

# ***APPENDIX H***

---

***DRY UTILITIES TECHNICAL MEMORANDUM AND WILL SERVE  
LETTERS***

*DRY UTILITIES TECHNICAL  
MEMORANDUM*

---



# GIACALONE

---

## DESIGN SERVICES, INC.

*December 4, 2019*

***RE: Dry Utilities - Point Molate, Richmond***

To Whom it May Concern,

A historical section of Pt Molates, Richmond, is planned to be rehabilitated, along with new construction, to provide a total of 1260 residential units, 40,000SF Retail, and ~580,000 SF of Office Space. Giacalone Design Services has been retained to provide general consulting and design support for the preliminary design submittals of this project. Accordingly, the author has reviewed the scope of the development and has provided an analysis of expected gas and electric loads. Specifically, estimated connected electric loads are provided in Column "A" of the "Pt Molate-Richmond GDSI" exhibit. The connected loads are based upon the author's previous experience with projects of similar type and scope. It is expected that all Title 24 calculations, and City of Richmond energy efficiency requirements, will be met during development of Construction Documents for this project. Additionally, all Photovoltaic and provisions for electric vehicle chargers will also be accounted for during development of Construction documents. Full NEC load calculations are not in the scope of this document. However, based upon 30+ years of experience with PG&E electrical systems and design standards, the author has provided a summary of expected electrical demands in Column "B" of the "Pt Molate-Richmond GDSI" exhibit. Gas residential loads are based upon four gas appliances per residential unit (total ~365 Mbtu/h) and 2,000 Mbtu/h for each retail/office tenant. Total Gas loads are shown in Column "C" of the exhibit.

There is an existing PG&E Single-phase Overhead primary distribution system about 1/2 mile south of the site. The density of the project will require PG&E to extend three-phase to the site and then distribute to multiple three-phase, and single-phase transformers, as needed to provide service to the site. For purposes of this study, it is assumed that (1) single-phase transformer will accommodate ~10 single-family dwellings, and (1) three-phase transformer will accommodate ~20 condominium style units. Actual loads and building styles will affect these assumptions up/down but the assumptions are "conservative". Padmount transformers are PG&E standard, but if soil conditions allow, sub-surface transformers could be utilized which would encounter additional

costs. PG&E will also require "protective devices" typically for every 5 to 10 transformers, depending upon nameplate ratings of the transformers. Protective devices are not shown on the exhibit but would typically be located at points where the primary facilities enter a neighborhood. Padmount "protective devices" are PG&E standard, but sub-surface alternatives are available for additional fees. Commercial/Retail buildings are typically served with (1) three-phase padmount transformer per building. Due to required voltages for Commercial/retail buildings (typically: 480/277V), PG&E does not have a sub-surface alternative (unless the building loads are "small"), therefore it is expected that padmount transformers will be used. Public Street lighting is typically owned and operated by the city of jurisdiction. On-site private lighting would be served from a "house meter", origin to be determined during CDs. Gas facilities will need to be extended to the site under PG&E Mainline extension agreement.

For any questions regarding this information, please feel free to call me.

Thank you,

David Crowfoot  
PE#11965  
Giacalone Design Services, Inc.  
Office: 925-467-1740 ext. 306  
Cell: 408-706-6191

# *CONSTRUCTION ENERGY ESTIMATES*

---

**Table 1**  
**Construction Fuel & Energy Usage Summary**  
**Point Molate**  
**Richmond, CA**

| Source                        | Construction Category                       | Total Fuel Consumption |           |                                          |                                     |
|-------------------------------|---------------------------------------------|------------------------|-----------|------------------------------------------|-------------------------------------|
|                               |                                             | Diesel                 | Gasoline  | Natural Gas                              | Total Energy from Electric Vehicles |
|                               |                                             | (gallons)              |           | (Diesel Gallon Equivalents) <sup>1</sup> | (kWh)                               |
| Project 1 - Residential Heavy |                                             |                        |           |                                          |                                     |
| Project                       | Offroad Construction Equipment <sup>2</sup> | 472,919                | 0         | 0                                        | 0                                   |
|                               | Onroad Mobile <sup>3,4</sup>                | 33,797,190             | 1,093,816 | 1,346,938                                | 3,715,897                           |
| WWTP                          | Offroad Construction Equipment <sup>2</sup> | 256                    | 0         | 0                                        | 0                                   |
|                               | Onroad Mobile <sup>3</sup>                  | 288                    | 9.68      | 11                                       | 34                                  |
| Total                         |                                             | 34,270,653             | 1,093,826 | 1,346,949                                | 3,715,931                           |
| Project 2 - Commercial Heavy  |                                             |                        |           |                                          |                                     |
| Project                       | Offroad Construction Equipment <sup>2</sup> | 472,919                | 0         | 0                                        | 0                                   |
|                               | Onroad Mobile <sup>3,4</sup>                | 33,812,765             | 906,703   | 1,347,463                                | 3,025,869                           |
| WWTP                          | Offroad Construction Equipment <sup>2</sup> | 256                    | 0         | 0                                        | 0                                   |
|                               | Onroad Mobile <sup>3</sup>                  | 288                    | 9.68      | 11                                       | 34                                  |
| Total                         |                                             | 34,286,227             | 906,713   | 1,347,475                                | 3,025,903                           |

