Appendix 3.5.1

Assessment of Energy Use and Impacts
Willow Village Project

RAMBOLL

DRAFT

ENVIRONMENT & HEALTH

MEMORANDUM

Date: February 18, 2022

To: Eric Harrison, Signature Development Group

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Sarah Manzano

Subject: **Assessment of Energy Use and Impacts**
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Ramboll conducted an assessment of energy use for the construction and operation of the proposed mixed-use development at Willow Village in Menlo Park, California (referred to hereafter as the “Proposed Project” or “Project”) for Peninsula Innovation Partners, LLC. The scope and methods used in this assessment are consistent with recommended analyses for projects requiring review under California Environmental Quality Act (CEQA). The analysis in this report will be independently reviewed by the City of Menlo Park, California (referred to as the "City") and peer reviewed by ICF Incorporated, LLC., the City's environmental consultant for possible incorporation into the Environmental Impact Report (EIR) for the Project. Assumptions used herein are consistent with assumptions used in our Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report for Willow Village.

1. METHODOLOGY FOR DEVELOPMENT OF ENERGY PROJECTIONS

Table 1 lists the sources for which energy use estimates from the Project are quantified.

1.1 Project Construction Energy Use

This analysis assumes that construction of buildings will overlap, that the complete build out would occur in roughly five years and that the buildings constructed would be occupied and fully operational as soon as construction of each building is completed. This is conservative because occupancy and operation of each building would likely ramp up over time, rather than occur immediately upon completion of construction. The analysis also assumes that operational energy use from completed buildings would overlap with construction energy use from buildings that are still being constructed.

The construction program would commence after all existing uses have vacated.[1,2] The preliminary construction schedule assumes that construction would begin after project entitlements and would last for roughly five years. See the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report** for a summary of the expected construction phasing timeline, provided by the Project Applicant.

Initial construction activities affecting the full site area include demolition of the existing buildings and parking lots, followed by grading and utilities. Construction activities related to the proposed Project (including constructing the Town Square District, Residential/Shopping District, and Campus District) include foundations, core and shell, tenant improvements, and landscaping.

Energy use calculations associated with off-road construction equipment are based on the construction schedule, type and quantity of equipment and hours of operation for each piece of equipment based on Project-specific information provided by the Project Applicant for demolition, grading and site preparation, building construction, architectural coating, and paving. Sources of energy use from construction are shown in **Table 1**. Fuel use from off-road construction equipment is estimated using consistent with Environmental Protection Agency (EPA) AP-42 diesel fuel. All off-road equipment is either diesel-fueled or electric based on Project-specific information. **Table 2** shows the anticipated fuel and electricity usage from off-road equipment for Campus and Town Square District construction equipment and **Table 3** shows Residential/Shopping District, Hamilton Avenue Parcels North and South, Tunnel, Substation Upgrade, Feeder Line, and Intersection Improvements construction equipment.

Passenger vehicles for construction workers are assumed to use gasoline. On-road construction vehicles such as vendors and trucks for demolition material, soil, and other material hauling are assumed to use diesel fuel. These fuel uses are calculated based on the number of trips and vehicle miles travelled (VMT) along with fuel efficiency from EMFAC2021. Trip counts were provided by the Project Applicant for hauling, worker and vendor trips, and California Emissions Estimator Model (CalEEMod®) defaults are used for worker trip lengths. The vendor and haul trip lengths were provided by the Project Applicant. **Table 4** shows the fuel efficiency derivations for the on-road vehicle types, while **Table 5** shows the anticipated fuel consumption from on-road construction vehicles.

Construction water trucks use indirect electricity to supply, treat, and distribute the water. **Table 6** shows the electricity required for construction water usage.

Total construction energy use is summarized in **Table 7**.

1.2 Existing Conditions Operational Energy Use

Detailed calculations of Existing Conditions operational energy uses are further explained below. These are calculated to estimate the net energy use of the Project (Project energy use minus Existing Conditions energy use).

[1] The existing dialysis center may remain open for a few months after demolition commences. If this were to occur, changes to the analysis would be negligible. The dialysis center would not be considered a sensitive receptor based on BAAQMD guidance, so the impacts of construction on the dialysis center do not need to be analyzed. The existing operational emissions associated with the dialysis center remaining and the shifting of emissions from the demolition of the dialysis center would not change conclusions as these are would minor changes.

[2] The analysis only considers net new retail in the Hamilton Avenue Parcels North and South, so does not consider the existing retail in this area to be vacated.

1.2.1 Building Energy Use

Natural gas and electricity provide building energy for residential and commercial use. The **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report** shows the annual electricity and natural gas use for the existing land uses.

Energy use for the Existing Conditions was based on 2019 historical data provided by the Project Applicant. Additional information and tables regarding building electricity and natural gas usage estimates can be found in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

1.2.2 Water Energy Use

Electricity is used to supply, treat, and distribute potable water and treat the resulting wastewater. Water consumption and wastewater generation were quantified as shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**. This electricity from water use is summarized in **Table 8**.

1.2.3 Mobile Energy Use

Fuel usage was estimated from on-road VMT by employees and visitors. Trip generation rates and total VMT for each land use for the existing conditions were provided by Hexagon, as shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**. Fuel usage was estimated using an average mpg obtained from EMFAC2021 for the fleet mix corresponding to the vehicle category and fuel type (gasoline, diesel, compressed natural gas, or electricity).

Table 9 shows detailed mobile fuel consumption estimates for Existing Conditions.

1.2.4 Stationary Source Energy Use

Diesel fuel usage is from diesel combustion resulting from their operation for testing and maintenance and for emergency operation. Under Existing Conditions, there is currently one emergency generator installed.

Operation for routine maintenance and testing is conservatively assumed to be 50 hours per year, consistent with the maximum allowed testing time from the Airborne Toxic Control Measures (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115).

Fuel usage was estimated based on the fuel consumption rate based on generator size, provided by the Project Applicant. **Table 11** provides details on fuel usage estimates from emergency generators. Additional details on fuel consumption rate and hours of operation can be found in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

1.2.5 Summary of Existing Conditions Energy Consumption

Table 12 shows the total energy use for the Existing Conditions, including electricity, natural gas, diesel fuel, and gasoline.

1.3 Project Operational Energy Use

Detailed calculations of Project operational energy uses are further explained below.

1.3.1 Building Energy Use

Natural gas and electricity provide building energy for residential and commercial use. **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report** shows the annual electricity and natural gas use for the Project buildings.

In an effort to reduce greenhouse gas (GHG) emissions, the Project would be entirely electrically powered with the exception of commercial culinary uses. The residential buildings would be entirely electrically powered. Therefore, energy use totals for the Project are based on Project-specific electricity and natural gas usage studies, as provided by the Project Applicant.

Additional information and tables regarding building electricity and natural gas usage estimates can be found in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

1.3.2 Water Energy Use

Electricity is used to supply, treat, and distribute potable water and treat the resulting wastewater. Water consumption and wastewater generation were quantified as shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**. This electricity from water use is summarized in **Table 8**.

1.3.3 Mobile Energy Use

Fuel usage was estimated from on-road VMT by residents, employees, and visitors. Trip generation rates and total VMT for each land use were provided by Hexagon, as shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**. Fuel usage was estimated using an average miles-per-gallon (mpg) obtained from EMFAC2021 for the fleet mix corresponding to the vehicle category and fuel type (gasoline, diesel, compressed natural gas, or electricity).

Table 9 shows detailed vehicle fuel usage estimates for the Project, including implementation of the Transportation Demand Management (TDM) Plan measures.

This is discussed further in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

1.3.4 Electric Vehicle Charging Energy Use

Electricity used to charge additional electric vehicles beyond the projected fleet-average due to the Project's commitment to including electric vehicle (EV) charging stations onsite is included in building energy use estimates. Battery electric vehicles use electricity to drive their motors rather than that combustion of gasoline or diesel fuel. The gasoline and diesel displaced by the additional electric vehicles is calculated in **Table 10**. The detailed derivation of the electricity usage VMT displacement estimates are shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

1.3.5 Stationary Source Energy Use

Diesel fuel usage from diesel combustion resulting from generator operation for testing and maintenance is included in this analysis. For the Full Buildout Project, 13 emergency generators are anticipated to be installed. Operation for routine maintenance and testing is

conservatively assumed to be 50 hours per year, consistent with the maximum allowed testing time from the ATCM for Stationary Compression Ignition Engines (17 CCR 93115).

Fuel usage was estimated based on the fuel consumption rate based on generator size, provided by the Project Applicant. **Table 11** provides details on fuel usage estimates from emergency generators. Additional details on fuel consumption rate and hours of operation can be found in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

1.3.6 Summary of Net Project Operational Energy Consumption

The table below summarizes the change in operational energy use with the project. More detail can be found in **Table 12**, which summarizes Existing Conditions and Full Project Buildout operational energy use by source and the change in energy use between the Existing Conditions and Full Project Buildout.

	Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Gasoline (gallons)	Diesel (gallons)
Existing Conditions	13,484	30,274	1,201,685	543,432
Project	81,336	3,806	2,923,540	748,392
Net Change	67,851	-26,468	1,721,855	204,960

2. IMPACT ASSESSMENT AND MITIGATION MEASURES

2.1 Standards of Significance

CEQA Guidelines Appendix G (as amended December 28, 2018) includes two significance thresholds related to Energy as follows:

Would the project:

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

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

In addition, Part I of Appendix F of the CEQA Guidelines states as follows:

“The goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:

1. decreasing overall per capita energy consumption,
2. decreasing reliance on natural gas and oil, and
3. increasing reliance on renewable energy resources.”

Appendix F states that an EIR should discuss the general energy impacts of a project, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The avoidance of inefficient, wasteful, and unnecessary consumption of energy will be the standard of significance used for this Project.

For purposes of this analysis, impacts to Energy Resources will be considered to be significant if the Project would result in the wasteful, inefficient or unnecessary consumption of energy resources, and conversely if the project would conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

2.2 Methodology

The methodology used to evaluate the significance of the Project's energy-related impacts is explained in the context of each impact, as discussed below.

2.3 Environmental Analysis

Impact ER-1: The Project Would Not Result in the Wasteful, Inefficient or Unnecessary Consumption of Fuel or Energy, and Conversely the Project Would Not Conflict With or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency (Less Than Significant)

2.3.1 Overview

The Project will be constructed in compliance with California's Building Energy Efficiency Standards; California's Green Building Standards; Leadership in Energy and Environmental Design (LEED) Gold Standards for buildings over 10,000 square feet; City of Menlo Park Municipal and Reach Codes additional requirements; and will implement transportation demand management strategies to reduce vehicle miles traveled and mobile fuel use. Overall, these programs will ensure that the Project reduces wasteful consumption of energy and does not obstruct any plans for renewable energy or energy efficiency.

2.3.2 Analysis of Factors Identified in CEQA Guidelines Appendix F

To determine whether a project would result in the wasteful, inefficient or unnecessary consumption of fuel or energy, and conversely whether the project would fail to incorporate renewable energy or energy efficiency measures into building design, equipment use, transportation or other project features, Appendix F of the CEQA Guidelines identifies six categories of potential energy-related environmental impacts, and five categories of potential mitigation measures that may be incorporated into the project. Each impact and mitigation category identified in Appendix F is addressed below.

Based on the analysis of each of these factors, the potential for the Project to result in wasteful, inefficient or unnecessary consumption of fuel or energy, and conversely to fail to incorporate renewable energy or energy efficiency measures into building design, equipment use, transportation or other project features is **Less Than Significant.**

2.3.2.1 Appendix F.II.C.1 Energy Requirements and Energy Use Efficiencies

In section II.C.1, CEQA Guidelines Appendix F states that environmental impacts may include:

The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal. If appropriate the energy intensiveness of materials may be discussed.

The inventories prepared for this evaluation include energy and fuel used for construction and operation of the Project. Energy intensiveness of materials is not addressed because the California Governor's Office of Planning and Research (OPR) has stated that lifecycle analyses

are not required under CEQA,[3] and in December 2009 the California Natural Resources Agency (CNRA) issued energy conservation guidelines for EIRs that make no reference to lifecycle emissions.[4] The CNRA explained that: (1) There exists no standard regulatory definition for lifecycle emissions, and (2) Even if a standard definition for 'lifecycle' existed, the term might be interpreted to refer to emissions "beyond those that could be considered 'indirect effects'" as defined by CEQA Guidelines, and therefore, beyond what an EIR is required to estimate and mitigate.[5] This reasoning was reaffirmed in the November 2018 CEQA Guidelines Update.[6]

The Project requires energy in the forms of electricity, natural gas, and gasoline and diesel fuel. These energy use requirements are summarized in **Table 12** for operational activities and **Table 7** for construction activities.

Construction-related energy consumption would be limited to the construction period. As shown in the tables noted above, construction would require the use of electricity, diesel and gasoline. **Table 7** shows the fuel use for construction over the length of the construction period. **Table 12** shows the annual fuel use of operation. The construction gasoline and diesel fuel use over the length of construction would be less than the associated gasoline and diesel fuel use if the Existing Conditions remained over the length of construction. Electricity would be used to reduce other impacts of construction, such as the electricity associated with providing watering for fugitive dust control and the electricity to power construction equipment to reduce fossil fuel use. Therefore, construction energy consumption is not wasteful, inefficient, or unnecessary.

