used to calculate existing (Year 2020) and future (Year 2040) baseline traffic noise levels (see Section 4.10.2), except that 2040 FGPUZA traffic levels were obtained from the VMT analysis prepared for the Project and entered into the traffic model. Table 4.10-13 summarizes the net change in Year 2040 ADT and traffic noise levels that would occur with implementation of the FGPUZA. Refer to Appendix D for detailed transportation noise modeling results.

Table 4.10-13
Year 2040 Traffic Noise Levels With and Without FGPUZA

Road / Segment	Year 2040 Without FGPUZA		Year 2040 With FPGUZA		Net Change	
	ADT	CNEL[(A)]	ADT	CNEL[(A)]	ADT	CNEL
Brookhurst Street						
North of Garden Grove Boulevard	42,766	70.5	45,185	70.7	2,419	0.2
North of Trask Avenue	53,300	71.3	56,081	71.5	2,781	0.2
Chapman Avenue						
East of Springdale Street	7,105	64.1	7,472	64.3	367	0.2
West of Magnolia Street	14,977	66.0	15,556	66.1	579	0.1
West of Euclid Street	17,916	66.9	17,162	66.7	-754	-0.2
West of Harbor Boulevard	12,929	65.3	12,912	65.3	-17	0.0
Euclid Street						
North of Acacia Parkway	39,482	70.1	41,470	70.3	1,988	0.2
South of Garden Grove Boulevard	44,848	70.9	48,026	71.2	3,178	0.3
Garden Grove Boulevard						
West of Dale Street	29,009	69.1	30,096	69.3	1,087	0.2
East of Gilbert Street	34,301	69.4	37,813	69.8	3,512	0.4
West of Century Boulevard	24,216	67.8	26,520	68.2	2,304	0.4
West of West Street	28,268	68.9	37,175	70.1	8,907	1.2
West of Haster Street	32,261	69.4	32,846	69.5	585	0.1
Harbor Boulevard						
North of Garden Grove Boulevard	40,594	70.1	44,428	70.5	3,834	0.4
South of Garden Grove Boulevard	42,386	70.2	48,061	70.8	5,675	0.6
Magnolia Street						
North of Garden Grove Boulevard	31,549	69.0	34,287	69.4	2,738	0.4
North of Garden Trask Avenue	35,095	69.4	37,944	69.7	2,849	0.3
Trask Avenue						
East of Magnolia Street	23,041	67.6	23,767	67.8	726	0.2
East of Brookhurst Street	23,120	67.7	24,426	67.9	1,306	0.2
Westminster Avenue						
East of Brookhurst Street	34,573	71.2	36,319	71.4	1,746	0.2

Source: MIG, 2021 (see Appendix E)
(A) CNEL values are as estimated 50 feet from the center of the nearest roadway travel direction.

As shown in Table 4.10-13, the results of the traffic noise modeling indicate that traffic noise levels within the City would continue to be highest along major travel corridors such as Garden Grove Boulevard, Harbor Boulevard, and Euclid Avenue; however, the FGPUZA would not substantially increase traffic volumes or traffic noise levels along these roadways. The traffic noise modeling indicates the FGPUZA could increase traffic noise levels by more than one decibel on only one roadway segment: Garden Grove Boulevard, between Century Boulevard and West Street. Specifically, the modeling shows:

- Traffic noise levels along Garden Grove Boulevard between Century Boulevard and West Street are estimated to be up to 69.2 CNEL under existing 2020 conditions and 68.9 CNEL under future baseline 2040 conditions. These noise levels are considered conditionally acceptable for the existing residential (70 CNEL) and commercial (77.5 CNEL) land uses that border this segment of Garden Grove Boulevard. With the FGPUZA, traffic noise levels are estimated to increase to approximately 70.1 CNEL. The FGPUZA, therefore, would increase noise levels by 0.9 decibels along this roadway segment as compared to Year 2020 conditions, and by 1.2 decibels as compared to future baseline Year 2040. The increase in noise levels to 70.1 CNEL would also contribute to a change in noise exposure compatibility for residential land uses from conditionally acceptable to normally unacceptable.. It is noted the traffic noise modeling does not consider any trip reductions that may occur as a result of Mitigation Measure AQ-2E (Transportation Demand Management).

Pursuant to the State noise standards, California Building Code, Section 1207.4, new residential structures would be required to be constructed such that interior noise levels do not exceed 45 dBA CNEL. Standard construction techniques and materials are commonly accepted to provide a minimum exterior to interior noise attenuation (i.e., reduction) of 22–25 dBA with all windows and doors closed (HUD 2009a and 2009b).[3] These interior noise reductions would be adequate for some developments occurring under the FGPUZA to meet interior noise standards. New residential and mixed-use developments along Garden Grove Boulevard between Century Boulevard and West Street could require additional noise attenuation design features since traffic noise levels along these roadways are estimated to exceed 70 CNEL under existing and future conditions. Adherence to the State's mandatory noise standards would ensure residential and mixed-use structures within the Planning Area meet or exceed the 45 dBA CNEL standard.

The City's existing General Plan Noise Element emphasize the reduction of transportation-related noise impacts on residential and other sensitive land uses. Table 4.10-14 summarizes the Noise Element goals and policies that address ambient noise exposure and transportation noise levels within the City.

[3] The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 35 dBs of attenuation between exterior and interior noise levels. This reduction may be slightly lower (2-3 dBs) for traffic noise due to the specific frequencies associated with traffic noise. Increasing window space may also decrease attenuation, with a reduction of 10 dBs possible if windows occupy 30% of the exterior wall façade.

Table 4.10-14
General Plan Noise Element Policies Pertaining to Transportation Noise

Plan Element	Goal	Policy/Program	How does the General Plan Avoid or Reduce the Impact?	Applicable Significance Criteria
Noise	1: Noise considerations must be incorporated into land use planning decisions.	Policy N-1.1 Require all new residential construction in areas with an exterior noise level greater than 55 dBA to include sound attenuation measures. Policy N-1.2 Incorporate a noise assessment study into the environmental review process, when needed for a specific project for the purposes of identifying potential noise impacts and noise abatement procedures. N-IMP-1C Implement noise mitigation by placing conditions of approval on development projects, and require a clear description of mitigation on subdivision maps, site plans, and building plans for inspection purposes. N-IMP-1I Encourage the location of balconies and operable windows of residential units in mixed use projects away from arterials and other major noise sources.	Requires discretionary non-exempt projects to assess and minimize potential construction noise impacts on sensitive land uses.	a) Generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards in the local general plan or noise ordinance.

Noise	2: Maximize efficiency in noise abatement efforts through clear and effective policies and ordinances.	Policy N-2.4 Permit only those new development or redevelopment projects that have incorporated appropriate mitigation measures, so that standards contained in the Noise Element and/or adopted ordinance are met. N-IMP-2A Require a noise impact evaluation for projects, if determined necessary through the environmental review process. Should noise abatement be necessary, the City shall require the implementation of mitigation measures based on a technical study prepared by a qualified acoustical professional.	Requires discretionary non-exempt projects assess and minimize potential construction noise impacts on sensitive land uses.	a) Generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards in the local general plan or noise ordinance.

Noise	4: Minimize noise impacts for residential uses and noise sensitive receptors along the City's arterial streets, ensuring that City and State interior and exterior noise levels are not exceeded.	Policy N-4.1 Examine the feasibility of implementing sound attenuation measures along the City's arterial streets. Prioritize the areas in need of sound attenuation based on degree of sensitivity, excess of maximum allowable standards, length of time the noise impact has existed, and the number or residential uses or sensitive receptors impacted. Policy N-4.2 Minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures (e.g., shifting travel lanes away from impacted units, adding bike ways, etc.). Policy N-4.3 Discourage through traffic on residential local streets to reduce noise. N-IMP-4A Install sound attenuation measures, including but not limited to, retrofitting existing residential units or sensitive receptors with double-glazed windows and sound insulation; construction of sound walls and landscaping, use of low walls and landscaped berms, enclose courtyards, rubberized asphalt, or relocation of driveways. N-IMP-4B Develop a streamlined process to	Identifies vehicle traffic as a key contributor to the City's noise environment and plans for reducing traffic noise effects on noise-sensitive land uses.	a) Generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of applicable standards in the local general plan or noise ordinance.

The City's General Plan establishes the overall goal and intent of the City to protect noise sensitive uses and minimize traffic-related noise impacts; however, as shown in Table 4.10-13 and discussed above, the proposed FGPUZA would result in more than a 1 decibel increase in traffic noise levels on Garden Grove Boulevard between Century Boulevard and West Street and contribute to normally unacceptable residential noise level conditions in Year 2040.

Increases in Rail Noise

The proposed FGPUZA does not authorize, nor does it increase any freight rail operation because such operations are outside the jurisdictional authority of the City. Nonetheless, as described in Section 4.13.2, the 2018 California State Rail Plan acknowledges that freight train service is anticipated to double by 2040, and the proposed FGPUZA could result in changes in land use type and or intensity near the existing UPRR rail line adjacent to Western Avenue. The City's existing General Plan includes goals and policies that minimize the impact of ambient and operational noise levels throughout the City, including Goal N-5 (minimize noise impacts on residential areas from rail) and Policy N-5.5, which requires noise attenuation measures for residential construction in areas affected by a 65 CNEL railroad noise contour such that interior noise levels do not exceed 45 CNEL. This policy would protect residents from excessive rail-related noise levels and ensure new land uses meet Garden Grove noise standards through evaluation and design considerations.

Increases in Stationary and Other Sources of Noise

Stationary and other sources of noise in the Planning Area include, but are not limited to, landscape and building maintenance activities, stationary mechanical equipment (e.g., pumps, generators, HVAC units), garbage collection activities, commercial and industrial activities, and other stationary and area sources such as people's voices, amplified music, and public address systems.

Noise generated by residential or commercial uses is generally short-term and intermittent. Industrial uses may generate noise on a more continual basis due to the types of associated activities. The FGPUZA would increase residential and commercial development within the Planning Area and, in particular, allow mixed use development in which residential and commercial uses are integrated into a single development project. These types of developments tend to have higher noise levels associated with the mix of land uses contained within them. Future planned development could also result in new stationary and area sources as well as exposure of new sensitive land uses to existing stationary and area sources.

The City's existing General Plan includes goals and policies that minimize the impact of ambient and operational noise levels throughout the City (see Table 4.13-15). In addition, Garden Grove Municipal Code Title 8 (Peace, Safety, and Morals), Chapter 8.47 (Noise Control) establishes the City's standards related to noise (see Section 14.3 and Table 4.13-10). General Plan Policy N-2.4 and N-2.5 as well as implementation Programs N-IMP-2C, and N-IMP-2D specifically call out enforcement of the City's noise ordinance to abate unlawful noise. Finally, 2008 General Plan EIR Mitigation NOI-3 and NOI-4 already require the City to review new stationary sources and new mixed use projects for noise reduction measures and practices that achieve compliance with Municipal Code noise standards.

For the reasons outlined above, existing General Plan policies would protect residents from excessive stationary noise sources and ensure new land uses meet the Garden Grove Municipal Code noise standards through evaluation and design considerations. Stationary and

other sources of noise would be controlled by the General Plan goals and policies, and the Municipal Code, which limit allowable noise levels at adjacent properties. Therefore, future stationary noise sources would comply with City standards and would not expose people to a substantial permanent increase in noise levels.

Level of Significance Before Mitigation

The existing General Plan Noise Element establishes the City's intent to establish clear and enforceable noise regulations for all land uses, to consider operational noise impacts during the development review process, and to limit new development in noise impacted areas unless the development includes measures to reduce noise levels to acceptable levels. In addition, General Plan policies protect residents from excessive stationary noise sources and ensure new land uses meet the Garden Grove Municipal Code noise standards through evaluation and design considerations. Stationary and other sources of noise would be controlled by the General Plan goals and policies, and the Municipal Code, which limits allowable noise levels at adjacent properties; however, traffic noise modeling indicates the FGPUZA would result in a potentially significant increase in traffic noise levels. In summary:

- Increase in Traffic Noise Levels: Traffic noise modeling indicates the FGPUZA could result in more than a 1 decibel increase in traffic noise levels on Garden Grove Boulevard between Century Boulevard and West Street and result in a change in noise and land use compatibility status for residential land uses from conditionally acceptable to normally unacceptable. This is considered a potentially significant impact.
- Increases in Rail Noise Levels: Existing General Plan Noise Element goals and policies would protect residents from excessive rail-related noise levels and ensure new land uses meet Garden Grove noise standards through evaluation and design considerations. This impact would be less than significant.
- Increases in Stationary and Other Noise Levels: Stationary and other sources of noise would be controlled by the General Plan goals and policies, and the Municipal Code, which limit allowable noise levels at adjacent properties. Therefore, future stationary noise sources would comply with City standards and would not expose people to a substantial permanent increase in noise levels. This impact would be less than significant.

Mitigation Measures

The City's General Plan EIR includes several mitigation measures that could address potential increases in traffic noise levels under the FGPUZA:

- General Plan EIR Mitigation Measure NOI-2 requires the City to ensure new development include noise reduction measures that achieve compliance with the City's exterior and interior noise standards established by the General Plan and Municipal Code where noise conditions exceed the General Plan's noise and land use compatibility criteria for "normally acceptable" noise exposure levels.
- FPGUZA EIR Mitigation Measure AQ-2E requires the City to achieve a 20% reduction below standard trip generation rates for certain new projects occurring in the City (see Chapter 4.1).

Mitigation Measure AQ-2E would reduce vehicle trips and lower traffic-related noise levels; however, the specific roadway segments where this mitigation would reduce vehicle trips and traffic-related noise is not known and, therefore, no noise reduction has been taken for VMT and

trip reduction measures required by Mitigation Measure AQ-2E. Is it worth noting that the modeled increase in traffic noise levels on Garden Grove Boulevard between Century Boulevard and West Street do not substantially exceed the City's noise standards for traffic noise and, therefore, even a small decrease in trips attributable the FGPUZA on this roadway segments would avoid the potentially significant impacts identified in Table 4.10-13.

Level of Significance After Mitigation Measures

The City's General Plan establishes the overall goal and intent of the City to protect residents from excessive noise by requiring the City to review the location of new noise-sensitive land uses, locate such land uses away from major noise sources, and ensure new land uses meet the City's noise standards (see Section 4.10.3) through evaluation and design considerations; however, these policies would not protect existing land uses from increases in vehicle traffic that would occur with and without the project.

The installation of physical barriers to reduce noise levels at existing residential land uses is not feasible mitigation because Garden Grove Boulevard between Century Boulevard and West Street is already developed and cannot accommodate the installation of a barrier without landowner access, authorization, and potential easement dedication none of which could be guaranteed to occur. Interior noise levels in existing residences that front this segment of Garden Grove Boulevard could be approximately 45.1 CNEL (with windows closed) to 55.1 CNEL (with windows open), although the exact noise level would be contingent on traffic conditions and specific building design factors (e.g., window surface area, building orientation, etc.). The installation of physical barriers to reduce traffic noise levels at existing commercial land uses along impact roadway segments is not necessary because these land uses do not include sensitive outdoor areas that require mitigation.

Ordinarily, a 1 dB increase in ambient noise levels is not discernible; however, the FGPUZA would contribute to a 1 dB change in modeled traffic noise levels in areas already affected by high noise levels that exceed City guidelines for noise and land use compatibility. Since a reduction in vehicle trips on specific, impacted roadway segments cannot be guaranteed, and future traffic noise levels would increase by 1 dB or more and/or potentially expose noise-sensitive land uses to normally unacceptable noise levels, this impact would remain ***significant and unavoidable***.

Ground-borne Vibration and Noise Levels

Impact NOISE-3– Would the project result in generation of excessive groundborne noise levels?

Analysis of Impacts

Temporary Construction Vibration Levels

Project implementation would involve construction that would result in temporary groundborne vibrations, primarily from the use of heavy-duty construction equipment. Individual construction projects would be spread throughout the City; however, projects would likely not occur in close proximity contemporaneously.

Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Vibration generated by construction equipment spreads through the ground and diminishes with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, result in low rumbling sounds and detectable vibrations at moderate levels, and at high levels can cause sleep disturbance in places where people normally sleep or annoyance in buildings that are primarily used for daytime functions and sleeping (e.g., a hospital). Ground vibration can also potentially damage the foundations and exteriors of existing structures even if it does not result in a negative human response. Pile drivers and other pieces of high-impact construction equipment are generally the primary cause of construction-related vibration impacts. The use of such equipment is generally limited to sites where there are extensive layers of very hard materials (e.g., compacted soils, bedrock) that must be loosened or penetrated to achieve grading and foundation design requirements. The need for such methods is usually determined through site-specific geotechnical investigations that identify the subsurface materials within the grading envelope, along with foundation design recommendations and the construction methods needed to safely permit development of a site.

Construction equipment and activities are categorized by the nature of the vibration they produce. Equipment or activities typical of continuous vibration include excavation equipment, static compaction equipment, vibratory pile drivers, and pile-extraction equipment. Equipment or activities typical of transient (single-impact) or low-rate, repeated impact vibration include impact pile drivers, and crack-and-seat equipment. Pile driving and blasting activities produce the highest levels of ground vibration and can result in structural damage to existing buildings.

Since individual project-specific information is not available at this time, potential short-term construction-related vibration impacts can only be evaluated based on the typical construction activities associated with residential, commercial, and industrial development. Potential construction source vibration levels were developed based on methodologies, reference noise levels, and typical equipment usage and other operating factors documented and contained in the FHWA's Construction Noise Handbook (FHWA, 2006), FTA's Transit Noise and Vibration Impact Assessment document (FTA 2018), and Caltrans' Transportation and Construction Vibration Guidance Manual (Caltrans, 2020). Reference levels are vibration emissions for specific equipment or activity types that are well-documented and for which their usage is common practice in the field of acoustics.

Future development as a result of the Project could occur in primarily urban settings where land is already disturbed and, therefore, is not likely to require blasting, which is typically used to remove unwanted rock or earth. Standard construction equipment (e.g., bulldozers, trucks, jackhammers) generally do not cause vibration that could cause structural or cosmetic damage but may be felt by nearby receptors. Table 4.10-15 presents the typical types of equipment that could be used for future development activities in the Planning Area.

Table 4.10-15
Ground-borne Vibration and Noise from Typical Construction Equipment

Equipment	Peak Particle Velocity (in/sec) (A)			Velocity Decibels (VdB) (B)		
	25 feet	50 feet	100 feet	25 feet	50 feet	100 feet
Small bulldozer	0.003	0.001	0.001	58	49	40
Jackhammer	0.035	0.016	0.008	79	70	61
Rock Breaker	0.059	0.028	0.013	83	74	65
Loaded truck	0.076	0.035	0.017	86	77	68
Auger Drill Rig	0.089	0.042	0.019	87	78	69
Large bulldozer	0.089	0.042	0.019	87	78	69
Vibratory Roller	0.210	0.098	0.046	94	85	76
Impact Pile Driver (upper range)	1.518	0.708	0.330	112	103	94
Impact Pile Driver (typical)	0.644	0.300	0.140	104	95	86
Sonic Pile Driver (upper range)	0.734	0.42	0.160	105	96	87
Sonic Pile Driver (typical)	0.170	0.079	0.037	93	84	75

Sources: Caltrans 2013 and FTA 2018

(A) Estimated PPV calculated as: PPV(D)=PPV(ref)*(25/D)^1.1 where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.1 for dense compacted hard soils).

(B) Estimated Lv calculated as: Lv(D)=Lv(25 feet)-30Log(D/25) where Lv(D)= estimated velocity level in decibels at distance, Lv(25 feet)= RMS velocity amplitude at 25 ft; and D= distance from equipment to receiver.

As shown in Table 4.10-15, specific vibration levels associated with typical construction equipment are highly dependent on the type of equipment used. Vibration levels dissipate rapidly with distance, such that even maximum impact pile driving activities would result in vibration levels below Caltrans' recommended 0.5 PPV threshold for transient vibration-induced damage in historic, older buildings at a distance 100 feet; all other activities would be below Caltrans' threshold for transient vibration-induced damage in historic, older buildings at a distance of 25 feet. For human responses, maximum impact pile driving activities would result in groundborne vibration and noise levels below Caltrans' threshold for a distinctly perceptible response (0.24 PPV) and the FTA's vibration standard for infrequent events at residential lands (80 VdB) at a distance of approximately 150 feet and 300 feet, respectively. All other activities may be barely to distinctly perceptible when occurring within approximately 150 feet of sensitive land uses.

Long-Term Ground-borne Vibration Levels

The proposed FGPUZA could facilitate the construction of residential mixed-use projects along Western Avenue, between Chapman Avenue and Garden Grove Boulevard. This segment of

Western Avenue is generally located within 700 feet of an existing Union Pacific railroad corridor that runs parallel to Western Avenue; several properties along this segment also include rail spurs. With regard to vibration impacts on new development near railroads, human disturbance is the primary concern. It is extremely rare for vibration levels from trains passing to result in structural damage to buildings. In addition, buses and other transit vehicles are not anticipated to generate excessive vibration levels that would disturb sensitive receptors because these vehicles are travelling at lower speeds and do not generate substantial vibrations.

The FTA's *Transit Noise and Vibration Impact Assessment* document provides recommended ground-borne vibration criteria for general environmental assessments of rail lines. The vibration criteria vary according to the sensitivity of the land use and the frequency of vibration events (i.e., number of trains passing by the sensitive land use), as shown in Table 4.13-5, but for infrequent events such as freight train activity (i.e., less than 30 trains passing by in one day), the criteria generally vary between 65 Vdb for buildings where vibration would interfere with interior operations (e.g., highly sensitive research facilities, hospitals), to 80 VdB for residences and buildings where people normally sleep, to 83 VdB for land uses with primarily daytime use. Highly sensitive research facilities and hospitals are not anticipated under the proposed FGPUZA and, therefore, the 65 VdB threshold is not considered further in this analysis. The FTA's guidance document contains generalized ground surface vibration curves derived from vibration measurements of transit systems in North America (FTA 2018, Figure 6-4). Based on these vibration prediction curves, proposed residential development within approximately 80 feet of a freight rail line could be exposed to vibration levels that exceed the FTA's recommended threshold of 80 VdB for residences. Similarly, other proposed land uses within approximately 60 feet of a freight rail line could be exposed to vibration levels that exceed the FTA's recommended threshold of 83 VdB for land uses with primarily daytime occupancy. The proposed FGPUZA does not involve the change in the designation of any existing land use parcel closer than 190 feet from center of the existing rail track that runs parallel to Western Avenue. Therefore, future planned residential and non-residential development along the east side of Western Avenue would not be exposed to excessive freight train vibration levels that exceed FTA-recommended vibration criteria (for human annoyance and response factors) of 80 or 83 VdB, respectively.

Level of Significance Before Mitigation

Typical construction activities may be barely to distinctly perceptible when occurring within approximately 150 feet of sensitive land uses. Most construction equipment does not operate in the same location for prolonged periods of time. Therefore, even if construction equipment were to operate near a building where receptors may feel vibration, it would only be for a temporary amount of time. This impact is considered less than significant.

The proposed FGPUZA would not change the designation of any existing land use parcel in close proximity to existing rail lines in the City and, therefore, would not expose new development to freight train vibration levels that exceed FTA-recommended vibration criteria (for human annoyance and response factors) of 80 VdB (residential) or 83 VdB (commercial), respectively. This impact is considered less than significant.

Mitigation Measures

None required.

Excessive Airport-related Noise Levels

Impact NOISE-4 – For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Analysis of Impacts

As described in Section 4.10.2, JFTB Los Alamitos is located near western Garden Grove; however, the proposed FGPUZA does not involve a change in the designation of any existing land use parcel within JFTB Los Alamitos Noise Impact Zone I (65 CNEL) or Noise Impact Zone II (60 CNEL). Therefore, the proposed FGPUZA does not have the potential to expose new future residents or employees to excessive airport-related noise levels.

Level of Significance Before Mitigation

The proposed FGPUZA would not involve a change in the designation of any existing land use parcel within JFTB Los Alamitos Noise Impact Zone I (65 CNEL) or Noise Impact Zone II (60 CNEL) and, therefore, would not have the potential to expose new future residents or employees to excessive airport-related noise levels. The Project is not located within the vicinity of any other private air strip. This impact would be less than significant.

Mitigation Measures

None required.

Cumulative Impacts

Would the project cause substantial adverse cumulative impacts with respect to noise or vibration?

Analysis of Impacts

Project implementation would result in construction noise and vibration as individual development projects are constructed over time. Each individual development would be subject to City regulations and policies regarding construction noise and vibration (See Impact NOISE-1 and NOISE-3). These policies and measures establish the overall goal and intent of the City to protect residents from excessive construction noise and vibration, to require the appropriate evaluation of construction noise and vibration impacts at sensitive receptor locations, and to implement feasible construction noise and vibration control measures when development occurs near noise-sensitive land uses. Therefore, construction noise would not make a cumulatively considerable contribution to a significant cumulative construction noise impact.

Once constructed, development projects would contribute to the potential permanent increases in noise levels evaluated under Impact NOISE-2. The City's existing General Plan Noise Element sets forth the City's intent to establish clear and enforced noise regulations for all land uses, to consider operational noise impacts during the development review process, and to limit

new development in noise impacted areas unless the development includes measures to reduce noise levels to acceptable levels. In addition, General Plan policies protect residents from excessive stationary noise sources and ensure new land uses meet the Garden Grove Municipal Code noise standards through evaluation and design considerations. Stationary and other sources of noise would be controlled by the General Plan goals and policies, and the Municipal Code, which limits allowable noise levels at adjacent properties. Therefore, the FGPUZA would not make a cumulatively considerable contribution to cumulative, non-transportation noise impact.

Traffic noise modeling indicates the FGPUZA would result in a potentially significant increase in traffic noise levels. The FGPUZA would contribute to a cumulative increase in traffic noise levels of 1 dB or more on Garden Grove Boulevard, between Century Boulevard and West Street, and would potentially expose noise-sensitive land uses to normally unacceptable noise levels. This is considered a cumulatively considerable contribution to a significant cumulative noise impact even with the inclusion of existing General Plan EIR mitigation (NOI-2) and FGPUZA EIR Mitigation Measure AQ-2E.

The proposed FGPUZA would not directly alter rail activities or facilitate the construction of projects directly adjacent to any existing rail operations. Therefore, the FGPUZA would not result in a cumulatively considerable contribution to a cumulative rail noise-related impact.

The proposed FGPUZA would not involve a change in the designation of any existing land use parcel within JFTB Los Alamitos Noise Impact Zone I (65 CNEL) or Noise Impact Zone II (60 CNEL) and, therefore, would not result in a cumulatively considerable contribution to airport-related noise impacts.

Level of Significance Before Mitigation

The FGPUZA would contribute to a cumulative increase in traffic noise levels of 1 dB or more on Garden Grove Boulevard, between Century Boulevard and West Street, and would potentially expose noise-sensitive land uses to normally unacceptable noise levels. This is considered a potentially significant cumulative impact.

Mitigation Measures

See General Plan EIR Mitigation Measure NOI-2 and FGPUZA EIR Mitigation Measure AQ-2E.

Level of Significance After Mitigation

The FGPUZA would contribute to a 1 dB change in modeled traffic noise levels in areas already affected by high noise levels that exceed City guidelines for noise and land use compatibility. Since a reduction in vehicle trips on specific, impacted roadway segments cannot be guaranteed, and future traffic noise levels would increase by 1 dB or more and/or potentially expose noise-sensitive land uses to normally unacceptable noise levels, this impact would remain ***significant and unavoidable***.

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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
AELUP	Airport Environs Land Use Plan
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CLUP	Comprehensive Land Use Plan
CNEL	Community Noise Equivalent Level
D	Distance
dB	Decibel (unweighted)
dBA	Decibels, A-Weighted
DNL / L_{dn}	Day-Night Noise Level
FGPUZA	Focused General Plan Update and Zoning Analysis
FHWA	Federal Highway Works Administration
FTA	Federal Transit Administration
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
In/sec	Inches per Second
JFTB	Joint Forces Training Base
kH	Kilohertz
L_{eq}	Average / Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LT	Long-term
OITC	Outside-Indoor Transmission Class
OPR	Office of Planning and Research
Pa	Pascals
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
SR	State Route
ST	Short-term
STC	Sound Transmission Class
TIA	Transportation Impact Analysis
TNM	Traffic Noise Model

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
UF	Usage Factor
VdB	Velocity Decibels
VMT	Vehicle Miles Travelled
§	Section
%	Percent

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4.11 – Population and Housing

This EIR chapter addresses population and housing impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes the following population and housing impacts identified by the CEQA Guidelines: whether the FGPUZA will induce substantial unplanned population growth or whether the FGPUZA will displace substantial numbers of existing people or housing necessitating the construction of replacement housing.

4.11.1 – ENVIRONMENTAL SETTING

The Planning Area includes a mix of residential, mixed-use, commercial, industrial, institutional, and open space uses. A description of the existing population, housing, and employment characteristics within the Planning Area is provided below.

Population

The California Department of Finance estimates that the January 2020 population for Orange County and the City of Garden Grove was 3,194,332 and 174,801 residents, respectively (DOF, 2020a). The Southern California Association of Governments (SCAG) develops socioeconomic estimates and growth projections including population, households, and employment. These estimates and projections provide the analytical foundation for SCAG's transportation planning and other programs. The growth forecast used for the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (2020-2045 RTP/SCS) (SCAG 2020) for Orange County and the City of Garden Grove are included in Table 4.11-1 (Population Forecasts). As shown in Table 4.11-1, continued population growth is anticipated at both the county and city level, although the projected growth rate for the County is higher. Population growth at the County level from 2012 to 2040 is projected to be approximately 12.7%, while during the same period it is projected to be approximately 3.1% for the City of Garden Grove.

Table 4.11-1
Population Forecasts

	2012	2020	2040
County of Orange	3,071,600	3,271,100	3,461,500
City of Garden Grove	172,900	176,100	178,200
Source: 2020-2045 RTP/SCS Final Growth Forecast by Jurisdiction, SCAG 2020.			

Housing

According to the California Department of Finance, as of April 2020 there were approximately 1,111,421 housing units within Orange County and approximately 48,257 housing units within the City of Garden Grove (DOF, 2020b). As noted above, SCAG develops socioeconomic estimates and growth projections including population, households, and employment. Table 4.11-2 (Household Forecasts Included in the 2020-2045 RTP/SCS) shows the anticipated growth in households for both Orange County and the City of Garden Grove. As shown in Table 4.11-2, the County of Orange is anticipated to have an increase in housing units of 152,800 units between 2012 and 2040 and the City of Garden Grove is anticipated to have an increase

in housing units of 2,000 during the same time period, an increase of approximately 15.3% and 4.3% respectively.

Table 4.11-2
Household Forecasts

	2012	2020	2040
County of Orange	999,500	1,074,700	1,152,300
City of Garden Grove	46,200	47,300	48,200
Source: 2020-2045 RTP/SCS Final Growth Forecast by Jurisdiction, SCAG 2020.			

Employment

Table 4.11-3 (Employment Forecasts) shows the anticipated growth in employment for both Orange County and the City of Garden Grove. As shown in Table 4.11-3, the County of Orange had an employment base of 1,526,500 in 2012, and is anticipated to increase its employment base to 1,898,900 by 2040, an increase of 372,400 or 24.4% (SCAG, 2020). During that same time period the City of Garden Grove is anticipated to increase its employment base from 51,700 in 2012 to 58,500 in 2040, an increase of 6,800 or 13.2%.

Table 4.11-3
Employment Forecasts

	2012	2020	2040
County of Orange	1,526,500	1,730,400	1,898,900
City of Garden Grove	51,700	56,600	58,500
Source: 2020-2045 RTP/SCS Final Growth Forecast by Jurisdiction, SCAG 2020.			

4.14.2 – REGULATORY FRAMEWORK

Federal

U.S. Department of Housing and Urban Development (HUD). HUD oversees the Federal Housing Administration (FHA), the largest mortgage insurer in the world, regulates housing industry business, and provides Project-Based Rental Assistance and other rental assistance programs which provide support for low and very low-income households.

State

California Department of Housing and Community Development (HCD). HCD enforces standards for housing construction, maintenance of farmworker housing, and manufactured/factory-built homes. HCD also proposes amendments to California's residential building standards for new construction to the California Building Standards Commission and helps train local government to better understand new requirements. HCD works with regional governments to determine their housing needs and reviews every city and county's housing element of the general plan to determine compliance with State law.

Housing Element Law (California Government Code Article 10.6). The State has established detailed legal requirements for a General Plan Update (GPU) Housing Element. State Law requires each City and County to prepare and maintain a current Housing Element as part of the community's GPU to attain a Statewide Goal of providing "decent housing and a suitable living environment for every California family." Under State law, Housing Elements generally must be updated every five years and reviewed by the California Department of Housing and Community Development (HCD).

California Department of Finance Demographic Research Unit. The Demographic Research Unit uses population data to establish appropriation limitations, distribute various federal program funds, and aid in the planning and evaluation of programs. State agencies and departments, local governments, the federal government, school districts, public utilities, the private sector, and the public use the data. Staff provide demographic research and analysis, produce current population estimates, and future projections of population and school enrollment, and disseminate U.S. Census data.

Regional

Orange County Housing Authority (OCHA). The OCHA is a public agency chartered by the State to administer the development, rehabilitation or financing of affordable housing programs. The OCHA works with the City to administer the Housing Choice Vouchers Program, supports the County Housing Authority's applications for additional allocations, and assists the Housing Authority in marketing the program to home seekers and property owners.

Southern California Association of Governments (SCAG). Under federal law, SCAG is designated as a Metropolitan Planning Organization and under State law as a Regional Transportation Planning Agency and a Council of Governments.

Regional Housing Needs Assessment (RHNA). The RHNA is developed through a process directed by SCAG. The RHNA represents the number of housing units divided into various household income categories–that have been calculated to represent Garden Grove's "fair share" of the regional housing need during the Housing Element planning period. By law, the City is required to show in the Housing Element that adequate sites are available to accommodate construction of new housing units consistent with the RHNA.

Local

City General Plan. The updated Land Use Element contains the following overall goals that address land use which influences the City's housing stock and future population. Please note that this section does not include all the policies and implementation actions that support each goal – including those would make this section overly long and difficult to follow. Please see Appendix B for the full set of Goals, Policies and Implementation Actions for the updated Land Use Element.

Goal LU-1: The City of Garden Grove is a well-planned community with sufficient land uses and intensities to meets the needs of anticipated growth and achieve the community's vision.

Goal LU-2: Stable, well-maintained residential neighborhoods in Garden Grove.

Goal LU-3: Higher-density residential development along major thoroughfares i and in areas well served by public transit, retail and service businesses, public services, and public gathering places. **Goal LU-4:** Uses compatible with one another.

Goal LU-5: Economically viable, vital, and attractive commercial centers throughout the City that serve the needs of the community.

Goal LU-6: Revitalization of aging, underused or deteriorated commercial corridors, centers, and properties .

Goal LU-7: Industrial areas that contribute in terms of jobs and economic impacts they provide.

Goal LU-8: The OCTA Right-Of-Way offers great potential for alternative transportation systems, as well as for recreation or parklands that could benefit the residents of Garden Grove.

Goal LU-9: Creation of a tourism- and entertainment-related destination area that will benefit all residents, businesses, and visitors.

Goal LU-10: Develop transit-oriented development and create a transit hub around the OC Streetcar stop (Harbor Transit Center) at Harbor Boulevard and Westminster Avenue.

Goal LU-12: Maintenance and completion of the redevelopment and revitalization of the Brookhurst/Chapman commercial area.

Goal LU-13: Specific Plans that provide tailored planning and development directions for focus areas.

Goal LU-14: Transition and sensitive treatments on properties along the City's corporate boundary to provide compatibility.

Goal LU-15: Rationalized corporate boundaries, with the City having flexibility to annex unincorporated areas or de-annex areas of the City that have a closer relationship either with the City of Garden Grove or adjacent cities.

Goal LU-16: Resolution of the problems created by County islands adjoining the City.

Goal LU-17: Protection of land uses in the City of Garden Grove from impacts associated with the Joint Forces Training Base (JFTB) Los Alamitos.

Goal LU-18: Preservation of City quality and character through compliance with relevant codes and regulations.

City Municipal Code. Chapters 9.04 through 9.54 in Title 9 of the City's Municipal Code Address various land use topics.

4.14.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure).

B. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

C. Cause substantial adverse cumulative impacts with respect to population and housing.

4.14.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to population and housing that could result from the implementation of the FGPUZA and recommends mitigation measures as needed to reduce potentially significant impacts.

Population Growth

Impact POP-1 – Would the FGPUZA induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure)?

Analysis of Impacts

According to the State Department of Finance, the estimated population of the City in 2020 was 174,801 (DOF 2021). According to SCAG estimates, the City is expected to grow in population to 178,200 by 2040, which represents an increase of 1.9%. However, under the proposed FGPUZA, the Planning Area is anticipated to support a population of up to 238,619 in 2040. This would represent an increase of 36.5% over existing 2020 conditions. During the same period, the number of dwelling units in the Planning Area supported by the FGPUZA would increase from 48,257 dwelling units in 2020 to 68,499 dwelling units in 2040, representing an increase of more than 40%. According to SCAG estimates, the number of households in the City is anticipated to increase from 47,300 in 2020 to 48,200 in 2040, which only represents an increase of 1.9%. Therefore, potential population growth under the FGPUZA would exceed the projected population growth forecast from the SCAG 2020-2045 RTP/SCS (SCAG 2020). The anticipated growth under the FGPUZA is substantially greater than that indicated in SCAG's sub-regional population forecasts for the City in its 2020-2045 RTP/SCS regional plan (SCAG 2020). This amount of growth is the direct result of the City's RHNA housing allocation. The Land Use Element Goals LU-1 through LU-18 in many ways encourage new and innovative ways to add housing and thus population to the City in the future to achieve the RHNA allocation. If the Land Use Element and other elements of the General Plan were modified to reduce growth to be consistent with SCAG's 2020-2045 RTP/SCS regional plan, then the City could not meet its RHNA housing allocation.

The FGPUZA does not determine the rate of growth in the Planning Area, which is ultimately subject to market conditions; rather, it provides for the accommodation of growth, in accordance with the City's policies for type, intensity, and location as set forth in the FGPUZA. The Planning Area is almost completely urbanized with very little vacant land. Any new development that would occur under the proposed Project would consist of infill development and/or redevelopment of existing uses. The City is planning for this growth and revising its General Plan to accommodate its RHNA allocation through the intensification of land use, so the proposed FGPUZA Goals and Policies will encourage infill development, including revitalization of underutilized infill properties closest to available infrastructure and community services. These growth-oriented goals and policies will result in the City's population substantially exceeding the City's projected population in the SCAG regional plan. The FGPUZA will also change land uses, housing, and growth projections for the City. While these changes are consistent with SCAG's RHNA directives, they may not be in fully consistent with SCAG's 2020 RTP/SCS sub-regional forecasts. Once the next RTC/SCS is adopted (likely in 2024) it will accommodate the new land uses that will be included in the City's updated General Plan. The City cannot feasibly resolve this inconsistency in adopted plans at this time, but it can accommodate anticipated future growth at the local level. The potential population and housing impacts of future development under the FGPUZA are considered to be consistent with the Connect SoCal goals as previously shown in Land Use Section 4.9 Table 4.9-2. Therefore, impacts related to unplanned population growth are less than significant and no mitigation is required.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Housing Growth

Impact POP-2 – Would the FGPUZA displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Analysis of Impacts

The FGPUZA does not propose any policies that are intended to or that would indirectly result in displacement or demolition of any permanent or temporary residential structures. Overall, the FGPUZA policies would increase the number of housing units in the Planning Area. According to SCAG estimates, the City's housing stock consisted of 47,300 total units and the City was the place of employment for 56,600 workers in 2020 (SCAG 2020). Under the proposed FGPUZA, the housing stock in the Planning Area would increase from 48,257 dwelling units in 2020 to 68,499 dwelling units in 2040, representing an increase of more than 40%. According to SCAG estimates, the number of households in the City is anticipated to increase from 47,300 in 2020 to 48,200 in 2040, which only represents an increase of 1.9%. Therefore, potential housing growth under the FGPUZA would exceed the projected growth forecast from the current SCAG RTP/SCS (SCAG 2020). The anticipated growth under the FGPUZA is substantially greater than that indicated in SCAG's sub-regional forecasts for the City in its 2020-2045 RTP/SCS regional plan (SCAG 2020). Since the City is essentially built out with little vacant land left, this substantial amount of additional housing would have to be accommodated by the incremental replacement of existing units including older multi-family buildings, as well as conversion of commercial or industrial buildings to mixed-use projects that include new homes.

This amount of growth from the FGPUZA is the direct result of the City having to meet its RHNA housing allocation. The Land Use Element Goals LU-1 through LU-17 in many ways encourage new and innovative ways to add housing to the City in the future to achieve the RHNA allocation which will result in a substantial increase in housing. Over time, some older existing structures would be removed due to deterioration, while others may be replaced by more efficient and valuable land uses. Redevelopment would also occur whether or not the proposed FGPUZA is adopted, as market conditions result in the recycling of older homes to newer ones. Given the built-out nature of the City, some amount of existing housing would most likely have to be redeveloped which potentially could temporarily displace existing units and/or residents, although implementation of the FGPUZA will result in much greater housing opportunities in the City overall. While there may be individual, site specific instances in the future where a new development has the potential to displace residents, this potential already exists, regardless of whether or not the FGPUZA is adopted.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Cumulative Growth

Impact POP-3 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to population and housing?

Analysis of Impacts

As discussed in Impacts POP-1 and POP-2 above, the anticipated population and housing growth under the FGPUZA is substantially greater than that indicated in SCAG's sub-regional forecasts for the City in its 2020-2045 RTP/SCS regional plan (SCAG 2020). Since the City is essentially built out with little vacant land left, this substantial amount of additional housing and related population growth would have to be accommodated by incremental loss of existing units, including older multi-family buildings, as well as conversion of commercial or industrial buildings to mixed use projects.

The addition of almost 20,000 units in the City (due to the RHNA allocation) would also result in direct and indirect impacts in the surrounding region. To achieve the RHNA allocation, the Land Use Element Goals LU-1 through LU-17 necessarily encourage new and innovative ways to increase housing in the City in the future to achieve the RHNA allocation. If the Land Use Element and other elements of the General Plan were modified to reduce housing (and indirectly population) growth to be consistent with SCAG's 2020-2045 RTP/SCS regional plan, then the City could not meet its future RHNA housing allocation.

The City's growth-oriented goals and policies will eventually result in the City's housing and population substantially exceeding the growth in the SCAG regional plan. While these changes are consistent with SCAG's RHNA directives, they may not be fully consistent with SCAG's 2020 RTP/SCS sub-regional forecasts. Once the next RTC/SCS is adopted (likely in 2024) it will accommodate the new land uses that will be included in the City's updated General Plan. The City cannot feasibly resolve this inconsistency in adopted plans at this time, but it can accommodate anticipated future growth at the local level. The potential population and housing impacts of future development under the FGPUZA are considered to be consistent with the Connect SoCal goals as previously shown in Land Use Section 4.9 Table 4.9-2. Therefore, potential cumulative impacts related to population and housing growth are considered to be less than significant and no mitigation is required.

Level of Significance Before Mitigation

Less than significant contribution to any regional significant cumulative impact.

Mitigation Measures

None required.

4.11.5 – REFERENCES

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4.12 – Public Services

This EIR chapter addresses public services impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes public services impacts identified by the CEQA Guidelines: whether the FGPUZA will result in substantial adverse physical impacts associated with the provision of public services and public service facilities which could cause significant environmental impacts.

4.12.1 – ENVIRONMENTAL SETTING

Public Services include fire protection, police protection, schools, parks and recreation facilities, and libraries. These services are discussed below.

Fire Protection

The Orange County Fire Authority (OCFA) has been responsible for fire protection services in the City of Garden Grove since 2019, and responds to fire emergencies, release of hazardous toxic substances, and medical emergencies from seven Fire Stations located within the Planning Area. Exhibit 4.12-1 (Fire Station Locations) shows the locations of fire stations throughout Garden Grove (Garden Grove, 2008a). Fire Station No. 80 is located at 14162 Forsyth Lane, Fire Station No. 81 is located at 11261 Acacia Parkway, Fire Station No. 82 is located at 11805 Gilbert Street, Fire Station No. 83 is located at 12132 Trask Avenue, Fire Station No. 84 is located at 12191 Valley View Street, Fire Station No. 85 is located at 12751 Western Avenue, and Fire Station No. 86 is located at 12232 West Street (OCFA 2021a). The OCFA's stated standard of service for urban areas is 7:22 minutes total response time 80% of the time (OCFA 2021b). In addition, the national-accepted standard for fires and basic life support is five minutes or less while the standard for advanced life support is eight minutes or less (NFPA 2021).

