B. Project Description

Section B describes the Diablo Canyon Power Plant (DCPP) Steam Generator Replacement Project (the Proposed Project) proposed by Pacific Gas and Electric Company (PG&E). Detailed descriptions of project construction and operation are presented to provide a common understanding of the project parameters considered in Section D, where environmental impacts are evaluated. Sections B.1 and B.2 provide an overview of the Proposed Project and relevant background information. Section B.3 provides detailed descriptions of the transport and delivery of the replacement steam generators (RSGs) to DCPP, removal and storage of the original steam generators (OSGs), and installation and operation of the RSGs. Sections B.4 and B.5 provide project schedule, required equipment and personnel, and decommissioning issues associated with this project.

B.1 Overview of Proposed Project

The Proposed Project would be located at DCPP, which occupies a 760-acre high-security zone within PG&E's 12,000-acre owner-controlled land on the California coast in central San Luis Obispo County. DCPP is located within the Irish Hills approximately seven miles northwest of Avila Beach, 12 miles west-southwest of San Luis Obispo, and directly southeast of Montaña de Oro State Park (see Figures B-1 and B-2).

The Proposed Project would replace the OSGs at DCPP Units 1 and 2. Each DCPP unit consists of four steam generators, for a total of eight steam generators at the site, all of which would be replaced as part of the Proposed Project. The OSGs need to be replaced because of degradation from stress, corrosion cracking, and other maintenance difficulties. The four major components associated with the Proposed Project are listed below and summarized in the following sections, as well as presented in more detail in Sections B.3.1 through B.3.4.

- Replacement Steam Generator Transport
- Replacement Steam Generator Staging and Preparation
- Original Steam Generator Removal, Transport, and Storage
- Replacement Steam Generator Installation.

B.1.1 Replacement Steam Generator Transport

The RSGs would be manufactured by an international company specializing in the construction of steam generators for U.S. nuclear facilities. Upon completion, the RSGs would be transported by a heavy-load ship to a southern California port where they would be transferred to one or two barges and subsequently shipped to Port San Luis, located just west of Avila Beach. Since the steam generators for Units 1 and 2 would be replaced at different times, the RSGs would be delivered in two separate shipment groups, each containing four steam generators. Finally, the RSGs would be unloaded from the barge and transported from the Port San Luis site to the RSG temporary storage facility at DCPP.

B.1.2 Replacement Steam Generator Staging and Preparation

Staging, training, and planning activities would be required to prepare for the removal of the OSGs and installation of the RSGs. Approximately 90,000 square feet of temporary staging facilities and areas would be needed to support the RSG project activities and additional project personnel. Temporary staging areas (TSAs) would be used to accommodate most project activities and would consist of offices, fabrication, mock-up, weld testing and training, warehouse, and laydown areas. The RSGs would be staged and protected in a RSG storage facility, which would be located within the TSAs. In addition to the TSA facilities, a dedicated containment access facility (CAF), and additional decontamination and personnel processing facilities may be needed. For more information on facilities and project preparation activities, see Section B.3.

B.1.3 Original Steam Generator Removal, Transport, and Storage

Each OSG would be replaced during a scheduled refueling outage. Each OSG would be removed in one piece from the containment building, through the equipment hatch, over the auxiliary building roof and through the fuel handling building (see Figure B-3). The auxiliary building and the fuel handling building are two separate buildings; the auxiliary building is housed within the fuel handling building, making it appear as if they are only one building. After the OSGs are removed, each OSG must be treated and stabilized in accordance with Nuclear Regulatory Commission (NRC) requirements in order to be stored in the OSG Storage Facility. The exterior of the OSGs would be decontaminated to the extent possible inside the containment structure (or potentially just outside the hatch, depending on space requirements) and a protective plastic coating would be applied to prevent contaminant leakage. A system of hydraulic lifting devices and transport runways would be employed to facilitate OSG removal from the containment building and to lower the OSGs onto the site transporter. Next, the OSGs would be secured and subsequently transported to the onsite OSG Storage Facility, where they would remain until plant closure and decommissioning. Upon expiration of the NRC licenses, the OSGs and the remaining DCPP equipment would be decommissioned concurrently.

B.1.4 Replacement Steam Generator Installation

Preparatory work conducted prior to RSG installation would include OSG removal, RSG preparation by the installation contractor, and plant piping system preparation within the containment structure. The RSGs would be stored in the RSG storage facility until a scheduled refueling outage, during which the steam generators would be replaced. During the refueling outage, the RSGs would be moved from the RSG storage facility to the outside containment lift system behind the fuel handling building. Essentially, installation of the RSGs would occur in the reverse order as that described for the removal of the OSGs. A network of lift systems and runways would transport the RSGs through the fuel handling building, over the auxiliary building roof, through the equipment hatch and into the containment building. See Section B.3 for a detailed description of the removal and installation of the steam generators.

B.2 Project Background

B.2.1 Project Location

As described in Section B.1, the DCPP is located in unincorporated San Luis Obispo County roughly 12 miles west-southwest of the City of San Luis Obispo, 10 miles southeast of the City of Morro Bay and seven miles northwest of the community of Avila Beach. The DCPP property is bordered directly to the northeast by Montaña de Oro State Park. The existing DCPP facility encompasses a 760-acre high security zone within a total of 12,000 acres of coastline property jointly owned by PG&E and Eureka Energy Company (Eureka), a subsidiary of PG&E. With regard to the high security zone, PG&E owns 170 acres of DCPP property and leases the remaining 590 acres from Eureka.

Figure B-1. Regional Project Location
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Figure B-2. Proposed Project

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Figure B-3. Diablo Canyon Power Plant

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DCPP is located within the Irish Hills, near the mouth of Diablo Creek. The coastal border of the DCPP property is defined by rocky bluffs with gently to moderately sloping terraces ranging from 70 to 100 feet above sea level. The majority of the structures comprising the DCPP complex were constructed several hundred feet from the sea cliffs on a flat terrace. Units 1 and 2 are housed in separate but adjacent containment structures on the main terrace at 85 feet above sea level (see Figure B-3).

The nearest residential communities are in Avila Beach and Los Osos. Avila Beach is located near the DCPP Access Gate, which is approximately seven miles southeast of the project site. Los Osos is situated in a mountainous area adjacent to Montaña de Oro State Park and is located eight miles north of the Proposed Project site. Montaña del Oro State Park campground is approximately five miles from the project area and includes 54 campgrounds. Other cities and unincorporated residential areas exist along the coast and inland at a distance of more than eight miles from the project area. The closest public facilities to DCPP are the Port San Luis Harbor District facilities, which are located west of Avila Beach.

