

SECTION III.R ENERGY

III.R.1 Introduction

This section assesses the significance of the use of energy, including electricity, natural gas and gasoline and diesel fuels, by the Project activities. It discusses existing energy use patterns at the Project site and examines whether Project activities would result in the consumption of large amounts of fuel or energy, or use of such resources in a wasteful manner. A number of factors are considered when weighing whether a project would use a proportionately large amount of energy or whether the use of energy would be wasteful in comparison to other projects. Factors such as the use of on-site renewable energy features (such as photovoltaics) or energy conservation features or programs are considered. This section analyzes the potential for both Project level and cumulative environmental impacts. The analysis in this section concludes that no potentially significant or significant environmental impacts would result from the Project's energy usage; therefore, no mitigation measures are required.

This section is based upon consumption and infrastructure information from Pacific Gas & Electric (PG&E) and energy use studies from the California Energy Commission (CEC).¹⁰⁴⁶ The Project's energy use was modeled using factors from the *Climate Change Technical Report for the CP-HPS Development Plan* (included as Appendix S [Climate Change Technical Report]); the California Department of Transportation's *California Motor Vehicle Stock, Travel and Fuel Forecast*;¹⁰⁴⁷ and land use data from Chapter II (Project Description).¹⁰⁴⁸

Refer to Section III.S (Greenhouse Gas Emissions) for a discussion of the relationship between energy consumption and greenhouse gas emissions. Refer to Section III.Q (Utilities) for a discussion of water consumption.

III.R.2 Setting

■ Electricity

Overview

Electricity is a current of energy generated by combustion of fuels, nuclear fission, hydroelectric or wind power, photovoltaics/solar panels, or geothermal technologies. The capacity of electricity infrastructure¹⁰⁴⁹ is generally discussed in terms of kilowatts (kW), a measure of energy intensity, while

¹⁰⁴⁶ Individual studies and data sources are cited throughout the Setting.

¹⁰⁴⁷ California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009.

¹⁰⁴⁸ Copies of these documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor, as part of File No. ER06.05.07, or at the City Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

¹⁰⁴⁹ Local electrical capacity is a function of the capacity of the transmission network to convey power to a service area, the capacity of the local substations to "step down" the power to deliverable voltages, and of the adequacy of the local distribution network to deliver power to end users.

total electricity consumption is discussed in terms of kilowatt-hours (kWh), equal to one thousand watts over a one-hour period.

On a per capita basis, Californians consume approximately 7,032 kilowatt-hours (kWh) of electricity annually, the lowest statewide per capita consumption in the country.¹⁰⁵⁰ In comparison, the average annual US per capita consumption is 12,347 kWh.¹⁰⁵¹ However, California's overall electricity consumption is second only to that of Texas.¹⁰⁵² The large statewide demand for electricity creates economic vulnerability, as seen during the Western Energy Crisis of 1996 (a period of energy price fluctuation triggered by deregulation of the energy industry).¹⁰⁵³ Although California has made substantial progress in reducing energy consumption on a per capita basis, total demand for electricity is expected to increase with population and economic growth. The State recognizes that efficiency programs alone cannot address demand and that such programs must be supplemented with programs designed to ensure a stable, reliable energy supply.¹⁰⁵⁴ State agencies, utility providers, and the general public have invested in renewable energy development as a means of achieving energy stability. Refer to the discussion of renewable energy in the "Renewable and Alternative Energy" section and to Section III.R.3 (Regulatory Framework).

One of the difficulties in managing electricity consumption is that, once generated, electricity cannot be stored. Thus, a utility provider's overall generation capacity must be sized to accommodate peak demand. Load management strategies, which are energy efficiency strategies that focus on minimizing electricity demand during peak demand periods, allow providers to use smaller generation facilities and transmission infrastructure.¹⁰⁵⁵ Title 24 energy standards, discussed in Section III.R.3, weight consumption during peak periods to emphasize the need for peak hour conservation. Strategies designed to minimize long-term use are also helpful in reducing the need for infrastructure expansions. The Project's strategies to reduce peak loads and reduce overall energy demand are discussed in Section III.R.4 (Impacts).

The City receives approximately 76 percent of its electricity from PG&E.¹⁰⁵⁶ The remaining electricity is generated by hydroelectric facilities associated with HHWP that operate in the western Sierra Nevada Mountains (16 percent) and by small local generation facilities (8 percent).¹⁰⁵⁷ Table III.R-1 (Electricity Consumption in San Francisco, by Land Use [2007]) depicts energy demand by land use type in San Francisco. As shown in Table III.R-1, commercial uses account for nearly 60 percent of all electricity

¹⁰⁵⁰ California Energy Commission, *US Per Capita Electricity Use by State in 2005*, website: http://energyalmanac.ca.gov/electricity/us_per_capita_electricity_2005.html, accessed August 17, 2009.

¹⁰⁵¹ California Energy Commission, *US Per Capita Electricity Use by State in 2005*, website: http://energyalmanac.ca.gov/electricity/us_per_capita_electricity_2005.html, accessed August 17, 2009.

¹⁰⁵² California Energy Commission, *US Per Capita Electricity Use by State in 2005*, website: http://energyalmanac.ca.gov/electricity/us_per_capita_electricity_2005.html, accessed August 17, 2009.

¹⁰⁵³ Federal Energy Regulatory Commission, *The Western Energy Crisis, the Enron Bankruptcy, and FERC's Response*, website: <http://www.ferc.gov/industries/electric/indus-act/wec/chron/chronology.pdf>, accessed August 27, 2009.

¹⁰⁵⁴ California Energy Commission, *2007 Integrated Energy Policy Report*, CEC-100-2007-008-CMF.

¹⁰⁵⁵ California Energy Commission, *Load Management Standards Proceeding*, website: http://www.energy.ca.gov/load_management/, accessed August 20, 2009.

¹⁰⁵⁶ City and County of San Francisco, *Environment Code*, Chapter 18: Solar Energy Incentive Program, accessed August 20, 2009.

¹⁰⁵⁷ City and County of San Francisco, *Environment Code*, Chapter 18: Solar Energy Incentive Program, accessed August 20, 2009.

consumption, while residential uses account for approximately 28 percent of the usage.¹⁰⁵⁸ A total of 5,155 million kWh are consumed annually in San Francisco.

Table III.R-1 Electricity Consumption in San Francisco, by Land Use (2007)		
<i>Land Use</i>	<i>Total Consumption (million kWh)</i>	<i>Percent of Total Consumption</i>
Commercial	3,087.59	60%
Residential	1,454.81	28%
Industrial	76.60	1%
Construction	35.61	1%
Water Supply	302.85	6%
Other	197.39	4%
Total	5,154.85	100%

SOURCE: California Energy Commission, *County Electricity Deliveries by NAICS: San Francisco County*. <http://ecdms.energy.ca.gov/utilbynaicselec.asp> (accessed August 27, 2007).

Project Site Demand

Existing electricity use at the Project site was estimated by applying electricity use factors from the Climate Change Technical Report (Appendix S) to existing land uses floor areas and unit totals. Table III.R-2 (Existing Project Site Electricity Demand) shows existing electricity demand at Candlestick Point and HPS Phase II. A total of 9,468 MWh of electricity was consumed at the Project site in 2008. Of this total, approximately 6,026 MWh (64 percent) was consumed at Candlestick Point, and approximately 3,442 MWh (36 percent) was consumed at HPS Phase II.

■ Natural Gas

Overview

Natural gas is a liquid or gaseous fuel composed primarily of methane from decomposed plant and animal material. It can take many different forms depending on the source of extraction and the means by which it is processed following extraction. Natural gas is commonly associated with fossil fuel reservoirs, such as coal beds and petroleum reservoirs, but it is also biogenically produced in wetlands and marshes. Decomposition of wastes in landfills produces methane emissions that can be used as a fuel similar to natural gas.

¹⁰⁵⁸ Rocky Mountain Institute, *An Energy Resource Investment Strategy for the City and County of San Francisco*, website: http://sfwater.org/detail.cfm/MC_ID/12/MSC_ID/138/MTO_ID/239/C_ID/1346, accessed August 20, 2009.

Table III.R-2 Existing Project Site Electricity Demand

Type of Use	Energy Use Factor (MWh/gsf or unit) ^{abc}	Candlestick Point		HPS Phase II		Project Site Total	
		Existing Development ^d	MWh Consumed Annually ^e	Existing Development ^d	MWh Consumed Annually ^e	Existing Development	MWh Consumed Annually
Residential Units	3.617	256 units	926	—	—	256 units	926
Artist Studios	0.0153	—	—	225,000 gsf	3,442	225,000 gsf	3,442
Stadium	N/A	—	5,100	—	—	—	5,100
Total			6,026		3,442		9,468

SOURCES:

Existing electricity demand was estimated based on minimal compliance with 2005 Title 24 standards. Because existing development at the Project site predates adoption of the Title 24 standards, existing consumption may be somewhat higher than reported. Energy consumption is reported for uses that were operational as of September, 2009.

