

**FINAL ENVIRONMENTAL IMPACT REPORT
GRAYSON REPOWERING PROJECT**

RESPONSE TO COMMENTS
March 1, 2018

9.1.1 Topical Responses

A number of comments received on the Draft EIR focused on several main issues and topics associated with the Project and the CEQA analysis of Project impacts. Because of this, the City of Glendale determined it would be appropriate, and would facilitate public review, to provide topical responses to address these comments and provide the necessary context for considering the issues raised. The main issues and topics warranting topical responses are provided in full, below, and include the following:

Table 9-2 Topical Responses

Topics	Topical Response No.
Glendale is Pursuing Both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates	1
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9.1.1.1 Topical Response No. 1: **Glendale is Pursuing Both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates**

Summary of Comments

Comments were received stating that Glendale should not put “all of its eggs in one basket” by single-mindedly pursuing the construction of a large, gas-fired plant when alternative, green technologies are available and are continuing to develop. Commenters state that Glendale should instead consider an integrated solution that includes solar generation, storage, demand management and energy efficiency measures.

Summary of Responses

- The Project is just a part of the City's integrated, diversified plan to provide reliable, clean energy at reasonable rates to serve Glendale businesses and residents.
- Glendale is continually seeking additional cost-effective opportunities for renewable energy projects, and will continue to do so with or without the Project.
- The State of California allows utilities to leverage any number of renewable resources, including solar, wind, geothermal, and small hydroelectric, to achieve Renewable Portfolio Standards requirements. Glendale Water & Power's resource mix as of 2016 (the most recently reported year) included 47% eligible renewable resources.
- Many Renewable energy resources are subject to intermittency (i.e., they may not be available at all times, such as when the sun is not shining, or the wind is not blowing). Intermittent energy resources must be “firmed and shaped” by more reliable energy resources known as dispatchable resources. With this “firming and shaping”, the combination of the renewable energy sources and dispatchable energy sources provide an integrated resource strategy that can meet the City's energy demand on a continuous, real-time basis. The purpose of repowering Grayson is to provide that dispatchable source of power that can firm and shape GWP's renewable sources of power and ensure reliable operation of the City's electricity supply.
- Repowering Grayson is a necessary component of Glendale's long-term clean energy strategy. Glendale is planning for and moving toward a future where an increasing percentage of Glendale's energy portfolio must come from renewable and zero carbon resources. The increasing percentage of renewable energy on Glendale's system drives the need for the Project because additional firming and shaping capabilities will be needed. Also, the Project allows Glendale to use more of its limited transmission capacity for the import renewable and zero carbon resources rather than bringing in fossil fuel energy for firming and shaping or to meet the City's needs during a peak load day or a Grayson Power Plant failure.

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Response

Nearly Half of GWP’s Current Energy Portfolio Consists of Renewable Energy Sources

The Project is part of an integrated, diversified plan to provide reliable, clean energy at reasonable rates to serve Glendale businesses and residents. Glendale has long maintained a diversified portfolio of resources. Glendale Water & Power’s (“GWP”) resource mix as of 2016 (the most recently reported year) includes 47% eligible renewable resources, which is substantially higher than most communities in California. GWP’s energy portfolio includes wind energy, hydroelectricity, and geothermal resources brought into Glendale via long-distance transmission lines, a small amount of solar electricity generated by a City-owned facility covering the parking structure at Glendale Community College, and an additional 17% of carbon-free resources (large hydroelectric and nuclear). These figures are reported annually on the “power content label” that is required by state law to disclose to consumers the sources of power sold by retail electricity suppliers. GWP’s 2016 Power Content label is set forth below in Table 9-3:

Table 9-3 Power Content Label Annual 2016²⁸

Energy Resources	2016 Glendale Power Mix	2016 California Power Mix**
Eligible Renewable	47%	25%
- Biomass and Waste	12%	2%
- Geothermal	2%	4%
- Eligible Hydroelectric	8%	2%
- Solar	0%	8%
- Wind	26%	9%
Coal	5%	4%
Large Hydroelectric	10%	10%
Natural Gas	29%	37%
Nuclear	7%	9%
Other	1%	0%
Unspecified Sources of Power*	1%	15%
TOTAL:	100%	100%
<p>* “Unspecified sources of power” means electricity from transactions that are not traceable to specific generation sources. ** Percentages are estimated annually by the California Energy Commission based on the electricity sold to California consumers during the identified year. The 2016 California Power Mix is provided for comparison purposes *** Glendale uses the lowest cost resources and renewables to provide for retail sales. The percentage of Renewables will vary from the RPS Compliance for 2016 due to difference in calculation methodologies as required. Renewable purchases also include REC-only transactions (without energy). **** All percentages are rounded.</p>		

²⁸ <http://www.glendaleca.gov/government/city-departments/glendale-water-and-power/the-environment/power-content-label>

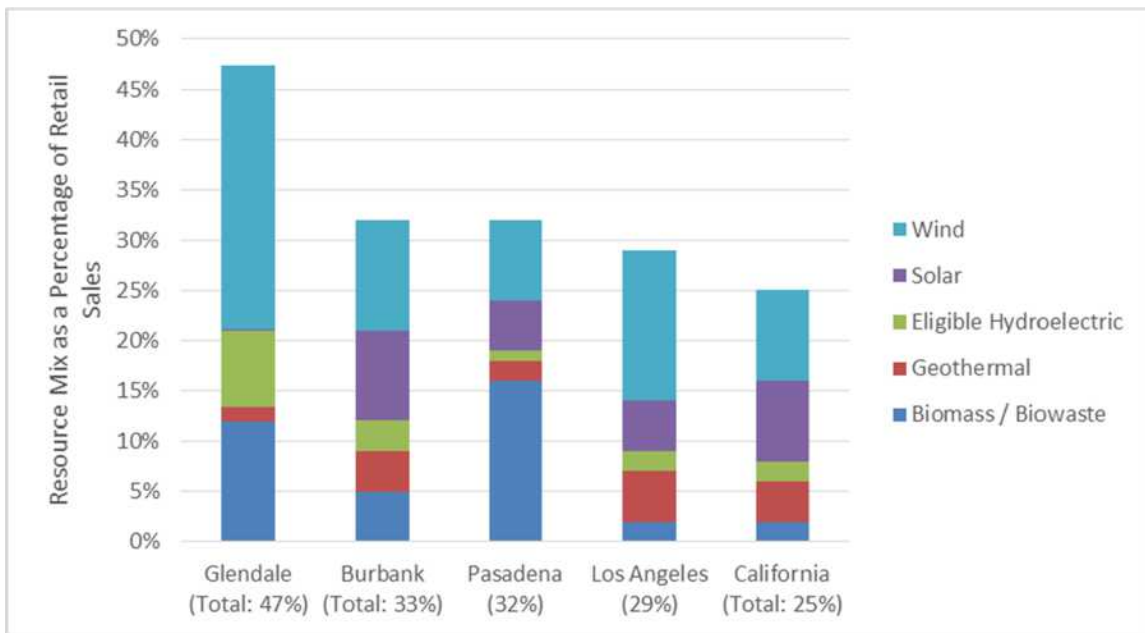


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Figure 9-1 and 9-2, below, compare Glendale's renewable energy and carbon-free portfolios with Burbank, Pasadena, LADWP, and California as a whole.

Figure 9-1 Compare Glendale's Renewable Energy Portfolios with Burbank, Pasadena, LADWP, and California as a Whole



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Figure 9-2 Compare Glendale’s Renewable Carbon-Free Portfolios with Burbank, Pasadena, LADWP, and California as a Whole

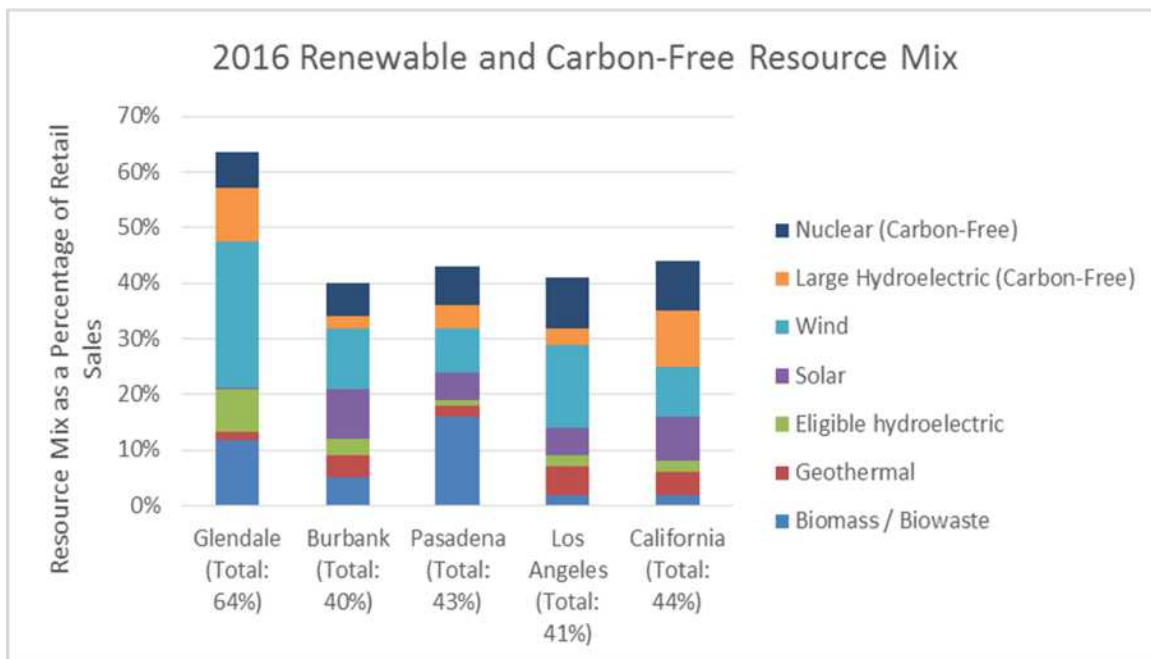


Figure 9-1 reflects the contents of each city's respective 2016 Power Content Label, which are the most recent ones available/certified (2017's numbers will likely not be certified until this fall).

Figure 9-2 reflects a combination of each city's respective renewable and other carbon-free resources (where "carbon free" expands the definition to include nuclear and large hydroelectric, which are not counted as "renewable" but are carbon-free).

It should be noted that solar energy reported in Glendale's power content label is negligible because State net energy metering law prohibits Glendale from counting privately-owned net-metered solar energy (other than the small amount of net generation fed back into the grid) towards Glendale's Renewables Portfolio Standard mandate, and the array at Glendale Community College is not large enough to be reflected in the Power Content Label. The State of California does not explicitly mandate procurement of solar resources, and instead allows utilities to leverage any number of renewable resources, including solar, wind, geothermal, and small hydroelectric, to meet its renewable obligations.

GWP's Renewable Energy Sources

The majority of GWP's procurement of renewable energy has been fulfilled by long-term renewable energy contracts, which are favored under California law (SB 350). GWP seeks to procure the most cost-effective resources. Historically, solar energy has been more expensive



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than other renewable resources. However, new solar projects and resources are continually evaluated for best fit into Glendale's resource mix and system. Glendale continues to review and monitor new solar installations throughout the western United States, both independently and through the Southern California Public Power Authority. Glendale has participated in a number of such projects, when such projects are cost-effective and where there is transmission available to bring the energy to Glendale. Where feasible and cost-effective, Glendale also enters into bilateral agreements for renewable and zero-carbon energy. For example, Glendale recently signed a twenty-one-year power supply contract that will annually deliver a guaranteed minimum of 160,600 MWh renewable energy and a minimum of 58,400 MWh per year zero-carbon energy for Glendale residents from 2020 through 2041. This represents approximately 21% of Glendale's electrical load.

Glendale also encourages private solar development within the City of Glendale by offering rebates, net energy metering, a renewable energy feed-in-tariff program, and by authorizing Property Assessed Clean Energy ("PACE") Program financing within its jurisdiction. GWP offers time-of-use rate schedules to shift load away from peak periods, and has installed 166 Ice Bear thermal energy storage technology systems on facilities throughout the City to shift load from the daytime to the night time. In addition, Glendale sponsors a number of energy efficiency programs and demand response measures for its residents and businesses, as described in Topical Response No. 7, Demand Management. Please refer to Topical Response No. 5, Renewable Energy, for further information.

The Project is a Necessary Component of a Long-Term Renewable Energy Strategy to Power Glendale

Glendale is planning for, and moving toward a future where an increasing percentage of Glendale's energy portfolio must come from renewable and zero-carbon resources. While it may seem counterintuitive, the increasing percentage of renewable energy on Glendale's system actually increases the need for the Project. This is because dispatchable energy sources are needed to "firm and shape" intermittent renewable energy sources, as described below. On a long-term basis, solar- and wind-based renewable power may be a reliable source of power (i.e., one can reasonably forecast the amount of energy that will be produced on an annual basis). However, on a short-term basis, these forms of renewable energy are intermittent, and their output can vary, sometimes quickly and unexpectedly, such as when clouds pass over a solar energy facility or the wind stops blowing. Therefore, renewable energy resources that are subject to intermittency must be "firmed and shaped" so that the combination of the renewable energy supply and the dispatchable energy source provide a source of power that matches the system load on a continuous, real-time basis. The purpose of repowering Grayson is to provide that dispatchable source of power that can firm and shape GWP's renewable sources of power and ensure reliable operation of the City's electricity supply.

Due to their age and unreliable availability, the current units at the power plant — other than Unit 9 — are unable to respond quickly and cannot "ramp up" and "ramp down" quickly

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enough to respond to intermittent conditions. Because solar and wind, which comprise the bulk of renewable energy supplies, have intermittency issues, a reliable power plant like the repowered Grayson is best-suited to quickly respond to those intermittent resources, ensuring a smooth and predictable supply of energy. As more renewable resources are installed, the need for reliable, dispatchable energy to respond to these intermittent resources increases at a commensurate rate; more rooftop solar means an increased need for dispatchable resources. The same is true for utility-sized solar projects importing solar energy from outside of Glendale because even these large, utility-scale solar projects are susceptible to cloud cover and require dispatchable generation to ensure a reliable supply.