There are a number of existing roads in the project area, though none are open to the public. The primary road, the Access Road, is a paved two-lane, approximately seven-mile road running from the Access Gate at Port San Luis to the DCPP complex (CCC, 2004). This is the main access road into the property and is primarily used by the power plant employees. Just north of the Access Gate is an unpaved spur road that leads to the Point San Luis Lighthouse. The northern portion of the Diablo Canyon lands between Montaña de Oro State Park and the DCPP facility includes several unpaved roads. The north road serves as an emergency exit route from the DCPP area to a security gate at the State Park boundary. See Figure B-1 for a regional map showing the location of DCPP.

B.2.2 DCPP Information and History

DCPP land is partially owned and exclusively operated by PG&E. The remainder of the DCPP land is owned by Eureka Energy Company, a wholly owned subsidiary of PG&E, and leased back to PG&E under a long-term lease of 99 years with the option of an additional 99 years (PG&E, 2005b). The power plant consists of two identical nuclear reactor units (pressurized water reactors), known as Units 1 and 2. PG&E received two separate Certificates of Public Convenience and Necessity (CPCN) from the CPUC, authorizing construction of Units 1 and 2 in 1967 and 1969, respectively. Due to construction, design, and regulatory issues, Units 1 and 2 were not completed until the 1980s. Unit 1 began commercial operation in May 1985 and Unit 2 began commercial operation in March 1986. The NRC operating licenses expire for Units 1 and 2 in September 2021 and April 2025, respectively.

Since beginning commercial operation in 1985, DCPP has produced electricity at full capacity more than 80 percent of the time, compared to a national average of 70 percent for nuclear power plants. DCPP operates 24 hours a day and employs approximately 1,400 workers under typical operating conditions. However, the number of active DCPP personnel fluctuates depending on extenuating plant requirements such as scheduled fuel replacement outages, routine maintenance, and other special projects. Up to 1,100 support personnel may be added during a refueling outage and approximately 900 additional employees would be needed for the Proposed Project.

As noted above, DCPP consists of two nuclear reactors housed in separate but adjacent containment buildings. Each unit has a pressurized water reactor coupled with steam generators, feed water systems, and cooling water systems. Common equipment includes a shared fuel handling building, a radioactive waste storage building, an auxiliary building containing emergency safety systems and other support systems, turbine generators, high-voltage step-up transformers, and switching equipment. See Figure B-3 for detailed photos of the existing DCPP facility.

B.2.3 Existing Operations

The DCPP is used for baseload electricity generation. Units 1 and 2, which were manufactured in the 1960s and furnished by Westinghouse Electric Corporation (Model 51), are each rated at a nominal 1,110 megawatts-electric and generate over 17,000 gigawatt hours per year. The energy output of DCPP accounts for 20 percent of the annual electricity delivered to PG&E's service territory and 10 percent of the total annual electricity generated in California. This translates into 2,200,000 northern and central California households that consume electricity generated by DCPP.

Each unit operates on 18- to 21-month refueling schedules. A refueling outage is a planned period of time (averaging 30 to 40 days; outage with steam generator replacement is 75 to 80 days) during which the power plant temporarily ceases operations in order to replenish the enriched uranium needed as fuel to produce electricity. Units 1 and 2 have operated for 12 fuel cycles and each is currently operating in its 13th cycle. Installation of the RSGs for Unit 2 is scheduled to begin in February 2008, at the end of fuel cycle 14 during the 2R14 outage. Steam generator replacement for Unit 1 would commence during the January 2009 refueling outage, which is scheduled for the end of fuel cycle 15 (1R15).

B.2.4 Steam Generator Characteristics

Both DCPP units have four steam generators; each generator consists of U-tube heat exchangers that convert heat from the reactor coolant system into steam to drive the turbine generators and produce electricity (Figure A-1). The steam generators were designed and constructed in the 1960s and are Westinghouse Model 51. The steam generators are approximately 16 feet in diameter, approximately 68 feet high, and weigh 360 tons.

Each original steam generator has 3,388 alloy 600MA U-tubes while the RSGs would be designed to have 3,900 tubes each with alloy 690TT tubing material, which has improved resistance to stress corrosion cracking (see Figure B-4 for a detailed illustration of a steam generator). Alloy 600MA is a type of iron-nickel alloy used in most OSGs worldwide. A single U-tube is approximately 70 feet long with an outside diameter of 0.875 inches and a 0.05-inch inside wall. In each steam generator, the U-tube network facilitates 51,000 square feet of heat transfer.

Because of operational-related degradation, many of the OSGs constructed in the 1960s have been replaced or have pending replacement projects. According to the Proponent's Environmental Assessment (PEA) and PG&E's Revised Testimony Supporting its Application for the Proposed Project, there are 57 operating units in the United States, including DCPP, that have/or had steam generators containing alloy 600MA tubing. Of these 57 units, 34 have undergone steam generator replacement and 21 are currently being replaced. It is anticipated that all steam generators units with original tubing would need to be replaced by 2009 to avoid forced outages and other complications (PG&E, 2004a).

Figure B-4. Steam Generator - Dimensions and Operating Parameters
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B.3 Project Components

B.3.1 Replacement Steam Generator Transportation

B.3.1.1 Fabrication and Transport to Port San Luis

The replacement steam generators would be fabricated by one of six international companies that manufacture steam generators for U.S. nuclear utilities. They are located in Japan, South Korea, Spain, France, Canada, and Italy (PG&E, 2004a). Design, fabrication, testing, and transport of these RSGs requires a lead time of approximately 40 months (PG&E, 2004b). To avoid forced outages, this environmental impact report is being conducted well in advance of the scheduled outages when steam generator replacements would occur. Table B-1 provides a preliminary timeline of milestones for the Proposed Project. See Section B.4 for additional details on the Proposed Project schedule.

Table B-1. Preliminary / Estimated Project Timeline

Milestone	Timeframe, Unit 1	Timeframe, Unit 2
Design & construct RSGs	Present – Aug 2008	Present–Sep 2007
Transport & deliver RSGs to DCPP	Sep 2008–Nov 2008	Sep 2007–Nov 2007
OSG removal & RSG installation	Jan 2009–May 2009	Feb 2008–May 2008
OSGs into storage	2009	2008

Source: PG&E, 2004a.

A heavy-load ship would be used to transport the replacement steam generators from the manufacturer's port to a southern California port, either the Port of Long Beach or the Port of San Pedro. Traditional shipping methods would be used in compliance with applicable regulations such as: federal Title 33, which regulates Navigation and Navigable Waterways and includes the International Navigational Rules Act of 1977 (33 CFR 80–82), the Inland Navigation Rules Act of 1980 (33 CFR 84-90), and the Maritime Transportation Security Act; the California Harbors and Navigation Code, and the Port San Luis Harbor District Code of Ordinances. At the California port, the RSGs would be offloaded onto one or two barges and shipped to Port San Luis.