- a. The energy use factor cited for residential units is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-8 (Appendix S to this EIR). The factor is in the “Electricity Delivered, Total” column and the “Minimally Title 24 Compliant (2005)” row. The factor was converted from kWh to MWh (1 MWh = 1,000 kWh).
- b. The energy use factor cited for the artist studios is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-16 (Appendix S to this EIR). The factor is in the Hunters Point Shipyard sub-table in the “Total Energy Intensity” column and the “Community Space and Artist Studio” row. The factor was converted from kWh to MWh.
- c. Energy use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4.
- d. Based on buildout floor areas provided in Table II-2 (Existing and Proposed Uses) of this EIR.
- e. Calculated by multiplying energy use factor by number of units or gsf. Numbers are rounded according to standard rounding practices and may not add up due to hidden decimals.

Because of its low molecular density, natural gas is difficult to store and transport over long distances. Currently, PG&E imports its natural gas from Canada through PG&E-owned transmission pipelines. The state’s natural gas supply may be supplemented when necessary from the Rocky Mountains, Texas, and New Mexico, as well as in-state production. Sources of natural gas available to California consumers are expected to decrease over time, even as population increases.¹⁰⁵⁹ However, natural gas is in high-demand as a fuel for electricity generation because it releases fewer emissions per unit of energy than oil or coal-based fuels. Over half of the natural gas consumed in California annually goes towards the production of electricity.¹⁰⁶⁰ California’s reliance on imported natural gas supplies leaves the state vulnerable to price fluctuations and supply disruptions.¹⁰⁶¹

At 60,000 cubic feet per year (approximately 62 million British thermal units [Btu]),¹⁰⁶² California’s per capita natural gas consumption is lower than the national per capita average of 67,900 cubic feet per year (70 million Btu).¹⁰⁶³ However, in terms of total statewide natural gas consumption, California is second only to Texas. As with electricity, California’s high statewide natural gas consumption results from the state’s large population and its vigorous economy. While California’s successful efficiency programs and

¹⁰⁵⁹ California Energy Commission, *2007 Integrated Energy Policy Report*, CEC-100-2007-008-CMF.

¹⁰⁶⁰ California Energy Commission, *California Natural Gas Data and Statistics*, website: <http://www.energyalmanac.ca.gov/naturalgas/index.html>, accessed August 20, 2009.

¹⁰⁶¹ California Energy Commission, *California Natural Gas Data and Statistics*, website: <http://www.energyalmanac.ca.gov/naturalgas/index.html>, accessed August 20, 2009.

¹⁰⁶² 1 Cubic Foot = 1,028 Btu.

¹⁰⁶³ Based on 2005 data, the most current information published by the California Energy Commission as of the date of publication of this EIR.

its reliance on renewable sources of electricity are expected to slow the demand for natural gas relative to the demand in other parts of the nation, competition for a limited natural gas supply is increasing with corresponding increases in population and economic activity.¹⁰⁶⁴

Like electricity, natural gas in San Francisco is supplied by PG&E. As shown in Table III.R-3 (Natural Gas Consumption in San Francisco, by Land Use [2007]), it is consumed largely by residential uses (54 percent) and commercial uses (34 percent).¹⁰⁶⁵ A total of approximately 28,918,000 million Btu is consumed annually in the City.

Table III.R-3 Natural Gas Consumption in San Francisco, by Land Use (2007)		
<i>Land Use</i>	<i>Total Consumption (million British thermal units [Btu])</i>	<i>Percent of Total Consumption</i>
Residential	15,504,000	54%
Commercial	9,971,000	34%
Industrial	357,000	1%
Construction	182,000	1%
Water Supply	6,000	0%
Other	2,898,000	10%
Total	28,918,000	100%

SOURCE: California Energy Commission, *County Gas Deliveries by NAICS: San Francisco County*, converted from therms to Btu (1 therm = 100,000 Btu).
<http://ecdms.energy.ca.gov/utilbynaicsgas.asp> (accessed August 27, 2007).

Project Site Demand

Existing natural gas use at the Project site was estimated by applying natural gas use factors from the Climate Change Technical Report (Appendix S) to existing land uses floor areas and unit totals. As shown in Table III.R-4 (Existing Project Site Natural Gas Demand), an estimated total of 14,253 million British thermal units (MBtu)¹⁰⁶⁶ of natural gas was consumed at the Project site in 2008. Of this total, approximately 9,010 MBtu (63 percent) was consumed at Candlestick Point, with the remaining 5,243 MBtu (37 percent) consumed at HPS Phase II.

¹⁰⁶⁴ California Energy Commission, *Overview of Natural Gas in California: Natural Gas Costs and Prices*, website: <http://www.energyalmanac.ca.gov/naturalgas/overview.html>, accessed August 27, 2007.

¹⁰⁶⁵ California Energy Commission, *County Gas Deliveries by NAICS: San Francisco County*, website: <http://ecdms.energy.ca.gov/utilbynaicsgas.asp>, accessed August 27, 2007.

¹⁰⁶⁶ One Btu is approximately the amount of energy needed to heat one pound of water one degree Fahrenheit.

Table III.R-4 Existing Project Site Natural Gas Demand

Type of Use	Energy Use Factor (MBtu/gsf or unit) ^{a,b,c}	Candlestick Point		HPS Phase II		Project Site Total	
		Existing Development ^d	MBtu Consumed Annually ^e	Existing Development ^d	MBtu Consumed Annually ^e	Existing Development	MBtu Consumed Annually
Residential Units	0.0400	256 units	10	—	—	256 units	10
Artist Studios	0.0233	—	—	225,000 gsf	5,243	225,000 gsf	5,243
Stadium	N/A	—	9,000	—	—	—	9,000
Total			9,010		5,243		14,253

SOURCE:

Existing natural gas demand was estimated based on minimal compliance with 2005 Title 24 standards. Because existing development at the Project site predates adoption of the Title 24 standards, existing consumption may be somewhat higher than reported. Energy consumption is reported for uses that were operational as of September, 2009.

- a. The energy use factor cited for residential units is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-8 (Appendix S to this EIR). The factor is in the “Electricity Delivered, Total” column and the “Minimally Title 24 Compliant (2005)” row. The factor was converted from kBtu to MBtu (1 MBtu = 1,000 kBtu).
- b. The energy use factor cited for the artist studios is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-16 (Appendix S to this EIR). The factor is in the Hunters Point Shipyard sub-table in the “Total Energy Intensity” column and the “Community Space and Artist Studio” row. The factor was converted from kBtu to MBtu.
- c. Energy use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4.
- d. Based on buildout floor areas provided in Table II-2 (Existing and Proposed Uses) of this EIR.
- e. Calculated by multiplying energy use factor by number of units or gsf. Numbers are rounded according to standard rounding practices and may not add up due to hidden decimals.

■ Gasoline and Diesel

Overview

Gasoline and diesel, both derived from petroleum (also known as crude oil), are the two most common fuels used for vehicular travel. According to the CEC, the State relies on petroleum-based fuels for 96 percent of its transportation needs.¹⁰⁶⁷ In 2006, Californians consumed an estimated 20 billion gallons of gasoline and diesel fuel for transportation, an increase of nearly 50 percent over the last 20 years.¹⁰⁶⁸

Although California refines much of its oil reserves in the State (approximately 39 percent), much of the petroleum consumed is produced out of state (approximately 20) or is supplied by foreign sources (41 percent).¹⁰⁶⁹ California experienced a 23 percent decrease in production between 1996 and 2006 as a result of several factors, including declining fuel reserves and economic and regulatory factors.¹⁰⁷⁰ Because California is one of the top oil-producing states in the country, the State has been historically able to meet a large portion of its internal demand for petroleum resources through in-state sources.

¹⁰⁶⁷ California Energy Commission, *The Role of a Low Carbon Fuel Standard in Reducing Greenhouse Gas Emissions and Protecting Our Economy*, website: <http://gov.ca.gov/index.php?/fact-sheet/5155/>, accessed August 20, 2009.

¹⁰⁶⁸ California Energy Commission, Fuels and Transportation Division, website: <http://www.energy.ca.gov/transportation/index.html>, accessed August 20, 2009.

¹⁰⁶⁹ “Production” generally refers to the petroleum mining and extraction process, while “refinement” refers to the post-extraction processing necessary to purify petroleum fuels into a usable form. California Energy Commission, Fuels and Transportation Division, website: <http://www.energy.ca.gov/transportation/index.html> (accessed August 20, 2009).

¹⁰⁷⁰ California Energy Commission, California Crude Oil Production and Imports <http://www.energy.ca.gov/2006publications/CEC-600-2006-006/CEC-600-2006-006.pdf>.

