

# DRAFT ENVIRONMENTAL IMPACT REPORT GRAYSON REPOWERING PROJECT

SUMMARY  
September 15, 2017

## 2.0 SUMMARY

### 2.1 OVERVIEW OF PROJECT

The City of Glendale (City), Department of Water and Power (GWP) is proposing to replace the majority of the existing power equipment and infrastructure at the existing Grayson Power Plant (the "Repowering Project" or "Project"). The Project site is located in an industrial area of the City at 800 Air Way, Glendale, California 91201, just northeast of the Interstate 5 and Highway 134 interchange (Figures 2-1 and 2-2). Most of the facilities located at the Grayson Power Plant (with the exception of Unit 9) were constructed between 1941 and 1977, and are proposed to be replaced with more reliable, efficient, flexible, and cleaner units and related facilities and infrastructure.

The existing generation facilities, units, and their related infrastructure associated with these aging facilities will be replaced. This work will involve removing existing above- and below-ground equipment and facilities and building new generation facilities, including demolishing the Boiler Building, Cooling Towers 1 through 5, boilers 1 through 5, steam turbines 1 through 5, and combustion turbines 8A and 8BC and their associated heat recovery steam generators (Figure 2-3)<sup>2</sup>.

The existing generation facilities would be replaced with a combination of combined-cycle and simple-cycle gas generating units (Figure 2-4). Unit 9 of the existing Grayson Power Plant is a simple-cycle peaking plant built in 2003. It will remain and no construction or improvements to Unit 9 are proposed as part of this Repowering Project.

The Project would replace 235 MW (gross) of the existing capacity from the boiler units (Units 3, 4, 5) and combined cycle units (Units 1, 2, 8A and 8BC<sup>3</sup>) with more efficient generation. The Project would comprise two 71 MW (net) combined cycle units and two 60 MW (net) simple-cycle units. Table 2-1 below summarizes the existing generation units and capacity at the Grayson Power Plant as well as the proposed replacement generation units and generation capacity. The combined cycle units would be permitted for 7,596 hours per year of operation with up to 7 starts per month and a limit of 67 starts per year<sup>4</sup>. As is typical for simple cycle units due to their lower efficiency, they are limited to 1,700 hours per unit per year. However, the simple cycle units are also permitted for up to 54 starts per month and 621 starts per year consistent with their operation as peaking units.

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<sup>2</sup> Units 6 and 7 were previously removed in 2006.

<sup>3</sup> The Units 1 and 2 boilers were shut down in 1997 with their associated steam turbines continuing in service supplied by steam from the Units 8A and 8BC combustion turbine/heat recovery steam generators.

<sup>4</sup> 5 cold/warm and 2 hot starts per month with an annual limit of 28 cold/warm and 39 hot starts. Hot starts may be performed in lieu of cold starts (but not the reverse).

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**Table 2-1 Comparative Summary of Grayson Power Plant Existing and Proposed Generation Capacity (Gross and Net) at Average Annual Conditions**

| Generation Unit                                       | Generation Capacity <sup>5</sup><br>(gross net) |
|---|---|
| <b>Existing</b>                                       |   |
| Unit 1 – steam turbine-generator                      | 20 MW/18 MW                                     |
| Unit 2 – steam turbine-generator                      | 20 MW/18 MW                                     |
| Unit 3 – steam boiler turbine-generator               | 20 MW/18 MW                                     |
| Unit 4 – steam boiler turbine-generator               | 44 MW/42 MW                                     |
| Unit 5 – steam boiler turbine-generator               | 44 MW/42 MW                                     |
| Unit 8A– gas turbine-generator combined cycle plant   | 32.2 MW/26 MW                                   |
| Unit 8BC – gas turbine-generator combined cycle plant | 55 MW/55 MW                                     |
| <b>Generation Capacity Removed:</b>                   | <b>235 MW/219 MW</b>                            |
| Unit 9 – Simple cycle turbine generator to remain     | 50.5 MW/48 MW                                   |
| <b>Total Existing Generation Capacity:</b>            | <b>286 MW/267 MW</b>                            |
| <b>Proposed</b>                                       |   |
| Unit 10 - one-on-one combined cycle unit              | 74.6 MW/71 MW                                   |
| Unit 11 - one-on-one combined cycle unit              | 74.6 MW/71 MW                                   |
| Unit 12 - simple cycle unit                           | 63.9 MW/60 MW                                   |
| Unit 13 - simple cycle unit                           | 63.9 MW/60 MW                                   |
| <b>Generation Capacity Added:</b>                     | <b>278 MW/262 MW</b>                            |
| Unit 9 – Simple cycle turbine generator to remain     | 50.5 MW/48 MW                                   |
| <b>Total Proposed Generation Capacity:</b>            | <b>328 MW/310 MW</b>                            |
| <b>NET GENERATION INCREASE:</b>                       | <b>42 MW/43 MW</b>                              |

As shown in Table 2-1, the Project includes replacing 235 MW gross (219 MW net) of generation capacity with 278 MW gross (262 MW net) of generation capacity. The Project would increase the total Grayson Power Plant generation capacity from 286 MW gross (267 MW net) to 328 MW gross (310 MW net), for a net increase of 42 MW gross (43 MW net).

The Project would be located entirely within the existing Grayson Power Plant site, which is bounded to the south by the Verdugo Wash and Highway 134, to the west by the Los Angeles River and Interstate 5, to the north by commercial properties, and to the east by commercial and residential properties.

## **2.2 HISTORY AND DESCRIPTION OF EXISTING OPERATION**

The Grayson Power Plant, named after the City's first Chief Engineer and General Manager Loren Grayson, has been faithfully serving the electrical power needs of the City of Glendale since 1941. Prior to 1937, the City purchased its electrical power from the Pacific Light and Power Company (today known as Southern California Edison) and in the 1930s, entered into contracts to purchase hydroelectric power from the Hoover Dam Project. In 1937, after evaluating the current and future electrical needs of the Glendale community, the City established a City-owned and operated steam powered electrical generating facility. Construction of the new power plant facility in Glendale began in 1939, and the first generating unit went into service in

<sup>5</sup> Some of the generation capacity numbers have been modified based upon further review.

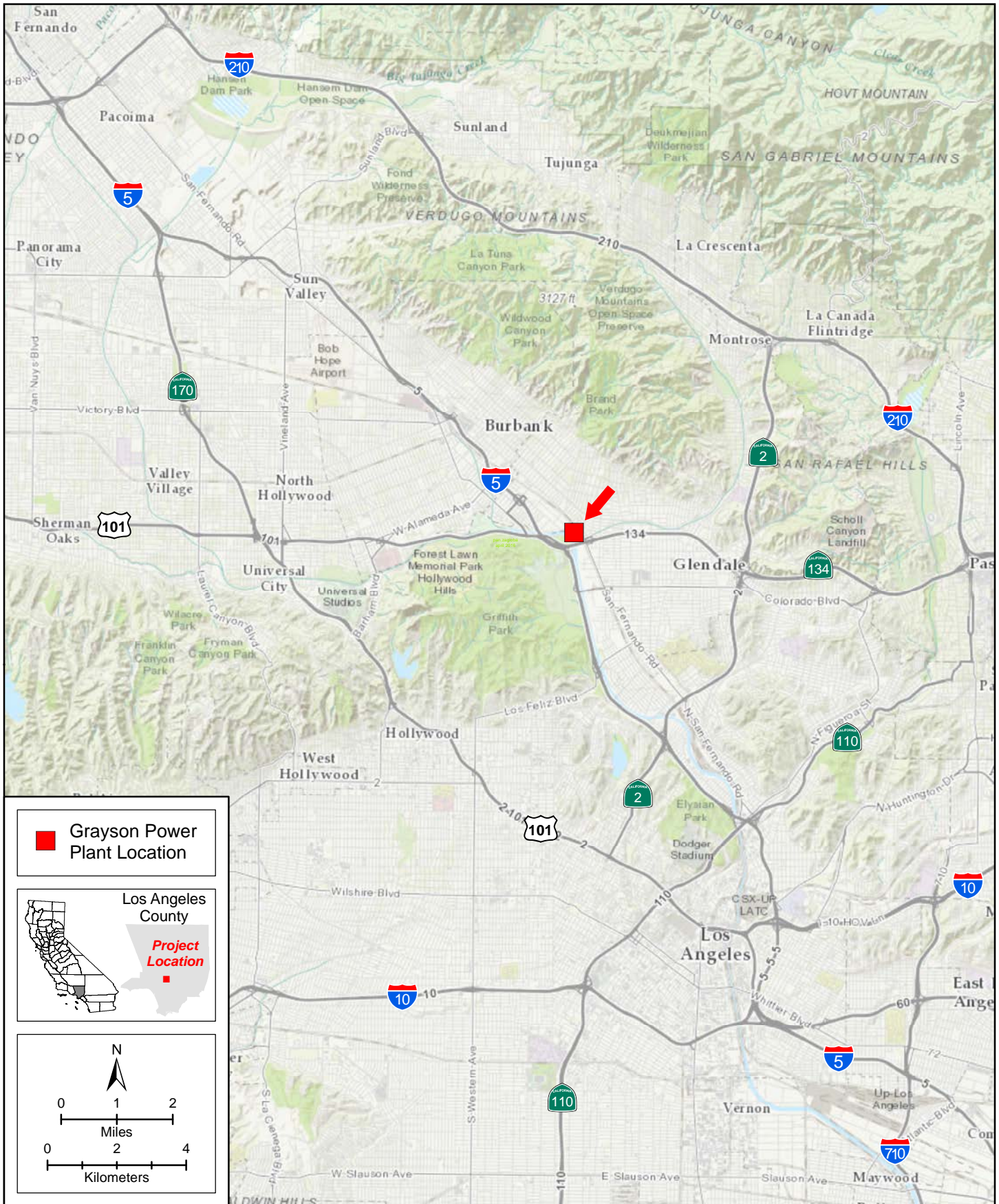
## DRAFT ENVIRONMENTAL IMPACT REPORT GRAYSON REPOWERING PROJECT

### SUMMARY

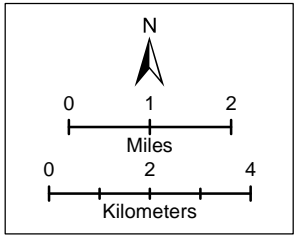
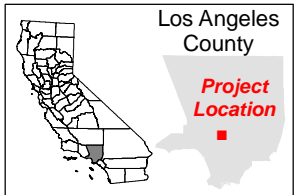
September 15, 2017

1941. Since that time, the facility has been expanded to meet the growing needs of the residents and businesses in the City, and has proven to be an invaluable asset to both GWP and more importantly to their customers.