Transporting the RSGs from the manufacturer to DCPP would require two separate shipments, each with four RSGs. Each shipment would supply the RSGs for one reactor unit at DCPP. The shipment for Unit 2 is expected to occur between September and November 2007, while shipment for Unit 1 would occur between September and November 2008. Transport of the RSGs from the southern California port to DCPP would most likely occur between September and November to avoid the peak tourist season during the summer months, and the stormy weather that typically occurs during the winter months. Depending on the location of the selected manufacturer, it is expected to take four to six weeks to transport the RSGs from the manufacturer to a southern California port. Transport from the southern California port to Port San Luis is expected to take approximately two days.

B.3.1.2 Offloading Steam Generators at Port San Luis

Upon arrival at Port San Luis, the barge would enter the port during high-tide conditions using an established transport route that passes permanent and seasonal moorings for commercial and recreational vessels. Figures B-5 and B-6 show the Port San Luis area and barge transport routes through the mooring configuration at Port San Luis. Some of the vessels located along this route may have to be temporarily relocated because of the clearance width required for the barge. The proposed location of the barge docking would be just north of a small peninsula that currently acts as a boat launch in the Harford Landing area of Port San Luis.

Figure B-5. Port San Luis

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Figure B-6. Barge Route through Moorings into Port San Luis
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It is possible that the contractor would use two small barges (each containing two steam generators) to transport the steam generators for each unit rather than one large barge (containing all four steam generators). Figure B-7 shows the types of barges that may be used for this project. A barge with a larger surface area may be used to spread the weight of the steam generators, allowing a shallower draft and minimal ocean floor disturbance. The following delivery procedures would be used under either barge transport scenario (i.e., two steam generators per barge or four steam generators per barge).
The proposed method to dock and stabilize the barge at Port San Luis would be to "pin" the nose of the barge to the harbor bottom, or to the riprap at the edge of the shore (PG&E, 2004d). The barge would be pulled in tight against the shore and positioned directly on the harbor bottom. There are some large boulders that were placed along the shoreline to construct a rocky revetment, but the remainder of the port is generally soft bottom. Preliminary investigation of the offloading sites indicates that underwater mats would not be necessary due to the sandy bottom at this location. A diver would perform an underwater survey at the time of docking to ensure that the barge would not impact any sensitive marine life or be damaged by any underwater obstacles. The barge pinning point would be relocated if any obstructions were found.

Another option is called a "live offload" where the barge would be moored slightly offshore using hard points on land and one or two "push boats" at the backside of the barge to keep it stable (see Figure B-8). Both methods would employ push boats to stabilize and maintain positioning. Two bulldozers may also act as temporary bollards (e.g., equipment used for tying off boats or barges) to secure and stabilize the barge. Additionally, a spud barge, or a barge constructed for use as work platform and anchored to the waterway floor by retractable legs, may also be used to laterally stabilize the main transport barge.

A temporary bridge, or barge ramp, would be needed to offload the RSGs. The bridge or barge ramp would be delivered in sections by truck to the barge docking location. It would be assembled on land adjacent to the docking location and swung into place connecting the barge and the shore using a large crawler crane. Steel road plates may be placed under the barge ramp using a forklift as a precaution to prevent damage. Offloading at Port San Luis would require a relatively long bridge span. The bridge must be able to clear the steep rock revetment immediately adjacent to the shoreline that was created for stabilization purposes. Once the barge is stabilized, hydraulic lifts, or cranes, would raise the steam generators from the barge and place them on transport trailers. See Figures B-9 and B-10 for an illustration of a typical barge and a transporter.

The two options for transporting the RSGs from the barge to DCPP are as follows:

- **Short-Term Storage of Steam Generators at Port San Luis.** Under option one, all four RSGs would be unloaded from the barge and staged in a nearby parking lot at the port. The RSGs would then be moved from this short-term storage area one by one to the RSG storage facility. Under this option, the RSGs would be stored at Port San Luis between two and four days, depending on how many trailer transporters are used. This approach would allow the barge and push boats to be released from the barge support activities as quickly as possible, approximately within one or two days.
- **Direct Transport to DCPP Facility.** The second method involves offloading the RSGs from the barge and transporting them directly to the RSG storage facility in one step. This would require the barge to be stationed at the port for one or two additional days, for a total of four consecutive days, but negates the need for a staging area and temporary storage of the RSGs at Port San Luis.

Figure B-7. Photos of Steam Generator Barges
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Figure B-8. Plan View of "Live Offload" Barge Docking at Port San Luis

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Figure B-9. Barge and Ground Transporter Drawing

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Figure B-10. Photos of Steam Generator Offloading
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B.3.1.3 Replacement Steam Generator Transport on Land

Once the RSGs are offloaded, they would be transported to the RSG storage facility at DCPP for preparation prior to installation. The RSGs would be transported from the Port San Luis area across Avila Beach Drive to the DCPP Access Gate and then along the Access Road for approximately seven miles to the RSG storage facility at the DCPP complex (see Figure B-11 for a map of the Port San Luis area). All land transportation activities would occur along existing paved roads that were designed and constructed for heavy loads. The steam generators may be transported at night to reduce traffic congestion and delays; however, this would require approval from the Harbor District. Both an overview of the proposed RSG transport route from Port San Luis to DCPP and the route of travel within the DCPP site are illustrated in Figures B-1 and B-2.

Transportation of the RSGs requires special planning because of their large size. The delivery of the RSGs and other large heavy equipment to DCPP is not unprecedented. The OSGs were delivered along approximately the same route during construction of DCPP in the 1970s. For this reason, the DCPP Access Road and the paved roads at the facility were all constructed to support heavy equipment and loads, and utilized for these purposes during various operations. In addition to the OSGs, four main bank transformers were transported along the Access Road to DCPP in 1995 (PG&E, 2004d).

Steam generator transport from Port San Luis to the RSG storage facility would occur according to the following procedure: (1) each individual steam generator would be loaded onto a heavy-haul ground transporter and moved to the RSG storage facility in the temporary staging area at DCPP; (2) the transporter would return in the reverse direction to the offloading site; and (3) the remaining RSGs would be individually transported to DCPP along the original route until all RSGs are unloaded. A total of eight trips in a single direction or 16 total trips would be required for the Proposed Project. Half of these trips would be return trips with no RSG on the trailer.

Land Transport Equipment. The ground transporters used to move the RSGs from the Port San Luis to the RSG storage facility would be platform trailers specifically designed to move heavy loads (see Figure B-10). These trailers have multiple wheels to allow the weight of the load to be spread out over a large area thereby decreasing the impact to the road and underlying utilities. Additionally, the load weight is controlled through hydraulic distribution and leveling equipment on the trailer. These trailers can be self-propelled or towed by prime movers. Prime movers are large semi-truck tractors with weights attached to the rear drive axles that allow the vehicles to tow heavy loads.