However, as with other energy resources, total demand for energy resources is predicted to rise over the coming decades as production capacity and extraction volume simultaneously decrease. In addition, unlike electricity and natural gas fuels, per capita consumption of petroleum products continues to rise in the Bay Area in spite of conservation programs.¹⁰⁷¹

The declining supply of in-state petroleum products, coupled with increasing demand, has resulted in an increased need for imported oil resources. According to the CEC, California’s reliance on crude oil imports will increase from 405 million barrels in 2005 to between 585 million (low forecast) and 685 million (high forecast) barrels in 2025.

Approximately 158 million gallons of gasoline and 11 million gallons of diesel were consumed in San Francisco for transportation in 2007.¹⁰⁷² By 2030, consumption of transportation-related fossil fuels is expected to increase by about 57 percent citywide.

Project Site Demand

According to the *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*,¹⁰⁷³ the current annual vehicle miles traveled (VMT) to and from the Project site is about 58.7 million miles. As shown in Table III.R-5 (Existing Project Site Petroleum Demand), based on existing trip generation and fuel efficiency data, the existing uses at the Project site result in a current demand for approximately 2.70 million gallons of gasoline and 0.17 million gallons diesel fuels per year.

Table III.R-5 Existing Project Site Petroleum Demand					
	Existing Annual VMT (million miles travelled)	Average Countywide Vehicle Fuel Efficiency (2008)	Existing Total Fuel Consumption (million gallons)	Existing Gasoline Consumption (million gallons)	Existing Diesel Consumption (million gallons)
Candlestick Point	58.7	20.41	2.87	2.70	0.17
Hunters Point Shipyard	0	20.41	0	0	0
Total	58.7		2.87	2.70	0.17

SOURCES:

- Equals the estimated VMT (3,495 million miles travelled) divided by the estimated total transportation fuel consumed (171.27 million gallons) for San Francisco County, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009
- Annual VMT was calculated by PBS&J based on trip generation information and average trip lengths reported in: CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.
- On average 94 percent of the transportation fuels consumed in San Francisco were gasoline fuels, while 6 percent were diesel fuels, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009.
- Numbers are rounded according to standard rounding practices and may not add up due to hidden decimals.

¹⁰⁷¹ California Energy Commission, *2007 Integrated Energy Policy Report*, CEC-100-2007-008-CMF.

¹⁰⁷² California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009.

¹⁰⁷³ CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.

■ Renewable and Alternative Energy

Renewable Electricity

Renewable electricity generation methods provide a number of benefits. Such methods reduce the State's dependence on the use of imported fossil fuels (including natural gas), reduce the State's vulnerability to price fluctuations in energy markets, and serve to minimize greenhouse gas emissions (refer to Section III.S). The CEC currently defines solar, geothermal, wind, biomass, and small-scale hydroelectric generation methods as renewable electricity sources.^{1074, 1075} Compared to other utility providers in the State, PG&E's overall electricity generation portfolio contains a relatively high percentage of renewable sources. In 2007, PG&E generated 12 percent of its total electricity through renewable sources, including biomass, small hydroelectric, geothermal, and wind. The remainder of PG&E's generation portfolio includes natural gas combustion (47 percent), nuclear fission (23 percent), large-scale hydroelectric (13 percent), coal combustion (4 percent), and other sources (1 percent).¹⁰⁷⁶ Although development of renewable energy sources is generally beyond the scope of local development planning, individual development projects may include small-scale generation features, such as photovoltaics, that can be connected to, and supply supplementary electricity to, the primary power grid. In addition, the electricity rates paid by San Francisco consumers support development of future renewable sources, as mandated by state law.

Currently, there is no renewable electricity generation infrastructure on the Project site.

Alternative Transportation Fuels, Technologies, and Strategies

Commercially available alternative transportation fuels include biodiesel, ethanol, hydrogen, methanol, natural gas, and electricity.¹⁰⁷⁷ Some of these fuels, such as natural gas, are cleaner-burning petroleum-based alternatives to gasoline and diesel. Other products, such as ethanol and biodiesel, are non-petroleum fuels. Although some alternative fuels can be used in a traditional combustion motor, other alternatives, such as electricity, are based on alternative propulsion technologies. The California Air Resources Board is investigating a number of low-carbon fuel strategies.

Although alternative transportation fuels and technologies could potentially minimize the use of petroleum products, land use planning strategies that result in denser, more compact development are also needed to reduce the need for vehicular travel. Refer to Section III.S and Section III.B (Land Use and Plans) for a description of adopted land use policies promoting such forms of development.

¹⁰⁷⁴ California Energy Commission, *California's Renewable Energy Programs*, website: <http://www.energy.ca.gov/renewables/index.html>, accessed August 19, 2009.

¹⁰⁷⁵ The California Energy Commission considers "renewable" electricity to be electricity produced through use of a rapidly renewable resource, such as sunlight, wind, geothermal energy, etc. In addition, generation of renewable electricity does not result in substantial environmental impacts, such as the production of harmful wastes or harm to sensitive species.

¹⁰⁷⁶ California Energy Commission, *Sources of Electricity for Major Utilities in California*, website: http://www.pgecorp.com/corp_responsibility/reports/2007/environment/energy-future.html, accessed August 19, 2009.

¹⁰⁷⁷ US Department of Energy, *Alternative and Advanced Fuels*, website: <http://www.afdc.energy.gov/afdc/fuels/index.html>, accessed August 20, 2009.

The joint trench systems for the Candlestick Point and Hunters Point Shipyard Phase II development plans would include electrical, communications and gas utilities. A joint trench network would be developed for each development site. Major and minor joint trenches would be routed through the street network to provide power, communications and gas facilities to the development areas.

III.R.3 Regulatory Framework

■ Federal

Corporate Average Fuel Efficiency Standards

In response to the *Massachusetts et al. vs. Environmental Protection Agency et al.* ruling, the Bush Administration issued an executive order on May 14, 2007, directing the USEPA and Department of Transportation to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. On December 19, 2007, the Energy Independence and Security Act of 2007 (discussed below) was signed into law, which requires an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. EISA requires establishment of interim standards (from 2011 to 2020) that will be the “maximum feasible average fuel economy” for each fleet. On October 10, 2008, the National Highway Traffic Safety Administration (NHTSA) released a final environmental impact statement analyzing proposed interim standards for model years 2011 to 2015 passenger cars and light trucks. NHTSA issued a final rule for model year 2011 on March 23, 2009.¹⁰⁷⁸

On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the US auto industry. The proposed rulemaking is a collaboration between the DOT and USEPA with the support of the United Auto Workers. The proposed federal standards apply to passenger cars, light-duty trucks, and medium duty passenger vehicles built in model years 2012 through 2016. If finalized, the proposed rule would surpass the 2007 CAFE standards and require an average fuel economy standard of 35.5 mpg in 2016. On May 22, 2009, the DOT and USEPA issued a notice of upcoming joint rulemaking on this issue.¹⁰⁷⁹ A Draft Environmental Impact Statement has been issued and the comment period for this ends on November 9, 2009. On June 30, 2009, the USEPA granted the waiver for California for its greenhouse gas emission standards for motor vehicles; this is described in more detail below.

Energy Independence and Security Act of 2007

In addition to setting increased CAFE standards for motor vehicles, the EISA includes other provisions:

- Renewable Fuel Standard (RFS) (Section 202)
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

¹⁰⁷⁸ DOT and USEPA, 2009. *Joint Rulemaking to Establish Vehicle CAFE and GHG Emissions Standards*, <http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.43ac99aefa80569eea57529cdba046a0/>

¹⁰⁷⁹ USEPA, 2009. *News Release: President Obama Announces National Fuel Efficiency Policy*, <http://yosemite.epa.gov/opa/admpress.nsf/6fa790d452bcd7f58525750100565efa/451902cb77d4add5852575bb006d3f9b!OpenDocument>.

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

■ State

California Code of Regulations, Title 24

New residential and non-residential buildings in California are required to conform to energy conservation standards specified in Title 24, Part 6 of the *California Code of Regulations* (CCR). Title 24 efficiency standards regulate energy consumed for heating, cooling, ventilation, water heating, and lighting on a per-square-foot basis. Title 24 standards do not regulate plug-in appliances. The standards establish “energy budgets,” expressed in terms of energy consumed per year. The energy budget weights energy consumed during peak hours to place emphasis on efficiency during these periods. Title 24 standards are updated on a periodic basis; the 2008 standards were adopted in April 2009 and go into effect in January 2010.

On July 17, 2008, the California Building Standards Commission adopted the nation’s first green building standards. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations). Part 11 establishes voluntary standards, that would become mandatory in the 2010 edition of the Code, on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.

California Code of Regulations, Title 20

The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608), dated December 2006, were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally-regulated appliances and non-federally regulated appliances. While these regulations are now often seen as “business as usual,” they do exceed the standards imposed by any other state and reduce GHG emissions by reducing energy demand.