As shown in the tables noted above, operational electricity, diesel, and gasoline requirements are projected to increase from the Existing Conditions to the Project due to the increase in density associated with the Project and the addition of new land uses, such as residences. However, the mobile fuel requirements will not increase as much as they would in the absence of the Project's TDM programs, electric vehicle initiatives, and increasing fuel efficiencies of vehicles. The electricity may be further reduced due to the Project's commitment to achieve LEED Gold building design for all buildings with more than 10,000 square feet, which has not been fully incorporated quantitatively into this assessment. Furthermore, the electricity usage assumes a conservative estimate of EV charging that is more than the associated reduction in gasoline and fuel usage, which overestimates energy use.

[3] California Natural Resources Agency, 2009. *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97*, pp. 71-72. http://resources.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf. Accessed December 16, 2021.

[4] State CEQA Guidelines, Appendix F. These new guidelines were part of amendments issued pursuant to SB97. A copy of this document is available for public review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, in Case File No. 2007.0903E.

[5] California Natural Resources Agency, 2009. *Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97*, p. 71. http://resources.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf. Accessed December 16, 2021.

[6] CNRA, 2018. Final Statement of Reasons For Regulatory Action
Amendments to the State CEQA Guidelines. Available at:
http://resources.ca.gov/ceqa/docs/2018_CEQA_Final_Statement_of%20Reasons_111218.pdf, pg 41. Accessed December 16, 2021.

In addition, the Project's commitment to encourage the use of EVs increases overall energy efficiency of the Project. EVs convert more electrical energy from the grid to power vehicles than conventional gasoline vehicles.[7]

Natural gas consumption is reduced with the Project compared to the Existing Conditions.

Due to its energy-efficient design and focus on reducing mobile fuel use, the resulting energy use from Project implementation is not wasteful or unnecessary.

2.3.2.2 Appendix F.II.C.2 Local and Regional Energy Supplies

In section II.C.2, CEQA Guidelines Appendix F states that environmental impacts may include:

The effects of the project on local and regional energy supplies and on requirements for additional capacity.

The Project will not have a substantial impact on the local or regional energy supplies or require additional capacity to be constructed. Through use of renewable energy, energy efficiency standards, and electric vehicle charging infrastructure, the Project will minimize impacts on the local and regional energy supply. The transition toward electric fuels for on-site vehicles and 100 percent electric building will result in an increase in calculated total electricity usage that will not significantly impact overall electricity infrastructure. This small increase may be offset by gains in energy efficiency at the Project that are not quantitatively addressed in the energy usage calculations as noted above.

As discussed in **Section 1.3** above, the Project relies on electricity, natural gas, and gasoline and diesel consumption associated with mobile operations, emergency generator operations, and construction operations. Total energy use requirements for Existing Conditions, Construction, and Project Full Buildout years are summarized in **Tables 7** and **12**.

The Project site is supplied electricity from Peninsula Clean Energy (PCE) and natural gas through Pacific Gas and Electric (PG&E). PCE and PG&E have established contracts to ensure there is adequate electricity generation capacity to meet its current and future loads. In addition, the Project would include solar photovoltaics that would generate renewable electricity and further reduce the burden on regional energy supplies. This extensive generation of new renewable energy would reduce the strain on electricity production by reducing the demand for electricity generation from the grid resources, particularly during peak times when energy demand is the highest and solar energy potential is also the highest. The Project would use minimal amounts of natural gas as only commercial culinary uses would be supplied with natural gas.

To put the Project's energy use in context, in 2020 Californians consumed 279,510 gigawatt hour (GWh) of electricity, of which San Mateo County consumed 4,167 GWh.[8] California Energy Commission (CEC) estimates that state-wide energy demand will increase to 320,375 GWh in 2025, an average annual growth rate of 1.32%.[9] The Project's anticipated increase in

[7] United States Department of Energy. All-Electric Vehicles. Office of Energy Efficiency and Renewable Energy. www.fueleconomy.gov. Available online at: https://www.fueleconomy.gov/feg/evtech.shtml. Accessed December 22, 2021.

[8] California Energy Commission. 2020. Energy Consumption Data Management Service. Electricity Consumption by County. Available online at: http://www.ecdms.energy.ca.gov/elecbycounty.aspx. Accessed December 13, 2021.

[9] California Energy Commission. 2018. California Energy Demand 2018-2030 Revised Forecast. Available online at: https://efiling.energy.ca.gov/getdocument.aspx?tn=223244. Accessed January 3, 2020.

electricity usage from 13,484 megawatt-hours (MWh) for Existing Conditions to 81,336 MWh by Full Buildout reflects an increase of 67,851 MWh in electricity usage. This increase represents approximately 0.024% of the total 2020 state-wide electricity usage and 1.63% of San Mateo County 2020 electricity usage. The electricity use associated with the Project incorporates a large demand for charging electric vehicles in 2026. This trend for increased demand for electric vehicles is likely to increase the state-wide and county electricity usage regardless of the Project. Therefore, these percentages would likely be much smaller compared to 2026 state-wide and county usage. Therefore, the Project will not require additional generation capacity or cause the need for more additionally generation capacity beyond more general state-wide expansion.

The Project's annual natural gas consumption is estimated to decrease by 26,468 Million British Thermal Unit (MMBtu) from 30,274 MMBtu for Existing Conditions to 3,806 MMBtu at Full Buildout. California's natural gas demand in 2020 was 1,232,858,633.8 MMBtu, and San Mateo County's natural gas demand in 2020 was approximately 20,025,518 MMBtu.[10] The Project's decrease in natural gas consumption accounts for just 0.0021% of the projected statewide annual consumption and 0.13% of the projected countywide consumption.

Although natural gas is the most common source for the generation of electricity in California, 90% of the state's natural gas is imported from the Rocky Mountain region, the Southwest, and Canadian basins.[11] The United States produces 20 trillion standard cubic feet per year (scf/yr) and had 340 trillion scf of proven reserves in 2014.[12] The Project's natural gas consumption is not substantial in comparison to the national natural gas reserves and comprises a tiny portion of annual national natural gas production.

Gasoline and diesel are provided by California's transportation fuels supplier network, as the majority of gasoline and diesel fuels are used for transportation to and from the Project.

Based on the very small increases in overall energy demand, the Project will not have a substantial impact on the local or regional energy supplies or require additional capacity to be constructed.

2.3.2.3 Appendix F.II.C.3 Peak and Base Period Demands

In section II.C.3, CEQA Guidelines Appendix F states that environmental impacts may include:

The effects of the project on peak and base period demands for electricity and other forms of energy.

The Project will not have a substantial impact on the peak and base period demands for electricity or other forms of energy. The Project's base energy consumption compared to regional and statewide energy consumption is discussed above in Section 2.3.2.2. Further details and reasoning on the peak demand are described below.

[10]California Energy Commission. 2018. Gas Consumption by County. Available online at: http://www.ecdms.energy.ca.gov/gasbycounty.aspx. Accessed December 13, 2021.

[11]U.S. Energy Information Administration. 2018. California State Profile and Energy Estimates: Profile Analysis. Available online at: https://www.eia.gov/state/analysis.cfm?sid=CA. Accessed December 13, 2021.

[12]California Energy Commission. 2019. Draft Staff Report: 2019 Natural Gas Market Trends and Outlook. Available online at: https://efiling.energy.ca.gov/getdocument.aspx?tn=233214#:~:text=The%20U.S.%20Energy%20Information%20Administration,or%20energy%20source%20in%20California. Accessed December 13, 2021.

In 2016, California's peak grid demand was 46,193 megawatts (MW). On the same day, PG&E reached a maximum demand of 23,752 MW.[13] In 2018, California's peak grid demand increased to 46,427 MW.[14] In comparison, the Project's maximum demand is expected to be 37.1 MW. This also conservatively excludes all the benefits of LEED Gold design and improvements in demand response due to the Title 24 energy standards, which would further reduce peak demand. Therefore, the Project peak demand represents less than 0.16 percent of PG&E's peak demand. This is a conservative estimate because the Project's peak may not occur at the same time as the utility or statewide peak. Therefore, the Project would have a relatively negligible effect on state-wide peak demands.

2.3.2.4 Appendix F.II.C.4 Existing Energy Standards

In section II.C.4, CEQA Guidelines Appendix F states that environmental impacts may include:

The degree to which the project complies with existing energy standards.

The Project complies with existing energy standards. During implementation of the Project, the Project will continue to adhere to State standards designed to minimize use of fuel in construction vehicles, ensure that buildings employ strict energy efficiency techniques, and operate comprehensive transportation demand management programs, as described further below.

Construction Vehicles and Electricity Usage

Project construction requires use of on-road trucks for soil hauling and deliveries, and off-road equipment such as excavators, cranes, forklifts, and pavers. The Project would comply with state and local requirements designed to minimize idling and associated emissions, which also minimizes use of fuel. Specifically, idling of commercial vehicles and off-road equipment would be limited to five minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation, and the trucks used would be compliant with the requirements of the Tractor-Trailer Greenhouse Gas Regulation.

Building Efficiency

The Project's anticipated electricity and natural gas use in buildings is shown in the sections above. New building construction is subject to California's Title 24. California's Title 24 reduces energy use in residential and commercial buildings through progressive updates to both the Green Building Standards Code (Title 24, Part 11) and the Energy Efficiency Standards (Title 24, Part 6). Provisions added over the years include consideration and possible incorporation of new energy efficiency technologies and methods for building features such as space conditioning, water heating, lighting, and whole envelope, as well as construction waste diversion goals. Additionally, some standards focus on larger energy saving concepts such as reducing loads at peak periods and seasons, improving the quality of energy-saving installations, and performing energy system inspections. Past updates to the Title 24 standards have proven very effective in reducing building energy use. The 2019 standards have reduced residential and non-residential electricity consumption further. Non-residential

[13] California ISO. 2021. 2020-2021 Transmission Plan. Available online at: http://www.caiso.com/planning/Pages/TransmissionPlanning/2020-2021TransmissionPlanningProcess.aspx. Accessed December 13, 2021.

[14] California ISO. 2021. California ISO Peak Load History 1998 through 2020. Available online at: https://www.caiso.com/documents/californiaisopeakloadhistory.pdf. Accessed December 13, 2021.

buildings built according to the 2019 code are expected to use 30% less energy than those built per 2016 code, mainly due to lighting upgrades.[15] . The draft 2022 Building Energy Efficiency Standards have been published and are scheduled to be approved in December 2021. If approved, the 2022 standards will go into effect on January 1, 2023. The 2022 standards improve upon the 2019 standards and focus on four key areas in new residential and nonresidential construction: (1) encouraging electric heat pump technology and use, (2) establishing electric-ready requirements when natural gas is installed, (3) expanding solar photovoltaic system and battery storage standards, and (4) strengthening ventilation standards to improve indoor air quality.[16] Future updates, which occur every 3 years, are expected to further reduce high-rise residential and non-residential electricity consumption.

As the Project schedule anticipates build out between 2024 and 2027, further reductions can be anticipated from future Title 24 code updates. Additionally, the Project will go beyond Title 24 requirements in construction and operation of new buildings by achieving the LEED Gold standard for all buildings with more than 10,000 square feet. This energy benefit of this commitment has conservatively not been quantified.

The buildings on the main Project Site also must comply with applicable Menlo Park Municipal Code energy efficiency requirements, which are more stringent than Title 24. These requirements state:

> *For all new construction, a project will meet 100 percent of energy demand (electricity and natural gas) through any combination of the following measures:*
>
> *(i) Onsite energy generation,*
>
> *(ii) Purchase of 100 percent renewable electricity through Peninsula Clean Energy or Pacific Gas and Electric Company (PG&E) in an amount equal to the annual energy demand of the project,*
>
> *(iii) Purchase of local renewable energy generation in Menlo Park in an amount equal to the annual energy demand of the project, and*
>
> *(iv) Purchase of certified renewable energy credits and/or certified renewable energy offsets annually in an amount equal to the annual energy demand of the project.*

The Campus District would meet this code requirement by eliminating the use of natural gas, except for culinary purposes, and committing to purchasing 100 percent carbon free electricity from PCE.

Portions of the Town Square, Campus, and/or the Residential/Shopping District would include natural gas for cooking in the retail area. To meet this code requirement, the on-site solar would offset any emissions from the natural gas combustion for cooking and any electricity that may not be carbon free.

[15] Stok. 2020. 2019 Title 24 Energy Code Update: What Project Teams Should Know. Available online at: https://stok.com/insights/2019-title-24-energy-code-update-what-project-teams-should-know/

[16] CEC. 2021. 2022 Building Energy Efficiency Standards. Available online at: https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency

The compliance method is discussed further in the memorandum from Signature Development Group to the City of Menlo Park dated December 2, 2021 regarding Willow Village 100% Renewable Energy Memo.

