Energy Impact Assessment
for the
California Renewable Carbon
Williams Production Facility Project

County of Colusa, California

Prepared For:

California Renewable Carbon, LLC

Prepared By:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
2525 Warren Drive
Rocklin, California 95677

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LIST OF ACRONYMS AND ABBREVIATIONS

APNs	Assessor's Parcel Numbers
CalEEMod	California Emissions Estimator Model
CAISO	California Independent System Operator
CARB	California Air Resources Board
CEC	California Energy Commission

EO	Executive Order
EPS	Emissions Performance Standard
IEPR	Integrated Energy Policy Report
I-5	Interstate 5
kWh	Kilowatt-Hours
MW	Megawatt
MWh	Megawatt Hour
M-2	Heavy Industrial
PG&E	Pacific Gas and Electric
Project	National Carbon Technologies Williams Facility Project
RPS	Renewables Portfolio Standard
UPRR	Union Pacific Railroad
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

This report documents the results of an Energy Impact Assessment completed for the California Renewable Carbon (CRC) Williams Production Facility Project (Project), which includes the construction and operation of a biocarbon production facility in unincorporated Colusa County. The Project site is located on approximately 49 acres in unincorporated Colusa County. This report was prepared to analyze the potential direct and indirect environmental impacts associated with the Project energy consumption, including the depletion of nonrenewable resources (oil, natural gas, coal, etc.) during the construction and operational phases. The impact analysis focuses on the four sources of energy that are relevant to the proposed Project: electricity, natural gas, the equipment-fuel necessary for Project construction, and the automotive fuel necessary for Project operations.

CRC is a leader in environmental technology with more than 185 issued and pending patents around processes and products engineered to improve the environment. CRC proposes to repurpose an existing facility in Colusa County to construct a new renewable biocarbon production facility. The new facility will use CRC's patented non combustion technology to convert sustainably sourced biomass into renewable biocarbon products. The new facility will use self-generated renewable biogas for process energy as well as generate and export renewable electricity to the grid. The new biocarbon process will be net water positive and carbon negative on a lifecycle basis. The facility also will significantly reduce regional air emissions by thousands of tons per year by converting locally sourced biomass such as orchard rotations and trimmings, that otherwise undergo open burning or land disposal, into renewable biocarbon products. CRC's products will be used to displace fossil-based products and reduce environmental impacts from metals production, energy generation, and crop production, and to purify the air and water. CRC will create more than 65 direct clean-tech jobs working toward environmental improvement.

1.1 Project Overview

The Project Site is located at 6229 Myers Road in unincorporated Colusa County, approximately 1.4 miles south of the Williams (see Figure 2-1). The approximately 49-acre site at the northeast corner of the intersection of Myers Road and Frontage Road would be the location of the CRC Williams facility. The site currently accommodates the existing Olam Tomato Processing facility, comprising approximately 161,000 square feet of existing structures including existing buildings, an existing rail spur, and two existing water wells. The site is bound by the Wadham Energy Company facility just north of the Project Site with agricultural lands north of the Wadham facility, and agricultural land and residences to the east and south. The Union Pacific Railroad (UPRR) tracks and Frontage Road run west of the site, with Interstate-5 (I-5) positioned further west. Orchard land with a single-family residence on a parcel zoned for Heavy Industrial (M-2) is located between Frontage Road and I-5 approximately 150 feet from the western boundary of the site. The site is located approximately 1,000 feet (0.3 mile) from I-5.

The purpose of the Project is to use renewable biomass, primarily in the form of orchard rotations and trimmings, to produce a biocarbon product using a net water positive, non-combustion process involving thermal conversion of biomass. The process would use self-generated biogas for process energy and would produce net electric power for export sale to Pacific Gas and Electric (PG&E) through

interconnection to either a PG&E 12 kilovolt (kV) distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. The Project would also include improvements to, and extension of, an existing rail spur system on the property which interconnects with the Union Pacific Railroad tracks adjacent to the property.

The process at the CRC Williams facility would involve the following components discussed in more detail:

- Biomass receiving and sizing;
- Biomass drying;
- Non-combustion thermal conversion;
- Pelletizing;
- Pellet finishing and shipping; and
- Cogeneration.