The existing Grayson Power Plant includes steam boilers and associated steam turbine generators, turbine generators, combustion turbine generators operating in combined cycle with steam turbine generators, and a simple cycle combustion turbine generator. These generation units have a combined gross electrical generation capacity of 286 MW. The capacity and age of each generation unit are presented in Tables 2-1 and 2-2. Due to normal degradation of the equipment over time, the reliability, efficiency, and cost effectiveness of the facility has continuously declined. All of the existing generation units, with the exception of Unit 9, are operating beyond their design life and expected retirement age.



 Grayson Power Plant Location





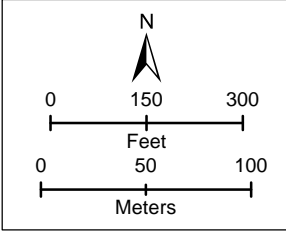
**STANTEC CONSULTING SERVICES Inc.**  
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**CITY OF GLENDALE  
 DEPARTMENT OF WATER AND POWER  
 PROPOSED GRAYSON REPOWERING PROJECT  
 ENVIRONMENTAL IMPACT REPORT  
 REGIONAL LOCATION MAP**

Date: 7/7/2017  
 Prepared by: HS  
**FIGURE NO. 2-1**



-  Utility Operations Center
-  Grayson Power Plant

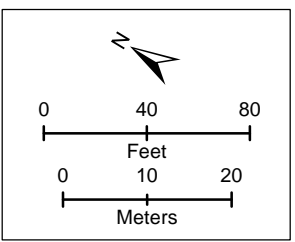
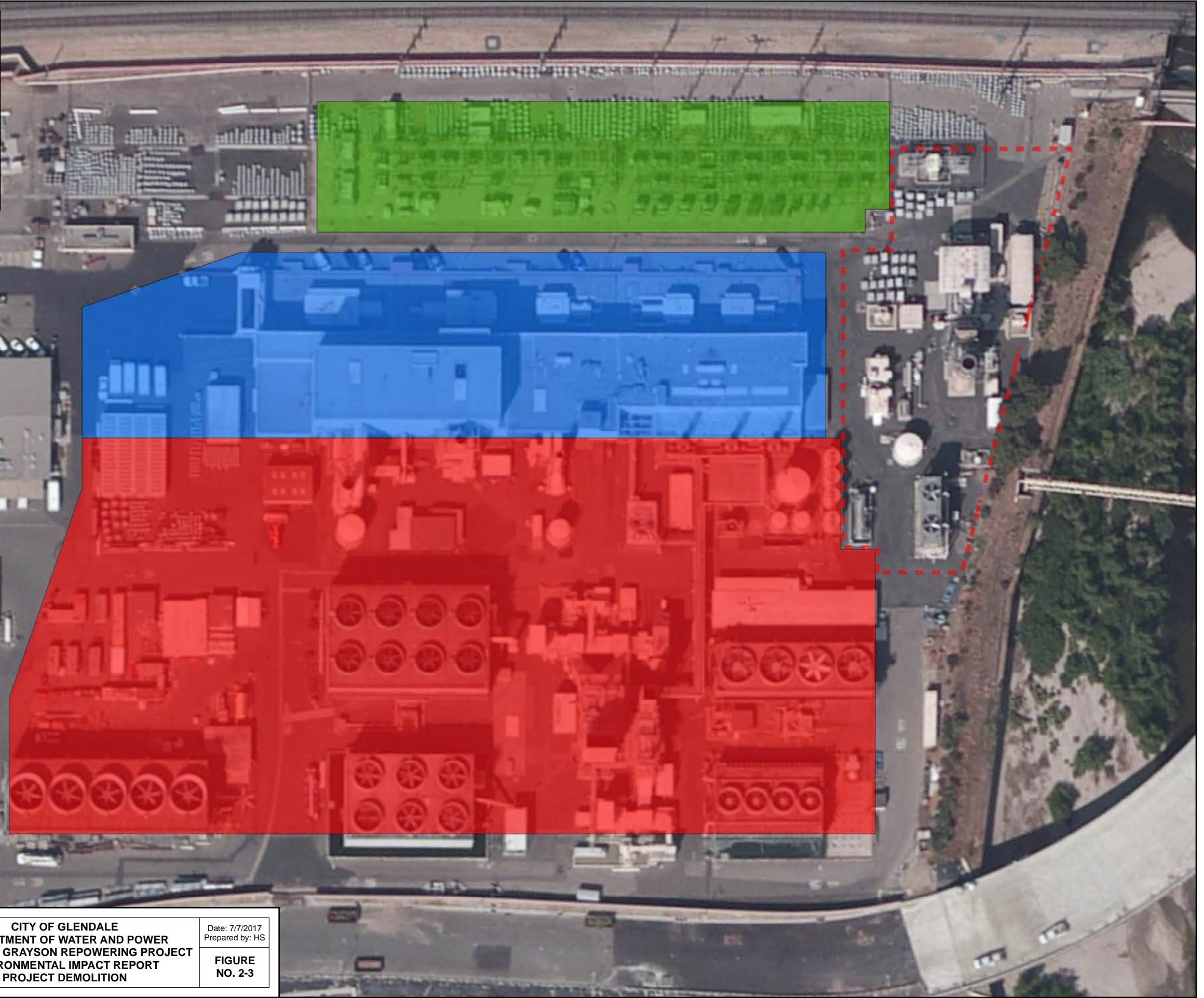


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**CITY OF GLENDALE  
 DEPARTMENT OF WATER AND POWER  
 PROPOSED GRAYSON REPOWERING PROJECT  
 ENVIRONMENTAL IMPACT REPORT  
 IMMEDIATE SITE VICINITY**

Date: 7/7/2017  
 Prepared by: HS  
**FIGURE NO. 2-2**

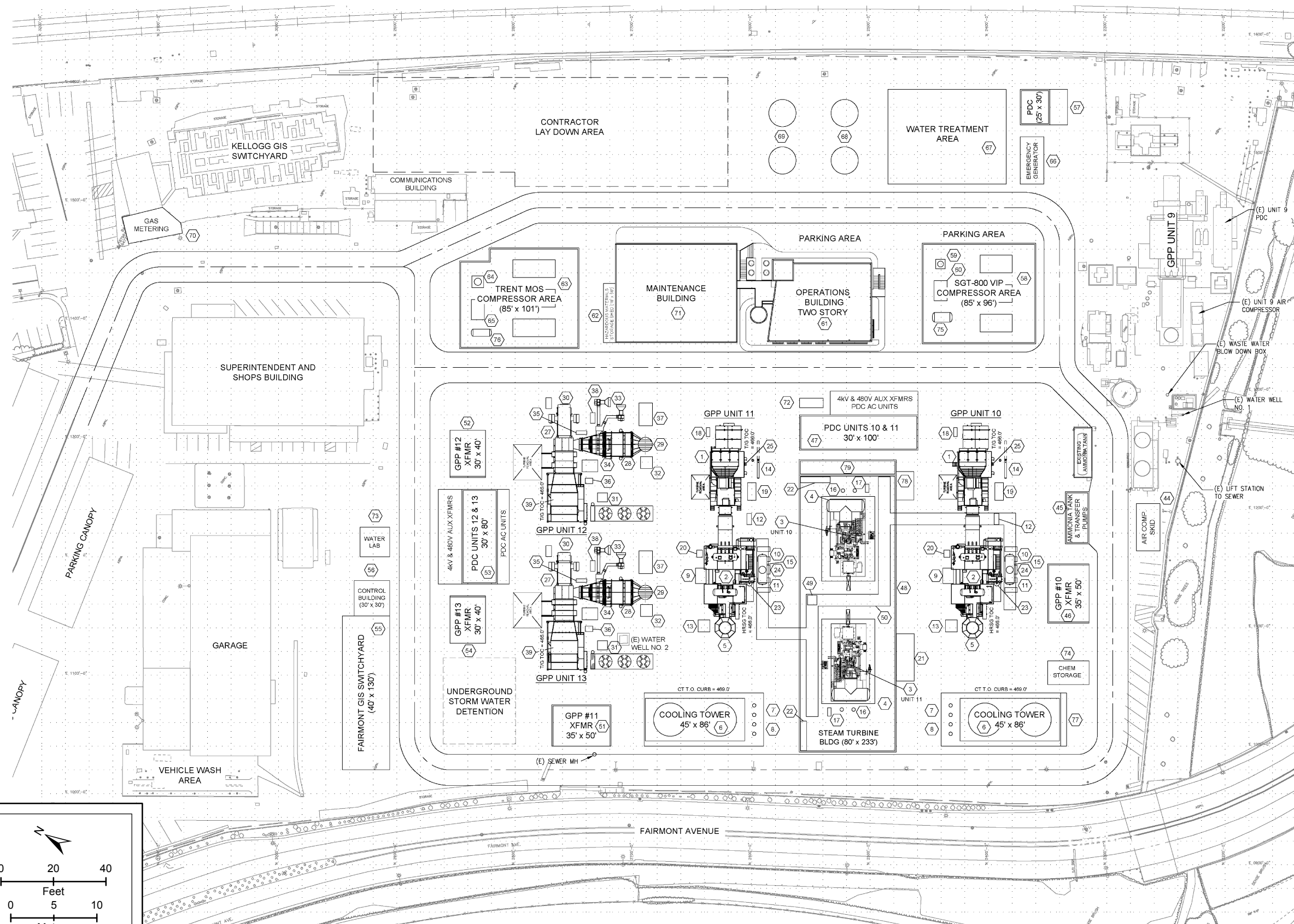
- Demolish and remove all surface equipment and foundations
- Demolish and remove building structure, all surface equipment and foundations, and cut all pilings to a depth of 8 feet below grade
- Demolish and remove all building structures, all surface equipment and foundations, all subsurface piping and electrical to a depth of 8 feet below grade, and completely remove all pilings
- Unit 9 Operating Unit is not in the demolition site area