As clarified in Topical Response No. 3, Project Need, “dispatchable generation” consists of a combination of thermal generation, which is reliable and dispatchable, and potentially storage (e.g., batteries). However, because Glendale’s limited transmission capacity is insufficient to fully charge the batteries to meet peak load, local thermal generation is required to charge the batteries at any hour and to firm and shape the intermittent renewable resources. Additionally, it is important to note that Glendale’s highest loads typically occur during the late afternoon, whereas solar generation peaks at noon, making it necessary to store and time shift solar energy resources.

The Project Would Allow for Increased Transmission of Renewable Energy Sources into Glendale

The Project would allow the City to free up its limited transmission capacity to import more renewable energy, and helps Glendale achieve its Renewables Portfolio Standard requirements, for several reasons:

- As explained in Topical Response No. 3, Project Need, by supplying its own reserves, Glendale can begin using its full share of the Pacific DC Intertie line that runs from the Pacific Northwest into Glendale. Under the terms of the Balancing Authority Area Agreement between LADWP and Glendale, LADWP will supply Glendale with 80 MW of reserves to cover Glendale for the first hour of a contingency event, on the condition that Glendale will limit its imports on the Pacific DC Intertie transmission line to 86 MW²⁹. With the Project, Glendale can self-supply the required reserves and therefore will be able to use its full transmission capacity (119 MW)³⁰ on the Pacific DC Intertie transmission line. Glendale can use this extra capacity to import renewable energy.
- Having dispatchable thermal generation under the City’s control facilitates the City’s ability to import renewable energy that is intermittent. With the Project, the City can “firm and shape” the intermittent, unpredictable renewable energy with its own dispatchable

²⁹ This results in 80 MW delivered to Glendale, because of 6 MW of transmission losses.

³⁰ Glendale’s share of the northern segment of the Pacific DC Intertie line (from Oregon to Sylmar) is 119 MW (recently increased from 115 MW due to line upgrades), but Glendale’s share of the southern segment (from Sylmar into Glendale) is 100 MW.

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energy, providing a stable, predictable, controllable output for GWP's customers. This means that the City can use its limited transmission capacity to bring in larger quantities of renewable energy, rather than importing a firmed and shaped mix of green energy and fossil fuel generation.

- o By way of example, if Glendale purchases 25 MW³¹ of wind energy from the Pacific Northwest, in order to rely on having 25 MW available to serve Glendale's customers, it must have a resource standing by, able to come online immediately and supply power if, for example, the wind is not blowing very hard and the City only receives 15 MW of wind from the wind farm. With the Project, in the event the expected wind power does not materialize, the City can use the Project to supply the additional 10 MW of power that it was counting on, so that it will have the full 25 MW that it needs to meet the City's load.
- When the City buys and imports power in the short-term market to meet load, the power that is purchased is "brown" energy – not renewables. Renewable energy is not available for purchase in the short-term market.³² Frequent and unexpected failures of the aging power plant equipment mean more short-term purchases of "brown" energy in the real-time and day-ahead energy markets, where renewable energy is not available. On the other hand, if Glendale has long-term renewable energy contracts in place (together with firming and shaping capability from the Project), more of Glendale's load can be met with renewable energy.
- SB 350 (the law imposing the Renewables Portfolio Standard requirement) favors renewable contracts of ten years or more in duration as renewable energy resources. Renewable Energy Credits are not available for purchase in the short-term market. Therefore, in order to meet its Renewables Portfolio Standard requirements, the City must be in a position to enter into long-term contracts.

In order for Glendale to acquire renewable resources, it must be able to commit to a long-term purchase. Glendale cannot commit to a long-term renewable energy purchase unless it is assured that it has the transmission necessary to bring that renewable energy "home." With the Project, Glendale is assured that it has the ability to meet load during peak load conditions, supply reserves, and firm and shape intermittent energy. This allows it to enter into long term contracts committing its transmission to renewable imports, rather than keeping those lines available for short-term nonrenewable energy purchases to meet load, or using the lines for firming and shaping energy. The Project, therefore, allows Glendale to commit to long-term power purchases for renewable energy.

³¹ Glendale typically buys renewable energy in smaller increments (20-25 MW) and from varied sources, to avoid the impact of a large dip or spike in output from any one renewable facility on Glendale's system.

³² When a renewable energy developer is constructing a renewable project, the developer seeks out long-term investors who sign power purchase agreements for a long-term share of the Project.

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The Project is part of an integrated plan that will enable Glendale to facilitate and manage renewable resources generated both within and outside of Glendale while maintaining a reliable and affordable source of power for Glendale's residents and businesses.

9.1.1.2 Topical Response No. 2: **Relation Between Integrated Resource Plan (IRP) and Project**

Summary of Comments

Multiple comments have referenced statements and recommendations in Glendale Water & Power's 2015 Integrated Resource Plan Report (dated June 30, 2015), prepared by PACE Global ("IRP"). These comments include:

1. The IRP is out of date and cannot be relied upon to support the need for the Project.
2. Some of the data or statements in the IRP differ from the Project as described in the Draft EIR. For example:
 - o The number of MW available at the power plant as specified in the IRP is inconsistent with the numbers provided in the Draft EIR.
 - o The IRP suggests that GWP may finance the Project through power sales to others, but GWP is not going to enter into power purchase agreements to finance the Project.
3. The IRP projected a diminishing forecasted load. Therefore, there is no need for Grayson to be sized as large as proposed because it will quickly become oversized.
4. A 200 MW plant would meet the City's needs, so a 250 MW plant is oversized and unnecessarily large.

Summary of Responses:

- 1) An IRP is an electric utility planning document that considers the best use of the City's resources, including demand-side resources, to guide resource decisions to enable the utility to serve electrical load and meet specified objectives. The 2015 IRP is not itself a regulation; it is a snapshot in time based upon the data, information, understandings, and considerations available at the time of its preparation. Some data, information, understandings, and considerations have changed since the 2015 IRP, and the City's plans for the repowering have evolved as the City has completed more detailed analysis. These changes do not change the need for the Project, and CEQA does not mandate that the Project be consistent with the IRP planning document. Further studies and developments that have occurred since the IRP was published make it even clearer that the Project is necessary and is appropriately sized to meet the City's needs.

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- 2) The number of MW specified in the IRP does not match the number of MW specified in the Draft EIR because during the time that the IRP was prepared, the capacity of one of the units was curtailed due to a maintenance issue. This difference in MW does not change the conclusions in the EIR regarding the need for the Project.
- 3) While the IRP recommended that GWP consider financing the project through power sales of excess power to others, the IRP's recommended financing methodology through power sales, was not a mandate. GWP does not plan to enter into power sales agreements to finance the Project. Due to GWP's need to maintain sufficient reserves to cover the unexpected loss of its first and second largest power sources, GWP will not have sufficient power during peak load days to enter into power sales agreements.
- 4) The IRP concluded that peak load will drop off to 300 MW by 2035 based upon a number of assumptions. As acknowledged in the IRP, a slight change in some of those assumptions affects the projected future peak load. Even if load drops to 300 MW by 2035 as projected in the 2015 IRP, the fact remains that GWP has an immediate need for the Project to meet peak load and reliability requirements within the next few years, because the power plant units other than Unit 9 cannot continue to operate. Please refer to Topical Response No. 3, Project Need, and Topical Response No. 6, Deferring the Repowering.
- 5) A 200 MW project would not be large enough to reliably meet the City's needs without additional transmission or battery storage. The IRP analysis of a 200 MW option relied upon procurement or construction of new transmission capacity in order for a 200 MW plant to be a reliable option. The Draft EIR analyzes a 200 MW Project Alternative.
- 6) The EIR, and not the IRP, is the operative document under consideration in the CEQA evaluation. As described throughout the Draft EIR and in these Responses to Comments, the Project best meets the City's objectives to reliably provide power to the City of Glendale, to meet reserve requirements, to maintain a local source of generation for emergencies, and to integrate additional renewable energy into Glendale's energy portfolio.

Response

Power versus Energy

In order to understand the IRP and the Project, it is important to understand the distinction between "power" and "energy." Power is the measure of electricity that is generated or consumed, typically expressed as kilowatts (kW, or 1,000 watts) or megawatts (MW or 1 million watts). Power is referenced as both "load" and "generation" and it also describes the capacity

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of the power lines called “transmission lines.” Energy is the amount of electricity generated or consumed over time, typically expressed as kilowatt-hours (kWh, or 1,000 watt-hours) or megawatt-hours (MWh, or 1 million watt-hours). Generating 1 MW of power for one hour produces 1 MWh of energy. Energy storage systems, like batteries, have ratings both in MW (power) and MWh (energy) because they have limits on how fast they can charge and discharge and how long they can discharge before the energy in them is depleted.

Integrated Resource Plan

An Integrated Resource Plan, or “IRP” is a planning document that looks holistically at all of the utility’s resources (including demand-side resources and transmission) and other factors, including cost, potential future conditions, and anticipated drivers of the utility’s operations, to provide a roadmap to guide future utility planning decisions to meet the City’s energy needs. The City’s 2015 IRP was a snapshot in time based upon the facts, data, information, understandings, and considerations available at the time of its preparation.

The IRP took into account future regulatory and market changes, to the best those could be predicted in 2015, and evaluated the proposed resource portfolios under varied scenarios, including a “Reference Case” scenario – based upon current expectations for the future; a “Status Quo Inertia” scenario – based upon sustained low natural gas prices, low production costs, the lack of new carbon emissions regulations or new technologies, low electricity prices, and high demand in GWP’s service area; a “Green” scenario -- characterized by dominant environmental regulation, including an assumption that Glendale’s portfolio would be 50% renewable energy by 2030 (as is the current State law); and a “Transformation” scenario, -- characterized by a dominance of technical change and more rapid deployment of solar photovoltaic (“PV”) and electric vehicles, with time of use implementation. The IRP also considered battery storage with various potential applications.

The IRP made several key recommendations, including the recommendation to pursue a 250MW repowering of the Grayson Power Plant. The IRP concluded that the Grayson Power Plant, other than Unit 9, will no longer be operations by the 2020s, and must be repowered as part of Glendale’s resource planning strategy.

Since the publication of the IRP, the City’s plans for repowering Grayson have continued to be developed, further studies have been done, and some of the facts that formed the basis for the IRP’s assumptions have been refined over time. For example, in 2015 at the time of the IRP “snapshot,” the generating capacity of Unit 4 was 28 MW and Unit 5 was 38 MW. The difference in generation between the two units was due to Unit 4 having a failed circulating water pump at the time, and hence its capacity was curtailed for the IRP analysis. Subsequent to the IRP, the City replaced the circulating water pump. Since Units 4 and 5 are identical, and the pump had been replaced, both units were shown with a capacity of 42 MW in the Draft EIR.

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Other developments, and further analyses, that have occurred since IRP was published further support the need for the Project. For example:

- Costs for purchasing transmission have increased. Effective September 2017, LADWP increased its Open Access Tariff Rate. This increase means that the cost to “rent” additional transmission from LADWP is higher than it was in 2015, assuming such additional transmission is even available from LADWP. This rate increase also increases Glendale’s costs under the Balancing Authority Area Agreement with LADWP (the rates under that Agreement are based upon the Open Access Tariff Rate).
- The City has determined that connecting to the California Independent System Operator’s (“CAISO”) system in Eagle Rock, an option that the IRP recommended that the City pursue, is not feasible or cost effective. The IRP includes an interim screening report for new interconnection options, which estimated a \$66 Million cost to create an interconnection to the CAISO in Eagle Rock to access an additional 150 MW of CAISO transmission. The \$66 Million cost is just the cost to construct the interconnection. That cost does not include the substantial ongoing CAISO charges and access fees that Glendale would incur to participate as a CAISO member and utilize CAISO transmission lines. Moreover, by joining the CAISO, Glendale would need to turn over its existing 200 MW of transmission rights to the CAISO to be used as a shared resource. Thus, Glendale would spend \$66 Million plus ongoing CAISO charges to gain a 150 MW access point but would forfeit its 200 MW of contractual transmission rights – those 200 MW of transmission would become a CAISO asset and would be shared by all CAISO members. Please also refer to Response to Comment Letter L-925.
- As of 2018, new air quality rulemaking is underway at the SCAQMD that will affect the Grayson Power Plant. The new rules are expected to require expensive air quality retrofits within the next few years. Please refer to Topical Response No. 6, Deferring the Repowering; and Topical Response No. 8, Air Quality.
- In late 2015, Glendale and LADWP signed a Balancing Authority Area Services Agreement defining the parameters of the limited reserves it will provide to Glendale, and setting its expectations for how Glendale will manage intermittent energy load within its borders. In 2017, LADWP announced plans to join the CAISO’s Energy Imbalance Market, which will make less excess energy available, at a higher cost, for Glendale to meet its reserve requirements. These developments have amplified the need for Glendale to maintain its own, adequate reserves to provide energy in the event of the unexpected loss of its largest power sources. Please refer to Topical Response No. 3, Project Need.

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Some data, information, understandings, and considerations have changed since the 2015 IRP, and the City's plans for the repowering have evolved as the City has completed more detailed analysis. However, these changes do not change the need for the Project, and CEQA does not mandate that the Project be consistent with the IRP planning document.

Energy Load Projections

Some commenters have commented that the Project is not required because the IRP projects that peak demand load within Glendale will drop to 300 MW by approximately 2036. The IRP forecasted a 0.25% annual decrease in load beginning in 2015. This projection was based upon several factors, including expected population growth, anticipated adoption rate of electric vehicles, expected energy efficiency gains, and increased distributed generation such as local solar PV generation. Even a relatively small change in these assumptions would result in higher peak loads in future years, reinforcing the need for the Project.