Police Protection

The Garden Grove Police Department, located at 11301 Acacia Parkway in Garden Grove, provides comprehensive police protection services within the Planning Area. Garden Grove Police Department's Community Policing philosophy is the foundation of the department's Community Relations Program (Garden Grove, 2008a). The Community Policing philosophy is based on community input, the use of creative problem-solving strategies which encourages officer and community generated solutions, a value system where all persons contacted are treated with dignity and respect, and a problem- solving orientation in which the actual problem is addressed, not merely the symptoms. The Department includes three divisions: the Community Policing Bureau, Support Services Bureau, and Administrative Services Bureau. The Department is divided into an East and a West Division with 43 sworn officers assigned to serve each Division (86 total sworn officers). Including sworn officers, the Department employs a total of 286 persons.

Community Policing Bureau. The Community Policing Bureau is comprised of a Chief's Advisory Council (CAC), a Community Liaison Division, a Civilian Report Writing Unit, a Gang Suppression Unit, a Canine Unit, a Patrol Division, a Neighborhood Traffic Unit, a Resort Services Team, a Special Investigations Unit, and a Special Weapons and Tactics (SWAT) Unit.

Support Services Bureau. The Garden Grove Police Department's Support Services Bureau includes the Police Cadet Program, the Communications Division, the Police Explorers, the Investigations Unit, Reserve Officers, and the Youth Services Unit. The Department maintains a number of community programs including neighborhood watch, security inspections, operation identification, emergency preparedness, citizen academy, vacation home checks, volunteers in policing (VIP), school safety programs, child safety, bicycle safety, gang awareness, and substance abuse education. The Department also participates in the "Be Well OC" program which is intended to bring together a robust, community-based, cross-sector strategy—public, private, academic, faith and others—to create a community-wide, coordinated ecosystem to support optimal mental health.

Administrative Services Bureau. The Garden Grove Police Department's Administrative Services Bureau consists of the Professional Standards Division and the Planning and Research Division.

Schools

Planning Area residents are served by the Garden Grove Unified School District. The District serves residents in the Cities of Garden Grove, Stanton, Westminster, Fountain Valley, and Santa Ana (GGUSD, 2020). As shown in Exhibit 4.12-2 (Garden Grove Unified School District Map), the District includes 47 Elementary Schools (34 in Garden Grove, 1 in Stanton, 4 in Westminster, 3 in Fountain Valley, 5 in Santa Ana), 10 Middle Schools (8 in Garden Grove, 1 in Westminster, 1 in Santa Ana), and 8 High Schools (6 in Garden Grove, 1 in Westminster, 1 in Fountain Valley). Together these schools enroll approximately 45,000 students.

Parks and Recreation Facilities

<u>Parks</u>

Parks within the City are categorized into three types that provide a range of passive and active recreation facilities. The three types of parks are community parks, neighborhood parks, and mini park. The National Recreation and Parks Association (NRPA) typically classify parks by their size (acreage), with larger parks serving a wider community by providing more amenities. The NRPA classifications are community parks (10 to 40 acres), neighborhood parks (1 to 10 acres), and mini parks (less than 1 acre). Garden Grove optimizes the use of its available park space and provides amenities, activities, and programs where they can best be located. For example, Eastgate Park, while only 4.5 acres, has a pool facility (Gary Hall pool) and basketball courts. It also hosts regional summer concerts and is one site for the Spring/Summer and Fall Aquatics Program. Such amenities and activities would typically be found in a park with more acreage.

Garden Grove chooses to classify parks based on amenities provided rather than the amount of land. Community parks are equipped with facilities that provide active and passive recreation opportunities for the entire community and range from 3 to 40 acres in size. Neighborhood parks provide more flexible and passive recreation amenities that serve the local neighborhood and range from 1 to 10 acres in size. A mini park provides a small oasis for relaxation and limited activities and is less than one acre. The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 2.0 acres of parkland per 1,000 persons. As shown in Exhibit 4.12-3 (Existing Parks and Recreation Facilities), the City currently owns 13 park properties and uses 4 public schools as additional park facilities through joint-use

agreements with the School District, totaling 123.8 acres of parkland (Garden Grove, 2008b; MIG, 2020). With a 2020 population of 174,801, the City currently has a ratio of 0.9 acres of parkland per 1,000 persons.

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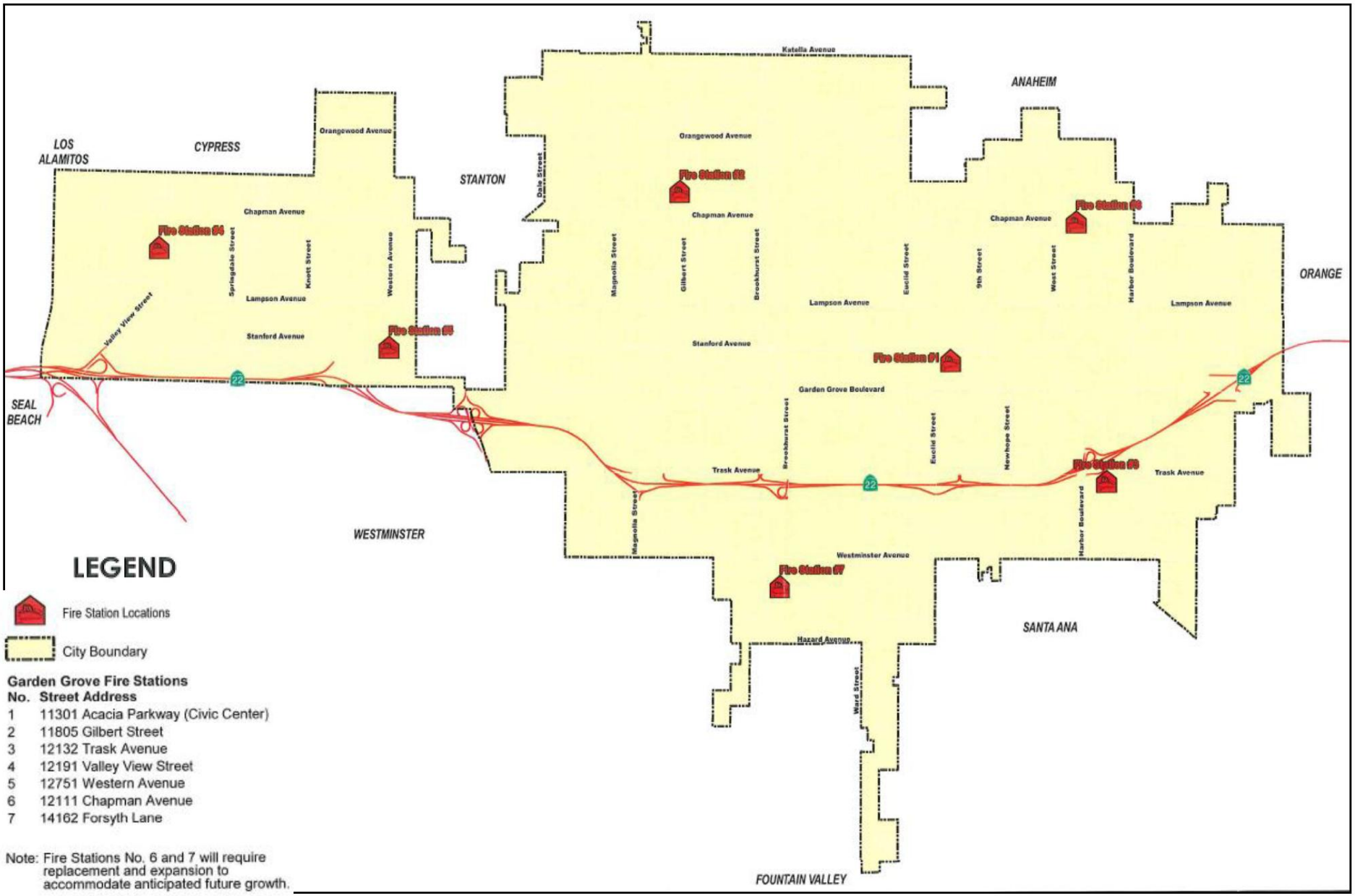

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Exhibit 4.12-1 Fire Station Locations

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

MIG

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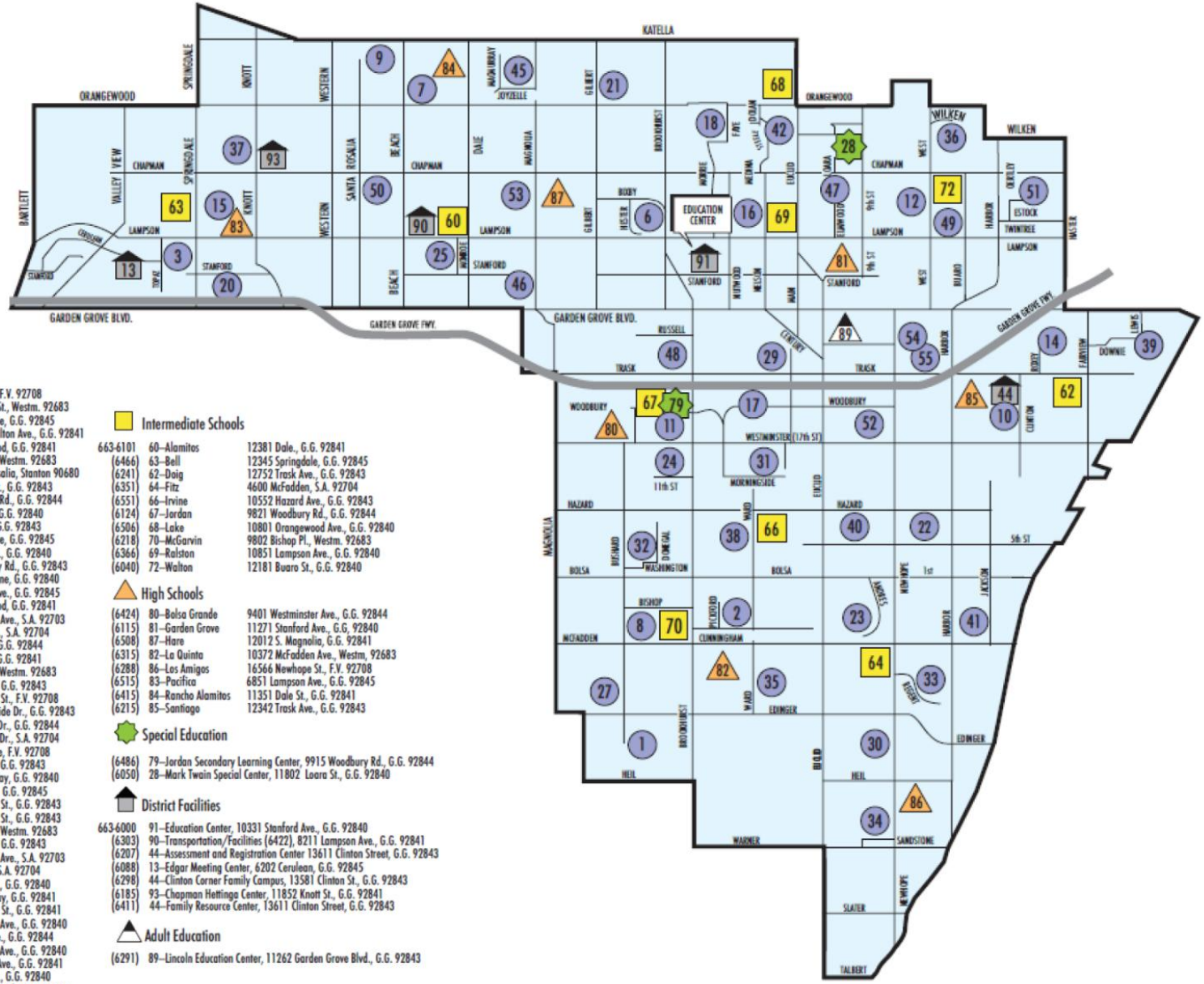

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Exhibit 4.12-2 Garden Grove Unified School District Map

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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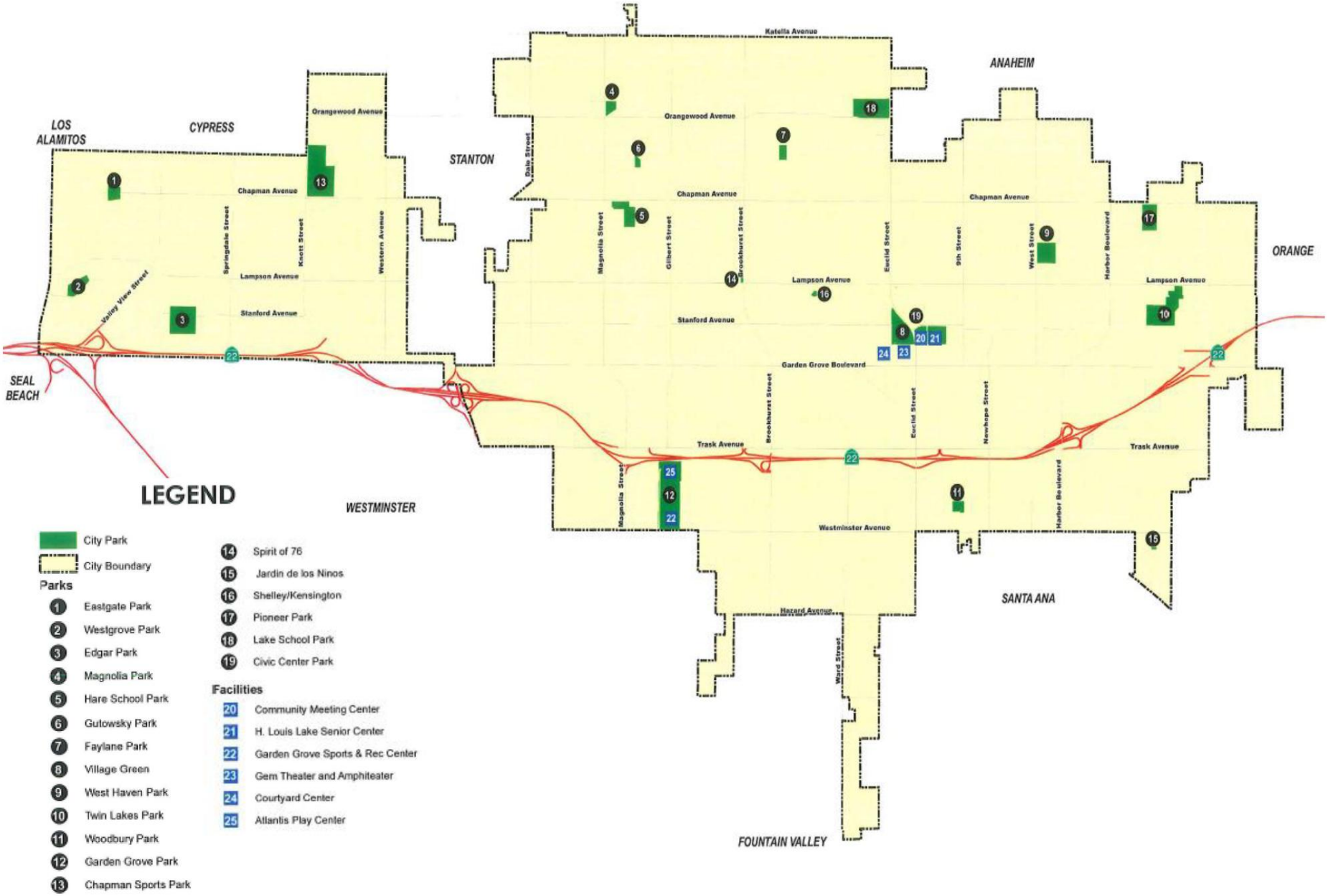

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Exhibit 4.12-3 Existing Parks and Recreation Facilities

Garden Grove Focused General Plan Update and Zoning Amendments

Garden Grove, California

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Table 4.12-1
Recreation Facilities and Amenities

Recreation Facility	Joint-Use School Park	Acres[1]	Swimming Pool	Multi-Purpose/ Soccer Field	Ball Fields	Basketball	Volleyball	Tennis	Play Equipment	Handball	Hockey	Multi-Purpose Building	Skate Park	Dog Park
Community Parks														
Chapman Sports Complex	*	11.0		6	1	2		6		6	1			
Civic Center		4.0												
Eastgate Park		4.5	1	1	1	2			1			1		
Garden Grove/ Atlantis Play Center/ Gymnasium		40.0		2	4	4	7		15			1	1	1
Hare School Park	*	14.0			7									
Magnolia Park		5.9	1			4		4	1	3		1		
West Grove Park		6.6		1		1			1			1		
Woodbury Park		3.3	1			1			2					
Twin Lakes Park		23.0[3]							1					
Village Green[2]		6.3							1			3		
Neighborhood Parks														
Edgar School Park	*	6.0		2					1	2		1		
Faylane Park		2.9				1			1					
Gutosky Park		2.1							1					
West Haven Park		10.0							1			1		
Pioneer Park	*	4.0							1					
Mini Parks														
Morningside School Park	*	1.0												
Spirit of 76		0.5												
Jardin de los Niños		0.7				1			2					
Shelley Kensington		0.3				2			1					

Recreation Facility	Joint-Use School Park	Acres[1]	Swimming Pool	Multi-Purpose/ Soccer Field	Ball Fields	Basketball	Volleyball	Tennis	Play Equipment	Handball	Hockey	Multi-Purpose Building	Skate Park	Dog Park
Total	***5***	***146.1***	***3***	***12***	***13***	***18***	***7***	***10***	***29***	***11***	***1***	***9***	***1***	***1***

Source: City of Garden Grove Parks, Recreation & Facilities Master Plan, October 2019.

[1] Acreage does not include Library Facility .

[2] One community building, one performing arts building, and one amphitheater

[3] Twin Lakes Park is a county facility within the City.

The recreation amenities available at each park are summarized in Table 4.12-1 (Recreation Facilities and Amenities). Primary recreation facilities include a gymnasium in Garden Grove Park and the Community Meeting Center and Senior Center in Civic Center Park. Over the last decade, the City has optimized park space to provide a variety of amenities, activities, and programs while still providing space for passive recreation (City 2019). The City currently has 183.8 acres of City-owned and joint-use park land which equals 1.05 acres per thousand population based on a 2020 population of 174,801 persons.

Open Space

As shown in Table 4.12-2, open space within the City consists of parks, school district properties, Orange County Transit Authority (OCTA) right-of-way, flood control facilities (retention basins, channels etc.), utility easements, and water well sites and reservoirs. Public schools consist of the largest proportion of open space in the City (Garden Grove, 2008b).

Table 4.12-2
Open Space

Open Space	Acreage
City Owned Parks[1]	123.8
Joint-Use Parks	60.0
Schools[2]	667.2
OCTA Right-of-Way	61.0
Flood Control Facilities[3]	60.0
SCE Easements	28.0
Water Wells and Reservoirs	6.0
TOTAL	**1,006.0**

1 - Includes 13.0 acres of water retention facility at Twin Lakes Park in joint-use with the County Flood Control District.

2- Includes public schools not currently under joint-use agreement.

3 - Does not include the water retention facility at Twin Lakes Park.

The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 5.0 acres of open space per 1,000 persons. As shown in Table 4.12-2, the City currently has 1,006 acres of open space (Garden Grove, 2008b; MIG, 2020). With a 2020 population of 174,801 persons, the City currently has a ratio of 5.8 acres of open space per 1,000 persons.

Trails

Recreational or multi-use trails support healthy activities in an urban area. Trails can be located in an existing park or within public rights-of-way and can connect neighborhoods to parks and commercial or employment areas. Currently, there is one dedicated recreational trail facility in Garden Grove, the one-mile Medal of Honor bike and pedestrian trail (Garden Grove, 2008b).

Bikeways

The following information is from the City's Active Streets Master Plan (City 2018). With the increased popularity of cycling as a form of recreation and alternate transportation, the City of Garden Grove has established bicycle routes to meet the growing demand for safe places to ride bicycles. All proposed and existing bikeway routes in Garden Grove and the surrounding area are classified as three different types of facilities, as shown on **Exhibit 4.12-4** (Master Plan of Bikeway Facilities). A Class I bicycle trail is a facility that is physically separated from a roadway and designated primarily for the use of bicycles. A Class II bicycle lane facility is a facility featuring a striped lane on the paved area of a road for preferential use by bicycles. A Class III bicycle route is a facility typically identified by green and white "Bike Route" guide signage only. Several Class III bikeway segments exist in Garden Grove. Along portions of Lampson and Trask Avenue, Class III facilities total 0.5 miles. Several Class II bikeways are being developed in the City which is working on a Bicycle Corridor Improvement Program (BCIP). The BCIP includes creating new Class II bike lanes through road re-balancing, striping buggers on existing bike lanes, striping bike lane network gaps, improving and creating bicycle routes, and providing wayfinding signage. These include:

- Brookhurst Street between Katella and Trask Avenue
- West Street between City Limit and Garden Grove Boulevard
- Gilbert Street between Katella Avenue and Westminster Avenue
- Chapman Avenue between Valley View and City limit
- Lampson Avenue between City limit and Haster Street

Located along portions of Lampson Avenue, Trask Avenue, Ward Street and 9th Street, Class II facilities total 22.75 miles. These Class II bicycle lane segments are located along the edge of the paved area outside the motor vehicle travel lanes and are restricted to vehicular parking. However, if sufficient pavement exists, the bicycle lane will be located between the parking lane and the outside motor vehicle travel lane. The three segments of bicycle routes in Garden Grove are characterized as bicycle facilities with typical widths of four feet (striping to curb), and widths of 12 feet (striping to curb) where on-street parking is permitted. One identified Class I bikeway is located along Knott Avenue and totals 0.5 miles in length. A second Class I bikeway is located along the Pacific Electric Right-of-Way (PE ROW) which begins at Nelson Street between Garden Grove Boulevard and Stanford Avenue and extends approximately one (1) mile west, and ends at Brookhurst Street. The trail includes a 12-foot wide bike path and an 8-foot wide pedestrian walkway. No existing bicycle parking facilities have been identified in the City. According to the City's Active Streets Master Plan, bike facilities that are most needed in

Garden Grove are those proposed constructed or completed along Lampson Avenue, Orangewood Avenue, Ninth Street, and Bushard Street. These routes have been proposed by the Orange County Environmental Management Agency (OCEMA) because they provide vital links to major activity centers, while allowing continuous travel from one regional route to another. Other routes needed, not in OCEMA's Master Plan, that would connect longer routes together, providing links to areas of the City not served by major routes, are routes along Springdale Street, Gilbert Street, and Ward Street (City 2018).

The City's BCIP design includes construction of 6.5 miles of new Class II bikeways and improvement to 8.35 miles of existing, but underutilized bikeways. Bicycle facility improvements include creating new bike lanes through road rebalancing (2.7 miles along West Street and Gilbert Street), striping buffers to existing bike lanes (5 miles on Brookhurst Street, Chapman Avenue and Lampson Avenue), striping bike lane network gaps (0.6 miles on Brookhurst Street), improving and creating bicycle routes (6.5 miles on Lampson Avenue, Gilbert Avenue, Imperial Avenue, and Deodara Drive) and provide bicycle wayfinding signs along all the corridors (total 14.85 miles).

Libraries

Orange County Public Libraries (OCPL) operates three public libraries within the Planning Area: the Main Library, located at 11200 Stanford Avenue; the Chapman Branch Library, located at 9182 Chapman Avenue; and the Tibor Rubin Library, located at 11962 Bailey Street.

4.12.2 – REGULATORY FRAMEWORK

Federal

Standardized Emergency Management System and National Incident Management System (SEMS). According to the State's SEMS, local agencies have primary authority regarding rescue and treatment of casualties and making decisions regarding protective actions for the community. When a major incident occurs the first few moments are critical in terms of reducing loss of life and property. First responders must be sufficiently trained to understand the nature and the gravity of the event to minimize the confusion that inevitably follows catastrophic situations. This on-scene authority rests with the local emergency services organization and the incident commander. Additional information regarding the City's SEMS program can be found in Section 4.9 Hazards and Hazardous Waste.

State

California Building Code. The 2019 California Building Code (CBC) became effective January 1, 2020, including Part 9 of Title 24, the California Fire Code. Section 701A.3.2 of the CBC has building requirements related to fire safety.

California Health and Safety Code (Sections 13000 et seq.). This code establishes State fire regulations, including regulations for building standards (also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

California Fire Code. The City of Garden Grove has adopted the 2019 California Fire Code, with amendments to address specific local conditions and needs. These provisions include construction standards and fire hydrant requirements, road widths and configurations designed

to accommodate the passage of fire trucks and engines, and requirements for minimum fire flow rates for water mains (see also OCFA below).

Regional

Orange County Fire Authority. The City contracts with the Orange County Fire Authority (OCFA) for fire protection and rescue services and emergency medical services. The OCFA also has mutual aid agreements with surrounding jurisdictions for assistance when needed during major fire events. The OCFA establishes incident command centers and emergency operation centers as necessary depending on the involved event.

Orange County Office of Emergency Management (OEM). The OEM has the responsibility of comprehensively planning for, responding to and recovering from large-scale emergencies and disasters that impact Orange County. OEM's work is accomplished in partnership and collaboration with first response agencies, as well as non-profit, private sector and government partners.

Education Code Section 17620. The Code allows school districts to assess fees on new residential and commercial construction within their respective boundaries. These fees can be collected without special city or county approval, to fund the construction of new school facilities necessitated by the impact of residential and commercial development activity. In addition, these fees can also be used to fund the reconstruction of school facilities or reopening schools to accommodate development-related enrollment growth. Fees are collected immediately prior to the time of the issuance of a building permit by the City or the County.

Leroy F. Greene School Facilities Act (1998). California Government Code Section 65995 sets base limits and additional provisions for school districts to levy development impact fees and to help fund expanded facilities to house new pupils that may be generated by the development project. Sections 65996(a) and (b) state that such fees collected by school districts provide full and complete school facilities mitigation under CEQA. These fees may be adjusted by the District.

Quimby Act (1975). The Quimby Act allows cities and counties to adopt park dedication standards/ordinances requiring developers to set aside land, donate conservation easements, or pay fees towards parkland. With the anticipated population growth, the City will use impact fees from development projects to fund park construction. The City has adopted an ordinance implementing the provisions of the Quimby Act (City Municipal Code Section 9.44.030 - In-Lieu Park Fees).

Local

City General Plan. The existing General Plan includes policies and programs to minimize potential damage and hazards to public services including, but not limited to, the following:

The updated Safety Element contains the following goals and policies regarding fire protection:

Goal SAF-5 Public harm from fire and health emergencies shall be minimized.

Policy SAF-5.1 Continue to develop and enforce construction and design standards related to fire protection.

Policy SAF-5.2 Ensure that the City has adequate resources to respond to health and fire emergencies, such as Fire Stations, personnel, and equipment.

SAF-IMP-5A Continue to require installation of automatic fire sprinkler systems in all new structures and existing structures undergoing substantial remodeling, and provide incentives for sprinkler installation in all other habitable structures.

SAF-IMP-5B Require that street addresses on commercial buildings be more readily visible to facilitate emergency response.

SAF-IMP-5C Continue to refer land development and building permit applications to the local fire district for review, and incorporate their recommendations as conditions of approval as necessary to ensure public safety.

SAF-IMP-5D Continue to require compliance with all provisions of the most recently adopted version of the California Fire Code (with local amendments).

SAF-IMP-5E Provide an adequate number of trained and certified emergency and medical technicians to address the increased medical demands due to an increase in residential density.

SAF-IMP-5F Continue to provide adequate staffing of fire response personnel based upon changing conditions, density, and development type.

SAF-IMP-5G Continue the Water Services Department's maintenance program dedicated to maintaining the quality of the City's water storage and distribution system, as well as to increase the water supply capacity.

SAF-IMP-5H Continue to participate in cooperative agreements with the County and appropriate cities to provide fire and medical services in an effective manner, and continue to explore opportunities to expand the programs provided through these agreements.

SAF-IMP-5I Adopt standards that set the number of personnel per response and response times (NFPA-1710).

SAF-IMP-5J Continue to implement and update, as necessary, the Fire Department's long-range plan and budget.

The updated Safety Element contains the following goals and policies regarding police protection:

Goal SAF-2: Crime reduction can be achieved through public facility and infrastructure improvements and the use of crime reducing design techniques.

Policy SAF-2.1 Remedy problems with existing public facilities that have the potential to encourage criminal activity

Policy SAF-2.2 Encourage Crime Prevention Through Environmental Design (CPTED) techniques; design that discourages crime and promotes pedestrian safety, for all new development and redevelopment projects.

Policy SAF-2.3 Identify specific high crime areas in the City and encourage and, when feasible, create plans/strategies to improve these areas.

Policy SAF-2.4 Work with law enforcement agencies and community groups to promote litter pick-up, graffiti removal, basic repairs, and other neighborhood beautification efforts.

SAF-IMP-2A Encourage site design using the following: increased pedestrian-level lighting, pedestrian routes that avoid blind corners and provide escape route choices, low fences or well-placed landscaping, and building entrances visible from public streets.

SAF-IMP-2B Encourage mixed use development throughout the City in order to decrease commercial areas that are left vacant during nighttime hours.

SAF-IMP-2C Involve law enforcement agencies in the design and planning phases of ABC licensed establishments to reduce design elements that conceal or encourage criminal activity.

SAF-IMP-2D Ensure that signage and street markings at crosswalks provide for pedestrian safety.

SAF-IMP-2E Involve law enforcement agencies in the design review of new and rehabilitated buildings to ensure basic safety measures and surveillance access are achieved.

SAF-IMP-2F Continue to locate police sub-stations in those areas of the City particularly vulnerable to crime.

SAF-IMP-2G Explore the use of new surveillance technologies that provide additional ways for the Police Department to monitor and more quickly respond to crime.

SAF-IMP-2H Develop, where necessary and feasible, a parking program for on-street parking in high crime residential neighborhoods.

The Parks, Recreation, and Open Space Element of the existing Garden Grove General Plan 2030 contains the following goals and policies regarding parks and recreation facilities:

Goal PRK-1 The City seeks to achieve a ratio of 2.0 acres of Parkland (which includes city-owned parks and joint-use school facilities) to every 1,000 persons to meet the needs of existing and future residents and employees.

Policy PRK-1.1 Explore the land acquisition feasibility of vacant land, empty housing lots, or abandoned properties for neighborhood park, mini or pocket parks, or tot lot purposes, in order to provide all existing neighborhoods with accessible parkland.

Policy PRK-1.2 Acquire additional lands for parks, as feasible.

Policy PRK-1.3 Allow for a variety of active and passive space for recreation and leisure use.

Policy PRK-1.4 Encourage the provision of parks and recreation space in new development and redevelopment projects.

Policy PRK-1.5 Encourage the development of linear parks along easements or rights-of-way, including but not limited to utility easements and the Orange County (OCTA) right-of-way.

Policy PRK-1.6	Encourage the development of additional Mini Parks to provide urban open space at a very small scale. Functions of Mini Parks shall vary as appropriate within each location and immediate neighborhood.
Policy PRK-1.7	Encourage the cooperation and coordination between City departments and public agencies, to provide recreation and leisure space through new development and as redevelopment occurs within Garden Grove.
Policy PRK-1.8	Continue to work with school districts or other agencies to maintain and, wherever feasible, expand the joint use facilities within the City.
Policy PRK-1.9	Continue to work with Orange County Flood Control District (OCFCD) and Orange County Transit Authority (OCTA) to lease and use right-of-way for passive recreation and trails.
PRK-IMP-1A	Develop a priority list to identify where additional parks and types of facilities are needed and seek community participation.
PRK-IMP-1B	Create a land feasibility plan to understand what land is available in the City for the creation of new parkland.
PRK-IMP-1C	When and where possible, consider the potential for additional parks or recreation facilities on public or private sites that can support a recreational activity such as vacant large buildings, undeveloped industrial properties, and/or existing underutilized parcels.
PRK-IMP-1D	Pursue available resources to fund facilities and parkland acquisition and development including Federal, State and local funding grants, or donations.
PRK-IMP-1E	Encourage coordination between the Community Services Department and the Community Development, Public Works, and Economic Development Departments to understand parkland and bikeway priorities, and secure available funding for new bikeways, parkland, and leisure spaces.
PRK-IMP-1F	Identify and focus funding resources on obtaining joint-use agreements with schools located in park deficient areas of the City.
PRK-IMP-1G	Coordinate with OCTA regarding the lease of land that will not preclude potential future development of rail.
PRK-IMP-1H	Coordinate with public agencies and utilities to acquire use of rights-of-way for restricted use by the public.
Goal PRK-3	Well-maintained and improved recreational parkland and facilities, both indoor and outdoor, provide the community with increased facility usage, along with encouraging healthy lifestyles and a sense of community pride in citywide facilities.
Policy PRK-3.1	Inventory existing parks and recreation facilities to determine rehabilitation needs through a periodic monitoring program, and establish the priority list for facility maintenance and/or rehabilitation.(completed in 2019)
Policy PRK-3.2	Encourage volunteerism and create a greater sense of stewardship for parks within each neighborhood and community through active public involvement programs.
PRK-IMP-3A	Use fiscally responsible rehabilitation and maintenance strategies to maintain and improve parks and facilities in need.

PRK-IMP-3B	Continue to utilize, and explore additional financing mechanisms for the operation and maintenance of existing facilities.
PRK-IMP-3C	Promote volunteer opportunities through various City media, including the City's website, cable channel and City publications.
Goal PRK-4	The City seeks to achieve a ratio of 5.0 acres of Open Space to every 1,000 persons to meet the needs of existing and future residents and employees.
Policy PRK-4.1	Preserve and enhance open space resources in Garden Grove.
Policy PRK-4.2	Continue to expand open space resources in Garden Grove.
Policy PRK-4.3	Promote visually appealing landscaped corridors, which contribute to a sense of spaciousness throughout the community.
Policy PRK-4.4	Encourage green spaces planted with a diverse plant palette in order to promote natural variety, ecosystem services, and enhance the well-being of community residents.
Policy PRK-4.5	Foster community participation and public participation programs regarding open space resources.
PRK-IMP-4A	Pursue available resources to fund open space acquisition including Federal, State and local funding grants, or donations.
PRK-IMP-4B	Encourage public volunteer programs that contribute to the preservation and maintenance of open space areas (such as Eagle Scouts).
PRK-IMP-4C	Partner with schools and colleges to foster an understanding and appreciation of open space among all age levels.
PRK-IMP-4D	Coordinate with OTCA to negotiate a lease of right-of-way lands and pursue available funding resource to create linear park through portions of the City.
Goal PRK-5	Public plazas or green spaces provide additional open space opportunities for existing and future residents and employees.
Policy PRK-5.1	Continue to require that adequate, usable, and permanent private open space is provided in residential developments.
Policy PRK-5.2	Encourage new and existing commercial, office, and industrial development to provide outdoor green spaces that may be used by employees.
Policy PRK-5.3	Encourage new development and redevelopment projects to incorporate gardens and green spaces with various cultural influences throughout the community to bridge cultures and provide education opportunities.
PRK-IMP-5A	Review and modify as necessary, open space requirements for different types of development projects.
Goal PRK-6	Safe, attractive, and accessible pedestrian trails provide additional recreational opportunities for Garden Grove residents and employees.
Policy PRK-6.1	Encourage pedestrian-oriented trails and amenities within and linkage to parks, new development and redevelopment projects, and commercial centers.
Policy PRK-6.2	Encourage the planning and development for on- and off-street pedestrian trails throughout the community by the Community Services Department.

Policy PRK-6.3 Explore public and private funding sources to provide additional pedestrian facilities within the City.

PRK-IMP-6A Work with adjacent property owners to create an interconnected trail that extends along the public right-of-way. A path will benefit business by increasing exposure and access, and benefit the community through encouraging fitness, improved access, and a connected community.

PRK-IMP-6B Coordinate with OCTA to provide trails within the right-of-way.

PRK-IMP-6C Design pedestrian trails/paths with multiple access points to maximize accessibility and minimize concentrating access.

PRK-IMP-6D Seek to create links between trails or new urban trails along the public right-of-way. Coordinate with City departments to create a method for modifying existing corridors to incorporate pedestrian trails along roadways.

PRK-IMP-6E Create design standards for trail development that includes distance markers (1/4, 1/2, and 1 mile), standardized signage, identifiable logo, street furniture, drinking fountain, and identifiable plant palette.

Municipal Code. The City of Garden Grove Municipal Code Section 9.44.030, In-Lieu Park Fees (Quimby), requires park dedication and/or in-lieu requirements for residential subdivisions for the purpose of providing park and recreational facilities to serve future residents of the City. Consistent with the General Plan, it was determined that the public interest, convenience, health, welfare and safety require that two (2.0) acres of land for each 1,000 persons residing within the City be devoted to public park and recreational purposes. Where there is no public park or recreation facility required or provided within or for the proposed subdivision, or where the subdivision contains 50 lots or fewer, the subdivider is required to pay a fee in-lieu of land dedication reflecting the value of land required for park and recreation purposes in accordance with the schedule of fees as adopted by Resolution of the City Council. This fee is required to reflect the amount of land that would otherwise be required to be dedicated under subsection 9.44.030.D multiplied by the estimated cost of land acquisition within the City.

4.12.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As identified in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

   i) Fire protection;

   ii) Police protection;

   iii) Schools;

   iv) Parks;

   v) Other public facilities.

B. Would the project cause substantial adverse cumulative impacts with respect to public services?

4.12.4 – IMPACTS AND MITIGATION MEASURES

New or Altered Government Services

Impact PUB-1 – Would the FGPUZA result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

I. Fire Protection

Analysis of Impacts

The FGPUZA is estimated to result in increases of approximately 20,242 dwellings and a reduction of 514,500 square feet of non-residential building space. The FGPUZA also projects an estimated increase of approximately 63,818 residents and 3,603 jobs for the 2040 horizon year. These additional homes, businesses, and residents will require a substantial increase in fire protection services since this is an increase of 35-40 percent in population and housing over existing conditions.

The Safety Element of the existing Garden Grove General Plan 2030 contains the following goals and policies regarding fire protection:

Goal SAF-5	Public harm from fire and health emergencies shall be minimized.
Policy SAF-5.1	Continue to develop and enforce construction and design standards related to fire protection.
Policy SAF-5.2	Ensure that the City has adequate resources to respond to health and fire emergencies, such as Fire Stations, personnel, and equipment.
SAF-IMP-5A	Continue to require installation of automatic fire sprinkler systems in all new structures and existing structures undergoing substantial remodeling, and provide incentives for sprinkler installation in all other habitable structures.
SAF-IMP-5B	Require street addresses on commercial buildings to more readily facilitate emergency response.
SAF-IMP-5C	Continue to refer land development and building permit applications to the local fire district for review, and incorporate their recommendations as conditions of approval as necessary to ensure public safety.
SAF-IMP-5D	Continue to require compliance with all provisions of the most recently adopted version of the California Fire Code (with local amendments).
SAF-IMP-5E	Provide an adequate number of trained and certified emergency and medical technicians to address the increased medical demands due to an increase in residential density.
SAF-IMP-5F	Continue to provide adequate staffing of fire response personnel based upon changing conditions, density, and development type.

SAF-IMP-5G Continue the Water Services Department's maintenance program dedicated to maintaining the quality of the City's water storage and distribution system, as well as to increase the water supply capacity.

SAF-IMP-5H Continue to participate in cooperative agreements with the County and appropriate cities to provide fire and medical services in an effective manner, and continue to explore opportunities to expand the programs provided through these agreements.

SAF-IMP-5I Adopt standards that set the number of personnel per response and response times (NFPA-1710).

SAF-IMP-5J Continue to implement and update, as necessary, the Fire Department's long-range plan and budget.

Table 4.12-3 (Fire Protection Facilities in the Planning Area), lists the station number, apparatus type, daily staffing, and 80th percentile response time for each of the fire stations located within the Planning Area. As shown in Table 4.12-3, the average 80th percentile response time for all seven fire stations in the Planning Area is 7 minutes and 36 seconds and the OCFA's standard of service is 7:22 minutes total response time 80% of the time (OCFA 2021). Therefore, the City's current response times for fire protection slightly exceed the OCFA's identified service standard (i.e. +16 seconds as shown in Table 4.2-3). This fire service level is functionally equivalent to the stated OCFA standards of cover for urban areas.

Table 4.12-3
Fire Protection Facilities in the Planning Area

Station No.	Apparatus Type	Daily Staffing	80th Percentile Response Time
80	Paramedic Engine	1 Captain, 1 Engineer, 2 Firefighters	0:07:38
81	Paramedic Truck, Battalion Chief Vehicle, Division Chief Vehicle	1 Captain, 1 Engineer, 2 Firefighters, 1 Battalion Chief, 1 Division Chief	0:07:38
82	Paramedic Engine	1 Captain, 1 Engineer, 2 Firefighters	0:07:48
83	Paramedic Engine	1 Captain, 1 Engineer, 2 Firefighters	0:07:26
84	Paramedic Engine	1 Captain, 1 Engineer, 2 Firefighters	0:07:16
85	Paramedic Truck	1 Captain, 1 Engineer, 2 Firefighters	0:08:03
86	Paramedic Engine	1 Captain, 1 Engineer, 2 Firefighters	0:07:20
Garden Grove 80th Percentile Response Time			***00:07:36***

Source: Correspondence with Tamera Rivers, Management Analyst, with Orange County Fire Authority.

OCFA has two types of members: Structural Fire Fund cities which pay OCFA through property taxes and Cash Contract cities which pay OCFA a designated amount through a contract (Rivers, 2021). Since OCFA owns the fire protection infrastructure (fire assets, fire apparatuses, and fire stations) in the Structural Fire Fund Cities, there is a Secured Fire Protection Agreement which is a pro rata fair share approach to maintaining infrastructure as those communities grow. However, since Cash Contract cities own their fire protection infrastructure and pay OCFA for fire protection services, Cash Contract cities are responsible for maintaining their own infrastructure as their communities grow. Cash Contract cities do this through collection of Development Impact Fees (DIF). When it is determined that a Structural Fire Fund city needs new or expanded fire protection infrastructure, OCFA chooses the location and funds the development. Conversely, when it is determined that a Cash Contract City needs new or expanded fire protection infrastructure, the City chooses the location and funds the development under the guidance of OCFA to ensure stations are built in accordance with OCFA Guidelines.

The City of Garden Grove has been a Cash Contract member city since 2019, and is responsible for maintaining its own fire protection infrastructure as it grows. The potential increase in City residents and land use intensity over time in the Planning Area from the proposed FGPUZA would result in a corresponding increase in demand for fire services and existing fire protection resources within the City. This increase would occur incrementally over the 20 year time horizon of the project As established by the OCFA, the City would, if needed, choose the location and fund the development of new or expanded facilities under the guidance of OCFA to ensure facilities are built in accordance with OCFA Guidelines. With payment of Development Impact Fees as development occurs in the future, projects developed within the Planning Area would fund its fair share of new fire facilities costs on a "pay as you go" basis to balance new growth with the need for expanded facilities: therefore, potential impacts of fire service demands would be less than significant.

As the type of built environment has changed in the City of Garden Grove, the OCFA has reviewed and adapted its operations and facilities. With the increase in taller, higher residential density or mixed-use projects, the OCFA has developed new requirements for building floor plans and determined areas in the City where an increase in facilities and support are needed. The OCFA will continue this flexible and proactive approach to fire protection service planning as the City of Garden Grove grows in the future. It is important to note this flexible planning process given the anticipated increase of almost 20,000 housing units over the next 20 years.

Fire Stations 80 and 86 recently underwent replacement and expansion to accommodate anticipated future growth[1]. Additionally, development within the Planning Area would be subject to current Orange County Fire Authority requirements for fire sprinkler systems, fire alarm systems, fire flow, and equipment and firefighter access, as well as fire code requirements. Compliance with these standards would be ensured through the plan check process prior to the issuance of building permits and would reduce the potential for fire emergencies at future project sites. The General Plan Safety Element also includes policies intended to provide an adequate number of trained and certified emergency and medical technicians to address the increased medical demands due to an increase in residential density as well as adequate staffing of fire response personnel based upon changing conditions, density, and development type.