**Notes:**

- <sup>1</sup>. Natural Gas fuel consumption is reported by EMFAC2017 in units of Diesel Gallon Equivalents; thus, the energy content of reported fuel volumes for natural gas is equivalent to that of diesel fuel.
- <sup>2</sup>. Fuel consumption from construction offroad equipment is estimated using CalEEMod® 2016.3.2 model inputs for equipment horsepower, load factors, and total time used for each construction phase, along with conversion factors from the USEPA Nonroad Engine and Vehicle Emission Study (NEVES). See Tables C1 and C3 for further details.
- <sup>3</sup>. Fuel consumption from onroad vehicles is estimated assuming CalEEMod default VMT totals and fleet mixes for Worker, Vendor and Hauling construction trips. Average fuel economies are estimated for each fleet type using CARB's EMFAC2017 model and guidance from NREL's California Plug-In Electric Vehicle Infrastructure Projections. See Tables C2 and C4 for further details.
- <sup>4</sup>. Fuel consumption from Project Construction is estimated assuming that excess soil from grading will be exported using haul trucks. The Project may also export soil using barges (pulled by tug boats). As shown in Tables C2 and C4, total fuel consumption from tug boats would be lower than haul trucks.

**Abbreviations:**

CARB - California Air Resources Board  
kWh - kilowatt hour  
NREL - National Renewable Energy Laboratory

USEPA - U.S. Environmental Protection Agency  
VMT - vehicle miles traveled  
WWTP - wastewater treatment plant

**References:**

National Renewable Energy Laboratory (NREL). 2018. California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025 (Table C.1). Available at: <https://www.nrel.gov/docs/fy18osti/70893.pdf>.  
CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B. Accessible at: <https://ww3.arb.ca.gov/regact/2007/chc07/appb.pdf>

**Table C1**  
**Construction Offroad Fuel Consumption**  
**Project 1 - Residential Heavy**  
**Point Molate**  
**Richmond, CA**

| Phase Name                   | Off Road Equipment Type   | Unit Amount | Usage Hours | Horse Power | Load Factor | Total Phase Days | Total Equipment Use <sup>1</sup> | Conversion Factor <sup>2</sup> | Fuel Consumption    |  |
|------------------------------|---------------------------|-------------|-------------|-------------|-------------|------------------|----------------------------------|--------------------------------|---------------------|--|
|                              |                           |             |             |             |             |                  | (bhp-hr)                         | (bhp-hr/gal)                   | (gallons of diesel) |  |
| Project Construction         |                           |             |             |             |             |                  |                                  |                                |                     |  |
| Demolition                   | Concrete/Industrial Saws  | 1           | 8           | 81          | 0.73        | 78               | 36,897                           | 19.58                          | 1,885               |  |
|                              | Excavators                | 3           | 8           | 158         | 0.38        | 78               | 112,395                          |                                | 5,742               |  |
| Site Preparation             | Rubber Tired Dozers       | 2           | 8           | 247         | 0.4         | 78               | 123,302                          |                                | 6,299               |  |
|                              | Rubber Tired Dozers       | 3           | 8           | 247         | 0.4         | 89               | 211,037                          |                                | 10,781              |  |
|                              | Tractors/Loaders/Backhoes | 4           | 8           | 97          | 0.37        | 89               | 102,215                          |                                | 5,222               |  |
| Grading                      | Excavators                | 2           | 8           | 158         | 0.38        | 261              | 250,727                          |                                | 12,808              |  |
|                              | Graders                   | 1           | 8           | 187         | 0.41        | 261              | 160,087                          |                                | 8,178               |  |
|                              | Rubber Tired Dozers       | 1           | 8           | 247         | 0.4         | 261              | 206,294                          |                                | 10,538              |  |
|                              | Scrapers                  | 6           | 8           | 367         | 0.48        | 261              | 2,206,932                        |                                | 112,738             |  |
|                              | Tractors/Loaders/Backhoes | 2           | 8           | 97          | 0.37        | 261              | 149,877                          |                                | 7,656               |  |
| Paving                       | Pavers                    | 2           | 8           | 130         | 0.42        | 125              | 109,200                          |                                | 5,578               |  |
|                              | Paving Equipment          | 2           | 8           | 132         | 0.36        | 125              | 95,040                           |                                | 4,855               |  |
|                              | Rollers                   | 2           | 8           | 80          | 0.38        | 125              | 60,800                           |                                | 3,106               |  |
| Bay Trail Grading            | Excavators                | 1           | 6           | 158         | 0.38        | 262              | 94,383                           |                                | 4,821               |  |
|                              | Graders                   | 1           | 6           | 187         | 0.41        | 262              | 120,525                          |                                | 6,157               |  |
|                              | Off-Highway Trucks        | 1           | 8           | 367         | 0.48        | 262              | 369,231                          |                                | 18,862              |  |
|                              | Paving Equipment          | 1           | 8           | 132         | 0.36        | 262              | 99,602                           |                                | 5,088               |  |
|                              | Plate Compactors          | 1           | 8           | 8           | 0.43        | 262              | 7,210                            |                                | 368                 |  |
|                              | Rubber Tired Dozers       | 1           | 6           | 247         | 0.4         | 262              | 155,314                          |                                | 7,934               |  |
|                              | Scrapers                  | 2           | 8           | 367         | 0.48        | 262              | 738,463                          |                                | 37,723              |  |
|                              | Tractors/Loaders/Backhoes | 1           | 7           | 97          | 0.37        | 262              | 65,822                           |                                | 3,362               |  |
|                              | Cranes                    | 1           | 7           | 231         | 0.29        | 1550             | 726,842                          |                                | 37,130              |  |
| Building Construction        | Forklifts                 | 3           | 8           | 89          | 0.2         | 1550             | 662,160                          |                                | 33,826              |  |
|                              | Generator Sets            | 1           | 8           | 84          | 0.74        | 1550             | 770,784                          |                                | 39,375              |  |
|                              | Tractors/Loaders/Backhoes | 3           | 7           | 97          | 0.37        | 1550             | 1,168,220                        |                                | 59,677              |  |
|                              | Welders                   | 1           | 8           | 46          | 0.45        | 1550             | 256,680                          |                                | 13,112              |  |
| Architectural Coating        | Air Compressors           | 8           | 6           | 78          | 0.48        | 110              | 197,683                          |                                | 10,098              |  |
| Total (Project Construction) |                           |             |             |             |             |                  |                                  |                                | 472,919             |  |
| WWTP Construction            |                           |             |             |             |             |                  |                                  |                                |                     |  |
| Site Preparation             | Graders                   | 1           | 8           | 187         | 0.41        | 1                | 613                              | 19.58                          | 31                  |  |
|                              | Tractors/Loaders/Backhoes | 1           | 8           | 97          | 0.37        | 1                | 287                              |                                | 15                  |  |
| Grading                      | Concrete/Industrial Saws  | 1           | 8           | 81          | 0.73        | 2                | 946                              |                                | 48                  |  |
|                              | Rubber Tired Dozers       | 1           | 1           | 247         | 0.4         | 2                | 198                              |                                | 10                  |  |
|                              | Tractors/Loaders/Backhoes | 2           | 6           | 97          | 0.37        | 2                | 861                              |                                | 44                  |  |
| Plant Installation           | Cranes                    | 1           | 4           | 231         | 0.29        | 2                | 536                              |                                | 27                  |  |
|                              | Forklifts                 | 2           | 6           | 89          | 0.2         | 2                | 427                              |                                | 22                  |  |
|                              | Tractors/Loaders/Backhoes | 2           | 8           | 97          | 0.37        | 2                | 1148                             |                                | 59                  |  |
| Total (WWTP Construction)    |                           |             |             |             |             |                  |                                  |                                | 256                 |  |
| Total (Project + WWTP)       |                           |             |             |             |             |                  |                                  |                                | 473,175             |  |