The transporters would likely be a towed system with rubber tires that have size and load capability within industry standard design specifications. The transporter would travel approximately three to ten miles per hour during transport. The total payload weight of the RSGs and transporter is expected to be approximately 500 tons. The estimated width of the transporter trailer would be approximately 11 to 16 feet, and the total length is expected to be approximately 68 feet. The exact weight, width, and length would not be known until a final heavy transport vendor is selected closer to the time that the projects would begin.

The transporter and any prime movers used would not require refueling during transport of each RSG because of the short distance from Port San Luis. The other vehicles and equipment (see Section B.4.2) using diesel fuel or gasoline would be refueled at DCPP, where fuel transfers are routinely performed. In the event of equipment spills or leaks, spill recovery equipment would be used consistent with the appropriate regulatory spill prevention guidance and hazardous waste management programs as indicated in the DCPP Spill Contingency Plan. Drip pans or other collection devices would be placed under the equipment when not in use to capture drips or spills. Equipment would be inspected daily for potential leakage or failures.

B.3.2 Replacement Steam Generator Staging and Preparation

Site planning, temporary facility construction or modification of existing buildings, and other preparation activities would need to occur at DCPP prior to the removal of the OSGs and the installation of the RSGs. A temporary staging area (TSA) would be used to house most project activities and would consist of offices, fabrication, mock-up, weld testing, warehouse, and laydown areas. Approximately 90,000 additional square feet would be required in temporary or existing facilities to perform the required project staging activities. To the extent possible, existing DCPP structures and facilities would be used or to otherwise support the RSG activities. PG&E considers it important to locate all project staging areas in close proximity, so space may be combined or connected with other existing TSAs. PG&E has proposed to locate the TSA facilities at the southern end of the site on a previously developed flat terrace area (see Figure B-2).

In addition to the above TSA facilities, a dedicated containment access facility (CAF) and additional decontamination and personnel processing facilities would be needed. These facilities are expected to be compact prefabricated modular units or warehouse facilities up to a maximum of 30 feet tall. Figure B-2 is a map showing all associated project facilities within the DCPP site. A more detailed description of the TSA structures and other required facilities is provided below.

B.3.2.1 Replacement Steam Generator Storage Facility

The RSGs would be stored and prepared for installation in the RSG storage facility, which would be a temporary enclosure located within the TSA. Preparation activities that would occur prior to RSG installation include removing the nitrogen purge, removing any shipping coating, removing nozzle shipping covers and plugs, preparing nozzle weld ends, cleaning and fitting support bolts, installing foreign material barriers, and installing rigging attachments.

Approximately 10,000 square feet (approximate measurements of 30 feet in height above existing grade, and general floor dimensions of 120 by 84 feet) would be required for the RSG storage facility (PG&E, 2005e). The RSG storage facility would be equipped with adequate electricity, lighting, communications, ventilation equipment, and other capabilities as required by uniform building code standards. The RSGs would be offloaded and staged on wood cribbing, concrete cribbing blocks, or other suitable material. This facility would be removed after all the RSGs were installed.

B.3.2.2 Temporary Warehouse and Laydown Area

Approximately 10,000 to 15,000 square feet of temporary warehouse space and approximately 20,000 to 25,000 square feet of laydown area would also be required within the TSA. The warehouse would measure approximately 25 feet in total height above existing grade, and have dimensions of 200 feet by 75 feet. This space could be combined with and should be in close proximity to the RSG storage facility, mock-up, fabrication, and weld shops. PG&E's preferred location for these areas is approximately 2,000 feet from the powerblock and shown in Figure B-2. The temporary warehouse and laydown area would be used for all services, including those needed by warehouse personnel, for record storage, storage of any required materials as a receiving dock, for electricity, lighting, telephones, fire protection, and heating/ventilation equipment. These areas would also provide any additional space needed to temporarily stage any materials (miscellaneous parts and contractor outage equipment) to support either RSG or OSG activity.

Figure B-11. Port San Luis Area

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B.3.2.3 Personnel Training and Mock-Up Facilities

An approximately 5,000-square-foot training facility within the TSA would be required to house a mock-up steam generator consisting of a steam generator channel head, reactor coolant pipes, steam generator supports, and adjacent structures and components. The mock-up would be used to train personnel in cutting, templating, machining, welding, and other specialized procedures to be used during the removal and installation of the steam generators. This area may also be used to provide space for nuclear welder training, qualification, and testing. The temporary mock-up facility would be equipped with electricity, lighting, communications, service air, running water, and ventilation equipment, and any other required equipment for its intended use. The proposed location would be within the TSA shown in Figure B-2.

An approximately 5,000-square-foot temporary fabrication facility would be required for welder qualification and shop fabrication activities. This facility would contain workstations for practicing various cutting, machining, and automatic welding operations, as well as booths for welder qualifying and testing in both automatic and manual welding techniques. The fabrication facility would be used to prefabricate pipe system components, special tools, electrical make-ups, and to weld piping spool pieces. This facility may also contain the general welding test shop, insulation modification area, and clean tool crib. The fabrication shop facilities would be equipped with electricity, lighting, communications, service air, running water, ventilation equipment, and all required equipment. The location for the fabrication and weld shops would be the same as shown for the TSA location identified in Figure B-2.

As a dual-use building, the personnel training and mock-up facilities would require a maximum of 10,000 square feet with dimensions of 25 feet in total height and 125 feet by 80 feet in exterior dimensions. This building would be approximately 1,500 feet from the powerblock containing Units 1 and 2, and would occupy land between the existing fire station and mobile offices.

B.3.2.4 Office and Subcontractor Facilities

The project team office space would be sized to house both the prime contractor and the PG&E project team in one area. Approximately 10,000 square feet (167 feet by 60 feet) of office space would be required to accommodate up to 150 personnel. The office areas would be equipped with electricity, lighting, communications, heating, ventilation and air conditioning (HVAC) system, fire protection, and office furniture and equipment. Existing building space may be made available to accommodate this group of people. Alternatively, temporary facilities may be required. Major subcontractors also may elect to use their own office facilities (e.g., trailers) while mobilized at the job site. The installation contractor would need to coordinate the location of these facilities with PG&E on existing, developed property. Temporary office facilities (e.g., trailers), if required by subcontractors, would require water, power, sanitation, and telephone services. Required services would be provided by the DCPP facility.

B.3.2.5 Containment Access Facility

The existing containment access facilities (CAF) would be inadequate to support the increased number of workers that would be assigned during the steam generator replacement outage. An approximately 10,000-square-foot temporary CAF structure would be constructed to serve as the central processing point for RSG workers to dress in anti-contamination clothing, receive their dosimetry and briefings, and move into and out of the containment building. This facility would be constructed southwest of the existing powerblock on developed land that is currently not in use or at a similarly suitable location, as depicted in Figure B-2. This building has two potential designs: a one-story building with a maximum 15 feet from grade with dimensions of 167 feet by 80 feet, and a two-story layout with dimensions of 84 feet by 60 feet. This facility would be removed after the second steam generator replacement outage.