Finally, based on the number of Fire Stations in the City, and their distribution throughout the Planning Area, it is expected that response times would remain within the OCFA's stated standard of a 7:22 minutes total response time 80% of the time (OCFA 2021b) For these reasons, the construction or expansion of existing fire facilities would not be required as a result of adoption of the proposed FGPUZA. Therefore, the proposed FGPUZA would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

[1] Station 86 was previously identified as Station 6 which was relocated and a new station was constructed at its current location

None required.

II. Police Protection

Analysis of Impacts

The 2040 planning horizon for the FGPUZA is estimated to result in increases of approximately 20,242 dwellings and a reduction of 514,500 square feet of non-residential building space. The FGPUZA also projects an estimated increase of approximately 63,818 residents and 3,603 jobs for the 2040 horizon year.

The Safety Element of the existing Garden Grove General Plan 2030 contains the following goals and policies regarding police protection:

Goal SAF-2	Crime reduction can be achieved through public facility and infrastructure improvements and the use of crime reducing design techniques.
Policy SAF-2.1	Remedy problems with existing public facilities that have the potential to encourage criminal activity.
Policy SAF-2.2	Encourage Crime Prevention Through Environmental Design (CPTED) techniques, design that discourages crime and promotes pedestrian safety, for all new development and redevelopment projects.
Policy SAF-2.3	Identify specific high-crime areas in the City and encourage and, when feasible, create plans/strategies to improve these areas.
Policy SAF-2.4	Work with law enforcement agencies and community groups to promote litter pick-up, graffiti removal, basic repairs, and other neighborhood beautification efforts.
SAF-IMP-2A	Encourage site design using the following: increased pedestrian-level lighting, pedestrian routes that avoid blind corners and provide escape route choices, low fences or well-placed landscaping, and building entrances visible from public streets.
SAF-IMP-2B	Encourage mixed use development throughout the City in order to decrease commercial areas that are left vacant during nighttime hours.
SAF-IMP-2C	Involve law enforcement agencies in the design and planning phases of ABC licensed establishments to reduce design elements that conceal or encourage criminal activity.
SAF-IMP-2D	Ensure that signage and street markings at crosswalks provide for pedestrian safety.
SAF-IMP-2E	Involve law enforcement agencies in the design review of new and rehabilitated buildings to ensure basic safety measures and surveillance access are achieved.
SAF-IMP-2F	Continue to locate police sub-stations in those areas of the City particularly vulnerable to crime.
SAF-IMP-2G	Explore the use of new surveillance technologies that provide additional ways for the Police Department to monitor and more quickly respond to crime.

SAF-IMP-2H Develop, where necessary and feasible, a parking program for on-street parking in high crime residential neighborhoods.

The Garden Grove Police Department is divided into an East and a West Division with 43 sworn officers assigned to each Division (86 total sworn officers). Including sworn officers, the Department employs a total of 286 persons. In the Planning Area, the average response time from February 6 through March 15, 2021 was 5 minutes and 57 seconds in the West Division and 4 minutes and 43 seconds in the East Division for a City-wide average of 5 minutes and 20 seconds (Burillo, 2021). The increased land use intensity in the Planning Area will incrementally increase the frequency of emergency and non-emergency calls to the Garden Grove Police Department compared with existing conditions. On a national level, five minutes is generally accepted as a goal for response to emergency calls (NPF 2021).

Under the proposed FGPUZA, the Planning Area is anticipated to support a population of up to 238,619 by 2040 which would represent an increase of 36.5% over existing 2020 conditions. During the same period, the housing stock in the Planning Area supported by the FGPUZA could increase from 48,257 units in 2020 to up to 68,499 units epresents an increase of more than 40%. However, this increased development as a result of the proposed FGPUZA would occur incrementally over a period of 20 years and is not anticipated to increase demand for police protection to the extent that new facilities would be required. Police service expansion to serve the increased population and housing would mainly require increased patrol and administrative staffing. While new development would increase demand on police protection services, such demand would be offset with payment of Development Impact Fees .. The General Plan goals and policies allow the City to proactively plan for future public facility needs such as police stations and related improvements, as well as service expansion as the City's population and housing stock increases in the future. At a programmatic level, the proposed FGPUZA would not result in substantial adverse physical impacts associated with the provision of new or physically altered police facilities. Impacts in this regard resulting from the proposed FGPUZA would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

III. Schools

Analysis of Impacts

The 2040 planning horizon for the FGPUZA is estimated to result in increases of approximately 20,242 dwellings and a reduction of 514,500 square feet of non-residential building space. The FGPUZA also projects an estimated increase of approximately 63,818 residents and 3,603 jobs for the 2040 horizon year.

Planning Area residents are served by the Garden Grove Unified School District. The District serves residents in the Cities of Garden Grove, Stanton, Westminster, Fountain Valley, and Santa Ana (GGUSD, 2020). The District includes 47 Elementary Schools (34 in Garden Grove, 1 in Stanton, 4 in Westminster, 3 in Fountain Valley, 5 in Santa Ana), 10 Middle Schools (8 in

Garden Grove, 1 in Westminster, 1 in Santa Ana), and 8 High Schools (6 in Garden Grove, 1 in Westminster, 1 in Fountain Valley). Together these schools enroll approximately 45,000 students.

According to Jerry Hills, Director of Public Facilities at the Garden Grove Unified School District, enrollment has been dropping in recent years and most schools in the district have available student capacity (Hills, 2020). While the proposed FGPUZA would increase the number of students in the Planning Area by up to 4,986 students over a period of 20 years, it is likely this increase could be absorbed due to the declining districtwide enrollment. Projects within the Planning Area would also be required to pay school fees to the District. Development Impact Fees finance the construction and/or reconstruction of school facilities needed to accommodate students coming from new development. Development Impact Fees are charged by the District for residential, industrial and commercial construction, pursuant to Education Code Section 17620 and California Government Code Section 65995. As stated in California Government Code Section 65996, payment of school impact fees in accordance with California Government Code Section 65995 and/or Education Code Section 17620 is deemed to constitute full and complete mitigation for potential impacts to schools caused by development. For these reasons, impacts related to the need for new school facilities as a result of implementing the proposed FGPUZA would be less than significant**.**

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

IV. Parks

Analysis of Impacts

The residents, employees, and visitors of the Planning Area could use nearby parks and recreation facilities. The 2040 planning horizon for the FGPUZA is estimated to result in increases of approximately 20,242 dwellings and a reduction of 514,500 square feet of non-residential building space. The FGPUZA also projects an estimated increase of approximately 63,818 residents and 3,603 jobs for the 2040 horizon year.

The Parks, Recreation, and Open Space Element of the existing Garden Grove General Plan 2030 (which is not amended by the FGPUZA) contains the following goals and policies regarding parks and recreation facilities:

Goal PRK-1	The City seeks to achieve a ratio of 2.0 acres of Parkland (which includes city-owned parks and joint-use school facilities) to every 1,000 persons to meet the needs of existing and future residents and employees.
Policy PRK-1.1	Explore the land acquisition feasibility of vacant land, empty housing lots, or abandoned properties for neighborhood park, mini or pocket parks, or tot lot purposes, in order to provide all existing neighborhoods with accessible parkland.
Policy PRK-1.2	Acquire additional lands for parks, as feasible.

Policy PRK-1.3	Allow for a variety of active and passive space for recreation and leisure use.
Policy PRK-1.4	Encourage the provision of parks and recreation space in new development and redevelopment projects.
Policy PRK-1.5	Encourage the development of linear parks along easements or rights-of-way, including but not limited to utility easements and the Orange County (OCTA) right-of-way.
Policy PRK-1.6	Encourage the development of additional Mini Parks to provide urban open space at a very small scale. Functions of Mini Parks shall vary as appropriate within each location and immediate neighborhood.
Policy PRK-1.7	Encourage the cooperation and coordination between City departments and public agencies, to provide recreation and leisure space through new development and as redevelopment occurs within Garden Grove.
Policy PRK-1.8	Continue to work with school districts or other agencies to maintain and, wherever feasible, expand the joint use facilities within the City.
Policy PRK-1.9	Continue to work with Orange County Flood Control District (OCFCD) and Orange County Transit Authority (OCTA) to lease and use right-of-way for passive recreation and trails.
PRK-IMP-1A	Develop a priority list to identify where additional parks and types of facilities are needed and seek community participation.
PRK-IMP-1B	Create a land feasibility plan to understand what land is available in the City for the creation of new parkland.
PRK-IMP-1C	When and where possible, consider the potential for additional parks or recreation facilities on public or private sites that can support a recreational activity such as vacant large buildings, undeveloped industrial properties, and/or existing underutilized parcels.
PRK-IMP-1D	Pursue available resources to fund facilities and parkland acquisition and development including Federal, State and local funding grants, or donations.
PRK-IMP-1E	Encourage coordination between the Community Services Department and the Community Development, Public Works, and Economic Development Departments to understand parkland and bikeway priorities, and secure available funding for new bikeways, parkland, and leisure spaces.
PRK-IMP-1F	Identify and focus funding resources on obtaining joint-use agreements with schools located in park deficient areas of the City.
PRK-IMP-1G	Coordinate with OCTA regarding the lease of land that will not preclude potential future development of rail.
PRK-IMP-1H	Coordinate with public agencies and utilities to acquire use of rights-of-way for restricted use by the public.
Goal PRK-3	Well-maintained and improved recreational parkland and facilities, both indoor and outdoor, provide the community with increased facility usage, along with encouraging healthy lifestyles and a sense of community pride in citywide facilities.

Policy PRK-3.1	Inventory existing parks and recreation facilities to determine rehabilitation needs through a periodic monitoring program, and establish the priority list for facility maintenance and/or rehabilitation.
Policy PRK-3.2	Encourage volunteerism and create a greater sense of stewardship for parks within each neighborhood and community through active public involvement programs.
PRK-IMP-3A	Use fiscally responsible rehabilitation and maintenance strategies to maintain and improve parks and facilities in need.
PRK-IMP-3B	Continue to utilize, and explore additional financing mechanisms for the operation and maintenance of existing facilities.
PRK-IMP-3C	Promote volunteer opportunities through various City media, including the City's website, cable channel and City publications.
Goal PRK-4	The City seeks to achieve a ratio of 5.0 acres of Open Space to every 1,000 persons to meet the needs of existing and future residents and employees.
Policy PRK-4.1	Preserve and enhance open space resources in Garden Grove.
Policy PRK-4.2	Continue to expand open space resources in Garden Grove.
Policy PRK-4.3	Promote visually appealing landscaped corridors, which contribute to a sense of spaciousness throughout the community.
Policy PRK-4.4	Encourage green spaces planted with a diverse plant palette in order to promote natural variety, ecosystem services, and enhance the well-being of community residents.
Policy PRK-4.5	Foster community participation and public participation programs regarding open space resources.
PRK-IMP-4A	Pursue available resources to fund open space acquisition including Federal, State and local funding grants, or donations.
PRK-IMP-4B	Encourage public volunteer programs that contribute to the preservation and maintenance of open space areas (such as Eagle Scouts).
PRK-IMP-4C	Partner with schools and colleges to foster an understanding and appreciation of open space among all age levels.
PRK-IMP-4D	Coordinate with OTCA to negotiate a lease of right-of-way lands and pursue available funding resource to create linear park through portions of the City.
Goal PRK-5	Public plazas or green spaces provide additional open space opportunities for existing and future residents and employees.
Policy PRK-5.1	Continue to require that adequate, usable, and permanent private open space is provided in residential developments.
Policy PRK-5.2	Encourage new and existing commercial, office, and industrial development to provide outdoor green spaces that may be used by employees.
Policy PRK-5.3	Encourage new development and redevelopment projects to incorporate gardens and green spaces with various cultural influences throughout the community to bridge cultures and provide education opportunities.
PRK-IMP-5A	Review and modify as necessary, open space requirements for different types of development projects.

Goal PRK-6	Safe, attractive, and accessible pedestrian trails provide additional recreational opportunities for Garden Grove residents and employees.
Policy PRK-6.1	Encourage pedestrian-oriented trails and amenities within and linkage to parks, new development and redevelopment projects, and commercial centers.
Policy PRK-6.2	Encourage the planning and development for on- and off-street pedestrian trails throughout the community by the Community Services Department.
Policy PRK-6.3	Explore public and private funding sources to provide additional pedestrian facilities within the City.
PRK-IMP-6A	Work with adjacent property owners to create an interconnected trail that extends along the public right-of-way. A path will benefit business by increasing exposure and access, and benefit the community through encouraging fitness, improved access, and a connected community.
PRK-IMP-6B	Coordinate with OCTA to provide trails within the right-of-way.
PRK-IMP-6C	Design pedestrian trails/paths with multiple access points to maximize accessibility and minimize concentrating access.
PRK-IMP-6D	Seek to create links between trails or new urban trails along the public right-of-way. Coordinate with City departments to create a method for modifying existing corridors to incorporate pedestrian trails along roadways.
PRK-IMP-6E	Create design standards for trail development that includes distance markers (1/4, 1/2, and 1 mile), standardized signage, identifiable logo, street furniture, drinking fountain, and identifiable plant palette.

The City expanded the 1995 General Plan Open Space Element to include the Parks and Recreation Element because these two issues are interconnected and vital to the health and well-being of the community. There is a significant difference between the two; Open Space includes a much broader category of open areas within the City while parkland is limited to the 17 park sites described in the Element. Open Space includes the City parks, all school district properties, Orange County Transit Authority (OCTA) rights-of-way, flood control facilities (retention basins, channels, etc.), utility easements and water well sites and reservoirs.

The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 2.0 acres of parkland per 1,000 persons. As shown in Exhibit 4.12-3 (Existing Parks and Recreation Facilities), the City currently owns 13 park properties and uses 5. public schools as additional park facilities through joint-use agreements with the School District, In addition Twin Lakes Park a County facility within the City limits, provides another 23 acres of parkland. Combining the City-owned parks, School District Joint use facilities and Twin Lakes park totals 146.1 acres of parkland (Garden Grove, 2008b; MIG, 2020). With a 2020 population of 174,801 persons, the City currently has a ratio of approximately 1.25 acres of parkland per 1,000 persons, which approximately 60% of the City's stated goal. Therefore, under existing conditions the City would need to acquire an additional 142.8 acres of parkland to meet its stated goal of 2.0 acres of parkland per 1,000 persons or 349.6 total acres. By 2040, it is estimated the City's population under the FGPUZA will increase to 238,619 persons which would require a total of 477.2 acres of parkland to achieve the 2.0 acres per thousand population ratio, an increase of 331.1 acres.

The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 5.0 acres of open space per 1,000 persons. As shown in Table 4.12-2, the City currently has 1,006 acres of open space (Garden Grove, 2008b; MIG, 2020). With a 2020 population of 174,801, the City currently has a ratio of 5.8 acres of open space per 1,000 persons, which is above the City's stated goal.

At buildout of the proposed FGPUZA, the Planning Area could have a population of up to 238,619. If the City's Parkland and Open Space area is not expanded, the 2040 ratios for the City would be 0.66 acres of parkland and 4.09 acres of open space per 1,000 persons. Therefore, the City would need to acquire an additional 331.1 acres of parkland and 214.7 acres of open space to meet its stated goals of 2.0 acres of parkland and 5.0 acres of open space per 1,000 residents. However, all new dwelling units developed under the proposed FGPUZA would be subject to Development Impact Fees (DIF) fees which would be used to provide additional park facilities. . For residential tentative tract maps, the City's Quimby Ordinance, requires dedication or in-lieu fee equivalent to 2.0 acres of parkland per 1,000 persons (Garden Grove Municipal Code Section 9.44.030). According to the City's Parks, Recreation & Facilities Park Master Plan, these park funding mechanisms will offset the incremental increase in demand for park facilities from implementation of the proposed FGPUZA (City 2019).

In addition, as detailed above, the General Plan 2030 Parks, Recreation, and Open Space Element includes goals and policies intended to maximize parkland and open space. Policy PRK-1.1 requires the City to explore the land acquisition feasibility of vacant land, empty housing lots, or abandoned properties for neighborhood parks, mini or pocket parks, or tot lot purposes, in order to provide all existing neighborhoods with accessible parkland. Policy PRK-1.4 encourages the provision of parks and recreation space in new development and redevelopment projects. Policy PRK-1.5 encourages the development of linear parks along easements or rights-of-way, including but not limited to utility easements and the Orange County Transit Authority right-of-way. Policy PRK-1.7 encourages cooperation and coordination between City departments and public agencies to provide recreation and leisure space through new development and as redevelopment occurs within Garden Grove. Implementation Measure PRK-IMP-1A requires the City to develop a priority list to identify where additional parks and types of facilities are needed and seek community participation. Implementation Measure PRK-IMP-1C requires that when and where possible, the City should consider the potential for additional parks or recreation facilities on public or private sites that can support a recreational activity such as vacant large buildings, undeveloped industrial properties, and/or existing underutilized parcels. Policy PRK-5.1 requires that adequate, usable, and permanent private open space be provided in residential developments.

For the above reasons, impacts to existing recreational facilities would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

V. Other Public Facilities

Analysis of Impacts

Other public facilities and services provided within the Planning Area include libraries. Orange County Public Libraries (OCPL) operates three public libraries within the Planning Area: the Main Library, located at 11200 Stanford Avenue; the Chapman Branch Library, located at 9182 Chapman Avenue; and the Tibor Rubin Library, located at 11962 Bailey Street. Garden Grove Hospital and Medical Center is located at 12601 Garden Grove Boulevard.

The 2040 planning horizon for the FGPUZA is estimated to result in increases of approximately 20,242 dwellings and a reduction of 514,500 square feet of non-residential building space. The FGPUZA also projects an estimated increase of approximately 63,818 residents and 3,603 jobs for the 2040 horizon year. The limited size and aging condition of the three libraries and the hospital in the Planning Area makes it difficult to satisfy rising demand for services and the need to modernize and keep pace with 21st century information technologies. The Chapman Library was originally constructed in 1964 and underwent a renovation/expansion in 2014, while the Tibor-Rubin Library was constructed in 1965 and underwent renovation/expansion in 2015. The Main Library has not been renovated/expanded since its initial construction in 1969; however, the City is in the initial planning phases for a similar renovation/expansion at the Chapman and Tibor-Rubin branches. The residents, employees, and customers of the Planning Area will likely continue to use the City's library services in the future, but the public use of similar internet-based services will likely blunt the potential increase in use of library facilities in the future. In addition, the prevalence of new kinds of post K-12 instruction and technology related to literacy has eased the direct demand on library facilities in recent years. As the functions and service demands for particular services for public libraries continues to evolve and the City grows, the City will continue to assess growth in demand for library services. However it is anticipated that existing libraries would be able to accommodate the incremental increase in demand for services due to implementation of the proposed FGPUZA on the campuses of the three existing libraries. As such, substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Cumulative Impacts

Would the FGPUZA cause substantial adverse cumulative impacts with respect to public services?

Analysis of Impacts

The proposed FGPUZA does not include specific development projects. Development projects in the Planning Area would generally increase the land use intensities in the service areas for the Orange County Fire Authority and the Garden Grove Police Department, potentially causing

incremental and cumulative increases in the number of calls for fire and/or police protection services. Development of residential projects within the boundaries of the Garden Grove Unified School District would lead to incremental increases in the number of students served by the district. Development of residential projects in the Planning Area would also lead to increases in the number of people who use the City's park and library facilities.

However, the increase in demand for public services in the City attributable to the FGPUZA would be incremental as growth occurs over a period of 20 years and would be offset by Development Impact Fees. Projects constructed within the Planning Area over the life of the Plan would also be required to be developed in accordance with applicable fire codes and emergency access requirements. Compliance with these requirements would help prevent and/or ameliorate fire emergencies (automatic sprinkler systems and fire alarms) and would help facilitate more expedient emergency response (adequate fire flows, turning radii, width of emergency accesses). Similarly, the FGPUZA has been designed to improve public safety through design practices, enhanced lighting, and updated wayfinding signage. For example, the Safety Element of the existing Garden Grove General Plan 2030 contains the following goals, policies, and implementation programs in this regard:

Goal SAF-2	Crime reduction can be achieved through public facility and infrastructure improvements and the use of crime-reducing design techniques.
Policy SAF-2.2	Encourage Crime Prevention Through Environmental Design (CPTED) techniques, design that discourages crime and promotes pedestrian safety, for all new development and redevelopment projects.
SAF-IMP-2A	Encourage site design using the following: increased pedestrian-level lighting, pedestrian routes that avoid blind corners and provide escape route choices, low fences or well-placed landscaping, and building entrances visible from public streets.
SAF-IMP-2B	Encourage mixed use development throughout the City in order to decrease commercial areas that are left vacant during nighttime hours.
SAF-IMP-2D	Ensure that signage and street markings at crosswalks provide for pedestrian safety.
SAF-IMP-2E	Involve law enforcement agencies in the design review of new and rehabilitated buildings to ensure basic safety measures and surveillance access are achieved.

These design practices and operational practices would lessen the demand for police protection services within the Planning Area. The Orange County Fire Authority reviews fire station placement and fire services through its annual budget process, and resources are expanded or reassigned as necessary to meet increases in service demands. Similarly, the Garden Grove Police Department annually evaluates its service needs. Payment of Development Impact Fees by future projects in the service areas of the OCFA and the Garden Grove Police Department would offset the costs of increased service needs as necessary and would ensure that performance objectives for fire and police services are not substantially affected by incremental increases in land use intensity within service areas. The need for new facilities as a result of these development projects has not been identified by either department.

Regarding school services, the contribution of future projects within the Planning Area to increased demand for such services would be minor. The district that serves the Planning Area

has verified its ability to accommodate increases in students resulting from development projects through the collection of development impact fees. As such, the increases in student enrollment resulting from future projects that fall within the service area of Garden Grove Unified School District would be accommodated within the district's existing facilities, and no new facilities would be required. The proposed FGPUZA in combination with other projects in the area would not result in the need for new school facilities.

Potential cumulative impacts with respect to incremental increases in demand for parks would be offset by required DIF fees and Quimby ordinance dedications/fees.

Finally, cumulative impacts to library and hospital facilities would be less than significant through continued assessment of demands and improvements in technology that will ease direct demand on these facilities.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

4.12.5 – REFERENCES

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4.13 – Recreation

This EIR chapter addresses recreation impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes recreation impacts identified by the CEQA Guidelines including whether the FGPUZA will: increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated and whether the FGPUZA will include recreational facilities or requires the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

4.13.1 – ENVIRONMENTAL SETTING

Parks and Recreation Facilities

Parkland. As shown in Exhibit 4.16-1 (Existing Parks and Recreation Facilities), the City currently owns 13 park properties and uses 4 public schools as additional park facilities through joint-use agreements with the School District, totaling 122.8 acres (Garden Grove, 2019). Parks within the City are categorized into three types that provide a range of passive and active recreation facilities. The three types of parks are community parks, neighborhood parks, and mini parks. The National Recreation and Parks Association (NRPA) typically classify parks by their size (acreage), with larger parks serving a wider community by providing more amenities. The NRPA classifications are community parks (10 to 40 acres), neighborhood parks (1 to 10 acres), and mini parks (less than 1 acre). Garden Grove optimizes the use of its available park space and provides amenities, activities, and programs where they can best be located. For example, Eastgate Park, while only 4.5 acres, has a pool facility (Gary Hall pool) and basketball courts. It also hosts regional summer concerts and is one site for the Spring/Summer and Fall Aquatics Program.

Garden Grove chooses to classify parks based on amenities provided rather than the amount of land. Community parks are equipped with facilities that provide active and passive recreation opportunities for the entire community and range from 3 to 40 acres in size. Neighborhood parks provide more flexible and passive recreation amenities that serve the local neighborhood and range from 1 to 10 acres in size. A mini-park provides a small oasis for relaxation and limited activities and is less than one acre. The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 2.0 acres of parkland per 1,000 persons. With a 2020 population of 174,801, the City currently has a ratio of 0.9 acres of parkland per 1,000 persons.

The City of Garden Grove is part of the larger fabric of Southern California, where cities are barely distinguishable from each other as they extend across the entire region. While Garden Grove has its own parkland that is calculated separately, it also is ideally located to take advantage of numerous regional recreation areas and facilities in other cities. The beaches of Southern California are renowned attractions that provide recreation within driving distance of the City, a fact acknowledged in the name of arterial streets such as Harbor Boulevard and Beach Boulevard. There is Mile Square Park in Fountain Valley, the Santa Ana River bike trail, and golf courses abutting Garden Grove in several cities. Other county recreational venues include Disneyland and California Adventure (Anaheim), Knott's Berry Farm (Buena Park) and professional sports arenas.

Still, providing parks that are community places for recreation and relaxation within the City remains a high priority and will continue to be important with the anticipated population growth. Exhibit 4.16-2 (Parkland Service Area) identifies park service areas in the City and neighborhoods that are not currently located within reasonable distance from a park (one-half mile radius from a community or neighborhood park, one-fourth mile from a mini park).

Park Facilities and Recreational Programs. The City of Garden Grove aims to provide well designed and maintained facilities, along with high quality programs, encourage use that fosters an active and healthy community. Recreational programs offered by the Community Services Department play an important role in creating a healthy community through diverse and innovative recreational programming. The Community Services Department provides space to:

- Foster human development, focusing on children, youth, and seniors
- Increase cultural unity
- Promote healthy and wellness
- Provide recreational experiences
- Strengthen community image and sense of place
- Support economic development
- Strengthen safety and security

The programs and activities offered by the Community Service Department provide essential community benefits, including:

- Healthier residents
- Sense of well-being in the community
- Safer neighborhoods
- A higher quality of life
- Opportunities for children, youth, and seniors
- Partnership opportunities with community organizations
- Cultural expression and unity

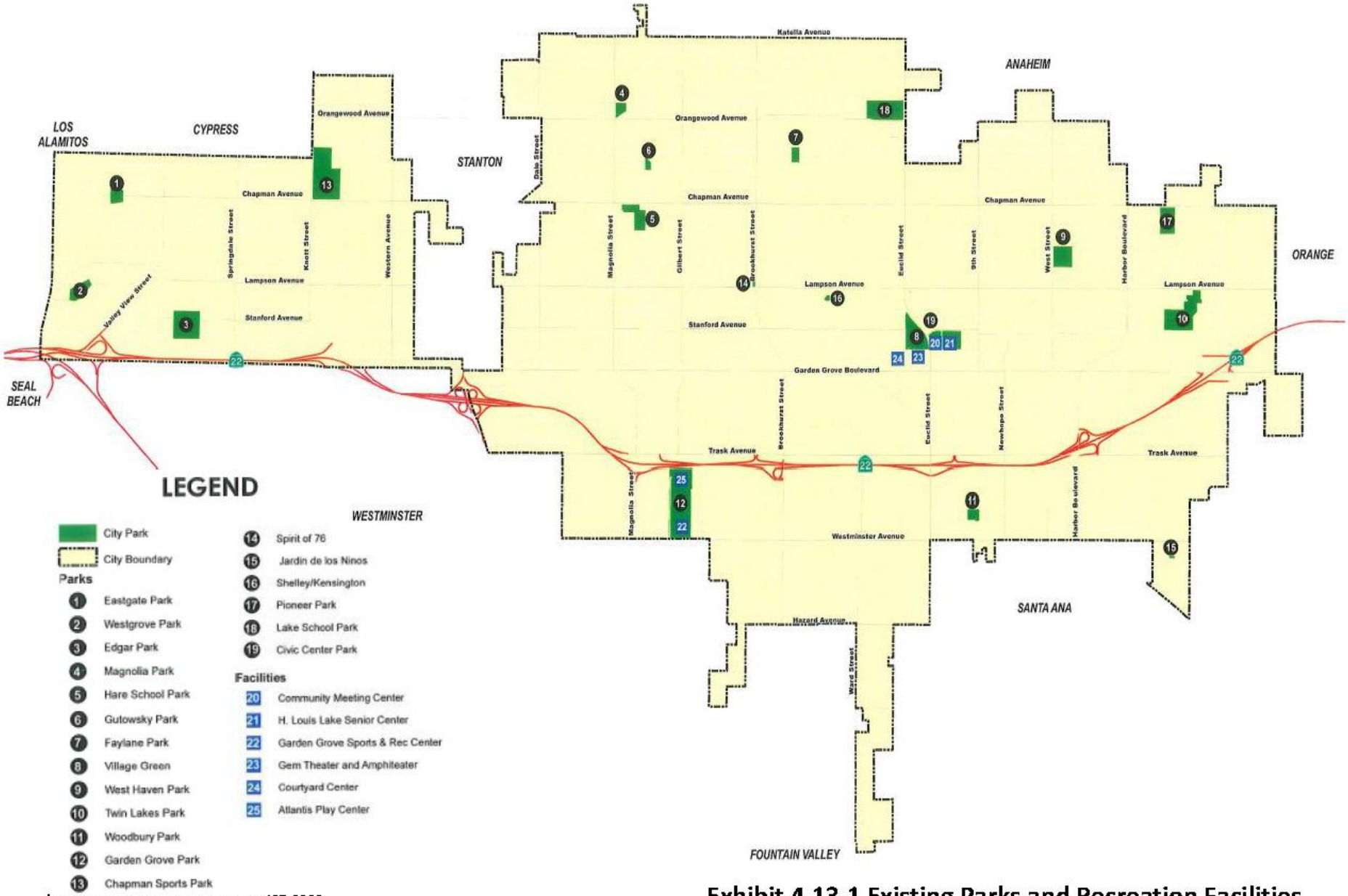

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Exhibit 4.13-1 Existing Parks and Recreation Facilities

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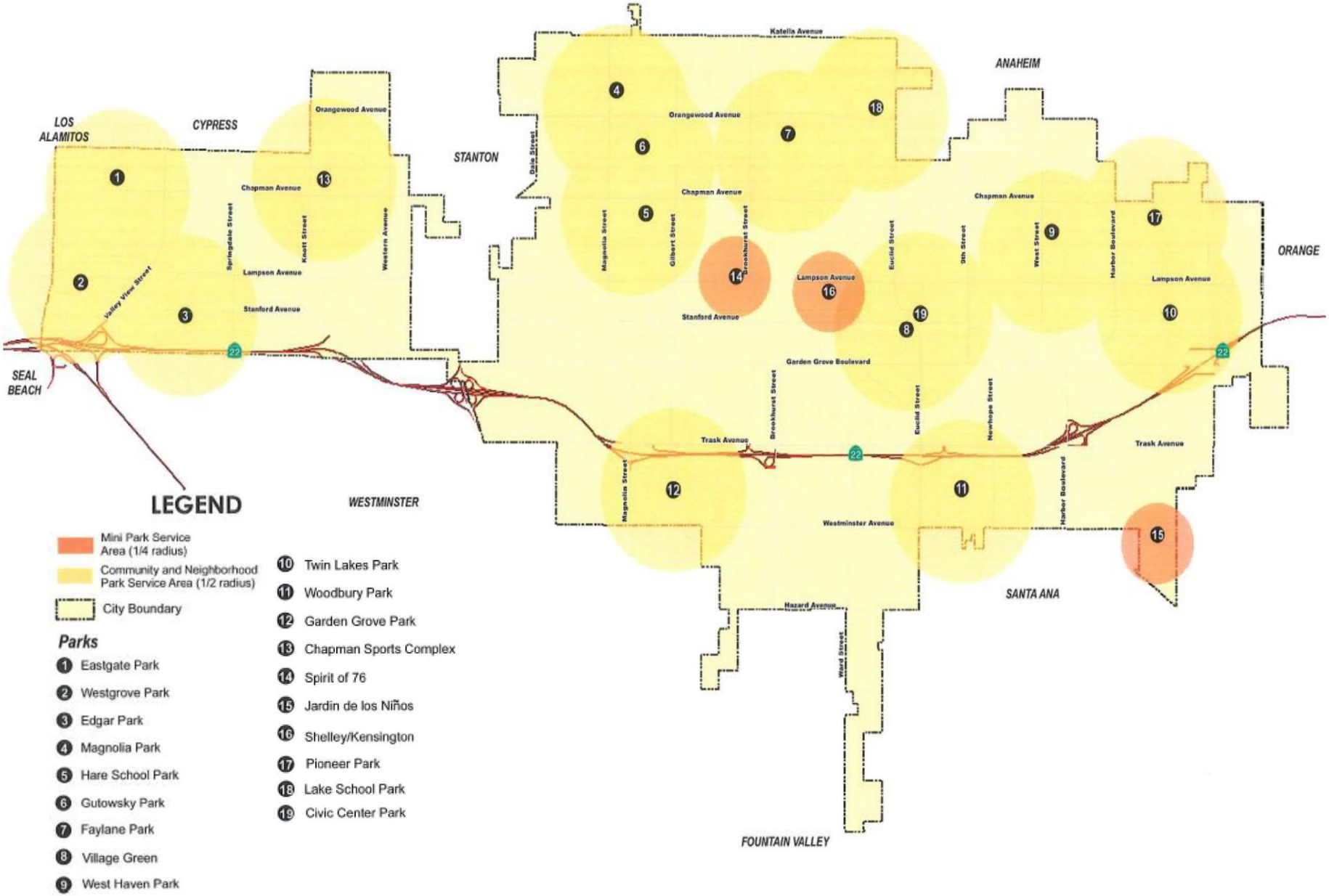

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Exhibit 4.13-2 Parkland Service Area

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The recreation amenities available at each park are summarized in Table 4.13-1 (Recreation Facilities and Amenities). In addition to the facilities in the Table 4.13-1, the City also has use of an additional swimming pool facility at Pacifica High School. Primary recreation facilities include a gymnasium in Garden Grove Park and the Community Meeting Center and Senior Center in Civic Center Park. Over the last decade, the City has optimized park space to provide a variety of amenities, activities, and programs while still providing space for passive recreation. As shown in Tables 4.13-1 and 4.13-2, the City currently owns 13 park properties (123.8 acres) and uses 5 public schools as additional park facilities through joint-use agreements with the School District (60 acres), totaling 183.8 acres of parkland (Garden Grove, 2019; MIG, 2020). With a 2020 population of 174,801 persons, the City currently has a ratio of 1.05 acres of parkland per 1,000 persons.

Table 4.13-1
Recreation Facilities and Amenities

Recreation Facility	Joint-Use School Park	Acres[1]	Swimming Pool	Multi-Purpose/ Soccer Field	Ball Fields	Basketball	Volleyball	Tennis	Play Equipment	Handball	Hockey	Multi-Purpose Building	Skate Park	Dog Park
Community Parks														
Chapman Sports Complex	*	11.0		6	1	2		6		6	1			
Civic Center		4.0												
Eastgate Park		4.5	1	1	1	2			1			1		
Garden Grove/ Atlantis Play Center/ Gymnasium		40.0		2	4	4	7		15			1	1	1
Hare School Park	*	14.0[1]			7									
Magnolia Park		5.9	1			4		4	1	3		1		
West Grove Park		6.6		1		1			1			1		
Woodbury Park		3.3	1			1			2					
Village Green[2]		6.3							1			3		
Neighborhood Parks														
Edgar School Park	*	6.0		2					1	2		1		

Recreation Facility	Joint-Use School Park	Acres[1]	Swimming Pool	Multi-Purpose/ Soccer Field	Ball Fields	Basketball	Volleyball	Tennis	Play Equipment	Handball	Hockey	Multi-Purpose Building	Skate Park	Dog Park
Faylane Park		2.9				1			1					
Gutosky Park		2.1							1					
West Haven Park		10.0							1			1		
Pioneer Park	*	4.0							1					
Mini Parks														
Morningside School Park	*	1.0												
Spirit of 76		0.5												
Jardin de los Niños		0.7				1			2					
Shelley Kensington		0.3				2			1					
Total	***5***	***123.8***	***3***	***12***	***13***	***18***	***7***	***10***	***29***	***11***	***1***	***9***	***1***	***1***

Source: City of Garden Grove Parks, Recreation & Facilities Master Plan, October 2019.

[1] Acreage does not include Library Facility or Twin Lakes Park, a county facility within the City.

[2] One community building, one performing arts building, and one amphitheater

Open Space. As shown in Table 4.13-2, open space within the City consists of parks, school district properties, Orange County Transit Authority (OCTA) right-of-way, flood control facilities (retention basins, channels etc.), utility easements, and water well sites and reservoirs. Public schools consist of the largest proportion of open space in the City (Garden Grove, 2008b).

Table 4.13-2
Open Space

Open Space	Acreage
City Owned Parks[1]	123.8
Joint-Use Parks	60.0
Schools[2]	667.2
OCTA Right-of-Way	61.0
Flood Control Facilities[3]	60.0
SCE Easements	28.0
Water Wells and Reservoirs	6.0
TOTAL	**1,006.0**

1 - Includes 13.0 acres of water retention facility at Twin Lakes Park in joint-use with the County Flood Control District.
2- Includes public schools not currently under joint-use agreement.
3 - Does not include the water retention facility at Twin Lakes Park.

The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 5.0 acres of open space per 1,000 persons. As shown in Table 4.13-2, the City currently has 1,006 acres of open space (Garden Grove, 2008b; MIG, 2020). With a 2020 population of 174,801, the City currently has a ratio of 5.8 acres of open space per 1,000 persons.

Trails. Recreational or multi-use trails support healthy activities in an urban area. Trails can be located in an existing park or within public rights-of-way and can connect neighborhoods to parks and commercial or employment areas. Currently, there is one dedicated recreational trail facility in Garden Grove, the one-mile Medal of Honor bike and pedestrian trail that runs from Nutwood Avenue to Brookhurst Street (Garden Grove, 2019).

Bikeways. The following information is from the City's Active Streets Master Plan (City 2018). With the increased popularity of cycling as a form of recreation and alternate transportation, the City of Garden Grove has established bicycle routes to meet the growing demand for safe places to ride bicycles. All proposed and existing bikeway routes in Garden Grove and the surrounding area are classified in three types of facilities, as shown on **Exhibit 4.13-4** (Master Plan of Bikeway Facilities). A Class I bicycle trail is a facility that is physically separated from a roadway and designated primarily for the use of bicycles. A Class II bicycle lane facility is a facility featuring a striped lane on the paved area of a road for preferential use by bicycles. A Class III bicycle route is a facility typically identified by green and white "Bike Route" guide signage only. Several Class III bikeway segments exist in Garden Grove.

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LEGEND

City of Garden Grove

Existing	Proposed	
		Class I Bike Trail (Off Street Trail)
		Class II Bike Lanes (On-Street Striped Lanes)
		Class III Bike Route (On-Street Signed Route)

County of Orange and Adjacent Cities

Existing	Proposed	
		Class I Bike Trail (Off Street Trail)
		Class II Bike Lanes (On-Street Striped Lanes)
		Class III Bike Route (On-Street Signed Route)

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Exhibit 4.13-3 Master Plan of Bikeway Facilities

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Along portions of Lampson and Trask Avenue, Class III facilities total 0.5 miles. Several Class II bikeways are being developed in the City which is working on a Bicycle Corridor Improvement Program (BCIP). The BCIP includes creating new Class II bike lanes through road re-balancing, striping buggers on existing bike lanes, striping bike lane network gaps, improving and creating bicycle routes, and providing way finding signage. These include:

- Brookhurst Street between Katella and Trask Avenue
- West Street between City Limit and Garden Grove Boulevard
- Gilbert Street between Katella Avenue and Westminster Avenue
- Chapman Avenue between Valley View and City limit
- Lampson Avenue between City limit and Haster Street

Located along portions of Lampson and Trask Avenues and Ward and 9th Streets, Class II facilities total 22.75 miles. These Class II bicycle lane segments are located along the edge of the paved area outside the motor vehicle travel lanes and are restricted to vehicular parking. However, if sufficient pavement exists, the bicycle lane will be located between the parking lane and the outside motor vehicle travel lane. The three segments of bicycle routes in Garden Grove are characterized as bicycle facilities with typical widths of four feet (striping to curb), and widths of 12 feet (striping to curb) where on-street parking is permitted. One identified Class I bikeway is located along Knott Avenue and totals 0.5 miles in length. A second Class I bikeway is located along the Pacific Electric Right-of-Way (PE ROW) which begins at Nelson Street between Garden Grove Boulevard and Stanford Avenue and extends approximately one (1) mile west, and ends at Brookhurst Street. The trail includes a 12-foot wide bike path and an 8-foot wide pedestrian walkway. No existing bicycle parking facilities have been identified in the City. According to the City's Active Streets Master Plan, bike facilities that are most needed in Garden Grove are those proposed to be constructed or completed along Lampson Avenue, Orangewood Avenue, Ninth Street, and Bushard Street. These routes have been proposed by the Orange County Environmental Management Agency (OCEMA) because they provide vital links to major activity centers, while allowing continuous travel from one regional route to another. Other routes needed, not in OCEMA's Master Plan, that would connect longer routes together, providing links to areas of the City not served by major routes, are routes along Springdale Street, Gilbert Street, and Ward Street (City 2018).

The City's BCIP design includes construction of 6.5 miles of new Class II bikeways and improvement to 8.35 miles of existing, but underutilized bikeways. Bicycle facility improvements include creating new bike lanes through road rebalancing (2.7 miles along West Street and Gilbert Street), striping buffers to existing bike lanes (5 miles on Brookhurst Street, Chapman Avenue and Lampson Avenue), striping bike lane network gaps (0.6 miles on Brookhurst Street), improving and creating bicycle routes (6.5 miles on Lampson Avenue, Gilbert Avenue, Imperial Avenue, and Deodara Drive) and provide bicycle way finding signs along all the corridors (total 14.85 miles).

4.16.2 – REGULATORY FRAMEWORK

Federal

National Recreation and Park Association (NRPA). The NRPA is a national non-profit professional organization which supports the planning and provision of parks at all levels of government. While not a regulatory agency, the NRPA offers guidance to local governments on various aspects of park planning, including size, location, classification, and characteristics of

various kinds of parks. Their stated mission is to "advance parks, recreation and environmental conservation efforts that enhance the quality of life for all people". nrpa.org

State

Quimby Act (1975). The Quimby Act allows cities and counties to adopt park dedication standards/ordinances requiring developers to set aside land, donate conservation easements, or pay fees towards parkland. With the anticipated population growth, the City will use impact fees from development projects to fund park construction. The City has adopted an ordinance implementing the provisions of the Quimby Act.

State Public Park Preservation Act (California Public Resource Code Section 5400 – 5409). The State Public Park Preservation Act is the primary instrument for protecting and preserving parkland in California. Under the act cities and counties may not acquire any real property that is in use as a public park for any non-park use unless compensation or land, or both, are provided to replace the parkland acquired. This ensures a no net loss of parkland and facilities.

California Surplus Land Act. The California Surplus Land Act (Government Code section 54220, et seq.) currently requires local agencies, prior to disposing of property, declare the property surplus and to offer to sell or lease that property to certain entities for specified uses, including affordable housing, parks and recreation, and schools uses. After making these preliminary offers, if the disposing agency receives notice of interest from one of the entities under the Act, the disposing agency and the responding entity must enter into negotiations to sell or lease the property for a period of at least 90 days - presumably unless, before that time expires, an agreement is reached or the parties agree to terminate negotiations. If no notice of interest is received or negotiations do not result in a disposition of the property, and the local agency subsequently disposes of the surplus land for development of 10 or more residential units, then not less than 15% of the total number of units developed on the site must be sold or rented as affordable housing.

Local

City General Plan. The Parks, Recreation, and Open Space Element of the existing Garden Grove General Plan 2030 contain the following goals and policies regarding parks:

Goal PRK-1	The City seeks to achieve a ratio of 2.0 acres of Parkland (which includes city-owned parks and joint-use school facilities) to every 1,000 persons to meet the needs of existing and future residents and employees.
Policy PRK-1.1	Explore the land acquisition feasibility of vacant land, empty housing lots, or abandoned properties for neighborhood park, mini or pocket parks, or tot lot purposes, in order to provide all existing neighborhoods with accessible parkland.
Policy PRK-1.2	Acquire additional lands for parks, as feasible.
Policy PRK-1.3	Allow for a variety of active and passive space for recreation and leisure use.
Policy PRK-1.4	Encourage the provision of parks and recreation space in new development and redevelopment projects.
Policy PRK-1.5	Encourage the development of linear parks along easements or rights-of-way, including but not limited to utility easements and the Orange County (OCTA) right-of-way.