Senate Bill 1078

Senate Bill (SB) 1078, adopted by the State Legislature in September 2002, establishes a renewable portfolio standard (RPS) for electricity supply. The RPS requires that retail sellers of electricity provide 20 percent of their supply from renewable sources by 2017. This target date was moved forward in 2006 by SB 107 to require compliance by 2010. In addition, electricity providers subject to the RPS must increase their renewable share by at least 1 percent each year.

Senate Bill 1368

Senate Bill (SB) 1368 prohibits any retail seller of electricity in California from entering into a long-term financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant. This performance standard applies to electricity generated out-of-state as well as in-state, and to publicly owned as well as investor-owned electric utilities.

Senate Bill 1389

Senate Bill (SB) 1389, the *California Integrated Energy Policy*, was adopted by the State Legislature in August 2002. This bill requires the California Energy Commission (CEC) to prepare an Integrated Energy Policy Report (IEPR) for electricity, natural gas, and transportation fuels. The IEPR contains an analysis of the policies and actions that are necessary to ensure that the state has adequate energy resources—including a range of alternative energy resources—to meet its needs. The IEPR also includes recommendations to reduce energy demand and to improve the state's energy infrastructure.

Assembly Bill 1007

Assembly Bill 1007, (Pavley, Chapter 371, Statutes of 2005) required the CEC to prepare a State plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the State Alternatives Fuels Plan in partnership with the California Air Resources Board and in consultation with other State, federal, and local agencies.

The final State Alternatives Fuels Plan, published in December, 2007, would attempt to achieve an 80 percent reduction in greenhouse gas emissions associated with personal transportation, even as California's population increases. Measures proposed that would reduce petroleum fuel use include:

1. Lowering the energy needed for personal transportation by tripling the energy efficiency of on-road vehicles by 2050 through:
 - a. Conventional gas, diesel, and flexible fuel vehicles (FFVs) averaging more than 40 miles per gallon (mpg).
 - b. Hybrid gas, diesel, and FFVs averaging almost 60 mpg.
 - c. All electric and plug-in hybrid electric vehicles (PHEVs) averaging well over 100 mpg (on a greenhouse gas equivalents (GGE) basis) on the electricity cycle.
 - d. Fuel cell vehicles (FCVs) averaging over 80 mpg (on a GGE basis).
2. Moderating growth in per capita driving, reducing today's average per capita driving miles by about 5 percent or back to 1990 levels.
3. Changing the energy sources for transportation fuels from the current 96 percent petroleum-based to approximately:
 - a. 30 percent from gasoline and diesel from traditional petroleum sources or lower GHG emission fossil fuels such as natural gas.
 - b. 30 percent from transportation biofuels.
 - c. 40 percent from a mix of electricity and hydrogen.
4. Producing transportation biofuels, electricity, and hydrogen from renewable or very low carbon-emitting technologies that result in, on average, at least 80 percent lower life cycle GHG emissions than conventional fuels.
5. Encouraging more efficient land uses and greater use of mass transit, public transportation, and other means of moving goods and people.

Executive Order S-03-05

Executive Order S-03-05 mandates that California emit 80 percent fewer greenhouse gases in 2050 than it emitted in 1990. Energy efficiency and reduced VMT would play important roles in achieving this aggressive goal.

Executive Orders S-14-08 and S-21-09

Since 2006, California has had a mandate to increase the use of renewable generation to 20 percent of retail electricity sales by 2010 (refer to description of SB 1078 and SB 107, above). In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which raises California's renewable energy goals to 33 percent by 2020. This enhanced target is intended to help California meet statewide greenhouse gas emission reduction targets (refer to Section III.S). This has been reiterated by California Executive Order S-21-09 which charges CARB by July 31, 2010, to establish a regulation consistent with this 33 percent target by 2020. This is a further increase in RPS over SB 1078 and SB 107.

Local

San Francisco General Plan

The Environmental Protection Element¹⁰⁸⁰ of the General Plan includes a number of energy objectives and policies:

- Objective 13 Enhance the energy efficiency of housing in San Francisco.
 - Policy 13.4 Encourage the use of energy conserving appliances and lighting systems.
 - Policy 13.5 Emphasize energy conservation in local government housing assistance programs.
- Objective 14 Promote effective energy management practices to maintain the economic vitality of commerce and industry.
 - Policy 14.1 Increase the energy efficiency of existing commercial and industrial buildings through cost-effective energy management measures.
 - Policy 14.4 Promote commercial office building design appropriate for local climate conditions.
 - Policy 14.5 Encourage use of integrated energy systems.
- Objective 15 Increase the energy efficiency of transportation and encourage land use patterns and methods of transportation which use less energy.
 - Policy 15.1 Increase the use of transportation alternatives to the automobile.
- Objective 16 Promote the use of renewable energy sources.

¹⁰⁸⁰ City and County of San Francisco, Planning Department, *Environmental Protection Element of the General Plan*, adopted July 1997, updated in 2004.

- Policy 16.1 Develop land use policies that will encourage the use of renewable energy sources.
- Policy 16.2 Remove obstacles to energy conservation and renewable energy systems in zoning and building codes.
- Policy 16.3 Develop information resources to assist in the use of renewable energy.
- Policy 18.1 Promote government and private financing partnerships to carry out local energy programs.

The Air Quality Element of the General Plan¹⁰⁸¹ includes one objective pertaining to energy use:

- Objective 6 Link the positive effects of energy conservation and waste management to emission reductions.

The Housing Element of the General Plan¹⁰⁸² includes one objective pertaining to energy use:

- Policy 11.10 Include energy efficient features in new residential development and encourage weatherization in existing housing to reduce overall housing costs and the long-range cost of maintenance.

San Francisco Building Code, Green Building Ordinance

In August 2008, Mayor Gavin Newsom signed into law San Francisco's Green Building Ordinance (codified as Chapter 13C of the *San Francisco Building Code*) for newly constructed residential and commercial buildings and renovations to existing buildings. The ordinance specifically requires newly constructed commercial buildings over 5,000 gross square feet (gsf), residential buildings over 75 feet in height, and renovations of buildings over 25,000 gsf to be subject to Leadership in Energy and Environmental Design (LEED®) Gold (or an equivalent standard), which makes San Francisco the City with the most stringent green building requirements in the nation.¹⁰⁸³ Table III.R-6 (Summary of San Francisco Green Building Ordinance) illustrates the requirements of the Green Building Ordinance. LEED® is a voluntary, internationally recognized green building certification procedure developed by the US Green Building Council. It reflects that a building or community was designed and built using standards for energy saving, water efficiency, carbon dioxide emissions, improved environmental quality, and general stewardship of resources and sensitivity to their impacts.

Key sections of Chapter 13C pertaining to energy include Section 1304C.2.1.6, which requires enhanced building energy system commissioning for all mid-sized commercial buildings, and Section 1304C.2.1.7, which requires that permit applicants submit documentation to verify renewable on-site energy or purchase of green energy credits (effective January 2012).

¹⁰⁸¹ City and County of San Francisco, Planning Department, *Air Quality Element of the General Plan*, adopted July 1997, updated in 2000.

¹⁰⁸² City and County of San Francisco, *Housing Element of the General Plan*, adopted 2000, updated in 2004.

¹⁰⁸³ Although in meeting the green building standards project proponents are allowed to choose from a range of possible credit options, the Green Building Ordinance makes certain LEED® credits mandatory requirements. Refer to Section III.L (Hydrology and Water Quality) and Section III.S (Greenhouse Gas Emissions) for further detail regarding implementation of the Green Building Ordinance.

Table III.R-6 Summary of San Francisco Green Building Ordinance

	2008	2009	2010	2012 and Beyond
Commercial >5,000 gsf	LEED® Certified Rating ^a	LEED® Silver Rating	Same as for 2009	LEED® Gold Rating
Residential (4 units or less)	GreenPoint Rated: complete checklist	GreenPoint Rated: 25 points	GreenPoint Rated: 50 points	GreenPoint Rated: 75 points
Residential (5+ units less than 75 sf tall)	GreenPoint Rated: complete checklist	GreenPoint Rated: 25 points	GreenPoint Rated: 50 points	GreenPoint Rated: 75 points
Residential (5+units greater than 75 ft tall)	LEED® Certified Rating OR GreenPoint Rated: 50 points	Same as for 2008	LEED® Certified Rating or GreenPoint Rated: 50 points.	Same as for 2010

SOURCE: Chapter 13 of San Francisco Building Code, Ordinance No. 180-08, added Sept 4, 2008

a. The Green Building Ordinance requirements are based on the LEED® for Commercial Interiors v. 2.0 standards from June 2005, LEED® for Core and Shell v. 2.0 standards from July 2006, LEED® for New Construction v. 2.0 standards from July 2007, and GreenPoint Rated v. 2007 standards from March 2007. References to LEED® standards are from the LEED® for New Construction v. 2.0. Equivalent standards may be used in place of the cited standards if the same performance objectives are met.