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**CITY OF GLENDALE  
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 PROPOSED GRAYSON REPOWERING PROJECT  
 ENVIRONMENTAL IMPACT REPORT  
 PROJECT DEMOLITION**

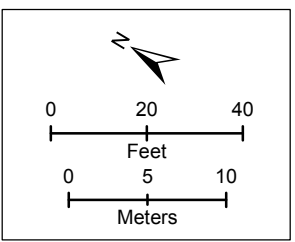
Date: 7/7/2017  
 Prepared by: HS  
**FIGURE NO. 2-3**



### EQUIPMENT LIST

| UNITS 10 & 11   | BALANCE OF PLANT  |
|---|---|
| 1 SGT-800 TURBINE GENERATOR                           | 44 AIR COMPRESSOR PACKAGE SKID                            |
| 2 HEAT RECOVERY STEAM GENERATOR                       | 45 AMMONIA TANK SYSTEM                                    |
| 3 STEAM TURBINE GENERATOR                             | 46 UNIT 10 GENERATOR STEP-UP TRANSFORMER                  |
| 4 SURFACE CONDENSER                                   | 47 UNIT 10/11 POWER DISTRIBUTION CENTER                   |
| 5 HRSG STACK  | 48 STEAM TURBINE BUILDING                                 |
| 6 COOLING TOWER                                       | 49 AUXILIARY BOILER                                       |
| 7 CIRCULATING WATER PUMPS (2)                         | 50 PIPE RACK  |
| 8 AUXILIARY COOLING WATER PUMPS (2)                   | 51 UNIT 11 GENERATOR STEP-UP TRANSFORMER                  |
| 9 AMMONIA FLOW CONTROL UNIT                           | 52 UNIT 12 GENERATOR STEP-UP TRANSFORMER                  |
| 10 HIGH PRESSURE BOILER FEEDWATER PUMPS (2)           | 53 UNIT 12/13 POWER DISTRIBUTION CENTER                   |
| 11 LOW PRESSURE BOILER FEEDWATER PUMPS (2)            | 54 UNIT 13 GENERATOR STEP-UP TRANSFORMER                  |
| 12 SGT-800 CO2 BOTTLES                                | 55 FAIRMONT 69KV SWITCHYARD                               |
| 13 CEMS SKID  | 56 FAIRMONT SWITCHYARD CONTROL BUILDING                   |
| 14 FUEL GAS HEATER & K.O. VESSEL                      | 57 WATER TREATMENT AREA POWER DISTRIBUTION CENTER (25x30) |
| 15 DEAREATING VESSEL                                  | 58 UNIT 10/11 FUEL GAS COMPRESSORS (3)                    |
| 16 CONDENSATE PUMPS (2)                               | 59 UNIT 10/11 GAS SUCTION SCRUBBER                        |
| 17 VACUUM PUMP SKID                                   | 60 UNIT 10/11 GAS DEMISTER (2)                            |
| 18 MINERAL LUBE OIL COOLER                            | 61 OPERATIONS BUILDING                                    |
| 19 GAS CONDITIONING UNIT                              | 62 HAZMAT STORAGE SHED                                    |
| 20 AMMONIA INJECTION PUMPS (2)                        | 63 UNIT 12/13 FUEL GAS COMPRESSORS (3)                    |
| 21 UNIT 10/11 CONDENSATE POLISHERS                    | 64 UNIT 12/13 GAS SUCTION SCRUBBER                        |
| 22 BEARING COOLING WATER SYSTEM                       | 65 UNIT 12/13 GAS DEMISTER (2)                            |
| 23 BLOW DOWN TANK & SUMP                              | 66 EMERGENCY GENERATOR                                    |
| 24 CONDENSATE PREHEATER                               | 67 WATER TREATMENT UNIT                                   |
| 25 EVAPORATION TANK & DEHUMIDIFIER                    | 68 REVERSE OSMOSIS FEED TANKS 23'Ø x 16'H (2)             |
| 26 (not used)   | 69 DEMINERALIZED WATER STORAGE TANK 23'Ø x 24'H (2)       |
| <b>UNITS 12 &amp; 13</b>                              |   |
| 27 INDUSTRIAL TRENT 60 TURBINE GENERATOR (SGT-A65 TR) | 70 FUEL GAS METERING STATION                              |
| 28 SCR  | 71 MAINTENANCE BUILDING (103x82)                          |
| 29 SCR STACK  | 72 OILY WATER SEPARATOR (UNDERGROUND)                     |
| 30 MINERAL LUBE OIL SKID                              | 73 WATER LABORATORY (25x25)                               |
| 31 CLOSED LOOP AIR COOLER AND PUMP SKID               | 74 CHEMICAL STORAGE                                       |
| 32 CEMS SKID  | 75 SGT-800 BUFFER VESSEL 6'Ø x 13' LONG                   |
| 33 TEMPERING AIR FANS (2)                             | 76 TRENT BUFFER VESSEL 6'Ø x 14' LONG                     |
| 34 WATER INJECTION SKID                               | 77 PROCESS SEWER REJECT BASIN                             |
| 35 INDUSTRIAL TRENT 60 CO2 BOTTLES                    | 78 BATTERY ROOM (440V)                                    |
| 36 FUEL GAS FILTER SKID                               | 79 STG BUILDING PDC                                       |
| 37 AMMONIA FLOW CONTROL UNIT                          |   |
| 38 SEAL AIR FANS (2)                                  |   |
| 39 ISI SKID (UNDER FILTER STRUCTURE)                  |   |
| 40 (not used)   |   |
| 41 (not used)   |   |
| 42 (not used)   |   |
| 43 (not used)   |   |

1 inch = 40 feet



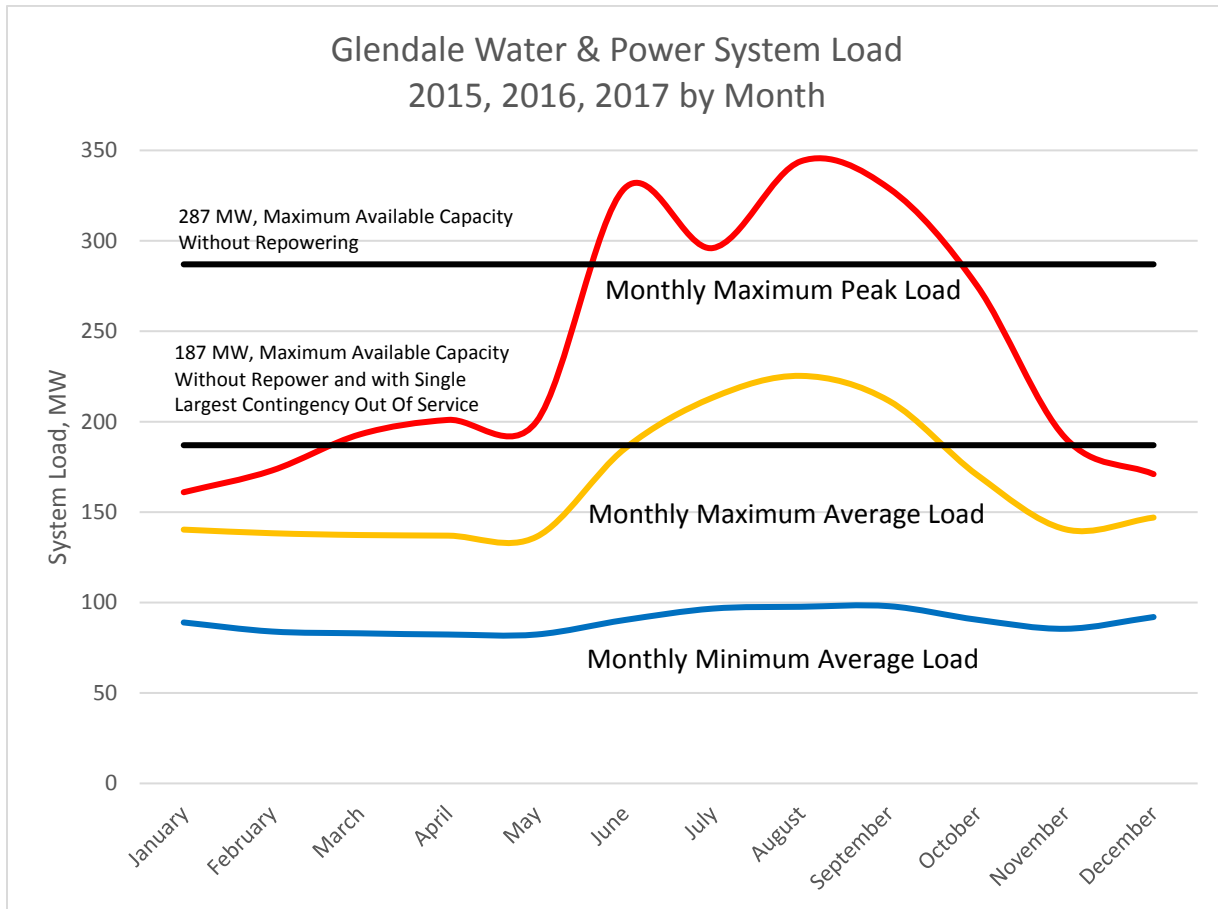
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| <p><b>STANTEC CONSULTING SERVICES Inc.</b><br/>5500 Ming Avenue, Suite 300<br/>Bakersfield, California 93309<br/>Phone: (661) 617-5873 Fax: (661) 396-3771</p> | <p><b>CITY OF GLENDALE</b><br/>DEPARTMENT OF WATER AND POWER<br/>PROPOSED GRAYSON REPOWERING PROJECT<br/>ENVIRONMENTAL IMPACT REPORT<br/>PROJECT SITE AND EQUIPMENT LAYOUT PLAN</p> | <p>Date: 7/7/2017<br/>Prepared by: HS</p> |
|  |   | <p><b>FIGURE NO. 2-4</b></p>              |

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## 2.3 PURPOSE AND NEED

GWP is a municipal utility and Load Serving Entity that is responsible for generating and/or importing electricity to serve the residents and commercial customers and community of Glendale, California including over 88,110 electric customers. GWP's electric load varies considerably during the course of the year and on a daily basis, as shown in the below chart.



### NOTES:

- For each month, averaged across the days of the month and the three years, the chart reflects the minimum load during the 24-hour day. Since this is an average, for some days the actual minimum load would be lower and other days it would be higher.
- For each month, averaged across the days of the month and the three years, the chart reflects the maximum load during the 24-hour day. Since this is an average, for some days the actual maximum load would be lower and other days it would be higher. This is illustrated in the third curve which shows the maximum load that occurred during that month over the three-year period.