CRC would utilize all existing buildings onsite and would construct several smaller support structures for the process. A new paved access road into the northeast corner of the facility would be constructed as well as a new drainage basin and other drainage improvements. New process equipment, tanks, pipe bridges, and conveyor belts would be installed outdoors in the central portion of the site in and around existing buildings.

The Project would involve improvements to, and extension of, an existing rail spur system on the property that interconnects to the UPRR tracks that run adjacent to the Project Site and along I-5. Improvements to the existing rail spur may involve improvements to the rail spur track (i.e., new ballast, ties, rail), signal improvements, and/or improvements to utility lines along the rail spur (electrical lines, fiber optic lines, etc.). Improvements to the UPRR tracks may be requested by UPRR, including potentially new ballast, ties, rail, and/or signal or utility line improvements on or near the UPRR tracks. Extension of the rail spur is also proposed along the eastern boundary of the CRC Williams facility property. New track, signal facilities, and utility lines will be installed in this area in support of the rail spur. Finally, a new rail spur loadout area would be constructed adjacent to the new rail spur.

Biogas from the process would be used in a new cogeneration system for generation of electricity. The process would provide up to 10 megawatts (MW) of net electric power (17 MW gross) for export sale to PG&E through interconnection to either PG&E's Williams 1101 12 kV distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. Both existing lines are located on the same power poles along Frontage Road running north to the PG&E Williams Generating Station in Williams. It is assumed that PG&E will require reconductoring along this route and may require replacement of some or all of the power poles along this route. For interconnection to the 12 kV distribution line, a new transformer or circuit breaker may be required at the PG&E Williams Generating Station (within the station facility). Alternatively, for interconnection to the Wadham 60 kV power line, a new 60 kV gentie line would be required on the CRC Williams facility that would interconnect with the Wadham 60 kV line with a new three-breaker ring bus that would be located on the northwest corner of the CRC Williams

facility. Improvements at the Williams Generation Station are not anticipated for interconnection to the 60 kV power line.

Grading would be required for new foundations, for paving of the new internal access roads, and drainage improvements on the CRC Williams facility. Construction at the CRC Williams facility, including offsite improvements required for the interconnection to PG&E's electrical system and any improvements to the interconnection to the UPRR tracks, is expected to take 14 months to complete using approximately 42 construction workers.

The CRC Williams facility can process up to 763,000 gross wet tons of renewable feedstock per year. The source locations for renewable feedstock would primarily comprise orchards in the region, and primarily within Colusa County. Approximately 125 heavy truck trips per day would be utilized to deliver renewable feedstock to the CRC Williams facility. Source locations for the renewable feedstock are expected to be primarily within 75 miles of the CRC Williams facility. Heavy trucks would utilize local area roadways to access I-5, to travel either north or south along I-5 to the CRC Williams facility. Heavy trucks would either utilize the I-5/Husted Road interchange to then travel southbound on the two-lane Frontage Road to the facility or utilize the I-5/Hahn Road interchange to travel northbound on the two-lane Frontage Road to the facility.