GoSolarSF

In 2008, the San Francisco Public Utilities Commission (SFPUC) launched the “GoSolarSF” program to San Francisco’s businesses and residents, offering incentives in the form of a rebate program that could pay for approximately half the cost of installation of a solar power system, and more to those qualifying as low-income residents.

The Planning Department and Department of Building Inspection have also developed a streamlining process for Solar Photovoltaic Permits and priority permitting mechanisms for projects pursuing LEED® Gold Certification.

Other Policies

Citywide alternative transportation planning efforts adopted by the City include the *Better Streets Policy*,¹⁰⁸⁴ designed to improve streetscape policies throughout the City, the Transit Effectiveness Project,¹⁰⁸⁵ designed to improve transit service, and the *Bicycle Plan*,¹⁰⁸⁶ designed to increase bicycle accessibility throughout the City. The *Transit First Policy* (Section 16.102 of the *City Charter*) gives priority to public transit investments over other transportation investments; adopts street capacity and parking policies to discourage increased automobile traffic; and encourages the use of transit, bicycling, and walking rather than use of single-occupancy vehicles. San Francisco’s 2004 *Climate Action Plan* commits the City to reducing greenhouse gas emissions by 20 percent below 1990 levels by 2012, and outlines actions, including improving energy efficiency that the City can take to meet this goal. Finally, the City’s *Planning Code* reflects smart growth policies, such as requiring electric vehicle refueling stations in city parking garages, bicycle storage facilities for commercial and office buildings, and zoning that is supportive of high density mixed-use infill development.

¹⁰⁸⁴ City and County of San Francisco, *Better Streets Policy, Ordinance 33-06*, adopted by the San Francisco Board of Supervisors on February 6, 2006.

¹⁰⁸⁵ City and County of San Francisco, Municipal Transportation Agency, *Transit Effectiveness Project*, website: <http://www.sfmta.com/cms/mtep/teprec.htm>, accessed August 31, 2009.

¹⁰⁸⁶ City and County of San Francisco, Municipal Transportation Agency, *San Francisco Bicycle Plan*, website: <http://www.sfmta.com/cms/bproj/bikeplan.htm>, accessed August 31, 2009.

III.R.4 Impacts

■ Significance Criteria

The City and Agency have not formally adopted significance standards for impacts related to energy, but generally consider that implementation of the Project would have significant impacts if it were to:

- R.a Encourage activities that result in the use of large amounts of fuel or energy, or use such resources in a wasteful manner¹⁰⁸⁷

■ Analytic Method

To determine whether the Project would use large amounts of fuel or energy, this analysis provides a quantitative overview of the energy that would be expected to be consumed during the construction and operation of the Project. The analysis also weighs the Project's energy efficiency features when considering the Project's potential for wasteful energy consumption.

Data from the Climate Change Technical Report (Appendix S)¹⁰⁸⁸ was used to estimate the total energy use per residential unit for space heating and cooling, domestic hot water systems, lighting, and other energy-consuming components of a typical building envelope. The Applicant has made a preliminary commitment to making all new residential units 15 percent more energy efficient than required under the 2008 Title 24 standards as a project design feature by employing high performance glazing, efficient lighting, daylighting, natural ventilation, shading, envelope optimization, reflective roofs, insulation, radiant water heaters, design and installation of HVAC systems to ACCA Manual recommendations, building commissioning, and other energy efficiency measures. The Project energy use factors were adjusted to reflect the Project Applicant's commitment to reduce energy consumption below 2008 Title 24 standards and were used to estimate the energy that would be used by building envelopes, which are governed by Title 24. The energy consumption by non-residential uses (except for the proposed 49ers stadium) was estimated based on data from the Climate Change Technical Report (Appendix S).¹⁰⁸⁹

Title 24-regulated energy use (cooling, space heating, water heating, lighting, ventilation) and plug-in energy use (appliances, office equipment, plug-in cooking equipment, electronics, and other plug-in loads) are presented in separate tables. Plug-in energy demand is not governed under Title 24 standards. Plug-in energy use is largely beyond the control of the Project Applicant, as most plug-in equipment would be installed by future occupants rather than by the Applicant. However, the Project Applicant has made a preliminary commitment to install ENERGY STAR¹⁰⁹⁰ appliances in newly built residences (for builder-supplied appliances) as an energy-saving measure. Because it is not clear which appliances would

¹⁰⁸⁷ Appendix G of the CEQA Guidelines requires that an EIR include a discussion of the potential energy impacts of a project, with a particular emphasis on avoiding or reducing the inefficient, wasteful, and unnecessary consumption of energy. The criteria provided for this analysis adequately cites the requirements of CEQA.

¹⁰⁸⁸ Modified from the CEC's *Statewide Residential Appliance Saturation Survey, Volume 2, Study Results, Final Report, June, 2004*.

¹⁰⁸⁹ Modified from CEC, *California Commercial End-Use Survey*, website: <http://www.energy.ca.gov/ceus/>, accessed August 30, 2009.

¹⁰⁹⁰ The term ENERGY STAR is capitalized as is the convention used by the United States Environmental Protection Agency and Department of Energy.

be chosen, the decrease in plug-in electricity use associated with ENERGY STAR appliances cannot be quantified at this time. Plug-in energy use is discussed qualitatively.

The *San Francisco Climate Action Plan* contains an estimate of the existing stadium's energy use. The stadium's existing electricity use is 5,100 MWh per year, and natural gas use is 9,000 MBtu per year.¹⁰⁹¹ The new stadium would be more energy efficient than the old stadium, which was built in 1960. Based on estimates from other new football stadiums, the new stadium would use approximately 20 percent less electricity than the existing stadium.¹⁰⁹² Thus, the energy use projections presented in the analysis below include a 20 percent reduction for stadium energy use.

Projected petroleum fuel use associated with Project vehicle trips was estimated by multiplying the Project vehicle miles traveled (VMT) from the *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*¹⁰⁹³ by Caltrans average fuel efficiencies for San Francisco.¹⁰⁹⁴ The analysis considers the Project's transportation demand management (TDM) programs and programs designed to shift trips to other modes of transportation in the analysis of the Project's overall energy efficiency.

Additionally, the Project's potential contribution to cumulative energy impacts is evaluated.

■ Construction Impacts

Impact ME-1: Energy Use during Construction

Impact ME-1 **Construction activities associated with the Project would not result in the use of large amounts of energy, or use energy in a wasteful manner. (Less than Significant) [Criterion R.a]**

Construction activities associated with the Project would require the following sources of energy:

- Electricity, for operation of hand tools, air compressors, mobile project offices, and security lighting
- Diesel, for grading and construction equipment, delivery trucks, and earth hauling trucks
- Gasoline, to fuel construction worker commute vehicles

Although natural gas is sometimes used as a construction fuel to minimize localized air quality impacts, the construction activities for this Project would not exceed health standards, and thus, would not require substitution of natural gas fuels for standard diesel fuels. Air quality parameters would be met using a phased-in diesel exhaust retrofit program for construction equipment, described in the Project

¹⁰⁹¹ City and County of San Francisco, Department of the Environment and Public Utilities Commission, *Climate Action Plan for San Francisco*.

¹⁰⁹² The new stadium to be used by the New York Jets and Giants is expected to reduce energy consumption by 30 percent as compared to their old stadium. The new stadium to be used by the Dallas Cowboys is expected to reduce energy use by 20 percent as compared to their old stadium.

¹⁰⁹³ CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Bayview Waterfront Project Transportation Study*, 2009.

¹⁰⁹⁴ California Department of Transportation, *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009.

Health Risk Assessment (Appendix H1 [Ambient Air Quality and Human Health Risk Assessment]).¹⁰⁹⁵
All lifts would be either propane or electrically powered.

The construction activities for the Project would not be expected to result in demand for fuel greater than any other similarly sized project in the region. Although the Project would be large, it would be constructed over a period of approximately 29 years and demand for electricity and fuels would be spread out over this timeframe. The Project has been broken down into construction phases; each of these phases is comparable to similar projects in terms of: activity types, duration, land use, development area, and fuel consumption.

Given these considerations, the construction-related energy use associated with the Project would not be large or wasteful and is considered less than significant. No mitigation is required.

■ Operational Impacts

Impact ME-2: Electricity Use in Large Amounts or a Wasteful Manner

Impact ME-2 **Buildings constructed by the Project would not use large amounts of electricity in a wasteful manner. (Less than Significant with Mitigation) [Criterion R.a]**

Table III.R-7 (Project Electricity Demand from Plug-In Appliances [MWh]) presents the estimated Project electricity use for plug-in appliances. The Project would require approximately 59,616 MWh of electricity annually to supply plug-in appliances. Because plug-in electricity use depends on the appliances installed by future Project residents and employees, plug-in consumption would be difficult for the Project Applicant to influence. However, the Project Applicant's preliminary commitment to installing ENERGY STAR appliances into residential units for all builder-supplied appliances would result in a small decrease in plug-in energy use below the numbers shown.