B.3.2.6 Decontamination Facility

Additional temporary decontamination space of approximately 2,000 square feet may be required to support additional personnel during project activities. In addition, 2,000 square feet would be required temporarily for laundering anti-contamination clothing for the additional personnel associated with these projects. If additional facilities are required, temporary facilities would need to be located near the Unit 1 and 2 containment structures, inside the radiation controls area, for direct access purposes.

B.3.2.7 Parking

Parking accommodations for up to 900 personnel may be necessary during the peak outage period, in addition to the 1,100 outage personnel typically onsite during each normal refueling outage. The RSG and refueling personnel would use spaces in Parking Lots 1, 7, 8, and others around DCPP. The locations of these parking lots are shown in Figure B-2. Shuttles to other parking areas could also be provided as required.

B.3.3 Original Steam Generator Removal, Transportation, and Storage

PG&E's proposed method of steam generator replacement and installation would be to remove the steam generators as one piece through the equipment hatch. PG&E concluded that this is the most technically feasible and the most cost- and schedule-efficient process. This method would allow the existing generators to be removed and installed in one piece, and would also be the least invasive to existing plant structures and systems.

B.3.3.1 Steam Generator Removal and Replacement

The preferred method for removing the OSGs would be to haul them out of the containment building through the equipment hatch over the auxiliary building roof and through the fuel handling building. RSG installation would employ the same method as used for OSG removal, only in reverse. Before the steam generator removal and installation could begin, the following procedures must occur.

- Two temporary auxiliary cranes would be installed within the containment building to facilitate removal, replacement, and installation of new permanent structures, piping, and steam generator appurtenances within the steam generator compartments. The electrically powered hydraulic cranes would augment the polar gantry crane (i.e., the crane that operates within a containment building on runway rails at or above the opening floor level) and thus improve equipment-handling activities.
- A steel runway system would be installed inside the containment area for transporting the steam generators through the equipment hatch. The runway would span from the equipment hatch to the far side of the refueling pool where it would abut a platform trailer. The runway would be skewed within each unit to minimize interference with the biological shield wall. The runway system would be designed in accordance with the NRC license requirements.

The sequential steps for removing each OSG from Units 1 or 2 are represented in Figure B-12 through B-15 and are briefly summarized below.

- The OSG would be cut from its support system within the containment structure.
- The OSG would be hauled out of the containment as an intact assembly using a temporary lifting device (TLD), as shown in Figure B-13. The TLD would be a gantry capable of traveling along the rails of the polar crane girders. The TLD would be designed with sufficient height to allow passage of the steam generators between the crane bridge girders so that the bottom of the steam generator could clear the top of the lower biological shield walls.

Figure B-12. Steam Generator on Runway Moving through the Equipment Hatch from the Containment Structure onto the Auxiliary Building Roof

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Figure B-13. Steam Generator Lifted from Place and onto the Runway Moving through the Equipment Hatch from the Containment Structure onto the Auxiliary Building Roof

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Figure B-14. Steam Generator Passing over the Auxiliary Building
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Figure B-15. Steam Generator Lowered onto the Transporter Outside of the Auxiliary Building
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- The OSG would be transferred horizontally out through the equipment hatch onto the runway system using a winch to pull it along the rails. Once the OSG is moved through the equipment hatch to an outside location on the roof of the auxiliary building, it would be transferred directly onto a hydraulic platform trailer (transporter) staged on the auxiliary building roof at the end of the runway.
- The hydraulic platform trailer would transport the OSG across the auxiliary building at elevation to the west rollup door (#525) of the fuel handling building, where it would make a 90-degree turn passing through the fuel handling building at the east rollup door (#526). Once the OSG exited the fuel handling building, it would be transferred from the transporter directly onto an outside runway system. This sequence is set forth in Figures B-14 and B-15.
- A rigging system would be installed to lift the OSG from the runway system, rotate it 90 degrees, and lower it to another transporter below. Final removal plans for handling of the OSG outside of the fuel handling building would need to take into account the existing subsurface conditions, outside interference, wind loading, and the fact that the steam generator centerline would be more than 35 feet above grade as it passes out through the rollup door.
- After the OSG was lowered onto the site transporter, it would be secured and transported to the OSG Storage Facility.

Laser measurements have been made within the containment structure to verify that the above proposed OSG rigging and removal plan would work given the space limitations and layout of the structures (PG&E, 2005d). Each RSG would be moved into the containment structures following the same steps in reverse order.

B.3.3.2 Original Steam Generator Staging

After removal of the OSGs, they would be treated in preparation for transport and storage at the proposed OSG Storage Facility. The following activities would be performed to secure and safely transport the OSGs to the OSG Storage Facility.

- **Decontamination and Application of a Protective Coating.** The exterior of the OSGs would be decontaminated to the extent possible inside the containment structure (or potentially just outside the hatch, depending on space requirements), and then a plastic coating would be applied as a preventative measure to secure loose material. The coating would prevent the spread of loose contamination. This procedure would be performed in accordance with NRC requirements for the handling of low-level radioactive materials.
- **Installation of Steel Covers.** Steel covers would be installed on the main openings of the OSGs in order to seal off the internal sections. The steel covers would be seal-welded to the nozzles of the main coolant, steam, and feedwater piping openings while the OSGs are still in the containment structure. PG&E would implement procedures and work practices to attain the as low as reasonably achievable (ALARA) dose in compliance with NRC regulation 10 CFR 20.1101(b), Radiation Protection Programs.[1]

[1] This regulation does not dictate specific programs, but rather states “The licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA).”

B.3.3.3 Original Steam Generator Storage

PG&E's proposed method of disposing of the OSGs at this time would be to store them onsite during the remainder of DCPP's operating life and then decommission them along with the remaining plant equipment after the plant has been shut down. The OSG Storage Facility would consist of an 18,000-square-foot reinforced concrete building at the upper portion of the DCPP site just north of Reservoir Road at the intersection with Oak Tree Lane (see Figure B-2). The building would have a maximum height of 30 feet and dimensions of 180 feet by 100 feet. Consistent with 10 CFR 50.59,[2] the addition of the OSG Storage Facility would be covered by PG&E's current NRC license. PG&E would obtain all appropriate permits for the facility from San Luis Obispo County and other potential key parties such as U.S. Army Corps of Engineers, State Water Resources Control Board/Regional Water Quality Control Board, and California Department Fish Game (see Table A-2). The OSG Storage Facility would be constructed to store and secure all eight OSGs on their sides. Construction of the OSG Storage Facility would proceed following these steps:

- Relocation of facilities on the site including underground electrical conduits and grounding grid, fire-water, domestic water, and sewer lines.
- Excavation for the structures and utilities.
- Installation of utilities and construction of the foundation slab, walls, and roof.
- Backfill, grading, and paving around the completed structure.