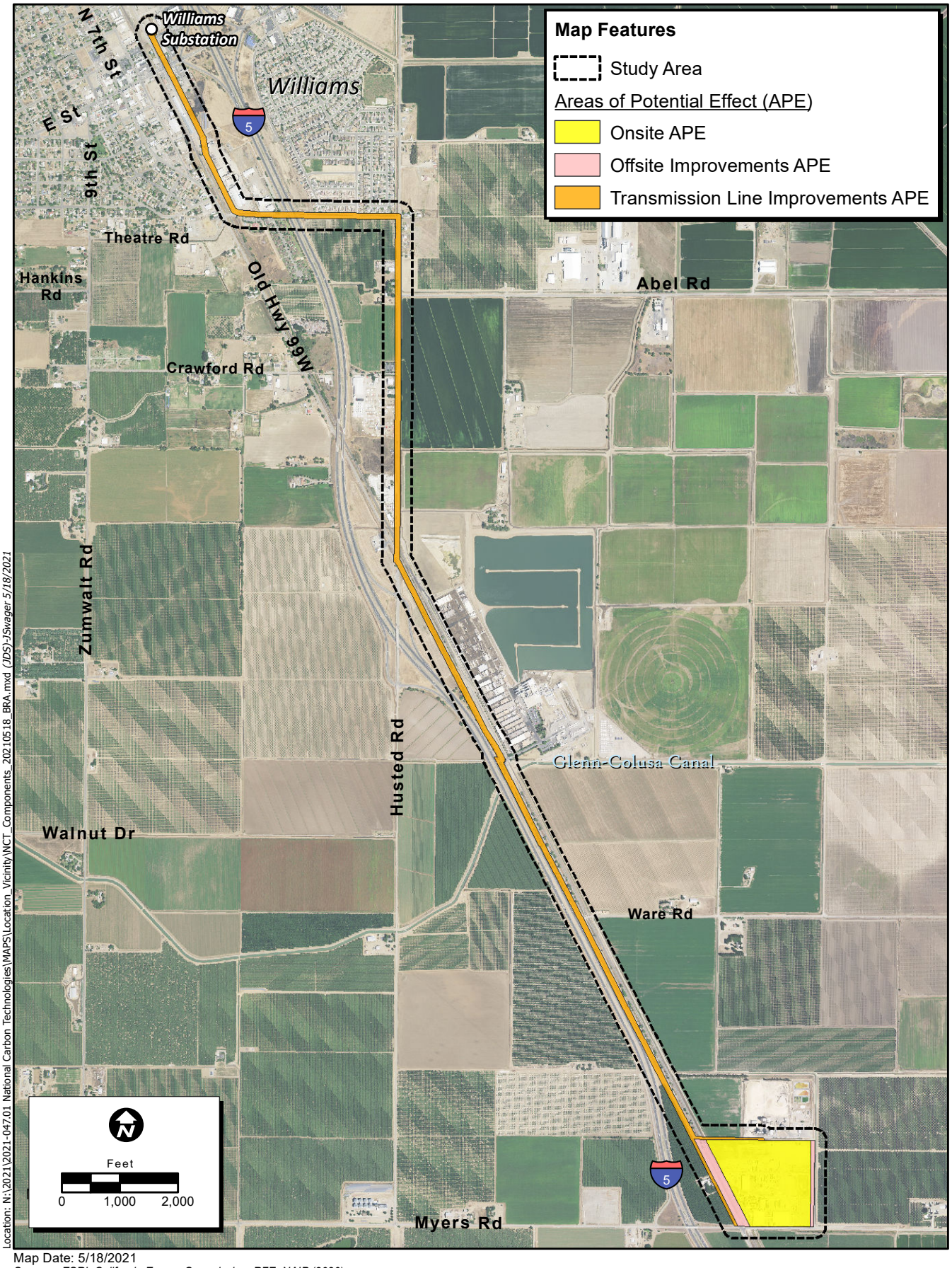
Rail cars would be loaded with biocarbon product at the proposed rail car loadout area. A new electric switching locomotive would be utilized on the property to move cars along the rail spur system. Approximately 50 rail cars per week would be utilized to transport biocarbon product on UPRR tracks to one or more major ports in California and/or Oregon for ultimate transport of the biocarbon product via Handymax class vessels.

The Project site is currently designated Industrial by the County of Colusa (County) General Plan. The Industrial designation identifies areas suitable for a wide range of industrial activities, ranging from light industrial to heavy manufacturing and processing uses. This designation is applied to lands with existing industrial uses, including industrial parks and agricultural support uses, and to lands suited for future industrial uses, where necessary services such as transportation systems (e.g., I-5, SR 20, SR 45 corridors) and utilities and services exist or can be efficiently provided, where disruption of proximate uses will be least, and where the potential for environmental disruption is minimal or can be adequately mitigated.

2.0 ENERGY CONSUMPTION

2.1 Energy Types and Sources

California relies on a regional power system comprised of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Natural gas provides California with a majority of its electricity followed by renewables, large hydroelectric and nuclear (California Energy Commission [CEC] 2020a). PG&E provides electricity and natural gas to unincorporated Colusa County. It generates or buys electricity from hydroelectric, nuclear, renewable, natural gas, and coal facilities. PG&E provides natural gas and electricity to most of the northern two-thirds of California, from Bakersfield and Barstow to near the Oregon, Nevada and Arizona State Line. It provides 5.2 million people with electricity and natural gas



Location: N:\2021\2021-047.01 National Carbon Technologies\MAPS\Location_Vicinity\NCT_Components_20210518_BRA.mxd (JDS)-JSwager 5/18/2021

Map Date: 5/18/2021

Sources: ESRI, California Energy Commission, RFE, NAIP (2020)

Figure 2-1. Project Location and Vicinity

across 70,000 square miles. In 2017, PG&E announced that 80 percent of the company's delivered electricity comes from greenhouse gas emission-free sources, including renewables, nuclear, and hydropower.