**Notes:**

<sup>1</sup>. Equipment use is based on CalEEMod® 2016.3.2 model runs for the annual average construction activity at Point Molate.

<sup>2</sup>. Conversion factors from fuel usage to bhp-hr for off-road equipment originate from the USEPA Nonroad Engine and Vehicle Emission Study (NEVES). Off-road equipment fuel efficiency is assumed to remain constant for the different calendar years. Therefore, off-road fuel use from construction activity is the same across inventory years.

**Abbreviations:**

bhp - brake horsepower      hr - hour      WWTP - wastewater treatment plant  
gal - gallon      USEPA - U.S. Environmental Protection Agency

**Table C2**  
**Construction Onroad & Tug Boat Fuel Consumption**  
**Project 1 - Residential Heavy**  
**Point Molate**  
**Richmond, CA**

| Mobile Category                                  | Total VMT <sup>1</sup> | Fleet Mix <sup>2</sup> |                     |               |                     | Fuel Economy <sup>3,4</sup> |          |             |            | Total Fuel Consumption |           |                                          |                                     |
|--------------------------------------------------|------------------------|------------------------|---------------------|---------------|---------------------|-----------------------------|----------|-------------|------------|------------------------|-----------|------------------------------------------|-------------------------------------|
|                                                  |                        | Percentage Diesel      | Percentage Gasoline | Percentage NG | Percentage Electric | Diesel                      | Gasoline | Natural Gas | Electric   | Diesel                 | Gasoline  | Natural Gas                              | Total Energy from Electric Vehicles |
|                                                  |                        |                        |                     |               |                     | (miles/gal)                 |          |             | (kWh/mile) | (gallons)              | (gallons) | (Diesel Gallon Equivalents) <sup>5</sup> | (kWh)                               |
| Project Construction                             |                        |                        |                     |               |                     |                             |          |             |            |                        |           |                                          |                                     |
| Construction Worker Trips                        | 34,188,512             | 1.0%                   | 96.3%               | 0%            | 2.7%                | 49.6                        | 32.4     | --          | 0.25       | 6,998                  | 1,014,780 | 0                                        | 3,715,897                           |
| Construction Vendor Trips                        | 5,272,790              | 94.1%                  | 5.0%                | 0.9%          | 0%                  | 7.6                         | 5.1      | 2.4         |            | 655,284                | 51,551    | 20,405                                   | 0                                   |
| Construction Haul Trips <sup>6</sup>             | 232,017,740            | 98.6%                  | 0.1%                | 1.4%          | 0%                  | 6.9                         | 4.6      | 2.4         |            | 33,134,908             | 27,486    | 1,326,533                                | 0                                   |
| Grading Phase Haul Trips                         | 224,820,180            | 98.6%                  | 0.1%                | 1.4%          | 0%                  | 6.9                         | 4.6      | 2.4         |            | 32,107,010             | 26,633    | 1,285,382                                | 0                                   |
| Project Construction - Fuel Consumption          |                        |                        |                     |               |                     |                             |          |             |            | 33,797,190             | 1,093,816 | 1,346,938                                | 3,715,897                           |
| WWTP Construction                                |                        |                        |                     |               |                     |                             |          |             |            |                        |           |                                          |                                     |
| Construction Worker Trips                        | 313                    | 1.0%                   | 96.3%               | 0%            | 2.7%                | 49.6                        | 32.4     | --          | 0.25       | 0.06                   | 9.30      | 0                                        | 34.04                               |
| Construction Vendor Trips                        | 15                     | 94.1%                  | 5.0%                | 0.9%          | 0%                  | 7.6                         | 5.1      | 2.4         |            | 1.8                    | 0.14      | 0.057                                    | 0                                   |
| Construction Haul Trips                          | 2,000                  | 98.6%                  | 0.1%                | 1.4%          | 0%                  | 6.9                         | 4.6      | 2.4         |            | 286                    | 0.24      | 11                                       | 0                                   |
| WWTP Construction - Fuel Consumption             |                        |                        |                     |               |                     |                             |          |             |            | 288                    | 9.68      | 11                                       | 34                                  |
| Total (Project Construction + WWTP Construction) |                        |                        |                     |               |                     |                             |          |             |            | 33,797,478             | 1,093,826 | 1,346,949                                | 3,715,931                           |