The IRP stated that "over the long term, energy efficiency penetration is expected to more than offset any load gains from economic growth, new customers and electric vehicle adoption." Thus, the IRP relied heavily on demand management and energy efficiency measures to reduce load over time. However, a 2017 study prepared by Navigant Consulting, Inc. for 39 California municipal utilities, projected that the number of MWh to be achieved from energy efficiency measures may be much lower than was assumed previously, including in the IRP.³³

The IRP also assumed that consumption from electrical vehicles usage would increase from approximately 1,000 MWh in 2015 to just over 18,000 MWh in 2036. However, electrical vehicle usage is accelerating at a much more rapid pace than was assumed in the IRP. Data prepared for GWP by Navigant Consulting, Inc., in support of the 2017 California Municipal Utilities' Energy Savings report to the California Energy Commission, projects annual electric consumption from electrical vehicles in Glendale to grow from 5,794 MWh in 2018 to 29,055 MWh by 2027. The more rapid proliferation in the use of electric vehicles will increase demands on GWP's electric system and may offset the drops in load projected in the IRP.

Even if the IRP's projections regarding a long-term decline in load remain sound, GWP has an immediate need for the Project to meet peak load and reliability requirements when the Grayson units inevitably fail within the next few years. The IRP projected that the Grayson Power Plants other than Unit 9 will cease operation within a decade, and this remains true today. GWP anticipates that the Grayson units, other than Unit 9, will fail in the early 2020s. GWP must be able to reliability provide electricity on peak load days in both the short-term and the long-term. Please refer to Topical Response No. 3, Project Need, and Topical Response No. 6, Deferring the Repowering.

³³ Refer to "Energy Efficiency Potential Forecasting for California's Publicly Owned Utilities," prepared for California Municipal Utilities Association by Navigant Consulting, Inc., dated February 22, 2017, and January 30, 2017 Memorandum from Navigant Consulting, Inc. to GWP entitled "2016 CMUA Energy Efficiency Potential Forecasting Study."

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200 MW Option

Several commenters state that, based upon the IRP, a 200 MW option is sufficient, and a 250 MW project is oversized.

A 200 MW project would not be large enough to reliably meet the City's needs without additional transmission or battery storage. The IRP analysis of a 200 MW option relied upon procurement or construction of new transmission capacity in order for a 200 MW plant to be a reliable option. The Draft EIR analyzes a 200 MW Project Alternative that includes transmission or storage.

Acquiring additional transmission is not feasible. Glendale is surrounded by LADWP's system. Glendale's existing transmission rights exist due to grandfathered, long-term transmission service agreements with LADWP. New transmission access under an Open Access Transmission Tariff is subject to availability, and is purchased on a one-year basis. The City cannot enter into long-term contracts to purchase energy to bring into Glendale, without assurances that it has long-term transmission. Constructing new transmission lines is likewise not a feasible option due to cost and the need to acquire significant rights of way. Likewise, while the IRP recommended further exploring the possibility of interconnecting to the CAISO transmission system, as discussed in more detail herein above, connecting to the CAISO would be extremely costly and would cause Glendale to forfeit ownership of its existing 200 MW of transmission rights into Glendale, while gaining access to only 150 MW of CAISO owned and controlled transmission.

Moreover, the IRP only took into account the need to plan for the loss of a 100 MW single largest contingency (the "N-1" contingency). In November of 2015, the City executed a Balancing Authority Area Services Agreement with LADWP (the "BAASA"). The BAASA allows GWP to purchase certain reserves from LADWP for a cost, and defines the parameters of (1) what reserve energy LADWP will provide to Glendale and (2) how GWP must control and regulate its energy system in Glendale. Given the limited reserve coverage provided by the BAASA, prudent utility planning dictates that GWP have immediately available additional generation capacity to replace the loss of both the single largest contingency (the "N-1" contingency), and the next largest contingency (the "N-1-1" contingency), e.g. up to 171 MWs.

The Project takes into account the need for capacity to cover both the N-1 and the N-1-1 contingency losses. Please refer to EIR Table 2-3 and Topical Response No. 3, Project Need, for further information. As discussed in Topical Response No. 3, at least 234 MW of local generation capacity (plus the 48 MW of capacity of Unit 9) is needed to reliably supply energy to Glendale on a peak load day.

Power Sales

Commenters have questioned the need for the Project based upon statements in the IRP noting that Glendale can enter into power purchase agreements in order to make the 250 MW project

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option financially viable. Even though the City had considered power purchase agreements as a way to partially finance the Project cost at the time that the IRP was adopted in 2015, the City is not planning to sell the power and indeed, has not sized the Project to do so. As set forth in the Draft EIR and as further explained in Topical Response No. 3, Project Need, the Project is sized to meet peak load conditions and to ensure that Glendale has sufficient reserves to cover the loss of its single largest and second largest contingencies. The City will not have the ability to sell excess power during peak load conditions. If the Project had been intended to sell into the energy markets, it would have been sized larger because peak load periods are the most lucrative time for energy sales.

Conclusion

The 2015 IRP was a road map to plan for the City's electric resource needs; it is not an environmental review document that establishes thresholds. CEQA does not mandate that the Project be consistent with the 2015 IRP; it is not a "General Plan" level document with which all subsequent land use decisions and projects must show consistency.

The IRP was prepared in compliance with all legal requirements and the City will continue to update its IRP, and comply with all applicable legal requirements for the preparation of its IRP, whether or not the City proceeds with the Project.

The EIR is the environmental document that must be prepared, reviewed and certified prior to any action on the Project. As required by CEQA, the EIR provides a detailed description of the Project and Project objectives, considers various Project Alternatives, and evaluates the environmental impact of the Project and Project Alternatives, and evaluates the extent to which the Project and Project Alternatives can feasibly meet the objectives as stated in the EIR.

For the reasons stated in the EIR, and as further detailed in Topical Response No. 3, Project Need, the Project is necessary and is sized appropriately for GWP to reliability meet peak load needs and comply with reserve requirements.

9.1.1.3 Topical Response No. 3: Project Need

Summary of Comments

Comments were received stating that:

1. The Project is too large. The power demands of residents and businesses within Glendale can be met with a smaller plant and the size of the Project is motivated by a desire to sell energy for profit.
2. Rather than constructing a plant based upon a peak load of 350 MW that occurs only a few days out of the year, and only certain times of the day, Glendale should first make

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an effort to introduce methodologies to reduce demand through energy efficiency, and demand shifting.

3. Glendale will rely on a 75 MW purchase from the Los Angeles Department of Water and Power ("LADWP") to meet load during the Project construction and repowering and therefore, Glendale can rely on LADWP to supply needs in the long-term rather than pursuing the Project.

Summary of Responses

1. The Project is sized so that Glendale will be able to meet peak power demand even if the Pacific DC Intertie line is unavailable and a unit within the repowered Grayson plant is down. The minimum capacity needed to serve Glendale from Grayson is 282 MW. This includes 48 MW from Unit 9 and 234 MW from the Project. Glendale has a peak load of 350 MW and must have sufficient reserves to cover its single largest contingency and its next largest contingency. With only Unit 9 remaining at the Grayson Power Plant, plus Glendale's share from Burbank's Magnolia Power Plant, and Glendale's limited transmission, Glendale will not have sufficient power to meet demands and balancing requirements under peak load conditions.
2. Glendale has a number of successful energy efficiency and demand management initiatives in place. However, even with Glendale's successful energy efficiency and demand management program, in September of 2017, Glendale had a peak load of close to 350 MW. For the health and safety of Glendale's customers, Glendale must be prepared to meet demand on the hottest days of the year.
3. Glendale cannot rely on LADWP to meet Glendale's needs on a long-term basis. LADWP's has expressed a willingness to help Glendale out during the Project construction and repowering, but it will not serve as Glendale's utility provider in the long term.

Response

The driving force for the Project, and the basis for the proposed capacity of the repowered plant, is to ensure a reliable electric supply for the citizens and residents of the City of Glendale. The Project is sized to ensure that Glendale can continue to provide power to its customers, even on the hottest day of the year when electricity demands is the highest and even if one or two sources of power are unavailable. The Project would provide GWP with sufficient generation capacity to cover peak load and also allow GWP to meet regulatory, contractual, and reliability requirements at an affordable cost to its customers.

Additionally, the Project provides the added benefit of supporting the expansion of Glendale's renewable energy portfolio by facilitating solar development within Glendale and the import of additional energy from remote renewable projects. Local solar generation within Glendale creates fluctuations in the electrical system that can be difficult to manage with the aging units



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at Grayson. With modern units, GWP will be able to quickly be automatically increase generation to compensate for the sudden loss of solar energy output (*i.e.*, provide regulation service). With respect to transmission of additional renewable energy, the Project would allow Glendale to allocate a greater portion of its transmission imports to renewables in lieu of importing dispatchable resources needed to firm and shape intermittent renewable resources. Please refer to Topical Response No. 1, Glendale is Pursuing Both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates, and Topical Response No. 2, Relationship between the Integrated Resource Plan and Project, for additional information.

In addition, as discussed in the Draft EIR, the Project will also provide GWP the ability to start and restore GWP's electric system, in the event outside sources of energy are lost.

Peak Load

The all-time peak load for Glendale was 346 MW, which occurred on September 1, 2017. This peak occurred even with the extensive energy efficiency, demand response, and load-shifting programs Glendale currently has in place. (Please refer to Topical Response No. 7, Demand Management, for additional information on these programs). For the Project, Glendale used a peak planning capacity of 350 MW. As set forth in Table 2-3 of the Draft EIR, the total power needed from repowering the Grayson Power Plant to serve Glendale's needs is 234 MW. The remaining load can be served by electrical imports, Glendale's share of Burbank's Magnolia Power Plant, and the existing Unit 9 at Grayson.

Other than Unit 9, the current power generation units at the Grayson Power Plant are well beyond their useful life. Units 1, 2, 3, 4, 5, and 8 are all 40 to 70 years old and are not expected to continue running much longer. The units require ongoing maintenance that is very costly. Additionally, Units 3, 4, 5 and 8 will require costly air quality retrofits in the near future based upon the current and anticipated future South Coast Air Quality Management District regulatory program – an investment that does not make financial sense given the age these units³⁴. Please refer to Topical Response No. 6, Deferring the Repowering, for more information.

Without the Project, Units 1 through 8 are expected to fail in the early 2020s, leaving only Unit 9 available. At that point, when Units 1 through 8 are no longer available, the sources of supply available to Glendale would be limited to the following:

³⁴ Units 1 and 2 are steam turbines that are supplied steam from units 8A and 8BC. Thus Units 1 and 2 would not require emissions controls upgrades, however their operation is solely dependent on Units 8A and 8BC being in operation.

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Table 9-4 Remaining Sources of Supply Without the Project

Source of Supply	MW Available
Generation from the remaining simple-cycle Unit 9 at Grayson.	48 MW ³⁵
Glendale's share of the generation of Burbank Water & Power's Magnolia Power Plant, imported to Glendale from Burbank through the Western Substation.	39 MW ³⁶
Glendale has approximately 100 MW (after transmission losses) of transmission rights on the Pacific DC Intertie line, which runs from the Nevada-Oregon Border, through LADWP's system, into Glendale. Using this transmission, Glendale can purchase up to 100 MW of generation from the Pacific Northwest and bring over this line into Glendale.	100 MW ³⁷
Glendale has approximately 100 MW of transmission rights on multiple transmission lines that bring power from the southwest into Glendale via the LADWP system. Glendale can purchase up to 100 MW of generation from the southwest (Arizona, Nevada, Utah, and elsewhere) and transmit it using these transmission rights.	100 MW ³⁸
Total available supply of power without the Project:	287 MW

These four sources total 287 MW if all sources are available and operating at full capacity (leaving no reserves to cover the loss of one of these sources). It is important to note that the totals in Table 9-4 are reflective of best-case-scenario assumptions. For example, these totals do not account for the fact that on a hot day, when demand is highest, the capabilities of power generation units to generate power, and the capability of transmission lines to transmit power, are reduced (de-rated). Additionally, the generation is not always available to fully utilize the transmission capacity. If heat-related reductions in capacity are taken into account, Glendale's shortage of power would be even greater.

³⁵ There is some loss of capacity on hot days due to the increased electrical load for the inlet air chilling system.

³⁶ Glendale's allocation of the Magnolia Power Plant's output is nominally 39 MW. During hot periods, the plant capacity decreases and Glendale's share can fall to 35 MW. Up to 47 MW can be provided if the plant's supplementary duct burners are used to produce additional steam and hence increase the steam turbine power output. However, this capability is available on an extremely limited basis and hence is held in reserve for an emergency. Thus, for all practical purposes the Magnolia Power Plant output ranges between 35 MW to 39 MW.

³⁷ Glendale's share of the northern segment of the Pacific DC Intertie line (from Oregon to Sylmar) is 119 MW (recently increased from 115 MW due to line upgrades), but Glendale's share of the southern segment (from Sylmar into Glendale) is 100 MW. The transmission on the Pacific DC Intertie line that actually flows into Glendale is subject to a loss factor making deliveries to Glendale slightly less than 100 M. Additionally, the transmission capacity is subject to de-rating on a hot day. When the capacity is de-rated, a 100 MW allocation can be further reduced, depending upon conditions. Lastly, Glendale's right to use its full Pacific DC Intertie rights is currently limited to 86 MW, minus approximately 6 MW of losses, due to the terms of Glendale's Balancing Authority Area Services Agreement with LADWP. Refer to discussion of the Balancing Authority Area Services Agreement under "Reserves and Other Ancillary Services."