Table III.R-8 (Project Electricity Demand from Building Envelopes [MWh]) presents the projected electricity demand of the Project associated with building envelope design. The projected demand incorporates energy savings associated with the Applicant's preliminary commitment to planning, designing, and constructing the Project to reduce energy use to 15 percent below 2008 Title 24 standards. As shown, the electricity demand associated with Project building envelopes would be approximately 34,974 MWh. A similarly sized project that would not include the electricity reduction below 2008 Title 24 standards would result in consumption of approximately 40,426 MWh of electricity use annually.¹⁰⁹⁶

¹⁰⁹⁵ ENVIRON, 2009. *Ambient Air Quality Human Health Risk Assessment: Candlestick Point-Hunters Point Shipyard Phase II Development Plan*. The Health Risk Assessment analysis assumes that 50 percent of the construction equipment used would be retrofitted with after-market filters in 2010 and 2011, 75 percent would be retrofitted in 2012, and 100 percent would be retrofitted in 2013. Section III.H (Air Quality) indicates that air emissions from construction equipment would result in a less than significant impact.

¹⁰⁹⁶ Electricity use for the stadium is not governed under Title 24, thus, reductions in electricity use associated with the stadium are factored into both the Title 24 and 15 percent reduction scenarios presented in Table III.R-8.

Table III.R-7 Project Electricity Demand from Plug-In Appliances (MWh)								
Type of Use	Energy Use Factor (MWh/gsf or unit) ^a	Candlestick Point		HPS Phase II		Project Site Total		Percent of Total by Land Use
		Development Program ^b	MWh Consumed Annually ^c	Development Program ^b	MWh Consumed Annually ^c	Development Program	MWh Consumed Annually	
Residential Units	1.7830 ^d	7,850	13,997	2,650	4,725	10,500	18,722	31%
Retail	0.0096	635,000	6,077	—	—	635,000	6,077	10%
Neighborhood Retail	0.0096	125,000	1,196	125,000	1,196	250,000	2,392	4%
Office	0.0093	150,000	1,388	—	—	150,000	1,388	2%
R&D	0.0093	—	—	2,500,000	23,125	2,500,000	23,125	39%
Hotel	0.0069	220	2	—	—	220	2	0%
Artist Studios/ Center	0.0093	—	—	255,000	2,359	255,000	2,359	4%
Community Space	0.0093	50,000	463	50,000	463	100,000	926	2%
Arena	0.0073	75,000	548	—	—	75,000	548	1%
Stadium ^e	N/A	—	—	1,860,000	4,080	1,860,000	4,080	7%
Total			23,671		35,948		59,619	100%
Percent of Total			40%		60%			

SOURCES:

Baseline Project natural gas demand was estimated based on land use and basic compliance with 2008 Title 24 standards.

- a. The electricity factors cited for non-residential uses are from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point-Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-16 (Appendix S to this EIR). The factors are in the "Non-Title 24" column. The factors were converted from kWh to MWh.
- b. Based on buildout floor areas provided in Table II-2 (Existing and Proposed Uses) of this EIR.
- c. Calculated by multiplying energy use factor by number of units or gsf.
- d. The electricity factor cited for residential units is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point-Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-8 (Appendix S to this EIR). The factor is in the "Plug-in" column and the "Minimally Title 24 Compliant (2008)" row. The factor was converted from kWh to MWh (1 MWh = 1,000 kWh).
- e. Electricity use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20 percent reduction in electricity use is anticipated with construction of the replacement stadium.

The combined annual electricity use of the Project, including both building envelope consumption and plug-in electricity use would be 94,590 MWh,¹⁰⁹⁷ not taking into account reductions associated with the use of ENERGY STAR appliances or green building measures beyond the Project Applicant's preliminary commitment to reduce energy use 15 percent below 2008 Title 24 standards.

The threshold for this impact considers whether the Project would result in a large increase in electricity consumption. The electricity use at the Project site, following implementation of energy efficiency measures, would represent approximately 1.8 percent of the City's total electricity consumption of 5,155 million kWh, and would result in approximately ten times the existing electricity use of 9,457 MWh at the Project site. This would be a large overall increase in consumption because much of the Project site is unoccupied and undeveloped; however, on a per-square-foot basis, the Project would result in 15 percent less electricity use than projects that comply with minimum Title 24 requirements only.

¹⁰⁹⁷ Plug-in energy use (59,616 MWh) + building envelope energy use (34,974 MWh) = 94,590.

Table III.R-8 Project Electricity Demand from Building Envelopes (MWh)

Type of Use	Electricity Use Factor, 2008 Title 24 Standards (MWh/gsf or unit) ^a	Candlestick Point			HPS Phase II			Project Site Total			Percent of Total Electricity by Land Use
		Development Program ^b	MWh Consumed Annually, 2008 Title 24 Standards ^c	MWh Consumed Annually, with 15% Reduction	Development Program ^b	MWh Consumed Annually, Title 24 Standards ^c	MWh Consumed Annually, with 15% Reduction	Development Program	MWh Consumed Annually, Title 24 Standards	MWh Consumed Annually, with 15% Reduction	
Residential Units	1.7350 ^d	7,850	13,620	11,577	2,650	4,598	3,908	10,500	18,218	15,485	45%
Retail	0.0027	635,000	1,715	1,457	—	0	0	635,000	1,715	1,457	4%
Neighborhood Retail	0.0027	125,000	338	287	125,000	338	287	250,000	676	574	2%
Office	0.0052	150,000	780	663	—	0	0	150,000	780	663	2%
R&D	0.0052	—	0	0	2,500,000	13,000	11,050	2,500,000	13,000	11,050	32%
Hotel	0.0027	220	1	1	—	0	0	220	1	1	0%
Artist Studios/ Center	0.0052	—	0	0	255,000	1,326	1,127	255,000	1,326	1,127	3%
Community Space	0.0052	50,000	260	221	50,000	260	221	100,000	520	442	1%
Arena	0.0015	75,000	113	96	—	0	0	75,000	113	96	0%
Stadium ^e	N/A	—	0	0	1,860,000	4,080	4,080	1,860,000	4,080	4,080	10%
Total			16,827	14,302		23,602	20,673		40,429	34,975	100%

SOURCES:

Project electricity demand was estimated based on the Applicant's commitment to achieve 15 percent energy reductions below Title 24 standards and use ENERGY STAR appliances in all residential units.

- a. The energy use factor cited for residential units is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-8 (Appendix S to this EIR). The factor was derived by subtracting the "Plug-in" factor from the "Electricity Delivered, Total" column (in the "15% Better than Title 24 2008 and ENERGY STAR Appliances" row). The factor was converted from kWh to MWh (1 MWh = 1,000 kWh).
- b. Based on buildout floor areas provided in Table II-2 (Existing and Proposed Uses) of this EIR.
- c. Calculated by multiplying energy use factor by number of units or gsf.
- d. The electricity factors cited for non-residential uses are from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-16 (Appendix S to this EIR). The factors are in the "Non-Title 24" column. The factors were converted from kWh to MWh.
- e. Electricity use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20 percent reduction in electricity use is anticipated with construction of the replacement stadium.

In addition, the Project would be required to comply with the City's Green Building Ordinance. The Green Building Ordinance requires newly constructed commercial buildings over 5,000 gsf, residential buildings over 75 feet in height, and renovations on buildings over 25,000 gsf to meet LEED® or other green building standards. Individual buildings would incorporate various green building specifications to meet the Green Building Ordinance and, in some cases, seek LEED® certification, or an equivalent certification for these buildings. While specific green building measure cannot be identified until building designs have been completed, examples of measures that could be implemented by the Project in compliance with the Green Building Ordinance include high performance glazing, shading, envelope optimization, reflective roofs, and natural ventilation (reducing energy use for heating and cooling), natural and energy efficiency lighting (reducing energy for artificial lighting), reduced water consumption (reducing energy use associated with the conveyance of water and wastewater), and energy commissioning, a process that requires verification, monitoring, and regular maintenance of energy systems to achieve peak performance.