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- The top black line in the chart reflects the 287 MW electricity supply available to Glendale with Unit 9 in operation, but without repowering Grayson. The 287MW also reflects Glendale's share of power generated by the Magnolia Power plant, and transmission imports all in service.
- The bottom black line in the chart reflect the 187 MW electricity supply available to Glendale with Unit 9 in operation but without repowering Grayson, plus Glendale's share of the power generated by the Magnolia Power plant, and the loss of one of the two transmission import paths. This path, the Pacific DC Intertie, has a capacity of 100 MW and is the Glendale's single largest contingency, i.e., the one failure that causes the greatest loss of available power. Glendale is required to plan for the loss of the single largest contingency – a lost that that has previously occurred in whole or in part for extended periods.
- The bottom blue line in the chart reflects the monthly minimum average load is 80-100 MW. The monthly maximum average load is 135-225 MW. Peak electrical demand is approximately 350 MW. The daily load variation can be 150-200 MW.

The need for the Repowering Project is based on several factors, including providing reliable generating capacity, avoiding electric capacity shortages as identified in GWP's governing Integrated Resource Plan, and facilitating the use of more renewable energy by freeing up transmission line capacity to bring more renewable-based electricity to Glendale. Additionally, the generating capacity needs to have the flexibility to operate efficiently over the wide range of loads.

The City serves its power system through a combination of renewable energy imports, non-renewable imports, and local generation. To meet retail power demand, GWP relies on a combination of both local and remote generation, as well as long-term power purchase agreements and spot market purchases from a variety of suppliers throughout the Western Electricity Coordination Council territory which includes 14 western states, two Canadian provinces and Northern Baja Mexico (known as the Western Interconnection).

Natural gas for generation is supplied by several sources, which include gas reserves in Wyoming, a pre-paid gas commodity contract, and the term and daily gas markets.

As a result of recent state mandates, GWP is becoming more involved in short- and long-term markets for renewable energy and carbon allowances. These markets however, are not as reliable as self-generation and require backup generation to shape and firm the renewable energy resources.

Publicly owned electric utilities such as GWP are required to prepare and file, and then periodically update, an Integrated Resource Plan with the California Energy Commission. (SB 350, statutes 2015, chapter 547). Integrated Resource Plans are electricity system planning documents intended to ensure that publicly owned utilities set forth the resource needs, policy

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goals, physical and operational constraints, and general priorities or proposed resource choices of an electric utility, including customer-side preferred resources. These plans are intended to provide a framework to evaluate how utilities have chosen to align with greenhouse gas emission reduction targets as well as energy and other policy goals. In June 2015, GWP completed its Integrated Resource Plan covering the 20-year planning period from 2015 to 2035 (Pace Global, 2015).

Based on industry data, the average retirement age for combustion turbines and steam turbines is 40 and 54 years, respectively (SNL, 2012). Table 2-2 below summarizes the existing generating units at the Grayson Power Plant, the year built, average retirement age for similar equipment and the current age of the existing equipment.

**Table 2-2 Age of Existing Generation Units at the Grayson Power Plant**

| Existing Generation Unit Number & Type                                      | Year Built | Average Retirement Age for Similar Generation Units | Current Age of Existing Grayson Generation Units |
|---|------------|---|--|
| Unit 1 – steam turbine generator  | 1941       | 54 years  | 76 years   |
| Unit 2 – steam turbine generator  | 1947       | 54 years  | 70 years   |
| Unit 3 – steam boiler and steam turbine generator                           | 1953       | 54 years  | 64 years   |
| Unit 4 – steam boiler and steam turbine generator                           | 1959       | 54 years  | 58 years   |
| Unit 5 – steam boiler and steam turbine generator                           | 1964       | 54 years  | 53 years   |
| Unit 8A- combustion turbine generator and heat recovery steam generator     | 1977       | 40 years  | 40 years   |
| Unit 8BC – combustion turbine-generator and heat recovery steam generator   | 1977       | 40 years  | 40 years   |
| Unit 9 – combustion turbine generator simple (not proposed for replacement) | 2003       | 40 years  | 14 years   |

All the existing generating units, with exception of Unit 9, were built between 1941 and 1977 and are at least 40 years old.

Over the next several years, units at the existing Grayson plant are expected to face shutdowns because it will become infeasible to perform further repairs. These retirements are expected through the remainder of the decade and into the 2020s. After 2022, current projections suggest that Unit 9 will be the only unit remaining at Grayson.

The City is also constrained in the amount of power (renewable and non-renewable sources) that can be imported into the City through existing transmission capacity. The Glendale electrical infrastructure has two existing interconnections to other systems:

- One connection is to Burbank Water & Power, an adjacent utility that allows Glendale to import its 39 MW allocation from the Magnolia Power Plant into Glendale.

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- The second interconnection is to the Los Angeles Department of Water and Power (LADWP) electrical transmission system at the Airway Substation. This interconnection provides transmission access through the LADWP system to import up to 100 MW from the northwest over the Pacific DC Intertie and an additional 100 MW of imports from the Southwest A/C transmission system through the Victorville area (the sources of the imports are beyond Victorville into other states).

These interconnections allow GWP access to specific transmission systems as shown in Table 2-3 that allow GWP to import up to 243 MW through transmission (without considering transmission line derates<sup>6</sup> that are common during hot days when demand is also high). Additional capacity on these interconnections is not available, and it is anticipated that by the early 2020s the power demands on these systems may result in, a potential capacity shortage.

To support Grayson during the Repowering Project construction, LADWP has agreed to provide Glendale with seventy-five (75) MW during peak period hours and up to twenty-five (25) MW during off-peak hours, in addition to the transmission access they already provide. This will partially offset the temporary reduction in generating capacity at Grayson between decommissioning the existing Grayson units and commissioning of the new units, and will be sufficient to temporarily assist Glendale in meeting its electrical loads during Project construction, even though the net amount of power they are able to supply is less than the existing capacity of Grayson. Although, LADWP has the capacity to back stop Glendale’s electrical loads during Project construction, LADWP cannot be relied on as a feasible long-term solution to the Project because LADWP is not able to enter into long-term power supply contracts with Glendale.

Table 2-3 summarizes the City’s electrical demand, sources, and additional capacities needed under the No Project Alternative to meet demand and reliability requires.

**Table 2-3 City Electricity Demand, Sources and Projected Capacity Deficit Under the No Project Alternative**

| Source  | Capacity (MW) |
|---|---------------|
| <b>Total Peak Demand:</b>   | <b>350</b>    |
| Pacific DC Intertie (Single Largest Contingency)  | 100           |
| Southwest A/C transmission from the Victorville area via LADWP transmission line contracts  | 100           |
| Magnolia Power Project (peak summer load adjustment)  | 39            |
| <b>Total Import Capacity:</b>   | <b>239</b>    |
| Total Import Capacity (243 MW) minus Single Largest Contingency (100 MW)  | 139           |
| Additional Capacity Needed to Support First Outage (350 MW -143 MW)   | 211           |
| Additional Capacity Needed to Recover and Support the System  | 71            |
| <b>Total Additional Capacity Needed to Meet Demand and Reliability Requirements:</b>  | <b>278</b>    |
| Note: Additional electricity needed to recover and support the system assumes next single largest contingency is a 71 MW combined cycle unit installed as part of the Repowering Project. Per reliability requirements, the operating reserve used to cover the single largest contingency must itself be restored within 60 minutes. |               |

<sup>6</sup> A derate is a reduction in the rated capacity of a transmission line.

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The 2015 Integrated Resource Plan identified approximately 250 MW of local generation at the existing Grayson Power Plant site as the best option to make up the projected service area wide capacity shortage, meet regulatory requirements for reliability, and integrate future renewable resources to meet Renewable Portfolio Standards. The Repowering Project would allow GWP to be proactive rather than reactive in meeting its utility service responsibility, consistent with its vision to deliver reliable, high-quality, environmentally-clean, and sustainable power services to City customers in a cost-competitive manner.

Recognizing the tremendous benefit that locally-generated power has provided the City and understanding the long-term benefits that would be derived by replacing the existing units in terms of efficiency, cost, and environmental quality, the City has embarked on a process for the potential repowering of the existing Grayson Power Plant.

The proposed Repowering Project is necessary to assist in meeting current and future City energy needs and California Renewables Portfolio Standard requirements. Pursuant with Senate Bill 350 that was signed into legislation in October 2015, the Renewables Portfolio Standard requires retail sellers and publicly-owned utilities, including GWP, to procure 50 percent of their electricity from eligible renewable energy resources by 2030. By reducing the importing of non-renewable imports, the Project makes available more of GWP's transmission capacity, which can then be used to accommodate more renewable energy to assist the City in meeting State Renewable Portfolio Standards.

The increased requirement for California's renewable energy portfolio would require a dispatchable energy source to support and firm up the intermittent characteristics of photovoltaic and wind resources. The Project's ability to provide rapid startup and operational flexibility over a wide range of demand supports the City's commitment to integrate additional renewable electric energy sources to meet California's Renewable Portfolio Standards. By being able to deliver flexible operating characteristics across a wide range of efficient generating capacity, and replacing older, less efficient generation both in the basin and well as outside the basin, the Project would help lower the overall greenhouse gas emissions resulting from electrical generation for the City.

The State Legislature is currently considering a bill, SB 100, the Clean Energy Act of 2017, which if adopted in its current form (as of the date of publication of this Draft EIR) would require state agencies to plan for all retail electric sales to come from renewable energy resources and zero-carbon resources, by December 31, 2045. If this bill or comparable legislation is adopted, the long-term need for natural gas generation will be affected, particularly after 2045. Prior to 2045, however, and particularly in the near- and medium-term to 2035, the time period covered by GWP's adopted Integrated Resource Plan, there remains a need for the Project, to resolve the capacity and reliability issues set forth above.