³⁸ If Glendale were to continue to rely on LADWP to supply reserves to cover its single largest contingency, this number drops to 86 MW. Additionally, because this power is spread amongst several transmission lines, this source does not represent as large a contingency loss as the loss of the Pacific DC Intertie line. Units 1 and 2 are steam turbines that are supplied steam from units 8A and 8BC. Thus Units 1 and 2 would not require emissions controls upgrades, however their operation is solely dependent on Units 8A and 8BC being in operation.

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Glendale's peak load is nearly 350 MW, which occurs during hot weather in the summer or during a heat wave. Surrounding utilities also experience their peak loads at this time, making it more difficult for those utilities to commit their reserves to supply Glendale with power.

The City would continue to make every effort to purchase additional power to cover shortfalls, but the City cannot bring in more power than it can import using its limited transmission entitlements. Glendale's ties to other electric systems for large power imports are limited to power that can be imported through the LADWP system. Glendale does not have direct connections to other sources of power. If additional energy could not be purchased and imported into Glendale, then demand would exceed supply and the City would experience rolling blackouts.

In the past, LADWP has, on an emergency basis, provided temporary spot supplies of power to Glendale. However, this occurred when the Grayson units were operating and supplying some amount of power. If there were no Grayson Units except Unit 9 available to operate, then during hot weather conditions, Glendale would continuously require more power than LADWP is willing or able to contractually commit to in long-term contracts. Additionally, the provision of energy during an emergency is temporary, and would not cover long-term power needs.³⁹ Thus, when Units 1 through 8 are no longer available, Glendale could be forced to engage in rolling blackouts.⁴⁰

Transmission Constraints

Some commenters have suggested that rather than repowering the Grayson Power Plant, Glendale may rent or otherwise acquire additional transmission capacity to bring in the necessary energy. LADWP offers transmission under its Open Access Transmission Tariff. That tariff does not offer multi-year access to transmission services. Additionally, the amount of transmission capacity offered each year is subject to availability on a year-to-year basis. For these reasons, the City cannot rely upon renting transmission capacity from LADWP to predictably plan for its future energy needs.

Additionally, GWP cannot interconnect to the California Integrated System Operator Balancing Authority (CAISO), because it is not a member of the CAISO Balancing Authority. In addition, it is not possible or practicable for GWP to become a member of the CAISO Balancing Authority.

³⁹ Refer to Balancing Authority Area Services Agreement, Article 3.6, Emergency Operations, wherein Paragraph 3.6.1 provides: "In the event of an Emergency, each Party shall render all available Emergency assistance to the other Party as requested, if the requesting entity has implement similar Emergency procedures, and if such assistance would not violate safety, equipment, or regulatory or statutory requirements. This Agreement does not address obligations for payment or other compensation that may or may not exist under other agreements that may exist or may be entered into by the Parties in connection with, or as a result of Emergency assistance."

⁴⁰ During the Project, Glendale has arranged to purchase power from LADWP. However, this arrangement is temporary and LADWP has not and will not commit to supplying Glendale's power needs in perpetuity.

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Please refer to Topical Response No. 2 and Response to Comment No. L298-80 for additional information.

Reserves and Other Ancillary Service Requirements

In addition to the need to maintain sufficient power to cover the 350 MW peak load, Glendale must also have available sufficient amounts of the following:

- **Spinning Reserves** – Generation operating at low load that is synchronized and ready to serve additional demand (*i.e.*, the gears are spinning, and the unit is ready to go). Spinning reserves are particularly important in the event of the sudden, unexpected, and sustained loss of a generating resource. The amount of spinning reserve may be spread over more than one resource.
- **Non-spinning or supplemental reserves** – A non-operating generating resource that is capable of starting and serving demand within a specified time (currently 10 minutes) (*i.e.*, the gears are not spinning, but the unit can be up and running within 10 minutes). The amount of non-spinning reserves may be spread over more than one resource.
- **Regulation and frequency response services** – Capacity of adjusting generation output instantaneously up or down (“regulation up” and “regulation down”) to meet swings in demand, resource capability, and frequency.

“Spinning” reserves and “non-spinning” or “supplemental” reserves are referred to as “contingency reserves.” Utilities use these contingency reserves to ensure that adequate generating capacity is available at all times to maintain scheduled frequency (to keep the generation and load in balance), and avoid power outages following the loss of a major generation or transmission resource (a contingency event).

Utilities require regulation and frequency-response services to maintain voltage and frequency, ensuring the reliable and safe operation of the interconnected bulk electric system. The bulk electric system is a giant machine that must operate within a range of voltages and a range of frequencies. A complete collapse of the bulk electric system will occur if it is not operated within a tight band of voltage and frequency. To prevent this collapse, NERC and WECC have issued a series of mandatory rules, or Standards, that will keep the giant machine running reliably, predictably, and safely. “Regulation” is the ability of a generator to immediately and automatically match load with generation. As load increases (*e.g.*, someone turns on a light), generation must immediately and automatically respond to that increased load; as load decreases (someone unplugs a toaster), generation must immediately and automatically decrease to match the change in load. Similarly, as loads increase, frequency generally decreases, so generators must increase output to ensure frequency is maintained as close to 60 Hertz (Hz) as possible. If generators do not respond to frequency, and frequency is allowed to stray beyond an acceptable amount, equipment can be damaged, and the grid will

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destabilize, potentially resulting in a blackout of portions of the interconnected bulk electric system.

Glendale operates within the LADWP "Balancing Authority Area" ("BAA"). LADWP is the Balancing Authority ("BA") for the LADWP System BAA and is ultimately responsible for balancing its BAA under federal NERC/WECC Reliability Standards. Under NERC Reliability Standard BAL-003-1.1 – Frequency Response and Frequency Bias Setting, LADWP is required to have the requisite capacity to provide Frequency Response to maintain Interconnection Frequency within predefined bounds. Under NERC Reliability Standard BAL-002-WECC-2a – Contingency Reserves R1.1, LADWP is required to maintain a minimum amount of Contingency Reserves, equal to "the amount of Contingency Reserve equal to the loss of the most severe single contingency [referred to in the EIR as the "single largest contingency"]," which is also referred to in the industry as the "N minus 1" or "N-1" "contingency."⁴¹

The N-1-1 case is addressed in the Draft EIR at Table 2-3, which includes 71 MW for "Additional Capacity Needed to Recover and Support the System" and a note at the bottom of the table. GWP is not alone in utilizing this N-1-1 planning criteria. LADWP is also required to have reserves sufficient to meet its BAA's second largest contingency, which is referred to as the "N minus 1, minus 1" or "N-1-1" "contingency."⁴² The need to address N-1-1 contingencies are driven by the requirements of the NERC Reliability Standards and prudent utility practices.⁴³

Glendale operates as a metered subsystem⁴⁴ or sub-BAA within the LADWP BAA. Under its transmission agreements with LADWP, Glendale is required to meet its subsystem's reserve obligations and balance its loads and resources within its subsystem (i.e., service territory). This means Glendale, and not LADWP, is responsible for meeting its subsystem's Spinning Reserves, Supplemental Reserves and Regulation and frequency response requirements. To meet these

⁴¹ WECC Standard BAL-002-WECC-2a – Contingency Reserves R1; See also, Price Formation in Energy and Ancillary Services Markets Operated by Regional Transmission Organizations and Independent System Operators, 153 FERC ¶ 61,221 at fn. 60 (2015) ("An N-1 contingency is the loss of a single generator or transmission element.")

⁴² Price Formation in Energy and Ancillary Services Markets, 153 FERC ¶ 61,221 at fn. 61 ("An N-1-1 contingency is a sequence of events consisting of an initial loss of a single generator or transmission element, followed by system adjustment, followed by another loss of a single generator or transmission element. An N-2 contingency is the simultaneous loss of two transmission elements or generators.")

⁴³ Refer to e.g., *Id.*, at pp 30-32, (describing how because BAAs are required to meet N-1-1 or N-2 contingencies under the NERC Reliability Standards they may charge uplift charges to meet these obligations), citing "Reliability Standard TOP-007-WECC-1a (Western Electricity Coordinating Council regional standard requiring, among other things, that that at no time shall the power flow for a Transmission path exceed the System Operating Limit for more than 30 minutes); Reliability Standard TOP-004-2 (Continent-wide standard requiring, among other things, that each Transmission Operator shall operate within Interconnection Reliability Operating Limits and System Operating Limits)."

⁴⁴ A metered subsystem is a geographically contiguous system located within a BAA (usually a load serving entity), "which is responsible for balancing its own load and resources within its territory." See e.g., N. Am. Elec. Reliability Corp., 153 FERC ¶61,024 at P 8 (2015).

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obligations, Glendale must either self-provide reserves or purchase them from LADWP or third-parties so that it can balance the loads and resources within its metered subsystem.⁴⁵

Glendale's Contingency Reserve obligations require it to carry reserves equal to the loss of its single largest contingency (N-1 contingency), and its next largest contingency (N-1-1 contingency). Glendale's current single largest contingency (N-1) is an outage of the Pacific DC Intertie (i.e., 100 MW). Therefore, Glendale must maintain 100 MW of reserves to respond to this outage scenario; at least 50 MW of reserves must be spinning, and no more than 50 MW of reserves can be non-spinning.⁴⁶ A failure to do so would require LADWP to balance Glendale's system on an emergency basis. This would result in Glendale breaching its contractual obligations and incurring significant costs. It could also result in potential violations of NERC Reliability Standards, which would have significant penalties associated with them.

Glendale's next single largest contingency (N-1-1), after loss of the Pacific DC Intertie, is assumed for planning purposes to be 71 MW, the loss of a unit at the power plant. If an N-1 event (the 100 MW loss of the Pacific DC Intertie) occurs, Glendale must plan and prepare for the loss of a 71 MW unit at the power plant (i.e., Glendale's N-1-1 contingency), this requires Glendale to have 71 MW of replacement energy available within 10 minutes of the loss of the 71 MW generator.⁴⁷ In this scenario, Glendale has lost 100 MW of import capability on the Pacific DC Intertie and has subsequently lost 71 MW of local generation (before the 100 MW on the Pacific DC Intertie was restored). Therefore, Glendale must replace 171 MW of "lost" energy supply on a potentially on-going basis (i.e., longer than one hour).

To meet the NERC Reliability Standards' requirements, which Glendale is obliged to satisfy under its transmission contracts with LADWP, and to comport with prudent utility practices, Glendale must plan in advance for both the N-1 and the N-1-1 scenarios because by the time the N-1 event occurs, Glendale's options to purchase reserves from outside of Glendale would be limited due to its limited transmission import capability.⁴⁸ For example, if the Pacific DC Intertie

⁴⁵ Refer to, e.g., N. Am. Elec. Reliability Corp., 153 FERC ¶61,024 at p 8. In fact, under LADWP's Business Practice entitled "Contingency Reserves Requirement" Version No. 1, Effective Date: 10/1/2015, if Contingency Reserves are not covered contractually in other agreements with LADWP, then LADWP's Open Access Transmission Tariff Customers must provide Contingency Reserves via one of the following methods: Self-Supply; Supply from a Third Party; or Purchase from LADWP.

⁴⁶ WECC Standard BAL-002-WECC-2a – Contingency Reserves R1.1

⁴⁷ Refer to, e.g., Schedule 5, Section 6 of the BAASA ("If Glendale makes such sales of Spinning Reserves it shall provide said Spinning Reserves from its resources or resources that it contracts for that are separate and distinct from the purchase of reserves from LADWP under this Agreement."); See also Schedule 6, Section 6 of the BAASA ("If Supplemental Reserves made available by Glendale fail to respond within 10 minutes of the time the reserves are requested by LADWP, Glendale will pay to LADWP a fee equal to 3 x [Monthly OATT Rate] x [MW Short] per reserve activation."); See also NERC Reliability Standard BAL-002-WECC-2a R1, which describes the need for "Contingency Reserve equal to the loss of the most severe single contingency" and BAL-002-WECC-2a R2 which describes Contingency Reserves as a "[r]eserve that is immediately and automatically responsive to frequency deviations through the action of a governor or other control system" or a "[r]eserve that is capable of fully responding within ten minutes."

⁴⁸ This is what all Regional Transmission Operators ("RTOs") and Independent System Operators ("ISOs") do to maintain the reliable operations of their systems. Price Formation in Energy and Ancillary Services Markets, 153 FERC 61,221 at PP 30-46 (describing how RTOs and ISOs determine and charge their customers for N-1-1 or N-2 contingencies under the NERC Reliability Standards).

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transmission line fails (due to equipment failure, wildfires, or other natural disasters) or is taken out of service for maintenance, Glendale loses 100 MW of transmission capacity and, for as long as the transmission line is unavailable, Glendale will not be able to bring energy over that line to serve 100 MWs of its residents' energy needs. LADWP and Burbank also rely on the Pacific DC Intertie line to bring energy into the LA Basin. Therefore, if the Pacific DC Intertie line is down, LADWP, Burbank, and Glendale will all have fewer resources available to serve their residents' energy needs and will all be forced to rely on local generation or imports over other, operating transmission lines. This will mean the supply of local generation and alternate transmission routes available to Glendale will be dramatically reduced as the owners of that generation and transmission will be using it first to meet their own needs before they offer it to Glendale. In these circumstances, if generation is available, Glendale will be forced to pay a premium for it.

Glendale's Balancing Authority Area Services Agreement with LADWP

The City has entered into a Balancing Authority Area Services Agreement with LADWP (the "BAASA"). Under the BAASA, the City purchases balancing services from LADWP because the City does not currently have the resources available to self-supply them. Specifically, the City purchases Regulation and Frequency Response Service (Schedule 3), Energy Imbalance Service (Schedule 4), Operating Reserve – Spinning Reserve Service (Schedule 5), and Operating Reserve – Supplemental Reserve Service (Schedule 6) from LADWP.