Policy PRK-1.6	Encourage the development of additional Mini Parks to provide urban open space at a very small scale. Functions of Mini Parks shall vary as appropriate within each location and immediate neighborhood.
Policy PRK-1.7	Encourage the cooperation and coordination between City departments and public agencies, to provide recreation and leisure space through new development and as redevelopment occurs within Garden Grove.
Policy PRK-1.8	Continue to work with school districts or other agencies to maintain and, wherever feasible, expand the joint use facilities within the City.
Policy PRK-1.9	Continue to work with Orange County Flood Control District (OCFCD) and Orange County Transit Authority (OCTA) to lease and use right-of-way for passive recreation and trails.
PRK-IMP-1A	Develop a priority list to identify where additional parks and types of facilities are needed and seek community participation.
PRK-IMP-1B	Create a land feasibility plan to understand what land is available in the City for the creation of new parkland.
PRK-IMP-1C	When and where possible, consider the potential for additional parks or recreation facilities on public or private sites that can support a recreational activity such as vacant large buildings, undeveloped industrial properties, and/or existing underutilized parcels.
PRK-IMP-1D	Pursue available resources to fund facilities and parkland acquisition and development including Federal, State and local funding grants, or donations.
PRK-IMP-1E	Encourage coordination between the Community Services Department and the Community Development, Public Works, and Economic Development Departments to understand parkland and bikeway priorities, and secure available funding for new bikeways, parkland, and leisure spaces.
PRK-IMP-1F	Identify and focus funding resources on obtaining joint-use agreements with schools located in park deficient areas of the City.
PRK-IMP-1G	Coordinate with OCTA regarding the lease of land that will not preclude potential future development of rail.
PRK-IMP-1H	Coordinate with public agencies and utilities to acquire use of rights-of-way for restricted use by the public.
Goal PRK-3	Well-maintained and improved recreational parkland and facilities, both indoor and outdoor, provide the community with increased facility usage, along with encouraging healthy lifestyles and a sense of community pride in citywide facilities.
Policy PRK-3.1	Inventory existing parks and recreation facilities to determine rehabilitation needs through a periodic monitoring program, and establish the priority list for facility maintenance and/or rehabilitation.
Policy PRK-3.2	Encourage volunteerism and create a greater sense of stewardship for parks within each neighborhood and community through active public involvement programs.
PRK-IMP-3A	Use fiscally responsible rehabilitation and maintenance strategies to maintain and improve parks and facilities in need.

PRK-IMP-3B	Continue to utilize, and explore additional financing mechanisms for the operation and maintenance of existing facilities.
PRK-IMP-3C	Promote volunteer opportunities through various City media, including the City's website, cable channel and City publications.
Goal PRK-4	The City seeks to achieve a ratio of 5.0 acres of Open Space to every 1,000 persons to meet the needs of existing and future residents and employees.
Policy PRK-4.1	Preserve and enhance open space resources in Garden Grove.
Policy PRK-4.2	Continue to expand open space resources in Garden Grove.
Policy PRK-4.3	Promote visually appealing landscaped corridors, which contribute to a sense of spaciousness throughout the community.
Policy PRK-4.4	Encourage green spaces planted with a diverse plant palette in order to promote natural variety, ecosystem services, and enhance the well-being of community residents.
Policy PRK-4.5	Foster community participation and public participation programs regarding open space resources.
PRK-IMP-4A	Pursue available resources to fund open space acquisition including Federal, State and local funding grants, or donations.
PRK-IMP-4B	Encourage public volunteer programs that contribute to the preservation and maintenance of open space areas (such as Eagle Scouts).
PRK-IMP-4C	Partner with schools and colleges to foster an understanding and appreciation of open space among all age levels.
PRK-IMP-4D	Coordinate with OTCA to negotiate a lease of right-of-way lands and pursue available funding resource to create linear park through portions of the City.
Goal PRK-5	Public plazas or green spaces provide additional open space opportunities for existing and future residents and employees.
Policy PRK-5.1	Continue to require that adequate, usable, and permanent private open space is provided in residential developments.
Policy PRK-5.2	Encourage new and existing commercial, office, and industrial development to provide outdoor green spaces that may be used by employees.
Policy PRK-5.3	Encourage new development and redevelopment projects to incorporate gardens and green spaces with various cultural influences throughout the community to bridge cultures and provide education opportunities.
PRK-IMP-5A	Review and modify as necessary, open space requirements for different types of development projects.
Goal PRK-6	Safe, attractive, and accessible pedestrian trails provide additional recreational opportunities for Garden Grove residents and employees.
Policy PRK-6.1	Encourage pedestrian-oriented trails and amenities within and linkage to parks, new development and redevelopment projects, and commercial centers.
Policy PRK-6.2	Encourage the planning and development for on- and off-street pedestrian trails throughout the community by the Community Services Department.

Policy PRK-6.3 Explore public and private funding sources to provide additional pedestrian facilities within the City.

PRK-IMP-6A Work with adjacent property owners to create an interconnected trail that extends along the public right-of-way. A path will benefit business by increasing exposure and access, and benefit the community through encouraging fitness, improved access, and a connected community.

PRK-IMP-6B Coordinate with OCTA to provide trails within the right-of-way.

PRK-IMP-6C Design pedestrian trails/paths with multiple access points to maximize accessibility and minimize concentrating access.

PRK-IMP-6D Seek to create links between trails or new urban trails along the public right-of-way. Coordinate with City departments to create a method for modifying existing corridors to incorporate pedestrian trails along roadways.

PRK-IMP-6E Create design standards for trail development that includes distance markers (1/4, 1/2, and 1 mile), standardized signage, identifiable logo, street furniture, drinking fountain, and identifiable plant palette.

Local School District. The City maintains agreements with the local Garden Grove School Districts
for certain Recreation uses and facilities within Garden Grove. This arrangement expands the supply of specialized park space and benefits local youth. The City is committed to the joint agreement involving maintenance scheduling, safety and liability.

4.16.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact as follows:

A. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

B. Does the project include recreational facilities or require the construction or expansion of recreational facilities which have an adverse physical effect on the environment?

C. Would the project cause substantial adverse cumulative impacts with respect to recreation?

4.16.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to increases in the use of existing recreational facilities and the potential impacts from construction of additional or expanded recreational facilities.

Local and Regional Recreational Facilities

Impact REC-1 – Would the FGPUZA increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Analysis of Impacts

The residents, employees, and visitors of the Planning Area could use nearby parks and recreation facilities. The 2040 planning horizon for the FGPUZA is estimated to result in increases of approximately 20,242 dwellings and a reduction of 514,500 square feet of non-residential building space. The FGPUZA also projects an estimated increase of approximately 63,818 residents and 3,603 jobs for the 2040 horizon year.

The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 2.0 acres of parkland per 1,000 persons. As shown in Exhibit 4.13-1 (Existing Parks and Recreation Facilities), the City currently owns 13 park properties and uses 5 public schools as additional park facilities through joint-use agreements with the School District, totaling 183.8 acres of parkland (Garden Grove, 2019; MIG, 2020). With a 2020 population of 174,801 persons, the City currently has a ratio of 1.05 acres of parkland per 1,000 persons, which approximately half the City's stated goal. Therefore, under existing conditions the City would need to acquire an additional 165.8 acres of parkland to meet its stated goal of 2.0 acres of parkland per 1,000 persons or 349.6 total acres. By 2040, it is estimated the City's population under the FGPUZA will increase to 238,619 persons which would require a total of 477.2 acres of parkland at 2.0 acres per thousand population. If the City does not increase its amount of parkland (both city-owned and joint-use or 183.8 acres), the City would need to provide an additional 293.4 acres of parkland by 2040.

The General Plan 2030 Parks, Recreation, and Open Space Element establishes the goal of a desired ratio of 5.0 acres of open space per 1,000 persons. As shown in Table 4.13-2, the City currently has 1,006 acres of open space (Garden Grove, 2008b; MIG, 2020). With a 2020 population of 174,801, the City currently has a ratio of 5.8 acres of open space per 1,000 persons, which is above the City's stated goal.

At buildout of the proposed FGPUZA, the Planning Area could have a population of up to 238,619. If the City's Parkland and Open Space area is not expanded, the 2040 ratios for the City would be 0.66 acres of parkland and 4.09 acres of open space per 1,000 persons. Therefore, the City would need to acquire an additional 321.5 acres of parkland and 214.7 acres of open space to meet its stated goals of 2.0 acres of parkland and 5.0 acres of open space per 1,000 residents.

All new dwelling units developed under the proposed FGPUZA would be subject to Development Impact Fees (DIF) fees which would be used to purchase and construct additional parkland within the City. For residential tentative tract maps, the City's Quimby Ordinance, requires dedication of in-lieu fees equivalent to 2.0 acres of parkland per 1,000 persons (Garden Grove Municipal Code Section 9.44.030). According to the City's Parks, Recreation & Facilities Park Master Plan, these parks funding mechanisms will offset the incremental increase in demand for park facilities from future development (City 2019) which would include implementation of the proposed FGPUZA.

Another opportunity to add recreational facilities is to enter into additional joint-use agreements with School Districts. The joint-use of school facilities allows the community the use of these existing recreational spaces and benefits the school district by sharing maintenance costs with the City. As shown in Exhibit 4.13-4 (Priority Future Joint-Use School/Park Locations), the City has identified several key school facilities in areas where recreation space is needed.

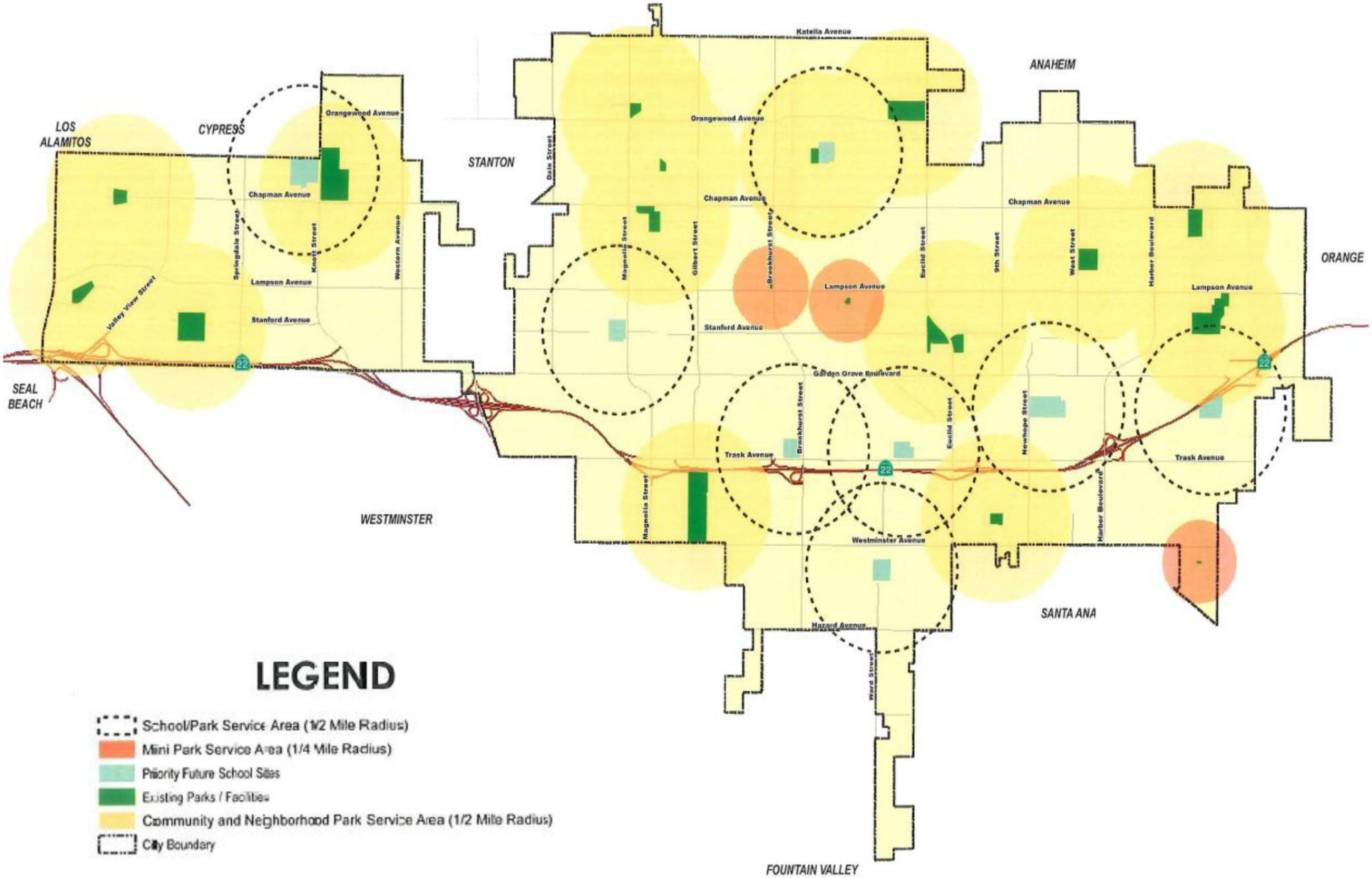

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Exhibit 4.13-4 Priority Future Joint-Use School/Park Locations

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The General Plan 2030 Parks, Recreation, and Open Space Element includes goals and policies intended to maximize parkland and open space. Policy PRK-1.1 requires the City to explore the land acquisition feasibility of vacant land, empty housing lots, or abandoned properties for neighborhood parks, mini or pocket parks, or tot lot purposes, in order to provide all existing neighborhoods with accessible parkland. Policy PRK-1.4 encourages the provision of parks and recreation space in new development and redevelopment projects. Policy PRK-1.5 encourages the development of linear parks along easements or rights-of-way, including but not limited to utility easements and the Orange County Transit Authority right-of-way. Policy PRK-1.7 encourages cooperation and coordination between City departments and public agencies to provide recreation and leisure space through new development and as redevelopment occurs within Garden Grove. Implementation Measure PRK-IMP-1A requires the City to develop a priority list to identify where additional parks and types of facilities are needed and seek community participation. Implementation Measure PRK-IMP-1C requires that when and where possible, the City should consider the potential for additional parks or recreation facilities on public or private sites that can support a recreational activity such as vacant large buildings, undeveloped industrial properties, and/or existing underutilized parcels. Policy PRK-5.1 requires that adequate, usable, and permanent private open space be provided in residential developments.

Based on the preceding analysis, the proposed FGPUZA will increase the use of existing neighborhood and regional parks or other recreational facilities but not to the degree that substantial physical deterioration of existing facilities would occur or be accelerated. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Expansion of Recreational Facilities

Impact REC-2 – Does the FGPUZA include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Analysis of Impacts

The proposed FGPUZA would create the need for new or expanded recreational facilities because of the projected housing and population growth through 2040. The Community Services Department is actively pursuing innovative ways to increase both active and passive new parkland. There are opportunities for new parkland in the creation of smaller and more frequent neighborhood parks and pocket parks, community gathering areas such as urban plazas and gardens, and urban trails including the use of the OCTA right-of-way. These smaller parks, plazas and trails should link to each other and connect with existing parks. A network of links between park areas expands their impact and the opportunities for recreation. Another opportunity to add recreational facilities is to enter into additional joint-use agreements with School Districts. The joint-use of school facilities allows the community the use of these existing recreational spaces and benefits the school district by sharing maintenance costs with the City. These joint use-agreements help the City reduce its parkland deficiency and improve recreation

services in the City and Planning Area over the term of the FGPUZA. As shown in Exhibit 4.16-3, the City has identified several key school facilities in areas where recreation space is needed.

Any environmental issues associated with the discretionary, non-exempt construction of potential new facilities will be subject to environmental review on a project-by-project basis pursuant to CEQA. Through that routine planning and environmental impact assessment process, significant environmental impacts that might result from park development will be identified, and measures to mitigate such impacts examined. In addition, as detailed above, the General Plan 2030 Parks, Recreation, and Open Space Element includes goals and policies intended to maximize parkland and open space. Policy PRK-1.1 requires the City to explore the land acquisition feasibility of vacant land, empty housing lots, or abandoned properties for neighborhood parks, mini or pocket parks, or tot lot purposes, in order to provide all existing neighborhoods with accessible parkland. Policy PRK-1.4 encourages the provision of parks and recreation space in new development and redevelopment projects. Policy PRK-1.5 encourages the development of linear parks along easements or rights-of-way, including but not limited to utility easements and the Orange County Transit Authority right-of-way. Policy PRK-1.7 encourages cooperation and coordination between City departments and public agencies to provide recreation and leisure space through new development and as redevelopment occurs within Garden Grove. Implementation Measure PRK-IMP-1A requires the city to develop a priority list to identify where additional parks and types of facilities are needed and seek community participation. Implementation Measure PRK-IMP-1C requires that when and where possible, the City should consider the potential for additional parks or recreation facilities on public or private sites that can support a recreational activity such as vacant large buildings, undeveloped industrial properties, and/or existing underutilized parcels. Policy PRK-5.1 requires that adequate, usable, and permanent private open space be provided in residential developments.

The City will also encourage the development of public facilities in a manner which ensures high levels of service, are located to efficiently serve the community and are compatible with existing and future land uses. Pursuant to the Quimby Act, the City has adopted park dedication standards that require developers to set aside land, donate conservation easements, or pay fees towards parkland development. Further, recreational facilities developed as a result of FGPUZA population growth, will undergo environmental review consistent with CEQA which will help minimize potential environmental impacts such as inadequate park facilities as well as potential impacts of constructing new parks and recreational facilities.

With incorporation of the above policies, recreational facility construction and expansion will not have adverse physical effects on the environment so impact will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Cumulative Impacts

Impact REC-3 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to Recreation?

Analysis of Impacts

Development of residential projects within the Planning Area would generally increase the usage of parks and recreational facilities in the City and surrounding area, potentially causing the need for additional parks and recreational facilities due to related population increases. However, such new development would be subject to DIF fees and, for residential tentative tract maps, the City's Quimby Ordinance. These two parks funding mechanisms will offset the incremental and cumulative increase in demand for park facilities from implementation of the FGPUZA as well as other residential developments in the vicinity of the Planning Area. The CEQA and planning review processes in the City and surrounding jurisdictions will help assure that impacts from future individual park projects would be less than significant, thus regional cumulative impacts of these projects would be less than significant as well.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

4.16.5 – REFERENCES

City of Garden Grove (2008a). *Garden Grove General Plan 2030: Parks, Recreation, and Open Space Element*. May 2008.

City of Garden Grove (2008b). *Garden Grove General Plan 2030: Circulation Element*. May 2008.

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National Parks and Recreation Association (NPRA), 2021. Web: npra.org [Accessed July 2021].

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4.14 – Transportation

This EIR chapter addresses transportation and traffic impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes transportation and traffic impacts identified by the CEQA Guidelines: whether the FGPUZA will conflict with a program plan, ordinance or policy addressing the circulation system; will conflict with or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b); will substantially increase hazards due to a geometric design feature or incompatible uses; or will result in inadequate emergency access. This analysis is based, in part, on a vehicle miles traveled (VMT) study prepared by Fehr and Peers (F&P 2021). Although some information is provided in this section regarding Level of Service (LOS) relating to street congestion, the determination of any traffic impacts under CEQA is based on VMT, not LOS.

4.14.1 – ENVIRONMENTAL SETTING

The existing regional and local roadway network in Garden Grove is a hierarchical system of highways and local streets developed to provide regional traffic movement and local access. The following sections provide a description of the functional classification of the facilities within the City. **Exhibit 4.14-1** (Existing Circulation System and Master Plan of Arterial Highways (MPAH) Designations) illustrates the existing circulation system within the City.

Regional Access

Regional roadways include those facilities that serve regional demand and under the jurisdiction of other agencies, such as Caltrans. Within the limits of Garden Grove, the Garden Grove Freeway (SR-22) is the primary regional facility that provides access to the City of Garden Grove. The facility has four general-purpose lanes and one carpool lane in each direction, plus auxiliary lanes between interchanges. It is considered as a limited-access corridor between the Costa Mesa Freeway (SR-55) to the east and the San Diego Freeway (I-405) to the west. There are eight full-access interchanges on SR-22 within the City. These interchanges are: Garden Grove Boulevard/Haster Street; Harbor Boulevard; Euclid Street; Brookhurst Street; Magnolia Street; Beach Boulevard; Knott Street; and Valley View Street. I-405 also provides regional access and circulation in the westerly end of Garden Grove at Bolsa Chica Road/Valley View Street. In the vicinity of Garden Grove, I-405 is a ten-lane limited access corridor that provides regional circulation from Orange County in the south to Los Angeles County in the north. While not in the City limits, access to the Santa Ana Freeway (I-5) is provided less than one mile from the City's easterly border, at State College Boulevard and Chapman Avenue. I-5 is a major regional transportation corridor traversing the State of California from the Mexico border to the south to the Oregon border to the north. Currently, I-5 proximate to Garden Grove is a ten-lane freeway plus carpool lanes.

Local Circulation

Local circulation within the City of Garden Grove is provided by a primarily grid-pattern system of arterial streets, most of which are under the sole jurisdiction of the City. The local arterial street system is classified by a functional hierarchy. The network of major roadways is primarily designed in a north-south and east-west grid pattern with major and primary arterials spaced between one mile and one-half mile intervals. Many of the major and primary arterials within the City of Garden Grove are built out to the full paved cross-section along the entire length. Local streets generally follow the same grid pattern. **Table 4.14-1** (Arterial Highway Classification) shows the classification of the arterial street system in the City.

Table 4.14-1
Arterial Highway Classification

Type	Number of Lanes	Median	Right-of-Way (ft)[1]	Daily Volume Capacity[2]	Function
Principal	8	Yes	160	72,000	Carry large volume of regional traffic on high capacity thoroughfare.
Major	6	Yes	120	56,300	Carry large volume of regional traffic not handled by freeways.
Primary	4	Yes	100	37,500	Carry regional traffic, but with less capacity than Major arterial.
Secondary	4	No	80	25,000	Distribute traffic between local streets and Major and Primary arterials.

[1] Right-of-way width is a general guide, as consistency with the County MPAH is measured by number of lanes.

[2] Capacity volume is based on County of Orange MPAH standards for an acceptable LOS E. It should be noted that the City of Garden Grove LOS threshold for streets is LOS D.

Principal Arterials. Principal arterials are eight-lane facilities that provide service to non-local through trips with minimal direct access to adjacent land uses. They have a design cross-section of eight lanes (four in each direction) with medians and turn lanes at a limited number of access points. Regional arterials are typically within a 160-foot right-of-way. Bike lanes may also be included on regional arterials where separate facilities are not available. Principal arterials comprise approximately three miles of the circulation system of the City of Garden Grove. Principal arterials include the following roadways:

- Beach Boulevard – Garden Grove Boulevard to Trask Avenue
- Katella Avenue - Euclid Street to Dale Street
- Harbor Boulevard - Chapman Avenue to Westminster Avenue

Major Arterials. Major arterials are primarily intended to serve through, non-local traffic and provide limited local access. They generally have a cross-section of three through lanes, and a median for left-turning traffic in each direction. Major arterials are designated within a 120-foot right-of-way. Bike routes may be included on major arterials when separate facilities are not available. However, the wide right-of-way sometimes allows for the development of off-street facilities such as multi-purpose trails or bicycle paths. Major arterials comprise approximately ten miles of the circulation system of the City of Garden Grove. Major arterials include the following roadways: Valley View Street - Catalina Avenue to SR-22 Freeway

- Brookhurst Street – Katella Avenue to Hazard Avenue
- Bolsa Avenue - Ward Street to Starboard Street
- Fairview Road - south of Trask Avenue to Garden Grove Boulevard

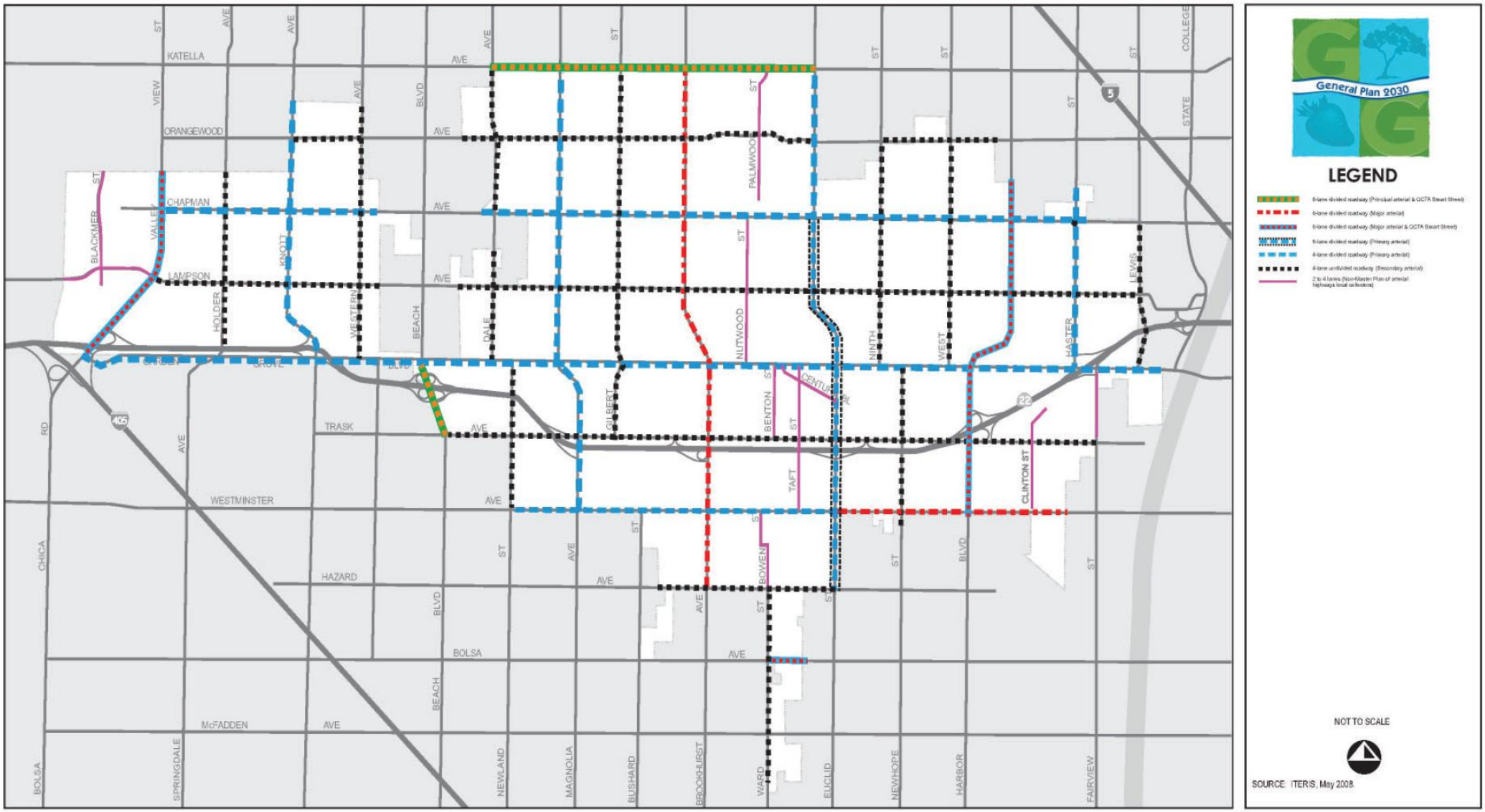

Exhibit 4.14-1 Existing Circulation System & Master Plan of Arterial Highways (MPAH)

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Primary Arterials. Primary Arterials are intended to service through, non-local traffic and provide limited local access. They have a cross-section of two through lanes traffic in each direction and a median for left-turning. Primary arterials are four-lane divided highways. The function of a Primary Arterial is similar to that of a Major Arterial; the principal difference is capacity. Primary Arterials are designated within a 100-foot right-of-way. Bike lanes may be included on primary arterials when separate facilities are not available. However, the wide right-of-way sometimes allows for the development of off-street facilities. Primary arterials comprise approximately 23 miles of the total Citywide circulation system. Primary arterials in the City include the following roadways:

- Magnolia Street - Katella Avenue to Westminster Avenue
- Euclid Street - Katella Avenue to Chapman Avenue
- Euclid Street – Chapman Avenue to Hazard Avenue (six-lane section)
- Haster Street - Tiller Street to SR-22 Freeway
- Chapman Avenue - Knott Avenue to west of Beach Boulevard, west of Dale Street to Lewis Street
- Garden Grove Boulevard - Knott Avenue to west of Park Vine Street
- Westminster Avenue - west of Erin Street to eastern City limit
- Knott Avenue - Patterson Drive to Garden Grove Boulevard
- Valley View Street

Secondary Arterials. Secondary arterials provide more local access than the major arterials and primary arterials, while also providing a lesser level of non-local through traffic service. A secondary arterial serves as a collector distributing traffic between local streets, major and primary arterials in the City of Garden Grove. Secondary arterials have a cross-section of four through lanes and a left-turn lane within an 80-foot wide right-of-way. Bike lanes may be included on secondary arterials when separate facilities are not available. These roadways are usually undivided with possible limited on-street parking, turn lanes at major intersections, and may have partial control of vehicular and pedestrian access from driveways, cross streets, and crosswalks. In the City of Garden Grove, Secondary arterials make up approximately 25 miles of the circulation system. Secondary arterials include the following roadways:

- Western Avenue - Simmons Place to Garden Grove Boulevard
- Dale Street - Katella Avenue to Orangewood Avenue, near Linmar, and north of Chapman Avenue to Garden Grove Boulevard
- Gilbert Street - Chapman Avenue to Garden Grove Boulevard
- Ninth Street - Orangewood Avenue to Garden Grove Boulevard
- Lewis Street - Chapman Avenue to Garden Grove Boulevard
- Orangewood Avenue – Valley View Street to Western Avenue, west of Nearing Way to Euclid Street, Ninth Street to west of Harbor Boulevard
- Lampson Avenue - west of Manley Street to east of Western Avenue Street, east of Beach Boulevard to Lewis Street
- Trask Avenue - Beach Boulevard to Fairview Street
- Springdale Street - SR-22 Freeway to north of Santa Barbara Street
- Newhope Street - Westminster Avenue to Garden Grove Boulevard
- Newland Avenue - Westminster Avenue to Garden Grove Boulevard
- Ward Street – North of Edinger Avenue to Hazard Avenue
- Hazard Avenue - east of Bushard Street to Euclid Street
- McFadden Avenue – Ward Street to Reeve Street

Local Residential Streets. These streets serve adjacent residential land uses only, allowing access to residential driveways and providing on-street parking for neighborhoods. Local residential streets in Garden Grove are designated 36-foot roadways within either 50-foot, 56-foot, or 60-foot rights-of-way. These streets are not intended to serve through traffic traveling from one street to another. Traffic volumes on these streets generally do not exceed 2,500 vehicles per day and 200-300 vehicles per hour.

OCTA Smart Streets. The Smart Street concept seeks to improve roadway traffic capacity and smooth traffic flow through measures such as traffic signal synchronization, bus turnouts, intersection improvements and the addition of travel lanes by removing on-street parking and consolidating driveways. Along with the State highways, the Smart Street network comprises the Congestion Management Program (CMP) highway system. Street designation allows for the development of improvements that enhance the traffic carrying capacity of this roadway in excess of the Major arterial designation. Beach Boulevard was the first Smart Street project to be implemented. Other Smart Streets in the City of Garden Grove include Katella Avenue, Harbor Boulevard, Bolsa Avenue, and Valley View Streets. All are designated as Smart Streets in the County of Orange Congestion Management Program highway system. The following are the smart streets within the Planning Area:

- Beach Boulevard (SR-39) – Pacific Coast Highway (SR-1) to Imperial Highway (SR-90)
- Bolsa Avenue/First Street – Bolsa Chica Road to Santa Ana Freeway (I-5)
- Harbor Boulevard – Imperial Highway (SR-90) to Costa Mesa Freeway (SR-55) extended
- Katella Avenue – San Gabriel River Freeway (I-605) to Costa Mesa Freeway (SR-55)
- Valley View Street – Garden Grove Freeway (SR-22) to Riverside Freeway (SR-91)
- Fairview Street – Garden Grove Boulevard to Westminster Avenue.

Rail Freight

The Union Pacific Railroad provides rail freight spur line service in western Garden Grove in the area generally bounded by Knott Avenue on the west, the City boundary on the north, Beach Boulevard on the east, and Garden Grove Boulevard on the south. All crossings with streets in this area are at-grade. In the City of Garden Grove, the rail lines cross the following arterial streets:

- Garden Grove Boulevard
- Lampson Avenue
- Chapman Avenue
- Western Avenue

Truck Routes

The City of Garden Grove has adopted a truck route system (Municipal Code 10.40 et. seq.) to provide access to those land uses requiring truck transportation, while protecting those land uses sensitive to the impacts of truck travel (i.e., noise and vibration,). The truck routes in the Planning Area are illustrated in **Exhibit 4.14-2** (City of Garden Grove Designated Truck Routes) and designates those roadways for use by commercial vehicles exceeding a maximum gross weight of 6,000 pounds and with a maximum length from the kingpin to the rearmost axle not exceeding 38 feet (Municipal Code 10.40.030). In addition, “large truck routes” are also indicated for roadways designated for use by any commercial vehicle exceeding 38 feet in length from the kingpin to the rear-most axle.

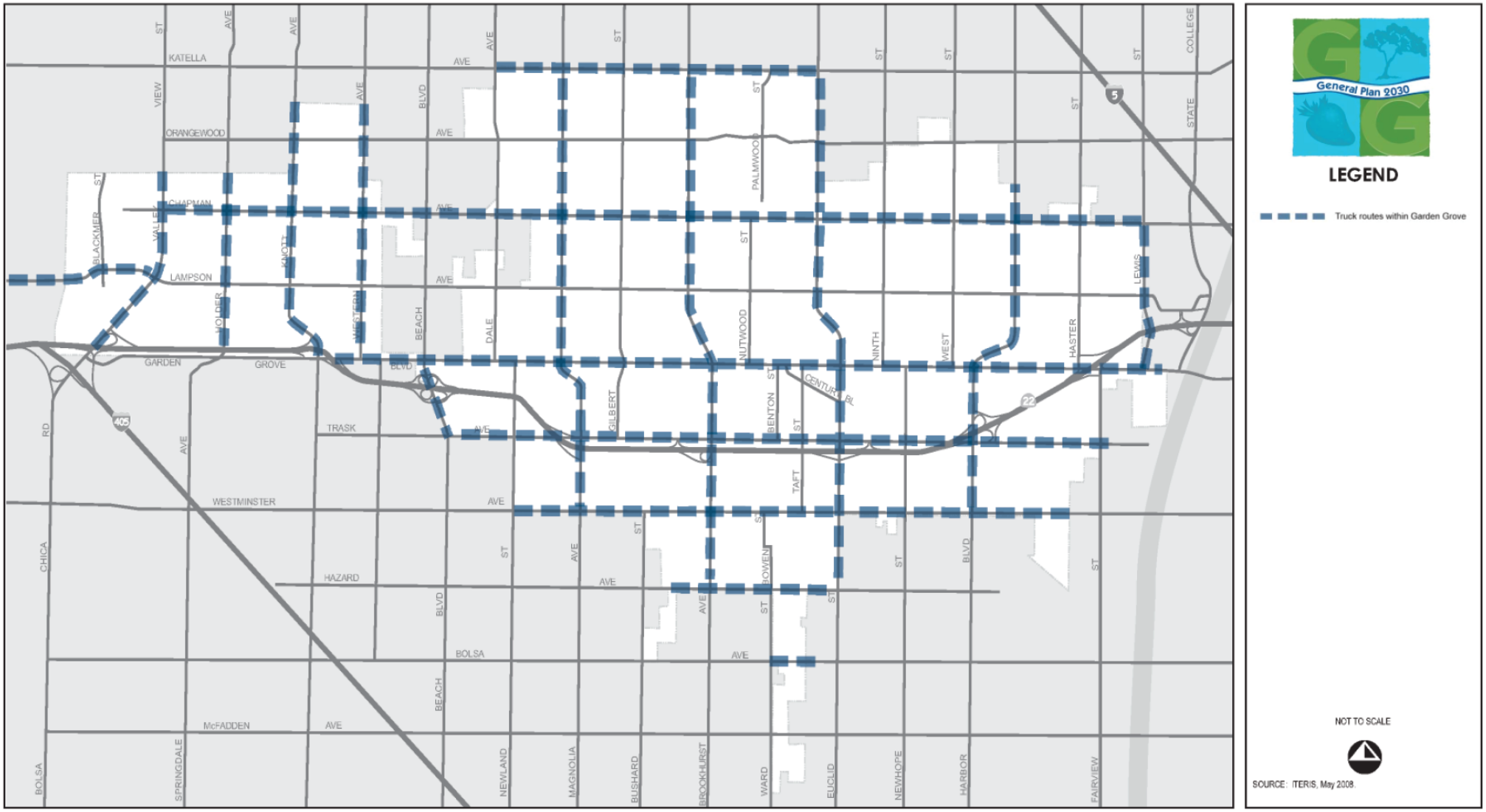

Exhibit 4.14-2 City of Garden Grove Designated Truck Routes

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These arterials include truck routes along the road segments listed below:

Name of Street	Segment Designated as Truck Route
Beach Boulevard	Garden Grove Boulevard, south to Trask Avenue
Brookhurst Street	Katella Avenue, south to Hazard Avenue
Chapman Avenue	Valley View Street, east to Beach Boulevard
Euclid Street	Garden Grove Boulevard, south to Hazard Avenue
Garden Grove Boulevard	Knott Street, east to Beach Boulevard
Harbor Boulevard	Garden Grove Boulevard, south to Westminster Avenue
Katella Avenue	Dale Street, east to Euclid Street
Knott Street	City limits north of Orangewood Avenue, south to Garden Grove Boulevard
Valley View Street	City limits north of Chapman Avenue, south to Garden Grove Freeway
Western Avenue	City limits north of Orangewood Avenue, south to Garden Grove Boulevard
Western Avenue	Newland Street, east to Fairview Street

Public Transit

Orange County Transportation Authority (OCTA) provides extensive bus and rail transit service throughout Orange County. Public transit service in Garden Grove includes local fixed-route bus service, commuter bus service, and paratransit services. The existing transit routes in the study area are illustrated in **Exhibit 4.14-3** (Existing Transit Routes).

OCTA Fixed Route Services. Nineteen OCTA bus routes have stops within the City of Garden Grove. These include local service, community shuttles, intra-county express routes serving connecting cities, and intercounty express routes.

Bus Rapid Transit. Bus Rapid Transit (BRT) is a new approach to traditional bus travel. The new buses will only stop at key destinations in order to provide faster service in existing transit corridors. BRT is planned to offer frequent service, have its own distinct identity, offer traffic signal priority, and serve customized bus shelters that display real-time bus arrival information. Corridors being studied of interest to Garden Grove include Harbor Boulevard and Westminister Avenue/17th Street.

Other OCTA Transit Services. OCTA provides ACCESS bus service for senior citizens & people with disabilities. ACCESS is a shared-ride service for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by a disability. These passengers must be certified by OCTA to use the ACCESS system by meeting the Americans with Disabilities Act (ADA) eligibility criteria. OCTA's Ridematch program helps registered users find carpool partners based on commuters schedules. OCTA also has vanpool services. Commuters can form groups and can apply for the vanpool service through OCTA. Commuters can get subsidies from OCTA or their employers.

OC Streetcar. OCTA's OC Streetcar project will close a transit gap between Santa Ana and Garden Grove. The 4.1-mile line completes a contiguous transit system through Orange County, creating vital connections to employment, healthcare and recreation. It will eventually connect to

18 OCTA bus routes and to regional and intercity rail services and will give users access to high-quality, low-cost transportation that complements existing travel infrastructure serving Southern California. The project is under construction and ridership is expected to start in 2022.

Go Local Project. The Cities of Garden Grove and Santa Ana have entered into a partnership for the Transit Vision and Go Local Project (Go Local). The Go Local program is a four-step process to plan and implement city-initiated transit extensions to OCTA's Metrolink commuter rail line. The Metrolink rail line is the backbone of transit in Orange County. Two-thirds of Orange County's population and jobs are within a four-mile radius of each of the County's 11 Metrolink stations. The Santa Ana-Garden Grove Go Local would create a five-mile transportation corridor that links Garden Grove (at the Pacific Electric right-of-way/SR-22) to both the Santa Ana Civic Center and the Santa Ana Regional Transportation Center and Metrolink station. The Go Local program is currently underway and intends to expand the multi-modal transportation network by accommodating streetcars, bus rapid transit, automobiles, bicycles, and pedestrians.

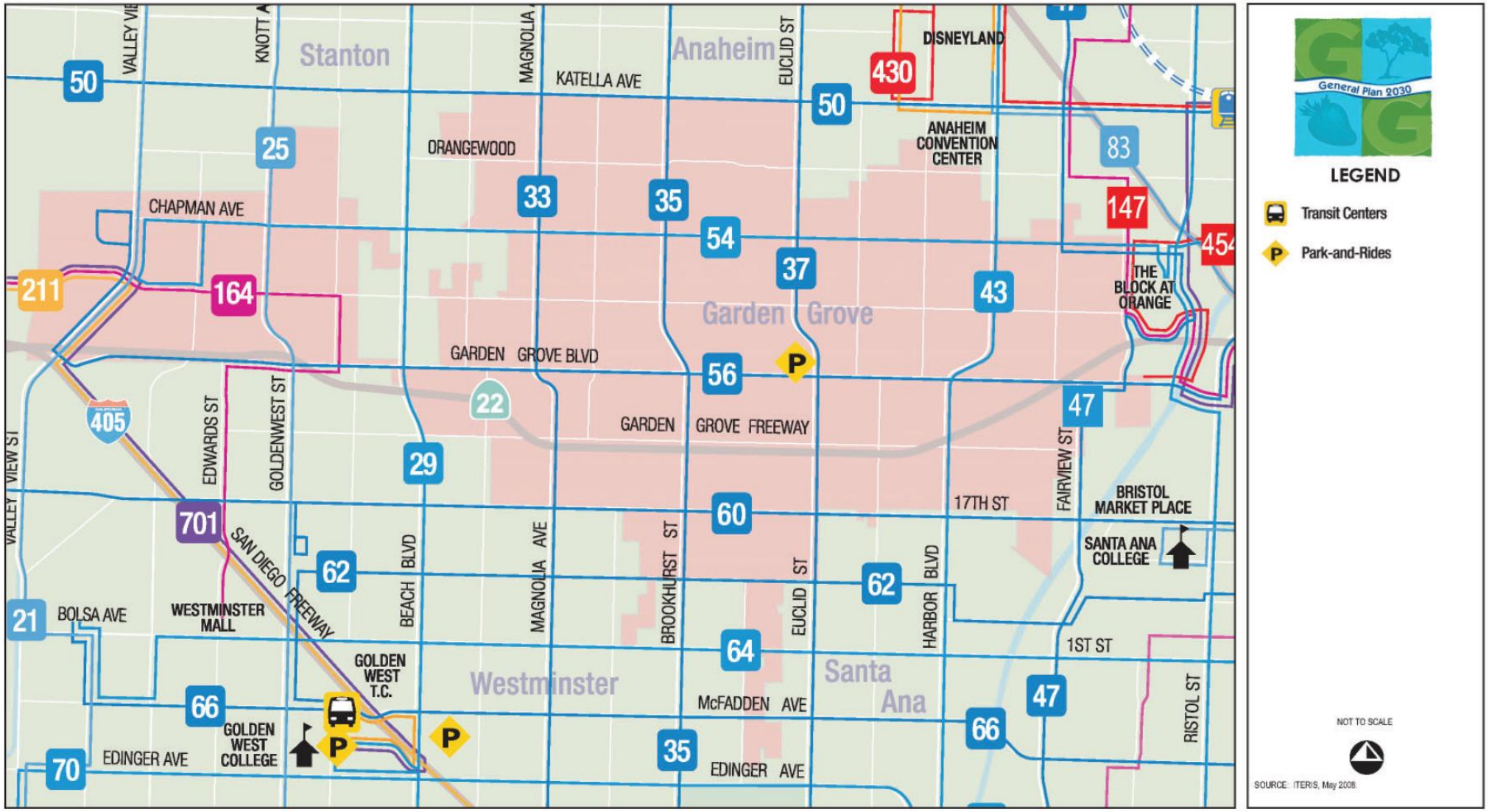

Exhibit 4.14-3 Existing Transit Routes

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Bikeways and Trails

With the increased popularity of cycling as a form of recreation and alternate transportation, the City of Garden Grove has established bicycle routes to meet the growing demand for safe places to ride bicycles. According to the City's Active Streets Master Plan, all proposed and existing bikeway routes in Garden Grove and the surrounding area are classified in three types of facilities, as shown on **Exhibit 4.14-4** (Master Plan of Bikeway Facilities)(City of Garden Grove 2018). A Class I bicycle trail is a facility that is physically separated from a roadway and designated primarily for the use of bicycles. A Class II bicycle lane facility is a facility featuring a striped lane on the paved area of a road for preferential use by bicycles. A Class III bicycle route is a facility typically identified by green and white "Bike Route" guide signage only. Several Class III bikeway segments exist in Garden Grove. Along portions of Lampson and Trask Avenue, Class III facilities total 0.5 miles. Several Class II bikeways are being developed in the City. The City is working on a Bicycle Corridor Improvement Program (BCIP). The BCIP includes creating new Class II bike lanes through road re-balancing, striping buggers on existing bike lanes, striping bike lane network gaps, improving and creating bicycle routes, and providing way finding signage. These include:

- Brookhurst Street between Katella and Trask Avenue
- West Street between City Limit and Garden Grove Boulevard
- Gilbert Street between Katella Avenue and Westminster Avenue
- Chapman Avenue between Valley View and City limit
- Lampson Avenue between City limit and Haster Street

Located along portions of Lampson and Trask Avenues and Ward and 9th Streets, Class II facilities total 22.75 miles. These Class II bicycle lane segments are located along the edge of the paved area outside the motor vehicle travel lanes and are restricted to vehicular parking. However, if sufficient pavement exists, the bicycle lane will be located between the parking lane and the outside motor vehicle travel lane. The three segments of bicycle routes in Garden Grove are characterized as bicycle facilities with typical widths of four feet (striping to curb), and widths of 12 feet (striping to curb) where on-street parking is permitted. One identified Class I bikeway is located along Knott Avenue and totals 0.5 miles in length. A second Class I bikeway is located along the Pacific Electric Right-of-Way (PE ROW) which begins at Nelson Street between Garden Grove Boulevard and Stanford Avenue and extends approximately one (1) mile west, and ends at Brookhurst Street. The trail includes a 12-foot wide bike path and an 8-foot wide pedestrian walkway.

