4.6 Energy Conservation

This section addresses the potential energy conservation-related impacts that could result from implementation of the Project and alternatives. Discussed are the environmental and regulatory setting, the analytical baseline, the criteria used for determining the significance of any change in the environment that would be caused by the Project or alternatives, and potential impacts associated with the activities proposed in the Project Area.

4.6.1 Setting

4.6.1.1 Regional and Local Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.6.1 provides setting information specific to energy conservation.

Energy Production and Distribution in California

California's energy system includes electricity, natural gas, hydroelectric, nuclear, petroleum, and renewable resources. California's energy system provides 69.0 percent of the electricity, 13.0 percent of the natural gas, and 38.11 percent of the petroleum consumed in or used for the state. The rest of the state's energy is imported and includes: electricity from the Pacific Northwest (7 percent, primarily hydroelectric) and the Southwest (24 percent, primarily coal and nuclear); natural gas purchases from Canada (19 percent), the Rocky Mountain States (22 percent), and the Southwest (46 percent); and crude oil imported from Alaska (14.23 percent) and foreign sources (47.66 percent) (CEC, 2011).

The production of electricity requires the consumption or conversion of energy resources including water, wind, oil, gas, coal, solar, geothermal, and nuclear sources. Of the electricity generated in-state, 53.4 percent is generated by natural gas-fired power plants, 1.7 percent is generated by coal-fired power plants, 14.6 percent comes from large hydroelectric dams, and 15.7 percent comes from nuclear power plants. The remaining in-state total electricity production is supplied by renewable sources (CEC, 2010a).

On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order # S-14-08, which raised California's renewable energy goals to 33 percent by 2020 and improved processes for licensing renewable projects. The Executive Order is intended to advance California's transition into a clean energy economy and directs state agencies to create comprehensive plans to prioritize regional renewable projects based on an area's renewable resource potential and the level of protection for plant and animal habitat. To implement and track the progress of the Executive Order, the CEC and California Department of Fish and Game signed a Memorandum of Understanding formalizing a Renewable Energy Action Team which will concurrently review permit applications filed at the state level to streamline the application process for renewable energy development. Recently, on April 12, 2011 Governor Brown, signed SBX1-2 which puts S-14-08 in to the state code and established the 33 percent renewable portfolio as the state target by December 31, 2020. Currently California receives 14.6 percent of its electricity from renewable sources including

small hydroelectric generation (2.2 percent), biomass (2.8 percent), geothermal (6.2 percent), solar (0.4 percent) and wind (3.0 percent) (CEC, 2010a).

The electricity generated and used in California is distributed via a network of transmission and distribution lines commonly called the power grid.

Local Energy Production and Distribution

Electricity is provided to the Project Area by the Pacific Gas and Electric Company (PG&E). PG&E provides service to approximately 13 million people throughout a 70,000 square mile service area in Northern and Central California. PG&E's service area extends from Eureka to Bakersfield (north to south), and from the Sierra Nevada to the Pacific Ocean (east to west). PG&E produces and purchases energy from a mix of conventional and renewable generating sources, which travel through their electric transmission and distribution systems to reach customers. **Table 4.6-1** shows the electric power mix that PG&E delivered to its retail customers in 2010.

TABLE 4.6-1
PG&E'S 2010 ELECTRIC POWER MIX DELIVERED TO RETAIL CUSTOMERS

Power Source	Percent of Total Power Mix Delivered
Nuclear	23.8%
Natural Gas	19.6%
Large Hydroelectric	15.6%
Coal	1.0%
Other Fossil Fuels	1.2%
Unspecified Sources	22.9%
Eligible Renewables	15.9%
Geothermal	30.5%
Biomass and Waste	26.6%
Wind	24.0%
Small Hydroelectric	18.3%
Solar	0.5%

SOURCE: PG&E. 2011.