Transportation

Vehicle use at the Project has been reduced through TDM programs. VMT has a direct correlation to fuel usage. Many regulatory requirements reduce mobile fuel use and VMT, and the Project will comply with or exceed all requirements. For example, SB 743 requires projects to evaluate VMT relative to existing regional averages rather than evaluating Level of Service (LOS) for CEQA significance and allows streamlining for projects in high quality transit areas. SB 375, the Sustainable Communities & Climate Protection Program, requires Metropolitan Planning Organizations MPOs to develop Sustainable Community Strategies (SCS) to reduce per capita VMT. The California Air Resources Board (ARB) has prepared a white paper that identifies how VMT reductions consistent with SB 743 and SB 375 relate to statewide climate goals.[17] The Project focuses housing and job growth within existing urbanized areas, reducing VMT below regional averages and thus fulfills one of the key aspects of the SCS.[18] The Project also helps fulfill the Governor's Zero Emission Vehicle Action Plan (Executive Order B-48-18) by promoting the adoption of electric vehicles. The vehicles that travel to and from the Project will be registered at the Department of Motor Vehicles consistent with the overall regional fleet and therefore will comply with vehicle efficiency standards.

2.3.2.5 Appendix F.II.C.5 Energy Resources

In section II.C.5, CEQA Guidelines Appendix F states that environmental impacts may include:

The effects of the project on energy resources.

The Project's use of energy will not have a substantial effect on statewide or regional energy resources. The Project's energy use is discussed above, including electricity, natural gas, and gasoline and diesel consumption associated with mobile operations, emergency generator operations, and construction operations. The change in energy use requirements from the Existing Conditions to Full Buildout Project years is summarized in **Table 12**. Programs and measures relevant to energy resources are discussed in detail in **Sections 2.3.2.2** and **2.3.2.3**.

2.3.2.6 Appendix F.II.C.6 Transportation Energy Use

In section II.C.6, CEQA Guidelines Appendix F states that environmental impacts may include:

The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

The Project uses efficient transportation alternatives to reduce its transportation energy use requirements, as described further below.

[17]ARB. 2019. CARB 2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals. Available at: https://ww2.arb.ca.gov/resources/documents/carb-2017-scoping-plan-identified-vmt-reductions-and-relationship-state-climate. Accessed December 16, 2021.

[18]ARB. 2019. What are Sustainable Communities Strategies. Available at: https://ww2.arb.ca.gov/our-workprogramssustainable-communities-program/what-are-sustainable-communities-strategies. Accessed December 16, 2021.

The Project's transportation energy use is discussed above and gasoline and diesel quantities for all inventory scenarios, including the Existing Conditions and Project are presented in **Tables 7** and **12**. The quantification of VMT associated with Project operations, which feeds into total transportation energy use quantified, is discussed in detail in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

The Project includes reductions in VMT from TDM Plan measures, which result in a reduction in gasoline, diesel, natural gas, and electricity usage at Full Buildout. Additional displacement of gasoline or diesel fuel will occur due to the Project's commitment to installing additional EV charging stations.

The Project's EV charging stations will reduce fuel use and GHG emissions by assisting Californians in the shift from fossil-fueled vehicles to electric vehicles, while the fossil fuels needed to produce electricity for charging continues to decrease. As shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**, by 2026 a conventional passenger vehicle is expected to emit 289 grams of Carbon Dioxide Equivalent (CO_2e) per mile, while the indirect electricity emissions for an EV charged with carbon-free electricity is 0. Therefore, for every mile that is driven in an EV rather than in a gasoline or diesel car, GHG emissions are reduced by 289 grams, and corresponding fuel use decreases.

2.3.2.7 Appendix F.II.D.1 Energy Reduction Measures

In section II.D.1, CEQA Guidelines Appendix F states that mitigation measures (including those already incorporated into the project) may include:

Potential measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or removal. The discussion should explain why certain measures were incorporated in the project and why other measures were dismissed.

As discussed above, construction energy consumption is not wasteful, inefficient, or unnecessary. As discussed in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**, the project has proposed to implement the Bay Area Air Quality Management District (BAAQMD) Basic Construction Mitigation Measures. These measures would result in reduced fuel consumption during construction.

The Project implements a number of programs to reduce the consumption of energy, as discussed above. Buildings with more than 10,000 square feet will achieve LEED Gold standards, will comply with increasingly stringent Title 24 Building Energy Efficiency and Green Building standards, and will comply with City of Menlo Park's Municipal and Reach Codes. Mobile fuel use is reduced through an extensive TDM program. Mobile fuel is also displaced through use of EV charging stations. Solid waste energy use is reduced through diversion, recycling, and composting programs. The Project also incorporates on-site solar generation, and water and waste reduction measures, including low-water landscaping, low-flow toilets, and low-flow faucets. These measures have not all been completely quantitatively incorporated in the Project to be conservative. However, the Project is committed to enough onsite renewable electricity generation to offset non-carbon free energy use in buildings.

2.3.2.8 Appendix F.II.D.2 Siting, Orientation, and Design

In section II.D.2, CEQA Guidelines Appendix F states that mitigation measures (including those already incorporated into the project) may include:

The potential of siting, orientation, and design to minimize energy consumption, including transportation energy, increase water conservation and reduce solid waste.

A number of Project initiatives and programs, as well as general features of the location itself, utilize siting, orientation, or design elements to minimize energy consumption, as discussed further below.

Transportation (Siting)

The Project is an infill development positioned within existing residential and industrial land uses. The Project brings amenities, such as a grocery store and pharmacy, to an area devoid of such amenities, thereby reducing existing trip lengths for residents of the neighboring community and reducing demand for transportation fuels. The Project is a mixed-use development placing residents near office and retail areas, reducing the need for trips outside the development.

Building Energy Efficiency (Siting, Orientation)

The Project's high-performance design and construction of new buildings to achieve LEED Gold for buildings over 10,000 square feet, stringent Title 24 building energy requirements, and compliance with City of Menlo Park Municipal code will allow for increased energy efficiency and opportunities for on-site renewables generation. Title 24 performance-based compliance requires building energy modeling through computer software that calculates energy use and reductions by incorporating building orientation and climate data; it penalizes buildings that are oriented in a way that will increase energy consumption, as such buildings would be required to achieve additional energy efficiency features to reach the target energy design ratings. Therefore, the Project is incentivized to site and orient its buildings in a way that maximizes energy efficiency or will implement additional energy efficiency to reduce demand.

Furthermore, the Project would incorporate potable water conservation, utilize recycled water for non-potable uses and implement an aggressive solid waste reduction program at the Campus District that exceeds the goals of the City's waste goals.

2.3.2.9 Appendix F.II.D.3 Reducing Peak Energy Demand

In section II.D.3, CEQA Guidelines Appendix F states that mitigation measures (including those already incorporated into the project) may include:

The potential for reducing peak energy demand.

The Project's energy mitigation measures and project features will help reduce peak energy demand throughout the Project life. LEED Gold and Title 24 Building Energy Efficiency Standards include measures that encourage load-shifting and demand-response. In addition, rooftop solar should reduce grid demand, particularly during peak times when energy demand is the highest and solar energy potential is also the highest. Title 24 energy use performance standards are based on the time dependent valuation (TDV) of energy, which uses the value of the electricity or natural gas used at every hour of the year to incentivize load shifting off of the peak. In addition, the mixed-use nature of the Project site naturally allows for a balanced energy load, as not all uses will be occupied at the same time of day.

2.3.2.10 Appendix F.II.D.4 Alternative Fuels

In section II.D.4, CEQA Guidelines Appendix F states that mitigation measures (including those already incorporated into the project) may include:

Alternative fuels (particularly renewable ones) or energy systems.

The Project has pursued the use of alternative fuels or energy systems for heating, cooling, electricity, and transportation, as discussed below.

The Project has committed to providing on-site EV charging stations to support the expanded use of electric vehicles. The Project's EV charging stations will reduce fuel use and GHG emissions by assisting Californians in the shift from fossil-fueled vehicles to electric vehicles, while the fossil fuels needed to produce electricity for charging continues to decrease. Additional details regarding the number and type of EV chargers to be installed by the Project are shown in the **Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report**.

2.3.2.11 Appendix F.II.D.5 Recycling Efforts

In section II.D.5, CEQA Guidelines Appendix F states that mitigation measures (including those already incorporated into the project) may include:

Energy conservation which could result from recycling efforts.

California has a statewide goal of 75% waste diversion by 2020, while the City of Menlo Park Zero Waste goal reduces emissions from waste by 90 percent between 2005 and 2035.[19] The City of Menlo Park administers recycling and solid waste services. For multifamily homes, this includes recycling for residential solid waste and organics. Recology provides recycling services for residential as well as commercial establishments.[20] The Project will comply with these goals by implementing waste diversion policies and infrastructure. At the Campus District, the Project will implement an aggressive solid waste reduction program that exceeds the goals of the City's waste goals.

2.3.2.12 Summary

In summary, based on the analysis of each of the factors identified in CEQA Guidelines Appendix F, the potential for the Project to result in wasteful, inefficient or unnecessary consumption of fuel or energy, and conversely to fail to incorporate renewable energy or energy efficiency measures into building design, equipment use, transportation or other project features is **Less Than Significant.**

[19]City of Menlo Park. Zero Waste Management Plans. Available at: https://www.menlopark.org/1482/Zero-waste-management-plans. Accessed December 13, 2021.

[20]City of Menlo Park. Solid Waste and Recycling Services. Available at: https://www.menlopark.org/335/Commercial-solid-waste-and-recycling-ser. Accessed December 16, 2021.

Table 1
Energy Use Sources for the Project
Willow Village
Menlo Park, California

Type	Source	Description
Construction	Off-Road Equipment	Diesel fuel and electricity use of off-road equipment
	On-Road Mobile Sources	Diesel hauling and vendor vehicle fuel use, and gasoline worker vehicle fuel use
	Water	Electricity use for water supply, distribution, and treatment
Operations	Building Energy Use	Electricity and natural gas used in buildings
	On-Road Mobile Sources	Diesel, gasoline, electricity, and natural gas fuel used for vehicles
	Water	Electricity use for water supply, distribution, and treatment
	Standby Emergency Generators	Diesel fuel used by generators

Table 2
Campus and Town Square District Construction Equipment Energy Use
Willow Village
Menlo Park, California

Construction Subphase	Equipment Type[1]	CalEEMod Equipment Category	Fuel[1]	Horsepower[1]	kW	Load Factor	Cumulative Hours per Building[1]	Year 2 Equipment Hours/Day[1]	Year 3 Equipment Hours/Day[1]	Year 4 Equipment Hours/Day[1]	Year 5 Equipment Hours/Day[1]	Year 6 Equipment Hours/Day[1]	Fuel Usage (gal diesel)[2]
North Garage	Air Compressor	Air Compressors	Diesel	150	112	0.48	144	0.47	0.48	0	0	0	530
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	10	0	0.039	0	0	0	67
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	10	0	0.039	0	0	0	38
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	345	0	1.3	0	0	0	218
	Concrete Pump	Pumps	Diesel	450	336	0.74	163	0.33	0.58	0	0	0	2,777
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	163	0.33	0.58	0	0	0	3,337
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	31	0.59	0.023	0	0	0	703
	Excavator	Excavators	Diesel	500	373	0.38	612	12	0.47	0	0	0	5,940
	Generator	Generator Sets	Diesel	25	19	0.74	654	4.7	1.8	0	0	0	618
	Gradall	Forklifts	Diesel	350	261	0.20	900	2.9	3.0	0	0	0	3,218
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	1,421	2.9	5.0	0	0	0	11,574
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	306	5.9	0.23	0	0	0	578
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	174	4.1	0	0	0	0	2,667
	Pressure Washer	Pressure Washers	Diesel	25	19	0.30	32	0	0.12	0	0	0	12
	Semi Dump Truck	Onsite HHDT	Diesel	450	336	1.00	459	8.8	0.35	0	0	0	10,551
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	580	1.0	2.1	0	0	0	13,333
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	438	1.2	1.5	0	0	0	940
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	219	2.9	0.37	0	0	0	3,356
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	111	0.15	0.41	0	0	0	1,137
Office Building 4	Air Compressor	Air Compressors	Diesel	150	112	0.48	12	0	0.049	0	0	0	44
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	306	0	1.3	0	0	0	2,024
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	306	0	1.3	0	0	0	1,157
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	2,091	0	7.4	1.4	0	0	1,325
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	24	0	0.10	0	0	0	131
	Concrete Pump	Pumps	Diesel	450	336	0.74	18	0	0.075	0	0	0	310
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	34	0	0.14	0	0	0	685
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	9.2	0	0.04	0	0	0	211
	Excavator	Excavators	Diesel	500	373	0.38	15	0	0.06	0	0	0	149
	Generator	Generator Sets	Diesel	25	19	0.74	702	0	2.9	0	0	0	663
	Gradall	Forklifts	Diesel	350	261	0.20	216	0	0.48	0.48	0	0	771
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	438	0	1.8	0	0	0	3,569
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	174	0	0.72	0	0	0	329
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	174	0	0.72	0	0	0	2,667
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,120	0	2.3	2.7	0	0	25,742
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	674	0	1.5	1.5	0	0	1,445
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	219	0	0.90	0	0	0	3,356
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	190	0	0.36	0.50	0	0	1,944
Meeting, Collaboration, Park	Air Compressor	Air Compressors	Diesel	150	112	0.48	79	0	0.30	0	0	0	291
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	1,098	5.9	3.3	0	0	0	7,264
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	1,098	5.9	3.3	0	0	0	4,151
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	7,749	0	0.89	19	9.4	0	4,909
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	53	0.31	0.15	0	0	0	283
	Concrete Pump	Pumps	Diesel	450	336	0.74	79	0	0.30	0	0	0	1,347
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	158	0	0.61	0	0	0	3,237
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	639	5.9	1.5	0	0	0	14,689
	Excavator	Excavators	Diesel	500	373	0.38	2,412	23	5.5	0	0	0	23,411
	Generator	Generator Sets	Diesel	25	19	0.74	1,992	5.9	6.7	0	0	0	1,883
	Gradall	Forklifts	Diesel	350	261	0.20	8,661	8.8	7.7	10	12	12	30,971
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	2,553	1.6	7.2	0.50	0.77	5.9	20,801
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	660	4.4	1.8	0	0	0	1,247
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	654	3.1	2.0	0	0	0	10,023
	Pressure Washer	Pressure Washers	Diesel	25	19	0.30	40	0	0.15	0	0	0	15
	Semi Dump Truck	Onsite HHDT	Diesel	450	336	1.00	570	5.9	1.2	0	0	0	13,103
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	2,603	0.39	1.4	4.2	4.2	1.0	59,846
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	275	1.5	0.82	0	0	0	589
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	718	2.9	1.9	0.37	0	0	11,006
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	1,425	0.73	1.0	2.0	2.0	2.0	14,561