Earthmoving equipment would be used to excavate existing soil in preparation for the structure's foundation and associated utilities. The foundation would require a maximum cut of five feet into the soil. Approximately 2,300 cubic yards of excavated material, or spoils, would be generated. The spoils would be removed and stored at an onsite disposal facility previously approved for the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) Project. This disposal site is located in an existing storage yard approximately 200 feet west of the 500 kV switchyard (see Figure B-2). All the underground utilities would be relocated according to engineering parameters.

The OSG Storage Facility would be a reinforced concrete structure constructed either on a reinforced concrete mat foundation or on an independent floor slab. Concrete would come from a temporary onsite batch plant, and the necessary water would come from DCPP's existing water supply system. This water supply system consists primarily of a reverse osmosis system using seawater, and three groundwater wells. Other materials used in the construction would be reinforcing steel, structural steel, fine and coarse aggregate, and drainage pipe and wire for utility relocation. Restoration of the area surrounding the OSG Storage Facility would be performed after construction has been completed. This would consist of backfill and asphalt paving around the perimeter.

The walls and roof of the OSG Storage Facility would be made of reinforced concrete to meet maximum permissible dose limits as prescribed by NRC regulation 10 CFR 20, Standards for Protection Against Radiation; and USEPA regulation 40 CFR 190, Environmental Radiation Protection Standards for Nuclear Power Operations. These regulations set specific dose limits for radiation exposure;

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[2] 10 CFR 50.59(c)(1) (Changes, Tests and Experiments) is a design review that forms the basis for assessing the regulatory impact of work associated with a plant modification like a steam generator replacement project. PG&E has stated that "the steam generator replacement outages will not create any non-normal refueling situations and will not require any updates or changes to the NRC License" (PG&E, 2004g) and "it will not be necessary to file for a license amendment with the NRC to install the replacement steam generators (PG&E, 2004d)"

however they do not dictate specific design features or construction standards that must be incorporated into building design. Design and performance-based features would be dictated by 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste; NRC Regulatory Guide 1.29, Seismic Design Classification, which includes seismic-related building criteria; and NUREG-0819, Appendix 11.4-A, Design Guidance for Temporary Onsite Storage of Low Level Radioactive Waste. Access into the OSG Storage Facility would be controlled using locked personnel access doors. The OSG Storage Facility design would satisfy the intent embodied in NRC Generic Letter 81-38, Storage of Low Level Radioactive Wastes at Power Reactor Sites; the commitments of the Diablo Canyon operating license; and any governing State and local building codes.

B.3.4 Replacement Steam Generator Installation

Preparatory work conducted prior to RSG installation would include OSG removal, RSG preparation by the installation contractor, and plant piping system preparation within the containment structure. The RSGs would be stored in the RSG storage facility until a scheduled refueling outage, during which the steam generators would be replaced. During the refueling outage, the RSGs would be moved from the RSG storage facility to the outside containment lift system behind the fuel handling building. Essentially, installation of the RSGs would occur in the reverse order as that described for the removal of the OSGs. A network of lift systems and runways would transport the RSGs through the fuel handling building, over the auxiliary building roof, through the equipment hatch and into the containment building.

B.4 Project Schedule, Equipment and Personnel Requirements

The following sections provide detailed information on the overall project schedule, and describe the personnel and equipment required for replacing the steam generators at DCPP.

B.4.1 Project Schedule

The nature of the Proposed Project requires a long lead time for design, fabrication, testing, and transport of the steam generators to DCPP. As described in Section A, PG&E has stated that the steam generators need to be replaced because the existing ones are degrading from stress and corrosion cracking. Under the worst-case scenario, studies prepared by PG&E suggest that the steam generator in Unit 2 would reach the NRC-mandated plugging limit by 2013, and the steam generators in Unit 1 would reach the plugging limit by 2014. Therefore, the steam generators in Unit 2 would be delivered and replaced first, followed by those in Unit 1. See Table B-2 for details on the Proposed Project schedule.

Upon the completion of manufacturing overseas, it would take almost one month for the RSGs to be shipped to a southern California port. Delivery of replacement steam generators would occur as two separate shipments, each containing four steam generators, given that the steam generators would be replaced at different times for Unit 1 and Unit 2.

Steam generator replacement, consisting of removal of OSGs and installation of RSGs, would be conducted during regularly scheduled fuel cycle outages. DCPP operates on a 18- to 20-month cycle with 30- to 40-day fuel outages (75 to 80 days for Steam Generator Replacement Project) scheduled to occur in the Spring and the Fall. The steam generators that would be replaced for Unit 2 are scheduled for the February to May 2008 outage, while the steam generators for Unit 1 are scheduled for January to April 2009.

The project facilities and team would be demobilized after the entire project is completed in 2009. Table B-2 shows some of the major milestone dates for the Proposed Project.

Table B-2. Steam Generator Replacement Project Components and Timeline

Project Activity	Unit 1	Unit 2
Establish installation project team	Jan 2006–Feb 2008	Jan 2006–Feb 2008
Design/construct OSG Storage Facility	2005–2007	2005–2007
Deliver RSGs to DCPP	Aug 2008–Nov 2008	Sep 2007–Nov 2007
Install RSGs	Jan 2009–Apr 2009	Feb 2008–May 2008
Store OSGs onsite	2009	2008
Conduct startup testing	May 2009	June 2008
Demobilize project facilities and team	2009	2009

Source: PG&E, 2004c.

B.4.2 Equipment and Personnel Requirements

Two of the most equipment-intensive periods of the Proposed Project would be the offloading and transport of the RSGs from Port San Luis to DCPP, and the removal and installation of the steam generators in the containment structure. The exact equipment needed for the project would not be determined until the heavy transport and installation contractors were selected. However, the equipment listed in Table B-3 represents what is currently expected to be used during the transport task. The specific pieces of equipment to be used and their configurations may vary from this table. However, this list is a conservative estimate of the necessary equipment so that potential project impacts can be assessed.

Table B-3. Preliminary Equipment Requirements for Delivery to Port San Luis

Equipment	Number Needed	Energy Output/ Capacity	Power Source	Function
Prime Movers				
Barge	1			Transport RSGs
Tractor/Platform trailers (“Transporters”)	3	500 HP	Diesel	Transport RSGs to RSG storage facility
Tugboats	2	600 HP		Stabilize barge movement
Spud barge (tentative)	1			Stabilize barge movement
Bulldozer (tentative)				Assist prime movers, and act as temporary bollards to stabilize the barge
Service Fleet				
Tractor/trailers	3	400 HP	Diesel	Shuttle gear/ equipment
Hydraulic pumps	2	200 HP	Diesel or gasoline	For gantry crane
Forklift	3	18-ton	Diesel	Move/load equipment onto tractor trailers and trucks
Utility/mechanic trucks	5	1-ton	Diesel	
Crawler crane	2	300-ton	Diesel	Set/remove ramps for barge offloading
Portable light towers	4	110 volts	Diesel	Facilitate night work
Pickup trucks	6		Gasoline	Transport of utility, personnel, and light-duty material
Autos/SUVs	6		Gasoline	Transport of utility, personnel, and light-duty material
Traffic control vehicles with arrow boards	2		Gasoline	Traffic control
Generators	4	110 volts	Gasoline	Misc.