Within the Project Area, electricity is used for the Quarry pit dewatering system, which operates an average of 24 hours per day, 7 days per week, 40 weeks per year (ALG, 2011, Table A-17); for Quarry office uses; for crushers, conveyors, and screens; and for other uses. The total baseline annual electrical power use in the Project Area is 1,871,323 kilowatt hours (kWh) (ALG, 2011, Table A-17). No natural gas is used in the Project Area; however, fossil fuels (i.e., diesel and gasoline) are.

Based on the fuel purchase records for 2000-2010 (ALG, 2011, Table A-10), approximately 822,554 gallons of diesel per year are used in the Project Area. Diesel is used to power portable welders, off-road equipment (e.g., bore/drill rigs, crawler-tractors, excavators, graders, off-highway trucks, rubber-tired dozers, rubber-tired loaders, water trucks, and portable light towers),

on-road on-site vehicles (e.g., work trucks), and on-road off-site vehicles (e.g., fuel transport trucks and employee commute vehicles). Also based on fuel purchase records for 2000-2010, approximately 12,615 gallons of gasoline per year are used in the Project Area (ALG, 2011). Gasoline is used in the Project Area to power portable welders and passenger vehicles.

4.6.1.2 Regulatory Setting

Federal Regulations

Energy Policy and Conservation Act

The Energy Policy Act of 1975 was established in response to the oil crisis of 1973, which increased oil prices due to a shortage of reserves. The Act required that all vehicles sold in the U.S. to meet certain fuel economy goals. Since 1990, the fuel economy standard for new passenger cars has been 27.5 miles per gallon. Since 1996, the fuel economy standard for new light trucks (gross vehicle weight of 8,500 pounds or less) has been 20.7 miles per gallon. Heavy-duty vehicles (i.e., vehicles and trucks over 8,500 pounds gross vehicle weight) are not subject to fuel economy standards. This Act indirectly applies to the Project due to its requirements for increased fuel economy standards particularly for the construction equipment to be used.

Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can attain federal tax credits for purchasing fuel-efficient appliances and products, buying hybrid vehicles, building energy efficient buildings, and improving the energy efficiency of residential and commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

State of California

State of California Integrated Energy Policy

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan biannually for electricity, natural gas, and transportation fuels, for the California Energy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicle miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the latest update – the *2010 Update to the Integrated Energy Policy Report* - on January 12, 2011 (CEC, 2011). The update focuses on the potential contribution of American Recovery and Reinvestment Act of 2009 (ARRA) funding to California's transition to a clean energy economy. The *2009 Integrated Energy Policy Report* focuses on: anticipated operational

and physical changes to California's electric system through 2020; how the State's energy efficiency goals interact with electrical and natural gas demand forecasting methods; recommended changes to electricity procurement; vulnerability of the State's nuclear plants to major seismic events; and other energy issues.

County of Santa Clara

General Plan

The County General Plan contains goals, strategies and policies for the County as a whole, as well as rural unincorporated areas outside of cities and remaining unincorporated areas (called pockets and islands) within cities' urban service areas (County of Santa Clara, 2011). The policies relating to energy resources are summarized as follows:

> ***C-RC 77*:** Energy efficiency and conservation efforts in the transportation, industrial, commercial, residential, agricultural and public sectors shall be encouraged at the local, county (sub-regional), and regional level.
>
> ***C-RC 77*:** The objectives of the state energy plan should be implemented at the local and regional level through an overall strategy consisting of:
>
> a) reducing transportation energy demand and oil-dependency;
>
> b) conserving energy in residential, commercial, agricultural, and industrial sectors; and
>
> c) increasing consumer and general public awareness through education.
>
> ***C-RC 77*:** Energy use and fossil fuel dependency in the transportation sector should be reduced by the following general means:
>
> a) growth management policies and implementation to minimize increases in the extent of the urbanized area and to promote balanced, compact urban development;
>
> b) land use and development standards which support alternative transportation modes;
>
> c) travel demand management, TDM, and transportation system operational efficiency;
>
> d) expanded transit service; and
>
> e) increased availability and use of alternative fuels.
>
> ***C-RC 83*:** Industrial processes should be modified wherever feasible to take advantage of energy savings, to reduce operational costs, and to enhance competitiveness.