Table 2
Campus and Town Square District Construction Equipment Energy Use
Willow Village
Menlo Park, California

Construction Subphase	Equipment Type[1]	CalEEMod Equipment Category	Fuel[1]	Horsepower[1]	kW	Load Factor	Cumulative Hours per Building[1]	Year 2 Equipment Hours/Day[1]	Year 3 Equipment Hours/Day[1]	Year 4 Equipment Hours/Day[1]	Year 5 Equipment Hours/Day[1]	Year 6 Equipment Hours/Day[1]	Fuel Usage (gal diesel)[2]
Hotel Excavation	Air Compressor	Air Compressors	Diesel	150	112	0.48	705	2.6	2.3	0	0	0	2,593
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	111	2.6	0	0	0	0	734
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	303	2.9	0.70	0	0	0	1,145
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	152	1.5	0.35	0	0	0	96
	Concrete Pump	Pumps	Diesel	450	336	0.74	612	0.42	2.3	0	0	0	10,407
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	612	0.42	2.3	0	0	0	12,500
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	303	2.9	0.70	0	0	0	6,965
	Excavator	Excavators	Diesel	500	373	0.38	1,212	12	2.8	0	0	0	11,764
	Generator	Generator Sets	Diesel	25	19	0.74	2,982	5.9	11	0	0	0	2,818
	Gradall	Forklifts	Diesel	350	261	0.20	2,982	5.9	11	0	0	0	10,663
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	2,487	2.6	9.2	0	0	0	20,264
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	1,212	12	2.8	0	0	0	2,291
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	444	11	0	0	0	0	6,804
	Pressure Washer	Pressure Washers	Diesel	25	19	0.30	12	0	0.046	0	0	0	4.6
	Semi Dump Truck	Onsite HHDT	Diesel	450	336	1.00	606	5.9	1.4	0	0	0	13,931
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	115	0.16	0.42	0	0	0	2,647
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	600	2.9	1.9	0	0	0	1,287
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	398	2.9	1.1	0	0	0	6,100
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	796	2.0	2.8	0	0	0	8,133
Hotel Construction	Air Compressor	Air Compressors	Diesel	150	112	0.48	654	0	0	3.0	0.84	0	2,405
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	6,768	0	0	21	20	0	4,287
	Concrete Pump	Pumps	Diesel	450	336	0.74	654	0	0	3.0	0.84	0	11,125
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	654	0	0	3.0	0.84	0	13,363
	Gradall	Forklifts	Diesel	350	261	0.20	3,960	0	0	12	12	0	14,160
	Pressure Washer	Pressure Washers	Diesel	25	19	0.30	13	0	0	0.060	0.017	0	5.0
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,733	0	0	1.9	9.1	0	39,838
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	495	0	0	1.5	1.5	0	1,062
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	158	0	0	0.48	0.48	0	2,427
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	400	0	0	1.4	1.0	0	4,087
Town Square	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	975	0	3.0	1.0	0	0	3,686
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	848	0	1.5	1.9	0	0	537
	Concrete Pump	Pumps	Diesel	450	336	0.74	5.3	0	0	0.020	0	0	91
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	5.3	0	0	0.020	0	0	109
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	975	0	3.0	1.0	0	0	22,413
	Excavator	Excavators	Diesel	500	373	0.38	3,900	0	12	4.0	0	0	37,853
	Generator	Generator Sets	Diesel	25	19	0.74	1,572	0	6.0	0.55	0	0	1,486
	Gradall	Forklifts	Diesel	350	261	0.20	4,788	0	6.0	5.3	18	0	17,121
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	290	0	0	1.0	0.18	0	2,363
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	3,900	0	12.0	4.0	0	0	7,371
	Semi Dump Truck	Onsite HHDT	Diesel	450	336	1.00	1,950	0	6.0	2.0	0	0	44,826
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	397	0	0.16	0.53	2.0	0	9,126
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	975	0	3.0	1.0	0	0	2,092
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	975	0	3.0	1.0	0	0	14,942
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	1,084	0	2.0	1.5	2.0	0	11,075
South Garage	Air Compressor	Air Compressors	Diesel	150	112	0.48	187	0	0.48	0.48	0	0	689
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	11	0	0.055	0	0	0	73
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	11	0	0.055	0	0	0	42
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	891	0	0	4.7	0	0	564
	Concrete Pump	Pumps	Diesel	450	336	0.74	204	0	0.45	0.60	0	0	3,470
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	218	0	0.52	0.60	0	0	4,453
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	30	0	0.15	0	0	0	690
	Excavator	Excavators	Diesel	500	373	0.38	600	0	3.0	0	0	0	5,824

Table 2
Campus and Town Square District Construction Equipment Energy Use
Willow Village
Menlo Park, California

Construction Subphase	Equipment Type[1]	CalEEMod Equipment Category	Fuel[1]	Horsepower[1]	kW	Load Factor	Cumulative Hours per Building[1]	Year 2 Equipment Hours/Day[1]	Year 3 Equipment Hours/Day[1]	Year 4 Equipment Hours/Day[1]	Year 5 Equipment Hours/Day[1]	Year 6 Equipment Hours/Day[1]	Fuel Usage (gal diesel)[2]
South Garage	Generator	Generator Sets	Diesel	25	19	0.74	654	0	3.2	0	0	0	618
	Gradall	Forklifts	Diesel	350	261	0.20	1,170	0	3.0	3.0	0	0	4,184
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	1,688	0	4.9	3.7	0	0	13,749
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	300	0	1.5	0	0	0	567
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	174	0	0.86	0	0	0	2,667
	Pressure Washer	Pressure Washers	Diesel	25	19	0.30	32	0	0.16	0	0	0	12
	Semi Dump Truck	Onsite HHDT	Diesel	450	336	1.00	450	0	2.2	0	0	0	10,344
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	873	0	1.9	2.6	0	0	20,068
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	575	0	1.4	1.5	0	0	1,233
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	216	0	1.1	0	0	0	3,310
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	159	0	0.32	0.50	0	0	1,624
Office Building 3	Air Compressor	Air Compressors	Diesel	150	112	0.48	12	0	0.067	0	0	0	44
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	456	0	2.6	0	0	0	3,017
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	456	0	2.6	0	0	0	1,724
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	2,097	0	1.7	6.9	0	0	1,328
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	36	0	0.21	0	0	0	196
	Concrete Pump	Pumps	Diesel	450	336	0.74	23	0	0.12	5.0E-03	0	0	388
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	46	0	0.25	5.0E-03	0	0	932
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	14	0	0.077	0	0	0	314
	Excavator	Excavators	Diesel	500	373	0.38	23	0	0.13	0	0	0	221
	Generator	Generator Sets	Diesel	25	19	0.74	852	0	4.8	0	0	0	805
	Gradall	Forklifts	Diesel	350	261	0.20	240	0	0.48	0.48	0.48	0	860
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	588	0	3.3	0	0	0	4,791
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	330	0	1.9	0	0	0	624
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	330	0	1.9	0	0	0	5,057
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,223	0	1.8	2.8	3.0	0	28,114
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	752	0	1.5	1.5	1.5	0	1,612
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	294	0	1.7	0	0	0	4,506
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	210	0	0.27	0.50	0.50	0	2,146
Office Building 1	Air Compressor	Air Compressors	Diesel	150	112	0.48	12	0	0.07	0	0	0	43
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	402	0	2.2	0	0	0	2,659
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	402	0	2.2	0	0	0	1,520
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	2,076	0	2.5	6.6	0	0	1,315
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	32	0	0.18	0	0	0	172
	Concrete Pump	Pumps	Diesel	450	336	0.74	21	0	0.11	5.3E-03	0	0	355
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	41	0	0.22	5.3E-03	0	0	837
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	12	0	0.067	0	0	0	277
	Excavator	Excavators	Diesel	500	373	0.38	20	0	0.11	0	0	0	195
	Generator	Generator Sets	Diesel	25	19	0.74	792	0	4.4	0	0	0	748
	Gradall	Forklifts	Diesel	350	261	0.20	205	0	0.48	0.48	0	0	733
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	522	0	2.9	0	0	0	4,253
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	264	0	1.5	0	0	0	499
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	264	0	1.5	0	0	0	4,046
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,025	0	1.9	2.7	0	0	23,558
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	642	0	1.5	1.5	0	0	1,377
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	261	0	1.5	0	0	0	4,000
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	176	0	0.29	0.50	0	0	1,798
Office Building 2	Air Compressor	Air Compressors	Diesel	150	112	0.48	12	0	0.076	0	0	0	44
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	390	0	2.5	0	0	0	2,580
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	390	0	2.5	0	0	0	1,474
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	2,097	0	1.2	7.3	0	0	1,328
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	31	0	0.20	0	0	0	167
	Concrete Pump	Pumps	Diesel	450	336	0.74	21	0	0.12	5.0E-03	0	0	354
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	40	0	0.25	5.0E-03	0	0	824
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	12	0	0.075	0	0	0	269
	Excavator	Excavators	Diesel	500	373	0.38	20	0	0.12	0	0	0	189
	Generator	Generator Sets	Diesel	25	19	0.74	786	0	5.0	0	0	0	743
	Gradall	Forklifts	Diesel	350	261	0.20	204	0	0.48	0.48	0.48	0	731
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	522	0	3.3	0	0	0	4,253
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	264	0	1.7	0	0	0	499

Table 2
Campus and Town Square District Construction Equipment Energy Use
Willow Village
Menlo Park, California

Construction Subphase	Equipment Type[1]	CalEEMod Equipment Category	Fuel[1]	Horsepower[1]	kW	Load Factor	Cumulative Hours per Building[1]	Year 2 Equipment Hours/Day[1]	Year 3 Equipment Hours/Day[1]	Year 4 Equipment Hours/Day[1]	Year 5 Equipment Hours/Day[1]	Year 6 Equipment Hours/Day[1]	Fuel Usage (gal diesel)[2]
Office Building 2	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	264	0	1.7	0	0	0	4,046
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,020	0	1.8	2.8	3.0	0	23,447
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	639	0	1.5	1.5	1.5	0	1,371
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	261	0	1.7	0	0	0	4,000
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	175	0	0.26	0.50	0.50	0	1,790
Office Building 5	Air Compressor	Air Compressors	Diesel	150	112	0.48	12	0	0.059	0	0	0	44
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	534	0	2.6	0	0	0	3,533
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	534	0	2.6	0	0	0	2,019
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	2,067	0	2.2	6.2	0	0	1,309
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	43	0	0.21	0	0	0	229
	Concrete Pump	Pumps	Diesel	450	336	0.74	25	0	0.12	4.8E-03	0	0	425
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	52	0	0.25	4.8E-03	0	0	1,056
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	16	0	0.08	0	0	0	368
	Excavator	Excavators	Diesel	500	373	0.38	27	0	0.13	0	0	0	259
	Generator	Generator Sets	Diesel	25	19	0.74	930	0	4.6	0	0	0	879
	Gradall	Forklifts	Diesel	350	261	0.20	250	0	0.48	0.48	0.48	0	894
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	660	0	3.3	0	0	0	5,378
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	396	0	2.0	0	0	0	748
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	396	0	2.0	0	0	0	6,069
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,260	0	1.8	2.8	3.0	0	28,960
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	782	0	1.5	1.5	1.5	0	1,677
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	330	0	1.6	0	0	0	5,057
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	217	0	0.28	0.50	0.50	0	2,214
Office Building 6	Air Compressor	Air Compressors	Diesel	150	112	0.48	12	0	0.062	0.013	0	0	44
	Backhoe	Tractors/Loaders/Backhoes	Diesel	350	261	0.37	534	0	3.9	0	0	0	3,533
	Bob Cat	Tractors/Loaders/Backhoes	Diesel	200	149	0.37	534	0	3.9	0	0	0	2,019
	Boom Lift	Aerial Lifts	Diesel	40	30	0.31	2,097	0	0	8.0	0	0	1,328
	Compactor	Other Construction Equipment	Diesel	250	186	0.42	43	0	0.31	0	0	0	229
	Concrete Pump	Pumps	Diesel	450	336	0.74	25	0	0.16	0.014	0	0	428
	Concrete Truck	Onsite HHDT	Diesel	400	298	1.00	52	0	0.35	0.014	0	0	1,059
	Dump Truck	Onsite HHDT	Diesel	450	336	1.00	16	0	0.12	0	0	0	368
	Excavator	Excavators	Diesel	500	373	0.38	27	0	0.20	0	0	0	259
	Generator	Generator Sets	Diesel	25	19	0.74	930	0	6.0	0.44	0	0	879
	Gradall	Forklifts	Diesel	350	261	0.20	250	0	0.48	0.48	0.48	0	893
	Hydro/Crawler Crane	Cranes	Diesel	550	410	0.29	666	0	4.9	0	0	0	5,426
	Loader	Tractors/Loaders/Backhoes	Diesel	100	75	0.37	408	0	3.0	0	0	0	771
	Pile Rig	Bore/Drill Rigs	Diesel	600	447	0.50	408	0	3.0	0	0	0	6,253
	Semi Truck	Onsite HHDT	Diesel	450	336	1.00	1,254	0	1.2	2.8	3.0	0	28,827
	Tire Wash	Other Construction Equipment	Diesel	100	75	0.42	780	0	1.5	1.5	1.5	0	1,674
	Water Truck	Onsite HHDT	Diesel	300	224	1.00	333	0	2.4	0	0	0	5,103
	Work Truck	Onsite LHDT1	Diesel	200	149	1.00	216	0	0.25	0.46	0.50	0	2,209
												Total	**1,070,514**