According to the City Master Plan of Bikeway Facilities, facilities that are most needed in Garden Grove are those proposed constructed or completed along Lampson Avenue, Orangewood Avenue, Ninth Street, and Bushard Street. These routes have been proposed by the Orange County Environmental Management Agency (OCEMA) because they provide vital links to major activity centers, while allowing continuous travel from one regional route to another. Other routes needed, not in OCEMA's Master Plan, that would connect longer routes together, providing links to areas of the City not served by major routes, are routes along Springdale Street, Gilbert Street, and Ward Street.

The City's BCIP design includes construction of 6.5 miles of new Class II bikeways and improvement to 8.35 miles of existing, but underutilized bikeways. Bicycle facility improvements include creating new bike lanes through road rebalancing (2.7 miles along West Street and Gilbert Street), striping buffers to existing bike lanes (5 miles on Brookhurst Street, Chapman Avenue and Lampson Avenue), striping bike lane network gaps (0.6 miles on Brookhurst Street), improving and creating bicycle routes (6.5 miles on Lampson Avenue, Gilbert Avenue,

Imperial Avenue, and Deodara Drive) and provide bicycle way finding signs along all the corridors (total 14.85 miles).

Pedestrian Facilities

Pedestrian facilities serve two primary purposes: transportation and recreation. Sidewalks are the fundamental pedestrian transportation facility, while trails serve a recreation function. In the County Master Plan of Arterial Highways, which includes the majority of arterial highways in the City of Garden Grove, right-of-way is provided for parkways and sidewalks. All Master Plan facilities provide for sidewalks as a means of pedestrian transportation. In addition, the existing City of Garden Grove General Plan includes a policy to require new construction, including subdivisions, to provide sidewalks. It is the objective of the City to provide a system of sidewalks in all areas of the City. The major sidewalk program has been the voter approved sidewalks installation program. These sidewalks can be installed only on arterial streets within the City. For local residential streets, the residents may form special assessment districts to fund sidewalk installation. Currently, there is no sanctioned walking or hiking trail system in the City of Garden Grove. Moreover, the County Master Plan of Riding and Hiking Trails does not include facilities in the City of Garden Grove.

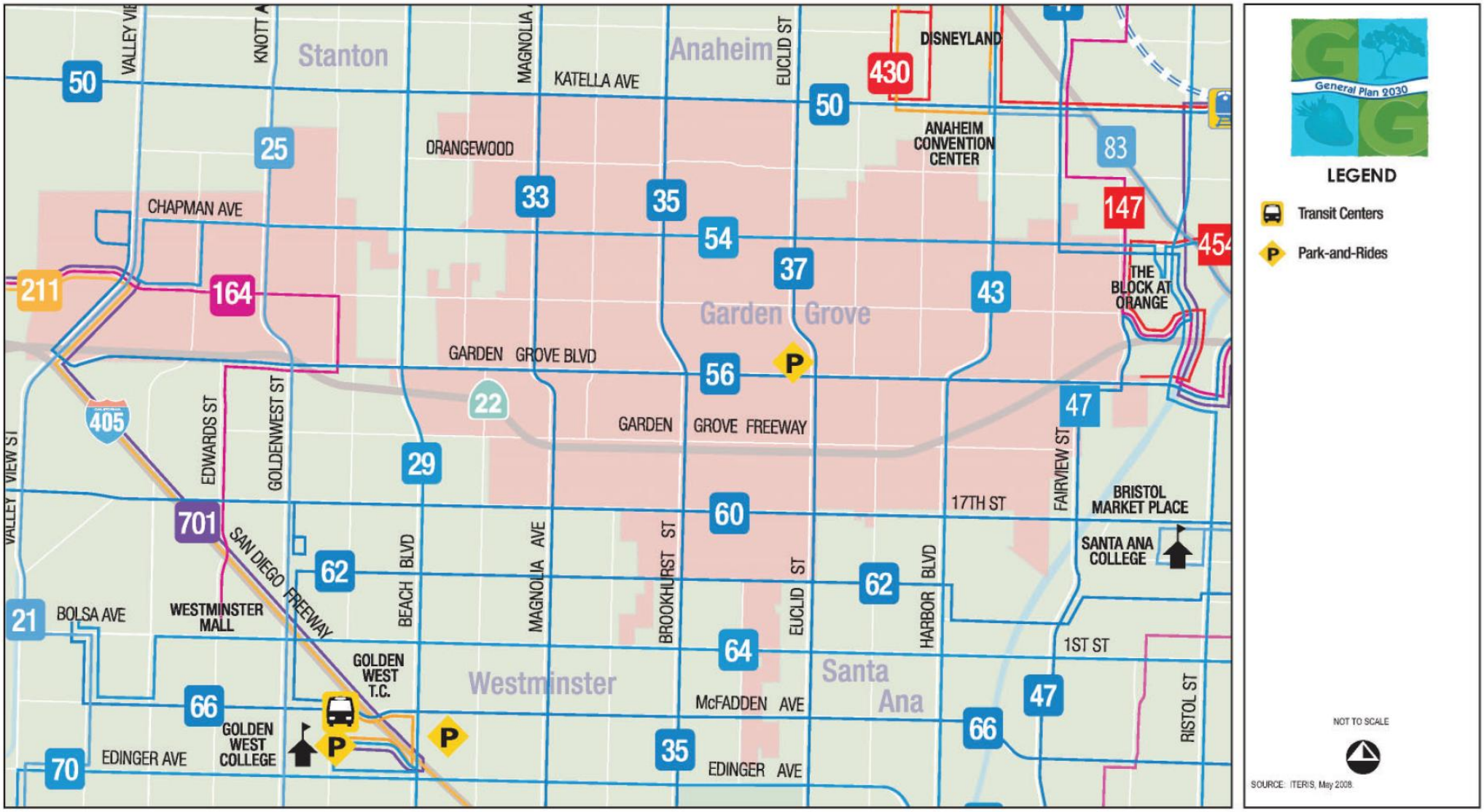

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Exhibit 4.14-4 Master Plan of Bikeway Facilities

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4.14.2 – REGULATORY FRAMEWORK

Federal

No federal agencies or regulations directly apply to the Project transportation impacts.

State

State of California Department of Transportation (Caltrans). The State of California Department of Transportation (Caltrans) implements State planning priorities in all plans, programs, and activities. Caltrans has the responsibility to coordinate and consult with local jurisdictions when proposed local land use planning and development may impact State highway facilities. Pursuant to Public Resources Code § 21092.4, for projects of statewide, regional, or area-wide significance, the lead agency must consult with transportation planning agencies and public agencies that have transportation facilities which could be affected by a project.

Senate Bill (SB) 743. On September 27, 2013, Governor Brown signed SB 743, which became effective on January 1, 2014. The purpose of SB 743 is to streamline the review under the California Environmental Quality Act (CEQA) process for several categories of development projects including the development of infill projects in transit priority areas and to balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. SB 743 adds Chapter 2.7: Modernization of Transportation Analysis for Transit Oriented Infill Projects to the CEQA Statute (Section 21099). Among other things, SB 743 mandates that alternative metric(s) for determining impacts relative to transportation shall be developed to replace the use of LOS in CEQA documents. Currently, environmental review of transportation impacts focuses on the delay that vehicles experience at intersections and on roadway segments, which is often measured using LOS. Pursuant to SB743, the focus of transportation analysis changes from vehicle delay to vehicle miles traveled (VMT). OPR released two rounds of draft proposals for updating the CEQA Guidelines related to evaluating transportation impacts and, after further study and consideration of public comment, submitted a final set of revisions to the Natural Resources Agency in November 2017. This was followed by a rulemaking process that would implement the requirements of the legislation. The updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018. OPR's regulatory text indicates that the new transportation impact guidelines must be implemented statewide by July 1, 2020. The City has since adopted *Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment* as their local VMT criteria.

Regional

Southern California Association of Governments (SCAG). The Southern California Association of Governments (SCAG) leads the development of the Regional Transportation Plan (RTP), which presents the vision for transportation throughout most of Southern California, including Riverside County. Senate Bill 375 (SB 375) was passed to reduce greenhouse gas emissions from both automobiles and light trucks through integrated transportation, land use, housing, and environmental planning. Under SB 375, SCAG is tasked with developing a Sustainable Communities Strategy (SCS). The SCS, as a component of the RTP, provides a plan for meeting emissions reduction targets set forth by the California Air Resources Board. The 2020 RTP/SCS (Connect SoCal) identifies priorities for transportation planning within the Southern California region, sets goals and policies, and identifies performance measures for transportation improvements to ensure that future projects are consistent with other planning goals for the region. The Regional Transportation Improvement Plan (RTIP), also prepared by SCAG based on the RTP, lists all of the regional, funded/programmed improvements within the

next seven years. In order to qualify for CEQA streamlining benefits under SB 375, a project must be consistent with the RTP/SCS.

Congestion Management Program (CMP). In June 1990, California voters approved Proposition 111, which established a nine cents per gallon gas tax staged over a five-year period to fund statewide transportation-related improvements. In order to be eligible for the revenues associated with Proposition 111, the Congestion Management Program (CMP) legislation requires urbanized counties in California to each adopt a Congestion Management Program. The Orange County Transportation Authority (OCTA) is designated as the Congestion Management Agency for the County of Orange and is responsible for the implementation of the Orange County CMP. The CMP was created to link local land use decisions with their impacts on regional transportation and air quality and to develop a partnership between transportation decision makers to generate appropriate transportation solutions that include all modes of travel. OCTA adopted its most recent CMP in 2019.

The goal of the CMP is to promote a more coordinated approach to land use and transportation decisions. The law requires that the traffic generated by individual development projects be analyzed for potential impacts to the regional roadway system. According to the CMP, projects that meet the following criteria are required to be evaluated:

- All CMP arterial monitoring intersections, including monitored freeway on- or off-ramp intersections, where the proposed project will add 50 or more trips during either the AM or PM weekday peak hour (of adjacent street traffic).
- Mainline freeway monitoring locations where the project will add 150 or more trips, in either direction, during either the AM or PM weekday peak hour.

According to the OCTA, one CMP highway, SR-22, is located within the City while two CMP highways, I-5 and I-405 are located adjacent to Garden Grove. The CMP requires that local jurisdictions (cities and counties) maintain CMP conformance by monitoring development activity, reporting the results annually to OCTA, and adopting a CMP transportation demand management ordinance. Compliance with the CMP provisions include:

- Continued land use coordination through the utilization of standardized traffic impact analysis methodologies;
- Implementation and enforcement of Transportation Demand Management (TDM) strategies;
- Maintenance of transit service standards;
- Demonstrated transportation modeling consistency with the Countywide computer model;
- Monitoring of CMP highway system levels of service;
- Development of level of service deficiency plans where applicable;
- Development of five-year capital improvement programs; and
- Monitoring and conformance with all CMP provisions.

Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), prepared by the Southern California Association of Governments (SCAG), has numerous goals to increase mobility for the region's residents and visitors, and an emphasis on sustainability and integrated planning to collectively improve the region's mobility, economy, and sustainability. The RTP/SCS must be approved by Federal agencies in order to receive Federal transportation funds. Only projects and programs included in the RTP are eligible for Federal funding. SCAG

adopted the 2020-2045 RTP/SCS in September 2020. The RTP/SCS is now referred to as "Connect SoCal".

SCAG Regional Comprehensive Plan. The Regional Mobility Plan (RMP) is part of an overall regional planning process that is linked directly to SCAG's Growth Management Plan, the Housing Allocation Process, and the South Coast Air Quality Management District's Air Quality Management Plan (2016). The last RCP was adopted by SCAG in 2008 although the Connect SoCal Plan outlined above has largely supplanted the RCP document itself. The RCP includes elements on Land Use and Housing, Open Space and Habitat, Water, Energy, Air Quality, Solid Waste, Transportation, and Security and Emergency Preparedness.

Highway Performance Monitoring System (HPMS). The Highway Performance Monitoring System (HPMS) is a Federally mandated inventory system and planning tool designed to assess the nation's highway system. HPMS is used as a management tool by the Federal and State governments and local agencies to analyze the system's condition and performance. The HPMS data are used for allocation of Federal funds, identification of travel trends and future forecasts, Environmental Protection Agency air quality conformity tracking, and biennial reports to the United States Congress on the state of the nation's highways. The HPMS is administered by Caltrans, with technical data provided by local agencies.

Local

City VMT Guidelines. Consistent with the requirements of SB 743, the City of Garden Grove has developed its own *Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment* procedures. Proposed development is assessed using the City's VMT thresholds to determine potential project-generated VMT and specific project effects on City VMT conditions. A project would result in a significant project-generated VMT impact if the cumulative project generated VMT per service population (residents plus employees) exceeds 15% below the County of Orange baseline VMT per service population. A project's effect on VMT would also be considered significant if it results in an increase in the cumulative link-level boundary Citywide VMT per service population under the plus project condition compared to the no project condition. Depending on the findings of the VMT impact analyses, mitigation measures may be needed to reduce the significance of a project's VMT impact. Proposed residential development projects that could have a potentially significant VMT impact shall consider reasonable and feasible project modifications and other measures during the project design and environmental review stage of project development that would reduce VMT effects in a manner consistent with state guidance on VMT reduction.

For projects with VMT impacts, potential mitigation measures are identified depending on the location of the project within a particular Traffic Analysis Zone (TAZ). Projects in Zone 1 areas or in a Transit Priority Area (TPA) are within the County VMT standards and have the lowest level of impact, so they would not require mitigation. Projects in Zone 2 may or may not have a VMT impact and would need further analysis to verify. Mitigation for impacts in Zone 2 areas is likely to be of a lower intensity due to the Zone 2 areas having a more efficient VMT than the county average, but not efficient enough to be lower than the City VMT impact threshold. Projects in Zone 3 areas would be expected to have a VMT impact and would need further analysis to determine the significance of the impact. Mitigation for impacts in Zone 3 areas is likely to be more extensive than for Zone 2 as they would have higher VMT generation and be less compliant with County standards. Potential VMT mitigation includes but is not necessarily limited to the following:

- incorporate affordable housing into the project;
- orient the project toward transit, bicycle and pedestrian facilities;

- provide bicycle parking;
- unbundle parking costs (selling or leasing a parking space separate from the purchase or lease of a multifamily residential unit);
- provide parking cash-out programs;
- provide car-sharing, bike sharing, and ride-sharing programs;
- provide transit passes;
- increase project density;
- improve or increase access to transit;
- increase access to common goods and services, such as groceries, schools, and daycare;
- incorporate neighborhood electric vehicle network;
- improve pedestrian or bicycle networks, or transit service;
- provide traffic calming;
- locate the project near transit;
- increase the mix of uses within the project or within the project's surroundings;
- increase connectivity and/or intersection density on the project site; and
- the City may evaluate the feasibility of a local or regional VMT impact bank or exchange.

City General Plan. The Circulation Element of the General Plan is a comprehensive plan for vehicular and non-vehicular circulation and transportation within the City and the planning area. The Circulation Element of the General Plan is required by Government Code Section No. 65302(b), which dictates that: …the General Plan shall have a circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other public local utilities and facilities, all correlated with the land use element of the General Plan. The Circulation Elements' Master Plan of Arterial Highways (MPAH) identifies the necessity of providing added capacity on several existing major roadways in Garden Grove.

The FGPUZA is not updating the Circulation Element so there are no new goals or policies to evaluate in this section. In addition, the updated Housing Element and Safety Element, including the new Environmental Justice Element, do not have goals or policies that are directly applicable to the proposed FGPUZA. However, the Circulation Element of the current General Plan contains the following goals and policies related to the efficient movement of vehicles and people within the Planning Area in the future that would result from additional housing under the updated Housing Element:

Goal CIR-1 A transportation system that maximizes freedom of movement and maintains a balance between mobility, safety, cost efficiency of maintenance, and the quality of the City's environment.

Policy CIR-1.1 Maintain a citywide circulation system that is balanced with the future land use development anticipated in the General Plan Land Use Element.

Policy CIR-1.2 Encourage a goal of Level of Service (LOS) D or better from arterial intersections under the jurisdiction of the City of Garden Grove.

Policy CIR-1.3 Strive to achieve a minimum traffic Level of Service (LOS) D throughout the City, except for major development areas at those intersections that are impacted by factors beyond the City's control or at those intersections included on the Deficient Intersection List.

Policy CIR-1.4 Improve those intersections that are impacted by factors beyond the control of the City, and that operate at an unacceptable Level of Service.

Policy CIR-1.5 Identify roadway corridors within the City of Garden Grove where LOS E operations may be acceptable if it supports transit-oriented development or other appropriate travel demand reduction strategies.

Policy CIR-1.6 Adopt typical street sections consistent with the County of Orange Master Plan of Arterial Highways (MPAH), and encourage their implementation.

Policy CIR-1.7 Continue to work with OCTA to implement and maintain the "Smart Street" corridors in the City to provide improved multi-modal traffic operations along those corridors.

Policy CIR-1.8 Ensure that new development can be accommodated within the existing circulation system, or planned circulation improvements, such that the standard of Level of Service (LOS) D is maintained.

Policy CIR-1.9 Review and determine if there are corridors or intersections where a future operating condition of Level of service E may be acceptable if the impact of the mitigation to address that condition would prohibit other important goals from being achieved.

Policy CIR-1.10 Continue to monitor land use development in adjacent cities to identify impacts and implement improvements to the Garden Grove circulation system.

Policy CIR-1.11 Continue to monitor the railroad operations in the Central Industrial Area along the Stanton Line of the Southern Pacific Transportation Company to ensure that these operations do not inhibit traffic flow through the area.

Goal CIR-2 Improved traffic flows along the Garden Grove Freeway, as well as improved access along the Freeway, within the City of Garden Grove.

Policy CIR-2.1 Continue to coordinate with Caltrans to monitor and improve the interface between the City's circulation network with that of the State.

Policy CIR-2.2 Continue to coordinate with adjacent cities and Caltrans to monitor all Freeway improvements.

Goal CIR-3 Minimized intrusion of commuter traffic on local streets through residential neighborhoods.

Policy CIR-3.1 Conduct neighborhood circulation studies to determine the nature and extent of actual and perceived traffic through these areas.

Policy CIR-3.2 Create disincentives for traffic traveling through neighborhoods, where feasible.

Policy CIR-3.3 Review new development or redevelopment projects adjacent to established residential neighborhoods for potential traffic intrusion impacts. The review should recommend methods, such as but not limited to 1) expanding parkways to reduce the roadway width, 2) limiting the number of ingress/egress locations on-site, 3) traffic circles, 4) diverters, or speed

humps, 5) curb extensions, 6) entrance treatments, or other effective traffic management techniques that reduce or eliminate the traffic intrusion impacts.

Policy CIR-3.4 Prioritize circulation improvements that enhance through traffic flow on Major, Modified Major, Primary, and Secondary Arterials that provide parallel routes to residential streets, in order to reduce through traffic during peak commute periods.

Policy CIR-3.5 Require new developments to implement access and traffic management plans that will reduce the potential for neighborhood traffic intrusion through factors such as driveway location, turn restrictions, shuttle bus operations, and/or travel demand strategies.

Goal CIR-4 A reduction in vehicle miles traveled in order to create a more efficient urban form.

Policy CIR-4.1 Strive to achieve a balance of land uses whereby residential, commercial, and public land uses are proportionally balanced.

Policy CIR-4.2 Strive to reduce the number of miles traveled by residents to their places of employment.

Policy CIR-4.3 Ensure the reduction in vehicle miles traveled through the approval of mixed use development proposals.

Goal CIR-5 Increased awareness and use of alternate forms of transportation generated in, and traveling through, the City of Garden Grove.

Policy CIR-5.1 Promote the use of public transit.

Policy CIR-5.2 Continue to work with OCTA to implement and maintain the “Smart Street” corridors in the City to provide improved multi-modal traffic operations along those corridors.

Policy CIR-5.3 Provide appropriate bicycle access throughout the City of Garden Grove. Policy

CIR-5.4 Provide appropriate pedestrian access throughout the City of Garden Grove.

Policy CIR-5.5 Continue to implement the provisions of the Transportation Demand Ordinance.

Goal CIR-6 A safe, appealing, and comprehensive bicycle network provides additional recreational opportunities for Garden Grove residents and employees.

Policy CIR-6.1 Continue to implement an updated Master Plan of Bikeways and its amendments.

Policy CIR-6.2 Continue to maintain roadways and remove barriers on streets with bikeway facilities.

Policy CIR-6.3 Encourage existing major traffic generators, and new major traffic generators to incorporate facilities, such as bicycle racks and showers, into the development.

Policy CIR-6.4 Continue to pursue and monitor funding sources for bikeway facilities.

Policy CIR-6.5 Sponsor bicycle safety and education programs.

Goal CIR-7 Adequate access to appropriate parking areas within the City.

Policy CIR-7.1 Design safe and efficient vehicular access to properties from arterial streets to ensure efficient vehicular ingress and egress.

Policy CIR-7.2 Review development plans and encourage designs that consolidate access locations onto streets and provide adequate turn lanes into sites to minimize conflicts with through traffic on adjacent streets.

Policy CIR-7.3 Continue to evaluate the City’s zoning ordinance to ensure that adequate parking, and access to that parking, is provided for all land uses.

Policy CIR-7.4 Require developments to provide adequate storage for exiting vehicles including multiple turning lanes at signalized access drives to reduce the time needed to exit vehicles from the site and improve intersection operations.

Policy CIR-7.5 Evaluate and determine restrictions for on-street parking along arterials in the City of Garden Grove.

Goal CIR-8 Minimized impacts associated with truck traffic through the City, as well as the parking locations of these vehicles.

Policy CIR-8.1 Continue to enforce the City's adopted truck route system.

Policy CIR-8.2 Prioritize capacity and operational enhancements along designated truck routes.

Policy CIR-8.3 Work with adjacent communities and regional agencies to identify alternative systems for goods movement.

Policy CIR-8.4 Review current goods movement patterns and determine if possible restrictions on hours of truck traffic may reduce impacts to area streets.

Goal CIR-9 Improved aesthetic quality and maintenance of arterial highways and local roadways.

Policy CIR9.1 Strive to achieve adequate funding levels for street and parkway maintenance in each budgetary cycle.

Policy CIR-9.2 Provide landscaped medians and greenbelts along major arterials, highways, and freeways, when economically feasible.

Policy CIR-9.3 Ensure the aesthetic quality and maintenance of facilities within the City under the jurisdiction of other agencies.

Policy CIR-9.4 Target and prioritize street beautification programs along Major arterials within the City.

Goal CIR-10 Participation in regional transportation planning efforts to address interjurisdictional issues, and maintain competitive advantage in capital improvement funding programs, as appropriate.

Policy CIR-10.1 Continue to comply with, and participate in, federal, state, and regional planning efforts as a means of maintaining eligibility for future roadway funding, as appropriate.

Policy CIR-10.2 Actively pursue federal, state, and regional funds for local and regional roadway improvements,

Policy CIR-10.3 Encourage employers to reduce employee-related travel.

Policy CIR-10.4 Examine the potential impacts to the community associated with county-wide street projects (i.e., effects on property values, increased noise and air quality impacts, potential improvement to marginal commercial areas, etc.)

Goal CIR-11 Continued compliance with regional congestion management, transportation demand, traffic improvement, air quality management, and growth management programs.

Policy CIR-11.1 Strive to facilitate compliance with the Congestion Management Program (CMP).

Policy CIR-11.2 Continue compliance with Measure M, as amended.

Policy CIR-11.3 Continue to meet Measure M requirements to ensure the City's eligibility to receive Measure M funds.

Policy CIR-11.4 Continue to investigate the possibility of park-and-ride facilities within the City.

Policy CIR-11.5 Encourage employers to reduce employee-related travel.

Goal CIR-12 A Citywide development phasing and monitoring program, as required by Measure M.

Policy CIR-12.1 Continue to require for all new development or redevelopment projects a development phasing plan that phases approval of development commensurate with required improvements.

Goal CIR-13 Use of the OCTA right-of-way for alternative transportation systems.

Policy CIR-13.1 Coordinate with the OCTA to facilitate the potential development of an alternative transportation system along the OCTA right-of-way. The City shall support such a use while recognizing that any impacts to the community must be appropriately mitigated.

4.14.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.
B. Conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b).
C. Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
D. Result in inadequate emergency access.
E. Cause substantial adverse cumulative impacts with respect to transportation and traffic.

4.14.4 – IMPACTS AND MITIGATION MEASURES

Conflicts with Plans or Programs

Impact TRANS-1 – Would the project* c*onflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

This section evaluates if the proposed FGPUZA is generally consistent with the goals and policies of the Circulation Element related to vehicular and non-vehicular circulation. A discussion of Vehicle-Miles Traveled (VMT) impacts is presented in Section 4.14 Impact TRANS-2 following this section.

Congestion Management Plan. LOS congestion is no longer a CEQA significance threshold, however, the City uses LOS analyses for non-CEQA purposes such as to identify specific improvements that individual projects need to install or contribute to as part of maintaining and improving the overall circulation networks (e.g., road improvements may include sidewalks, bicycle lanes, or transit stops/shelters that improve the non-vehicular circulation network as well). In the past, projects were analyzed to determine if they were consistent with the Orange County Congestion Management Plan (CMP). While the City still considers traffic generation and distribution of future development from a planning and engineering perspective, this analysis is no longer relevant to determining significant traffic impacts under CEQA.

Non-Vehicular Plan Consistency. Goal CIR-1 of the Circulation Element seeks to provide a "transportation system that maximizes freedom of movement and maintains a balance between mobility, safety, cost efficiency of maintenance, and the quality of the City's environment." Non-vehicular transportation is also a key element of SB 375 and SCAG's 2020-2045 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS)(now called "Connect SoCal"). Non-vehicular transportation includes pedestrians (sidewalks, trails), bicycles (on-road lanes or off-road paths), bus transit, and train transit.

Pedestrian (sidewalks and trails). Sidewalks are generally available on all major roadways within the City, especially within the downtown area and connecting to commercial areas. The General Plan 2030 envisions that sidewalks will eventually be provided on all roadways where they do not presently existing as development of new uses or redevelopment of existing uses occurs.

Bicycles. Bicycle lanes are classified as follows:

Class I – separate off-road bikeway or path dedicated exclusively for bicycles and pedestrians;
Class II – on-road lane or route within the right-of-way with a painted lines and signage; and
Class III – on-road preferred routes for bicycles that are not marked and on the roadway with cars.
Class IV - (separate on-road bikeway for the exclusive use of bicycles and includes a separation between the bikeway and through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

The City has a number of existing bicycle lanes on City streets and eventually plans to add on- and off-street bicycle lanes to allow for efficient bicycle movement throughout the City, as shown in the previous Exhibit 4.14-3.

Transit. The proposed FGPUZA does not include an update of the General Plan Circulation Element. At present there are a number of transit organizations that provide services to the City along major roads and to major destinations within the City, as shown in the previous Exhibit 4.14-2. A major goal of the City is for residents and employees of the City to be able to take advantage of these non-vehicular transportation options (i.e., sidewalks, bicycle lanes, or transit) as they so choose, although using them as a replacement for commuting will only be possible if residents and workers in the City live within a convenient distance to their places of employment, schools, commercial centers, entertainment, etc.

General Plan Analysis. In the existing Circulation Element, Goal CIR-1 encourages development of a flexible transportation network, including use of alternative transportation and public transit (Goal 5 and its policies) and bicycles (Goal 6 and its policies). Goal CIR-11 and its policies require continued compliance with regional plans for roadway consistency, road and intersection safety, regional transit planning, congestion management, transportation demand, traffic improvement, air quality management, and growth management. Finally, Goal CIR-13 and its policies encourage shared use of OCTA right-of-way to develop creative transportation programs.

Based on the availability of non-vehicular transportation options outlined in the existing General Plan Circulation Goals 1-13 and their attendant policies (shown above in Section 4.14.2), future development under the proposed FGPUZA will be consistent with the City's Circulation Element as well as regional and City planning efforts regarding transit, pedestrian circulation, and bicycle access, and thus will not conflict with any applicable program, plan, or ordinance on the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

VMT Consistency

Impact TRANS-2 – Would the project conflict or be inconsistent with CEQA guidelines section 15064.3, subdivision (b)? [regarding VMT]

Analysis of Impacts

In the past, the CEQA analysis for traffic impacts focused on LOS which measures congestion at local intersections and roadway segments. The emphasis of these past studies was to assure the street grid network functioned well (i.e., were not congested past a certain point) and allowed for efficient movement of vehicles.

Senate Bill 743 required that congestion or delay-based metrics such as roadway capacity and Level of Service (LOS) no longer be the performance measure used to analyze transportation impacts under CEQA. The state selected Vehicle Miles Traveled (VMT)as the new metric to analyze traffic impacts.

,A detailed VMT analysis for the FGPZA was prepared by Fehr & Peers in June 2021 (F&P 2021). Consistent with the requirements of the City of Garden Grove *Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment*, the following VMT thresholds were applied to determine potential project-generated VMT and VMT impacts:

- A project would result in a significant project generated VMT impact if the project generated VMT per service population (population plus employment) is not more than 15% below the County of Orange baseline VMT per service population.

- The project's effect on VMT would be considered significant if it resulted in an increase in the cumulative link-level boundary Citywide VMT per service population under the plus project condition compared to the no project condition.

Existing VMT Analysis. The Orange County Traffic Analysis Model (OCTAM) was used to estimate the existing VMT per service population for Orange County (as a whole) The existing VMT per service population for just the City of Garden Grove was also determined for comparative purposes. **Table 4.14-2** summarizes the existing Orange County and Garden Grove VMT per service population. As shown in Table 4.14-2, Garden Grove travel behavior is typically more efficient than Orange County with a lower VMT per service population than the existing county-wide average.

Table 4.14-2
Existing Vehicle Miles Traveled

Study Area	VMT Per Service Population	Impact Threshold (15% below Orange County VMT per Service Population)
Orange County	29.01	24.66
Garden Grove	22.56	--

Source: Table 1, F&P 2021

VMT Modeling. VMT was estimated using the Origin/Destination (OD) method. The OD tables estimate the number of trips between each Traffic Analysis Zone (TAZ) and the skim matrices provide the distance on the roadway network, or trip length, along the utilized travel paths between each TAZ. The full length of all trips with an origin or destination in any of the TAZs representing Garden Grove were used to estimate VMT generated in Garden Grove. This methodology is usually referred to as the "full accounting" methodology (e.g. assigning the whole of the trip length to the Project). Additionally, this is the methodology that is utilized in the Air Quality, GHG, and Energy sections of the environmental document which ensures consistency. Finally, the OD methodology only includes trips that originate or end in the City of Garden Grove; it does not include trips that "pass through" Garden Grove on their way to/from their ultimate destinations.

The future OCTAM model was modified to include the changes associated with the Project to evaluate the project generated VMT. The additional 20,242 new dwelling units were added to the existing households in the Garden Grove TAZs within OCTAM. This updated model was used to calculate project generated VMT for the City of Garden Grove for the cumulative plus project condition. Table 4.14-3 summarizes the VMT generated by Garden Grove in the existing, cumulative, and cumulative plus project conditions.

Table 4.14-3
Project Generated VMT Summary (Origin/Destination Method)

Method	Existing	Cumulative No Project	Cumulative Plus Project
Garden Grove VMT	6,599,660	7,215,593	7,801,908
Garden Grove Service Population	292,479	318,530	359,902
Garden Grove VMT/Service Population	22.56	22.65	21.68

Source: Table 2, F&P 2021

The City's VMT existing condition (22.56) indicates that the population is expected to travel in a more efficient manner. The improvement in travel efficiency is the result of people making fewer trips and traveling shorter distances due to increased availability of active modes of transportation and better accessibility to destinations by all modes of transportation. Table 4.14-4 summarizes the project effect on VMT, which evaluates how the Project will change travel behavior in the region. An analysis was also prepared using the boundary method. Unlike the OD method, the boundary method utilizes all the VMT within a specific geographic boundary (including trips that simply pass through the boundary). This assessment accounts for other rerouting of trips that may occur due to the project shifting travel patterns due to congestion or other factors and provides an additional picture of the VMT impacts associated with the project. Please note, since the Project increases service population in the City and/or Orange County, VMT will also increase in the region. As such, boundary VMT is also normalized for this assessment to provide an appropriate comparison between scenarios.

Table 4.14-4
Project Effect on VMT Summary (Boundary Method)

Method	Existing	Cumulative No Project	Cumulative Plus Project
Orange County VMT per Service Population	14.22	14.26	14.21
Garden Grove VMT	2,456,276	2,620,990	2,728,000
Garden Grove Service Population	292,479	318,530	359,902
Garden Grove VMT per Service Population	8.40	8.23	7.58

Source: Table 3, F&P 2021

As shown in Table 4.14-4, the Citywide VMT per Service Population under the "plus project" condition does not exceed the Citywide cumulative no project condition. Additionally, , overall countywide VMT is expected to improve. The improvement in countywide VMT is the result of people making fewer trips and traveling shorter distances due to the increased availability of active modes of transportation and better accessibility to destinations by all modes of transportation. A summary of the VMT impacts is provided below:

- Project Level: The Project generates VMT per Service Population that does not exceed 15 percent below the cumulative year rate for the citywide area.
- Cumulative: The cumulative plus project VMT per Service Population does not cause total VMT for the City of Garden Grove to exceed the cumulative forecast from the SCAG RTP/SCS.

Other VMT Considerations

Overall, the analysis shows that the VMT per service population would decrease in the future due to improved development and transportation patterns. Although OCTAM is the best available tool to estimate VMT for the City of Garden Grove (and the City has identified it as the most appropriate tool to estimate VMT as part of its VMT guidelines update), there are some factors that affect how much people travel that are not completely captured by the model.

Specifically, some factors, like the cost of fuel, have been shown to have a dramatic effect on .how much people drive. The City of Garden Grove does not have control over the price of gas; however, it is a factor the state could potentially influence. As an example, the legislature could impose regulations that would manage the cost of fuel to influence driver behavior to attain state goals. To date, the state has discussed measures that would influence VMT significantly, including a VMT tax or modifications to the fuel tax.

Although the findings indicate that the Project is beneficial from a VMT efficiency perspective using the best tool available in Orange County (and the Housing Element is expected to produce VMT at a rate that would not result in a significant impact), the uncertainty related to future fuel prices and future legislative policy could dramatically influence VMT production in the City. For the purposes of this Citywide planning effort, the City has deemed this to be significant. Given this information, the VMT impact of the FGPUZA is considered significant and unavoidable.

Future Transportation Analysis

All future project applicants would need to coordinate with the City of Garden Grove staff to determine the appropriate level of transportation analysis associated with their future projects.

The City of Garden Grove Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment were approved in 2020 to outline the specific steps for complying with the new CEQA expectations for VMT analysis and the applicable general plan consistency requirements related to Level of Service (LOS). Projects may be screened from VMT analysis and require LOS analysis, or vice-versa. In cases where insufficient information is available to make a preliminary assessment of a proposal's effect on traffic, the City Traffic Engineer shall determine, at his or her discretion, whether additional transportation analysis will be required. Please see the City's Traffic Impact Analysis Guidelines for detailed information and guidance.

Exhibit 4.14-5 (Housing Allocation by TAZ) illustrates the relationship between VMT per service population to the impact threshold for each traffic analysis zone (TAZ) in the City of Garden Grove. This map is provided as the VMT screening map in the City of Garden Grove Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment. Zone 1 identifies the VMT efficient areas where the VMT per service population is lower than the City VMT impact threshold (i.e. 85 percent or less than the County average). Projects proposed in these areas would be presumed not to have a significant VMT impact and can be screened from VMT analysis. Zone 2 identifies VMT areas that are more efficient than the county average, but not efficient enough to be lower than the City VMT impact threshold. Projects proposed in these areas may or may not have a VMT impact and would need further analysis to verify. Zone 3 identifies VMT areas that are less efficient than the county average. Projects proposed in these areas would be expected to have a VMT impact and would need further analysis determine the significance of the impact.

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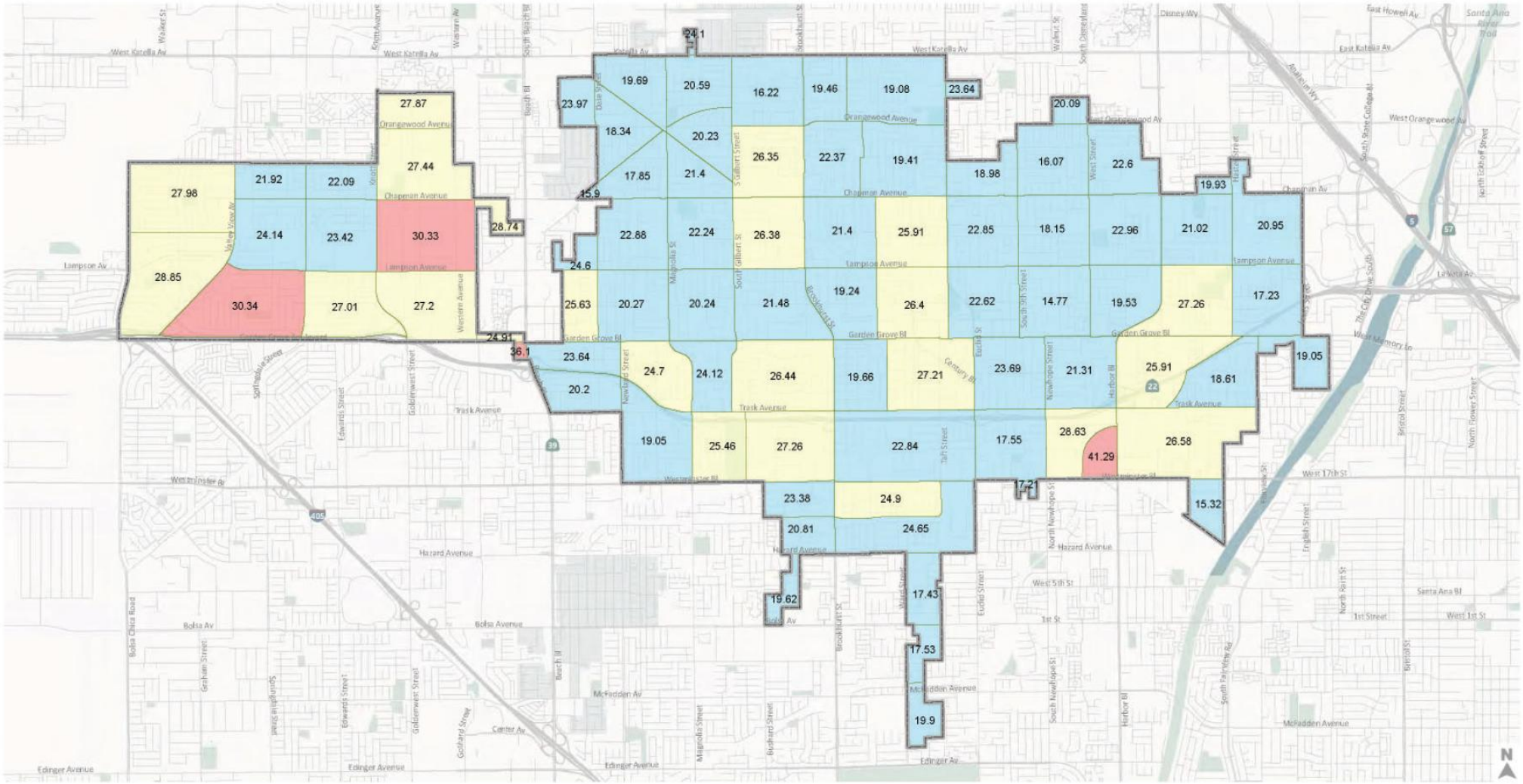

Orange County Average VMT/SP: 29.01

Exhibit 4.14-5 Housing Allocation by TAZ

Focused General Plan Update and Zoning Amendments
Garden Grove, California

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In addition to projects located in Zone 1 areas being screened from VMT analysis, projects located in a Transit Priority Area[1] (TPA) may be presumed to have a less than significant impact absent substantial evidence to the contrary and therefore screened from VMT analysis. As documented in City of Garden Grove Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment this presumption may not be appropriate if the project:

1. Has a Floor Area Ratio (FAR) of less than 0.75;
2. Includes more parking for use by residents, customers, or employees of the project than required by the City;
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Southern California Association of Governments [SCAG]); or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

Exhibit 4.14-6 (Transit Priority Areas) identifies the Garden Grove TPAs according to the City's guidelines. Future projects should confirm with local transit providers that no recent changes in transit service have occurred in the project area (e.g., addition or removal of transit lines, addition or removal of transit stops, or changes to service frequency).

Beyond the VMT impact analysis, LOS analysis and transportation studies may be required in the future for general plan consistency and development standard review. Project applicants must coordinate with the City of Garden Grove staff to determine what transportation analysis beyond VMT analysis may be required.

Projects in Zone 1 and Transit Priority Areas (TPAs). Per the City of Garden Grove Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment projects located in Zone 1 areas and TPAs (with meeting criteria) can be presumed not to have a significant VMT impact and can be screened from VMT analysis. Therefore, no VMT mitigation is necessary for projects located in Zone 1 areas.

Projects in Zones 2 and 3 will require varying levels of mitigation depending on the results of subsequent VMT analyses and project characteristics (see Mitigation Measures).