| <b>Comparison of Fuel Consumption from Material Export: Tug Boats vs. Haul Trucks<sup>7</sup></b> |                 |                                 |                 |                            |              |            |                           |                               |                                                   |                  |          |             |                                     |
|---------------------------------------------------------------------------------------------------|-----------------|---------------------------------|-----------------|----------------------------|--------------|------------|---------------------------|-------------------------------|---------------------------------------------------|------------------|----------|-------------|-------------------------------------|
|                                                                                                   | Tug Boat Rating | Engine Load Factor <sup>8</sup> | Material Volume | Material carried per Barge | Total Barges | Total Tugs | Time per one-way tug trip | Total Tug Transit Hours (hrs) | Brake-specific Fuel Consumption Rate <sup>9</sup> | Fuel Consumption |          |             |                                     |
|                                                                                                   | (kW)            |                                 | (cubic yds)     | (cubic yds)                |              |            | (hours)                   |                               | (gal/kWh)                                         | Diesel           | Gasoline | Natural Gas | Total Energy from Electric Vehicles |
| Material Export - Tug Boats                                                                       | 1,193           | 0.5                             | 355,000         | 2000                       | 178          | 89         | 0.5                       | 89                            | 0.078                                             | 4,141            | --       | --          | --                                  |
| <b>Tug Boats - Fuel Consumption</b>                                                               |                 |                                 |                 |                            |              |            |                           |                               |                                                   | 4,141            | --       | --          | --                                  |
| <b>Grading Phase Haul Trucks - Fuel Consumption</b>                                               |                 |                                 |                 |                            |              |            |                           |                               |                                                   | 32,107,010       | 26,633   | 1,285,382   | 0                                   |

**Notes:**

- <sup>1</sup> Total Vehicle Miles Traveled (VMT) for each onroad category is based on CalEEMod default trip rates for Worker, Vendor, and Hauling construction trips.
- <sup>2</sup> Fuel breakdown for Diesel, Gasoline, Natural Gas and Electric vehicles are based on CalEEMod default fleet mix definitions corresponding to EMFAC2017 VMT estimates for year 2024.
- <sup>3</sup> Fuel economy for Diesel, Gasoline, and Natural Gas vehicles are based on CalEEMod default fleet mix definitions corresponding to EMFAC2017 VMT and fuel consumption estimates for year 2024.
- <sup>4</sup> Energy consumption from electric vehicles is estimated assuming a vehicle drive efficiency of 250 Watts per mile, according to the National Renewable Energy Laboratory (NREL) California Plug-In Electric Vehicle Infrastructure Projections for years 2017-2025.
- <sup>5</sup> Natural Gas fuel consumption is reported by EMFAC2017 in units of Diesel Gallon Equivalents; thus, the energy content of reported fuel volumes for natural gas is equivalent to that of diesel fuel.
- <sup>6</sup> Fuel consumption from Project Construction is estimated assuming that excess soil from grading will be exported using haul trucks. A comparison of material export fuel consumption using tug boats vs. haul trucks is presented below total Project fuel consumption estimates.
- <sup>7</sup> Tug boat rating, total material volume, material carried per barge, and number of barges carried per tug boat were provided by the Project Sponsor. The tug boats are expected to haul up to 355,000 cubic yards of material. A one-way trip time of 30 minutes is assumed. Total number of tug trips are rounded up to the nearest whole number to reflect total trip count. All tug trips are assumed to be two-ways.
- <sup>8</sup> Engine load factors for Tug Boats taken from CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B, Table II-3
- <sup>9</sup> Brake-specific fuel consumption rate is assumed from CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B, Section 2

**Abbreviations:**

|                                       |                              |                                   |
|---------------------------------------|------------------------------|-----------------------------------|
| CARB - California Air Resources Board | kWh - kilowatt hour          | WWTP - wastewater treatment plant |
| gal - gallon                          | NG - Natural Gas             | yds - yards                       |
| kW - kilowatt                         | VMT - Vehicle Miles Traveled |                                   |

**References:**

National Renewable Energy Laboratory (NREL). 2018. California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025 (Table C.1). Available at: <https://www.nrel.gov/docs/fy18osti/70893.pdf>.  
CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B. Accessible at: <https://ww3.arb.ca.gov/regact/2007/chc07/appb.pdf>