Notes:

1. Information on Project equipment list, horsepower, quantity, and hours per equipment per year were provided by the Project Applicant. Cumulative hours per building represents the sum of hours per equipment across all years. All off-road equipment is assumed to have diesel engines except aerial lifts and cranes which were assumed to be electric, as designated by Project Applicant.
2. Fuel usage is calculated by taking the horsepower-hours for each piece of equipment (calculated as horsepower * usage hours * load factor) and multiplying it by the gallons of diesel consumption per horsepower-hour consistent with USEPA AP-42 diesel fuel data in Table 3.4.1, which cites an average brake-specific fuel consumption (BSFC) of 7,000 BTU/hp-hr, a heating value of 19,300 BTU/lb, and density of 7.1 lb/gal.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel

Table 3
Residential / Shopping District Construction Equipment Energy
Willow Village
Menlo Park, California

Phase	Construction Subphase[1]	Equipment Type[1]	CalEEMod Equipment Category	Fuel	Number[1]	Horsepower[1]	kW	Load Factor	Hours / Day[1]	Days / Year[1]	Utilization Percent[1]	Fuel Usage (gal diesel)[2]	Electricity Usage (kWh)
Area 1	Demolition	Excavator	Excavators	Diesel	4	131	98	0.38	8	97	90%	7,104	--
		Semi Truck	Onsite HHDT	Diesel	12	450	336	1.00	8	97	25%	53,515	--
		Generator	Generator Sets	Diesel	2	25	19	0.74	6	97	50%	550	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	97	90%	1,498	--
		Work Truck	Onsite LHDT1	Diesel	24	250	186	1.00	0.5	97	100%	14,865	--
		Water Truck	Onsite HHDT	Diesel	2	300	224	1.00	8	97	50%	11,892	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	6	150	112	0.37	8	97	80%	10,560	--
		Pressure Washer	Pressure Washers	Diesel	2	25	19	0.30	8	97	100%	595	--
		Air Compressor	Air Compressors	Diesel	1	140	104	0.48	6	97	70%	1,399	--
	Grading and Utilities	Blade	Graders	Diesel	2	359	268	0.41	8	143	15%	2,581	--
		Semi Dump Truck	Onsite HHDT	Diesel	10	450	336	1.00	8	143	25%	65,745	--
		Scraper	Scrapers	Diesel	2	41	31	0.48	8	143	15%	345	--
		Loader	Tractors/Loaders/Backhoes	Diesel	4	100	75	0.37	4	143	90%	3,892	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	143	90%	2,209	--
		Excavator	Excavators	Diesel	4	359	268	0.38	8	143	60%	19,134	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	4	350	261	0.37	8	143	60%	18,163	--
		Gradall	Forklifts	Diesel	4	350	261	0.20	4	143	60%	4,909	--
		Compactor	Other Construction Equipment	Diesel	4	250	186	0.42	0.5	143	20%	307	--
		Paver	Pavers	Diesel	2	250	186	0.42	8	143	1%	123	--
		Water Truck	Onsite HHDT	Diesel	2	300	224	1.00	8	143	50%	17,532	--
		Work Truck	Onsite LHDT1	Diesel	38	250	186	1.00	0.5	143	100%	34,699	--
		Generator	Generator Sets	Diesel	1	600	447	0.74	2	143	10%	649	--
		Concrete Truck	Onsite HHDT	Diesel	2	400	298	1.00	2	143	10%	1,169	--
Parcel 2 Foundations		Dump Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	161	0	22,206	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	161	90%	1,244	--
		Excavator	Excavators	Diesel	1	131	98	0.38	8	161	60%	1,965	--
		Semi Trucks	Onsite HHDT	Diesel	2	450	336	1.00	8	161	25%	14,804	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	161	60%	1,315	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	161	80%	1,363	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	161	80%	390	--
		Crane	Cranes	Diesel	1	215	160	0.29	4	161	50%	1,026	--
		Work Truck	Onsite LHDT1	Diesel	4	250	186	1.00	0.5	161	100%	4,112	--
		Concrete Truck	Onsite HHDT	Diesel	8	400	298	1.00	8	161	15%	31,386	--
		Concrete Pump	Pumps	Diesel	1	450	336	0.74	8	161	15%	3,287	--
Parcel 2 Core and Shell		Semi Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	180	25%	8,276	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	180	90%	1,390	--
		Crane	Cranes	Diesel	1	600	447	0.29	8	180	20%	2,560	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	180	80%	435	--
		Manlift	Aerial Lifts	Electric	1	48	36	0.31	8	180	40%	--	6391
		Work Truck	Onsite LHDT1	Diesel	8	250	186	1.00	0.5	180	100%	9,195	--
Parcel 2 Tenant Improvements		Semi Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	261	25%	12,000	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	261	90%	2,016	--
		Manlift	Aerial Lifts	Electric	1	48	36	0.31	0.5	261	90%	--	1303.2
		Scissor Lift	Aerial Lifts	Electric	1	3	2	0.31	4	261	80%	--	579.2
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	261	80%	631	--
		Work Truck	Onsite LHDT1	Diesel	6	250	186	1.00	0.5	261	90%	9,000	--
Parcel 2 Landscaping		Excavator	Excavators	Diesel	1	25	19	0.38	8	59	90%	206	--
		Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	59	25%	8,138	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	59	90%	456	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	59	100%	803	--
		Work Truck	Onsite LHDT1	Diesel	5	250	186	1.00	0.5	59	100%	1,884	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	59	80%	500	--
Parcel 3 Foundations		Dump Truck	Onsite HHDT	Diesel	4	450	336	1.00	8	161	25%	29,608	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	161	90%	1,244	--
		Excavator	Excavators	Diesel	1	131	98	0.38	8	161	60%	1,965	--
		Semi Trucks	Onsite HHDT	Diesel	2	450	336	1.00	8	161	25%	14,804	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	2	90	67	0.37	8	161	60%	2,629	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	161	80%	1,363	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	161	80%	390	--

Table 3
Residential / Shopping District Construction Equipment Energy
Willow Village
Menlo Park, California

Phase	Construction Subphase[1]	Equipment Type[1]	CalEEMod Equipment Category	Fuel	Number[1]	Horsepower[1]	kW	Load Factor	Hours / Day[1]	Days / Year[1]	Utilization Percent[1]	Fuel Usage (gal diesel)[2]	Electricity Usage (kWh)
Parcel 3 Foundations		Crane	Cranes	Diesel	1	215	160	0.29	4	161	50%	1,026	--
		Work Truck	Onsite LHDT1	Diesel	4	250	186	1.00	0.5	161	100%	4,112	--
		Concrete Truck	Onsite HHDT	Diesel	8	400	298	1.00	8	161	15%	31,582	--
		Concrete Pump	Pumps	Diesel	1	450	336	0.74	8	161	15%	3,287	--
Parcel 3 Core and Shell		Semi Truck	Onsite HHDT	Diesel	2	450	336	1.00	8	180	25%	16,551	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	180	90%	1,390	--
		Crane	Cranes	Diesel	1	600	447	0.29	8	180	20%	2,560	--
		Gradall	Forklifts	Diesel	2	74	55	0.20	4	180	80%	871	--
		Manlift	Aerial Lifts	Electric	2	48	36	0.31	8	180	40%	--	12783
		Work Truck	Onsite LHDT1	Diesel	8	250	186	1.00	0.5	180	100%	9,195	--
Parcel 3 Tenant Improvements		Semi Truck	Onsite HHDT	Diesel	2	450	336	1.00	8	260	25%	23,907	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	260	90%	2,008	--
		Manlift	Aerial Lifts	Electric	2	48	36	0.31	0.5	260	90%	--	2596
		Scissor Lift	Aerial Lifts	Electric	2	3	2	0.31	4	260	80%	--	1154.0
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	260	80%	629	--
		Work Truck	Onsite LHDT1	Diesel	7	250	186	1.00	0.5	260	90%	10,459	--
Parcel 3 Landscaping		Excavator	Excavators	Diesel	1	25	19	0.38	8	58	90%	203	--
		Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	58	25%	8,000	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	58	100%	789	--
		Work Truck	Onsite LHDT1	Diesel	5	250	186	1.00	0.5	58	100%	1,852	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	2	70	52	0.37	8	58	80%	982	--
Area 2	Demolition	Excavator	Excavators	Diesel	4	131	98	0.38	8	48	90%	3,515	--
		Semi Truck	Onsite HHDT	Diesel	12	450	336	1.00	8	48	25%	26,482	--
		Generator	Generator Sets	Diesel	2	25	19	0.74	6	48	50%	272	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	48	90%	741	--
		Work Truck	Onsite LHDT1	Diesel	24	250	186	1.00	0.5	48	100%	7,356	--
		Water Truck	Onsite HHDT	Diesel	2	300	224	1.00	8	48	50%	5,885	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	6	150	112	0.37	8	48	80%	5,226	--
		Pressure Washer	Pressure Washers	Diesel	2	25	19	0.30	8	48	100%	294	--
		Air Compressor	Air Compressors	Diesel	1	140	104	0.48	6	48	70%	692	--
	Grading and Utilities	Blade	Graders	Diesel	2	359	268	0.41	8	130	15%	2,346	--
		Semi Dump Truck	Onsite HHDT	Diesel	10	450	336	1.00	8	130	25%	59,768	--
		Scraper	Scrapers	Diesel	2	41	31	0.48	8	130	15%	314	--
		Loader	Tractors/Loaders/Backhoes	Diesel	4	100	75	0.37	4	130	90%	3,538	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	130	90%	2,008	--
		Excavator	Excavators	Diesel	4	359	268	0.38	8	130	60%	17,394	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	4	350	261	0.37	8	130	60%	16,512	--
		Gradall	Forklifts	Diesel	4	350	261	0.20	4	130	60%	4,463	--
		Compactor	Other Construction Equipment	Diesel	4	250	186	0.42	0.5	130	20%	279	--
		Paver	Pavers	Diesel	2	250	186	0.42	8	130	1%	112	--
		Water Truck	Onsite HHDT	Diesel	2	300	224	1.00	8	130	50%	15,938	--
		Work Truck	Onsite LHDT1	Diesel	38	250	186	1.00	0.5	130	100%	31,544	--
		Generator	Generator Sets	Diesel	1	600	447	0.74	2	130	10%	590	--
		Concrete Truck	Onsite HHDT	Diesel	2	400	298	1.00	2	130	10%	1,063	--
Parcel 7 Foundations		Dump Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	116	25%	15,999	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	116	90%	896	--
		Excavator	Excavators	Diesel	1	131	98	0.38	8	116	60%	1,416	--
		Semi Trucks	Onsite HHDT	Diesel	1	450	336	1.00	8	116	25%	5,333	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	116	60%	947	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	116	80%	982	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	116	80%	281	--
		Crane	Cranes	Diesel	1	215	160	0.29	4	116	50%	739	--
		Work Truck	Onsite LHDT1	Diesel	4	250	186	1.00	0.5	116	100%	2,963	--
		Concrete Truck	Onsite HHDT	Diesel	1	400	298	1.00	1.5	116	70%	2,489	--
		Concrete Pump	Pumps	Diesel	1	450	336	0.74	0.25	116	50%	247	--
Parcel 7 Core and Shell		Semi Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	129	25%	5,931	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	129	90%	996	--
		Crane	Cranes	Diesel	1	600	447	0.29	8	129	20%	1,835	--

Table 3
Residential / Shopping District Construction Equipment Energy
Willow Village
Menlo Park, California