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[1] A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor per the definitions below. Public Resources Code § 21099(a)(7)

Pub. Resources Code, § 21064.3 - 'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Pub. Resources Code, § 21155 - For purposes of this section, a 'high-quality transit corridor' means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hour

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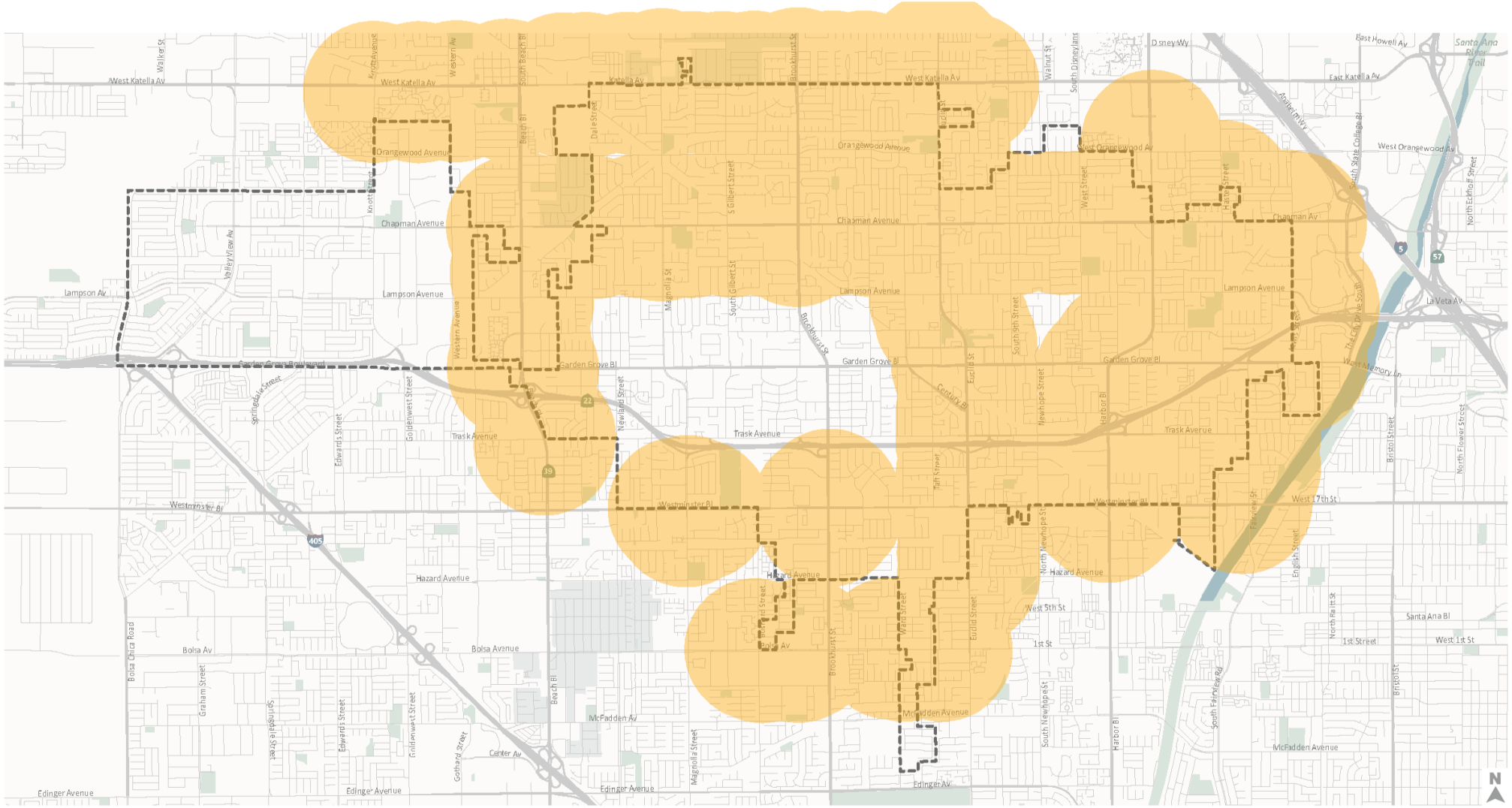

Exhibit 4.14-6 Transit Priority Areas

Focused General Plan Update and Zoning Amendments

Garden Grove, California

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General Plan Analysis. In the Circulation Element, Goal CIR-4 requires a reduction in vehicle miles traveled in order to create a more efficient urban form. To support this, Policy CIR-4.1 tries to achieve a balance of land uses (to reduce VMT) and Policy CIR-4.2 is to reduce the number of miles traveled by residents to their places of work. Finally, Policy CIR-4.3 tries to reduce VMT by encouraging mixed-use development that provides both housing and jobs.

Summary and Conclusion. The VMT analysis prepared for the FGPUZA determined that **Mitigation Measures VMT-1 through VMT-3** were necessary to apply to future development projects to help reduce future VMT to the greatest degree practical and feasible. Even with these measures, it cannot be established at this programmatic level that City-wide VMT will be maintained within the County standard, as outlined in the City's VMT guidelines, so impacts of the FGPUZA are considered significant and unavoidable even with the recommended mitigation.

Level of Significance Before Mitigation

Potentially Significant.

Mitigation Measures[2]

VMT-1 **Zone 2 Projects.** Projects proposed in Zone 2 areas may or may not have a VMT impact and are required to provide further VMT analysis to verify and quantify potential impacts. Mitigation for impacts in Zone 2 areas is likely to be of a lower intensity due to the Zone 2 areas having a more efficient VMT than the county average, but not efficient enough to be lower than the City VMT impact threshold. Potential measures to be identified in the VMT analysis could include, but are not limited to:

- incorporate affordable housing into the project;
- orient the project toward transit, bicycle and pedestrian facilities;
- provide bicycle parking;
- unbundle parking costs (selling or leasing a parking space separate from the purchase or lease of a multifamily residential unit);
- provide parking cash-out programs;
- provide car-sharing, bike sharing, and ride-sharing programs;
- provide transit passes; and/or
- increase project density.

VMT-2 **Zone 3 Projects.** Projects proposed in Zone 3 areas would be expected to have a VMT impact and would need further VMT analysis to determine the significance of the impact. Mitigation for impacts in Zone 3 areas is likely to be of a higher intensity than Zone 2 areas due to VMT inefficiency. Potential measures to be identified in the VMT analysis could include, but are not limited to:

- measures identified for Zone 2 areas;

[2] Per the City of Garden Grove Traffic Impact Analysis Guidelines for VMT and Level of Service Assessment projects located in Zone 1 areas and TPAs (with meeting criteria) can be presumed not to have a significant VMT impact and can be screened from VMT analysis. Therefore, no VMT mitigation is necessary for projects located in Zone 1 areas.

- improve or increase access to transit;
- increase access to common goods and services, such as groceries, schools, and daycare;
- incorporate neighborhood electric vehicle network;
- improve pedestrian or bicycle networks, or transit service;
- provide traffic calming; • locate the project near transit;
- increase the mix of uses within the project or within the project's surroundings;
- increase connectivity and/or intersection density on the project site; and/or

VMT-3 **Mitigation Exchange or Bank.** The City may evaluate the feasibility of a local or regional VMT impact bank or exchange program. Such an offset program, if determined feasible, would be administered by the City or a regional agency, and would offer demonstrated VMT reduction strategies through transportation demand management programs, impact fee programs, mitigation banks or exchange programs, in-lieu fee programs, or other land use project conditions that reduce VMT in a manner consistent with state guidance on VMT reduction. If, through onsite changes, a subject project cannot demonstrate consistency with state guidance on VMT reduction, the project can contribute on a pro-rata basis to a local or regional VMT reduction bank or exchange, as necessary, to reduce net VMT impacts.

Level of Significance After Mitigation

Significant and Unavoidable.

Design Feature Hazards

Impact TRANS-3– Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Analysis of Impacts

The City's street and intersection network is laid out in a grid pattern with a hierarchy of roadways by width and purpose. An overarching goal of the General Plan is to protect health and safety of its residents and workers. The Circulation Element supports this effort by maintaining safe and efficient streets and intersections. Where traffic safety issues are identified, the City works to correct any structural deficiencies in a timely manner to the degree practical.

The EIR for the FGPUZA has been prepared at a programmatic level, but future housing projects would be required to prepare project-level CEQA documentation. At that time any specific traffic hazards due to geometric design around the housing project site would be identified and mitigated to the extent possible or practical under CEQA. No such design issues, however, are reasonably foreseeable at this time.

In the Circulation Element, Goal CIR-1 encourages a transportation system that maximizes freedom of movement and maintains a balance between mobility, safety, cost efficiency of maintenance, and the quality of the City's environment. To support that goal, Policy CIR-1.3 strives to achieve a minimum traffic Level of Service (LOS) D throughout the City, except for major development areas at those intersections that are impacted by factors beyond the City's control or at those intersections included on the Deficient Intersection List. However, it should

be noted the City only considers VMT for CEQA impact determinations, LOS impacts are for non-CEQA reasons. In addition, Policy CIR-1.4 seeks to improve intersections impacted by factors beyond the control of the City and that operate at an unacceptable Level of Service (some of which may occur due to poor geometric design). The City's development review process will also assure that future development under the FGPUZA will be consistent with these policies and thus prevent a significant increase in traffic hazards.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Emergency Access

Impact TRANS-4 – Would the project result in inadequate emergency access?

Analysis of Impacts

As outlined in Impact TRANS-3 above, the City's streets and intersections are laid out in a grid pattern with a hierarchy of roadways by width and purpose. An overarching goal of the General Plan is to protect health and safety of its residents and workers, which includes efficient access for emergency vehicles. The Circulation Element supports this effort by maintaining safe and efficient streets and intersections.

The EIR for the FGPUZA has been prepared at a programmatic level, but future housing and other types of development projects would be required to prepare project-level CEQA documentation. At that time, any specific improvements needed to maintain adequate emergency access would be identified and required of the development to the extent required by CEQA.

In the Circulation Element, Goal CIR-1 encourages a transportation system that maximizes freedom of movement and maintains a balance between mobility, safety, cost efficiency of maintenance, and the quality of the City's environment. The City's development review process will also assure that future development under the FGPUZA will be consistent with these policies and thus prevent significant impacts related to emergency access. In addition, during construction, traffic control plans would be required and project design would be subject to review by the OCFA, police department, etc.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

Cumulative Impacts

Impact TRANS-4 – Would the project cause substantial adverse cumulative impacts with respect to transportation and traffic?

Analysis of Impacts

Future development under the FGPUZA will add housing in a housing rich city which could hinder the state and regional VMT reduction goals outlined in SCAG's RTP/SCS ("Connect SoCal"). Future regional transportation network improvements and transportation demand

management (TDM) factors that SCAG has assumed for 2040 will incrementally help reduce regional VMT in the coming years as the SCAG RTP/SCS are implemented at the local level, including the City of Garden Grove. For example, increases in Metrolink and OCTA transit opportunities will help support a mode shift from autos to transit. In addition, SCAG's RTP/SCS assumes the implementation of several TDM factors, such as increased auto ownership costs, shifts to telecommuting, and further implementation of regional trip reduction strategies will help contribute to this mode shift as well.

However, Impact TRANS-2 above did conclude the FGPUZA could have potentially significant VMT impacts even with implementation of the recommended **Mitigation Measures VMT-1 through VMT-3.** Therefore, the FGPUZA would also result in a significant contribution to a regional (cumulative) VMT impact.

Level of Significance Before Mitigation

Potentially Significant (increased VMT).

Mitigation Measures

See Mitigation Measures VMT-1 through VMT-3 in IMPACT TRANS-2.

Level of Significance After Mitigation

Significant contribution to a cumulative impact.

4.14.5 – REFERENCES

City of Garden Grove. *Garden Grove General Plan 2030: Circulation Element*. May 2008.

Fehr & Peers (F&P 2021). Garden Grove Housing Element Update Vehicles Miles Traveled (VMT) Analysis. Fehr and Peers, June 18, 2021.

4.15 – Tribal Cultural Resources

This section describes the existing conditions for Tribal Cultural Resources (TCRs) in the Planning Area, describes the associated regulatory requirements, and evaluates the potential impacts to TCRs resulting from implementation of the FGPUZA.

On July 1, 2015, Assembly Bill (AB) 52 went into effect amending CEQA to include TCRs as a new class of resources and to include new requirements relating to Native American consultation. A TCR, in general, is similar to the federally defined Traditional Cultural Properties. However, AB 52 incorporates consideration of local and state significance and requires mitigation under CEQA. TCRs may include resources that are listed in or eligible for listing in the California Register of Historical Resources, such as archaeological sites, districts, or landscapes, or other kinds of resources that the CEQA lead agency chooses to treat as a TCR through tribal consultation.

4.15.1 – ENVIRONMENTAL SETTING

Generally, TCRs are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources as defined in Public Resources Code Section 5024.1(k). TCRs are also resources determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the criteria established in Public Resources Code Section 5024.1(c) (which are the criteria used to determine whether a resource may be listed as historical in the California Register of Historical Places), (Public Resources Code §§ 21074; 5024.1(c).

Prior to European contact in the 1700s, the Planning Area was inhabited by the Gabrieleño Indian Tribe for many thousands of years. Development began in the Garden Grove area in the latter half of the 19th century. but the surrounding area is known to contain archaeological resources that pre-date Spanish and Mexican land grants. Additionally, the Planning Area is located close to the modern route of the Santa Ana River. The river in prehistory changed its course with winter floods and would likely have flowed over the alluvial soils in the Planning Area. Native Americans would have used the natural resources of the Santa Ana River and its tributaries as a source of water and food. It is almost certain the Planning Area would have been utilized heavily by the indigenous people living in this area for thousands of years. The Planning Area likely contains archaeological resources that pre-date Spanish and Mexican land grants, dating back thousands of years and reflecting Native American settlement patterns. Given the long history of Native American settlement in the region, there is a moderate to high probability of finding archaeological resources, including Tribal Cultural Resources and possibly tribal cultural resources in the Planning Area.

Tribal Cultural Resources

One prehistoric site (Site CA-ORA-392) has been identified within Garden Grove's municipal boundaries, (Garden Grove, 2008b). The prehistoric site is located under a residential development and consists of shellfish remains from food debris, stone tools and stone flakes from manufacturing stone tools. As a prehistoric site, connected with the indigenous Native

peoples of the area, the site is considered an archaeological resource but it is not known if it also constitutes a Tribal Cultural Resource (TCR).

4.15.2 – REGULATORY FRAMEWORK

Federal

National Historic Preservation Act of 1966. Enacted in 1966, the National Historic Preservation Act (NHPA) (16 U.S.C §§ 470 et seq.) declared a national policy of historic preservation and instituted a multifaceted program, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the National Register of Historic Places (NRHP), established the position of State Historic Preservation Officer (SHPO), provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assist Native American tribes in preserving their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP).

NHPA establishes the nation's policy for historic preservation and sets in place a program for the preservation of historic properties by requiring federal agencies to consider effects to significant cultural resources (i.e. historic properties) prior to undertakings**.**

Section 106 of the Federal Guidelines. Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the NRHP and that the ACHP and SHPO must be afforded an opportunity to comment, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800, on such undertakings. The Section 106 process also give Federally recognized Native American Tribes the chance to consult and comment on the project before it can be finalized.

Native American Graves Protection and Repatriation Act of 1990. The NAGPRA of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation

State

Native American Heritage Commission, Public Resources Code Sections 5097.9–5097.991. Section 5097.91 of the Public Resources Code (PRC) established the Native American Heritage Commission (NAHC), whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Under Section 5097.9 of the PRC, a state policy of noninterference with the free expression or exercise of Native American religion was articulated along with a prohibition of severe or irreparable damage to Native American sanctified cemeteries, places of worship, religious or ceremonial sites or sacred shrines located on public property. Section 5097.98 of the PRC specifies a protocol to be followed when the

NAHC receives notification of a discovery of Native American human remains from a county coroner. Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

California Native American Graves Protection and Repatriation Act of 2001. Codified in the California Health and Safety Code Sections 8010–8030, the California Native American Graves Protection Act (NAGPRA) is consistent with the federal NAGPRA. Intended to "provide a seamless and consistent state policy to ensure that all California Indian human remains, and cultural items be treated with dignity and respect," the California NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this process. The act also provides a process for non–federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

California Assembly Bill 52.

Assembly Bill (AB) 52 was approved by Governor Jerry Brown on September 25, 2014. AB 52 amended California Public Resources Code (PRC), Section 5097.94, and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that TCRs must be considered under CEQA and required additional Native American consultation in certain circumstances. Specifically, AB 52 requires the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report.

Section 1(a)(9) of AB 52 establishes that "a substantial adverse change to a tribal cultural resource has a significant effect on the environment." Effects on TCRs should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the PRC, which states that parties may propose mitigation measures "capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource." Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (PRC Section 21080.3.2(a)). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (PRC Section 21082.3(a)).**Senate Bill (SB) 18.** California Government Code, Section 65352.3 incorporates the protection of California traditional tribal cultural places into land use planning for cities, counties, and agencies by establishing responsibilities for local governments to contact, refer plans to, and consult with California Native American tribes as part of the adoption or amendment of any general or specific plan proposed on or after March 1, 2005. SB18 requires public notice to be sent to tribes listed on the Native American Heritage Commission's SB18 Tribal Consultation list within the geographical areas affected by the proposed changes. Tribes must respond to a local government notice within 90 days (unless a shorter time frame has been agreed upon by the tribe), indicating whether or not they want to consult with the local government. Consultations are for the purpose of preserving or mitigating impacts to places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code that may be affected by the proposed adoption or amendment to a general or specific plan.

Local

City General Plan. The Conservation Element of the City's General Plan specifies the following Goals, Policies, and Implementation Programs regarding similar resources:

Goal CON-7 Significant historical, architectural, archeological, and cultural value resources shall be preserved and protected.

Policy CON-7.1 Preserve and protect Garden Grove's significant historical, archaeological and cultural value resources.

CON-IMP-7A Preserve significant archeological sites in conformance with Public Resources Code Section 21083.2 or Section 21084.1, as applicable.

4.15.3 – SIGNIFICANCE THRESHOLDS

As identified in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

   i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

   ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

B. Would the project cause substantial adverse cumulative impacts with respect to tribal cultural resources?

4.15.4 – Impacts and Mitigation Measures Impact TCR-1 – Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC, Section 21074, as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC, Section 5020.1(k), or

b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC, Section 5024.1(c). In applying the criteria set forth in PRC, Section 5024.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.

Analysis of Impacts

There are no known TCRs in the City of Garden Grove that are not archaeological in nature. This means that there are no landscapes, places that are not archaeological sites, or other non-archaeological features that could be a TCR within the Planning Area.

A single prehistoric archaeological TCR is known within the City; this consists of shellfish remains from food debris, stone tools and stone flakes from manufacturing stone tools.

Much of the City is heavily developed, greatly reducing the potential for the discovery of TCRs. However, some areas within the Planning Area that could have potential for discovery of TCRs include undeveloped land, and prior development with shallow foundations that is anticipated for redevelopment in the FGPUZA.

The Conservation Element of the City's current General Plan contains Goal CON-7, Policy CON-7.1 and Implementation Program CON-IMP-7A which can identify and protect significant tribal cultural/archaeological resources. It should be noted that TCRs can encompass large areas and resources that are more broad or regional compared to archaeological resources which usually refer to more isolated deposits or collections of artifacts in specific locations.

Section 7050.5 of the California Health and Safety Code requires that, if human remains are discovered during grading or earthmoving, work must be halted, and the coroner contacted to determine the Most Likely Descendant (MLD). If the MLD is Native American, tribal representatives will be contacted to consult on the appropriate disposition of the remains. CEQA requires the City and any project developer, including the City if it is a public works project, to comply with state law if human remains are found during excavation.

Native American Consultation is Required per SB18 when a General Plan, or General Plan Update is prepared, and must be conducted before the General Plan Update is adopted. The City sent out SB18 notifications on June 8,2021 to the sixteen (16) tribal representatives of six main tribal groups as shown in Table 4.15-1. No responses were received,

As part of AB52 outreach, the City sent out AB52 notifications on June 8, 2021 to the four (4) tribal groups/representatives that indicated they wished to receive AB 52 notices, also as shown in Table 4.15-1. Noreplies were received, except for the Gabrieleno Band of Mission Indians – Kizh Nation, who did not request consultation or changes in policies or mitigation measures, but did ask to be notified of future development proposals.

Table 4.15-1
Native American Consultation Process

Tribal Group	Tribal Representative
SB 18 Letters sent June 8, 2021	
Campo Band of Diegueno Mission Indians	Ralph Goff, Chairperson
Ewiiaapaayp Band of Kumeyaay Indians	Michael Garcia, Vice Chairperson
Ewiiaapaayp Band of Kumeyaay Indians	Robert Pinto, Chairperson
Gabrieleno Band of Mission Indians - Kizh Nation	Andrew Salas, Chairperson

Tribal Group	Tribal Representative
SB 18 Letters sent June 8, 2021	
Gabrieleno/Tongva San Gabriel Band of Mission Indians	Anthony Morales, Chairperson
Gabrielino /Tongva Nation	Sandonne Goad, Chairperson
Gabrielino Tongva Indians of California Tribal Council	Robert Dorame, Chairperson
Gabrielino-Tongva Tribe	Charles Alvarez
Juaneno Band of Mission Indians Acjachemen Nation	Matias Belardes, Chairperson
La Posta Band of Diegueno Mission Indians	Gwendolyn Parada, Chairperson
La Posta Band of Diegueno Mission Indians	Javaughn Miller, Tribal Administrator
Manzanita Band of Kumeyaay Nation	Angela Elliott Santos, Chairperson
Mesa Grande Band of Diegueno Mission Indians	Michael Linton, Chairperson
Pala Band of Mission Indians	Shasta Gaughen, Tribal Historic Preservation Officer
Santa Rosa Band of Cahuilla Indians	Lovina Redner, Tribal Chair
Soboba Band of Luiseno Indians	Isaiah Vivanco, Chairperson
Sycuan Band of the Kumeyaay Nation	Cody Martinez, Chairperson
Soboba Band of Luiseno Indians	Joseph Ontiveros, Cult. Resource Director
Torres Martinez Desert Cahuilla Indians	Michael Mirelez, Cult. Resource Coord.
Juaneno Band of Mission Indians- Acjachemen Nation	Christopher Granado Director of Native American Monitoring
Tongva Tribe	Sam Duniap

While there is potential for currently unknown TCRs to exist within the City, the existing General Plan Goal CON-7, Policy CON-7.1 and Implementation Program CON-IMP-7A in addition to Public Resources Code Section 5024.1 serve to protect resources by analyzing all proposed projects for the need for cultural resources surveys at the proposal stage. With these goals and policies, the City's development requirements to review CEQA documents for impacts to prehistoric archaeological and cultural tribal resources, and required AB52 consultation for Negative Declarations, Mitigated Negative Declarations, and EIRs, potential impacts to tribal cultural resources by future development within the Planning Area will be less than significant.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None Required.

Cumulative Impacts

Impact TCR-2 – Would the FGPUZA cause substantial adverse cumulative impacts with respect to tribal cultural resources?

Analysis of Impacts

There is a potential for archaeological/Tribal Cultural Resources (TCRs) to exist within the Planning Area, particularly in the few remaining undeveloped areas of the City, or in areas slated for redevelopment where existing foundations are shallow, and where archaeological resources, including human remains, could remain below the prior level of disturbance.

On a cumulative level, impacts to tribal cultural resources from both the City and the surrounding jurisdictions (i.e. the cities of Anaheim, Cypress, Fountain Valley, Los Alamitos, Orange, Santa Ana, Seal Beach, Stanton, and Westminster) should be considered. These jurisdictions potentially also contain TCRs, as with all cultural resources, are non-renewable. Damaging, disturbing, or destroying TCRs results in a permanent loss of resources, and future projects with impacts to cultural resources from all surrounding jurisdictions contribute to the cumulative impact to TCRs.

The Conservation Element of the City's current General Plan contains Goal CON-7, Policy CON-7.1 and Implementation Program CON-IMP-7A. This goal, policy, and implementation program will help identify and protect significant tribal cultural archaeological resources in consultation with local Native American tribal representatives.

Consistent with federal and state laws, the General Plans of the surrounding jurisdictions have similar goals and policies to protect cultural resources within their boundaries as well. State law requires local jurisdictions, including the City, to consult with local Native American tribal representatives when development or public works projects may affect tribal cultural resources and certain criteria are met (i.e., SB 18 and AB 52). This government-to-government consultation process is critical to identifying actions that could have significant impacts on tribal cultural resources before any ground disturbance occurs in the surrounding region. Finally, state law requires the City and surrounding jurisdictions to notify Native American representatives if tribal human remains are found.

By implementing the General Plan goals and policies, complying with required laws and regulations, and continuation of the City's required CEQA review of all development projects under the FGPUZA, the FGPUZA's potential cumulative impacts to cultural resources will be minimized, and future development in the City of Garden Grove under the FGPUZA will not make a significant contribution to any cumulative regional impacts on tribal cultural resources.

Level of Significance Before Mitigation

Less than significant.

Mitigation Measures

None required.

4.15.5 – REFERENCES

California Health and Safety Code, Section 7050.5.

California Public Resources Code Section 5097.

California State Parks, 2021. California Register of Historical Resources. https://ohp.parks.ca.gov/ListedResources/ website (accessed April 20, 2021)

City of Garden Grove (2008a). Garden Grove General Plan 2030: Community Design Element. May 2008.

_____ (2008b). Garden Grove General Plan 2030: Conservation Element. May 2008.

City of Garden Grove. City of Garden Grove Comprehensive Historic and Architectural Resources Inventory. June 1986.

National Park Service, 2021. National Register of Historic Places. Website accessed April 20, 2021. https://www.nps.gov/subjects/nationalregister/database-research.htm

4.16 – Utilities and Service Systems

This EIR chapter addresses utilities and service systems impacts associated with the proposed Focused General Plan Update and Zoning Amendments (FGPUZA). Specifically, this chapter analyzes utilities and service systems impacts identified by the CEQA Guidelines: whether the FGPUZA will require or result in the relocation or construction of new or expanded water, wastewater treatment, or other facilities; will have sufficient water supplies; will result in a determination by the wastewater treatment provider that it has adequate capacity to serve the Project's demand in addition to existing commitments; will generate solid waste in excess of standards; and will comply with regulations related to solid waste.

4.16.1 – ENVIRONMENTAL SETTING

Water Service

Garden Grove's water supply comes from two sources: local well water from the Lower Santa Ana River Groundwater Basin, which is managed by the Orange County Water District (OCWD), and imported water from Municipal Water District of Orange County (MWDOC) (UMWP, 2020). MWDOC is Orange County's wholesale supplier and is a member agency of the Metropolitan Water District of Southern California (MWD). The primary water supplier within the City is the Garden Grove Water Services Division, serving an area of about 18.2 square miles. The Division serves most of the incorporated City and two small unincorporated neighborhoods: one near Chapman Avenue and Dale Street, and the other near Lampson Avenue and Beach Street.).

The City's Water Services Division has been operating 13 active wells with a total capacity of 39,850 gallons per minute (GPM) and four imported water connections (City 2021a, b). In addition, the City also operates eight storage and distribution reservoirs at five sites with a combined volume of 53 million gallons (MG), allowing backup during periods of fireflow demand, peak demands, and/or temporary outages. The storage system is supported by 17 booster pumps that have a total capacity of 44,500 GPM, which will keep the system pressurized under peak flow conditions. The City also maintains seven emergency interconnections with neighboring water systems. In 2020, the City consumed 11,027 acre-feet of groundwater (not desalinated) and 11,027 acre-feet of groundwater from the Orange County Basin (Table 6-1, City UWMP 2020).

Water infrastructure within the City is vital to the well-being of a community, and must be maintained and improved to meet the needs of residents and the business community alike. (Garden Grove, 2021b). As the City ages, the Water Services Division will continue replacing aging infrastructure in certain areas of the City. The City's 2020 Water Master Plan (WMP) assesses the need for replacement and expansion of water facilities. In addition to water demands placed on the system for domestic and commercial use, the system must be capable of providing adequate pressures for fire-fighting purposes. Since fires can occur at any time, the water system must be ready at all times to provide the required flow. Although Garden Grove does not currently have a reclaimed water system, the City will continue to work with MWDOC and OCWD to develop new water sources from the upper non-potable aquifer for treatment and for other non-potable use (City 2020a).

Wastewater

The Garden Grove Sanitary District (GGSD) provides sewer service to the City of Garden Grove. The wastewater system consists of over 312 miles of gravity sewer pipes constructed between 1923 to the present, 9,700 manholes, and four lift stations. The gravity pipes collect wastewater from the service area and convey it to the Orange County Sanitation District's (OCSD) trunk sewers. The trunk sewers further convey the wastewater to OCSD's two treatments facilities in Fountain Valley and Huntington Beach (Garden Grove, 2008). OCSD's Plant No. 1 in Fountain Valley has a capacity of 320 million gallons per day (MGD) and Plant No. 2 in Huntington Beach has a capacity of 312 MGD. In 2018, approximately 188 MGD of influent was processed and treated at the Sanitation District's treatment plants. (OCSD September 2020). Therefore, there is an excess of roughly 132 MGD capacity. Both plants share a common ocean outfall, but Plant No. 1 currently provides all of its secondary treated wastewater to OCWD's GWRS for beneficial reuse. The 120-inch diameter ocean outfall extends 4 miles off the coast of Huntington Beach. A 78-inch diameter emergency outfall also extends 1.3 miles off the coast (Garden Grove, 2016).

The City does not own or operate wastewater treatment facilities and sends all collected wastewater to Orange County Sanitation District (OCSD) for treatment and disposal. OCWD is the manager of the OC Basin and strives to maintain and increase the reliability of the OC Basin through replenishment with imported water, stormwater, and advanced treated wastewater. OCWD and OCSD have jointly constructed and expanded two water recycling projects to meet this goal that include: 1) OCWD Green Acres Project (GAP) and 2) OCWD Groundwater Replenishment System (GWRS).

As the population continues to grow, infrastructure facilities, including wastewater will receive additional pressure to serve the community. Many resources are limited and increasing their availability will present new challenges and require creative techniques to effectively serve the residents, businesses, and other facilities within the City. In April 2020, the Garden Grove Sanitary District adopted a Sewer System Management Plan (SSMP) to comply with Order 2006-0003 and Order WQ 2013-0058-EXEC. The purpose of Order 2006-2003 is to prevent sanitary sewer overflows (SSOs). The Garden Grove Sanitary District (District) prepared the 2020 SSMP to comply with this order. The goals of the 2020 SSMP are to:

- Prevent or reduce Sanitary Sewer Overflow (SSOs)
- Provide a plan and schedule for measures to continue implementing measures to prevent or reduce SSOs
- Provide adequate sewer capacity
- Reduce the discharge of Fats, Oils, and Grease (FOG) into its sewer system
- Provide adequate sewer cleaning and maintenance
- Closed Circuit Television (CCTV) inspect the condition of the sewer system on a regular basis
- Maintain adequate legal authority to implement all elements of the SSMP
- Implement sewer improvement projects as indicated in the District's Capital Improvement Program

- Maintain adequate funding for the operation, maintenance, and repair of its system
- Provide detailed plan to address SSOs. This shall include the procedures to respond to the SSO, notify the appropriate individuals/parties, contain the SSO, clean up the affected areas, and properly report the SSO. The time to respond to the spill shall not exceed one hour.
- Provide routine training for safety, updated equipment and technology, spill response, and all other relevant operation and maintenance topics

Storm Drain System

The City of Garden Grove Public Works Department is responsible for constructing and maintaining flood control channels and storm drains within the City (Garden Grove, 2008). The system is designed to control the movement of rainwater to a safe location where it can re-charge our natural and man-made water supplies. Most of the collected rainwater is directed to a flood control channel where it flows to the ocean. Two important planning considerations in regard to storm drain planning include: 1) ensuring adequate capacity to collect and carry storm water is available, and 2) working to reduce pollutants in storm water. The City of Garden Grove has in the past been subjected to extensive street flooding and occasional property damage, particularly during the 1960s and earlier. Major floods occurred in 1938, 1969, 1978, and 1983, affecting various parts of the City. During peak winter storms, localized flooding damages properties and hinders travel along certain arterial streets. To accommodate new growth and revitalization, the City has continued to maintain and replace aging storm drain systems to minimize the adverse effects of urbanization upon drainage and flood control facilities. When it rains, pollutants such as trash, litter, silt, automotive chemicals, animal waste, and other contaminants are washed into the storm drains.

Stormwater and Urban Runoff

In accordance with the Federal Pollution Control Act and Clean Water Act, a National Pollutant Discharge Elimination System (NPDES) permit is required for certain municipal separate storm sewer discharges into surface waters. The City of Garden Grove participants in the NPDES permit program through a partnership with County of Orange, all cities within Orange County, and the County Flood Control District. The City of Garden Grove is within the region originally covered by Order No. 90-71 issued July 13, 1990. The first permit provided an opportunity for Garden Grove and all other local Orange County municipalities to establish a program customized to its special local conditions. The second permit, issued in 1996, was intended to improve water quality incrementally over time. The third permit, issued in 2002, requires implementation of a program to reduce pollutants in storm water discharges from commercial, industrial, and residential areas to the “maximum extent practical.”

Solid Waste and Recycling Services

Solid waste collection, disposal, and recycling services in the Planning Area is provided by the GGSD through a private contract with Republic Services. GGSD takes a unique approach to waste disposal with “Recycle Garden Grove”, an innovative program that combines automated trash collection with a broad recycling and yard waste collection operation. In a joint effort with Republic Services, the Recycle Garden Grove program is designed to recycle and reuse waste materials thereby reducing the volume of waste dumped into local landfills and conserving natural resources. Participation in Recycle Garden Grove allows residents to significantly help decrease the amount of trash buried in local landfills and to help the City comply with the state's

recycling laws. The Recycle Garden Grove program also allows the City to recycle many types and quantities of recyclable items and yard waste, instead of dumping it in landfills.

Electrical Service

Electrical services to the Planning Area are provided by Southern California Edison (SCE).

Telecommunications Service

Telecommunication services are provided by Time Warner, Charter Spectrum, AT&T, Verizon, or other service providers in the area.

4.16.2 – REGULATORY FRAMEWORK

Federal

Safe Drinking Water Act. The Safe Drinking Water Act (SDWA), administered by EPA in coordination with the California Department of Public Health (CDPH), is the main Federal law that ensures the quality of drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

Clean Water Act (CWA). The CWA is the cornerstone of surface water quality protection in the United States. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) are responsible for ensuring implementation and compliance with the provisions of the Federal CWA.

National Pollution Discharge Elimination System (NPDES). This is a program created for consistency with the Clean Water Act. The Act prohibits discharging “pollutants” through a “point source” into a “water of the United States” unless a discharger has an NPDES permit. The permit contains limits on what can be discharged, creates monitoring and reporting requirements, and other provisions to ensure the discharge does not diminish water quality and/or people’s health.

State

California Safe Drinking Water Act. The California Department of Public Health (CDPH) coordinates with the federal EPA to ensure the quality of local drinking water. The CDPH oversees state implementation of the SDWA based on the standards for drinking water quality established by the EPA.

California Department of Resources, Recycling, and Recovery (CalRecycle). CalRecycle oversees, manages, and monitors waste generated in California. It provides limited grants and loans to help California cities, counties, businesses, and organizations meet the State waste reduction, reuse, and recycling goals. It also provides funds to clean up solid waste disposal sites and co-disposal sites, including facilities that accept hazardous waste substances and non-hazardous waste. CalRecycle develops, manages, and enforces waste disposal and recycling regulations, including AB 939 and SB 1016 (see below).

Assembly Bill 939 (AB 939) (Public Resources Code 41780). The California Integrated Waste Management Act Requires cities and counties to prepare integrated waste management plans (IWMPs) and to divert 50 percent of solid waste from landfills beginning in calendar year

2000 and each year thereafter. AB 939 also requires cities and counties to prepare Source Reduction and Recycling Elements (SRRE) as part of the IWMP. These elements are designed to develop recycling services to achieve diversion goals, stimulate local recycling in manufacturing, and stimulate the purchase of recycled products.

Senate Bill (SB) 1016. This requires that the 50 percent solid waste diversion requirement established by AB 939 be expressed in pounds per person per day. SB 1016 changed the CalRecycle review process for each municipality's IWMP. The CalRecycle Board reviews a jurisdiction's diversion rate compliance in accordance with a specified schedule. Beginning January 1, 2018, the Board will be required to review a jurisdiction's source reduction and recycling element and hazardous waste element every two years.

Senate Bills 610 and 221, Water Supply Assessment and Verification. Senate Bills (SB) 610 and 221 amended State law to improve the link between the information on water supply availability and certain land use decisions made by cities and counties. Both statutes require detailed information regarding water availability (water supply assessment or WSA) to be provided to city and county decision-makers prior to approval of specified large development projects (projects greater than 500 dwelling units, or an equivalent water demand). Both statutes require this detailed information to be included in the administrative record. Under SB 610, WSAs must be furnished to local governments for inclusion in the environmental document for certain projects, as defined in Water Code 10912, subject to the California Environmental Quality Act (CEQA). Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. The City's General Plan does not require WSAs but individual future projects within the City that are subject to SB 610 and SB 221 will require WSAs.

Statewide Water Conservation Act of 2009 (Senate Bill X7-7). In November 2009, the California State legislature passed, and the Governor approved, a comprehensive package of water legislation, including Senate Bill (SB) X7-7 addressing water conservation. In general SB X7-7 requires a 20 percent reduction in per capita urban water use by 2020, with an interim 10 percent target in 2015. The legislation requires urban water users to develop consistent water use targets and to use those targets in their Urban Water Management Plans (UWMPs). SB X7-7 also requires certain agricultural water supplies to implement a variety of water conservation and management practices and to submit Agricultural Water Management Plans.

State Water Resources Control Board. The SWRCB, in coordination with nine Regional Water Quality Control Boards, performs functions related to water quality, including issuance and oversight of wastewater discharge permits (e.g., NPDES), other programs regulating stormwater runoff, and underground and above-ground storage tanks. The SWRCB has also issued statewide waste discharge requirements for sanitary sewer systems, which include requirements for development of a sewer system management plan (SSMP).

Title 22 of California Code of Regulations. Title 22 regulates the use of reclaimed wastewater. In most cases, only disinfected tertiary water may be used on food crops where the recycled water would come into contact with the edible portion of the crop. Standards are also prescribed for the use of treated wastewater for irrigation of parks, playgrounds, landscaping, and other non-agricultural irrigation. Regulation of reclaimed water is governed by the nine RWQCBs and the California Department of Public Health (CDPH).

Urban Water Management Planning Act. In 1983, the California Legislature enacted the Urban Water Management Planning Act (Water Code Section 10610–10656). The Act states that every urban water supplier that provides water to 3,000 or more customers, or that provides over 3,000 acre-feet (AF) annually, should make every effort to ensure the appropriate level of

reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years. The Act requires that urban water suppliers adopt an urban water management plan at least once every five years and submit it to the Department of Water Resources. Noncompliant urban water suppliers are ineligible to receive funding pursuant to Division 24 or Division 26 of the California Water Code, or receive drought assistance from the State, until the urban water management plan (UWMP) is submitted and deemed complete pursuant to the Urban Water Management Planning Act.

Regional

Orange County Basin MS4 Permit. Municipal separate storm sewer systems (MS4) are issued permits based on the size of the municipality. MS4 permit requirements include reduction of pollutant discharges to the "maximum extent practicable" and protection of water quality. Requirements also include identification of major outfalls and pollutant loads and control of discharges from new development and redevelopment. To address these objectives, municipalities are required to prepare stormwater management plans. Although the NPDES program does not regulate nonpoint sources of pollution, the Orange County Basin RWQCB has other programs in place to address nonpoint sources. The MS4 Permit also contains requirements that are necessary to improve efforts to reduce the discharge of pollutants in stormwater runoff to the maximum extent practicable and achieve water quality standards. The stormwater management programs have been guided by the following principles:

1) Utilize existing municipal departments/programs to meet Permit requirements whenever possible.
2) Minimize duplication of effort through coordinated Permittee compliance actions.
3) When necessary, develop new or enhanced stormwater management programs that are both cost-effective and acceptable to the public.

The MS4 permit requires developments and redevelopments The BMPs that are required include the following programs:

- Litter, debris and trash control
- Incident response investigation and reporting
- New development and redevelopment
- Private construction activities
- Permittee activities (for sewage, streets and roads, and MS4 facilities)
- Public education and outreach
- Implementation of Total Maximum Daily Loads
- Reporting Requirements and Notifications

Local

City General Plan

The existing 2030 General Plan contains the following goals and policies related to utilities:

Infrastructure Element

Goal INFR-1: Water systems shall meet the needs of the Garden Grove community.

Policy INFR-1.1: Continue to maintain, improve, and replace aging water systems to ensure the provision of these services to all areas of the community.

Policy INFR-1.2: New development and redevelopment projects shall ensure that water infrastructure systems are adequate to serve the development.

Policy INFR-1.3: Improve water services in a way that respects the natural environment.

Goal INFR-2: Adequate wastewater facilities shall be provided to serve new and existing development within the City.

Policy INFR-2.1: Continue to maintain, improve and replace aging wastewater systems to ensure the provision of these services to all areas of the community.

Policy INFR-2.2: Continue to coordinate with the Garden Grove Sanitary District (GGSD) and Orange County Sanitation District (OCSD) to ensure existing wastewater systems are maintained and upgraded and new wastewater facilities are constructed, as needed.

Policy INFR-2.3: Support sustainable wastewater services that respect and improve the natural environment.

Goal INFR-3: Storm drain service levels shall be maintained and/or improved throughout the City.

Policy INFR 3.1: Cooperate with local, State, and Federal flood control agencies to reduce the potential for flood damage in the City.

Policy INFR 3.2: Continue to maintain and replace aging storm drain systems to ensure the provision of these services to all areas of the community.

Policy INFR 3.3: Minimize the adverse effects of urbanization upon drainage and flood control facilities.

Policy INFR 3.4: Improve the storm drain system in a way that respects the environment.

Conservation Element

Goal CON-1: Garden Grove's water resources shall be conserved to ensure equitable amounts of clean water for all users.

Policy CON-1.1: Continue to work with Federal, State, and regional governments and agencies to ensure that adequate quantity of regional supplies and local groundwater resources remain available to the City.

Policy CON-1.2: Reduce the waste of potable water through efficient technologies, conservation efforts, and design and management practices, and by better matching the source and quality of water to the user's needs.

Policy CON-1.3: Promote water conservation in new development or redevelopment project design, construction, and operations.

Policy CON-1.4: Continue to implement a Water Conservation Program.

Policy CON-1.5: Develop model water demand management programs using best management practices.

Policy CON-1.6: Continue to educate citizens in water conservation and encourage its practice.

Goal CON-3: Reduce total waste diverted to treatment or disposal at the waste source and through re-use and recycling.

Policy CON-3.1: Update as appropriate and continue to implement the Source Reduction and Recycling Element (SRRE) for the City.

Policy CON-3.2: Investigate a Citywide recycling program and hazardous waste drop-offs to provide optimal recycling opportunities for homeowners and businesses.

Policy CON-3.3: Encourage business material reuse through waste exchange.

Policy CON-3.4: Encourage the use of materials with minimal impacts to the environment for new development or redevelopment projects in the City.

In addition, the 2021 FGPUZA contains the following goals and policies related to utilities:

Housing Element

Goal 3: A range of available housing types, densities, and affordability levels to meet diverse community needs.

Policy 3.9: Infrastructure. Continue ongoing infrastructure maintenance and upgrades as identified in the City's infrastructure plans to provide sewer and water capacity sufficient to accommodate projected growth.

Safety Element

Goal SAF-10: A robust, climate-responsive community prepared to anticipate, adapt to, and mitigate impacts stemming from climate change.

Policy SAF-10.7: Consider the possibility of constrained future water supplies due to long term climate change impacts on water supplies and require enhanced water conservation for new construction and retrofits.

Policy SAF-10.8: Contribute to and participate in ongoing climate change prevention programs at the regional, State, and Federal levels.

SAF-IMP 10E: Support residential energy efficiency and weatherization programs for new and existing buildings.

SAF-IMP 10F: Design new buildings to use less cooling through passive and cooling techniques.

SAF-IMP 10G: Encourage the use of water porous pavement materials to allow for groundwater recharge and reductions in stormwater runoff and materials that also can reflect solar energy, speed up evaporation, and otherwise stay cooler than traditional pavements.

SAF-IMP 10H: Ensure compliance with water conservation measures and regulations in the Urban Water Management Plan.

SAF-IMP 10I: Require the use of sustainable landscaping techniques and water conservation measures in new development beyond current requirements.

SAF-IMP 10J: Consider evaluating the feasibility of implementing a wastewater or recycle water facilities.

SAF-IMP 10K: Consult with Orange County Water District, manager of the groundwater basin, to monitor sea level rise and maintain barrier wells to control the intrusion of salt water into the groundwater supply.

SAF-IMP 10L: Continue the ongoing recycling and greenhouse gas reduction program.

SAF-IMP 10M: Consult with U.S. Army Corps of Engineers and Orange County Flood Control District (OC Public Works) to implement appropriate infrastructure improvements to protect the community from flood risks intensified by severe storms and/or sea-level rise.

Water Waste Prevention Ordinances. The Garden Grove City Council adopted Ordinance No. 2858 in 2015 to amend and update the City's Water Conservation Program provisions in Chapter 40 of title 14 of the Garden Grove Municipal Code to facilitate the implementation of 2014 and 2015 State-mandated water conservation requirements and regulations in response to the drought conditions. Ordinance No. 2858 established a mandatory permanent water conservation requirements and prohibition against waste that are effective at all times and is not dependent upon a water shortage for implementation as follows. The 2015 amendments are shown in italics.