**Table C3**  
**Construction Offroad Fuel Consumption**  
**Project 2 - Commercial Heavy**  
**Point Molate**  
**Richmond, CA**

| Phase Name                   | Off Road Equipment Type   | Unit Amount | Usage Hours | Horse Power | Load Factor | Total Phase Days | Total Equipment Use <sup>1</sup> | Conversion Factor <sup>2</sup> | Fuel Consumption    |        |
|------------------------------|---------------------------|-------------|-------------|-------------|-------------|------------------|----------------------------------|--------------------------------|---------------------|--------|
|                              |                           |             |             |             |             |                  | (bhp-hr)                         | (bhp-hr/gal)                   | (gallons of diesel) |        |
| Project Construction         |                           |             |             |             |             |                  |                                  |                                |                     |        |
| Demolition                   | Concrete/Industrial Saws  | 1           | 8           | 81          | 0.73        | 78               | 36,897                           | 19.58                          | 1,885               |        |
|                              | Excavators                | 3           | 8           | 158         | 0.38        | 78               | 112,395                          |                                | 5,742               |        |
| Site Preparation             | Rubber Tired Dozers       | 2           | 8           | 247         | 0.4         | 78               | 123,302                          |                                | 6,299               |        |
|                              | Rubber Tired Dozers       | 3           | 8           | 247         | 0.4         | 89               | 211,037                          |                                | 10,781              |        |
|                              | Tractors/Loaders/Backhoes | 4           | 8           | 97          | 0.37        | 89               | 102,215                          |                                | 5,222               |        |
| Grading                      | Excavators                | 2           | 8           | 158         | 0.38        | 261              | 250,727                          |                                | 12,808              |        |
|                              | Graders                   | 1           | 8           | 187         | 0.41        | 261              | 160,087                          |                                | 8,178               |        |
|                              | Rubber Tired Dozers       | 1           | 8           | 247         | 0.4         | 261              | 206,294                          |                                | 10,538              |        |
|                              | Scrapers                  | 6           | 8           | 367         | 0.48        | 261              | 2,206,932                        |                                | 112,738             |        |
| Paving                       | Tractors/Loaders/Backhoes | 2           | 8           | 97          | 0.37        | 261              | 149,877                          |                                | 7,656               |        |
|                              | Pavers                    | 2           | 8           | 130         | 0.42        | 125              | 109,200                          |                                | 5,578               |        |
|                              | Paving Equipment          | 2           | 8           | 132         | 0.36        | 125              | 95,040                           |                                | 4,855               |        |
| Bay Trail Grading            | Rollers                   | 2           | 8           | 80          | 0.38        | 125              | 60,800                           |                                | 3,106               |        |
|                              | Excavators                | 1           | 6           | 158         | 0.38        | 262              | 94,383                           |                                | 4,821               |        |
|                              | Graders                   | 1           | 6           | 187         | 0.41        | 262              | 120,525                          |                                | 6,157               |        |
|                              | Off-Highway Trucks        | 1           | 8           | 367         | 0.48        | 262              | 369,231                          |                                | 18,862              |        |
|                              | Paving Equipment          | 1           | 8           | 132         | 0.36        | 262              | 99,602                           |                                | 5,088               |        |
|                              | Plate Compactors          | 1           | 8           | 8           | 0.43        | 262              | 7,210                            |                                | 368                 |        |
|                              | Rubber Tired Dozers       | 1           | 6           | 247         | 0.4         | 262              | 155,314                          |                                | 7,934               |        |
|                              | Scrapers                  | 2           | 8           | 367         | 0.48        | 262              | 738,463                          |                                | 37,723              |        |
|                              | Tractors/Loaders/Backhoes | 1           | 7           | 97          | 0.37        | 262              | 65,822                           |                                | 3,362               |        |
|                              | Cranes                    | 1           | 7           | 231         | 0.29        | 1550             | 726,842                          |                                | 37,130              |        |
| Building Construction        | Forklifts                 | 3           | 8           | 89          | 0.2         | 1550             | 662,160                          |                                | 33,826              |        |
|                              | Generator Sets            | 1           | 8           | 84          | 0.74        | 1550             | 770,784                          |                                | 39,375              |        |
|                              | Tractors/Loaders/Backhoes | 3           | 7           | 97          | 0.37        | 1550             | 1,168,220                        |                                | 59,677              |        |
|                              | Welders                   | 1           | 8           | 46          | 0.45        | 1550             | 256,680                          |                                | 13,112              |        |
| Architectural Coating        | Air Compressors           | 8           | 6           | 78          | 0.48        | 110              | 197,683                          |                                |                     | 10,098 |
| Total (Project Construction) |                           |             |             |             |             |                  |                                  |                                | 472,919             |        |
| WWTP Construction            |                           |             |             |             |             |                  |                                  |                                |                     |        |
| Site Preparation             | Graders                   | 1           | 8           | 187         | 0.41        | 1                | 613                              | 19.58                          | 31                  |        |
|                              | Tractors/Loaders/Backhoes | 1           | 8           | 97          | 0.37        | 1                | 287                              |                                | 15                  |        |
| Grading                      | Concrete/Industrial Saws  | 1           | 8           | 81          | 0.73        | 2                | 946                              |                                | 48                  |        |
|                              | Rubber Tired Dozers       | 1           | 1           | 247         | 0.4         | 2                | 198                              |                                | 10                  |        |
|                              | Tractors/Loaders/Backhoes | 2           | 6           | 97          | 0.37        | 2                | 861                              |                                | 44                  |        |
| Plant Installation           | Cranes                    | 1           | 4           | 231         | 0.29        | 2                | 536                              |                                | 27                  |        |
|                              | Forklifts                 | 2           | 6           | 89          | 0.2         | 2                | 427                              |                                | 22                  |        |
|                              | Tractors/Loaders/Backhoes | 2           | 8           | 97          | 0.37        | 2                | 1148                             |                                | 59                  |        |
| Total (WWTP Construction)    |                           |             |             |             |             |                  |                                  |                                | 256                 |        |
| Total (Project + WWTP)       |                           |             |             |             |             |                  |                                  |                                | 473,175             |        |

**Notes:**

<sup>1</sup>. Equipment use is based on CalEEMod® 2016.3.2 model runs for the annual average construction activity at Point Molate.