Phase	Construction Subphase[1]	Equipment Type[1]	CalEEMod Equipment Category	Fuel	Number[1]	Horsepower[1]	kW	Load Factor	Hours / Day[1]	Days / Year[1]	Utilization Percent[1]	Fuel Usage (gal diesel)[2]	Electricity Usage (kWh)
Parcel 7 Core and Shell		Gradall	Forklifts	Diesel	1	74	55	0.20	4	129	80%	312	--
		Manlift	Aerial Lifts	Electric	1	48	36	0.31	8	129	40%	--	4580
		Work Truck	Onsite LHDT1	Diesel	8	250	186	1.00	0.5	129	100%	6,590	--
Parcel 7 Tenant Improvements		Semi Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	188	25%	8,643	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	188	90%	1,452	--
		Manlift	Aerial Lifts	Electric	1	48	36	0.31	0.5	188	90%	--	938.7
		Scissor Lift	Aerial Lifts	Electric	1	3	2	0.31	4	188	80%	--	417.2
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	188	80%	455	--
		Work Truck	Onsite LHDT1	Diesel	6	250	186	1.00	0.5	188	90%	6,483	--
Parcel 7 Landscaping		Excavator	Excavators	Diesel	1	25	19	0.38	8	58	90%	203	--
		Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	58	25%	8,000	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	58	90%	448	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	58	60%	474	--
		Work Truck	Onsite LHDT1	Diesel	5	250	186	1.00	0.5	58	100%	1,852	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	58	80%	491	--
Parcel 6 Foundations		Dump Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	116	25%	15,999	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	116	90%	896	--
		Excavator	Excavators	Diesel	1	131	98	0.38	8	116	60%	1,416	--
		Semi Trucks	Onsite HHDT	Diesel	2	450	336	1.00	8	116	25%	10,666	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	116	60%	947	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	116	80%	982	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	116	80%	281	--
		Crane	Cranes	Diesel	1	215	160	0.29	4	116	50%	739	--
		Work Truck	Onsite LHDT1	Diesel	4	250	186	1.00	0.5	116	100%	2,963	--
		Concrete Truck	Onsite HHDT	Diesel	1	400	298	1.00	3	116	70%	4,978	--
		Concrete Pump	Pumps	Diesel	1	450	336	0.74	0.5	116	50%	493	--
Parcel 6 Core and Shell		Semi Truck	Onsite HHDT	Diesel	2	450	336	1.00	8	129	25%	11,862	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	129	90%	996	--
		Crane	Cranes	Diesel	1	600	447	0.29	8	129	20%	1,835	--
		Gradall	Forklifts	Diesel	2	74	55	0.20	4	129	80%	624	--
		Manlift	Aerial Lifts	Electric	1	48	36	0.31	8	129	40%	--	4580
		Work Truck	Onsite LHDT1	Diesel	8	250	186	1.00	0.5	129	100%	6,590	--
Parcel 6 Tenant Improvements		Semi Truck	Onsite HHDT	Diesel	2	450	336	1.00	8	187	25%	17,195	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	187	90%	1,444	--
		Manlift	Aerial Lifts	Electric	1	48	36	0.31	0.5	187	90%	--	933.7
		Scissor Lift	Aerial Lifts	Electric	2	3	2	0.31	4	187	80%	--	830.0
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	187	80%	452	--
		Work Truck	Onsite LHDT1	Diesel	7	250	186	1.00	0.5	187	90%	7,523	--
Parcel 6 Landscaping		Excavator	Excavators	Diesel	1	25	19	0.38	8	59	90%	206	--
		Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	59	25%	8,138	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	59	60%	482	--
		Work Truck	Onsite LHDT1	Diesel	5	250	186	1.00	0.5	59	100%	1,884	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	2	70	52	0.37	8	59	80%	999	--
Area 3	Grading and Utilities	Blade	Graders	Diesel	1	359	268	0.41	8	22	15%	199	--
		Semi Dump Truck	Onsite HHDT	Diesel	6	450	336	1.00	8	22	25%	6,069	--
		Scraper	Scrapers	Diesel	1	41	31	0.48	8	22	15%	27	--
		Loader	Tractors/Loaders/Backhoes	Diesel	2	100	75	0.37	4	22	90%	299	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	22	90%	170	--
		Excavator	Excavators	Diesel	2	359	268	0.38	8	22	60%	1,472	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	2	350	261	0.37	8	22	60%	1,397	--
		Gradall	Forklifts	Diesel	2	350	261	0.20	4	22	60%	378	--
		Compactor	Other Construction Equipment	Diesel	2	250	186	0.42	0.5	22	20%	24	--
		Paver	Pavers	Diesel	1	250	186	0.42	8	22	1%	9	--
		Water Truck	Onsite HHDT	Diesel	1	300	224	1.00	8	22	50%	1,349	--
		Work Truck	Onsite LHDT1	Diesel	20	250	186	1.00	0.5	22	100%	2,810	--
		Generator	Generator Sets	Diesel	1	600	447	0.74	2	22	10%	100	--
		Concrete Truck	Onsite HHDT	Diesel	2	400	298	1.00	2	22	10%	180	--

Table 3
Residential / Shopping District Construction Equipment Energy
Willow Village
Menlo Park, California

Phase	Construction Subphase[1]	Equipment Type[1]	CalEEMod Equipment Category	Fuel	Number[1]	Horsepower[1]	kW	Load Factor	Hours / Day[1]	Days / Year[1]	Utilization Percent[1]	Fuel Usage (gal diesel)[2]	Electricity Usage (kWh)
Area 3	Tunnel Construction	Crane	Cranes	Diesel	1	290	216	0.29	6	262	35%	2,364	--
		Excavator	Excavators	Diesel	2	170	127	0.38	6	262	45%	4,669	--
		Loader	Tractors/Loaders/Backhoes	Diesel	1	250	186	0.37	6	262	45%	3,343	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	103	77	0.37	6	262	40%	1,224	--
		Gradall	Forklifts	Diesel	1	130	97	0.20	6	262	35%	731	--
		Boom Truck	Onsite HHDT	Diesel	1	200	149	1.00	6	262	35%	5,621	--
		Concrete Truck	Onsite HHDT	Diesel	3	300	224	1.00	5	262	25%	15,057	--
		Dump Truck	Onsite HHDT	Diesel	4	300	224	1.00	5	262	25%	20,076	--
		Work Truck	Onsite LHDT1	Diesel	5	250	186	1.00	4	262	30%	20,076	--
		Compressor	Air Compressors	Diesel	2	50	37	0.48	6	262	30%	1,156	--
	Foundations	Dump Truck	Onsite HHDT	Diesel	4	450	336	1.00	8	123	25%	22,620	--
		Generator	Generator Sets	Diesel	2	25	19	0.74	6	123	100%	1,395	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	123	90%	1,900	--
		Excavator	Excavators	Diesel	2	131	98	0.38	8	123	60%	3,003	--
		Semi Trucks	Onsite HHDT	Diesel	4	450	336	1.00	8	123	25%	22,620	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	2	90	67	0.37	8	123	60%	2,009	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	2	70	52	0.37	8	123	80%	2,083	--
		Gradall	Forklifts	Diesel	2	74	55	0.20	4	123	80%	595	--
		Crane	Cranes	Diesel	2	215	160	0.29	4	123	50%	1,567	--
		Work Truck	Onsite LHDT1	Diesel	4	250	186	1.00	0.5	123	100%	3,142	--
		Concrete Truck	Onsite HHDT	Diesel	3	400	298	1.00	3	123	70%	15,834	--
		Concrete Pump	Pumps	Diesel	3	450	336	0.74	0.5	123	50%	1,569	--
	Core and Shell	Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	139	25%	19,172	--
		Generator	Generator Sets	Diesel	2	25	19	0.74	6	139	100%	1,576	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	139	90%	2,147	--
		Crane	Cranes	Diesel	2	600	447	0.29	8	139	20%	3,954	--
		Gradall	Forklifts	Diesel	3	74	55	0.20	4	139	80%	1,009	--
		Manlift	Aerial Lifts	Electric	3	48	36	0.31	8	139	40%	--	14807
		Work Truck	Onsite LHDT1	Diesel	16	250	186	1.00	0.5	139	100%	14,201	--
	Tenant Improvements	Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	199	25%	27,447	--
		Generator	Generator Sets	Diesel	2	25	19	0.74	6	199	85%	1,918	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	199	90%	3,074	--
		Manlift	Aerial Lifts	Electric	3	48	36	0.31	0.5	199	90%	--	2981
		Scissor Lift	Aerial Lifts	Electric	3	3	2	0.31	4	199	80%	--	1324.9
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	199	80%	481	--
		Work Truck	Onsite LHDT1	Diesel	13	250	186	1.00	0.5	199	90%	14,867	--
	Landscaping	Excavator	Excavators	Diesel	1	25	19	0.38	8	59	90%	206	--
		Semi Truck	Onsite HHDT	Diesel	6	450	336	1.00	8	59	25%	16,275	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	59	90%	456	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	2	90	67	0.37	8	59	60%	963	--
		Work Truck	Onsite LHDT1	Diesel	10	250	186	1.00	0.5	59	100%	3,767	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	3	70	52	0.37	8	59	80%	1,499	--
Hamilton Avenue Parcels North and South	Demolition	Excavator	Excavators	Diesel	1	131	98	0.38	8	22	90%	403	--
		Semi Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	22	80%	9,710	--
		Generator	Generator Sets	Diesel	1	25	19	0.74	6	22	50%	62	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	22	90%	340	--
		Work Truck	Onsite LHDT1	Diesel	6	250	186	1.00	0.5	22	100%	843	--
		Water Truck	Onsite HHDT	Diesel	1	300	224	1.00	8	22	100%	2,697	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	2	70	52	0.37	8	22	80%	373	--
		Pressure Washer	Pressure Washers	Diesel	2	25	19	0.30	8	22	100%	135	--
		Air Compressor	Air Compressors	Diesel	1	140	104	0.48	6	22	70%	317	--

Table 3
Residential / Shopping District Construction Equipment Energy
Willow Village
Menlo Park, California

Phase	Construction Subphase[1]	Equipment Type[1]	CalEEMod Equipment Category	Fuel	Number[1]	Horsepower[1]	kW	Load Factor	Hours / Day[1]	Days / Year[1]	Utilization Percent[1]	Fuel Usage (gal diesel)[2]	Electricity Usage (kWh)
Hamilton Avenue Parcels North and South	Grading and Utilities	Semi Dump Truck	Onsite HHDT	Diesel	3	450	336	1.00	8	23	80%	10,151	--
		Loader	Tractors/Loaders/Backhoes	Diesel	2	100	75	0.37	4	23	90%	313	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	23	90%	178	--
		Excavator	Excavators	Diesel	1	359	268	0.38	8	23	60%	769	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	23	60%	188	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	23	60%	42	--
		Compactor	Other Construction Equipment	Diesel	1	250	186	0.42	0.5	23	20%	12	--
		Paver	Pavers	Diesel	1	250	186	0.42	8	23	1%	10	--
		Water Truck	Onsite HHDT	Diesel	1	300	224	1.00	8	23	100%	2,820	--
		Work Truck	Onsite LHDT1	Diesel	8	250	186	1.00	0.5	23	100%	1,175	--
		Generator	Generator Sets	Diesel	1	600	447	0.74	2	23	10%	104	--
		Concrete Truck	Onsite HHDT	Diesel	2	400	298	1.00	2	23	10%	188	--
	Foundations	Dump Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	22	60%	2,427	--
		Generator	Generator Sets	Diesel	1	25	19	0.74	6	22	100%	125	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	22	90%	170	--
		Semi Trucks	Onsite HHDT	Diesel	1	450	336	1.00	8	22	80%	3,237	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	22	60%	180	--
		Bob Cat	Tractors/Loaders/Backhoes	Diesel	1	70	52	0.37	8	22	80%	186	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	22	80%	53	--
		Work Truck	Onsite LHDT1	Diesel	2	250	186	1.00	0.5	22	100%	281	--
		Concrete Truck	Onsite HHDT	Diesel	1	400	298	1.00	3	22	60%	809	--
		Concrete Pump	Pumps	Diesel	1	450	336	0.74	6	22	30%	674	--
	Core and Shell	Semi Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	43	75%	5,931	--
		Generator	Generator Sets	Diesel	1	25	19	0.74	6	43	100%	244	--
		Tire Wash	Other Construction Equipment	Diesel	1	100	75	0.42	4	43	90%	332	--
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	43	80%	104	--
		Work Truck	Onsite LHDT1	Diesel	4	250	186	1.00	0.5	43	100%	1,098	--
		Concrete Truck	Onsite HHDT	Diesel	1	400	298	1.00	6	43	30%	1,582	--
		Concrete Pump	Pumps	Diesel	1	450	336	0.74	6	43	45%	1,975	--
	Tenant Improvements	Semi Truck	Onsite HHDT	Diesel	1	450	336	1.00	8	33	60%	3,641	--
		Generator	Generator Sets	Diesel	1	25	19	0.74	6	33	85%	159	--
		Tire Wash	Other Construction Equipment	Diesel	2	100	75	0.42	4	33	90%	510	--
		Scissor Lift	Aerial Lifts	Electric	1	3	2	0.31	6	33	80%	--	110
		Gradall	Forklifts	Diesel	1	74	55	0.20	4	33	80%	80	--
		Work Truck	Onsite LHDT1	Diesel	3	250	186	1.00	0.5	33	90%	569	--
Substation Upgrade	PG&E Substation Work	Backhoe	Tractors/Loaders/Backhoes	Diesel	2	90	67	0.37	8	109	60%	1,780	--
		Loader	Tractors/Loaders/Backhoes	Diesel	2	100	75	0.37	8	109	45%	1,483	--
Feeder Line	PG&E Offsite Work	Excavator	Excavators	Diesel	2	131	98	0.38	8	240	90%	8,788	--
		Loader	Tractors/Loaders/Backhoes	Diesel	1	100	75	0.37	8	240	45%	1,633	--
	Surface Improvements	Paver	Pavers	Diesel	1	250	186	0.42	8	23	60%	592	--
		Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	23	60%	188	--
		Vibratory Roller	Other Construction Equipment	Diesel	1	250	186	0.42	8	23	20%	197	--
		Finish Roller	Other Construction Equipment	Diesel	1	250	186	0.42	8	23	20%	197	--
Intersection Improvements	O'Brien and Kavanaugh	Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	15	60%	122	--
	Adams and O'Brien	Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	10	60%	82	--
	Willow Road and Ivy Drive	Backhoe	Tractors/Loaders/Backhoes	Diesel	1	90	67	0.37	8	10	60%	82	--
											Total	1,319,290	56,309

Notes:

1. Information on Project equipment list, horsepower, quantity, and utilization factor were provided by the Project Applicant. All off-road equipment is assumed to have diesel engines except aerial lifts which were assumed to be electric, as designated by Project Applicant. Utilizations for duration represent the usage percentage during the indicated equipment date range. Utilization percentage is multiplied by the number of hours per day in the calculation of off-road emissions.