Implementation of the Project would be consistent with the policies identified above: It would not discourage energy efficiency and conservation efforts in the industrial or commercial sectors and would have no impact on other sectors. Project implementation would obstruct implementation of state energy plan objectives at the local and regional level. The potential for the Project to induce growth is analyzed in Section 4.14, *Population and Housing*. Transportation and traffic impacts of the Project are analyzed in Section 4.17, *Transportation and Traffic*. Energy conservation aspects of the Project are discussed below.

4.6.2 Baseline

PG&E provided electrical service to the site and the Project Area in June 2007 and continues to do so. With regard to energy use, the Project involves an existing quarry operation. Such operations are characterized by fluctuating production in response to continually changing market demands and changing weather conditions in accordance with the seasons, which would affect how much water is available in the Quarry pit for pumping and use within the Project Area. Energy demand data that considers only conditions existing in June 2007 (or any other specific point in time) may substantially over- or under-represent typical conditions. Accordingly, baseline energy use for this assessment is based on an average over the 11-year period from January 1, 2000 to December 31, 2010, which includes periods of relatively high production and precipitation as well as relatively low production and precipitation at the Quarry. Existing electricity, diesel, and gasoline demand are described in Section 4.6.1 based on averaged energy demands reported by Ashworth Leininger Group (2011).

4.6.3 Significance Criteria

Appendix F of the CEQA Guidelines provides guidance for assessing energy conservation-related impacts of projects. The goal of this guidance is to conserve energy by:

1. decreasing overall per capita energy consumption;
2. decreasing reliance on natural gas and oil; and
3. increasing reliance on renewable energy sources.

Under CEQA, it is appropriate to evaluate the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy. Accordingly, the Project would cause a significant impact to energy resources if it would:

a) Fail to include means for avoiding or reducing wasteful and/or unnecessary consumption of energy; or

b) Not comply with existing energy standards, including standards for energy conservation.

4.6.4 Discussion of Criteria with No Energy Conservation Impacts

The Project does not have the potential to cause a significant impact related to criterion b).

b) The Project would comply with existing energy standards, including standards for energy conservation.

The Project would meet applicable state and federal energy policies or standards. The Project also would comply with the Energy Conservation Policies established in the Resource Conservation Chapter of the County General Plan (see policies in Section 4.6.1.3). To reclaim the Project Area energy-consumptive equipment must be used; however, the Applicant has incorporated elements into the Project that would reduce the energy intensiveness of the reclamation process. For example, a conveyor would be used to move overburden from the WMSA into the Quarry pit to

be used as backfill. Use of a conveyor for this purpose, rather than haul trucks, would reduce the Project's use of fossil fuels and make use of cleaner, renewable energy sources as part of the electricity mix provided by PG&E. The applicant proposes to complete the reclamation plan using only the vehicles currently at the Quarry, therefore, no additional vehicles will be introduced but onsite energy consumption will be minimized by the use of electric conveyors. Therefore, the Project would comply with existing energy standards, including, but not limited to, the General Plan standards and policies that call for energy conservation efforts in the industrial sector, reduction in transportation energy demand and oil-dependency, and modification of industrial processes to take advantage of energy savings and to reduce operational costs. Consequently, the Project would cause no impact related to criterion b).

4.6.5 Impacts and Mitigation Measures

a) Would the Project fail to include means for avoiding or reducing wasteful and/or unnecessary consumption of energy?

Impact 4.6-1: The Project would include means for avoiding or reducing wasteful and/or unnecessary consumption of energy. ***(Less than Significant Impact)***

Electrical Power Use

Project related electrical power use would be the same for reclamation Phase 1 as it is under existing conditions, i.e., 1,871,323 kilowatt hours (kWh) per year (ALG, 2011, Table C-25).