Source: PG&E, 2004a.

The transportation equipment required would be diesel, electric, and/or gasoline-operated. All transportation equipment would be fitted with appropriate mufflers and all engines would be maintained regularly according to manufacturer specifications.

The normal non-outage workforce at DCPP consists of approximately 1,400 employees. This figure temporarily increases by an additional 1,100 workers during a regular refueling outage. The removal of the OSGs and installation of RSGs would occur during one of these regularly scheduled 30- to 40-day (75 to 80 days for Steam Generator Replacement Project) refueling outages as described in Section B.3. Approximately 100 to 700 workers would be needed for the RSG preparation and staging periods that would occur prior to the actual outage. The peak number of temporary project workers would occur during outages 2R14 and 1R15 when approximately 900 workers would be present to remove and install the steam generators. These 900 RSG project personnel would be in addition to the 1,100 workers required for the regular refueling outage. Figure B-16 gives a detailed breakout of the number of temporary workers required each month for the Proposed Project. To accommodate the short-term increase in worker traffic, PG&E would incorporate alternative work hours for the workers during the 80-day outage period.

The transport of the RSGs from Port San Luis to DCPP would require approximately 30 workers. The labor force used during transport would be skilled labor, with most of the work force likely originating in California. PG&E personnel would be present during transportation of the RSGs to observe and coordinate the activities of the transportation contractor, to monitor the transportation progress, and to reduce the potential for adverse environmental impacts. There would be an industrial security force, most likely hired for the Proposed Project, assigned to attend to and ensure the security of the RSGs while at Port San Luis.

Personnel training would be conducted for all phases of the Proposed Project. Training programs would include general access training and DCPP site familiarization processes, welder qualification programs and training, mock-up training, and engineering training on PG&E design control processes.

B.5 Decommissioning

As described in Section B.2.2, the NRC licenses for Units 1 and 2 are set to expire in 2021 and 2025, respectively. The NRC requires that civilian nuclear facilities be decommissioned by safely removing the facility from service and reducing the residual radioactivity to a level that permits release of the property and termination of the operating license (10 CFR 20). Both the OSGs and RSGs would be decommissioned at the same time as the rest of the DCPP components and in compliance with NRC requirements. For further details on license renewal, please refer to Section G of this Draft EIR.

B.6 Project Description Measures or Activities to Prevent Environmental Impacts

PG&E refers to various informal measures or activities within the Project Description of the Proponent's Environmental Assessment, and the responses to the Proposed Project's deficiency notice and data requests that may reduce potential environmental impacts of the Proposed Project. CPUC has extracted these measures and activities directly from PG&E application material to provide the public with information on how PG&E would conduct each phase of the project. The analysis conducted in Section D was based on the project description, which included these measures and activities to avoid or reduce environmental impacts.

Figure B-16. Additional Workforce during Proposed Project

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Replacement Steam Generator Transport

- Ballast water would only be discharged from clean tanks on the barge, and only as necessary to stabilize the barge during offloading operations.
- To the extent practicable, RSG offloading would be conducted during the weekdays before or after the busy summer tourist season.
- All transportation equipment would be fitted with appropriate mufflers and all engines would be maintained regularly according to manufacturer specifications.
- Lighting (used to facilitate nighttime work) would be shielded and directed away from sensitive elements along the route.
- Mats and other ground reinforcing methods may be used at the offloading areas or some roadway portions to assist/facilitate transport (stabilize equipment, distribute weight), and minimize disturbance to sensitive areas (natural resources and subsurface utilities).
- Steel plates may be used under the barge ramps to protect the underlying asphalt or soil.
- At the time of offloading, an underwater survey would be performed by a diver to ensure that there are no objects that could potentially damage the hull of the barge, and to ensure that the barge would not impact any sensitive marine life.
- If the RSGs are staged at Port San Luis, PG&E would erect a cyclone fence enclosing the RSGs and place an industrial security force at the staging area.
- A complete load path analysis would be performed by the transportation contractor and the rigging subcontractor prior to delivery of the RSGs.
- Monitoring of possible erosion and sediment along the transport route would be conducted to limit interaction with the existing natural drainage patterns.
- In accordance with NRC regulations [10 CFR 50.59], a Nuclear Safety Related Structures, Systems, and Components (SSCs) review would analyze the risk of using the Intake Cove Offloading Alternative to verify that DCPP operations would not be adversely affected.
- If the Intake Cove would be used for RSG offloading, a site-specific procedure would be written specifically to establish prerequisites, precautions, and instructions to control the movement of the barge into the Intake Cove.
- Some work activities would be performed during the non-peak tourist season and at night to reduce any visual impacts.
- A marine biologist would attend the offloading in the Intake Cove to monitor for marine mammals.

Replacement Steam Generator Staging and Preparation

- In the event that cultural remains are detected during site preparation or construction activities, all work in the immediate area of the find shall be stopped immediately and a qualified archaeologist called out to determine the significance the finds under the procedures set forth at CEQA Section 15064.5. If human remains are found, work should be halted immediately in the vicinity and the County Coroner should be notified in accordance with Section 7050 of the California Health and Safety Code. A find of any significant fossils would follow additional established paleontological procedures.

- To accommodate the short-term increase in worker traffic, PG&E would incorporate alternate work hours for workers during the RSG preparation, staging and installation phases.
- Standard Best Management Practices (BMPs), including dust suppression, revegetation, slope stabilization, construction of ditches and berms, and/or placement of straw bales or other sediment traps as appropriate, would be used to prevent uncontrolled runoff, erosion, or migration of contaminants.
- PG&E would require the Installation Contractor to implement BMPs that include the following SLOAPCD standard dust reduction measures:
  - Reduction in the amount of the disturbed area, where possible.
  - Use of water trucks or sprinklers to reduce airborne dust; increase frequency when wind speeds exceed 15 mph.
  - Permanent dust control measures identified in the revegetation and landscape plans should be implemented as soon as possible following completion of any soil-disturbing activities.
  - All disturbed areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other similar methods.
  - All paved areas would be completed, and building pads would be laid as soon as possible after grading unless other applicable methods of dust reduction are used.
  - All vehicles hauling loose materials offsite or on public roadways would be covered, or should maintain at least two feet distance between the top of the load and the top of the trailer.
  - Sweep streets at end of each day if visible soil material is carried onto adjacent paved roads.
  - A person would be designated to monitor the dust control program, and to order increased watering, as necessary.