With regard to the spinning reserves (Schedule 4) and non-spinning/supplemental reserves (Schedule 5), under the terms of the BAASA, LADWP has agreed to sell Glendale 40 MW of spinning reserves and 40 MW of non-spinning/supplemental reserves (a total purchase of 80 MW) to cover Glendale's first-hour reserve obligations, and has agreed that this 80 MW purchase will be sufficient to cover Glendale's Spinning and Supplemental obligation to cover the first hour of its single largest contingency.⁴⁹ Specifically, with the reserve services provided under the BAASA, LADWP has agreed to cover Glendale's single largest contingency for only the first 60 minutes of a contingency event using Spinning and Supplemental Reserves.⁵⁰ Any outages that extend beyond the hour require Glendale to self-supply or purchase from others additional generation capacity to cover the extended outage.⁵¹ Therefore, even with the BAASA, and even if Glendale pays LADWP to cover its first hour single largest contingency, Glendale needs to have access to generation that will cover an extended outage of its single largest contingency.

What this means is that if Glendale experiences an N-1 contingency and loses the Pacific DC Intertie line, Glendale has up to 60 minutes to replace the resource as LADWP will cover 80 MW of Glendale's load for up to 60 minutes, but Glendale must have a replacement resource in

⁴⁹ Glendale has transmission rights to 119 MW on the upper segment of the Pacific DC line, and 100 MW on the lower segment into Glendale. However, because Glendale is unable to self-supply 100 MW of reserves, Glendale has contractually agreed that it will not use all of its available transmission capacity on the Pacific DC Intertie.

⁵⁰ Schedules 5 and 6, Section 8 of the BAASA state: "GWP may draw energy from the BAA following a contingency event causing a resource reduction for GWP up to 60 minutes from the time of the event."

⁵¹ *Id.*

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place within 60 minutes. In addition, from the moment the Pacific DC line goes down, Glendale must also cover its next largest or N-1-1 contingency, which would then become its new, single largest contingency. Thus, Glendale cannot rely on the BAASA for reserves either after the N-1 contingency's 60-minute period has run or to address N-1-1 contingencies.

LADWP's provision of reserves and other ancillary services, under the BAASA, is highly dependent on the availability of excess LADWP generation that it can set aside and make available to Glendale during emergency conditions. If LADWP does not have excess generation, it cannot provide these services to Glendale. Similarly, the prices for these services are subject to change as the demand for LADWP's generation changes and as the LADWP Open Access Transmission Tariff ("OATT") rates change. LADWP has announced that it will begin participating in the CAISO Energy Imbalance Market⁵² by 2019.⁵³ Once LADWP joins the Energy Imbalance Market, LADWP will have less excess generation available to sell. As the supply of excess energy goes down, whatever excess LADWP has is likely to be offered at increased rates. It is possible that LADWP will not have any excess generation available to provide these services. Therefore, to ensure Glendale can meet its future balancing obligations and avoid future reliability risks and dramatic price increases for reserves and other balancing services, Glendale will need to adequately size the repowered Grayson plant so that Glendale is able to self-provide reserves and meet its reserve obligations.

Additionally, as a load-serving entity, GWP also must demonstrate to the State of California Energy Commission that it has the requisite planning reserve margin and is able to handle contingency conditions.⁵⁴

If Glendale were not to size the Grayson plant to sufficiently meet its peak load and reserve obligations, Glendale would be exposed to future reliability risks and would be completely dependent on the market to meet its reserve obligations. Such risks can and should be avoided.

⁵² An Energy Imbalance Market ("EIM") is a real time, wholesale energy trading market that enables participants anywhere in the west to buy and sell energy when needed. <https://www.westerneim.com>; also refer to <https://www.nrel.gov/docs/fy12osti/56236.pdf> ("In the proposed Western EIM, BAAs would pool their variable and conventional generation resources to improve operational efficiency over a wider area. This sub-hourly, real-time energy market would provide centralized, automated, and region-wide generation dispatch for imbalances.") Glendale cannot participate in the Energy Imbalance Market because it is not a Balancing Authority.

⁵³ <https://www.publicpower.org/periodical/article/ladwp-agrees-join-western-energy-imbalance-market>; also refer to March 17, 2017 LADWP Board Letter entitled: "Approval of the California Independent System Operator Energy Imbalance Market Implementation Agreement (LADWP No. BP 17-001).

⁵⁴ Refer to California Public Resources Code 25216, 25216.5, and 25300-25323. Also refer to California Energy Commission Docket No. 17-IEPR-02.

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Glendale's Power Needs

Glendale's power needs can be summarized as follows:

Maximum Load	350 MW
Maximum Available Power w/out Project	- 287 MW
Glendale's Need w/out Covering Reserves:	63 MW
Reserves Required:	
"N-1" or single largest contingency (Loss of DC Intertie)	100 MW
"N-1-1" (or second largest contingency Loss of a Unit)	+ 71 MW
Total Required Reserves:	171 MW
Glendale's Total Need:	234 MW

Although limited sales may occur when excess energy is available, GWP is a publicly-owned utility, not an operator of a merchant power plant, and the Project is not designed or sized to sell energy for profit. During peak load conditions, the City will not have available any excess power to sell because it will need all of the capacity of Grayson to serve load and meet its reliability obligations. The Project would have a capacity of 262 MW at average annual conditions (64° F). On a hot day (95° F), that capacity would fall to 242 MW. On the peak load day (100°+ F), the available additional capacity would be slightly less.

With 242 MW available with the Project, GWP would be able to reliably serve Glendale by providing sufficient capacity to cover the loss of the single largest contingency (N-1), the loss of the next single largest contingency (N-1-1), and still meet load.

Peak Load	350 MW	--
Grayson Output on Peak Load Day	--	242 MW
Other Resources minus Single Largest Contingency	--	187 MW
Total:	350 MW	429 MW
Difference available to cover N-1-1 contingency (which is 71 MW)	79 MW	

The size of the Project is driven solely by the need to provide reliable energy to the residents and businesses of Glendale.

LADWP Cannot Be Relied Upon to Serve Glendale's Long-Term Needs

For the duration of Project construction and repowering, LADWP has indicated a willingness to sell Glendale up to 75 MW of energy during peak periods (in addition to selling ancillary services to Glendale under the BAASA) to cover Glendale's needs. The energy supplied by LADWP would come from within their Balancing Authority Area and would not be transmitted over Glendale's transmission assets. This means that Glendale's limited transmission entitlements would be preserved to supply additional power to Glendale during the construction of the Project. The capacity from LADWP, combined with the 287 MW from transmission imports, the Magnolia



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plant, and Unit 9, would just cover the peak load. During the construction/repowering period, GWP's ability to accommodate the loss of a contingency during high load periods (more than 280 MW) would be very limited. LADWP is not willing to enter into a long-term contract to supply Glendale's energy needs beyond the term of the Project. Therefore, Glendale cannot rely on LADWP to supply Glendale's power and energy needs in the long term.

9.1.1.4 Topical Response No. 4: Project Alternatives

Summary of Comments

Comments were received that:

1. The Draft EIR did not analyze the right Project alternatives.
2. The Draft EIR does not provide support for cost estimates that were used to reject feasible alternatives.
3. Identification of the Project as the Environmentally Superior Alternative was improper.

Summary of Responses

1. The Draft EIR analyzed a reasonable range of Project alternatives. Because the Project will not result in any significant environmental impacts after imposition of mitigation, the selection of alternatives focused on choosing alternatives that could potentially reduce environmental impacts as compared to the Project, while still feasibly attaining at least some of the Project objectives.
2. It is ultimately the City Council's decision whether to approve or reject the Project or a Project alternative. The Draft EIR provides information on the environmental impacts of each of the five Project alternatives and the extent to which each Project alternative meets the Project objectives. General estimates of relative costs are included, but none of the five Project alternatives was determined to be infeasible based solely on cost.
3. CEQA does not expressly require an EIR to identify an Environmentally Superior Alternative. When none of the alternatives is clearly environmentally superior, it is sufficient for the EIR to explain the environmental advantages and disadvantages of each alternative. The Draft EIR's discussion of comparative environmental impacts complies with CEQA.

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Response

Background – CEQA Requirements for Selection of Alternatives

CEQA requires an EIR to describe a range of reasonable alternatives for evaluation, which would feasibly attain most of the basic project objectives, but would avoid or substantially lessen any of the significant effects of the project. CEQA Guidelines Section 15126.6(a). The nature and scope of the alternatives studied in an EIR is governed by a rule of reason. CEQA Guidelines Section 15126.6(f). An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. CEQA Guidelines Section 15126.6(a). The EIR should briefly describe the rationale for selecting the alternatives to be discussed. CEQA Guidelines Section 15126.6(c).

There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376. Because the primary purpose of an EIR is to mitigate or avoid significant environmental effects, the alternatives discussion is focused on alternatives to the project that are capable of avoiding or substantially lessening any significant effects of the Project, even if those alternatives would impede to some degree the attainment of the Project objectives, or would be costlier. CEQA Guidelines Section 15126.6(b).

Of the alternatives that fit the above criteria, the EIR need examine in detail only those alternatives that the Lead Agency determines could feasibly attain most of the basic objectives of the project. CEQA Guidelines Section 15126.6(f). An EIR need not present alternatives that are incompatible with the project's fundamental purpose. *In re Bay-Delta Programmatic Env't'l Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1164; *Bay Area Citizens v. City of Oceanside* (2004) 119 Cal.App.4th 477; *Jones v. Regents of Univ. of Cal.* (2010) 183 Cal.App.4th 818.

No set number of alternatives is necessary to constitute a legally adequate range of alternatives. The scope will vary from case to case depending on the nature of the project and the Lead Agency has discretion to determine how many alternatives constitute a reasonable range. *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 566.

The Draft EIR complies with CEQA Requirements Regarding Selection of Alternatives

Section 5.2 of the Draft EIR evaluates a reasonable range of Project alternatives. The Draft EIR evaluates the following five Project alternatives: (1) No Project Alternative; (2) Energy Storage Alternative; (3) Alternative Energy Project Alternative; (4) 150 MW Alternative; and (5) 200 MW Alternative. These five alternatives were selected because each could feasibly attain some of the Project objectives, as described in Section 5.1 of the Draft EIR. Because the Project does not

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result in unmitigated significant impacts, the Draft EIR instead focuses on Project alternatives that could potentially reduce environmental impacts as compared to the Project, while still providing reliable power to the residents and businesses in Glendale sufficient to meet peak demand and balancing obligations as described in Topical Response No. 3, Project Need.

While five Project alternatives were selected for detailed analysis, several other Project alternatives were also considered. Section 5.3 of the Draft EIR provides an explanation as to why these other alternatives were not selected for further analysis, as summarized below:

- Alternative sites were rejected from the detailed analysis in the Draft EIR because each would require land acquisition and infrastructure not needed for the Project and therefore impacts would not be reduced as compared to the Project.
- Project technology alternatives were determined to be less efficient, do not meet current emissions standards, are too large or impractical, are substantially more expensive, increase maintenance, and present air permitting concerns.
- Apart from the Alternative Energy Project Alternative, several other alternative fuel technologies were rejected because the technologies are not available, would not meet the environmental stewardship objective of the Project, or are outside the reasonable control of the City.
- Power plant cooling alternatives were rejected because the alternatives would cost more and be less efficient, and would be more land-intensive than the Project.

The Draft EIR considered various technology alternatives to generate power, rejecting some as explained in Section 5.3, and including two others for further evaluation. In addition to those technology-based alternatives, the Draft EIR evaluated two smaller projects that could reduce impacts as compared to the Project. By providing sound reasoning for rejection of several Project alternatives for further analysis in the Draft EIR, and including a detailed analysis of another five alternatives to the Project that could feasibly replace the power generated by Units 1 through 8 at Grayson and the No Project Alternative, the Draft EIR evaluates a reasonable range of alternatives.

The two technology alternatives that were evaluated in the Draft EIR include renewable energy and increased battery storage. It should be noted that the commenters who claim that the Draft EIR did not select the right Project alternatives also argue that solar energy should be considered in lieu of the Project. In fact, analysis of solar energy as an alternative to the Project was done as part of the Alternative Energy Alternative at Section 5.2.3. Please refer to Topical Response No. 5, Renewable Energy, for additional information.

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The Draft EIR complies with CEQA Requirements Regarding the Analysis of Alternatives

Several commenters assert that the Draft EIR rejects alternatives. While there is language in the Draft EIR suggesting that certain alternatives were not selected, it is ultimately the City Council's decision whether to approve or reject the Project or a Project alternative. The Draft EIR does not actually reject or select any particular Project alternative. Instead, the Draft EIR provides information on the environmental impacts of each of the five Project alternatives that were selected for further analysis and the extent to which each Project alternative meets the Project objectives.