- Limits on watering hours
- Limit on watering duration
- No water flow or runoff
- No washing down hard or paved surfaces
- No washing of vehicles with hose
- No watering during or within 48 hours after measurable rainfalls
- Irrigation of landscapes outside of newly constructed homes and buildings must comply with regulations established by the California Building Standards Commission and the Department of Housing and Community Development
- Commercial lodging establishments must provide customers the option of not having towels and linen laundered daily
- Obligation to fix leaks, breaks, or malfunctions
- Recirculating water required for water fountains and decorative water features
- No installation of single pass cooling systems
- No installation of non-recirculating systems in commercial car wash and laundry operations

In an event of a water supply shortage, the ordinance established provisions for four stages of response associated with increasingly restrictive prohibitions from Stage 1 Water Watch to Stage 4 Water Emergency (severe drought and/or major failure of any supply or distribution system). The provisions and water conservation measures to be implemented in response to

each shortage level are described in Section 5 of the UWMP and the City's water conservation ordinance is included in Appendix D of the UWMP.

4.16.3 – SIGNIFICANCE THRESHOLDS

The methodology used to evaluate potential environmental impacts is described in Section 4.0. As provided in Appendix G of the Guidelines for Implementation of the California Environmental Quality Act (CEQA), the General Plan Update could result in a significant impact if it would:

A. Requires or results in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
B. Has sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.
C. Results in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
D. Generates solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
E. Complies with federal, state, and local management and reduction statutes and regulations related to solid waste.
F. The project will cause substantial adverse cumulative impacts with respect to utilities and service systems.

4.16.4 – IMPACTS AND MITIGATION MEASURES

This section describes potential impacts related to utilities and service systems which could result from the implementation of the General Plan Update and recommends mitigation measures as needed to reduce potentially significant impacts.

New or Expanded Facilities

Impact UTIL-1 – Would the FGPUZA require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Analysis of Impacts

The FGPUZA includes the potential for substantial population growth resulting primarily from future residential development. This growth would require the planned expansion of existing infrastructure as growth occurs, along with the likely development of new facilities related to utility infrastructure which are reviewed on a regular basis. This FGPUZA does not include any specific proposals for new facilities, although new or expanded facilities would result if and when the projected population growth occurs. All future development and/or infrastructure projects subject to CEQA would be required to undergo site-specific environmental review.

Water. As growth occurs with the implementation of the FGPUZA new or expanded water supply, treatment and distribution facilities would likely be needed. Garden Grove's water supply

comes from two sources: local well water from the Lower Santa Ana River Groundwater Basin, which is managed by the Orange County Water District (OCWD), and imported water from Municipal Water District of Orange County (MWDOC) (UWMP, 2020). MWDOC is Orange County's wholesale supplier and is a member agency of the Metropolitan Water District of Southern California (MWD). The primary water supplier within the City is the Garden Grove Water Services Division, serving an area of about 18.2 square miles. The Division serves most of the incorporated City and two small unincorporated neighborhoods: one near Chapman Avenue and Dale Street, and the other near Lampson Avenue and Beach Street. A small area inside the City boundaries is served Golden State Water Company (formerly known as Southern California Water Company).

The Garden Grove 2020 UWMP estimated the City's water demand to be 24,049 AFY in 2015, with 17,408 AFY of that demand coming from local well water and the remainder (6,640 AFY) being purchased or imported from MWDOC. The 2020 UWMP anticipates demand to increase to 26,055 AFY by 2040, with 18,239 AFY of that demand coming from local well water and the remainder (7,817 AFY) being purchased or imported from MWDOC. The UWMP anticipates a supply of 26,055 AFY in 2040, met through locally pumped groundwater and purchased imported water from MWDOC.

The above values were provided by MWDOC and reviewed by the City as part of the 2020 UWMP update process. As the regional wholesale supplier for much of Orange County, MWDOC works in collaboration with each of its retail agencies as well as MWD, its wholesaler, to develop demand projections for imported water. Every urban water supplier is required to assess the reliability of their water service to its customers under normal, dry, and multiple dry water years. The City depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies., There are various factors that may impact reliability of supplies such as regulations, environmental constraints, water quality, and climate. MWD's 2015 UWMP finds that it is able to meet, full-service demands of its member agencies starting 2020 through 2040 during normal years, single dry year, and multiple dry years.

MWD's 2015 Integrated Water Resources Plan (IRP) update describes the core water resources that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2020 through 2040. The foundation of MWD's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance and infrastructure improvements.

The Garden Grove 2020 UWMP anticipates the City to have a population of 180,825 in 2040. However, under the proposed FGPUZA, the Planning Area is anticipated to support a population of up to 238,619 in 2040. Table 4.16-1 compares the growth projections used to prepare the UWMP with those of the proposed FGPUZA. Table 4.16-1 indicated that the "worst case" population and housing growth projection under the proposed FGPUZA would be considerably higher than that estimated in the 2020 UWMP as shown in Table 4.16-1 below.

Table 4.16-1
City Growth Projections

Growth Characteristic	2020 Existing	2040 Projected	Difference (Percent)
2020 UWMP Estimates[1]			
Population	176,635	185,599	+8,964 (+5.1%)
Dwelling Units[2]	48,763	50,690	+1,927 (+4.0)
FGPUZA Estimates			
Population	174,801	238,619	+63,818 (+36.5%)
Dwelling Units	48,257	68,499	+20,242 (+41.9%)
2040 Difference - FGPUZA to UWMP			
Population			+53,020
Dwelling Units			+17,809

[1] Source: Tables 3-2 and 3-3, City UWMP 2020

[2] Includes single family, duplex, triplex, apartment, condo, townhouse, mobile home, etc., recreational vehicles, vans, etc. are included if is primary place of residence. Does not include group quartered units, cars, railroad box cars, etc.

As such, demand for water in the Planning Area would increase greatly over what was anticipated in the 2020 UWMP. The Orange County Water District and the Orange County Water Suppliers websites indicate that county residents currently consume approximately 100 gallons per person or per capita per day (gpcd) of potable water. Table 4.16-1, FGPUZA Water Consumption Estimates, calculates the additional population growth under the FGPUZA will consume 5.8 million gallons of water per day in excess of the population growth estimated by the UWMP. This equals 6,494 acre-feet per year of additional water consumption (assuming 326,000 gallons per acre-foot).

It is also possible to estimate the maximum additional amount of water that City growth under the FGPUZA could consume (i.e., “worst case” estimate). First it is necessary to estimate the “service area” of the City which is the total population, employees, and students in the City in the future compared to existing levels. It is then possible to estimate the incremental amount of water that will be consumed in the City in excess of existing “baseline” conditions. Table 4.16-2, FGPUZA Water Consumption Estimates, calculates the service population (including residents, employees and students) of the City will increase from 251,661 person in 2020 to 324,068 persons by 2040, an increase of 72,407 persons. If it is assumed future residents will consume water at a similar rate in the future (100 gallons pcpd as described above), Table 4.16-2 demonstrates that growth under the FGPUZA could require a maximum of 7.24 million gallons of water per day over existing consumption levels. This equals 8,106 acre-feet per year of additional water consumption (assuming 326,000 gallons per acre-foot).

As discussed above, future development projects would be required to undergo environmental review when proposed. The City is also working to decrease its reliance on imported water and overall water demand by enacting Demand Management Measures (DMM). These measures include Water Waste Prevention Ordinances, metering, conservation pricing, public education and outreach, programs to assess and manage distribution system real loss, water conservation program coordination and staffing support, and water use efficiency programs for residential, commercial, and landscape customers.

Table 4.16-2
FGPUZA Water Consumption Estimates

City Service Area Characteristics	Estimated Persons
Existing 2020 Service Area[1]	
Population	174,801
Employment	45,766
Students	31,094
Total	**251,661 persons**
Future 2040 Service Area[2]	
Population	238,619
Employment	49,369
Students	36,080
Total	**324,068 persons**
Existing /Future Conditions	**Estimated Water Consumption**
Existing 2020 Water Consuption[3]	25,166,100 gallons per day
Future 2040 Water Consumption[3]	32,406,800 gallons per day
Max. Increase in Water Consumption (2020 to 2040)	**7.24 Million gallons per day**
2040 UWMP Population Estimate	180,825 residents
2040 FGPUZA Population Estimate	238,619 residents
Increase in Population over UWMP	57,794 persons
Increase in Water Consumption over UWMP[4]	**5.8 Million gallons per day**

[1] data from Table 3-1, Existing Land Use 2020
[2] data from Table 3-2, Proposed General Plan Buildout 2040
[3] service area persons times 100 gallons per capita per day
[4] UWMP population increase times 100 gallons per capita per day

The City updated its Water Master Plan (WMP) in 2020 which examined the capacity of the City's water supply system to identify any future supply deficits. Table ES-2 of the 2020 WMP indicates that in 2040 the City's water system will be able to provide 48,850 gallons per day (gpd) on a maximum day demand compared to a projected demand of 21,100 pgd. The WMP therefore shows a substantial surplus of available groundwater that can be supplied compared to projected future demand by 2040 (Table ES-2, WMP 2020).

In the Infrastructure Element of the existing General Plan, Goal INFR-1 and its policies INFR-1.1 through 1.3 indicates the City wants to operate and maintain a water system that meets the needs of the entire community. The Conservation Element has Goal CON-1 and its policies CON-1.1 through 1.6 that emphasize water conservation and reuse to the extent practical within the City.

In addition, the FGPUZA contains several goals and polices that also increase water efficiency, decrease water demand in the Planning Area, and contribute to a water system that supports growth in the future. Housing Element Goal 3 and its Policy 3.9 require the City to maintain its existing water system and adequately plan to accommodate future growth. Finally, Safety Element Goal SAF-10 and its policies encourage the City adapt its infrastructure to climate change conditions, and the Implementation Programs of those policies require: water conservation in existing and new development and landscaping; use of porous pavement to

encourage groundwater recharge; and working with regional agencies to reduce seawater intrusion into local wells which threatens local water supplies (SAF-IMP 10G, 10H, 10I, and 10K). In these ways the FGPUZA will increase water efficiency and reduce the overall demand for water which can contribute greatly to the long-term sustainability of the City's water supply.

There are currently no recycled water uses within the City's service area. While the City recognizes the potential for beneficial reuse in their service area, there is no source of recycled water supply in proximity to the City. As discussed in detail below, the City's wastewater is conveyed to OCSD's regional treatment facilities where the wastewater is treated, recycled, or discharged to the ocean. Recycled water analyses performed over the years have shown that local treatment and reuse facilities are not feasible. However, the City supports, encourages, and contributes to the continued development of recycled water and potential uses throughout the region with OCWD's GWRS. The Planning Area will also continue to have access to imported water (via the Colorado River) due to water exchanges with MWD. Additionally, development projects will continue to provide "will serve" letters from the providing utility.

Regardless of implementation of DMM and General Plan goals and policies aimed at increasing water efficiency and reducing water demand, the anticipated growth under the FGPUZA is substantial and could require additional water resources if future growth is consistent with the growth projected in this EIR, which is designed to accommodate the City's 6th Cycle RHNA allocation. Therefore, the impacts with respect to water supply facilities are potentially significant and require mitigation.

Wastewater. Overall, the proposed FGPUZA would result in new and/or expanded wastewater treatment facilities due to the anticipated population growth that would occur under the FGPUZA. The City does not own or operate wastewater treatment facilities and sends all collected wastewater to Orange County Sanitation District (OCSD) for treatment and disposal.

Anticipated population growth under the FGPUZA would be substantial and may require expanded wastewater facilities to meet the demand from anticipated population growth. On a rough order of magnitude the 63,818 additional residents and 3,603 additional employees in the City estimated under the FGPUZA could generate approximately 5.1 million gallons per day of additional wastewater[1] by 2040.

To fund needed infrastructure, OCSD charges an annual regional service user fee of $339.00 for single family dwellings and $237.30 for multi-unit dwellings, and an annual local sewer service user fee of $108.00 for single family dwellings and $75.60 for multi-unit dwellings. Additionally, the OCSD has fees for Class I and Class II Permittees, Special Purpose Discharge Permittees, and administrative fees and charges relating to permittees. Finally, OCSD requires payment of Capital Facilities Capacity Charges (CFFCC) for new residential and non-residential development.

In the Infrastructure Element of the existing 2030 General Plan, Goal INFR-2 and its Policies INFR-2.1 through 2.3 indicates the City wants to support a wastewater system that meets the needs of the entire community, now and in the future, through cooperation with the serving agencies (Garden Grove Sanitary District and the Orange County Sanitation District).

[1] Growth numbers from Table 3-3, Potential GPU Growth, and assuming 75 gallons of wastewater generated per person per day

In addition, the FGPUZA contains several goals and polices that also increase water efficiency, decrease water demand in the Planning Area, and contribute to a wastewater system that supports growth in the future. Housing Element Goal 3 and its Policy 3.9 require the City to support maintenance of the wastewater system through inter-agency cooperation and adequately plan to accommodate future growth. Finally, Safety Element Goal SAF-10 and its policies encourage the City adapt its infrastructure to climate change conditions, and the Implementation Program SAF-IMP 10J requires the City to evaluate the feasibility of implementing wastewater or recycled water facilities.

Even with continued implementation of fees to fund planned future wastewater infrastructure expansion, it is likely the growth that will occur under the proposed FGPUZA may result in the need to expand wastewater treatment facilities over time. It is overly speculative at this programmatic level to determine if the physical relocation or construction of new or expanded wastewater treatment facilities would result in significant environmental effects that are attributable to the FGPUZA at such expanded or relocated sites. Therefore, impacts to wastewater facilities are considered potentially significant.

Stormwater. Development within the Planning Area would result in an increase in impermeable surfaces leading to the potential for increased stormwater runoff. Garden Grove Municipal Code Section 6.40.050 (Controls for Water Quality Management) requires all new development and significant reconstruction to be undertaken in accordance with the Orange County Drainage Area Management Plan (DAMP), including but not limited to the development project guidance, the local development plan, and/or administrative rules and practices as may be adopted from time to time by the City Manager or his or her designee. Prior to the issuance by the City of a grading permit, building permit, or nonresidential plumbing permit for any new development or significant reconstruction, the City shall review the project plans and impose terms, conditions and requirements on the project in accordance with Section 6.40.050.

Although the City may experience a substantial increase in population and housing units over the next 20 years under the FGPUZA, the City is essentially built out so there will not be a similar increase in the amount or percent of impervious surfaces within the City. Therefore, the amount of runoff and necessary flood control improvements to accommodate that runoff, will likely not require significant expansion. Impacts related to the relocation or construction of new or expanded storm drainage facilities, the construction of which could cause significant environmental impacts, would be less than significant.

In the Infrastructure Element of the existing 2030 General Plan, Goal INFR-3 and its Policies INFR-3.1 through 3.4 indicate the City wants to maintain and improve a flood control system protects the entire community, now and in the future. The proposed 2021 FGPUZA does not contain any additional goals and policies related to the storm drain system.

Additionally, the City is a co-permittee on the Orange County Basin (MS4) Permit which requires Best Management Practices to minimize the impact of new developments and re-developments in the Planning Area. Funding for stormwater management is based on Benefit Assessment Units (BAU); a 1/6-acre lot is the equivalent to one BAU. Overall, the impact on storm water due to development under the FGPUZA will be less than significant due to existing regulations, permits, and proposed FGPUZA policies.

Electric Power, Natural Gas and Telecommunications. The FGPUZA contains one goal and its policies that encourage energy conservation which affects energy-related utilities. Safety Element Goal SAF-10 and its policies encourage the City to adapt its infrastructure to climate

change conditions, and the Implementation Programs SAF-IMP 10E, 10F, and 10L encourage energy conservation in new City and private development projects as appropriate. Implementation of the FGPUZA would lead to demand-driven expansion of facilities and, subsequently, the possibility of site specific, physical environmental impacts covered under CEQA. These projects would be subject to site-specific environmental review at the time of proposal. These facilities are provided by private organizations and the infrastructure would be covered by service fees. The impact is less than significant.

Level of Significance Before Mitigation

Potentially significant with respect to water supply and wastewater treatment facilities.

Mitigation Measures

Mitigation Measure UTL-1: Water Demand Management. The City shall not approve new development if it would increase water demand in excess of the water supply available in 2040 as described in the most recent Urban Water Management Plan for the applicable local water provider.

Mitigation Measure UTL-2: Wastewater Treatment. The City shall not approve new development if it would increase wastewater generation demand in excess of the treatment capacity available and planned for in 2040 as described in the most current master planning document of the Orange County Sanitation District.

Level of Significance After Mitigation

Less than significant. **Water Supplies**

Impact UTIL-2 – Would there be sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Analysis of Impacts

The availability of water supplies is discussed in Impact UTL-1. In the Infrastructure Element of the existing 2030 General Plan, Goal INFR-1 and its Policies INFR-1.1 through 1.3 indicates the City wants to operate and maintain a water system that meets the needs of the entire community. The Conservation Element has Goal CON-1 and its policies CON 1.1 through 1.6 that emphasize water conservation and reuse to the extent practical within the City.

In addition, the FGPUZA contains several goals and polices that also increase water efficiency, decrease water demand in the Planning Area, and contribute to a water system that supports growth in the future. Housing Element Goal 3 and its Policy 3.9 require the City to maintain its existing water system and adequately plan to accommodate future growth. Safety Element Goal SAF-10 and its policies and implementing actions, all which have been included as part of the proposed Safety Element Update, call for "A robust, climate-responsive community prepared to anticipate, adapt to, and mitigate impacts stemming from climate change". Implementation Programs of those policies require, among other things: water conservation in existing and new development and landscaping; use of porous pavement to encourage groundwater recharge; and working with regional agencies to reduce seawater intrusion into local wells which threatens local water supplies (SAF-IMP 10G, 10H, 10I, and 10K). In these ways the FGPUZA will increase water efficiency and reduce the overall demand for water which can contribute greatly to the long-term sustainability of the City's water supply.

Overall, the FGPUZA is expected to require more water that is currently identified in the most recent UWMP. This imbalance would likely occur towards the end of the planning horizon if development occurs based on the "worst case" estimated growth projection for the FGPUZA. As discussed above, further conservation efforts and/or increased supply (from recycled water or other sources) may account for the anticipated growth. Therefore, potential impacts to water supply are potentially significant.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

MM-UTL-1 (See text under Impact UTIL-1, above**.**

Level of Significance After Mitigation:

Less than significant.

Wastewater Treatment

Impact UTIL-3 – Would the FGPUZA result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Analysis of Impacts

As mentioned in Impact UTIL-1 above, anticipated population growth under the FGPUZA would be substantial and may require expanded wastewater facilities to meet the demand from anticipated population growth. Anticipated population growth under the FGPUZA would be substantial and may require expanded wastewater facilities to meet the demand from anticipated population growth. On a rough order of magnitude the 63,818 additional residents and 3,603 additional employees in the City estimated under the FGPUZA could generate approximately to 5.1 million gallons per day of additional wastewater[2] by 2040.

To fund needed future infrastructure, OCSD charges an annual regional service user fee of $339.00 for single family dwellings and $237.30 for multi-unit dwellings, and an annual local sewer service user fee of $108.00 for single family dwellings and $75.60 for multi-unit dwellings. Additionally, the OCSD has fees for Class I and Class II Permittees, Special Purpose Discharge Permittees, and administrative fees and charges relating to permittees. OCSD also requires payment of Capital Facilities Capacity Charges (CFFCC) for new residential and non-residential development. The City will also continue to coordinate and encourage efforts for production and use of recycled water to increase water supply and conservation.

In the Infrastructure Element of the existing 2030 General Plan, Goal INFR-2 and its Policies INFR-2.1 through 2.3 indicates the City wants to support a wastewater system that meets the needs of the entire community, now and in the future, through cooperation with the serving agencies (Garden Grove Sanitary District and the Orange County Sanitation District).

[2] Growth numbers from Table 3-3, Potential GPU Growth, and assuming 75 gallons of wastewater generated per person per day

In addition, the FGPUZA contains several goals and polices that also increase water efficiency, decrease water demand in the Planning Area, and contribute to a wastewater system that supports growth in the future. Housing Element Goal 3 and its Policy 3.9 require the City to support maintenance of the wastewater system through inter-agency cooperation and adequately plan to accommodate future growth. Finally, Safety Element Goal SAF-10 and its policies encourage the City to adapt its infrastructure to climate change conditions, and the Implementation Program SAF-IMP 10J requires the City to evaluate the feasibility of implementing wastewater or recycled water facilities.

Even with continued implementation of fees to fund planned future wastewater infrastructure expansion, it is possible that growth will occur under the proposed FGPUZA that may result in the need to expand wastewater treatment facilities over time. Since the growth that could occur under the proposed FGPUZA has not yet been integrated into the OCSD's long term facilities planning it is possible that new or expanded facilities may be needed during the 20 year time horizon of the FGPUZA. Although, at present the existing treatment plants have an estimated excess current capacity of roughly 124 mgd.

Therefore, impacts to wastewater facilities are considered potentially significant.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

MM-UTL-2 from Impact UTIL-1

Level of Significance After Mitigation:

Less than significant.

Solid Waste

Impact UTIL-4 – Would the FPGUZA generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Analysis of Impacts

The County operates three landfills that exclusively serve County residents and cities, the Olinda Alpha, Frank R. Bowerman, and the Prima Deshecha landfills (OCWR 2021). Opened in 1960, the Olinda Alpha Landfill is a Class III site near the City of Brea featuring 565 total acres of which 453 acres is permitted for refuse disposal. The Olinda Alpha Landfill accepts public and commercial solid waste but does not accept hazardous waste. The landfill has enough projected capacity to serve residents and businesses until 2030. Olinda's average disposal rate is nearly 7,000 tons per day (TPD) although it permitted up to 8,000 TPD.

The Frank R. Bowerman Landfill is a state-of-the-art, Class III, municipal solid waste landfill. Opened in 1990 near the Cit of Irvine, it is one of the largest landfills in the state and the ninth largest in the U.S. The property spans approximately 725 acres of Irvine hillside with 534 acres allocated for waste disposal. Only municipal solid waste from commercial haulers and vehicles

operating under commercial status is accepted. It is permitted for 11,500 tons per day (TPD) maximum with an 8,500 TPD annual average. The landfill has enough projected capacity to serve residents and businesses until approximately 2053.Opened in 1976 in south Orange County, the Prima Deshecha Landfill occupies 1,530 total acres with 697 acres for waste disposal. The Prima Deshecha site has a maximum permitted daily refuse is 4,000 tons per day and has a projected capacity to serve residents and businesses until approximately 2102. The Prima site is also home to a landfill gas-to-energy plant which can power 7,500 homes.

With these three landfills, the County has adequate solid waste disposal capacity for well past the 2040 planning horizon o the FGPUZA (OCWR 2021).

Under the FGPUZA, the Planning Area is expected to accommodate more residential, commercial, mixed use, industrial, public uses, and open space/recreation land uses. In order to estimate solid waste generation under the FGPUZA, per-capita waste generation rates for the City of Garden Grove were used (pounds per day per resident). Under the proposed FGPUZA, the Planning Area is anticipated to support a population of up to 238,619 by 2040 or approximately 63,818 residents over the existing 2020 population. According to the CalEEMod output files, the Planning Area is anticipated to generate 117,000 tons per year of solid waste by 2040. This is likely the worse-case scenario as per-capita waste generation rates are expected to decline with the implementation of various solid waste management practices discussed below. Solid waste collection, disposal, and recycling services in the Planning Area are provided by the Garden Grove Sanitary District (GGSD) through a private contract with Republic Services. GGSD takes a unique approach to waste disposal with “Recycle Garden Grove”, an innovative program that combines automated trash collection with a broad recycling and yard waste collection operation. In a joint effort with Republic Services, Recycle Garden Grove is designed to reduce the volume of waste dumped in our local landfills and to conserve our natural resources. This automated waste collection and recycling program has also been successfully implemented in many surrounding communities with excellent results. Participation in Recycle Garden Grove allows residents to significantly help decrease the amount of trash buried in local landfills and to help the City comply with the state's recycling laws. The Recycle Garden Grove program also allows the City to recycle many types and quantities of recyclable items and yard waste, instead of dumping it in landfills. The City, in conjunction with GGSD, will continue to implement and support these measures to meet the Cities obligation under AB 939. These efforts will be coordinated with waste management programs; therefore, future landfill diversion rates may improve.

The Conservation Element of the 2030 General Plan contains one goal and four policies related to solid waste. Goal CON-3 encourages the reduction of solid wastes generated in the City by individuals and businesses in compliance with state laws. Policy CON-3.1 encourages continued implementation of the Source Reduction and Recycling Element (SRRE), and Policy CON-3.3 encourages businesses to reuse materials through waste exchange. The FGPUZA does not contain any new goals or policies that specifically address solid waste issues.

Additionally, the Garden Grove Municipal Code Title 9, Chapters 9.08 through 9.18 provide the framework to help the City meet its goals of reduction of solid waste and the solid waste stream. The City also participates in diversion programs such as composting, managing construction and demolition waste, public education, recycling, source reduction and special waste materials. Implementation of these policies and programs will further reduce the amount of waste produced over the life of the FGPUZA and reduce the impact to less than significant.

Level of Significance Before Mitigation

Less than significant.
Mitigation Measures

No mitigation is required.

Impact UTIL-5 – Would the FGPUZA comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Analysis of Impacts

Any future project completed under the proposed FGPUZA would be required to comply with all applicable Federal, State, and Local statues and regulations related to solid waste management and reduction. The Conservation Element of the 2030 General Plan contains one goal and four policies related to solid waste. Goal CON-3 encourages the reduction of solid wastes generated in the City by individuals and businesses in compliance with state laws. Policy CON-3.1 encourages continued implementation of the Source Reduction and Recycling Element (SRRE). The FGPUZA does not contain any new goals or policies that specifically address solid waste issues.

Level of Significance Before Mitigation:

Less than significant.

Mitigation Measures:

No mitigation is required.

Cumulative Impacts

Impact UTIL-6 – Would the FPGUZA cause substantial adverse cumulative impacts with respect to utilities and service systems?

Analysis of Impacts

Development that results from the proposed FGPUZA, in combination with other cumulative development in neighboring areas would increase the demand for utilities. Utilities can be potentially impacted by increased population, especially when new facilities are not built to meet population increases or when existing facilities are not adequately maintained. Alternatively, impacts may also occur when new facilities are built, resulting in physical impacts to existing resources. Overall, the FGPUZA accounts for both these scenarios. The FGPUZA includes policies to mitigate potential negative environmental impacts. Additionally, new facilities are subject to both the provisions of the FGPUZA and compliance with CEQA, when required. Environmental review would identify site-specific conditions and physical changes resulting from utility services expansion. Typical impacts associated with new facilities include short-term construction activities related to air quality pollutant emissions, temporary traffic detours, changes in traffic distribution, and noise.

Regardless, it has been determined that water supply may not be adequate for the full implementation of the FGPUZA and that mitigation is required.

Level of Significance Before Mitigation

Potentially significant.

Mitigation Measures

With the inclusion of **MM-UTL-1**, any regional cumulative impacts would be reduced to less than significant levels.

Level of Significance After Mitigation

Less than Significant.

4.16.5 – REFERENCES

City of Garden Grove. *Garden Grove General Plan 2030: Infrastructure Element*. May 2008.

City of Garden Grove. *2020a. Urban Water Management Plan (UWMP)*. June 29, 2020.

City of Garden Grove. *2020b. Water Management Plan (WMP)*. August 2020.

Garden Grove Sanitary District. *Sewer System Management Plan*. April 2020.

Orange County Sanitation District. Orange County Sanitation District Facilities Master Plan Draft Environmental Impact Report. September 2020

Orange County Waste and Recycling (OCWR), 2021. Landfill Fact Sheets. Website: https://www.oclandfills.com/landfills [Accessed July 2021]

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5.0 – Alternatives to the Proposed Focused General Plan Update and Zoning Amendments

Section 15126.6 of the CEQA Guidelines requires an EIR to *"describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."* The section also states that *"the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if those alternatives would impede to some degree the attainment of the project objectives, or would be more costly."* Under Section 15126.6(a) of the CEQA Guidelines, an EIR does not need to consider alternatives that are not feasible, nor need it address every conceivable alternative to the project. The range of alternatives "is governed by the 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice" (CEQA Guidelines § 15126.6(f).)

Pursuant to Section 15126.6, this chapter describes three (3) alternatives to the Focused General Plan Update and Zoning Amendments (Project), including the CEQA-mandated No Project Alternative, and compares the impacts of each alternative to the Project. The ability of each alternative to meet the basic project objectives is also described, and the "environmentally superior" alternative among the three (3) alternatives is identified, as required by the CEQA Guidelines.

5.1 – RATIONALE FOR ALTERNATIVE SELECTION

In accordance with CEQA Guidelines Section 15126.6(a), an EIR does not need to evaluate every conceivable alternative. A feasible range of alternatives has been evaluated that will allow decision-makers to make a reasoned choice and that meets most of the project objectives. The project objectives included in Chapter 3, Project Description, are:

- *A Safe Community* - Adequately funded, staffed, and equipped police and fire services that provide a timely, effective response to both minor and major public safety concerns. Also, the public safety providers will engage and educate all segments of the community.
- *An Economically Sound Community* - Meet budget challenges by capitalizing on our unique development opportunities and providing enhanced shopping, dining, and entertainment options while improving the aesthetics of the community.
- *A Family-Oriented Community* - Safe, well-kept neighborhoods where all segments of the community feel secure and comfortable, and where residents can feel unburdened from the stresses of the world outside the neighborhood.
- *A Diverse Community* - All segments of the community have a sense of belonging, regardless of race, ethnicity, or age. Also, a community where all feel safe in expressing their uniqueness, while joining and celebrating in their commonality as Americans, Californians, and Garden Grove residents.
- *A Well-Maintained Community* - Public infrastructure (i.e., streets, water and sewer systems, storm drains) that is kept in good working order, but results in few inconveniences and disruptions to users during maintenance. Also, future plans that

ensure the continued adequacy and availability of these services as the community changes.

- *An informed Community and Well Administered Community* - Good channels of communication shall exist between the general public, community organizations, service providers and the city government. This provides residents and other interested persons both information and opportunities to provide input on proposals being brought before the City's Boards, Commissions, and Council. In addition, the city government shall be adequately staffed and compensated to meet the service needs and goals of the community. City staff shall be encouraged to learn about and apply the most efficient and effective methods for providing public services to the community.
- *A High-Quality-of-Life Community* - Public facilities and open spaces that are well maintained and adequate for size and nature of the community, as well as provide recreational opportunities for all segments of the community.

Although not included in the formal General Plan Update document, one overarching objective of the FGPUZA is to accommodate, within the framework of the City's General Plan, the State-mandated Regional Housing Needs Allocation (RHNA) goal for the City, which is a total of 19,168 dwelling units. Therefore, the extent to which the RHNA would be achieved (referred to as the "RHNA Objective") was also analyzed for each alternative.

While selecting alternatives to be considered for analysis, the City focused on those alternatives which could potentially reduce the significant and unavoidable effects of the Project and would also achieve project objectives.

In addition, the City's RHNA Objective of almost 20,000 additional housing units is problematic to meet given the City's built-out nature and land use changes that are needed to accommodate such a large number of additional units. The proposed FGPUZA is one of the few alternative land use plans that would meet all of the City's objectives including the RHNA allocation.

5.2 – ALTERNTATIVES CONSIDERED

A number of different alternatives were considered but then rejected during preparation of the DEIR. Various levels of less intense residential and non-residential development were considered. Other alternatives, such as higher industrial development vs. other kinds of non-residential development, were also considered. At first no alternatives that has less planned units than would meet the RHNA allocation were considered. However, the inclusion of almost 20,000 additional units in the City results in a number of environmental impacts from that amount of additional residential growth. Therefore, Alternative 2 incorporated less units than indicated in the RHNA, a number of units approximately half way between that of the existing General Plan and the proposed FGPUZA. Alternative 3 was chosen to still meet the City's RHNA allocation but by doing it with a much larger amount of ADUs rather than mixed-use or multi-family development.

In addition, the City has little vacant land remaining so the options for large changes to proposed land uses are somewhat limited. In the end, two versions of a reduced mixed-use alternative were selected for additional study, as described below.

After discussion and consideration, the following alternatives have been selected and evaluated in comparison to the Focused General Plan Update and Zoning Amendments (Project) which will add 20,242 new dwelling units but have 514,500 less square feet of non-residential uses:

- Alternative 1: No Project/Existing 2008 General Plan – this would add only 6,039 dwelling units but add 18 million more square feet of non-residential uses;
- Alternative 2: Reduced Mixed-Use Alternative - this would add only 14,184 dwelling units and also have 514,500 less square feet of non-residential uses, similar to the FGPUZA,
- Alternative 3: Increased Auxiliary Accessory Dwelling Unit (ADU) and Reduced Mixed-Use Alternative – this would be similar to the FGPUZA but some amount of the land designated for mixed-use would not be developed but instead 5,656 additional ADUs would be built instead of multi-family development.

Per CEQA Guidelines Section 15126.6(d), the discussion of impacts associated with the alternatives is less detailed than the evaluation included in Chapters 4.1 through 4.16. Table 5-1 summarizes the development assumptions of each alternative. Table 5-2 summarizes the potential impacts of the alternatives compared to the impacts associated with implementation of the Project. The alternatives' potential impacts are evaluated in the following Sections 5.3 through 5.5.

Table 5-1:
Land Use Alternatives' Development Assumptions

Land Use	Existing Conditions	Net Change			
			Alternatives		
		Proposed General Plan Update	1. No Project/ Existing 2008 General Plan[(a)(b)]	2. Reduced Mixed-Use Alternative	3. Increased ADU and Reduced Mixed-Use Alternative
Residential (units)	48,257	+20,242	+6,039	+14,184	+20,242
Population	174,801	+63,818	+21,596	+44,718	+63,818
Non-Residential Building (SF)	30,232,500	-514,500	+18,340,335	-514,500	-514,500
Employees	45,766	+3,603	+33,123	+3,603	+3,603
Motels/Hotels (rooms)	3,600	+893	N/A	+893	+893

Source: MIG, 2021
(a) Source: 2008 Garden Grove General Plan EIR
(b) The 2008 Garden Grove General Plan did not include projections for motel/hotel rooms.

Table 5-2:
Alternatives Impacts Compared to Project Impacts

Impact/Resource	Alternative 1: No Project/ Existing 2008 General Plan	Alternative 2: Reduced Mixed-Use Alternative	Alternative 3: Increased ADU and Reduced Mixed-Use Alternative
Air Quality	Similar SU	Reduced SU	Similar SU
Biological Resources	Similar LTS	Similar LTS	Similar LTS
Cultural Resources	Similar LTS	Similar LTS	Similar LTS
Energy	Similar LTS	Reduced LTS	Similar LTS
Geology and Soils	Similar LTS	Similar LTS	Similar LTS
Greenhouse Gas Emissions	Similar SU	Reduced SU	Similar SU
Hazards and Hazardous Materials	Similar LTS	Similar LTS	Similar LTS
Hydrology and Water Quality	Similar LTS	Similar LTS	Similar LTS
Land Use	Similar LTS	Similar LTS	Similar LTS
Noise	Similar SU	Reduced SU	Reduced SU
Population and Housing	Reduced LTS	Reduced LTS	Similar LTS
Public Services	Similar LTS	Reduced LTS	Similar LTS
Recreation	Reduced LTS	Reduced LTS	Similar LTS
Transportation	Similar SU	Reduced SU	Similar SU
Tribal Cultural Resources	Similar LTS	Similar LTS	Similar LTS
Utilities and Service Systems	Similar LTS	Reduced LTS	Similar LTS
Significant and Unavoidable Impacts	4	4	4

Source: MIG, 2021
LTS= Less-than-Significant Impacts
SU= Significant and Unavoidable Impacts

5.3 – ALTERNATIVE 1: NO PROJECT/EXISTING 2008 GENERAL PLAN

5.3.1 – Principal Characteristics

The No Project/Existing 2008 General Plan Alternative (No Project Alternative) assumes that development would occur within the Planning Area, but only that development anticipated under the 2008 General Plan. Development assumptions for this alternative are shown in Table 5-1. As compared to the FGPUZA, there would be a significant reduction in residential development and a significant increase in non-residential development under this Alternative. Additionally, no new policies, goals, or development standards associated with the Project would be implemented; the standards, goals, and policies associated with the 2008 General Plan would be applicable. This alternative would not meet the City's Regional Housing Needs Allocation (RHNA) objective and would not meet the objectives of the Project to nearly the same degree as the FGPUZA since it would only implement the existing General Plan policies.

5.3.2 – Analysis of No Project/Existing 2008 General Plan Alternative

The potential impacts associated with the No Project Alternative are described below.

a. *Air Quality.* The Project would result in significant unavoidable air quality impacts. While this alternative would result in a reduction in the amount of residential development compared to the Project, there would be a significant increase in non-residential development compared to the Project. This alternative would likely not be consistent with SCAG forecasts for Garden Grove as it exceeds the 2020 RTP/SCS population and employment projections for the City (See Chapter 4.11); as such, this alternative would likely not be consistent with the SCAQMD 2016 Air Quality Management Plan (2016 AQMP) and would also exceed SCAQMD regional pollutant thresholds and thereby obstruct implementation of the AQMP. While no specific air quality modeling was undertaken for the alternative, it is likely it would generate substantial air pollutant emissions from the substantial increase in non-residential development, at least equivalent if not greater than the differential in residential units between the two plans. Under this alternative the City would rely on the existing General Plan for guidance on air quality policies which are over a decade old. This alternative would probably require similar air quality mitigation measures for future development since they are similar to those recommended by the SCAQMD for other jurisdictions in the Basin. The alternative would also have significant air quality impacts, similar to the conclusion for the Project.

b. Biological Resources. The Planning Area is completely urbanized and almost entirely built out with few vacant properties located throughout the City. As with the Project, development under this alternative would occur within urban areas that currently have existing development. Similar to the Project, this alternative would have a less-than-significant impact on biological resources.

c. Cultural Resources. As with the Project, development under the No Project Alternative could uncover previously unknown cultural resources or destroy/change structures that could be considered historic. As with the Project, under the No Project Alternative the City's development requirements would include a CEQA evaluation for discretionary, non-exempt projects to analyze potential impacts to historic resources, which may include mitigation measures to reduce potential impacts of future development within the Planning Area. Additionally, existing goals, policies and implementation programs within the Conservation Element ensure that significant archaeological resources are preserved and protected. The City also has the following standard condition of approval for development projects: "During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law."

Similar to the Project, this alternative would have a less-than-significant impact on cultural resources with adherence to existing regulations.

d. Energy. As with the Project, development associated with the No Project Alternative would require the consumption of electricity, natural gas, and vehicle fuel resources to accommodate growth. While this alternative does have a reduced level of residential development compared to the Project, it does include a large increase in non-residential development, which would consume at least an equivalent if not greater amount of energy compared to the reduced residential uses. Similar to the Project, under this alternative new development and land use turnover would be required to comply with statewide mandatory energy requirements outlined in Title 24, Part 6, of the California Code of Regulations (the CALGreen Code), which would decrease estimated natural gas consumption in new and/or retrofitted structures. This alternative would have similar less-than-significant energy impacts compared to the Project.

e. Geology and Soils. The same geology and soils policies and regulations would be applicable to the No Project Alternative as to the Project, as the revisions to the Safety Element included in the Project address only climate change, not geologic or seismic hazards. In addition, both the alternative and the Project would be exposed to the same existing geologic conditions within the Planning Area. As with the Project, existing building requirements would be applicable under this alternative. Additionally, all future projects would be required to be designed and constructed in compliance with all applicable City and State codes and requirements. All General Plan policies related to geology and seismic issues would be applicable to this alternative, as is the case with the Project. The No Project Alternative would have a less-than-significant geology impact, and would be considered similar to the Project.

f. Greenhouse Gas Emissions. The Project would result in significant unavoidable greenhouse gas (GHG) emissions impacts. This alternative would result in a reduction in residential development (-6,000 units) but a significant increase in non-residential development (+18 million square feet) compared to the Project. It is likely that mitigation measures identified for the Project would also be required for this alternative. While no specific GHG modeling was undertaken for the alternative, it is likely that the No Project Alternative would result in similar conclusion regarding GHG emissions (i.e., significant).

g. Hazards and Hazardous Materials. Hazardous materials would be present during construction and operation of development associated with the No Project Alternative. The amount and use of these hazardous materials present during construction would be limited, would be in compliance with existing government regulations, and would not be considered a significant hazard. All development under this alternative, similar to development under the FGPUZA, would be subject to all applicable federal, state, and local laws and regulations regarding the development of contaminated sites, unanticipated discovery of contamination, hazardous material handling, and hazardous material disposal. The No Project Alternative would have substantially more non-residential use so the likelihood of more hazardous materials being present during operations is higher. However, with regulatory compliance this impact would still be considered less than significant and similar to the Project.

h. Hydrology and Water Quality. Development associated with implementation of the No Project Alternative would be subject to all existing water quality regulations and programs. This alternative assumes a population and housing increase that would be less than the Project; however, it would be largely offset by the increased water use of more non-residential uses. The mitigation measure regarding water supply would still be required under this alternative. The No Project Alternative would have a less-than-significant hydrology and water quality impact and would be considered similar to the Project.

i. Land Use and Planning. As with the Project, the No Project Alternative would not physically divide an established community. Development would be consistent with the adopted 2008 General Plan, and would not conflict with regulations adopted to avoid environmental effects. This alternative would actually be more consistent with SCAG's 2020 RTP/SCS population, housing, and employment projections for the City. Similar to the Project, this alternative would have a less-than-significant land use and planning impact.

j. Noise. The Project would result in significant unavoidable noise impacts. While the No Project Alternative would result in significantly less residential development than the Project, it would result in a significant increase in non-residential development. Overall noise impacts of this alternative would likely be similar to the proposed Project although the specific increases in noise and vibration would shift from residential areas/uses to non-residential areas due to the different land use patterns proposed. Under this alternative, measures would still be required to ensure that construction noise is mitigated for projects located near sensitive receptors. While no specific noise modeling was undertaken for this alternative, it would still likely result in a significant roadway noise impact similar to the Project.

k. Population and Housing. This alternative would result in less residential development and anticipated less population growth compared to the Project. Given the reduction in anticipated population growth and housing, this alternative would result in a reduced less-than-significant impact related to population and housing compared to the Project.

l. Public Services. This alternative would result in a reduced amount of residential development and anticipated population growth, which would result in a decrease in demand for schools, services and park facilities when compared to the Project. While the No Project Alternative would result in reduced residential growth, there would be a significant increase in non-residential uses, which would shift the nature of protective services needed toward non-residential uses, but would not likely result in a significant increase in the overall demand for fire and police services compared to the Project. Overall, the No Project Alternative would likely result in similar less-than-significant public services impacts compared to the Project.

m. Recreation. This alternative would result in a reduced amount of residential development and anticipated population growth, which would result in a reduced demand for recreational facilities compared to the Project. This alternative would result in a reduced less-than-significant recreation impact compared to the Project.

n. Transportation. This alternative would result in less residential development than would occur with implementation of the Project. This alternative would result in a reduction in residential development but a significant increase in the amount of non-residential development which would tend to increase overall VMT impacts by adding jobs in a jobs rich region.. While no transportation modeling was undertaken for this alternative, a significant and unavoidable transportation impact would still likely occur. The transportation impacts associated with this alternative would likely require similar mitigation measures as the Project and would still be considered significant and unavoidable.

o. Tribal Cultural Resources. As with the Project, development under the No Project Alternative could uncover previously unknown Tribal Cultural Resources. Compliance with existing regulations regarding burial grounds and consultation with Native American tribes would ensure that potential impacts would be reduced. The City also has the following standard condition of approval for development projects: "During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law."

Similar to the Project, this alternative would have a less-than-significant impact on Tribal Cultural Resources with adherence to existing regulations.

p. Utilities and Service Systems. This alternative would result in a reduced amount of residential development growth, but an increase in non-residential development within the Planning area. While this alternative assumes a population and housing increase that would be less than the Project, the mitigation measures regarding water supply (MM-UTL-1) and wastewater (MM-UTL-2) would still be needed because substantial growth would still occur under this alternative. This alternative would have a similar less-than-significant utilities and service system impact when compared to the Project.