2. Fuel usage is calculated by taking the horsepower-hours for each piece of equipment (calculated as horsepower * usage hours * load factor) and multiplying it by the gallons of diesel consumption per horsepower-hour consistent with USEPA AP-42 diesel fuel data in Table 3.4.1, which cites an average brake-specific fuel consumption (BSFC) of 7,000 BTU/hp-hr, a heating value of 19,300 BTU/lb, and density of 7.1 lb/gal.

Abbreviations:

CalEEMod - CALifornia Emissions Estimator MODel

Table 4
Fuel Efficiency Derivation for On-Road Construction Equipment
Willow Village
Menlo Park, California

Year	Fuel Consumption (gallons/day)[1]					VMT (miles/day)[1]					Fuel Efficiency (gallon/mile)[2]					Fuel Efficiency by Category (miles/gallon)		
	HHDT	MHDT	LDA	LDT1	LDT2	HHDT	MHDT	LDA	LDT1	LDT2	HHDT	MHDT	LDA	LDT1	LDT2	Hauling	Vendor	Worker
Year 1	23,056	20,816	596	5.8	530	118,103	172,846	25,369	140	16,522	0.20	0.12	0.023	0.041	0.032	5.1	6.3	33
Year 2	22,935	20,927	524	4.9	550	118,758	174,304	22,502	119	17,455	0.19	0.12	0.023	0.041	0.031	5.2	6.4	34
Year 3	22,678	20,956	460	4.2	566	119,080	175,901	19,907	102	18,281	0.19	0.12	0.023	0.041	0.031	5.3	6.5	34
Year 4	22,436	21,015	402	3.6	577	119,489	177,028	17,557	88	18,954	0.19	0.12	0.023	0.041	0.030	5.3	6.5	34
Year 5	22,094	21,004	350	3.1	581	119,561	177,558	15,407	76	19,447	0.18	0.12	0.023	0.041	0.030	5.4	6.6	34
Year 6	21,769	20,975	304	2.7	584	119,592	177,809	13,511	66	19,853	0.18	0.118	0.022	0.041	0.029	5.5	6.7	35

Notes:

1. Fuel consumption and VMT from EMFAC2021 online database for San Mateo County. HHDT and MHDT are assumed to be diesel. LDA, LDT1 and LDT2 are assumed to be gasoline.
2. Fuel efficiency calculated based off of EMFAC data: [Fuel Consumption]/ [VMT]
3. Consistent with CalEEMod, Hauling assumes 100% HHDT, Vendor assumes 50% HHDT and 50% MHDT, and Worker assumes 50% LDA, 25% LDT1, and 25% LDT2 vehicles.

Abbreviations:

CalEEMod - California Emissions Estimator Model
EMFAC2021 - California Air Resources Board EMission FACtor model
LDA - light duty auto
LDT - light duty truck
MHDT - medium-heavy duty truck
HHDT - heavy-heavy duty truck
VMT - vehicle miles traveled

Table 5
Project On-Road Construction Vehicle Fuel Use
Willow Village
Menlo Park, California

Phase	Construction Subphase	Year	One-Way Trips Per Phase[1]			Annual VMT (mi/yr)[1]			Fuel Consumption (gallons)[2]		
			Worker	Vendor	Hauling	Worker	Vendor	Hauling	Worker (Gasoline)	Vendor (Diesel)	Hauling (Diesel)
Area 1	Demolition	Year 1	520	0	2,505	5,616	0	57,355	169	0	11,197
		Year 2	3,360	0	16,183	36,288	0	370,600	1,082	0	71,572
	Grading and Utilities	Year 2	17,160	0	32,640	185,328	0	267,648	5,528	0	51,689
Area 1 Campus District	Foundations + Core and Shell	Year 2	0	469	0	0	18,767	0	0	2,939	0
		Year 3	0	2,904	0	0	116,177	0	0	17,983	0
		Year 4	0	2,927	0	0	117,071	0	0	17,940	0
		Year 5	0	2,916	0	0	116,624	0	0	17,674	0
	Tenant Improvements	Year 4	0	1,217	0	0	48,665	0	0	7,457	0
		Year 5	0	1,628	0	0	65,136	0	0	9,871	0
		Year 6	0	287	0	0	11,480	0	0	1,722	0
Area 1 Town Square and Residential/Shopping District	Foundations	Year 3	0	384	0	0	15,371	0	0	2,379	0
		Year 4	0	2	0	0	69	0	0	11	0
	Core and Shell	Year 3	0	132	0	0	5,288	0	0	819	0
		Year 4	0	372	0	0	14,872	0	0	2,279	0
	Tenant Improvements	Year 4	0	330	0	0	13,207	0	0	2,024	0
		Year 5	0	400	0	0	15,993	0	0	2,424	0
	Landscaping	Year 5	0	192	0	0	7,680	0	0	1,164	0
Area 1 Campus District	O4 and NG Worker Mobile Trips	Year 2	16,800	0	0	181,440	0	0	5,412	0	0
		Year 3	104,000	0	0	1,123,200	0	0	33,241	0	0
		Year 4	82,800	0	0	894,240	0	0	26,246	0	0
	MCS Worker Mobile Trips	Year 2	12,600	0	0	136,080	0	0	4,059	0	0
		Year 3	78,000	0	0	842,400	0	0	24,931	0	0
		Year 4	78,600	0	0	848,880	0	0	24,915	0	0
		Year 5	78,300	0	0	845,640	0	0	24,602	0	0
		Year 6	13,800	0	0	149,040	0	0	4,296	0	0
Area 1 Town Square and Residential/Shopping District	Mixed Use Worker Mobile Trips	Year 3	100,800	0	0	1,088,640	0	0	32,218	0	0
		Year 4	117,900	0	0	1,273,320	0	0	37,373	0	0
		Year 5	80,100	0	0	865,080	0	0	25,168	0	0
	Landscaping Worker Mobile Trips	Year 5	14,760	0	0	159,408	0	0	4,638	0	0
Area 2	Demolition	Year 2	1,920	0	18,688	20,736	0	427,955	619	0	82,649
	Grading and Utilities	Year 2	7,800	0	16,320	84,240	0	133,824	2,513	0	25,845
		Year 3	7,800	0	16,320	84,240	0	133,824	2,493	0	25,486
Area 2 Campus District	Foundations + Core and Shell	Year 3	0	2,223	0	0	88,917	0	0	13,763	0
		Year 4	0	2,553	0	0	102,123	0	0	15,649	0
	Tenant Improvements	Year 4	0	2,205	0	0	88,204	0	0	13,516	0
		Year 5	0	1,747	0	0	69,876	0	0	10,589	0
Area 2 Town Square and Residential/Shopping District	Foundations	Year 4	0	386	0	0	15,440	0	0	2,366	0
	Core and Shell	Year 4	0	379	0	0	15,146	0	0	2,321	0
		Year 5	0	125	0	0	5,014	0	0	760	0
	Tenant Improvements	Year 4	0	49	0	0	1,970	0	0	302	0
		Year 5	0	681	0	0	27,230	0	0	4,127	0
	Landscaping	Year 5	0	142	0	0	5,682	0	0	861	0
		Year 6	0	50	0	0	1,998	0	0	300	0
Area 2 Campus District	Worker Mobile Trips	Year 3	173,720	0	0	1,876,176	0	0	55,526	0	0
		Year 4	225,320	0	0	2,433,456	0	0	71,423	0	0
		Year 5	104,920	0	0	1,133,136	0	0	32,966	0	0
Area 2 Town Square and Residential/Shopping District	Mixed Use Worker Mobile Trips	Year 4	117,000	0	0	1,263,600	0	0	37,087	0	0
		Year 5	105,750	0	0	1,142,100	0	0	33,227	0	0
	Landscaping Worker Mobile Trips	Year 5	10,920	0	0	117,936	0	0	3,431	0	0
		Year 6	3,840	0	0	41,472	0	0	1,195	0	0
Area 3	Grading and Utilities	Year 3	13,024	0	2,464	140,659	0	20,205	4,163	0	3,848
	Tunnel Construction	Year 3	229,250	1,400	0	2,475,900	56,000	0	73,274	8,668	0
		Year 4	113,970	696	0	1,230,876	27,840	0	36,127	4,266	0
	Foundations	Year 4	31,440	242	0	339,552	9,662	0	9,966	1,481	0
		Year 5	129,690	996	0	1,400,652	39,858	0	40,749	6,040	0
	Core and Shell	Year 5	182,090	1,612	0	1,966,572	64,480	0	57,213	9,771	0
	Tenant Improvements	Year 5	32,750	293	0	353,700	11,739	0	10,290	1,779	0
		Year 6	227,940	2,043	0	2,461,752	81,701	0	70,962	12,255	0
	Landscaping	Year 6	3,540	384	0	38,232	15,360	0	1,102	2,304	0
Hamilton Avenue Parcels North and South	Demolition	Year 4	440	0	422	4,752	0	9,664	139	0	1,815
	Grading and Utilities	Year 4	20	0	19	216	0	152	6	0	28
		Year 5	440	0	407	4,752	0	3,338	138	0	617
	Foundations	Year 5	0	274	0	0	10,944	0	0	1,658	0
	Core and Shell	Year 5	0	245	0	0	9,792	0	0	1,484	0
	Tenant Improvements	Year 5	0	306	0	0	12,240	0	0	1,855	0
	Worker Mobile Trips	Year 5	27,354	0	0	295,423	0	0	8,595	0	0
Substation Upgrade	PG&E Substation Work	Year 3	1,744	100	0	18,835	4,000	0	557	619	0
Feeder Line	PG&E Offsite Work	Year 3	4,800	228	0	51,840	9,125	0	1,534	1,413	0
	Surface Improvements	Year 3	460	22	0	4,968	875	0	147	135	0
Intersection Improvements	O'Brien and Kavanaugh	Year 3	180	50	0	1,944	2,000	0	58	310	0
	Adams and O'Brien	Year 3	120	50	0	1,296	2,000	0	38	310	0
	Willow Road and Ivy Drive	Year 3	120	50	0	1,296	2,000	0	38	310	0
								Total Fuel Consumption:	**809,457**	**205,895**	**274,744**

Notes

1. Total miles based on trip generation provided by Project sponsor and CalEEMod default trip distance by trip type.
2. Fuel usage based on VMT data and fuel efficiency values calculated in Table 4. It is assumed that worker vehicles use gasoline while vendor and hauling vehicles use diesel.
3. Onroad fuel usage does not vary between the unmitigated and mitigated scenario.