2.1.1 Energy Consumption

Electricity use is measured in kilowatt-hours (kWh), and natural gas use is measured in therms. Vehicle fuel use is typically measured in gallons (e.g. of gasoline or diesel fuel), although energy use for electric vehicles is measured in kWh.

The electricity consumption associated with all nonresidential uses in Colusa County from 2015 to 2019 is shown in Table 2-1. As indicated, the demand has decreased since 2015.

Table 2-1. Electricity Consumption in Colusa County 2015-2019

Year	Electricity Consumption (kilowatt hours)
2019	217,852,047
2018	232,008,950
2017	224,493,531
2016	232,370,081
2015	242,069,562

Source: CEC 2020b

The natural gas consumption associated with all uses in Colusa County from 2015 to 2019 is shown in Table 2-2. As indicated, the demand has decreased since 2015.

Table 2-2. Natural Gas Consumption in Colusa County 2015-2019

Year	Natural Gas Consumption (therms)
2019	29,254,071
2018	38,729,625
2017	40,442,318
2016	36,089,854
2015	31,494,256

Source: CEC 2020b

Approximately 125 heavy truck trips per day would be utilized to deliver renewable feedstock to the CRC Williams facility. Source locations for the renewable feedstock are expected to be primarily within 75 miles of the CRC Williams facility. Including Colusa County, which encompasses the Project site, there are eight counties both within a 75-mile radius of the Project and within the agricultural rich Sacramento Valley. These counties include Colusa, Glenn, Tehama, Butte, Sutter, Yuba, Yolo, and Solano counties. While both

Lake and Mendocino counties are located within a 75-mile radius of the Project site, these counties predominately lay outside of the Sacramento Valley and on the western side of the Coastal Range, and do not support a large amount of orchard crops. Thus, these counties are not considered in this analysis of existing conditions. Similarly, Sacramento County also lays within a 75-mile radius of the Project site yet was also not considered in this analysis of existing conditions due to its large amount of urban land use.

On-road automotive and off-road equipment fuel consumption in the eight-county region of Colusa, Glenn, Tehama, Butte, Sutter, Yuba, Yolo, and Solano counties from 2016 to 2020 are shown in Table 2-3. As shown, total fuel consumption has decreased between 2016 and 2020.

Table 2-3. Automotive Fuel Consumption in Eight Agricultural Counties in a 75-Mile Radius of the Project Site 2016-2020

Year	Total ON-ROAD Automotive and Equipment Fuel Consumption (gallons)
2020	666,229,406
2019	746,094,238
2018	736,758,138
2017	738,800,317
2016	722,163,486

Source: California Air Resources Board (CARB) 2021

2.2 Regulatory Framework

2.2.1 Federal

2.2.1.1 Intermodal Surface Transportation Efficiency Act (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) promoted the development of inter-modal transportation systems to maximize mobility as well as address national and local interests in air quality and energy. ISTEA contained factors that Metropolitan Planning Organizations (MPOs) were to address in developing transportation plans and programs, including some energy-related factors. To meet the new ISTEA requirements, MPOs adopted explicit policies defining the social, economic, energy, and environmental values guiding transportation decisions.

2.2.2 State

2.2.2.1 Integrated Energy Policy Report

Senate Bill 1389 (Bowen, Chapter 568, Statutes of 2002) requires the California Energy Commissions (CEC) to prepare a biennial integrated energy policy report that assesses major energy trends and issues facing California's electricity, natural gas, and transportation fuel sectors and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies;

enhance the State's economy; and protect public health and safety (Public Resources Code § 25301a). The CEC prepares these assessments and associated policy recommendations every two years, with updates on alternate years, as part of the Integrated Energy Policy Report (IEPR).