One of the factors supporting the need for the Repowering Project is satisfying applicable reliability standards. Section 215 of the Federal Power Act requires the development of mandatory, enforceable reliability standards by the electric reliability organization. In North

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America, the North American Electric Reliability Corporation (NERC) is the electric reliability organization, subject to Federal Energy Regulatory Commission oversight in the United States. NERC has jurisdiction over operators, owners, and users of the bulk power system, which serves more than 334 million people. The reliability standards developed by NERC are subject to the review and approval of the Federal Energy Regulatory Commission. The NERC reliability requirements encompass the following performance standards:

- Frequency Control – Requirements for maintaining the system frequency.
- Voltage Control – Requirements for maintaining the system voltages.
- Contingency Reserve – Requirements for maintaining adequate reserves to cover the loss of the single largest contingency. Reserves include operating generating units that are not fully loaded (spinning reserve), fast start generation (<10 minutes, non-spinning reserve), transmission imports, demand side management, and other means that can quickly add capacity.
- Automatic Under Frequency Load Shedding – Design requirements for automatic shedding of load to mitigate declining system frequency.
- Automatic Under Voltage Load Shedding – Design requirements for automatic shedding of load to mitigate declining system voltage.
- System Protection – Requirements for control systems to protect the transmission system.
- Automatic Generation Control - Requirements for control of generator loading.
- Balancing Authority Control – Requirements for the Balancing Authority control of the Balancing Area, not applicable to the GWP.
- Planning Reserve Adequacy Analysis – Requirements for planning for electric system loads using a one day in ten-year planning standard.
- Cyber Security – Requirements for maintaining a secure electric generation, transmission, and control infrastructure.
- Physical Security - Requirements for physical security of transmission-level switchyards and control centers.
- Communications – Requirements for communications between participants involved in operation of the electric system including Generators, Balancing Authorities, Transmission Operators, Distribution Providers, and Reliability Coordinators.
- Event Reporting – Requirements for reporting of events to improve system reliability.

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- System Restoration from Blackstart (Emergency) – Requirements for planning, equipment, and personnel to restart a system from black (no power) conditions.
- Loss of Control Center Functionality - Requirements for continued system reliability in the event of a loss of the control center.
- Geomagnetic Disturbances – Requirements for planning to mitigate the effects of geomagnetic disturbances (significant solar storm events).
- Emergency Operations - Requirements for planning to address emergency events.
- Interconnection Requirements – Requirements for new connections to the electric system.
- Vegetation Management – Requirement for vegetation management to protect transmission facilities.
- Facility Ratings – Requirements to ensure that facility ratings are reliable to ensure system reliability.
- System Operating Limits - Requirements to ensure that operating limits are based on a methodology that ensures system reliability.

There are additional requirements, as well regarding design, operations, testing, and maintenance all with the goal of ensuring system reliability. See <http://www.nerc.com/pa/stand/Pages/ReliabilityStandardsUnitedStates.aspx?jurisdiction=United%20States> for a full list of the NERC Reliability Standards.

## 2.4 PROJECT OBJECTIVES

Pursuant to Section 15124(b) of the CEQA Guidelines, the description of the project must contain “a clearly written statement of objectives” that would aid the lead agency in developing a reasonable range of alternatives to evaluate in the EIR, and to aid decision makers in preparing findings, and, if necessary, a statement of overriding considerations.

The primary objective of the Project is to replace the aged, inefficient, and inflexible generation units at Grayson Power Plant with approximately 262 MW net of modern power generation that is efficient, reliable, operationally flexible, and that can easily integrate into the City’s power system. The Project would ensure system reliability, balance renewable imports, and meet the power needs of the City in the event that the importing capacity from external transmission lines is limited or not available to serve its demand. The Project objectives are to:

1. Integrate with local and remote distributed renewable energy resources to provide sufficient capacity and energy to ensure reliable service at all times for the City and to support the City’s compliance with California’s Renewable Portfolio Standards.

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2. Utilize current and reliable technology and control systems to provide reliable, cost effective, and flexible generation capacity for the City to serve its customer load.
3. Provide a local generation resource sufficient to meet resource adequacy requirements, and the City's obligations within the Balancing Area<sup>7</sup> (BA) to balance load and resource at the interconnection with the BA, in accordance with industry standards including North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) requirements; thus, providing local reliability and contributing to grid stability within the Los Angeles Basin.
4. Provide sufficient locally controlled generation to minimize the City's reliance on importing power from remote generation locations through a congested transmission grid system subject to planned and unplanned outages and de-rates, making the delivery of energy to serve load less reliable than local generation.
5. Replace the aged, unreliable, less efficient, high maintenance steam boilers with new, efficient, and less environmentally impactful generation technologies that meet South Coast Air Quality Management District's (SCAQMD) Rule 1304(a)(2).
6. Locate the proposed Project at existing City property already permitted and used for generation to minimize the need for major infrastructure improvements such as fuel supply, water, wastewater, recycled water and transmission facilities, or the need to purchase additional property.
7. Provide generation that is highly efficient to maintain reasonable cost of generation to minimize the impact on customer electric rates and help manage costs of delivering energy to the City's customers.
8. Support water conservation efforts by eliminating the use of potable water for generation purposes.
9. Reduce the per megawatt-hour (MWH) creation of emissions and consumption of water.

## 2.5 PROJECT BENEFITS

The Project will achieve the following benefits:

- Maintain reliable service.

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<sup>7</sup> A geographic area defined by the interconnected transmission/distribution systems. The boundaries of the Balancing Area are defined by the points of interconnection to other Balancing Areas. The generation within a Balancing Area must be constantly adjusted so that the sum of the power generated within the Balancing Area, plus power imported into the Balancing Area, less the power exported from the Balancing Area, less the load within the Balancing Area is maintained at zero, e.g., in balance. For the Project, the Balancing Area is composed of Los Angeles Water and Power, Glendale Water & Power, and Burbank Water & Power.

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- Keep rates affordable to Glendale customers.
- Facilitate compliance with state regulations regarding renewable energy supplies mandated through the Renewable Portfolio Standards and greenhouse gas emissions without the need for new transmission lines.
- Allow the City to meet its existing and future electrical demands even if Glendale is separated from existing interconnections with the electric grid.
- Replace the aged, unreliable, less efficient, high maintenance steam boilers with new efficient and cleaner electricity generation technologies.
- Provide a locally controlled source of generation to minimize the City's reliance on importing power from remote generation locations.
- Support water conservation efforts by eliminating the use of potable water for generation purposes.

## 2.6 SUMMARY OF ALTERNATIVES

This EIR considers a range of Alternatives to the Project in accordance with State CEQA Guidelines Section 15126.6. This section of the CEQA Guidelines requires that an EIR describe and evaluate a range of reasonable alternatives to a project to promote informed decision-making.

The Alternatives to the Project evaluated in this Draft EIR include:

1. **No Project Alternative:** Running the existing power plant to failure and not proceeding with repowering.
2. **Energy Storage Project Alternative:** Use of existing City electrical generation and transmission capacity to serve the City's electrical load and charge batteries when excess capacity is available. Energy stored in the batteries would then be discharged to serve the electrical load when demand exceeds the combined capacity of Unit 9 at Grayson, the electrical imports from Magnolia Power Plant, and available transmission.
3. **Alternative Energy Project Alternative:** A project with some combination of photovoltaic power production with energy storage and transmission lines.
4. **150 MW Project Alternative:** A reduced size power project located on the existing project site with a new transmission interconnection.
5. **200 MW Project Alternative:** A reduced size power project located on the existing project site with a battery energy storage system.

According to the CEQA Guidelines, the discussion of alternatives should focus on alternatives to a project or its location that can feasibly avoid or substantially lessen the significant effects of the Project. Section 4.0, Environmental Impact Analysis, of this EIR concludes that Project implementation would not result in significant and unavoidable environmental impacts.



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Nonetheless, the City of Glendale identified and considered the above alternatives to the Project. A discussion of these alternatives, as well others considered but excluded from further analysis are included in Section 5.0 of the Draft EIR.

## **2.7 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED**

Concerns related to the potential environmental effects of the Project that were raised during public scoping and stakeholder meetings primarily include potential construction impacts related to noise, dust, and traffic. These concerns have been addressed in Section 4.0, Environmental Impact Analysis in the Draft EIR.

## **2.8 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

A summary of the potential environmental impacts of the Project and the measures identified to mitigate these impacts is provided in Table 2-4 below for each topic addressed in this EIR. Table 2-4 has been arranged in four columns: the identified impact under each EIR issue area; the level of significance prior to implementation of mitigation; mitigation measures that would avoid or reduce the level of impacts; and the level of significance after implementation of mitigation measures.

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**Table 2-4 Summary of Project Impacts**

| Project Impacts   | Impact without Mitigation      | Mitigation Measures   | Impact with Mitigation       |
|---|--------------------------------|---|------------------------------|
| <b>Aesthetics</b>   |                                |   |                              |
| <p>The presence of demolition equipment and demolition activities would be temporarily visible to sensitive viewer groups near the southern portion of the Project site. Visual impacts associated with demolition would be localized and short term. As such, demolition activities would not contribute to the degradation of existing visual resources.</p>  | <p>Less than significant</p>   | <p>No mitigation is required.</p>   | <p>Less than significant</p> |
| <p>Temporary construction activities occurring near the south side of the Project site, as well as temporary construction equipment that exceed the height of the 12-foot masonry walls would be temporarily visible to sensitive viewer groups. In addition, the construction materials stored at the off-site construction laydown area would be visible to sensitive viewer groups within the area. The increased presence of construction activities, and storage of construction materials would temporarily contrast with the existing visual character and quality of views throughout the Project area during the 27-month construction period.</p>   | <p>Potentially significant</p> | <p><b>AES-1: Screen Laydown Areas.</b> Staging and laydown areas within view of residences, motorists, and recreational facilities shall be located away from public views or effectively screened using opaque fencing to limit views of materials, equipment, vehicles, and other items used during construction. All laydown areas shall be effectively reclaimed immediately following completion of their use.</p> | <p>Less than significant</p> |
| <p>Key observation points (KOP) were evaluated to determine if implementation of the Project would degrade the long-term visual character of the Project site and its surroundings. KOP-1 through KOP-5 were evaluated for vividness, intactness, unity, overall existing visual quality, and overall visual quality with the Project. The overall existing visual quality at each KOP remained the same with the incorporation of the Project.</p> <p>The Project would have the same potential for emission of visible water vapor plumes as the existing facility and would not likely be the source of any increase in visible water vapor plumes. Operation of the Project would have a less than significant impact on the existing visual quality and character of the Project site.</p> | <p>Less than significant</p>   | <p>No mitigation is required.</p>   | <p>Less than significant</p> |