The Project Applicant has also made a preliminary commitment to voluntarily implement LEED® for Neighborhood Development (LEED® ND) standards based on the Pilot Version of the rating system released in June 2007.¹⁰⁹⁸ While most LEED® standards apply to individual structures, the new LEED® ND standards apply principles of smart growth, urbanism, and green building into a certification system for overall neighborhood design. LEED® ND was designed through collaboration between the USGBC, the Congress for the New Urbanism, and the Natural Resources Defense Council and would provide independent, third-party verification that the development's location and design meet accepted high levels of environmentally responsible, sustainable development. A preliminary analysis indicates the Project could achieve approximately 63 LEED® ND credits, which would make the Project eligible for Gold certification under LEED® ND 2007.^{1099,1100} Points would be achieved through strategies including, but not limited to, the following:

- Compact, infill development (including 90 percent of the new buildings fronting on public streets or open space)
- Enhanced habitat values
- Brownfield remediation and urban reuse
- Close proximity to transit and bicycle networks (75 percent of all development would be within ¼ mile walk to a transit stops, and Class I, II, and III bikeways would provide connections throughout the site and to the greater Bayview community)
- Urban design that promotes walking and discourages driving
- Diversity of land uses and housing types
- Affordable housing that supports a community of mixed ages and income

¹⁰⁹⁸ Since the initial release of the ND standard, the rating system has undergone two public comment periods, and several credit requirements have changed. The LEED® ND rating system is currently being finalized for formal release by the USGBC.

¹⁰⁹⁹ These numbers are preliminary estimates by ARUP, 2009. The Project Applicant has not yet committed to seeking certification under the modified standards.

¹¹⁰⁰ LEED® certification is obtained by demonstrating compliance with a number of design and construction credits. For example, a project that receives 60 to 79 credits receives Gold certification. The Applicant would design and develop buildings to comply with the Green Building Ordinance, and, meet LEED® or equivalent requirements; however, the Applicant may choose not to seek and obtain LEED® certification for every building developed.

- Community participation in community planning and design
- ENERGY STAR compliance to be documented by a Home Energy Rating System (HERS)
- Drought tolerant plant species and the use of efficient irrigation systems such as drip irrigation, moisture sensors, and weather data-based controllers
- Tree-lined streets throughout the development and streetscape improvements extending from the Project Site to Third Avenue along Gilman and Palou
- Access to public space and recreational amenities through the creation of parks and playfields
- Efficient use of water and the potential use of recycled water for non-potable water uses such as irrigation, toilets, vehicle washing
- Stormwater management practices that would retain and treat stormwater on site and/or in adjacent areas

Although additional energy savings associated with implementation of the City's Green Building Ordinance and the LEED[®] ND standards cannot be modeled until designs have been completed, these measures could further decrease the energy consumption presented in Table III.R-8.

To reduce peak demand on existing electricity infrastructure and to further State and local renewable energy policies, the Applicant would implement renewable energy strategies, such as the use of photovoltaic cells to provide electricity; the use of solar thermal energy to provide space cooling with the use of absorption systems; and/or water for space heating and domestic water systems. The specifics of the Project's renewable energy programs have not yet been developed.

Taking the Project's compliance with the Green Building Ordinance and its voluntary implementation of energy-saving design features into consideration, as well as the level of development proposed, the electricity increase associated with the Project would not be considered large.

The City's threshold also considers whether the Project's energy consumption would be wasteful. The efficiency measures proposed under the Project would result in building envelope consumption of at least 15 percent less electricity than a project that would not implement such measures. Further electricity savings would be anticipated as a result of the Project's compliance with the Green Building Ordinance, installation of ENERGY STAR appliances, and the Project's voluntary implementation of LEED[®] ND standards. However, because the Project Applicant's commitment to implement energy reductions and voluntary green building practices (beyond the measures required in the City's Green Building Ordinance) is preliminary and not based on actual building designs, mitigation is necessary to reduce potential electricity use impacts to a less-than-significant level. Mitigation measure MM GC-2, which requires the Project Applicant to exceed the 2008 Title 24 energy efficiency standards for homes and businesses by at least 15 percent, mitigation measure MM GC-3, which would require installation of ENERGY STAR appliances for builder-supplied appliances, and mitigation measure MM GC-4, which would require installation of energy efficient lighting, would reduce electricity consumption impacts to less than significant.

Impact ME-3: Natural Gas Use in Large Amounts or a Wasteful Manner

Impact ME-3 Buildings constructed by the Project would not use large amounts of natural gas in a wasteful manner. (Less than Significant with Mitigation) [Criterion R.a]

Table III.R-9 (Project Natural Gas Demand, Baseline [MBtu]) presents the annual natural gas use for the Project, estimate based on land use and minimal compliance with Title 24 standards as well as the Project Applicant's preliminary commitment to reduce energy use to 15 percent below Title 24 standards. The natural gas demand associated with the Project would be approximately 63,263 MBtu, in comparison to a similarly sized project that would not include the 15 percent reduction below 2008 Title 24 standards and which would result in consumption of approximately 73,156 MBtu of natural gas use annually.¹¹⁰¹

The natural gas use at the Project site would represent less than 1 percent of the City's overall natural gas consumption of 28,918,000 million Btus, and overall natural gas demand would be over four times higher than under existing conditions, largely attributable to R&D uses at HPS Phase II. Natural gas use would be roughly three and a half times higher at HPS Phase II than at Candlestick Point due to peak daytime demand from R&D uses. However, on a per-square-foot basis, the Project would result in 15 percent less electricity use than projects that comply with minimum Title 24 requirements only.

As described under Impact ME-2, the Project would be required to comply with the City's Green Building Ordinance and has voluntarily committed to constructing the Project to the LEED® ND Gold standard based on the Pilot Version of the rating system released in June 2007.¹¹⁰² Although energy savings associated with these programs could vary based on the credits chosen and, therefore, cannot be accurately quantified, additional energy savings, beyond those shown in Table III.R-9, are anticipated.¹¹⁰³

However, because the Project Applicant's commitment to implement energy reductions and voluntary green building practices (beyond the measures required in the City's Green Building Ordinance) is preliminary and not based on actual building designs, mitigation is necessary to reduce potential electricity use impacts to a less-than-significant level. Mitigation measure MM GC-2, which requires the Project Applicant to exceed the 2008 Title 24 energy efficiency standards for homes and businesses by at least 15 percent, and mitigation measure MM GC-3, which would require installation of ENERGY STAR appliances for builder-supplied appliances, would reduce natural gas consumption impacts to less than significant.

¹¹⁰¹ Electricity use for the stadium is not governed under Title 24, thus, reductions in electricity use associated with the stadium are factored into both the Title 24 and 15 percent reduction scenarios presented in Table III.R-8.

¹¹⁰² Since the initial release of this standard, the rating system has undergone two public comment periods, and several credit requirements have changed. The LEED® ND rating system is currently being finalized for formal release by the USGBC.

¹¹⁰³ LEED® certification is obtained by demonstrating compliance with a number of design and construction credits. For example, a project that receives 60 to 79 credits receives Gold certification. The Applicant would design and develop buildings to comply with the S.F. Green Building Ordinance, and, meet LEED or equivalent requirements; however, the Applicant may choose not to seek and obtain LEED certification for every building developed.

Table III.R-9 Project Natural Gas Demand, Baseline (MBtu)											
Type of Use	Natural Gas Use Factor, 2008 Title 24 Standards (MWh/gsf or unit)^a	Candlestick Point			HPS Phase II			Project Site Total			
		Development Program^b	MBtu Consumed Annually, 2008 Title 24 Standards^c	MBtu Consumed Annually, with 15% Reduction	Development Program^b	MBtu Consumed Annually, 2008 Title 24 Standards^c	MBtu Consumed Annually, with 15% Reduction	Development Program	MBtu Consumed Annually, 2008 Title 24 Standards^c	MBtu Consumed Annually, with 15% Reduction	Percent of Total by Land Use
Residential Units	0.0360 ^d	7,850	283	240	2,650	95	81	10,500	378	321	1%
Retail	0.0048	635,000	3,048	2,591	—	—	—	635,000	3,048	2,591	4%
Neighborhood Retail	0.0048	125,000	600	510	125,000	600	510	250,000	1,200	1,020	2%
Office	0.0200	150,000	3,000	2,550	—	—	—	150,000	3,000	2,550	4%
R&D	0.0200	—	—	—	2,500,000	50,000	42,500	2,500,000	50,000	42,500	68%
Hotel	0.0345	220	8	6	—	—	—	220	8	6	0%
Artist Studios/ Center	0.0200	—	—	—	225,000	4,500	3,825	225,000	4,500	3,825	7%
Community Space	0.0200	50,000	1,000	850	50,000	1,000	850	100,000	2,000	1,700	3%
Arena	0.0243	75,000	1,823	1,549	—	—	—	75,000	1,823	1,549	2%
Stadium ^e	N/A	—	—	—	1,860,000	7,200	7,200	1,860,000	7,200	7,200	10%
Total			9,762	8,296		63,395	54,966		73,157	63,262	100%
Percent of Total			13%			87%			100%		

SOURCES:

Baseline Project natural gas demand was estimated based on land use and basic compliance with 2008 Title 24 standards.