The 2017 IEPR focuses on next steps for transforming transportation energy use in California. The 2017 IEPR addresses the role of transportation in meeting state climate, air quality, and energy goals; the transportation fuel supply; the Alternative and Renewable Fuel and Vehicle Technology Program; current and potential funding mechanisms to advance transportation policy; transportation energy demand forecasts; the status of statewide plug-in electric vehicle infrastructure; challenges and opportunities for electric vehicle infrastructure.

2.2.2.2 Executive Order B-55-18

In September 2018 Governor Jerry Brown Signed Executive Order (EO) B-55-18, which establishing a new statewide goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Carbon neutrality refers to achieving a net zero carbon dioxide emissions. This can be achieved by reducing or eliminating carbon emissions, balancing carbon emissions with carbon removal, or a combination of the two. This goal is in addition to existing statewide targets for GHG emission reduction. EO B-55-18 requires the California Air Resource Board (CARB) to "work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

2.2.2.3 Senate Bill 1368

On September 29, 2006, Governor Arnold Schwarzenegger signed into law Senate Bill (SB) 1368 (Perata, Chapter 598, Statutes of 2006). The law limits long-term investments in baseload generation by the state's utilities to those power plants that meet an emissions performance standard jointly established by the CEC and the California Public Utilities Commission (CPUC).

The CEC has designed regulations that:

- Establish a standard for baseload generation owned by, or under long-term contract to, publicly owned utilities, of 1,100 pounds carbon dioxide per megawatt hour (MWh). This would encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of greenhouse gas.
- Require posting of notices of public deliberations by publicly owned utilities on long-term investments on the CEC website. This would facilitate public awareness of utility efforts to meet customer needs for energy over the long term while meeting the State's standards for environmental impact.
- Establish a public process for determining the compliance of proposed investments with the emissions performance standard (EPS) (Perata, Chapter 598, Statutes of 2006).

2.2.2.4 Renewable Energy Sources (Renewable Portfolio Standards)

Established in 2002 under SB 1078, and accelerated by SB 107 (2006) and SB 2 (2011), California's Renewables Portfolio Standard (RPS) obligated investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent of their electricity from renewable energy sources by 2020. Eligible renewable resources are defined in the 2013 RPS to include biodiesel; biomass; hydroelectric and small hydro (30 megawatts or less); Los Angeles Aqueduct hydro power plants; digester gas; fuel cells; geothermal; landfill gas; municipal solid waste; ocean thermal, ocean wave, and tidal current technologies; renewable derived biogas; multi-fuel facilities using renewable fuels; solar photovoltaic; solar thermal electric; wind; and other renewables that may be defined later.

Governor Jerry Brown signed SB 350 on October 7, 2015, which expands the RPS by establishing a goal of 60 percent of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 includes the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses upon which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the CPUC, in consultation with the CEC, establish efficiency targets for electrical and gas corporations consistent with this goal. SB 350 also provides for the transformation of the California Independent System Operator (CAISO) into a regional organization to promote the development of regional electricity transmission markets in the western states and to improve the access of consumers served by the CAISO to those markets, pursuant to a specified process.

In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 Renewables Portfolio Standard.

2.2.2.5 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings

The Building and Efficiency Standards (Energy Standards) were first adopted and put into effect in 1978 and have been updated periodically in the intervening years. These standards are a unique California asset that have placed the State on the forefront of energy efficiency, sustainability, energy independence and climate change issues. The 2019 Building Energy Efficiency Standards improve upon the 2016 Energy Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The 2019 standards are a major step toward meeting Zero Net Energy. According to the California Energy Commission, single-family homes built with the 2019 standards will use about 7 percent less energy due to energy efficiency measures versus those built under the 2016 standards and nonresidential buildings will use about 30 percent less energy (due mainly to lighting upgrades) (CEC 2018). The most significant efficiency improvement to the residential Standards include the introduction of photovoltaic into the perspective package, improvements for attics, walls, water heating and lighting. Buildings permitted on or after January 1, 2020, must comply with the 2019 Standards. These new standards apply only to certain nonresidential building types, as specified in the requirements.