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| Project Impacts   | Impact without Mitigation    | Mitigation Measures               | Impact with Mitigation       |
|---|------------------------------|-----------------------------------|------------------------------|
| <p>Although proposed to typically occur during daytime hours, demolition and construction activities may periodically require portable lighting for safety and security. The perimeter wall and proposed shielding of light fixtures would screen ground-level views of construction lighting. The varying lighting conditions from Project construction would be most noticeable from elevated views. Viewers on the adjacent elevated freeway are expected to have low sensitivity to visual changes since their views are of short duration. The remaining sensitive receptors with elevated views occur at distances in which these changes would blend with existing industrial and urbanized nighttime lighting conditions.</p>   | <p>Less than significant</p> | <p>No mitigation is required.</p> | <p>Less than significant</p> |
| <p>Proposed lighting installations during Project operation would be restricted to areas required for safety and operation. The Project would design and install all permanent exterior lighting with LED lights and fixtures that would not cause obtrusive spillover beyond the Project site, excessive reflective glare, or directly illuminate the night sky. In addition, the Project would incorporate switched lighting circuits for areas that would not require lighting for normal operation or safety. These areas would remain dark at most times and would minimize the amount of lighting visible off-site.</p>   | <p>Less than significant</p> | <p>No mitigation is required.</p> | <p>Less than significant</p> |
| <p><b>Air Quality</b></p>   |                              |                                   |                              |
| <p>The SCAQMD daily construction emissions thresholds are 75 pounds/day of volatile organic compounds (VOC), 100 pounds/day of nitrogen oxides (NOx), 550 pounds/per day of carbon monoxide (CO), 150 pounds/day of sulfur oxides (Sox), 150 pounds/day of particulate matter less than 10 microns (PM10), and 55 pounds/day of particulate matter less than 2.5 microns (PM2.5). The maximum daily emission caused by construction activities were calculated to be below the significance daily mass emission threshold for all criteria pollutants. Nevertheless, voluntary measures will be taken to further reduce emissions from construction equipment, and compliance with SCAQMD Rule 403 will also further reduce construction-related emissions. The Project would not conflict with or obstruct implementation of the air quality plan.</p> | <p>Less than significant</p> | <p>No mitigation is required.</p> | <p>Less than significant</p> |

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| Project Impacts  | Impact without Mitigation | Mitigation Measures        | Impact with Mitigation |
|--|---------------------------|----------------------------|------------------------|
| <p>The net increase of CO, PM10, PM2.5, and SO<sub>x</sub> emissions from Project operations are estimated to be below the significance daily mass emission thresholds. Additionally, an ambient air quality impact analysis demonstrates that the Project would not be expected to cause or significantly add to a violation of national and California ambient air quality standards. Furthermore, the net emission increase of PM10 and SO<sub>x</sub> will be offset using emission reductions from SCAQMD internal account to account for Rule 1304(a)(1) offset exemptions for replacement of functionally identical equipment.</p> <p>The net increase of NO<sub>x</sub> emissions of 553 pounds/day (normal operation) or 1,475 pounds/day (maintenance/testing of combustion turbines, hours of operation in this mode are limited), from Project operations are estimated to exceed SCAQMD's daily mass emission significance threshold of 55 pounds/day. However, an ambient air quality impact analysis shows the NO<sub>2</sub> emissions from this Project will not exceed the National and California ambient air quality standards. Additionally, the increase in NO<sub>x</sub> emissions from the Project will be offset through the purchase of Emissions Reduction Credits in the open market and allocations from SCAQMD internal accounts.</p> <p>The net increase of VOC emissions of 90 pounds/day (normal operation) or 102 pounds/day (maintenance/testing of combustion turbines, hours of operation in this mode are limited), from Project operations are estimated to exceed the daily mass emission significance threshold of 55 pounds/day. Additionally, there is no ambient air quality standard for VOC and no guidance to determine the significance of ambient concentrations of VOC. The increase in VOC emissions attributed to the Project will be fully offset using emission reductions from SCAQMD internal account to account for Rule 1304(a)(1) offset exemptions for replacement of functionally identical equipment.</p> | Less than significant     | No mitigation is required. | Less than significant  |
| <p>The net emission increase attributed to the Project are expected to be below the Prevention of Significant Deterioration significance thresholds. Based on the SCAQMD engineering evaluation, the potential annual emissions of Unit 9 are 45 tons for NO<sub>x</sub>, 30.8 tons for CO, 15.4 tons for</p>  | Less than significant     | No mitigation is required. | Less than significant  |

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|---|---------------------------|----------------------------|------------------------|
| <p>PM10/PM2.5, and 3.8 tons for SO<sub>2</sub>. Therefore, the plant-wide annual emissions after the modification are estimated to be 96.5 tons for NO<sub>2</sub>, 68.4 tons for CO, 30.5 tons for PM10/PM2.5, and 12.6 tons for SO<sub>2</sub>. These emission levels are below the Prevention of Significant Deterioration major source threshold of 100 tons per year for any of the attainment pollutants.</p>   |                           |                            |                        |
| <p>Modeling of Project operation emissions show that local ambient concentrations of NO<sub>2</sub>, CO and SO<sub>2</sub> are below state and federal ambient air quality thresholds after emissions from the Project are considered. The results also show that although ambient PM2.5 and PM10 currently exceed state and federal standards, the incremental increases in ambient concentrations of these pollutants are below significance thresholds established by SCAQMD.</p>  | Less than significant     | No mitigation is required. | Less than significant  |
| <p>The Project is not expected to violate any air quality standard or contribute substantially to an existing or projected air quality violation. The air quality impact during the construction phase does not exceed the mass daily significance thresholds; and the air quality impact in operating the facility will be below the ambient air quality standards based on the air dispersion modeling conducted.</p>   | Less than significant     | No mitigation is required. | Less than significant  |
| <p>The closest K-12 school will be Mark Keppel Elementary school, which is located more than 0.6 miles northeast from the emission sources. The nearest residential receptor is located approximately 694 feet (211 meters) from the emission sources and the nearest worker/commercial receptor is located approximately 572 feet (174 meters) from the emission sources. Both receptors are in the northeast direction of the emission sources. Based on the results of an ambient air quality analysis, criteria pollutant concentrations from the Project are expected to disperse substantially before reaching any sensitive receptors. The Project will neither cause, nor substantially add to an existing violation of state or federal ambient air quality standards. Additionally, impacts from construction activities are expected to be below daily significance thresholds as well as localized significance levels.</p> | Less than significant     | No mitigation is required. | Less than significant  |

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| Project Impacts   | Impact without Mitigation    | Mitigation Measures               | Impact with Mitigation       |
|---|------------------------------|-----------------------------------|------------------------------|
| <p>Toxic Air Contaminant emissions associated with the Project will consist primarily of combustion byproducts produced by the new turbines, the existing turbine (Unit 9), and the emergency engine. Maximum individual cancer risk (MICR) and non-cancer acute and chronic health risks were calculated for residential receptors and worker receptors. The MICR and hazard index (HI) values were calculated based on the combined impact of all chemicals. MICR was calculated as 1.09E-06 for residential receptors and 0.04E-06 for worker receptors with a significance threshold of 10.00E-06. Acute HI was calculated as 0.008 for residential receptors and 0.008 for worker receptors with a significance threshold of 1.00. Chronic HI was calculated as 0.003 for residential receptors and 0.003 for worker receptors with a significance threshold of 1.00. Therefore, health risks that the Project poses to nearby residential and worker receptors are expected to be below the significance thresholds.</p> <p>The MICR for residential receptors were calculated to be greater than the 1.00E-06 threshold to trigger the Cancer Burden analysis. Cancer burden of this Project were determined based on the distance of 627 meters, where the MICR falls below one in one million, a highly conservative population density default value of 7,000 persons per square kilometer, and the MICR at the residential receptor of 1.36E-06. The cancer burden was calculated to be 0.012, which is below the significance threshold of 0.5.</p> <p>Toxic air contaminants emissions associated with the earth moving activity will consist primarily of combustion byproducts from off-road equipment and vehicles trips. The construction of the facility is anticipated to take place over a period of 27 months. Therefore, Toxic Air Contaminants emissions from construction activity are not expected to have health significant impacts on cancer and non-cancer chronic risks because these risks are typically assessed for continuous exposure for 30 years. Additionally, the heaviest impacts of earth moving activity can be expected to occur within the fence line of the power plant. Therefore, the Toxic Air Contaminants emission impacts from the earth moving activity are expected to be less than significant.</p> | <p>Less than significant</p> | <p>No mitigation is required.</p> | <p>Less than significant</p> |

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| Project Impacts   | Impact without Mitigation | Mitigation Measures        | Impact with Mitigation |
|---|---------------------------|----------------------------|------------------------|
| <b>Geology &amp; Soils</b>  |                           |                            |                        |
| <p>There is low to moderate potential for surface rupture from the Verdugo fault and other nearby active faults during the design life of the Project. Strong ground shaking can be expected at the Project site during moderate to severe earthquakes in the general region and the Project area is located within a liquefaction zone and site conditions may be susceptible to seismically induced liquefaction in the event of a major earthquake. However, with the implementation of applicable building codes and recommendations made within the Geotechnical Study (Stantec, 2015), geological impacts are expected to be less than significant.</p>                       | Less than significant     | No mitigation is required. | Less than significant  |
| <p>Earth-moving activities during demolition and construction, including trenching, excavating, stockpiling, and grading would result in exposure and mobilization of onsite soils, increasing the chance of erosion. An erosion control plan, SWPPP, Dust Control Plan and BMPs would be implemented to minimize erosion. With implementation of these required plans and procedures, impacts from soil erosion are anticipated to be less than significant.</p>   | Less than significant     | No mitigation is required. | Less than significant  |
| <p>Due to estimated surface settlements, as well as minimal slopes, depth of groundwater, and non-expansive soils at the Project site, impacts related to stability, landslide, lateral spreading, subsidence, and liquefaction of collapse are considered less than significant.</p>   | Less than significant     | No mitigation is required. | Less than significant  |
| <b>Greenhouse Gas Emissions</b>   |                           |                            |                        |
| <p>The proposed new combustion gas turbines are expected to generate less GHG emissions on a pound per megawatt-hour basis than the existing equipment that is to be removed from service. The Project will result in GHG emissions due to both construction and operation activities. The GHG construction emissions would be generated primarily by the off-road construction equipment and on-road vehicles. Total CO<sub>2</sub>e emissions during construction of the Project would be 1,327 metric tons per year. During facility operations, natural gas combusted in the new combustion turbines, diesel fuel combusted in the emergency engine, and facility occupancy</p> | Less than significant     | No mitigation is required. | Less than significant  |