Abbreviations:

CalEEMod - California Emissions Estimator Model
mi - mile
yr - year
VMT - vehicle miles traveled

Table 6
Electricity Required for Project Construction Water Usage
Willow Village
Menlo Park, California

Construction Area	Construction Activity	Year	Number of Work Days	Average Acreage Needing Water[1]	Water Usage[1]	Total Water Usage	Electricity Usage[2]
				(acres)	(gal/acre/ day)	(million gal)	(MWh)
Area 1	Demolition	Year 1	13	18	500	0.11	0.40
		Year 2	84	18	500	0.74	2.6
	Grading and Utilities	Year 2	143	18	500	1.3	4.4
Area 1 Town Square and Residential/Shopping District	Foundations	Year 3	224	4	143	0.13	0.45
		Year 4	1	4	143	5.7E-04	2.0E-03
	Core and Shell	Year 3	64	4	148	0.038	0.13
		Year 4	180	4	148	0.11	0.37
	Tenant Improvements	Year 4	147	4	161	0.094	0.33
		Year 5	178	4	161	0.11	0.40
	Landscaping	Year 5	123	4	130	0.064	0.22
Area 1 Campus District	Vertical Construction	Year 2	42	5	200	0.038	0.13
		Year 3	260	5	200	0.24	0.82
		Year 4	262	5	200	0.24	0.83
		Year 5	261	5	200	0.24	0.83
		Year 6	46	5	200	0.042	0.15
Area 2	Demolition	Year 2	48	13	500	0.31	1.1
	Grading and Utilities	Year 2	65	13	500	0.42	1.5
		Year 3	65	13	500	0.42	1.5
Area 2 Town Square and Residential/Shopping District	Foundations	Year 4	180	4	129	0.093	0.32
	Core and Shell	Year 4	145	4	134	0.078	0.27
		Year 5	48	4	134	0.026	0.090
	Tenant Improvements	Year 4	17	4	148	0.010	0.035
		Year 5	235	4	148	0.14	0.49
	Landscaping	Year 5	91	4	96	0.035	0.12
		Year 6	32	4	96	0.012	0.043
Area 2 Campus District	Vertical Construction	Year 3	202	6	200	0.23	0.79
		Year 4	262	6	200	0.29	1.0
		Year 5	122	6	200	0.14	0.48
Area 3	Grading and Utilities	Year 3	22	5	500	0.055	0.19
	Tunnel Construction	Year 3	175	5	500	0.44	1.5
		Year 4	87	5	500	0.22	0.76
	Foundations	Year 4	24	5	200	0.024	0.084
		Year 5	99	5	200	0.099	0.35
	Core and Shell	Year 5	139	5	200	0.14	0.49
	Tenant Improvements	Year 5	25	5	200	0.025	0.088
		Year 6	174	5	200	0.17	0.61
	Landscaping	Year 6	59	8	200	0.094	0.33
Hamilton Avenue Parcels North and South	Demolition	Year 4	22	4	682	0.056	0.19
	Grading and Utilities	Year 4	1	4	2,891	0.011	0.037
		Year 5	22	4	2,891	0.24	0.82
	Foundations	Year 5	22	4	518	0.042	0.15
	Core and Shell	Year 5	43	4	316	0.050	0.18
	Tenant Improvements	Year 5	33	4	515	0.063	0.22
Feeder Line	PG&E Offsite Work	Year 3	240	--	--	0.250	0.88
						Total[3]	**27**

Notes:

1. Information on Project water use was provided by the Project Applicant.
2. Energy usage is calculated by applying the electric intensity factor for outdoor water to total water usage. An electric intensity factor of 3,500 kWh/million gallons was taken from Table 9.2 in Appendix D of the CalEEMod User's Guide as the sum of supply water, treat water and distribute water electric intensity factors. Since the water use reported here is only for construction fugitive dust control, operational indoor water use-related emissions and wastewater treatment-related emissions are not estimated here.
3. Water usage does not vary between the unmitigated and mitigated scenario.

Abbreviations:

gal - Gallons
kWh - kilowatt-hours
MWh - megawatt-hours

References:

CalEEMod User's Guide (Available online at: http://www.aqmd.gov/caleemod/user's-guide)
PG&E, Pacific Gas and Electric - Gas and power company for California (https://www.pge.com/)

Table 7
Summary of Project Construction Energy Use
Willow Village
Menlo Park, California

Source		Units	Project Construction Usage[1]
Electricity	Water Consumption[2]	kWh	26,689
	Off-Road Construction Equipment[3]	kWh	56,309
	Electricity Total	**kWh**	**82,998**
Diesel	On-Road Construction Trips[4]	gallons	480,639
	Off-Road Construction Equipment[3]	gallons	2,389,804
	Diesel Total	**gallons**	**2,870,443**
Gasoline	On-Road Construction Trips[4]	gallons	809,457
	Gasoline Total	**gallons**	**809,457**

Notes:

1. The energy usage for the unmitigated and mitigated scenarios is the same.
2. Construction water use based on project-specific estimate provided by Project sponsor. See Table 6 for more details on the methodology.
3. Off-road equipment electricity use based on hours of operation for electric equipment. Off-road diesel fuel usage based on a fuel usage rate of 0.051 gallons of diesel per horsepower (hp)-hour, consistent with diesel conversion factors given in USEPA AP-42 Table 3.4.1. See Tables 2 and 3 for more details on the methodology.
4. On-road mobile source fuel use based on vehicle miles traveled (VMT) for all years of construction and fleet-average fuel consumption in gallons per mile from EMFAC2021 for CY 2021 through 2026 in San Mateo County. See Table 4 for more details on the methodology.

Abbreviations:

CY - calendar year

EMFAC2021 - California Air Resources Board EMission FACtor model

hp - horsepower

kWh - kilowatt-hour

USEPA - United States Environmental Protection Agency

VMT - vehicle miles traveled

References:

USEPA. 1996. AP 42. Compilation of Air Pollutant Emission Factors, Volume 1. Fifth Edition. Chapter 3.4, Large Stationary Diesel and All Stationary Dual-fuel Engines. Available online at: http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s04.pdf. Accessed March 2019.

Table 8
Water Energy Use
Willow Village
Menlo Park, California

Scenario	Water Usage[1]		Electricity Usage[2]		
	Indoor	Outdoor	Indoor	Outdoor	Total
	(million gallons/year)		(kWh/year)		
Existing Conditions	247	28	1,335,508	98,953	1,434,462
Full Buildout	114	35	617,173	122,546	739,719

Notes:

1. Water usage rates consistent with Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report.
2. Energy Usage is based on the water usage rates and the default water electricity intensity found in Tables 9.2 of Appendix D of the CalEEMod user guide. Indoor water electricity usage assumes electricity is used to supply, treat and distribute water and treat wastewater. Outdoor water electricity usage does not include treating wastewater.

Abbreviations:

CalEEMod - California Emissions Estimator Model
kWh - kilowatt hour
yr - year

References:

California Air Pollution Control Officers Association (CAPCOA). California Emissions Estimator Model (CalEEMod®), Version 2020.4.0. Available online at http://www.caleemod.com

Table 9
Mobile Fuel Consumption
Willow Village
Menlo Park, California

Year	Land Use	Fleet Type	Annual VMT[1]	Percent Gasoline Vehicle Miles[2]	Gasoline Miles per Gallon[2]	Percent Diesel Vehicle Miles[2]	Diesel Miles per Gallon[2]	Percent Natural Gas Vehicle Miles[2]	Natural Gas Miles per DEG[2]	Percent Electric Vehicle Miles[2]	Electric kWh per Mile[3]	Annual Fuel Consumption[4]			
			VMT/year									Gallons of Gasoline	Gallons of Diesel	DEG of CNG	kWh
Existing Conditions	Campus District	Cars	30,742,244	99.7%	26	0.3%	37	--	--	--	--	1,174,641	2,759	0	0
		Trucks	731,958	47.9%	8.2	51.0%	8.1	1.1%	4.7	--	--	42,923	46,189	1,709	0
		Shuttles	3,916,358	--	--	100%	7.9	--	--	--	--	0	493,816	0	0
		On-Demand	1,470,590	100.0%	28	--	--	--	--	--	--	52,255	0	0	0
											Existing Conditions Fuel Consumption:	**1,269,819**	**542,764**	**1,709**	**0**
Full Buildout	Campus District	Cars	48,565,689	99.7%	29	0.3%	38	--	--	--	--	1,693,066	3,323	0	0
		Trucks	1,101,879	45.1%	9.3	53.5%	9.6	1.3%	5.2	--	--	53,394	61,198	2,768	0
		Shuttles	3,916,358	--	--	100%	8.2	--	--	--	--	0	475,358	0	0
		On-Demand	2,259,721	100.0%	31	--	--	--	--	--	--	72,256	0	0	0
	Residential	San Mateo	25,517,254	90.8%	25	4.3%	10	0.1%	5.5	4.8%	0.30	916,656	108,039	5,122	370,026
	Retail	San Mateo	12,358,799	90.8%	25	4.3%	10	0.1%	5.5	4.8%	0.30	443,965	52,327	2,481	179,215
	Park	San Mateo	1,548,641	90.8%	25	4.3%	10	0.1%	5.5	4.8%	0.30	55,632	6,557	311	22,457
	Hotel	San Mateo	5,199,035	90.8%	25	4.3%	10	0.1%	5.5	4.8%	0.30	186,765	22,013	1,044	75,391
											Full Buildout Fuel Consumption:	**3,421,733**	**728,814**	**11,726**	**647,090**

Notes:

1. The VMT and fleet mixes are based on data provided by The Transportation Engineer, for detailed VMT calculations see Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report.
2. The percent of each fuel type for a given fleet and the fuel efficiency (miles per gallon, diesel miles per gallon, natural gas miles per DEG) were calculated based on EMFAC2021 for San Mateo County.
3. An average EV fuel economy of 0.30 kWh per mile was used. The fuel economy is based on electric fleet data from fueleconomy.gov. Available at: https://www.fueleconomy.gov/.
4. Fuel consumption is calculated by multiplying the VMT by the fuel efficiency and percent of vehicles for each fuel type.

Abbreviations:

VMT - Vehicle miles traveled
DEG - Diesel equivalent gallon
CNG- Compressed natural gas

References:

California Air Resources Board. EMFAC2021. Available at: https://arb.ca.gov/emfac/

Table 10
Fuel Reduction from Electric Vehicles
Willow Village
Menlo Park, California

Year	Land Use	Annual Electric VMT (mi/yr)[1]	Percent Replacing Gasoline Vehicle Miles[2]	Percent Replacing Diesel Vehicle Miles[2]	Replaced Vehicle Miles		Miles per Gallon		Fuel Reduction	
					Gasoline	Diesel	Gasoline	Diesel	(gallons of gasoline)	(gallons of diesel)
2019	Campus District	1,783,182	99.7%	0.3%	1,777,261	5,921	26	37	68,134	160
2027	Town Square and the Residential/Shopping District	4,404,570	90.8%	4.3%	3,999,357	187,472	25	10	158,225	18,649
	Campus District	9,752,026	99.7%	0.3%	9,726,961	25,065	29	38	339,969	667
								Total Fuel Reduction:	**430,060**	**19,156**

Notes:

1. The electric VMT and fleet mixes are based on the expected increase in eVMT that the project will contribute. For detailed EV calculations see Air Quality, Greenhouse Gas, and Health Risk Assessment Technical Report.
2. The percent of each fuel type for a given fleet were calculated based on EMFAC2021 for San Mateo County.
3. Replaced vehicles miles is found by multiplying the fleet percentage by fuel type by the expected eVMT due to the project.
4. Fuel reduction is calculated by dividing the replaced VMT by the fleet fuel efficiency derived from EMFAC2021.

Abbreviations:

VMT - Vehicle miles traveled
mi/yr - Miles per year

References:

California Air Resources Board. EMFAC2021. Available at: https://arb.ca.gov/emfac/

Table 11
Project Generator Fuel Consumption
Willow Village
Menlo Park, California

Project Generators

Scenario[1]	Generator Hours of Operation [2] (hrs)	Average Horsepower (hp)	Fuel Consumption[3] (gallons of diesel)
Existing Conditions	50	324	828
Project Full Buildout	650	1,171	38,893

Notes:

1. The table shows generator fuel consumption for an annual operation of 50 hours/year, the maximum allowable by the Airborne Toxics Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115).

2. Total annual hours of operation and average horsepower from Air Quality Technical Report Table 27.

3. Consistent with USEPA AP-42 diesel fuel data in Table 3.4.1, which cites an average brake-specific fuel consumption (BSFC) of 7,000 BTU/hp-hr, a heating value of 19,300 BTU/lb, and density of 7.1 lb/gal.

Abbreviations:

BTU - British Thermal Units
gal - gallon
hp - horsepower
hrs - hours
lb - pound

References:

California Air Resources Board. Airborne Toxic Control Measures (ATCM), 17 CCR § 93115. Available online at: https://ww2.arb.ca.gov/sites/default/files/classic/diesel/documents/finalreg2011.pdf

Table 12
Summary of Operational Energy Use
Willow Village
Menlo Park, California

Operational Energy Use	Existing Conditions[1]				Project[1]				Net Change[2]			
	Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Gasoline (gallons)	Diesel (gallons)	Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Gasoline (gallons)	Diesel (gallons)	Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Gasoline (gallons)	Diesel (gallons)
Building Energy Use	12,050	30,039	--	--	79,949	2,195	--	--	67,899	-27,844	--	--
Water Energy Use	1,434	--	--	--	740	--	--	--	-695	--	--	--
Mobile Energy Use	0	235	1,269,819	542,764	647	1,611	3,421,734	728,815	647	1,376	2,151,915	186,051
Electric Vehicle Charging Energy Use Reduction	--	--	-68,134	-160	--	--	-498,194	-19,316	--	--	-430,060	-19,156
Stationary Source Energy Use	--	--	--	828	--	--	--	38,893	--	--	--	38,065
Total	***13,484***	***30,274***	***1,201,685***	***543,432***	***81,336***	***3,806***	***2,923,540***	***748,392***	***67,851***	***-26,468***	***1,721,855***	***204,960***

Notes:

1. Energy use as calculated in previous tables and as discussed in the memorandum.
2. Net Change in energy use is the Existing Conditions energy use removed from the Project energy use.
3. A conversion factor of 1 diesel-equivalent gallon = 137,381 BTU was used to calculate the natural gas usage for the mobile sources, based on information provided by the US Energy Information Administration (EIA).

Abbreviations:

CalEEMod - California Emissions Estimator Model
MMBtu - million British Thermal Units
MWh - Megawatt-hour
yr - year

Reference:

US Energy Information Administration. Units and Calculators Explained. Available online at: https://www.eia.gov/energyexplained/units-and-calculators/