2.3 Energy Consumption Impact Assessment

2.3.1 Thresholds of Significance

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to energy if it would do any of the following:

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

2) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The impact analysis focuses on the four sources of energy that are relevant to the Proposed Project: electricity, natural gas, the equipment fuel necessary for Project construction, and the automotive fuel necessary for Project operations. Addressing energy impacts requires an agency to make a determination as to what constitutes a significant impact. There are no established thresholds of significance, statewide or locally, for what constitutes a wasteful, inefficient, and unnecessary consumption of energy for a proposed land use. For the purposes of this analysis, the amount of electricity and natural gas estimated to be consumed by the Project are compared to that consumed by all nonresidential land uses in Colusa County. Similarly, the amount of fuel necessary for Project construction and operations is calculated and compared to that consumed in the effected region.

2.3.2 Methodology

Levels of construction and operational related energy consumption estimated to be consumed by the Project include the number of kWh of electricity, therms of natural gas and gallons of gasoline. Modeling was based on Project specific information such as construction timing and equipment as well as site operations.

As previously described, the purpose of the Project is to use renewable biomass, primarily in the form of orchard rotations and trimmings, to produce a biocarbon product using a non-combustion process involving thermal conversion of biomass. The amount of net electric power for export sale to PG&E has been identified by the Project engineer. Natural gas consumption data was provided by the Project engineer. The amount of total construction-related fuel use was estimated using ratios provided in the Climate Registry's General Reporting Protocol for the Voluntary Reporting Program, Version 2.1. The amount of operational fuel use was estimated using CARB's EMFAC2021 computer program, which provides projections for typical daily fuel usage.

2.3.3 Impact Analysis

2.3.3.1 Energy Consumption

While the proposed facility would consume electricity, biogas from the process would be used in a new cogeneration system for the generation of electricity. According to the Project engineer, the process would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E through

interconnection to either PG&E's Williams 1101 12 kV distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. Both existing lines are located on the same power poles along Frontage Road running north to the PG&E Williams Generating Station in Williams. As a result of the Project cogeneration system, the Project would be a net generator of electricity. Since operation of the Proposed Project would not result in the net consumption of electricity, it would not contribute to countywide usage. Instead, the Project would directly support the RPS goal of increasing the percentage of electricity procured from renewable sources.

Natural gas would be used to power all combustion equipment initially upon startup and to restart equipment after a shutdown yet would otherwise be powered by ambient air that is heated through heat exchangers in the cogeneration and process heater systems. The proposed facility would be served by a PG&E 8-inch underground natural gas line and header located on the west end of the facility. Natural gas would be also used to power an emergency generator proposed for the facility as well to power certain mobile equipment onsite. According to the Project engineer, these components of the Project are anticipated to consume 12,410 therms (1,200,000 cubic feet of natural gas).

Construction of the Project would require fuel to power equipment. Additionally, worker commutes during operations would represent an ongoing source of fuel consumption.

Energy consumption associated with the proposed Project is summarized in Table 2-4. Project increases in electricity and natural gas consumption are compared with overall nonresidential consumption in Colusa County in the year 2019, the most recent data available. Project increases in automotive fuel consumption are compared with the regional fuel consumption in the eight counties both within a 75-mile radius of the Project and within the agricultural rich Sacramento Valley in 2020, the most recent full year of data.

Table 2-4. Proposed Project Energy and Fuel Consumption

Energy Type	Annual Energy Consumption	Percentage Increase Countywide
Facility Consumption		
Electricity Consumption	0 kilowatt-hours	0.000 percent
Natural Gas	12,410 therms	0.042 percent
Automotive Fuel Consumption		
Project Construction 2023 Project Construction 2024	245,320 gallons 68,374 gallons	0.036 percent 0.010 percent
Project Operations3	612,736 gallons	0.091 percent

Source: Electricity and natural gas consumption have been identified by the Project engineer. Construction fuel use calculated using ratios from the Climate Registry's General Reporting Protocol for the Voluntary Reporting Program, Version 2.1 (Climate Registry 2016). Operational automobile fuel use calculated using EMFAC2021 (CARB 2021).