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|--|---------------------------|--|------------------------|
| <p>related activities will contribute to GHG emissions. The net increase of GHG emissions from the operation of the Project, 415,832 metric tons per year, exceeds the significance threshold of 10,000 metric tons per year. CO<sub>2e</sub> emissions would be reported and allowances and offset credits would be acquired to mitigate 100 percent of GHG emissions from the combustion equipment and transformers. Net emissions after mitigation will include only emissions related to facility occupants and will be well below the 10,000-metric ton significance threshold.</p>         |                           |  |                        |
| <p>Emissions from the Project will be fully offset through the retirement of GHG allowances held by GWP, and additional credits to be purchased by GWP. The Project will allow the City to maximize the import of renewable energy sources through the limited existing transmission capacity into the City which will further assist the City in meeting the Renewable Portfolio Standards and GHG reductions specified in the Greener Glendale Plan. The Project would not conflict with any applicable plan, policy or regulation adopted for reducing the emissions of greenhouse gases.</p> | Less than significant     | No mitigation is required.   | Less than significant  |
| <b>Hazards &amp; Hazardous Materials</b>   |                           |  |                        |
| <p>Demolition activities involving the removal of hazardous materials including asbestos containing material and lead-based paint could create a significant hazard to the public.</p>   | Potentially significant   | <p><b>HAZ-1:</b> Prior to demolition of facilities associated with the Grayson Repowering Project, hazardous materials stored onsite and not required for continued operation of the facility shall be inventoried, packaged, removed, and disposed in accordance with a Hazardous Materials Management Plan prepared by the demolition contractor and submitted to the City for review and approval prior to initiating demolition activities.</p> <p><b>HAZ-2:</b> Buildings or equipment to be demolished containing lead based paint or asbestos shall be either decontaminated or encapsulated prior to removal from the Project site and disposed in accordance with</p> | Less than significant  |



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| Project Impacts   | Impact without Mitigation | Mitigation Measures  | Impact with Mitigation |
|---|---------------------------|--|------------------------|
|   |                           | an Asbestos and Lead Paint Management Plan prepared by the demolition contractor and submitted to the City for review and approval prior to initiating demolition activities.  |                        |
| Petroleum hydrocarbons and VOCs may be encountered during subsurface demolition activities. Excavation, handling, and transport of contaminated soil has the potential to impact workers and the public if not handled and contained properly.  | Potentially significant   | <b>HAZ-3:</b> Contaminated soil encountered during demolition activities shall be handled, removed, and disposed in accordance with regulatory requirements and the Project's Soil Management Plan.  | Less than significant  |
| Hazardous materials used during construction of the Project will include gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. The quantities of hazardous materials that will be used onsite during construction will be limited to the quantities required to complete construction of the Project. The potential exists for fuels, oil, and grease to drip from construction equipment. Spills of fuel may occur during onsite refueling operations if refueling operations are not conducted properly. It is not anticipated that spills related to refueling operations would be large and would be limited to the immediate area and cleaned up at the time of the spill using spill kits stationed on the fuel truck. It is unlikely that the volume of refueling spills will travel beyond the immediate area of the spill and impact offsite receptors. | Potentially significant   | <b>HAZ-4:</b> Hazardous materials used during construction shall be limited to the quantities required for construction and shall be stored and handled in accordance with regulatory requirements.<br><br><b>HAZ-5:</b> Utility trucks and refueling trucks operating onsite shall have a spill kit onboard at all times. Small spills of petroleum products or other hazardous materials during construction operations shall be reported to the Construction Supervisor and a Spill Response form completed with a description of the type and quantity of the spill accompanied by photographs and a description of the disposition of the spill material. Hazardous spill material shall be disposed according to regulatory requirements. In the event of a large spill of hazardous materials equal to or above reportable quantities federal, state, and local reporting requirements shall be followed. | Less than significant  |

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|--|--------------------------------|--|------------------------------|
| <p>The types and quantities of hazardous materials anticipated to be used and stored onsite during operation of the Project is consistent with the types and quantities of hazardous materials currently used and stored onsite. Use, storage, handling, disposal, and reporting of these hazardous materials would be consistent with current practices and regulatory requirements and not create a significant hazard to the public or the environment.</p>   | <p>Less than significant</p>   | <p>No mitigation is required.</p>  | <p>Less than significant</p> |
| <p>The Project would maintain an existing 19-percent aqueous ammonia above ground storage tank and would add a second tank of the same volume and containment system. An offsite consequence analysis assumed the complete failure of the storage tank, the immediate release of the contents of the tank, and the formation of an evaporating pool of aqueous ammonia within the secondary containment structure. In this event, evaporative emissions of ammonia would be subsequently released into the atmosphere. The dispersion and transport of these emissions into the atmosphere would be subject to meteorological conditions at the time of the release. The offsite consequence analysis for the worst-case release of ammonia indicates that 75 parts per million concentration would extend 528 feet from the ammonia tank/release. This distance would extend beyond the Grayson Power Plant eastern property boundary and is considered a potentially significant impact.</p> | <p>Potentially significant</p> | <p><b>HAZ-6:</b> The surface area of the proposed and existing ammonia tank containment systems shall be reduced by 90 percent or greater through the installation and maintenance of three-inch diameter high density polyethylene balls or similar method.</p> | <p>Less than significant</p> |
| <p><b>Hydrology &amp; Water Quality</b></p>  |                                |  |                              |
| <p>Soil temporarily exposed during excavation and grading activities may be subject to sheet erosion during rain events thereby increasing the level of suspended solids in flows emanating from the site. In addition, the demolition of the existing facility may result in the exposure and/or disruption of contaminated soils, which may impact surface water quality during storm flows. A SWPPP containing structural treatment and source control measures, including BMPs, appropriate for the Project would be prepared and incorporated. Implementation of the measures included in the SWPPP as well as those included in the Project's Soil Management Plan (Appendix E.4) would ensure that RWQCB water quality standards are met,</p>   | <p>Less than significant</p>   | <p>No mitigation is required.</p>  | <p>Less than significant</p> |

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|---|------------------------------|-----------------------------------|------------------------------|
| <p>the drainage pattern of the site would not result in substantial erosion or siltation on- or off-site.</p>   |                              |                                   |                              |
| <p>Stormwater that falls within the plant in pavement areas and outside the process equipment containment areas would flow via surface sheet flow and localized gutters to catch basins and on-site storm drain piping to be discharged to the Verdugo Wash and Los Angeles River. Stormwater that is not captured in containment areas would be captured via a storm drain system and processed before being discharged either to the sanitary sewer or to the Verdugo Wash or Los Angeles River. The system would meet all applicable effluent discharge standards set by the RWQCB and other regulatory agencies before discharging through the existing stormwater outfalls and would not substantially alter the drainage pattern or result in substantial polluted runoff. The proposed stormwater capture, treatment and infiltration system would result in improved drainage conditions and stormwater runoff quality compared to the existing system.</p> | <p>Less than significant</p> | <p>No mitigation is required.</p> | <p>Less than significant</p> |
| <b>Noise</b>  |                              |                                   |                              |
| <p>Demolition and construction would result in noise from the operation of conventional construction equipment and associated vehicles. Construction related activities will be conducted Monday through Saturday between the hours of 7:00 AM and 7:00 PM and will therefore be in accordance with the City of Glendale noise ordinance related to construction noise. It is possible that some concrete pouring activities could be conducted at night. Predicted noise levels at receptors were modeled and would be below City nighttime noise standards. Any construction work conducted outside the above times and days would be subject to issuance of a City variance. Construction related noise would</p>  | <p>Less than significant</p> | <p>No mitigation is required.</p> | <p>Less than significant</p> |

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| Project Impacts  | Impact without Mitigation | Mitigation Measures   | Impact with Mitigation |
|--|---------------------------|---|------------------------|
| therefore not expose persons to or generate noise levels in excess of established standards and potential impacts would be less than significant.  |                           |   |                        |
| <p>Noise (including low frequency) from operation of the Project was modeled to predict resulting noise levels at sensitive receptors. Many of the primary noise sources and levels associated with Project operation have been guaranteed by the equipment manufacturer and were considered in the modeling. However, some ancillary equipment which would contribute to noise has not yet been identified. If this ancillary equipment does not meet specific noise levels, operation of the Project could expose persons to noise levels in excess of established City standards.</p> | Potentially significant   | <p><b>NOI-1: Noise Source and Required Noise Control Measures: Cooling Towers</b> - The noise emissions from each cooling tower shall be limited to 57 dBA at 400 feet (107 dBA sound power level). Mats may be required to limit the water splash noise.</p> <p><b>NOI-2: Noise Source and Required Noise Control Measures: Cooling Tower Fan Motors and Gearboxes</b> - The sound power levels for cooling tower motors shall be limited to 98 dBA (85 dBA at 3') the motors shall be placed on the west side of the towers.</p> <p><b>NOI-3: Noise Source and Required Noise Control Measures: Fuel Gas Compressors</b> - The noise emissions from each of the two fuel gas compressor areas shall be limited to 44 dBA at 400 feet. Compressor enclosures or properly designed noise barriers can be utilized.</p> <p>Under the current assessment scenario open air compressor equipment packages with total sound power level of 108 dBA were treated with 21-foot sound barrier to yield appropriate results.</p> <p><b>NOI-4: Noise Source and Required Noise Control Measures: Water Treatment Area</b> - The noise emissions from the water treatment area shall be limited to 48 dBA at 400 feet. It is expected that this level can be achieved</p> | Less than significant  |