Original Steam Generator Removal, Transport, and Storage

- After OSG removal, the exterior of the OSGs would be decontaminated to the extent possible, and then a plastic coating would be applied as a preventative measure to secure loose material (as per NRC requirements for the handling of radioactive materials).
- The work areas would be decontaminated as necessary before work begins.
- All disturbed commodities and the containment building would be restored, and all temporary equipment would be removed.
- Only employees trained in radiation protection practices would work with tasks located in Radiation Controlled Areas (RCAs). These employees would monitor work activities and ensure personnel radiation exposure is minimized.
- Standard BMPs, including dust suppression, revegetation, slope stabilization, construction of ditches and berms, and/or placement of straw bales or other sediment traps as appropriate, would be used to prevent uncontrolled runoff, erosion, or migration of contaminants.
- A sump pit would be included in the design and constructed in the OSG Storage Facility to collect any leakage that the building may experience.
- PG&E would require the Installation Contractor to implement best management practices.

- PG&E would perform a detailed geotechnical analysis of the final OSG Storage Facility location prior to its design, if necessary.
- Onsite work would be conducted in accordance with DCPP radiological procedures implementing regulatory compliance for dose control, and the ALARA program.
- A detailed ALARA plan, including, if necessary, shielding and source removal, would be included as part of the radiation work permit used to control radiation exposure to workers for this task.

Replacement Steam Generator Installation

- To accommodate the short-term increase in worker traffic, PG&E would incorporate alternate work hours for workers during the RSG preparation, staging and installation phases.
- Welds of the RSGs during installation would be verified with radiography as required by the ASME Section III and XI code, and the RSGs would be installed in full compliance with ASME code requirements.
- The work areas would be decontaminated as necessary before work begins.
- All disturbed commodities and the containment building would be restored, and all temporary equipment would be removed.
- Only employees trained in radiation protection practices would work with tasks located in Radiologically Controlled Areas (RCAs). These employees would monitor work activities and ensure personnel radiation exposure is minimized.
- Onsite work would be conducted in accordance with DCPP radiological procedures implementing regulatory compliance for dose control, and the ALARA (As Low As Reasonably Achievable) program.
- A detailed ALARA plan, including, if necessary, shielding and source removal, would be included as part of the radiation work permit used to control radiation exposure to workers for this task.

All Proposed Project Phases

- Containers used to store hazardous materials would be properly labeled and kept in good condition.
- Contaminated soil materials produced during cleanup of a spill would be contained and transported by appropriate personnel for offsite disposal as a hazardous waste.
- If a spill or leak into the environment were to involve hazardous materials equal to or greater than the specific reportable quantity (25 gallons for petroleum products), federal, State, and local reporting requirements would be adhered to.
- Emergency telephone numbers would be available onsite for the fire department, or other regulatory agencies.
- A Health and Safety Plan would be prepared and implemented according to the Radiation Protection Program.
- Potential solid waste (e.g., trash) would be properly recycled and disposed of in offsite, PG&E or contractor-owned receptacles.
- In the event of spills or leaks, spill recovery equipment (shovels, absorbent materials, etc.) would be used consistent with the appropriate regulatory spill prevention guidance and hazardous waste management programs as implemented by the DCPP Spill Contingency Plan.

- If used, spent absorbent and contaminated sand or soil would be collected and brought back to the DCPP and handled according to the DCPP spill prevention and response procedures and the Hazardous Waste Management Program.
- Drip pans or other collection devices would be placed under the equipment at night to capture drips or spills.
- Equipment would be inspected daily for potential leakage or failures.
- Bulldozers (if used) would be limited to travel on roads or other developed areas that were previously disturbed.
- Minimum safe working distances to the 500 kV transmission lines onsite would be maintained during all work activities (in accordance with Diablo Canyon Administrative Procedure OM6.ID7).
- Depending of the extent of traffic impact, PG&E would employ several of the following best management practices (BMPs):
  - Post additional security and traffic control personnel to accommodate processing of vehicles onto the DCPP Access Road on 24-hour/7-day-per-week basis.
  - Removal of a speed bump at the Avila Security Gate.
  - Implement alternating shifts on ½ hour cycles.
  - Delivery of security passes to temporary employees prior to their actual start date.
  - Carpool program.
  - Public transit incentives.
  - Delivery of construction materials during off-peak hours.
- The contractor would prepare a Diesel Combustion Emission Control Plan to ensure adequate control of the potential diesel emissions during the project construction phase. The Plan would include implementation of the following standard NOx and ROC reduction measures:
  - Use of Caterpillar pre-chamber diesel engines, or equivalent, together with proper maintenance and operation.
  - Electrify equipment where feasible.
  - Maintain all fossil-fuel equipment in tune per manufacturer's specifications.
  - Encourage use of catalytic converters on gasoline-powered equipment where feasible.
  - Substitute diesel-powered equipment with gasoline-powered equipment where feasible.
  - Use compressed natural gas (CNG) or propane-powered portable equipment onsite instead of diesel-powered equipment where feasible.
  - All off-road and diesel-powered equipment would be fueled with California Air Resources Board (CARB) certified motor vehicle diesel fuel. Off-road equipment may use tax-exempt motor vehicle fuel if not operated on public roads.
  - To the extent feasible, maximize the use of diesel construction equipment meeting the CARB's 1996, or newer, certification standard for off-road heavy-duty diesel engines.

  - Schedule construction truck trips during non-peak hours to reduce peak-hour emissions where feasible.
  - Limit the length of the construction workday period, if necessary.
  - Implement the phasing of construction activities, if appropriate.
- The following administrative and physical controls are currently used during gasoline and diesel fuel oil transfers.
  - Trained operating personnel and truck drivers are required to be present during tanker truck loading and offloading, ensuring that prompt action would be taken in the event of a spill.
  - Absorbents for spill remediation are stored near each tank truck loading and offloading facility.
  - Tanker truck loading and offloading is scheduled, when possible, during non-rainy weather.
  - Park PG&E refueling truck over a dense asphalt pavement or impermeable surface that would allow spill containment.
  - Operating personnel should visually inspect the tanker truck prior to departure and after each refueling operation.
- A Drainage and Polluted Runoff Control Plan would be prepared by a registered civil engineer, and would include the following temporary and final BMPs:
  - Earth or paved interceptors and diversion would be installed at the top of cut or fill slopes where there is a potential for erosive surface runoff.
  - Energy dissipaters would be installed to reduce the velocity of the runoff.
  - All provisions in the drainage and runoff control plan would be consistent with other DCPP plans, such as the existing Stormwater Pollution Prevention Plan (SWPP).
  - Sedimentation basins and traps installed by the Installation Contractor as a BMP shall be inspected and cleaned.
  - Existing and proposed drainage channels, including drainage swales, ditches, and berms.

B.7 References

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