Table 2-4. Proposed Project Energy and Fuel Consumption		
Energy Type	**Annual Energy Consumption**	**Percentage Increase Countywide**

Notes: The Project would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E and therefore result in no net consumption of electricity. The Project increases in natural gas consumption are compared with all uses in Colusa County in 2019, the latest data available. The Project increases in automotive fuel consumption are compared with the fuel consumption in the eight agricultural counties within a 75-Mile Radius of the Project Site in 2020, the most recent full year of data.

Operations of the Proposed Project would include electricity and natural gas usage. However, as previously described, while the proposed facility would consume electricity, biogas from the process would be used in a new cogeneration system for the generation of electricity, resulting in up to 10 MW of net electric power (17 MW gross) for export sale to PG&E. Therefore, the Project would result in no net consumption of electricity. As shown in Table 2-4, the Project's increase in natural gas usage of 0.042 percent across all nonresidential uses in the County would also be negligible. For these reasons, the Project would not result in the inefficient, wasteful, or unnecessary consumption of electricity or natural gas.

Fuel necessary for Project construction would be required. The fuel expenditure necessary to construct the facility and associated infrastructure would be temporary, lasting only as long as Project construction. As indicated in Table 2-4, the Project's gasoline fuel consumption during the one-time construction period is estimated to be 245,320 gallons during 2023 construction and 68,374 gallons during 2024 construction. This would increase the annual gasoline fuel use in the region by 0.036 percent and 0.01, respectively. As such, Project construction would have a nominal effect on local and regional energy supplies. No unusual Project characteristics would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or the state. Construction contractors would purchase their own gasoline and diesel fuel from local suppliers and would judiciously use fuel supplies to minimize costs due to waste and subsequently maximize profits. Additionally, construction equipment fleet turnover and increasingly stringent state and federal regulations on engine efficiency combined with state regulations limiting engine idling times and requiring recycling of construction debris, would further reduce the amount of transportation fuel demand during Project construction. For these reasons, it is expected that construction fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature.

Once operational, the Project would generate approximately 125 heavy-duty trucks trips daily. Additionally, the Project would accommodate approximately 200 employee trips daily (the Project would maintain weekday staffing levels of 50 employees. Assuming each employee arrives in their own vehicle and takes lunch offsite, 50 employees would generate approximately 200 daily traffic trips [50 workers x 4 trips = 200 daily trips]). Thus, the Project is expected to generate 325 daily traffic trips during operations. As indicated in Table 2-4, this would equate to a consumption of approximately 612,736 gallons of automotive fuel per year, which would increase the annual automotive fuel consumption in the region by 0.091 percent. The amount of operational fuel use was estimated using CARB's EMFAC2021 computer program, which provides projections for typical daily fuel usage by individual county. A liberal approach

was taken for vehicle trip estimation to ensure potential impacts due to operational gasoline usage were adequately accounted. Fuel consumption associated with vehicle trips generated by the Project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

State and Local Plans for Renewable Energy/Energy Efficiency

While the proposed facility would consume electricity, biogas from the process would be used in a new cogeneration system for the generation of electricity. According to the Project engineer, the process would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E. Once in operation, it will decrease the need for energy from fossil fuel–based power plants in the state. The result would be a net increase in electricity resources available to the regional grid, generated from a renewable source. Therefore, the Project would directly support the RPS goal of increasing the percentage of electricity procured from renewable sources.

Additionally, the Project would also be consistent with the County's General Plan Conservation Element, which is the primary local plan for renewable energy and energy efficiency influencing unincorporated Colusa County. The General Plan Conservation Element addresses energy conservation through the promulgation of several energy consumption-reducing policy provisions. For instance, Policy CON 2-1 seeks to encourage and facilitate the use of on-site alternative energy systems to support industrial operations within the County. As previously described, biogas from the Project process would be used in a new cogeneration system for generation of electricity. The process would provide up to 10 MW of net electric power for export sale to PG&E. Policy CON 2-5 seeks to encourage the use of green building and design practices in new development, infrastructure, large-scale planning, and rehabilitation projects. The new Project buildings would be required to adhere to the 2019 Building and Efficiency Standards. The 2019 standards are a major step toward meeting Zero Net Energy. According to the California Energy Commission, nonresidential buildings will use about 30 percent less energy (due mainly to lighting upgrades) (CEC 2018). General Plan Policy CON 2-15 is intended to conserve energy by continuing to require a compact development pattern that focuses growth in and around existing communities. The site currently accommodates the existing Olam Tomato Processing facility and the Project is proposes to redevelop and repurpose the site. According to the U.S. Environmental Protection Agency (USEPA), redevelopment of a site, as proposed by the Project, saves on infrastructure expense and prevents additional energy consumption and environmental degradation compared with building on vacant sites (USEPA 2020). Additionally, the Project proposes to transport all manufactured product from the facility by rail during normal operations. Trucks would only be used if rail is out of service or other extraordinary circumstances. Railways consume up to 5.5 times less energy per ton per mile traveled than trucks (Freightera 2019).