General estimates of relative costs are included, but none of the five Project alternatives was determined to be infeasible based solely on cost, as described below:

- The No Project Alternative was described as not being a viable alternative because the City could no longer meet its obligations as a load serving entity for its residents and customers, placing them at significant risk for decreased electrical system reliability and availability. Moreover, the No Project Alternative would not satisfactorily meet the Project objectives and would fail to comply with Federal and State reliability standards.
- The Energy Storage Project Alternative was described as reducing certain localized impacts, but also increasing certain impacts due to the additional night-time generation needed to charge the batteries, when renewable solar energy will not be available. Additionally, as discussed in Section 5.2.2.1 of the Draft EIR, it is not possible to import enough electricity during the summer season to charge the batteries to serve the daytime load. Lastly, this Alternative does not feasibly meet the Project objectives to the same extent as the Project.
- The Alternative Energy Project Alternative was described as reducing certain localized impacts, but also increasing certain off-site impacts due to the need for increased transmission and the large area needed for a wind farm or solar field. Because of the very limited ability to site solar or wind resources within the City and due to the limited transmission capacity coming into Glendale, additional transmission would be needed to implement this Alternative. Because solar and wind resource opportunities within Glendale are limited, combined with energy storage considerations, as well as the complications associated with building a new transmission line to import alternative energy, the Alternative Energy Project Alternative was not described as not being an adequate replacement for the power that would be generated by the Project. Additionally, the Alternative Energy Project Alternative does not feasibly meet the Project objectives to the same extent as the Project.
- The 150 MW Project Alternative was described as having incrementally less, but similar, impacts as the Project. However, the 150 MW Project Alternative would also require construction of a new transmission line because additional capacity would be needed

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to meet peak load and reserve requirements. Construction of a new transmission line has the potential to result in increased impacts where the line would be constructed. In addition to the potential environmental impacts, the 150 MW Project Alternative does not feasibly meet many of the Project objectives or meet them as well as the Project. The 200 MW Alternative was described as having reduced air and greenhouse gas emissions and noise from one less generation unit compared to the Project, with the reduction of one unit offset by the addition of a battery energy storage system (one that is smaller than the earlier alternative). However, the battery energy storage system adds the impact of periodic battery replacement as well as the need to dispose/recycle the batteries when they reach end of life.⁵⁵ If sufficient transmission capacity were not available for charging the battery energy storage system, then the air emissions may not be reduced due to the need to operate additional unit(s) to charge the battery energy storage system. For these reasons, the overall environmental impacts of a 200 MW Alternative are expected to be comparable to the Project, but at the expense of not having fully dispatchable generation capacity after exhaustion of the battery energy storage system, as well as potentially greater cost.

Environmentally Superior Alternative

The CEQA statute and the CEQA Guidelines do not expressly require an EIR to identify the environmentally superior alternative. The CEQA Guidelines state that if the No Project Alternative is the environmentally superior alternative, the EIR must also identify "an environmentally superior alternative" from among the other alternatives. CEQA Guidelines Section 15126.6(e)(2). When none of the alternatives is clearly environmentally superior, it is sufficient for the EIR to explain the environmental advantages and disadvantages of each alternative.

The Draft EIR's discussion of the comparative environmental impacts of the Project alternatives complies with the requirements of CEQA. The Draft EIR includes a detailed description of the potential environmental impacts of each Project alternative as compared to the Project in Sections 5.2.1 through 5.2.5. In addition, Table 5-1 describes the environmental advantages and disadvantages of each alternative. The Draft EIR at Section 5.2.7 includes a detailed evaluation of the relative impacts of each Project alternative, determining that the Project is the Environmentally Superior Alternative because it is the only project that both attains fundamental project objectives and results in the fewest environmental impacts.

It is important to note that the Project does not result in significant and unavoidable environmental impacts. Accordingly, the Draft EIR focuses on Project alternatives that could

⁵⁵ Under CEQA, a lifecycle analysis is not generally required. When considering Manhattan Beach's adoption of an ordinance banning point-of-sale plastic bags within the City limits, the California Supreme Court held: "this case serves as a cautionary example of overreliance on generic studies of 'life cycle' impacts associated with a particular product. Such studies, when properly conducted, may well be a useful guide for the decision maker when a project entails substantial production or consumption of the product. When, however, increased use of the product is an indirect and uncertain consequence, and especially when the scale of the project is such that the increase is plainly insignificant, the product 'life cycle' must be kept in proper perspective and not allowed to swamp the evaluation of actual impacts attributable to the project at hand." *Save the Plastic Bag Coalition v. City of Manhattan Beach* (2011) 52 Cal.4th 155,175.

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potentially reduce environmental impacts as compared to the Project, while still providing reliable power to the residents and businesses in Glendale sufficient to meet peak demand and balancing obligations as described in Topical Response No. 3, Project Need. None of the alternatives is clearly environmentally superior to the Project, especially with respect to the 200 MW Project Alternative. While the 200 MW Project Alternative is environmentally superior with respect to emissions, it brings with it new potential impacts associated with battery disposal. However, purchase of batteries on the market as a product is an indirect and uncertain consequence, especially when the scale of the 200 MW Project Alternative is such that the increase use of batteries is plainly insignificant. Accordingly, the "life cycle" of a battery must be kept in proper perspective. Because the Project does not result in significant and unavoidable impacts and because none of the Project alternatives are clearly environmentally superior, the Draft EIR complies with CEQA by explaining the environmental advantages and disadvantages of each alternative and the City's designation of the Project as the Environmentally Superior Alternative is supported by substantial evidence.

9.1.1.5 Topical Response No. 5: Renewable Energy

Summary of Comments

Comments were received that:

1. The Draft EIR does not adequately consider alternative projects that would include all or more renewable energy sources. Specifically, commenters criticized the Draft EIR for not including an analysis of an alternative that would utilize all City-owned rooftops and open space for solar energy.
2. The City should disapprove the Project and instead rely upon increased rooftop solar installations, including those on private property, throughout the City.
3. Rather than constructing the Project, the City should increase funding for solar rebates to encourage solar development or fund private solar development in Glendale with municipal bonds.

Summary of Responses

Glendale has a robust solar incentive program and encourages solar and renewable energy development within the City. However, Glendale cannot rely upon solar and renewable energy to replace the Project and still meet Glendale's energy supply needs for the following reasons:

- In all of the years that rooftop solar has been available, and with GWP incentives, Glendale now has approximately 14.7 MW of solar. Based on NREL methodology, the IRP projects 35 MW to 40 MW of solar by 2030. Even if solar development was twice as much,

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this would not be enough generation to meet Glendale's needs.⁵⁶ It would be imprudent from a reliability perspective to count on enough solar being built quickly enough to fully meet Glendale's needs.

- Municipal finance laws restrict the City's ability to pay for everyone in Glendale to have a solar roof, either through incentives or bond financing.
- The City has considered utility-scale solar developments within the City but does not have sufficient land under its control for a project of the size that would be needed to meet Glendale's energy needs.
- As described in Topical Response No. 1, renewable energy is intermittent and requires a firm, dispatchable generation source (such as a power plant) to ensure that the supply of power is constant. With imported renewables, Glendale can pay a premium price for the energy to have the renewable energy arrive to Glendale already "firmed and shaped." Increases in solar energy within Glendale make the Project even more necessary because the Project will be needed to firm and shape the solar resources.
- Because of its intermittent nature, renewable energy cannot be used to supply contingency reserves to meet Glendale's reliability requirements.
- Solar energy is at its peak during the afternoon, whereas peak loads for the day occur as people are arriving home from work. Accordingly, there is a 4-5-hour delta between the time of day when solar is at its peak and Glendale's peak load. Batteries or power plant generation is needed to cover this delta. Batteries cannot be used exclusively to firm and shape the solar power, or to serve Glendale's reserve needs, because during peak load periods, there is insufficient generation to both serve load and to charge the batteries.

Response

The City is Actively Pursuing Renewable Energy

It is important to keep in mind that the City continues to actively pursue renewable energy opportunities and programs to power Glendale. Please refer to Topical Response No. 1, Glendale is Pursuing Both Increased Use of Renewables and Continued Reliability of Electricity at Reliable Rates.

The Draft EIR Analyzed an Alternative Energy Project Alternative

Section 5.2.3 of the Draft EIR includes analysis of an Alternative Energy Project Alternative, which evaluates the feasibility of both photovoltaic ("PV") solar and wind-powered production

⁵⁶ Refer to NREL Report entitled "2017 Standard Scenarios Report: A U.S. Electricity Sector Outlook," dated October 17, 2017, projecting that the U.S. power system will evolve to a system primarily powered by natural gas and renewable energy; most new energy growth to be met by wind and solar, and foreseeing no dramatic changes until post-2040.

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alternative energy options. The Draft EIR describes the land area that would be needed to produce the same amount of energy as the Project with renewable energy sources. Because the City does not have sufficient land area under its control to produce sufficient solar and/or wind energy to meet the energy demands of the City, the Draft EIR determined that the Alternative Energy Project Alternative is not an adequate replacement for the power that would be generated by the Project.

The Draft EIR Alternatives Analysis is Sufficient

As described in Topical Response No. 4, Project Alternatives, CEQA requires that a Lead Agency describe a range of reasonable alternatives for evaluation, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects of the project. CEQA Guidelines Section 15126.6(a). The nature and scope of the alternatives studied in an EIR is governed by a rule of reason. CEQA Guidelines Section 15126.6(f).

The Draft EIR evaluated solar and wind energy and determined that the City does not control sufficient land area to provide the power that is required. CEQA does not require that the City consider every possible renewable energy scenario. Once the City determined that it could not replace the power anticipated to be lost at Grayson with a renewable energy project, partially because the City does not control sufficient land to develop such a project, CEQA does not require that the City then study what could be produced on City-owned land. As demonstrated by the Project alternatives analysis in the Draft EIR, sufficient power could not be generated on City-owned land to meet the Project Need, as described in Topical Response No. 3, Project Need.

As part of the analysis of the Alternative Energy Project Alternative, the Draft EIR appropriately considered the City's inability to require private property owners to install solar facilities on their property. CEQA does not require that an EIR consider an alternative whose effect cannot reasonably be ascertained or whose implementation is remote and speculative. CEQA Guidelines Section 15126.6(f)(3). A Lead Agency may conclude that an alternative is remote or speculative if it is unlikely as a practical matter to be carried out within the reasonable future or is contingent on the occurrence of uncertain future events. *Larsen Boat Shop, Inc. v. Board of Harbor Comm'rs* (1993) 18 Cal.App.4th 729, 745; *Bowman v. City of Petaluma* (1986) 185 Cal.App.3d 1065, 1084. With respect to alternative sites, a Lead Agency may consider whether an alternative site is owned by the project proponent when determining whether the site is a feasible alternative. The agency may consider whether the project proponent can reasonably acquire, control, or otherwise obtain access to the site. CEQA Guidelines Section 15126.6(f)(1).

Rooftop solar is the result of a voluntary effort on the part of property owners within Glendale. As described in the Draft EIR, the City cannot rely on private businesses and residents to voluntarily install rooftop solar to meet the City's obligation to provide sufficient and reliable energy to the people of Glendale. While GWP can and does incentivize the residents and businesses within Glendale to install rooftop solar, it is not a resource that GWP can manage or assure that

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sufficient capacity will be developed and available with schedule certainty. As a practical matter, the City cannot be certain that sufficient rooftop solar would be installed by residents and businesses to replace the power lost by the anticipated failure of Units 1 through 8 in the early 2020s.

In addition, as described in Topical Response No. 1, Glendale is Pursuing both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates, the City's current energy portfolio consists of a diverse mix of renewable, carbon-free, and other non-renewable sources. These include wind, small and large hydroelectric, geothermal, nuclear, landfill gas, coal, and natural gas. Per the 2016 Power Content Label, 47 percent of the City's retail energy sales were sourced from renewable sources, and an additional 17 percent were sourced from carbon-free sources. Please refer to the 2016 Power Content Label set forth in Topical Response No. 1, Glendale is Pursuing Both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates.

In the coming years, the City will eliminate its coal sources and will continue to increase its renewable and carbon-free resources. As the City imports increasing amounts of wind, solar, and other variable sources of renewable energy into Glendale, and as more solar power is generated locally in Glendale, this creates increased fluctuations on the power grid. The flexibility of the repowered Grayson plant will be critical to ensuring reliable and sustainable energy to the City's customers. Without the ability to immediately react to large, unpredictable swings in the incoming renewable energy supply (primarily through the use of Grayson's flexible generators), the City would not be in a position to continue to increase its renewable energy imports. Modernizing the Grayson Power Plant will enable the City to maximize its use of imported renewable energy.

Accordingly, a fundamental purpose of the Project is to provide a steady, constant source of energy such as that from the Grayson Power Plant, which is needed to balance out ("firm and shape") and regulate the frequency of the energy so that a smooth and steady supply of power can be delivered to GWP customers. Please see Topical Response No. 1, Glendale is Pursuing both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates, for more information.

An EIR is not required to present alternatives that are incompatible with the project's fundamental purpose. *In re Bay-Delta Programmatic Env't'l Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1164; *Bay Area Citizens v. City of Oceanside* (2004) 119 Cal.App.4th 477; *Jones v. Regents of Univ. of Cal.* (2010) 183 Cal.App.4th 818. The Project alternatives promoted by the commenters would not meet a fundamental purpose of the Project—neither rooftop solar on all City-owned buildings nor increasing incentives for private homes and businesses to install rooftop solar can provide sufficient, reliable power necessary to meet peak demand and the City's balancing obligations as described in Topical Response No. 3, Project Need.

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However, given the overall interest in further analysis of rooftop solar, the following information is provided.

Background - Existing Glendale Solar Installations

There are currently 1,427 privately-owned rooftop solar installations within the City of Glendale. These installations have a generating capacity of 14.7 MW.⁵⁷ These rooftop solar installations are estimated to generate approximately 23,000 MWh of electricity annually.⁵⁸

Separately, the City owns a 0.261MW solar photovoltaic system at the Glendale Community College.

Solar Incentives

In 2002, GWP became one of the first municipal utilities to provide solar rebates to its customers to encourage new solar installations within the City. Since 2002, GWP has provided over \$14.7 million in solar incentives, to support the installation of 892 systems. Other property owners have installed solar systems on their own, without the assistance of GWP subsidies.

GWP has budgeted an additional \$950,000 to support local solar in fiscal year 2017-2018. As described herein below in this topical response, GWP provides various incentives for residential customers to install solar energy systems. GWP also pays 100% of the cost of permits to install solar systems.

At the start of each program year, customers on the previous year's waiting list are moved to current year's program list. During the first couple of weeks in July, the City holds a lottery drawing to fill remaining slots. Applications that do not receive a lottery reservation are placed on the waiting list for the following year. The City has accepted 155 applications for the fiscal year 2017-2018 program year. The amount of \$900,000 has been reserved for 82 applications (from these 155) and 42 applications from the previous year's waiting list. The remaining, budgeted funds funded the PowerClerk software which is used for accepting and processing applications for solar rebates.