- a. The natural gas factors cited for non-residential uses are from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-16 (Appendix S to this EIR). The factors are in the "Overall Based on 2008 Title 24" column. The factors were converted from kBtu to MBtu.
- b. Based on buildout floor areas provided in Table II-2 (Existing and Proposed Uses) of this EIR.
- c. Calculated by multiplying energy use factor by number of units or gsf.
- d. The natural gas factor cited for residential units is from: ENVIRON International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009, Table 3-8 (Appendix S to this EIR). The factor is in the "Natural Gas Delivered, Total" column and the "Minimally Title 24 Compliant (2008)" row. The factor was converted from kBtu to MBtu (1 MBtu = 1,000 kBtu).
- e. Natural gas use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20 percent reduction in natural gas use is anticipated with construction of the replacement stadium.

Impact ME-4: Vehicle-Trip Energy Use in Large Amounts or a Wasteful Manner

Impact ME-4 Vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner. (Less than Significant with Mitigation) [Criterion R.a]

The Project would increase trips to and from the Project site, increasing the use of petroleum fuels. Based on average fuel efficiencies for the City of San Francisco and the Project VMT (reported in the *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*), the Project would result in a demand for 14.01 million gallons of gasoline and 0.93 million gallons of diesel annually (refer to Table III.R-11 [Project Petroleum Demand]).

Table III.R-11 Project Petroleum Demand					
	<i>Project Annual VMT (million miles travelled)^a</i>	<i>Average Countywide Vehicle Fuel Efficiency (2030)^b</i>	<i>Project Total Fuel Consumption (million gallons)</i>	<i>Project Gasoline Consumption (million gallons)^c</i>	<i>Project Diesel Consumption (million gallons)^c</i>
Candlestick Point	223.67	21.15	10.58	9.92	0.66
Hunters Point Shipyard	92.36	21.15	4.37	4.09	0.27
Total	316.03		14.95	14.01	0.93

SOURCES:

- a. Annual VMT was calculated by PBS&J based on trip generation information and average trip lengths reported in: CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.
- b. Equals the projected 2030 VMT (3,495 million miles travelled) divided by the projected total transportation fuel consumed (171.27 million gallons) for San Francisco County, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009. This factor does not take into account recently adopted fuel efficiency standards.
- c. On average 94 percent of the transportation fuels consumed in San Francisco were gasoline fuels, while 6 percent were diesel fuels, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: <http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf>, accessed August 20, 2009.

The use of fuels resulting from Project-related travel to and from the Project site would be five times higher than under existing conditions, a large increase in consumption. However, this consumption would not be wasteful because (1) the Project proposes to minimize transportation-related fuel use by implementing a number of transit, bicycle, and pedestrian improvements that would encourage alternative travel modes; (2) the Project would include a transportation demand management (TDM) program designed to reduce the remaining vehicle trips; and (3) the Project would result in dense development within an urbanized area with a mixture of neighborhood-serving uses, which would reduce the total number of trips to and from the site, as well as overall trip lengths. Project design features and programs that would increase the efficiency of transportation activities associated with the Project are described in Section III.D (Transportation and Circulation) and summarized below.

Transit Improvements: The Project proposes to implement the following transit improvements (described in Section III.D):

- Extended existing Muni Service and increased frequency
- Harney/Geneva BRT/Transit Preferential Street

- Hunters Point Transit Center
- Bus Rapid Transit Stops
- Palou Avenue Transit Preferential Street

Bicycle Network Improvements: Currently, the Project site has little in the way of existing bicycle amenities and trail connections. The Project would include the construction of the Bay Trail throughout the Project site, including connections to the existing and new parks from the western boundary of Candlestick Point near the Harney Way/US-101 interchange, through the Candlestick Point State Recreation Area (CPSRA), Yosemite Slough, and HPS Phase II shoreline to India Basin. The Bay Trail would be incorporated into the Yosemite Slough bridge, which would serve bus transit and pedestrian and bicycle routes between Candlestick Point and HPS Phase II. Bikeways would provide connections within the Project site and to the surrounding neighborhoods and other parts of the City. Bicycle lanes would be provided along major roadways, consistent with City guidelines, and it is anticipated that as the street network develops, the bicycle facilities would be incorporated into the City's official bicycle route network. There would be bicycle parking in each commercial parking facility and residential garages. New commercial buildings with at least 20,000 gsf of floor area, as well as other facilities and attractions would provide locker and shower facilities.

Pedestrian Network Improvements: The Project proposes to enhance the pedestrian network at the Project site. The pedestrian network would encourage walking as a primary mode of transportation at the Project site. Pedestrian facilities, including sidewalk and multi-use pathways, would allow access to transit facilities and to shopping, schools, and recreation. The interior roadway network would include traffic calming features to facilitate safe pedestrian travel. The streets would be designed to accommodate multi-modal travel with features including curb extensions, intersection bulb-outs, raised crosswalks, comprehensive signage, street trees, narrow roadway lanes, and short blocks and other features to slow auto traffic. All pedestrian facilities would meet ADA standards.

Transportation Demand Management (TDM) Programs: The Project TDM programs would be designed to reduce use of single-occupant vehicles and to increase the use of rideshare, transit, bicycle and walk modes for trips to and from, as well as within the Project. In addition, the TDM plan would include measures to reduce the demand for travel during peak times. The TDM plan would include the following strategies (described in Section III.D):

- Transportation Coordinator and Website
- Employee TDM Programs
- Carpool/Vanpools
- Carshare Services
- Transit Passes
- Outreach
- Unbundled Residential Parking
- Parking Fees
- Dedicated Bicycle and Bus Lanes

Finally, the Project would be an infill project within a developed urban area that would provide access to employment, retail, and recreational opportunities. The VMT for the Project anticipates shorter and fewer trips as a result of the proposed density and mixed uses at the Project site.

As a result of these Project features and programs, between 28 and 34 percent of the weekday AM and PM peak hour person trips would be internal pedestrian trips within the Project site, according to the Transportation Study (Appendix D).¹¹⁰⁴ Of the remaining external trips, 21 percent would be conducted via transit and 3 percent would be conducted via bicycle.¹¹⁰⁵ The shift to non-vehicular modes of travel would result in savings in transportation fuels. Over time, implementation of the State Alternatives Fuels Plan (see Regulatory Framework) is expected to increase the efficiency of vehicle trips, result in the development of alternative fuels, and shift trips to non-vehicular modes of travel. Project programs, in combination with local and State policies, would minimize vehicular fuel use.

In summary, the programs proposed under the Project for minimization of trips, as well as the Project's density, mix of uses, and overall physical layout, would result in efficiency in the total amount of fuel consumed by shortening trip lengths and shifting trips from vehicular modes of travel. However, in an abundance of caution and because Project site plans are in a preliminary state, mitigation measures MM TR-1 through MM TR-5, requiring implementation of specified circulation improvements that would minimize VMT, are applied to the Project. Following implementation of these mitigation measures, impacts would be considered less than significant.

■ Cumulative Impacts

The geographic context for evaluation of cumulative energy impacts is the Bayview Hunters Point neighborhood. The past and present development is described in the Setting section of this chapter, representing the baseline conditions for evaluation of cumulative impacts. Reasonably foreseeable future development includes Executive Park, Jamestown, Hunters Point Shipyard Phase I, Hunters View, and India Basin Shoreline. These areas contain a mixture of land uses, including residential, commercial, and industrial uses. The past and present development in these areas is described in Section III.B. Reasonably foreseeable future development forecasts are based on projections of future growth and take into account projects going through the entitlement process.

All development anticipated under the cumulative scenario, including the Project, would be expected to comply with the energy efficiency standards in Title 24, and, for those projects exceeding certain size thresholds, the City's Green Building Ordinance. In accordance with these requirements, all proposed developments would use site and building design strategies similar to those employed by the Project to discourage wasteful energy consumption. While it is not certain that other developments would commit to the 15 percent reduction in energy consumption (below Title 24 standards) that is proposed under the Project, the cumulative demand for electricity and natural gas would be reduced through implementation of the City's *Building Code* policies and incentives. Electricity and natural gas consumption would therefore be less than significant.

¹¹⁰⁴ CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.

¹¹⁰⁵ CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.

Petroleum consumption associated with the new development identified above would be primarily attributable to transportation, especially private automobile use. However, the cumulative study area is an urban area, with a range of alternative transportation options. As development in the cumulative study area occurs, the development pattern over time, allowing greater walkability. Increased population density and mixed-use development would allow residents to work, shop, and live within a small area, reducing average trip lengths, which would in turn result in lower consumption of fuels. Pedestrian and bicycle amenities would be enhanced in the cumulative study area as a result of City programs, contributing to a reduction in vehicular travel. These considerations would reduce wasteful petroleum consumption associated with unnecessary automobile trips and long commutes. State fuel efficiency standards and alternative fuels policies contained in the State Alternatives Fuels Plan (see Regulatory Framework) would also contribute to a reduction in fuel use.

For all of these reasons, the cumulative construction and operational impact with regard to the consumption of energy resources would be less than significant.