<sup>2</sup>. Conversion factors from fuel usage to bhp-hr for off-road equipment originate from the USEPA Nonroad Engine and Vehicle Emission Study (NEVES). Off-road equipment fuel efficiency is assumed to remain constant for the different calendar years. Therefore, off-road fuel use from construction activity is the same across inventory years.

**Abbreviations:**

bhp - brake horsepower  
gal - gallon

hr - hour

USEPA - U.S. Environmental Protection Agency

WWTP - wastewater treatment plant

**Table C4**  
**Construction Onroad & Tug Boat Fuel Consumption**  
**Project 2 - Commercial Heavy**  
**Point Molate**  
**Richmond, CA**

| Mobile Category                         | Total VMT <sup>1</sup> | Fleet Mix <sup>2</sup> |                     |               |                     | Fuel Economy <sup>3,4</sup> |          |             |            | Total Fuel Consumption |           |                                          |                                     |
|-----------------------------------------|------------------------|------------------------|---------------------|---------------|---------------------|-----------------------------|----------|-------------|------------|------------------------|-----------|------------------------------------------|-------------------------------------|
|                                         |                        | Percentage Diesel      | Percentage Gasoline | Percentage NG | Percentage Electric | Diesel                      | Gasoline | Natural Gas | Electric   | Diesel                 | Gasoline  | Natural Gas                              | Total Energy from Electric Vehicles |
|                                         |                        |                        |                     |               |                     | (miles/gal)                 |          |             | (kWh/mile) | (gallons)              | (gallons) | (Diesel Gallon Equivalents) <sup>5</sup> | (kWh)                               |
| Project Construction                    |                        |                        |                     |               |                     |                             |          |             |            |                        |           |                                          |                                     |
| Construction Worker Trips               | 27,839,840             | 1.0%                   | 96.3%               | 0%            | 2.7%                | 49.6                        | 32.4     | --          | 0.25       | 5,699                  | 826,339   | 0                                        | 3,025,869                           |
| Construction Vendor Trips               | 5,408,570              | 94.1%                  | 5.0%                | 0.9%          | 0%                  | 7.6                         | 5.1      | 2.4         |            | 672,159                | 52,878    | 20,930                                   | 0                                   |
| Construction Haul Trips <sup>6</sup>    | 232,017,740            | 98.6%                  | 0.1%                | 1.4%          | 0%                  | 6.9                         | 4.6      | 2.4         |            | 33,134,908             | 27,486    | 1,326,533                                | 0                                   |
| Grading Phase Haul Trips                | 224,820,180            | 98.6%                  | 0.1%                | 1.4%          | 0%                  | 6.9                         | 4.6      | 2.4         |            | 32,107,010             | 26,633    | 1,285,382                                | 0                                   |
| Project Construction - Fuel Consumption |                        |                        |                     |               |                     |                             |          |             |            | 33,812,765             | 906,703   | 1,347,463                                | 3,025,869                           |
| WWTP Construction                       |                        |                        |                     |               |                     |                             |          |             |            |                        |           |                                          |                                     |
| Construction Worker Trips               | 313                    | 1.0%                   | 96.3%               | 0%            | 2.7%                | 49.6                        | 32.4     | --          | 0.25       | 0.06                   | 9.30      | 0.00                                     | 34.04                               |
| Construction Vendor Trips               | 15                     | 94.1%                  | 5.0%                | 0.9%          | 0%                  | 7.6                         | 5.1      | 2.4         |            | 1.8                    | 0.14      | 0.057                                    | 0                                   |
| Construction Haul Trips                 | 2,000                  | 98.6%                  | 0%                  | 1.4%          | 0%                  | 6.9                         | 4.6      | 2.4         |            | 286                    | 0.24      | 11                                       | 0                                   |
| WWTP Construction - Fuel Consumption    |                        |                        |                     |               |                     |                             |          |             |            | 288                    | 9.68      | 11                                       | 34                                  |
| Total (Project + WWTP)                  |                        |                        |                     |               |                     |                             |          |             |            | 33,813,052             | 906,713   | 1,347,475                                | 3,025,903                           |