Attainment of Project Objectives

The No Project Alternative assumes that development would occur within the Planning Area, but only development anticipated under the 2008 General Plan. The No Project Alternative would meet the following project objectives:

- *A Safe Community - Adequately funded, staffed, and equipped police and fire services that provide a timely, effective response to both minor and major public safety concerns. Also, the public safety providers will engage and educate all segments of the community.*
- *An Economically Sound Community - Meet budget challenges by capitalizing on our unique development opportunities and providing enhanced shopping, dining, and entertainment options while improving the aesthetics of the community.*
- *A Family-Oriented Community - Safe, well-kept neighborhoods where all segments of the community feel secure and comfortable, and where residents can feel unburdened from the stresses of the world outside the neighborhood.*
- *A Diverse Community - All segments of the community have a sense of belonging, regardless of race, ethnicity, or age. Also, a community where all feel safe in expressing their uniqueness, while joining and celebrating in their commonality as Americans, Californians, and Garden Grove residents.*
- *A Well-Maintained Community - Public infrastructure (i.e., streets, water and sewer systems, storm drains) that is kept in good working order, but results in few inconveniences and disruptions to users during maintenance. Also, future plans that ensure the continued adequacy and availability of these services as the community changes.*
- *An informed Community and Well Administered Community - Good channels of communication shall exist between the general public, community organizations, service providers and the city government. This provides residents and other interested persons both information and opportunities to provide input on proposals being brought before the City's Boards, Commissions, and Council. In addition, the city government shall be adequately staffed and compensated to meet the service needs and goals of the community. City staff shall be encouraged to learn about and apply the most efficient and effective methods for providing public services to the community.*
- *A High-Quality-of-Life Community - Public facilities and open spaces that are well maintained and adequate for size and nature of the community, as well as provide recreational opportunities for all segments of the community.*

However, this alternative would not meet the RHNA Objective of accommodating 19,168 additional dwelling units.

5.4 – ALTERNATIVE 2: REDUCED MIXED-USE ALTERNATIVE

5.4.1 – Principal Characteristics

The Reduced Mixed-Use Alternative reflects a reduced amount of residential units (approximately 30 percent fewer units) compared to the FGPUZA, and the same amount of non-residential development included in the Project. Since the significant impacts of the Project (air quality, greenhouse gases, and VMT) are largely due to the substantial number of new residential units proposed, this alternative substantially reduces the potential number of future dwelling units. Development assumptions for this alternative are shown in Table 5-1. This alternative assumes that policies, goals, or development standards associated with the Project would apply to this alternative. However, this alternative would not meet the City's Regional Housing Needs Allocation (RHNA) goals.

5.4.2 – Analysis of the Reduced Mixed-Use Alternative

The potential impacts associated with the Reduced Mixed-Use Alternative are described below.

a. Air Quality. The Project would result in significant unavoidable air quality impacts. While this alternative would result in a reduction in the amount of residential development compared to the Project, it would likely not be consistent with SCAG forecasts for Garden Grove as it exceeds the 2020 RTP/SCS population projections for the City; as such, this alternative would likely not be consistent with the SCAQMD 2016 Air Quality Management Plan (2016 AQMP) and would also exceed SCAQMD regional pollutant thresholds and thereby obstruct implementation of the AQMP. While no specific air quality modeling was undertaken for the alternative, it is likely that emissions would be reduced under this alternative but that the air quality mitigation measures needed for the Project would also be required for this alternative. It is likely that air quality emissions would be reduced under this alternative, but the alternative would result still result in significant air quality impacts (though reduced significant air quality impacts compared to the Project).

b. Biological Resources. The Planning area is completely urbanized and almost entirely built out with few vacant properties located throughout the City. As with the Project, development under this alternative would occur within urban areas that currently have existing development. Similar to the Project, this alternative would have a less-than-significant impact on biological resources.

c. Cultural Resources. Development under the Reduced Mixed-Use Alternative could uncover previously unknown cultural resources or destroy/change structures that could be considered historic. As with the Project, the City's development requirements would include a CEQA evaluation for discretionary, non-exempt projects to evaluate potential impacts to historic resources, which may include mitigation measures to reduce potential impacts of future development within the Planning Area. Additionally, existing goals, policies and implementation programs within the Conservation Element ensure that significant archaeological resources are preserved and protected. The City also has the following standard condition of approval for development projects: "During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law."

Similar to the Project, this alternative would have a less-than-significant impact on cultural resources with adherence to existing regulations.

d. Energy. As with the Project, development associated with the Reduced Mixed-Use Alternative would require the consumption of electricity, natural gas, and vehicle fuel resources to accommodate growth. However, given the reduced amount of development associated with this alternative, this alternative would result in reduced energy consumption compared to the Project. Similar to the Project, under this alternative new development and land use turnover would be required to comply with statewide mandatory energy requirements outlined in Title 24, Part 6, of the California Code of Regulations (the CALGreen Code), which would decrease estimated natural gas consumption in new and/or retrofitted structures. This alternative would have a reduced less-than-significant energy impact compared to the Project.

e. Geology and Soils. Both this alternative and the Project would be exposed to the same existing geologic conditions within the Planning area, and the same geology and soils policies and regulations would be applicable to both the Project and the alternative. As with the Project, existing building requirements would be applicable under this alternative and all future projects would be required to be designed and constructed in compliance with all applicable City and State codes and requirements. All General Plan policies related to geology and seismic issues would be applicable to this alternative, as is the case with the Project. The Reduced Mixed-Use Alternative would have a less-than-significant geology impact, and would be considered similar to the Project.

f. Greenhouse Gas Emissions. The Project would result in significant unavoidable greenhouse gas (GHG) emissions impacts. This alternative would result in a reduction in residential development and an associated reduction in GHG emissions, but it is likely that mitigation measures identified for the Project would also be required for this alternative. While no specific GHG modeling was undertaken for the alternative, it is likely that the Reduced Mixed-Use Alternative would result in significant GHG impacts (though reduced significant GHG impacts compared to the Project).

g. Hazards and Hazardous Materials. Hazardous materials would be present during construction and operation of development associated with the Reduced Mixed-Use Alternative. The amount and use of these hazardous materials present during construction would be limited, would be in compliance with existing government regulations, and would not be considered a significant hazard. All development under this alternative, similar to development under the FGPUZA would be subject to all applicable federal, state, and local laws and regulations regarding the development of contaminated sites, unanticipated discovery of contamination, hazardous material handling, and hazardous material disposal. As with the Project, any future development under this alternative would also be subject to the City's standard environmental review process, which would include identification of any contaminated sites not already identified and implementation of appropriate cleanup and disposal procedures. The Reduced Mixed-Use Alternative would have a less-than-significant hazards and hazardous materials impact, and would be considered similar to the Project.

h. Hydrology and Water Quality. Development associated with implementation of the Reduced Mixed-Use Alternative would be subject to all existing water quality regulations and programs. This alternative assumes housing increase that would be less than the Project; however, the mitigation measure regarding water supply would still be required under this alternative. The Reduced Mixed-Use Alternative would have a less-than-significant hydrology with incorporation of mitigation and water quality impacts would be considered similar to the Project.

i. Land Use and Planning. As with the Project, the Reduced Mixed-Use Alternative would not physically divide an established community and would not conflict with regulations adopted to avoid environmental effects. This alternative would be more consistent with SCAG's population, housing, and employment projections but would not meet its the RHNA allocation. Similar to the Project, this alternative would have a less-than-significant land use and planning impact.

j. Noise. The Project would result in significant unavoidable noise impacts. The Reduced Mixed-Use Alternative would result in an approximately 30 percent reduction in units that are expected to be located along major corridors, where mixed-use development would be anticipated. Under this alternative, measures would still be required to ensure that construction noise is mitigated for projects located near sensitive receptors. While no specific noise modeling was undertaken for the alternative, it is possible that the reduced vehicle trips associated with this alternative could reduce this roadway noise impact to a less-than-significant level. To be conservative, the noise impact associated with this alternative is still considered to be significant and unavoidable, though it would be considered a reduced significant and unavoidable impact when compared to the Project.

k. Population and Housing. This alternative would result in less residential development as compared to the Project. Given the reduction in population and housing, this alternative would result in a reduced less-than-significant population and housing impact compared to the Project.

l. Public Services. This alternative would result in a reduced amount of residential development, which would result in decrease in demand public services. The Reduced Mixed-Use Alternative would result in a reduced less-than-significant public services impacts compared to the Project.

m. Recreation. This alternative would result in a reduced amount of residential development, which would result in less demand for recreational facilities compared to the Project. This alternative would result in a reduced less-than-significant recreation impact compared to the Project.

n. Transportation. This alternative would result in less residential development than would occur with implementation of the Project. Given the reduction in development associated with this alternative, it is possible that vehicle miles traveled impacts under this alternative might increase depending on what type of new non-residential development was added to provide additional jobs for City residents. As with the Project, the uncertainty related to future fuel prices and future legislative policy could dramatically influence VMT production in the City. While no transportation modeling was undertaken for this alternative, a reduced significant and unavoidable transportation impact would likely occur under this alternative. The transportation impacts associated with this alternative would likely require similar mitigation measures as the Project and would still be considered significant and unavoidable, although the impact would be considered reduced when compared to the Project.

o. Tribal Cultural Resources. As with the Project, development under the Reduced Mixed-Use Alternative could uncover previously unknown Tribal Cultural Resources. Compliance with existing regulations regarding burial grounds and consultation with Native American tribes would ensure that potential impact would be reduced. The City also has the following standard condition of approval for development projects: "During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law."

Similar to the Project, this alternative would have a less-than-significant impact on Tribal Cultural Resources with adherence to existing regulations.

p. Utilities and Service Systems. This alternative would result in a reduced amount of residential development within the Planning Area. While this alternative assumes a housing increase that would be less than the Project, the mitigation measure regarding water supply (UTIL-1) would still be required under this alternative. Given the reduced amount of development associated with the Reduced Mixed-Use Alternative, it would result in a reduced less-than-significant with incorporation of mitigation utilities and service system impact when compared to the Project.

Attainment of Project Objectives

The Reduced Mixed-Use Alternative would meet the following project objectives:

- *A Safe Community - Adequately funded, staffed, and equipped police and fire services that provide a timely, effective response to both minor and major public safety concerns. Also, the public safety providers will engage and educate all segments of the community.*
- *An Economically Sound Community - Meet budget challenges by capitalizing on our unique development opportunities and providing enhanced shopping, dining, and entertainment options while improving the aesthetics of the community.*
- *A Family-Oriented Community - Safe, well-kept neighborhoods where all segments of the community feel secure and comfortable, and where residents can feel unburdened from the stresses of the world outside the neighborhood.*
- *A Diverse Community - All segments of the community have a sense of belonging, regardless of race, ethnicity, or age. Also, a community where all feel safe in expressing their uniqueness, while joining and celebrating in their commonality as Americans, Californians, and Garden Grove residents.*
- *A Well-Maintained Community - Public infrastructure (i.e., streets, water and sewer systems, storm drains) that is kept in good working order, but results in few inconveniences and disruptions to users during maintenance. Also, future plans that ensure the continued adequacy and availability of these services as the community changes.*
- *An informed Community and Well Administered Community - Good channels of communication shall exist between the general public, community organizations, service providers and the city government. This provides residents and other interested persons both information and opportunities to provide input on proposals being brought before the City's Boards, Commissions, and Council. In addition, the city government shall be adequately staffed and compensated to meet the service needs and goals of the community. City staff shall be encouraged to learn about and apply the most efficient and effective methods for providing public services to the community.*
- *A High-Quality-of-Life Community - Public facilities and open spaces that are well maintained and adequate for size and nature of the community, as well as provide recreational opportunities for all segments of the community.*

However, this alternative would not meet the RHNA Objective of accommodating an additional 19,168 dwelling units.

5.5 – ALTERNATIVE 3: INCREASED ADU AND REDUCED MIXED-USE ALTERNATIVE

5.5.1 – Principal Characteristics

The Increased Accessory Dwelling Unit (ADU) and Reduced Mixed-Use Alternative assumes that the total number of dwelling units under this alternative would be the same as the Project, but there would be a significant increase in the number of ADUs constructed under this alternative (a total of 5,656 ADUs, which is 2,038 more ADUs compared to what is being proposed under the Project at 3,618 ADUs), with a corresponding reduction in the number of multi-family units located within the corridors of the City that are planned for Mixed Use in the FGPUZA.

This alternative considers the environmental impacts of building ADUs throughout the entire City within single-family zoned neighborhoods as opposed to building higher density multi-family units along major corridors. Based on the number of existing detached single-family dwelling units (over 27,680 units as of 2021) in the City, Garden Grove could potentially accommodate over 20,000 additionally ADUs. There are no regulatory restrictions to prevent these units from being built. However, the financial costs of building the structures, which could range anywhere from $50,000 to $200,000 for a new standalone structure, is one consideration to impeding building ADUs.

If property owners were to build more junior accessory dwelling units, which are integrated into the existing structure of the main building, the costs could be dramatically reduced, and the numbers of ADUs could increase. As such, this alternative assumes only a moderate increase in ADUs beyond what is proposed in the Project. This alternative also assumes the same amount of non-residential development as the proposed project. This alternative assumes additional financial incentives and marketing programs beyond what has been identified in the 2021-2029 Housing Element to significantly promote and increase the development of ADUs within the Planning Area. This alternative would meet the City's Regional Housing Needs Allocation (RHNA) total housing unit goal, but could hinder the certification of the Housing Element as the Housing and Community Development (HCD) Department would require substantial evidence to show that the City could yield that many new ADUs over the RHNA 6th Cycle Housing Element between 2021 and 2029.

5.5.2 – Analysis of the Increased ADU and Reduced Mixed-Use Alternative

The potential impacts associated with the Increased ADU and Reduced Mixed-Use Alternative are described below.

a. Air Quality. The Project would result in significant unavoidable air quality impacts. This alternative would expand the construction of ADUs in residential areas in lieu of higher density mixed use development in non-residential areas of the City. Construction emissions from this pattern of development would be more localized but at lower levels due to the smaller size of ADUs compared to higher density development on specific non-residential sites. The construction impacts would also be spread over a longer period of time depending on when and where ADUs were actually built. Overall, this alternative has the same overall amount of residential development compared to the Project, and would likely be inconsistent with SCAG forecasts for Garden Grove as it exceeds the 2020 RTP/SCS population projections for the City; as such, this alternative would likely be inconsistent with the SCAQMD 2016 Air Quality Management Plan (2016 AQMP) and would also exceed SCAQMD regional pollutant thresholds and thereby obstruct implementation of the AQMP. While no specific air quality modeling was undertaken for the alternative, it is likely that air quality mitigation measures needed for the

Project would also be required for this alternative. It is likely that the significant air quality impacts associated with the Project would be similar under this alternative.

b. Biological Resources. The Planning area is completely urbanized and almost entirely built out with few vacant properties located throughout the City. As with the Project, development under this alternative would occur within urban areas that currently have existing development. Similar to the Project, this alternative would have a less-than-significant impact on biological resources.

c. Cultural Resources. As with the Project, development under this alternative could uncover previously unknown cultural resources or destroy/change structures that could be considered historic. As with the Project, under the alternative the City's development requirements would include a CEQA evaluation for discretionary, non-exempt projects to evaluate potential impacts to historic resources, which may include mitigation measures to reduce potential impacts of future development within the Planning Area. Additionally, existing goal, policies and implementation programs within the Conservation Element ensure that significant archaeological resources are preserved and protected. The City also has the following standard condition of approval for development projects: "During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law."

Similar to the Project, this alternative would have a less-than-significant impact on cultural resources with adherence to existing regulations.

d. Energy. As with the Project, development associated with the Increased ADU and Reduced Mixed-Use Alternative would require the consumption of electricity, natural gas, and vehicle fuel resources to accommodate growth. Similar to the Project, under this alternative new development and land use turnover would be required to comply with statewide mandatory energy requirements outlined in Title 24, Part 6, of the California Code of Regulations (the CALGreen Code), which would decrease estimated natural gas consumption in new and/or retrofitted structures. ADUs could require more energy resources than more dense and efficient mixed use housing, however ADUs are typically smaller and widely distributed and must still meet applicable energy conservation construction and operation requirements. Therefore, this alternative would likely have similar less-than-significant energy impacts as the Project.

e. Geology and Soils. Both the alternative and the Project would be exposed to the same existing geologic conditions within the Planning area, and the same geology and soils policies and regulations would be applicable to both the Project and the alternative. As with the Project, existing building requirements would be applicable under this alternative and all future projects would be required to be designed and constructed in compliance with all applicable City and State codes and requirements. All General Plan policies related to geology and seismic issues would be applicable to this alternative, as is the case with the Project. The Increased ADU and Reduced Mixed-Use Alternative would have a less-than-significant geology impact, and would be considered similar to the Project.

f. Greenhouse Gas Emissions. The Project would result in significant unavoidable greenhouse gas (GHG) emissions impacts. This alternative would result in the same amount of development as the Project (i.e., almost 20,000 added units), although in a somewhat different form (i.e., 5,600 units would be less dense and smaller ADUs and more distributed throughout residential areas). It is likely that mitigation measures identified for the Project would also be required for this alternative. While no specific GHG modeling was undertaken for the alternative,

it is likely that the Increased ADU and Reduced Mixed-Use Alternative would result in similar significant GHG impacts associated with the Project.

g. Hazards and Hazardous Materials. Hazardous materials would be present during construction and operation of development associated with the Increased ADU and Reduced Mixed-Use Alternative. The amount and use of these materials present during construction would be limited, would be in compliance with existing government regulations, and would not be considered a significant hazard. All development under this alternative, similar to development under the FGPUZA would be subject to all applicable federal, state, and local laws and regulations regarding the development of contaminated sites, unanticipated discovery of contamination, hazardous material handling, and hazardous material disposal. The Increased ADU and Reduced Mixed-Use Alternative would have a less-than-significant hazards and hazardous materials impact, and would be considered similar to the Project.

h. Hydrology and Water Quality. Development associated with implementation of the Increased ADU and Reduced Mixed-Use Alternative would be subject to all existing water quality regulations and programs. The mitigation measure regarding water supply would still be required under this alternative. The Increased ADU and Reduced Mixed-Use Alternative would have a less-than-significant hydrology and water quality impact with incorporation of mitigation, and would be considered similar to the Project.

i. Land Use and Planning. As with the Project, the Increased ADU and Reduced Mixed-Use Alternative would not physically divide an established community and would not conflict with regulations adopted to avoid environmental effects. Similar to the Project, this alternative would have a less-than-significant land use and planning impact.

j. Noise. The Project would result in significant unavoidable noise impacts. The Increased ADU and Reduced Mixed-Use Alternative would result in the same amount of dwelling unit development within the City, but more ADUs would be located throughout the City and there would be a reduction in the number of multi-family units located along major corridors. Under this alternative, measures would still be required to ensure that construction noise is mitigated for projects located near sensitive receptors. This alternative assumes the increased ADU development would be spread throughout the City. While no specific roadway noise modeling was undertaken for the alternative, it is possible that the ADU vehicle trips associated with this alternative would divert vehicle trips away from major corridors, where mixed-use development occurs under the Project and which results in a significant vehicle noise impacts; the new traffic patterns associated with this alternative could reduce roadway noise impacts to a less-than-significant level. However, to be conservative in this analysis, the noise impact associated with this alternative would still be considered significant and unavoidable (though less than compared to the Project).

k. Population and Housing. This alternative would result in the same amount of residential development compared to the Project. This alternative would result in a similar less-than-significant impact related to population and housing compared to the Project.

l. Public Services. This alternative would result in the same amount of development and population growth and development as the Project although the overall pattern would change slightly (i.e., with approximately a quarter of the planned 20,000 additional units being smaller and more dispersed throughout residential areas. This alternative would result in a similar less-than-significant public services impacts compared to the Project.

m. Recreation. This alternative would result in the same overall amount of development as the Project although approximately a quarter of the planned residential growth (5,600 out of

20,000 new units) would be smaller ADU units distributed throughout residential areas rather than concentrated in mixed use development. This alternative would result in a similar less-than-significant recreation impact compared to the Project.

n. Transportation. This alternative would result in same amount of development that would occur with implementation of the Project. However, the pattern of development under this alternative would have more residential development outside of corridors with an increase in ADU development within single-family neighborhoods. As these neighborhoods tend to have fewer transit opportunities, or alternative transportation facilities (such as bike lanes), it is possible that VMT under this alternative could increase as future ADU residents may have fewer opportunities to take alternative forms of transportation. In addition, mixed use development areas are typically located closer to sources of employment. As with the Project, the uncertainty related to future fuel prices and future legislative policy could dramatically influence VMT production in the City. While no transportation modeling was undertaken for this alternative, a significant and unavoidable transportation impact would likely occur under this alternative. The transportation impacts associated with this alternative would likely require similar mitigation measures as the Project and would still be considered significant and unavoidable.

o. Tribal Cultural Resources. As with the Project, development under the Increased ADU and Reduced Mixed-Use Alternative could uncover previously unknown Tribal Cultural Resources. Compliance with existing regulations regarding burial grounds and consultation with Native American tribes would ensure that potential impact would be reduced. The City also has the following standard condition of approval for development projects: “During construction, if paleontological or archeological resources are found, all attempts will be made to preserve in place or leave in an undisturbed state in compliance with applicable law.”

Similar to the Project, this alternative would have a less-than-significant impact on Tribal Cultural Resources with adherence to existing regulations.

p. Utilities and Service Systems. This alternative would result in the same amount of development within the Planning Area as the Project, and the mitigation measure regarding water supply would still be required under this alternative. This alternative would have a similar less-than-significant utilities and service system with incorporation of mitigation impact when compared to the Project.

Attainment of Project Objectives

The Increased ADU and Reduced Mixed-Use Alternative would meet the following project objectives:

- *A Safe Community - Adequately funded, staffed, and equipped police and fire services that provide a timely, effective response to both minor and major public safety concerns. Also, the public safety providers will engage and educate all segments of the community.*
- *An Economically Sound Community - Meet budget challenges by capitalizing on our unique development opportunities and providing enhanced shopping, dining, and entertainment options while improving the aesthetics of the community.*
- *A Family-Oriented Community - Safe, well-kept neighborhoods where all segments of the community feel secure and comfortable, and where residents can feel unburdened from the stresses of the world outside the neighborhood.*
- *A Diverse Community - All segments of the community have a sense of belonging, regardless of race, ethnicity, or age. Also, a community where all feel safe in expressing*

their uniqueness, while joining and celebrating in their commonality as Americans, Californians, and Garden Grove residents.

- *A Well-Maintained Community - Public infrastructure (i.e., streets, water and sewer systems, storm drains) that is kept in good working order, but results in few inconveniences and disruptions to users during maintenance. Also, future plans that ensure the continued adequacy and availability of these services as the community changes.*
- *An informed Community and Well Administered Community - Good channels of communication shall exist between the general public, community organizations, service providers and the city government. This provides residents and other interested persons both information and opportunities to provide input on proposals being brought before the City's Boards, Commissions, and Council. In addition, the city government shall be adequately staffed and compensated to meet the service needs and goals of the community. City staff shall be encouraged to learn about and apply the most efficient and effective methods for providing public services to the community.*
- *A High-Quality-of-Life Community - Public facilities and open spaces that are well maintained and adequate for size and nature of the community, as well as provide recreational opportunities for all segments of the community.*

This alternative would also provide for the attainment of the RHNA Objective in that it would accommodate development of the City's entire 19,168 dwelling unit RHNA allocation, even though not all ADUs can be counted toward the RHNA allocation.

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

If an alternative is considered clearly superior to the proposed project relative to identified impacts, Section 15126.6 of the CEQA Guidelines requires that alternative to be identified as the environmentally superior alternative. By statute, if the environmentally superior alternative is the No Project Alternative, an EIR must also identify an environmentally superior alternative among the other alternatives.

Alternative 2, the Reduced Mixed-Use Alternative would result in the least adverse environmental impacts and would therefore be the "environmentally superior alternative." This conclusion is based on the comparative impact conclusions in Table 5-2 and the analysis within this chapter. However, this alternative would not meet the City's RHNA Objective.

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6.0 – CEQA-Mandated Sections

6.1 CUMULATIVE IMPACTS

Section 15130(a) of the CEQA Guidelines requires that the EIR "discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable...." The CEQA Guidelines (Section 15355) define "cumulative impacts" as "...two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."

The analyses of quantitative cumulative impacts in this EIR are based on the “summary of projections” method, as authorized by section 15130(b)(1)(B) of the CEQA Guidelines.

The proposed Garden Grove FGPUZA is itself a cumulative project because it would be implemented across the entire Planning Area incrementally and cumulatively over approximately 20 years (the horizon year is 2040 but the life of the plan could extend beyond 2040). This Program EIR evaluates the FGPUZA as one “project” in accordance with CEQA. All potentially significant cumulative impacts are addressed in this chapter with the following exceptions:

1) The Initial Study that was the basis for the Notice of Preparation for this DEIR determined that the Project has less then significant impacts in the following four (4) environmental topics: (a) Aesthetics; (b) Agriculture and Forest Resources; (c) Mineral Resources; and (d) Wildfire. Therefore, these topics were not evaluated in the DEIR and cumulative impacts were considered less than significant in the Initial Study.
2) The SCAQMD identifies all regional air pollutant emission impacts and climate change impacts as inherently cumulative impacts because they contribute to regional and global conditions, and are not confined to physical boundaries. Accordingly, the analyses of these impacts in Chapters 4.1 (Air Quality) and 4.6 (Greenhouse Gas Emissions and Global Climate Change) are analyses of cumulative impacts.
3) Cumulative noise impacts are analyzed in detail in Chapter 4.10 (Noise).
4) Cumulative transportation and circulation impacts are analyzed in detail in Chapter 4.14 (Transportation).
5) Chapter 4.16 (Utilities and Service Systems) evaluates: 1) water supply sufficiency on a cumulative basis, (UWMP), 2) wastewater generation, collection, and treatment capacity on a cumulative basis; and 3) utility (water, wastewater, and storm drainage) infrastructure needs on a cumulative basis.

All other potential cumulative impacts are addressed in the sections that follow below.

6.1.1 Cumulative Local Odor Impacts (Air Quality)

There are no identified odor-producing development projects anticipated in the FGPUZA. The proposed Project would not make a cumulatively considerable contribution to any significant cumulative odor impact.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

Please note that other air quality impacts that are potentially cumulatively considerable are discussed in detail in Chapter 4.1 (Air Quality).

6.1.2 Cumulative Biological Resource Impacts

The FGPUZA will not contribute to substantial adverse cumulative impacts to biological resources, as the FGPUZA is primarily in a developed urban area and natural areas are not planned to be developed. Therefore, cumulative impacts to biological resources from future development under the FGPUZA are expected to be less than significant.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been specifically identified; however, the potential for impacts to nesting migratory birds can be mitigated through adherence to existing regulations. Therefore, with the implementation of existing regulations, potential cumulative as well as project-level impacts would be less than significant.

6.1.3 Cumulative Cultural Resource Impacts

As discussed in Chapter 4.3 (Cultural Resources) and Chapter 4.15 (Tribal Cultural Resources), by adopting the General Plan Update goals and policies, following required laws and regulations, and continuation of the City's required CEQA review of all development projects created by the FGPUZA, the potential cumulative impacts to cultural resources will be minimized, and future development in the City of Garden Grove under the FGPUZA will not make a significant contribution to any cumulative regional impacts on cultural resources.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.4 Cumulative Energy Resource Impacts

The consumption of electricity, natural gas, and vehicle fuel resources would be necessary to accommodate the planned development anticipated by the FGPUZA. The project, however, supports redevelopment of existing land uses with newer, more efficient development that would reduce energy consumption compared to existing conditions. In addition, the FGPUZA supports higher density, mixed use development that reduces VMT and fuel consumption as compared to other types of development. The use of energy resources in the Planning Area would become substantially more efficient over time with the change in land uses with the application of more stringent regulations that reduce energy usage. In addition, the FGPUZA would not conflict with nor obstruct a state or local plan adopted for the purposes of increasing renewable energy or energy efficiency.

Therefore, on a cumulative basis the FGPUZA would not result in the unnecessary, inefficient, or wasteful use of energy resources nor would it conflict with or obstruct a state or local plan for increasing renewable energy or energy efficiency.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.5 Cumulative Geology and Soils Impacts

The General Plans for the surrounding cities and the County General Plan are all required to identify potential risks from geologic and seismic conditions and contain goals and policies to address these risks and protect the public. These goals and policies are intended to be consistent with state law and are similar to those of Garden Grove's General Plan. In addition to local general plans, the State Building Code (SBC) and the Garden Grove Building Code have guidelines on building design and construction based on seismic constraints and expected ground shaking and ground failure throughout California.

Although it might be possible for two adjacent improperly constructed projects to cumulatively affect a third facility (e.g., an underground utility line), implementation of adopted City regulations and required geotechnical investigations, as described in Chapter 4.7 (Geology and Soils), would avoid such impacts.

In these ways, potential cumulative impacts to future development from geologic, seismic, and soil constraints will be minimized, and future development in the City of Garden Grove under the FGPUZA will not make a significant contribution to any cumulative regional impacts on geologic, seismic, soil, or paleontological resources.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.7 Cumulative Hazards and Hazardous Materials Impacts

The existing Safety Element of the General Plan contained Goals 4, 5, 9, and 16 and their attendant policies to assure future development would not result in significant environmental impacts regarding emergency plans, evacuation, hazardous materials, and airport hazards. Other surrounding jurisdictions have similar General Plan goals and policies as they generally reflect compliance with state laws regarding various hazards and hazardous materials. Compliance with the requirements of the General Plan Safety Element described above would result in impacts from hazards and hazardous materials that would be less than significant.

Because of the applicable laws, adopted regulations, and uniform protocols described in Chapter 4.7 (Hazards and Hazardous Materials), the proposed FGPUZA would create minimal risk and no significant impacts from hazards and hazardous materials. For all potential exposure pathways other than transport of hazardous waste outside the Planning Area, any potential impacts would be limited to a particular development site and its immediate vicinity. Therefore, implementation of the proposed FGPUZA would not result in any cumulatively considerable impacts regarding these issues.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.8 Cumulative Hydrology and Water Quality Impacts

The General Plans for the surrounding cities and the County General Plan are all required to identify potential risks from flooding, erosion, dam inundation, and other water-related hazards, and contain goals and policies to address these risks and protect the public. These goals and policies are intended to be consistent with state law and are similar to those of Garden Grove's General Plan. In addition to local general plans, various state laws including CEQA require the

City as a lead agency to identify potential hazards related to new development as well as protect important water resources as development occurs in the future. Local water districts must prepare Urban Water Management Plans and Groundwater Sustainability Plans are required to provide long-term protection for both surface and groundwater supplies for the region.

In these ways, potential cumulative impacts to future development from flooding and water-related hazards will be minimized, and important regional water resources will be protected. Therefore, future development in the City of Garden Grove under the proposed FGPUZA will not make a significant contribution to any cumulative regional impacts on flooding or other water-related hazards and protect surface and groundwater resources in the future.

Under **Mitigation Measure UTL-1**, the City will inform the local water serving agencies of its change in land use and growth projections under the FGPUZA. This information will then contribute to the planning process of the Watermaster and the subsequent GSP for groundwater management in this region. Cumulative impacts would then be less than significant with implementation of General Plan goals and policies protecting the public from water-related hazards and carefully managing important water resources consistent with state law.

The proposed FGPUZA includes numerous policies and implementation programs to improve hydrology and water quality (see EIR chapter 4.10-Hydrology and Water Quality). In addition, implementation of mitigation (UTL-1) will ensure that new developments approved under the FGPUZA will not increase water use in excess of what is identified for supply in 2040 under the most recent Urban Water Management Plan. Therefore, the proposed Project would not contribute to any significant cumulative flooding impact. Individual development projects could potentially cause soil erosion, contaminant spills, and long-term water quality effects, but would be subject to universally applied regulatory requirements. Compliance with these requirements would ensure that any cumulative impacts would be less than significant.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.9 Cumulative Land Use and Planning Impacts

Anticipated population growth in Orange County would result in land use changes at the regional level; the 2020-2045 RTP/SCS anticipates significant population and housing growth within the Orange County region – an increase of approximately 190,400 residents, 77,600 households, and 168,500 jobs between 2020 and 2040. Implementation of the FGPUZA would result in the addition of lands designated for future housing units and non-residential square footage, which would help to meet the anticipated regional demand by directing development within the City. The FGPUZA also includes several policies to ensure that long-term sustainable development considers air quality, health of residents, existing infrastructure networks, and services. The FGPUZA also includes goals and policies to balance development with the preservation of environmental systems and open space areas. Additionally, as specific development projects are proposed under the FGPUZA, site specific environmental evaluations would occur which would evaluate potential environmental impacts, including land use impacts, and identify mitigation measures, if required.

The proposed FGPUZA would not cause a cumulatively considerable contribution to land use and planning impacts. Project-facilitated redevelopment would result in an intensification of land uses, but would not alter the existing pattern of land use. Although minor changes to the

circulation system would occur the existing layout of roadways would remain, and no new roads would be constructed and, therefore, would not create any physical divisions within the Planning Area. Therefore, the implementation of the FGPUZA would not cause a substantial adverse cumulative impact with respect to land use and planning.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.10 Cumulative Population and Housing Impacts

Implementation of the FGPUZA would result in increased residential density which would increase the population of the City. The City would ensure that existing regulations and land use policies are used to avoid or reduce an identified potential environmental impact. Although some existing housing units are susceptible to redevelopment, the amount of new housing that will be needed exceeds the housing that could be replaced.

In most cases, no one goal, policy, or implementation measure ("policy" for short) is expected to completely avoid or reduce an identified potential environmental impact. However, the collective, cumulative mitigating benefits of the policies listed above will result in a less-than-significant impact related to population and housing growth.

Implementation of the FGPUZA would result in increased residential density which, in turn, would increase the population of Garden Grove. New development within the City would be guided by the Goals and Policies of the proposed FGPUZA, which provides the framework for addressing the potential negative impacts sometimes associated with population growth. This EIR concludes that, with the policies and programs included in the FGPUZA, the impacts of this growth would be less than significant (see EIR chapter 4.11-Population and Housing). Because the proposed Project would not displace residents or housing, the proposed Project would not contribute to a displacement impact. The proposed Project would not make a cumulatively considerable contribution to a significant cumulative population, housing, or employment impact.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.11 Cumulative Public Services

The proposed FGPUZA does not include specific development projects. Development projects in the Planning Area would generally increase the land use intensities in the service areas for the Orange County Fire Authority and the Garden Grove Police Department, potentially causing incremental and cumulative increases in the number of calls for fire and/or police protection services. Development of residential projects within the boundaries of the Garden Grove Unified School District would lead to incremental increases in the number of students served by the district. Development of residential projects in the Planning Area would also lead to increases in the number of people who use the City's park and library facilities.

However, the increase in demand for public services in the City attributable to the FGPUZA would be incremental as growth occurs over a period of 20 years and would be offset by Development Impact Fees. Projects constructed within the Planning Area over the life of the Plan would also be required to be developed in accordance with applicable fire codes and emergency access requirements. Compliance with these requirements would help prevent and/or ameliorate fire emergencies (automatic sprinkler systems and fire alarms) and would

help facilitate more expedient emergency response (adequate fire flows, turning radii, width of emergency accesses). Similarly, the FGPUZA has been designed to improve public safety through design practices, enhanced lighting, and updated wayfinding signage. These design practices and operational practices would lessen the demand for police protection services within the Planning Area. The Orange County Fire Authority reviews fire station placement and fire services through its annual budget process, and resources are expanded or reassigned as necessary to meet increases in service demands. Similarly, the Garden Grove Police Department annually evaluates its service needs. Payment of Development Impact Fees by future projects in the service areas of the OCFA and the Garden Grove Police Department would offset the costs of increased service needs as necessary and would ensure that performance objectives for fire and police services are not substantially affected by incremental increases in land use intensity within service areas. The need for new facilities as a result of these development projects has not been identified by either department.

Regarding school services, the contribution of future projects within the Planning Area to increased demand for such services would be minor. The district that serves the Planning Area has verified its ability to accommodate increases in students through the collection of development impact fees. As such, the increases in student enrollment resulting from future projects that fall within the service area of Garden Grove Unified School District would be accommodated within the district's existing facilities, and no new facilities would be required. The proposed FGPUZA in combination with other projects in the area would not result in the need for new school facilities.

Potential cumulative impacts with respect to incremental increases in demand for parks would be offset by required development impact fees and Quimby ordinance dedications/fees.

Finally, cumulative impacts to library and other public facilities would be less than significant through continued assessment of demands and improvements in technology that will ease direct demand on these facilities.

Mitigation*.* No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.12 Cumulative Impacts on Recreation

Development of residential projects within the Planning Area would generally increase the usage of parks and recreational facilities in the City and surrounding area, potentially causing the need for additional parks and recreational facilities due to related population increases. However, such new development would be subject to development impact fees and, for residential tentative tract maps, the City's Quimby Ordinance. These three parks funding mechanisms will offset the incremental and cumulative increase in demand for park facilities from implementation of the FGPUZA as well as other residential developments in the vicinity of the Planning Area.

Mitigation*.* No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.13 Cumulative Impacts on Tribal Cultural Resources

By adopting the General Plan Update goals and policies, following required laws and regulations, and continuation of the City's required CEQA review of all development projects

created by the FGPUZA, the potential cumulative impacts to cultural resources will be minimized, and future development in the City of Garden Grove under the FGPUZA will not make a significant contribution to any cumulative regional impacts on cultural resources.

Mitigation. No cumulatively considerable contribution to a significant cumulative impact has been identified; thus, no mitigation is required.

6.1.14 Cumulative Impacts on Utilities and Service Systems

Development that results from the proposed FGPUZA, in combination with other cumulative development in neighboring areas would increase the demand for utilities. Utilities can be potentially impacted by increased population, especially when new facilities are not built to meet population increases or when existing facilities are not adequately maintained. Alternatively, impacts may also occur when new facilities are built, resulting in physical impacts to existing resources.

Overall, the FGPUZA accounts for both these scenarios. The FGPUZA includes policies to mitigate potential negative environmental impacts. Additionally, new facilities are subject to both the provisions of the FGPUZA and compliance with CEQA, when required. Environmental review would identify site-specific conditions and physical changes resulting from utility services expansion. Typical impacts associated with new facilities include short-term construction activities related to air quality pollutant emissions, temporary traffic detours, changes in traffic distribution, and noise.

In addition, all development projects in Garden Grove are required to be consistent with adopted solid waste and recycling regulations and programs, including those described in Chapter 16-Utilities and Service Systems of this EIR. The solid waste disposal and recycling facilities used by the City have ample capacity, and the applicable regulations and programs have been deliberately designed and adopted to avoid or reduce cumulative solid waste/recycling impacts to less-than-significant levels. The overall cumulative solid waste/recycling impact of cumulative development would be less than significant. The proposed FGPUZA would not make a cumulatively considerable contribution that would significantly impact solid waste disposal facilities.

Mitigation. It has been determined that water supply may not be adequate for the full implementation of the FGPUZA and that mitigation is required. With the inclusion of **Mitigation Measure UTL-1**, any regional cumulative impacts would be reduced to less than significant levels. No cumulatively considerable contribution to a significant cumulative solid waste impact has been identified; thus, no mitigation is required.

6.2 GROWTH-INDUCING EFFECTS

CEQA Guidelines Section 15126.2(d) requires that an EIR discuss "...the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

The proposed FGPUZA has a planning horizon year of 2040. Exhibit 3-4 (Proposed Land Use Plan) shows the proposed future land uses under the FGPUZA. It is estimated that growth under the FGPUZA will result in 68,499 dwelling units, 238,619 residents, 29,718,000 building square feet of non-residential uses, and 49,369 jobs in the City by the 2040 General Plan horizon year. However, the FGPUZA could potentially result in approximately 514,500 less non-

residential square feet when compared to existing conditions. Growth in the City as a result of its RHNA housing allocation and future land uses will be substantial. However, no substantial, detrimental, growth-inducing effect is expected because the General Plan is the City's overall guide to growth and development in the future. Therefore, the FGUPZA accommodates growth that would occur even without the FGUPZA.

The goals, polices and implementing actions, contained in the proposed FGPUZA address the potentially negative aspects of growth, have been designed to facilitate development efficiently and effectively in an area where roads and infrastructure already exist. The more compact urban form envisioned by the FGPUZA is expected to improve the livability in Garden Grove by improving walking and bicycling opportunities, increasing economic vitality and job opportunities, and reducing vehicle-miles-travelled (VMT). Since the FGPUZA is designed to accommodate projected growth and the City's RHNA, the FGPUZA's potential growth-related impacts have also been evaluated in the topical Chapters of this EIR (Air Quality, Biological Resources, etc.) and, as appropriate, mitigation measures have been applied to address such impacts. In addition, implementation of the proposed FGPUZA would not involve the extension of roads, major sewer or water lines, or the construction of other major infrastructure facilities that would induce growth in areas adjoining Garden Grove.

5.3 SIGNIFICANT UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126.2(b) requires that the EIR discuss "significant environmental effects which cannot be avoided if the proposed project is implemented." The impacts listed below are identified as significant and unavoidable for one of four reasons: 1) no potentially feasible mitigation has been identified; 2) potential mitigation has been identified but may be found by the Lead Agency to be infeasible; 3) with implementation of feasible mitigation, the impact still would not, or might not, be reduced to a less-than-significant level; or 4) implementation of the mitigation measure would require approval of another jurisdictional agency, whose approval will be pursued by the Lead Agency but cannot be guaranteed as of the publication of this EIR. Because these significant unavoidable impacts "cannot be alleviated without imposing an alternative design" (CEQA Guidelines Section 15126.2[b]), Chapter 6 (Alternatives to the Proposed General Plan Update) of this EIR evaluates a range of feasible alternatives that could lessen the identified significant unavoidable impacts, and evaluates for each alternative the ability to meet the Project objectives.

The following impacts have been identified in this EIR as significant and unavoidable:

- Impact AIR-1: Conflict with or obstruct implementation of applicable air quality plans because it would exceed the growth assumption of the South Coast Air Quality Management Plan (AQMP), and exceed SCAQMD's regional threshold for the criteria pollutant listed under Impact AIR-2 below, thereby impeding AQMP attainment.

- Impact AIR-2: Result in a cumulatively considerable net increase of non-attainment criteria pollutants for which the project region is in non-attainment. The Project would exceed the SCAQMD regional operational thresholds for NO_x, ROG's, CO, SO_2 and PM_{10}, and construction thresholds for ROG, NO_x and $PM_{10.}$

- Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations.

- Impact AIR-5: Cause adverse substantial adverse cumulative impacts with respect to air quality (Cumulative Impact).

- Impact GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Impact GHG-2: Conflict with the growth assumptions of the SCAG 2020 RTP/SCS.
- Impact GHG-3: Cause a substantial adverse cumulative impact with respect to greenhouse gas emissions (Cumulative Impact).
- Impact TRANS-2: Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), related to Vehicle Miles Travelled (VMT).
- Impact TRANS-5: Cause substantial adverse cumulative impacts with respect to transportation and traffic.

The implications of each significant unavoidable impact identified above are described in the particular EIR chapter referenced with the impact. The FGPUZA is being proposed, notwithstanding these effects, to fully achieve the Project objectives described in Chapter 3.0 of this EIR. If the City approves the FGPUZA (or an alternative to the proposed Project) that would result in significant unavoidable impacts, the City must adopt a “Statement of Overriding Considerations” per CEQA Guidelines Section 15093 describing why the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of the approved FGPUZA outweigh its significant unavoidable impacts.

5.4 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Section 15126.2(c) requires that the EIR discuss "significant irreversible environmental changes which would be caused by the proposed Project should it be implemented." Since nearly all of Garden Grove is developed and the Project will not significantly change the circulation pattern or make other major changes to backbone infrastructure facilities, there would not be any significant irreversible physical changes caused by the FGPUZA. The proposed FGPUZA would result in an irreversible commitment of energy resources, primarily in the form of fossil fuels, including fuel oil, natural gas, and gasoline or diesel fuel for construction equipment and vehicles, as well as the use of these same resources during long-term operation of individual projects facilitated by the Plan. Because development facilitated by the proposed FGPUZA would be required by law to comply with California Code of Regulations Title 24 (including updates over time) and adopted City energy conservation ordinances and regulations, Plan implementation would not be expected to use energy in a wasteful, inefficient, or unnecessary manner.

The consumption or destruction of other non-renewable or slowly renewable resources would also result during construction, occupancy, and use of individual development sites under the proposed FGPUZA. These resources would include, but would not be limited to, lumber, concrete, sand, gravel, asphalt, masonry, metals, and water. FGPUZA implementation would also irreversibly use water and solid waste landfill resources. However, development under the proposed FGPUZA would not involve a large commitment of those resources relative to supply, nor would it consume any of those resources wastefully, inefficiently, or unnecessarily, especially considering ongoing City conservation and recycling programs.

The FGPUZA itself will not result in significant irreversible environmental changes, but future development within the City under the guidance of the FGPUZA will result in some irreversible environmental changes and consumption of non-renewable resources.