Restrictions on Funding for Private Solar Installations

Several commenters have suggested that rather than constructing the Project, the City should increase funding for solar rebates to encourage solar development. The City has a robust solar rebate program funded by its Public Benefit Charge ("PBC"), as well as a number of alternative

⁵⁷ Power is the rate at which electricity is generated, typically expressed as kilowatts (kW, or 1,000 watts) or megawatts (MW, or 1,000,000 watts).

⁵⁸ Energy is the amount of electricity is generated, typically expressed as kilowatt-hours (kWh, or 1,000 watt-hours) or megawatt-hours (MWh, or 1,000,000 watt-hours). Generating 1 MW of power for one hour produces 1 MWh of energy. Rooftop solar located in Glendale has a capacity factor of approximately 18%. Thus 1 MW of solar PV generates, on average, 1,577 MWh per year (8,760 hours per year x 1 MW x 18% capacity factor).

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mechanisms in place to encourage private solar development within the City. However, municipal finance rules limit the City's ability to directly pay property owners to install solar systems on their properties. For the reasons outlined below, Glendale could not raise additional funding for solar incentives through bond financing like that proposed for the Project. In other words, the City cannot take the money planned for the Project and simply reallocate it to the PBC Program.

- **The PBC Program Cannot Be Expanded Without a Ballot Measure.** The City's solar rebates are funded through the City's PBC Program. The PBC is a 3.6% surcharge that is collected from all GWP electric utility bills to pay for public interest programs to benefit Glendale electric customers. Based upon State law and the City's PBC Ordinance, the PBC revenue may only fund programs in the following four categories: "(1) cost-effective demand side management services to fund energy efficiency and energy conservation; (2) new investments in energy resources and technology consistent with existing statutes and regulations; (3) research, development and demonstration programs for the public interest to advance science or technology, which is not adequately provided by competitive and regulated market; and (4) services provided to low-income electricity customers, including but not limited to, targeted energy efficiency and rate discounts."⁵⁹

Every two years, the City Council adopts a two-year PBC Program and Budget and allocates the PBC revenue to each of several PBC Programs within the four categories. A significant portion of the PBC Budget is allocated to fund solar incentives.

In 2010, Proposition 26⁶⁰ amended the California Constitution to require voter approval in order to implement a state or local "tax," as defined in the Constitutional measure.⁶¹ For local governments, Proposition 26 applies only to those fees and charges newly imposed or increased on and after November 3, 2010. Glendale's PBC Ordinance pre-dates the effective date of Proposition 26. Therefore, the collection of the PBC surcharge is "grandfathered" at the current 3.6% rate. However, any increase in the PBC surcharge would trigger Proposition 26's requirements and would need to be approved by public vote. Likewise, Proposition 26's restrictions prohibit the City from setting up a new funding mechanism within its rate structure to use the electric rate revenue collected from one customer to benefit another customer.

⁵⁹ Glendale Municipal Code § 13.44.425; California Public Utilities Code § 385. Also refer to http://cmua.org/wp-content/uploads/2014/08/PBC_Fact_Sheet.pdf

⁶⁰ California Constitution, Articles XIII A and XIII C.

⁶¹ Section 1(e) of Article XIII C of the California Constitution defines a "tax" as any levy, charge, or exaction of any kind that does not fall within any of seven exceptions to the definition of "tax." Two such exceptions are: (1) "A charge imposed for a specific benefit conferred or privilege granted directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit or granting the privilege;" and (2) A charge imposed for a specific government service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of providing the service or product.

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- **The City Cannot Use Bond Funding for Solar Installations on Private Property.** Other commenters have suggested that the City should fund private solar installations with a municipal bond measure. However, the City cannot issue tax-exempt municipal bonds for a privately-held asset; the solar installations on private rooftops financed by tax-exempt bonds would need to be owned by the City of Glendale. Nor is it feasible to issue taxable bonds, because the increased costs of a taxable bond measure would outweigh the benefit to be gained in terms of the amount of power that could be generated from such a program.

Notwithstanding these restrictions on funding private solar, the City encourages solar and other renewable energy development within the City. For example:

- **Feed-in-Tariff Program.** Since 2013, the City has had in place a Feed-in-Tariff program. Under the City's Feed-in-Tariff program, a renewable energy developer can contract with the City to sell the City 100% of the power from a small-scale renewable energy facility (including rooftop solar) in Glendale. A Feed-in-Tariff is a standard price offered to pay producers of renewable power for the power that the producer feeds into the grid. The developer can be the property owner, or another entity leasing space from the property owner. The renewable/environmental attributes associated with the power are transferred to the City and help the City achieve its Renewable Portfolio Standard requirements. Glendale has developed Standard Form Agreements, which set forth the terms and conditions that allow Glendale customers and renewable resource developers to locate renewable generation facilities in Glendale's service territory and to sell the energy output to Glendale. The Standard Form Agreements are designed for facilities up to 1.4 megawatts (AC) in size that will be connected to Glendale's local distribution system. To date, however, the program has no subscribers.
- **PACE Program Financing.** In April of 2016, Glendale authorized five Property Assessed Clean Energy (PACE) Program providers (in addition to one previously-authorized PACE Program provider) to offer renewable energy development financing to customers within the City of Glendale.⁶² PACE programs allow property owners to finance solar or other renewable energy development on a long-term basis through a voluntary contractual assessment or a special tax collected together with their property taxes. One of the most notable characteristics of PACE programs is that the loan is attached to the property rather than belonging to an individual. Therefore, when the owner sells the property, the loan may be paid off during the sale or stay with the property and be paid off by the new owner, who also benefits from the upgrades that were completed. The PACE Programs are managed privately through the PACE Program Administrators.

⁶² PACE programs are implemented under the legislative authority of two separate California PACE laws, (1) the provisions of Chapter 29 of Division 7 of the Streets & Highways Code (commonly referred to as "AB 811") and (2) Senate Bill 555 (Government Code sections 53311 through 53368.3) ("SB 555").

http://www.ci.glendale.ca.us/government/council_packets/Reports_040516/CC_SpMtg_Item1_040516.pdf

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- **Community Solar.** GWP intends to recommend the creation of a new Community Solar program as part of its upcoming Two Year Public Benefit Charge (PBC) Programs and Budget that will go to City Council in spring 2018. Sometimes referred to as a solar garden, Community Solar is a local solar power plant whose electricity is shared by more than one customer. Community solar allows members of a community the opportunity to share the benefits of solar power even if they cannot or prefer not to install solar panels on their property. Typical participation formats include ownership (where participants purchase some panels or a share in a project and receive a credit for the solar power produced by their share); subscription (where participants subscribe to a set amount of power produced by a community solar installation at a set price); and donation (which allows participants to donate toward the installation of system at a non-profit. Benefit to participant is philanthropic). The goal will be to allow renters and other residents that cannot otherwise participate in the current solar incentive program access to solar power. GWP has identified a number of potential sites that could support 3.064 MW of solar for a program, including:
 - Public Works Building/Parking Area 0.077 MW
 - Civic Auditorium Parking Structure 0.040 MW
 - Civic Auditorium Overflow Lot 0.175 MW
 - Diederich Reservoir 2.270 MW
 - Rossmoyne Reservoir 0.502 MW

The addition of approximately 3 MW of community solar does not materially affect the required capacity of the Project.

Available City Property for Solar Development

The City of Glendale currently has ownership of approximately 5,524 acres within the City limits. These areas consist of buildings, parking structures, open space, parks and recreation areas, and roadways. The City has excluded open space, parks and recreation areas from consideration for solar development to maintain their natural setting. These areas total approximately 4,970 acres. Of the remaining 554 acres, the City has evaluated the largest such sites for possible solar development, as discussed below.

In 2003, the City undertook an evaluation of renewable energy resources available to the City by installing solar photovoltaic systems on city-owned facilities. The City identified the following potential sites:

Potential Site	Estimated Construction Cost in 2003 (preliminary estimate, prior to considering structural issues)	Potential output
Civic Center Parking Structure	\$600,000	0.077 MW
Public Works Building and Parking Area	\$900,000	0.040 MW
Civic Auditorium Parking Structure	\$400,000	0.040 MW
Civic Auditorium Overflow Lot	\$1.7 Million	0.175 MW



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Based upon this evaluation, GWP recommended undertaking a comprehensive engineering analysis of the City Center Parking Structure's ability to house a 0.058 MW photovoltaic system, and to evaluate the Public Works site as a second option. Upon further analysis of the City Center Parking Structure installation, the City determined that adding a photovoltaic facility on the City Center parking structure would require substantial engineering work to ensure that the building could support the solar panels. The City did not proceed with the project because the cost of the structural upgrades and construction outweighed the benefit of the additional 0.058 MW of solar capacity.

Subsequently, the City partnered with the Glendale Community College to install a City-owned photovoltaic system on the Glendale Community College's newly-constructed parking garage. The project has a generating capacity of 0.261 MW.

The City has also partnered with Habitat for Humanity and City-owned low-income housing projects to install PBC-funded photovoltaic projects totaling 10.5 kW or 0.0105 MW.

In 2015, the City contracted with a developer to investigate the Scholl Canyon Landfill for development of a solar PV project. The developer determined that Scholl Canyon Landfill was not suitable for solar development, for the following reasons:

- Being an active landfill, ground subsidence would be an issue affecting alignment of the solar panels and complicating the design and construction of the electrical gathering system.
- The required methane gas gathering system would limit the available space and access for solar panels. The gas gathering system is required to gather methane gas that would otherwise escape to the environment, a gas that has a global warming potential 21 times greater than CO₂.

In addition to considering the Scholl Canyon landfill site, the developer considered the potential of other sites within Glendale for solar development, including a combination of a Water-to-Energy facility with a solar facility at Scholl Canyon landfill; solar facilities at the Brand Park landfill and/or atop City-owned reservoirs, and an analysis of parking roof decks and parking lots as well as the rooftops of City-owned buildings. The developer concluded that the Water-to-Energy facility was too expensive and raised new environmental concerns. The Brand Park landfill and covered reservoir sites were projected to yield less than 5 MW which would be cost prohibitive.⁶³ The City-owned rooftop alternative was the most uneconomic due to the lack of contiguous space and the necessary infrastructure upgrades, which would result in substantially higher costs than available wholesale prices for energy in the open market. The memorandum summarizing the findings of this study is provided at Appendix K.1 of this Final EIR.

⁶³ While the reservoir sites are cost prohibitive for a developer, who uses wholesale prices as a reference point, the City is considering the Rossmoyne and Dietrich reservoir sites for possible Community Solar installations.

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In 2015, GWP also worked with Solar City to explore the possibility of installing solar energy facilities at City reservoirs. Solar City identified two potential reservoirs that would yield a total of 2.52 MW of power. The City did not pursue the installation because the cost greatly exceeded the cost of other renewable energy sources, for a gain of only 2.52 MW. Additionally, given the age and condition of the Grayson Power Plant, Glendale was concerned about its ability to integrate an additional 2.52 MW of intermittent energy into the City's electrical system, particularly during morning and evening hours, when solar power goes on- and off-line.

Rooftop Solar is Not a Manageable Resource for the Required Capacity

As there are no available large open spaces for a utility-scale solar photovoltaic (PV) power plant within Glendale, the only opportunity to offset generating capacity from Grayson within Glendale is with rooftop solar. However, the City cannot rely on private installations of solar energy, which may or may not occur, to plan for reliable energy needs for the City. Rooftop solar is the result of a voluntary effort on the part of property owners within Glendale. While the City can and does incentivize the residents and businesses within Glendale to install rooftop solar, it is not a resource that the City can manage or assure that sufficient capacity will be developed and available with schedule certainty.

Citing NREL methodology for its analysis, the IRP concluded that by 2030, total photovoltaic installations by the early 2030s are expected to be between 35 MW and 40 MW. Even if twice that many solar installations are put into place by early 2030, there would not be enough rooftop solar to meet Glendale's capacity needs without the Project. Moreover, relying on solar deployment by 2030 does not address Glendale's supply needs in the interim. And lastly, Glendale's highest load hours tend to occur during the late afternoon, after solar power has already peaked and is dropping off.

Rooftop Solar Load Must be Balanced

A repowered Grayson Power Plant would still be necessary to support increases in rooftop solar. Solar energy is not constant, and causes fluctuations in the power grid that must be managed with a steady supply of power. Please see Topical Response No. 1, Glendale is Pursuing Both Increased Renewables and Continued Reliability of Electricity at Reasonable Rates, for further information.

Rooftop Solar Would Be Substantially More Expensive

Commenters have suggested that Glendale should install additional rooftop photovoltaic generation and batteries within Glendale, or that the peak load will be lower as more rooftop photovoltaic installations come online. During high system loads, the capacity of the existing transmission imports into Glendale is not sufficient to serve the nighttime load and also to charge batteries with enough energy to provide the necessary dispatchable power to meet peak load,

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as shown in Figure 5-1 of the Draft EIR. While the addition of photovoltaic generation could mitigate this situation, it would do so at a much higher cost than the Project.

As a benchmark, the average 2017 cost shown on the California Distributed Generation Statistics website for rooftop solar systems of less than 10 kW capacity is \$4.58/watt (101,671 systems) and \$3.77/watt (10,352 systems sample size) for systems greater than 10 kW.⁶⁴ A 10 kW rooftop system is a large rooftop solar system. This is a blended cost of \$4.51/watt. Using this cost, 250 MW of rooftop solar would require an investment of \$1.13 billion. This is significantly more expensive than the Project. These costs are higher than utility scale solar PV costs (nearing \$1/watt), however that is a consequence of rooftop installations being more expensive and lacking the economy of scale that a utility scale PV system enjoys. In addition to the investment in rooftop solar, a further investment in energy storage would also be required because of the need to store energy for use at other times (the load peak occurs at a different time than the solar production peak).