| <b>Comparison of Fuel Consumption from Material Export: Tug Boats vs. Haul Trucks<sup>7</sup></b> |                 |                                 |                 |                            |              |            |                           |                               |                                                   |                  |          |             |                                     |
|---------------------------------------------------------------------------------------------------|-----------------|---------------------------------|-----------------|----------------------------|--------------|------------|---------------------------|-------------------------------|---------------------------------------------------|------------------|----------|-------------|-------------------------------------|
|                                                                                                   | Tug Boat Rating | Engine Load Factor <sup>8</sup> | Material Volume | Material carried per Barge | Total Barges | Total Tugs | Time per one-way tug trip | Total Tug Transit Hours (hrs) | Brake-specific Fuel Consumption Rate <sup>9</sup> | Fuel Consumption |          |             |                                     |
|                                                                                                   | (kW)            |                                 | (cubic yds)     | (cubic yds)                |              |            | (hours)                   |                               | (gal/kWh)                                         | Diesel           | Gasoline | Natural Gas | Total Energy from Electric Vehicles |
| Material Export - Tug Boats                                                                       | 1,193           | 0.5                             | 355,000         | 2000                       | 178          | 89         | 0.5                       | 89                            | 0.1                                               | 4,141            | --       | --          | --                                  |
| <b>Tug Boats - Fuel Consumption</b>                                                               |                 |                                 |                 |                            |              |            |                           |                               |                                                   | 4,141            | --       | --          | --                                  |
| <b>Grading Phase Haul Trucks - Fuel Consumption</b>                                               |                 |                                 |                 |                            |              |            |                           |                               |                                                   | 32,107,010       | 26,633   | 1,285,382   | 0                                   |

**Notes:**

- <sup>1</sup> Total Vehicle Miles Traveled (VMT) for each onroad category is based on CalEEMod default trip rates for Worker, Vendor, and Hauling construction trips.
- <sup>2</sup> Fuel breakdown for Diesel, Gasoline, Natural Gas and Electric vehicles are based on CalEEMod default fleet mix definitions corresponding to EMFAC2017 VMT estimates for year 2024.
- <sup>3</sup> Fuel economy for Diesel, Gasoline, and Natural Gas vehicles are based on CalEEMod default fleet mix definitions corresponding to EMFAC2017 VMT and fuel consumption estimates for year 2024.
- <sup>4</sup> Energy consumption from electric vehicles is estimated assuming a vehicle drive efficiency of 250 Watts per mile, according to the National Renewable Energy Laboratory (NREL) California Plug-In Electric Vehicle Infrastructure Projections for years 2017-2025.
- <sup>5</sup> Natural Gas fuel consumption is reported by EMFAC2017 in units of Diesel Gallon Equivalents; thus, the energy content of reported fuel volumes for natural gas is equivalent to that of diesel fuel.
- <sup>6</sup> Fuel consumption from Project Construction is estimated assuming that excess soil from grading will be exported using haul trucks. A comparison of material export fuel consumption using tug boats vs. haul trucks is presented below total Project fuel consumption estimates.
- <sup>7</sup> Tug boat rating, total material volume, material carried per barge, and number of barges carried per tug boat were provided by the Project Sponsor. The tug boats are expected to haul up to 355,000 cubic yards of material. A one-way trip time of 30 minutes is assumed. Total number of tug trips are rounded up to the nearest whole number to reflect total trip count. All tug trips are assumed to be two-ways.
- <sup>8</sup> Engine load factors for Tug Boats taken from CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B, Table II-3
- <sup>9</sup> Brake-specific fuel consumption rate is assumed from CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B, Section 2

**Abbreviations:**

|                                       |                              |                                   |
|---------------------------------------|------------------------------|-----------------------------------|
| CARB - California Air Resources Board | kWh - kilowatt hour          | WWTP - wastewater treatment plant |
| gal - gallon                          | NG - Natural Gas             | yds - yards                       |
| kW - kilowatt                         | VMT - Vehicle Miles Traveled |                                   |

**References:**

National Renewable Energy Laboratory (NREL). 2018. California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025 (Table C.1). Available at: <https://www.nrel.gov/docs/fy18osti/70893.pdf>.  
CARB Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B. Accessible at: <https://ww3.arb.ca.gov/regact/2007/chc07/appb.pdf>