Lastly, the Proposed Project facility would manufacture a product that would be used as an alternative energy source to fossil fuels in order to produce energy, as well as steel. The result would be a net increase in alternative (non-fossil fuel) energy resources available to the global market.

For these reasons, the Project would directly support state and local plans for renewable energy development.

3.0 REFERENCES

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ATTACHMENT A

Energy Consumption Modeling Output

Appendix "D"

Proposed Project
Total Construction-Related
Gasoline Usage

Action	Carbon Dioxide Equivalents (CO_2e) in Metric Tons[1]	Conversion of Metric Tons to Kilograms[2]	Construction Equipment Emission Factor[2]	Total Gallons of Fuel Consumed
Project Construction	**2490**	**2490000**	**10.15**	**245,320**
	Per CalEEMod Output Files.	Per Climate Registry Equation 13e	Per Climate Registry Equation 13e	

Total Gallons Consumed During Project Construction 2023: 245,320

Action	Carbon Dioxide Equivalents (CO_2e) in Metric Tons[1]	Conversion of Metric Tons to Kilograms[2]	Construction Equipment Emission Factor[2]	Total Gallons of Fuel Consumed
Project Construction	**694**	**694000**	**10.15**	**68,374**
	Per CalEEMod Output Files.	Per Climate Registry Equation 13e	Per Climate Registry Equation 13e	

Total Gallons Consumed During Project Construction 2024: 68,374

Notes:

Fuel used by all construction equipment, including vehicle hauling trucks, assumed to be diesel.

Sources:

[1]ECORP Consulting, 2021.

[2]Climate Registry. 2016. *General Reporting Protocol for the Voluntary Reporting Program version 2.1.* January 2016. http://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf

Proposed Project Total Operational Gasoline Usage

Appendix "D"

Total Gallons During Project Operations [3]

Heavy-Duty Haul Trucks

Area	Sub-Area	Cal. Year	Season	Veh_tech	Total T7 Single Dump Truck Gallons Consumed in 8 County Area within 75 Mile Radius in 2020	Total T7 Single Dump Truck Miles Traveled in 8 County Area within 75 Mile Radius in 2020	Total T7 Single Dump Truck Miles per Gallon in 8 County Area within 75 Mile Radius in 2020	Project T7 Single Dump Truck Daily Trips	Estimated Miles per Trip	Project T7 Single Dump Truck Daily Miles Traveled
Sub-Areas	8 County Area	2020	Annual	T7 Single Dump Truck	45,333	265,969	5.86	125	75	9,375

Project T7 Single Dump Truck Daily Fuel Consumption
1,599.83

Project T7 Single Dump Truck Annual Fuel Consumption
583,937.71

Passenger Vehicles

Area	Sub-Area	Cal. Year	Season	Veh_tech	Total Passenger Vehicle Gallons Consumed in Colusa County in 2020	Total Passenger Vehicle Miles Traveled in Colusa County in 2020	Total Passenger Vehicle Miles per Gallon in Colusa County in 2020	Project Passenger Vehicle Daily Trips	Estimated Miles per Trip	Project Passenger Vehicle Daily Miles Traveled
Sub-Areas	Colusa County	2020	Annual	Passenger Cars and Trucks	27,384,790	597,000,000	21.80	200	8.6	1,720
									Per CalEEMod Model	

Project Passenger Vehicle Daily Fuel Consumption
78.90

Project Passenger Vehicle Annual Fuel Consumption
28,798.17

Total Project Operational Automotive Fuel Consumption
612,735.88

Sources:

[3] Californai Air Resource Board. 2021. EMFAC2021 Mobile Emissions Model.