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|                 |                           | <p>through a combination of equipment selection, small enclosures and barriers</p> <p><b>NOI-5: Noise Source and Required Noise Control Measures: Boiler Feed Water Pumps for Combined Cycle Units</b> - The sound power levels for boiler feed water pumps shall be limited to 105 dBA when placed outside near the respective HRSGs.</p> <p><b>NOI-6: Noise Source and Required Noise Control Measures: Circulating Water Pumps for Cooling Towers</b> - The sound power levels for circulating water pumps shall be limited to 101 dBA when placed outside near the respective cooling towers.</p> <p><b>NOI-7: Noise Source and Required Noise Control Measures: Generator Step-up Transformers</b> - Standard NEMA 95 MVA rated transformers or lower shall be utilized.</p> <p><b>NOI-8: Noise Source and Required Noise Control Measures: Steam Turbine Building</b> - The sound power level of the noise breaking out from the steam turbine building shall be limited to 95 dBA and 115 dBC (45 dBA and 65 dBC at 400 feet).</p> <p>Specialized enclosures for the gearboxes shall be required and steam turbine building walls and roofs shall have an STC 40 composite transmission loss rating.</p> <p><b>NOI-9: Noise Source and Required Noise Control Measures: Steam Pipe Rack</b> - The</p> |                        |

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|   |                              | <p>sound power level for the steam pipe rack shall be limited to 82 dBA per meter of piping.</p> <p><b>NOI-10: Noise Source and Required Noise Control Measures: Steam Sky vents and safety valves</b> - Steam sky and safety valves shall be equipped with silencers to limit their noise emissions to 115 dBA sound power (approximately, 90 dBA at 5').</p> |                              |
| <p>No significant ground-borne noise effects are expected during the construction or operation of the Project. Project vibration levels beyond the Project site boundary during operations are expected to be negligible. Demolition and construction activities are expected to involve potential sources of ground borne vibration such as pile driving. At the higher end of the diesel pile drivers, the expected vibration amplitude defined in terms of peak particle velocity (PPV) is 1.52 in/s. For demolition activities, the vibration levels equivalent to 1.5-ton ball drop from 10' can be used (3.89 in/s PPV at 25 feet). Predicted maximum demolition and construction vibration levels are below the preferred vibration thresholds at the nearest residential and commercial buildings. The Project would therefore not result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels nor would damage to the nearby structures would be expected.</p> | <p>Less than significant</p> | <p>No mitigation is required.</p>  | <p>Less than significant</p> |
| <p>the Project noise results in a permanent increase in area ambient sound levels of less than 2.5 dB during nighttime hours and less than 1 dB during daytime hours.</p>   | <p>Less than significant</p> | <p>No mitigation is required.</p>  | <p>Less than significant</p> |
| <p>A substantial temporary increase in ambient noise levels may result from the demolition and construction activities associated with the Project. Such increases will fluctuate with changing activities and duration. Construction would be limited to the daytime hours of 7:00 am to 7:00 pm Monday through Saturday, excluding Holidays consistent with the City's Noise Ordinance. It is possible that some concrete pouring activities could</p>  | <p>Less than significant</p> | <p>No mitigation is required.</p>  | <p>Less than significant</p> |

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| <p>be conducted at night. Predicted noise levels at receptors were modeled and would be below City nighttime noise standards. Any construction work conducted outside the above times and days would be subject to issuance of a City variance. Steam blows during commissioning will utilize silencers. Other commissioning activities will be no louder than normal plant operations.</p>   |                           |   |                        |
| <b>Transportation &amp; Traffic</b>   |                           |   |                        |
| <p>The majority of truck traffic would access the site using the northbound right-turn lane on Fairmont Avenue. The entrance driveway is 25 feet wide and is designed to accommodate most truck movements. However, larger trucks (CA-Legal 65 feet) will require a wider turn radius and encroach into the number two northbound through lane.</p>   | Potentially significant   | <p><b>TRA-1:</b> To accommodate turning movements by large trucks (CA-Legal 65 feet) and public safety on Fairmont Avenue, the demolition and construction contractor shall be required to prepare a traffic control plan for City review and approval prior to initiating demolition and construction activities that includes the use of large trucks entering and departing the Grayson Power Plant from Fairmont Avenue.</p>  | Less than significant  |
| <p>During the demolition phase (June 2018 – March 2019) the Project will require between 25 and 60 construction personnel daily. Between five and 22 trucks delivering equipment or hauling demolition materials will travel to and from the project site daily. During the construction phase (April 2019 – December 2020) the Project will require between 35 and 150 construction personnel daily, with a peak demand of between 170 to 240 personnel during the December 2019 – May 2020 period. Between two and nine trucks delivering equipment or hauling demolition materials are expected to travel to and from the project site daily. In addition, soils import will require up to 50 hauling trucks per day during the first two months (April - May 2019) and up to 25 trucks per day during December 2019 and January 2020. Concrete delivery for foundation pilings will require an average of up to 12 trucks per day, with a maximum of 36 trucks for two days per month during four months (total of eight days during the life of the Project). During the commissioning phase (January 2021 – June 2021) the Project will require between 25 and 85 construction personnel daily.</p> | Potentially significant   | <p><b>TRA-2:</b> To reduce construction traffic at the San Fernando Road and Doran Street intersection during the PM peak hours, a construction traffic control plan shall be developed by the contractor, reviewed and approved by the City, and implemented for the duration of the construction phase. The plan shall include measures to limit vehicle trips to a total of 24 trips or less during the hours of 4 to 6 PM for the San Fernando Road and Doran Street intersection. Measures may include scheduling of construction activities or trip routing to minimized travel during peak PM traffic times, ride sharing, closing the parking lot, and/or other effective and verifiable measure.</p> | Less than significant  |

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| <p>The number of hauling/delivery trucks will be reduced to an average of two trucks per day.</p> <p>Construction worker parking will be provided on the Caltrans/City of Glendale storage yard between the Verdugo Wash and Doran Street. Maximum construction related traffic levels are anticipated to occur from January to May 2020. The Project is expected to result in a short-term addition of 214 ADT, 27 AM peak hour trips and 40 PM peak hour trips during the demolition period. During the construction period, a short-term addition of 513 ADT, 65 AM peak hour trips and 104 PM peak hour trips would be generated. During the commissioning period, a short-term addition of 71 ADT, 9 AM peak hour trips and 17 PM peak hour trips would be generated. The project peak is during the construction phase (January 2020).</p> <p>The Project would generate a short-term impact at the San Fernando Road/Doran Street intersection by adding V/C 0.05 during the PM peak hour, which would exceed the City of Glendale's threshold of V/C 0.02 for signalized intersections operating at LOS D, E, or F. Project personnel expected during the construction phase is 180 persons. Project personnel trips during the demolition and commissioning phases are not expected to exceed 60 and 35 persons; respectively. This short-term significant impact is expected to be for a maximum 21-month time period (construction duration).</p> |                           | <p><b>TRA-3:</b> The applicant shall ensure that traffic control is implemented for the duration of demolition and construction phases. Traffic control shall include construction warning signs on Fairmont Avenue (Trucks Entering Exiting), and monitoring (flag person) on public roadways as needed during large transports.</p> <p><b>TRA-4:</b> A construction traffic control plan shall include provisions for days when high truck traffic is generated (soil delivery days, peak concrete delivery days). The plan will include considerations for truck staging to ensure that truck parking/staging can be accommodated off the City streets.</p> <p><b>TRA-5:</b> Traffic control monitors shall direct traffic whenever heavy construction equipment is entering and exiting the plant as warranted to ensure public safety. The traffic monitor shall be posted throughout the demolition and construction periods, as necessary. The applicant shall coordinate with the Glendale Fire Department to ensure that traffic control routes and procedures would allow for adequate emergency access.</p> <p><b>TRA-6:</b> All construction-related vehicles, equipment staging and storage areas shall be located in approved pre-determined areas that are outside of adjacent road right of ways. The applicant shall provide all construction personnel with a written notice of this requirement and a description of</p> |                        |



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|  |                                | <p>approved parking, staging and storage areas. The notice shall also include the name and phone number of the applicant's designee responsible for enforcement of this restriction.</p> <p><b>TRA-7:</b> Construction traffic shall comply with the California Vehicle Code sections related to vehicle weight and width. Any extra-legal loads needed for specialized deliveries shall be subject to special permit requirements from the City of Glendale. Should roadway damage occur along the haul route that is directly attributable to the demolition and construction of the Project, repairs will be assessed by the City and completed accordingly.</p>                                     |                              |
| <p>Roadway segments in the local transportation network could potentially be damaged by truck traffic. There is also the potential for tracking dust, soils, and other materials from the construction sites onto public and private roads. The potential for damage to public and private roadways from construction traffic is considered significant.</p> | <p>Potentially significant</p> | <p><b>TRA-8:</b> Fugitive dust control shall be implemented according to SCAQMD Rule 402, 403 and 1186, and California Vehicle Code Section 23114, and Building &amp; Safety requirements. Dust control mitigation measures shall include:</p> <ul style="list-style-type: none"> <li>• Soil stabilizers and dust suppressants to control fugitive dust levels from exposed soils.</li> <li>• On-site water trucks to provide control of fugitive dust while soil is moved or disturbed.</li> <li>• Off-site vacuum and broom sweepers to remove any fugitive materials from the public roadways.</li> <li>• Track-out control to prevent dirt and mud from being spread to public roadways:</li> </ul> | <p>Less than significant</p> |

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|   |                           | <ul style="list-style-type: none"> <li>o Sweeping or spray cleaning trucks prior to leaving project site.</li> <li>o Adequate truck load covering.</li> </ul> Limit on-site vehicle speeds to 15 mph. |                        |
| <p>The existing storage length of each off-ramp in the study-area is sufficient to accommodate the expected peak hour queues of 270 feet or less under existing plus project conditions. Therefore, no impacts are anticipated.</p> <p>Caltrans District 7 has established LOS F0 as the minimum acceptable level of service on the freeway system (Caltrans, 1996). Segment 7 along I-5 has an existing LOS below the minimum acceptable level. The AADT for segment 7 is 294,000 vehicles. The Project would add an ADT average of 513 vehicles during the peak period (construction, January 2020). The construction trip distribution calculates that 65% of the 513 vehicles will utilize I-5. Therefore, approximately 334 vehicles may travel along segment 7 of I-5 consisting of 0.11% of the AADT along this freeway. The Project contribution of 0.11% is not expected to degrade the existing MOE along segment 7. Based on the foregoing analysis, and therefore will not conflict with the CMP LOS.</p> | Less than significant     | No mitigation is required.  | Less than significant  |
| <b>Tribal Cultural Resources</b>  |                           |   |                        |
| The Project would have no significant impacts.  | No impact                 | No mitigation is required.  | No impact              |