# *OPERATIONAL ENERGY ESTIMATES*

---

|                                                  |                        |       |               |           | COLUMN "A"                                         |                          | COLUMN "B"                             |                            | COLUMN "C"                                                                         |  |
|--------------------------------------------------|------------------------|-------|---------------|-----------|----------------------------------------------------|--------------------------|----------------------------------------|----------------------------|------------------------------------------------------------------------------------|--|
| Project Description for use in Technical Studies |                        |       |               |           | Estimated Electric Loads:                          |                          | Estimated Electric Demand:             |                            | Estimated Gas Loads (Mbtu/h)                                                       |  |
|                                                  |                        |       |               |           | Estimated NEC Unit Load Calc <sup>1</sup> kVA/unit | Total Connected Load kVA | Estimated Demand <sup>2</sup> kVA/unit | Total Estimated Demand kVA | Residential:<br>Cooking: 65<br><b><i>Laundry: 0</i></b><br>Furnace: 100<br>WH: 200 |  |
| Non Historic District                            |                        |       |               |           |                                                    |                          |                                        |                            |                                                                                    |  |
| Planning Area                                    | Product Type           | Units | Avg Unit Size | Total SF  |                                                    |                          |                                        |                            |                                                                                    |  |
| A-D                                              | Single Family Attached | 286   | 2,400         | 686,400   | 27                                                 | 7,722                    | 2.5                                    | 715                        |                                                                                    |  |
| A-D                                              | Single Family Detached | 274   | 2,800         | 767,200   | 30                                                 | 8,220                    | 3                                      | 822                        | Total per Res Unit:                                                                |  |
| E                                                | Multifamily            | 350   | 1,000         | 350,000   | 24                                                 | 8,400                    | 2.1                                    | 735                        | 365                                                                                |  |
| Total                                            |                        | 910   |               | 1,803,600 |                                                    | 24,342                   |                                        | 2,272                      | 332,150 Mbtu/h                                                                     |  |
|                                                  |                        |       |               |           | Estimated NEC Loads <sup>1</sup> VA/SF             |                          | Total Connected Load kVA               |                            | Estimated Demand <sup>2</sup> VA/SF                                                |  |
|                                                  |                        |       |               |           |                                                    |                          | Total Estimated Demand kVA             |                            | 362,150 Mbtu/h Total                                                               |  |
| Historic District                                |                        |       |               |           |                                                    |                          |                                        |                            | Retail:                                                                            |  |
| Planning Area                                    | Product Type           | Units | Avg Unit Size | Total SF  |                                                    |                          |                                        |                            | Assumed 2,000 Mbtu/hr per tenant.                                                  |  |
| Rehabilitated Space                              | Office                 |       |               | 354,572   | 12                                                 | 4,255                    | 4.5                                    | 1,596                      | 4,000                                                                              |  |
| Rehabilitated Space                              | Retail                 |       |               | 20,000    | 50                                                 | 1,000                    | 5.3                                    | 106                        | 10,000                                                                             |  |
| New Construction                                 | Office                 |       |               | 230,000   | 12                                                 | 2,760                    | 4.5                                    | 1,035                      | 2,000                                                                              |  |
| New Construction                                 | Retail                 |       |               | 20,000    | 50                                                 | 1,000                    | 5.3                                    | 106                        | 10,000                                                                             |  |
|                                                  |                        |       |               |           | kVA/unit:                                          |                          | kVA/unit:                              |                            |                                                                                    |  |
| Residential                                      | Multifamily            | 350   | 900           | 315,000   | 22                                                 | 7,700                    | 2.1                                    | 735                        |                                                                                    |  |
| Total                                            |                        | 350   |               | 939,572   |                                                    | 16,715                   |                                        | 3,578                      | 26,000 Mbtu/h                                                                      |  |
| Total Project                                    |                        |       |               |           |                                                    | 41,057                   |                                        | 5,850                      | 358,150 Mbtu/h                                                                     |  |

Notes:

1. Estimated NEC Load calculations based upon utility consultants experience with similar projects. Actual NEC load calculations may differ, when available.

2. Estimated demand based upon utility standards from historical data of similar product types.

3. Bold Italics revised Column A loads to include +2kW diversified load of electric dryers & removed 35 Mbtu/h from Gas Loads. Added 600 homes with 50Mbtu/h fireplaces. (Electric demand "column B" remained unchanged because utility considers electric dryers as "off-peak load").

*WILL SERVE LETTERS*

---



9/12/2019

Argent Management  
ATTN: Nick Pappas  
2392 Morse Ave  
Irvine, CA 92614

Re: Will Serve Notice

Dear Nick,

This letter is written to confirm that the proposed project for **Point Molate**, located in **Richmond, California**, is within the Base Rate Area of the AT&T California serving area in the **RCMDCA11** Exchange. AT&T expects to be in a position to provide telephone service to applicants in the above-referenced development upon request in accordance with requirements of, and at the rates and charges specified in, its Tariffs that are on file with the California Public Utilities Commission.

This offer to provide service will terminate 24 months after the date of this letter unless both of the following first occur: 1) you, in your capacity as the developer, enter into a written service agreement with AT&T; and, 2) you, in your capacity as developer, pay all charges you are required by AT&T's Tariffs to pay.

If you have any questions I can be contacted at 925-271-1378.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Miracle", written over a horizontal line.

DEREK MIRACLE  
AT&T DESIGN ENGINEER – C & E WEST



Pacific Gas & Electric Company  
4801 Oakport St.  
Oakland, CA 94601

January 7, 2020

David Crowfoot  
Giacalone Design Services, Inc.  
5820 Stoneridge Mall Rd., Suite 345  
Pleasanton, CA 94588

**RE: Point Molate Project, Richmond, Ca - Will Serve Letter**

Gas and electric service is available to your proposed project at the above referenced location.

Extension of these facilities will be made in accordance with our gas and electric rules and regulations on file with the State of California Public Utilities Commission at the time the applicant applies for gas and electric service.

Any relocation or re-arrangement of existing facilities would be done at the applicant's expense.

If you have any questions, please call me at 510-385-6211.

Sincerely,

A handwritten signature in black ink, reading 'Cedricke Dennis', is positioned below the 'Sincerely,' text.

**Cedricke Dennis**  
4801 Oakport st.  
Oakland, CA



Comcast Cable  
3055 Comcast Place  
Livermore, CA 94551

September 11, 2019

Nick Pappas  
Argent Management  
2392 Morse Ave.  
Irvine, CA 92614

RE: Comcast Broadband Communications Services Availability at – 19-140 Point Molate, Richmond, CA 94801 (AFS# 117867340)

Dear Nick:

This letter is to confirm that your proposed project located at – 19-140 Point Molate, Richmond, CA 94801 (AFS# 117867340) is within Comcast's service territory.

Under its present plans, and upon owner's/developer's completion of the service application documents, Comcast expects to be in a position to provide its services to occupants in the referenced projects. Our broadband services include television, high-speed internet, and telephone services.

Arrangements to install the necessary service facilities are being made in accordance with Comcast's wiring infrastructure specifications and requirements.

You will be contacted by our local Engineering department to discuss the project specifics and align your project details to our construction process.

Sincerely,

A handwritten signature in black ink, appearing to read "David Higginbotham", with a long horizontal flourish extending to the right.

David Higginbotham  
Comcast Cable Corporation  
Field Sales Operations