During reclamation Phase 2, use of the proposed overland conveyor system to transport materials from the WMSA to the Quarry pit would increase the electrical demand within the Project Area, because it would operate 24 hours/day, 6 days/week, 50 weeks/year (7,200 hours/year) and be powered by electric motors. This increased electrical demand would be partially offset because the Quarry dewatering system no longer would be in use during Phase 2. The Project would require a total of approximately 26,853,093 kWh per year during this timeframe, representing an increase in electrical demand of an average of 24,981,770 kWh per year relative to existing conditions (ALG, 2011, Table C-25). The increased power needs would be served by a mix of energy sources, including renewable sources (see Table 4.6-1, *PG&E's Electric Power Mix Delivered to Customers*), which would conserve energy resources and reduce the fossil fuel resource depletion created by the use of trucks (U.S. EPA, 2011).

Diesel Fuel Use

Project-related diesel throughputs have been estimated for the proposed Project by Ashworth Leininger Group based on scheduling information and equipment specifications provided by the Applicant. As reported in Table C-19 of their report (ALG, 2011), reclamation Phase 1 would involve the use of 2,327,866 gallons of diesel per year, resulting in an approximately 183 percent increase in the average annual demand for diesel relative to existing conditions. Reclamation Phase 2 would require 540,188 gallons of diesel per year, resulting in an approximately 34 percent decrease in the average annual demand relative to existing conditions (ALG, 2011, Table C-19).

Gasoline Fuel Use

Project-related gasoline throughputs were estimated based on estimated in-plant vehicle use, mileage accruals, and fuel economy for the Project phases. Reclamation Phase 1 would result in the use of 7,933 gallons of gas per year (a reduction of approximately 37 percent relative to existing conditions) and Phase 2 would result in the use of 6,533 gallons per year (an approximately 48 percent reduction relative to existing conditions) (ALG, 2011, Table C-19).

At the conclusion of reclamation Phase 3, all conveyor systems (existing and new) and other energy-consumptive uses would be decommissioned, dismantled, and removed from the Project Area. No further energy demand would be generated in the Project Area.

Although energy consumption is necessary to complete the Project, the Project includes a means for avoiding or reducing wasteful and/or unnecessary consumption of fossil fuels by avoiding unnecessary reliance on fossil fuels to operate diesel-powered vehicles and instead installing a conveyor system that can be powered in part with energy generated by renewable sources. Based on the resulting energy efficiency, the Project would cause a less than significant impact related to criterion a).

4.6.6 Alternatives

4.6.6.1 Alternative 1: Complete Backfill Alternative

Reclamation activities associated with Alternative 1 would be less energy conservative than the Project due to the use of petroleum-fueled trucks to transport backfill material into the Quarry pit from the EMSA during Phase 2. Under Alternative 1 the overburden created by mining would continue to be stored at the EMSA until mining activities cease, at which point the overburden would be transported by trucks from the ESMA to the Quarry pit to be used as backfill material. The fuel required to excavate and move the EMSA materials and thereafter to contour the area would be more than the amount of fuel required by the Project to achieve slope stability and contouring. As stated in Section 4.3.6, in the analysis of Air Quality impacts, the activity required to implement Alternative 1 would involve considerable additional hours of operation for off-road equipment to excavate, transport, dump, and grade the EMSA materials. Consequently, Alternative 1 would be less environmentally advantageous than the Project.

4.6.6.2 Alternative 2: Central Materials Storage Area Alternative

Alternative 2 would result in reduced effort/fuel use to reclaim the EMSA, since the EMSA would not be as extensive as it would be under the Project, and would cause fuel use to reclaim the CMSA. Overall, approximately the same amount of overburden would be reclaimed under Alternative 2 as the Project, since safe extraction levels in the Quarry pit are the prime limiting factor for the amount of overburden to be generated, and not the amount of storage space available. However, because the material would be spread over a larger surface area (i.e., the current EMSA plus a new CMSA), additional use of diesel-fueled off road equipment would be

required to implement Alternative 2 than to implement the Project. Consequently, Alternative 2 would be less environmentally advantageous than the Project.

4.6.6.3 No Project Alternative

The No Project Alternative would simply delay the site reclamation for approximately 7 years, but would not substantially affect how much energy would be required to accomplish reclamation. Consequently, the No Project Alternative would cause roughly comparable impacts to energy conservation as the Project.

References – Energy Conservation

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