9.1.1.6 Topical Response No. 6: Deferring the Repowering

Summary of Comments

Comments were received that Glendale should continue operating the Grayson Power Plant for the foreseeable future, or at least until there is sufficient demand reduction due to solar development, demand response, energy efficiency, and energy storage or alternative technologies available such that either the repowering will not be required, or a much smaller power plant will be required. Commenters expressed doubt that the Grayson Power Plant cannot continue to run with proper maintenance.

Summary of Responses

The Grayson Power Plant is well beyond its useful life and, despite continued, costly, ongoing efforts to maintain it, the plant experiences frequent unplanned outages and is not expected to remain in service (other than Unit 9) beyond early 2020s. Additionally, new SCAQMD air quality regulations will require that the plant undergo costly air quality retrofits, or cease operations, within the next few years. The City has commissioned numerous studies over the years regarding appropriate measures to keep the plant running. Each of those studies recognized that the plant is beyond retirement age and needs to be repowered in the near future. Despite the City's extensive efforts to keep the plant alive, in keeping with the maintenance recommendations in those studies, the plant cannot continue to operate much longer. The repowering must occur imminently in order for the City to be able to continue to reliability serve power to its customers.

⁶⁴ Refer to California Distributed Generation Statistics for the 2017 average cost per watt for rooftop systems of greater than 10 kW capacity (10 kW is equal to 0.01 MW).

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Response

The repowered Grayson Power Plant is part of an integrated plan to move Glendale towards a 100% clean energy future. The existing power plant is well beyond its useful life and not expected to remain in service (except for Unit 9) beyond early 2020s. Repowering the Grayson Power Plant must occur in the immediate future in order for Glendale to be able to continue to reliably serve its residents and businesses. Glendale's peak load of close to 350 MW occurred even with an array of energy efficiency, demand response, voltage reduction, and load-shifting measures in place. Even as Glendale continues to incentivize solar development and to actively encourage demand response and energy efficiency among its customers, Glendale must be able to meet the electricity needs of its energy customers and meet its ancillary services obligations in the immediate future as well as in the long term.

The current power generation units at the Grayson Power Plant are well beyond their useful life. Unit 3 is currently out of service. The remaining units (1, 2, 4, 5, and 8) are all 40 to 70 years old and are not expected to continue running beyond early 2020s. Maintenance on these units is not very effective and also very costly. Additionally, units 1, 2, 3, 4, 5 and 8 will require costly air quality retrofits in the near future due to anticipated new regulatory requirements – an investment that does not make financial sense given the age of these units.

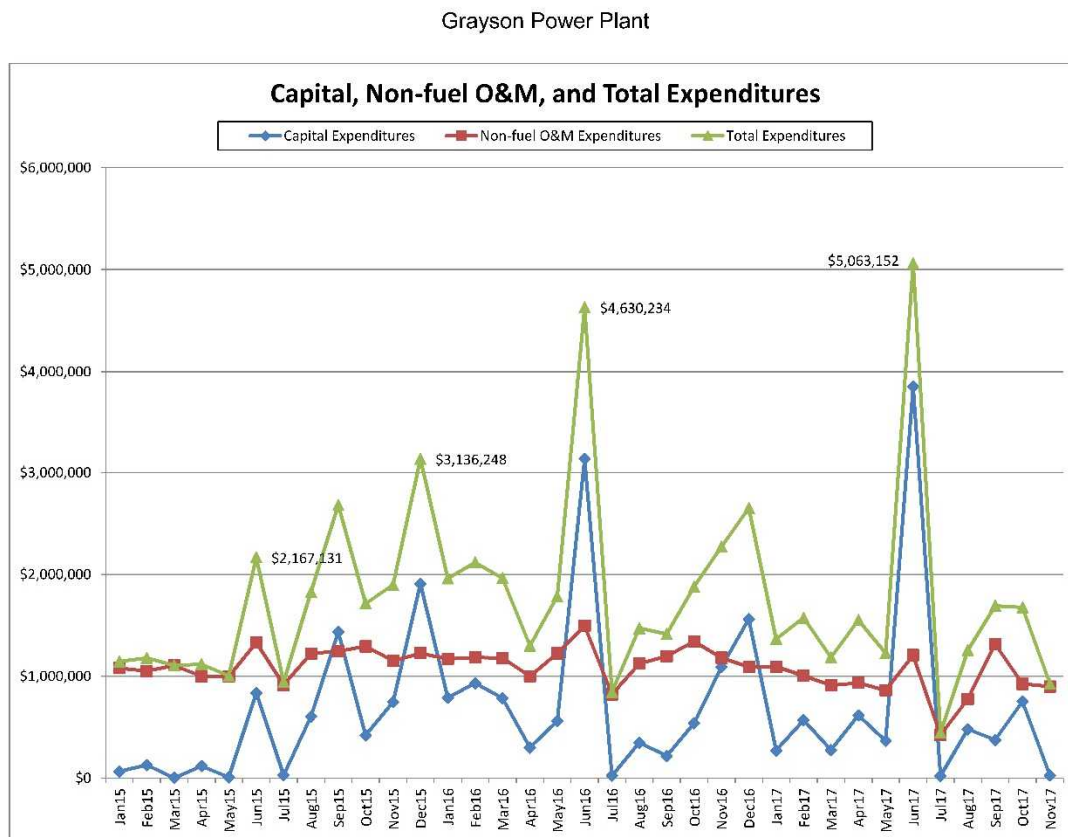
Recent Maintenance, Repair and Capital Work and Costs

Over the years, the City has expended significant sums to maintain the Grayson Power Plant Units. Actual cost of repairs is shown in the Figure 9-3 below:

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Figure 9-3 Capital, Non-fuel O&M, and total Expenditures



Date: 2/16/2018

As shown in Figure 9-3, maintenance and repair costs spike in the hot summer months because that is when the City is forced to rely most heavily on the Grayson units, and that these costs are increasing. Examples of the recent maintenance and repair costs are provided below:

In December of 2014, GWP presented a report to the City Council regarding proposed, necessary capital repairs to the Grayson Power Plant that would be necessary to keep the power plant operational pending completion of an Integrated Resources Planning Report and a decision whether to pursue a repowering.⁶⁵ Prior to commencement of the IRP, the City identified capital improvement projects necessary for the Grayson Power Plant and appropriated approximately \$20,000,000, to be funded through bond proceeds. Importantly these costs do not include those necessary to bring the existing generation units into compliance with pending SCAQMD rules and existing air toxics programs. However, the report indicated that pending the completion of the IRP, staff had reevaluated the list of recommended capital improvement projects and would only move forward with the absolutely necessary ones. The

⁶⁵ http://www.ci.glendale.ca.us/government/council_packets/Reports_121614/CC_SpMtg_Item4_121614.pdf.



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City has undertaken costly repairs and capital work to keep the plant in service. It is a difficult juggling act to make sure that the units are in service and able to cover energy demand, particularly during the summer peak load season, and to make sure that at least one of the boilers that can burn landfill gas – Units 3, 4, and 5, is in operation. Some of the significant repairs over the past several years are described below:

Unit 1:

- In 2014, GWP overhauled the unit, including the vibration monitoring system. The cost of repairs to the unit totaled approximately \$2,853,000.

Unit 2:

- In 2015, the excitation system for the Unit 2 steam turbine generator was upgraded at a cost of approximately \$368,700.

Unit 3:

- In 2014, Unit 3 underwent emergency repairs to install a new burner management control system at a cost of approximately \$412,900,000. The Unit 3 processor and its components were no longer manufactured, the processor was no longer technically supported by the successor to the original manufacturer, and Glendale's limited supply of spare parts had run out. At the time of the repair, Unit 4 was also unavailable due to lengthy repairs and Unit 5 had experienced an equipment failure forcing that Unit offline.
- In March 2017, the City Council authorized the repair of the Unit 3 boiler. The boiler was put back into service, but the headers leaked high pressure steam. The boiler subsequently was shut down. In May 2017, the prime contractor engaged the services of a consultant, Applus RTD, to perform a shear wave inspection of the Unit 3 headers. The findings indicated "that the 63-year old headers were not able to withstand the heat and stress required to perform the necessary repairs most likely due to fatigue and exacerbated by stress corrosion cracking at elevated temperatures." The report noted that the stress cracks are "propagating from the inside of the header as well and not just external cracking." The consultant concluded that "to continue to repair the new stress cracks would be futile as the header(s) could possibly fail which could result in a catastrophic event." The contractor therefore advised Glendale that "[r]eplacement of the headers may be an option however upon replacement, we may simply find that the rest of the boiler is fatigued similarly and will not hold up for further service. If the City desires to consider the option to replace these headers we could work up an estimate however the costs would be significant."⁶⁶

⁶⁶ May 30, 2017 correspondence from Primoris Services Corporation/ ARB, Inc. to Mr. John Escudero of Glendale Water & Power.

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Unit 4:

- In 2015, the City contracted for the design/build of cooling tower repairs. The cooling tower had been in services since 1959 and required safety as well as functional upgrades. The cost of the repairs was approximately \$562,950.
- In April 2015, the City contracted for the repair of the boiler bull nose tubes due to leaks. A total of 22 tubes were repaired at a cost of \$127,800.
- In the spring of 2015, GWP Staff recommended the replacement of all of the Unit 4 water wall tubes (separate from the boiler bull nose tubes). Based upon GWP's examination, the roof tubes appeared to be in adequate condition, but failures had occurred on the wall tubes. Staff agreed that the re-tube would not include the roof tubes up to the steam drum nozzle connections. On July 14, 2015, a contract was issued to replace the Unit 4 water wall tubes and some portions of the roof tubes⁶⁷. This project was completed in July 20, 2016. The boiler was subsequently put back into service.
- In December 24, 2016, a roof tube failed, which also caused damage to the boiler casing. A contract was issued to inspect the Unit 4 boiler tube failure. The original equipment manufacturer conducted an inspection and determined that an original right-side tube failed just above the cut line of the recent tube replacement. Based upon the manufacturer's inspection and repair recommendation, a work order was issued in July 2017 to replace the failed tube and repair the boiler casing. The work was completed in August 18, 2017 and the boiler was put back into service. The total cost of the Unit 4 water wall tubes replacement, ensuing tube failure and casing repairs amounted to approximately \$4,550,000.
- Although all of the boiler units at Grayson Power Plant were past useful life, repair of the Unit 4 boiler was deemed the best option because:
 1. It has higher emissions limits than Unit 3 and Unit 5 boilers. This allows the Unit 4 boiler to have more operating hours.
 2. Over the years, Unit 4 has had newly installed, a) Automatic Voltage Regulator, b) Boiler Management System, c) Woodward Governor, d) Turbine-Generator Vibration Monitoring system, e) Overhauled turbine-generator (in 2004), f) Rewind of generator rotor (in 2004), and g) Generator hydrogen analyzer.
- Due to the issues with the Unit 4 tubing, from the spring of 2015 through August of 2017, Unit 4 was only in service for six months.

⁶⁷ Although the plan was to replace wall tubes only, because of the welding of the unit, some portion of the roof tubes had to be included in the Project.

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Unit 5:

- In 2016, during the six-month period that Unit 4 was back online, GWP had the Unit 5 main transformer repaired at a total cost of approximately \$172,560. The Unit 5 main transformer repairs were one of the capital projects that GWP had recommended deferring, in its 2014 report to City Council. However, in 2016, GWP made the decision to proceed with the repairs to the Unit 5 main transformer because of leaking bushings and pumps on the cooling system. GWP became concerned that without the repairs, the Unit could not support load.

Units 8A and 8BC:

Unit 8 currently operates as combined-cycle units consisting of Unit 8A—an FT-4 PowerPak combustion turbine generator consisting of a single turbine and generator with a heat recovery steam generator; and Unit 8BC—an FT-4 TwinPak combustion turbine consisting of two turbines with a common generator with a heat recovery steam generator. The Units 1 and 2 steam turbines are supplied steam from the Unit 8A and Unit 8BC heat recovery steam generators.

- From 2012 to 2016, the Unit 8A and 8BC controls were upgraded at a total cost of approximately \$74,800. Because of their age, the Units' controls are electro-mechanical, not digital, and in many cases parts are no longer being manufactured. This requires finding a manufacturer who can specially fabricate the needed controls, or finding refurbished spare parts where available.
- In 2012 and 2013, the Unit 8BC turbine and generator was overhauled at a total cost of approximately \$2,710,000.
- In 2015, Unit 8A failed in service. GWP staff swapped the spare engine and sent the failed engine to Wood Group Pratt-Whitney (WGPW) for inspection and repairs. Upon inspection, it was determined that the cost of repair was \$1.1 million. A sole source contract was issued to WGPW as they are the original equipment manufacturer. Final cost of repairs on this turbine upon completion was approximately \$988,000.
- In 2016 and 2017, the 8A & 8B/C Heat Recovery Steam Generators underwent major retrofits, which included new economizers and inlet air filters at a total cost of approximately \$3,200,000. The work was necessary because the economizer was leaking and the structure for the filter housing had corroded to the point where it could not be repaired any more.
- If Units 8A and 8BC are retained beyond their average retirement age as suggested by the commenter, costly ongoing repairs would be necessary to keep them in service, including:

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- o A combustion issue in Unit 8A requires removal and inspection of the power turbine and possibly replacement of the bearings; and
- o An electrical issue with the Unit 8BC generator necessitates rework of the generator.

Notwithstanding all the maintenance, repair, and capital work undertaken to keep the Grayson Power Plant in operation, since May of 2015, there have been 40 unplanned outages caused by equipment failures at the plant.⁶⁸ Each of these outages has resulted in downtime, or the inability to operate the unit associated with the individual piece of failed equipment. In addition to the cost to repair the equipment itself, the unavailability of the unit requires the purchase of outside power, at a substantially greater cost than the cost to run the unit and generate the power locally, especially because unexpected purchased power costs are higher than planned purchased power costs.

In addition, it is difficult and sometimes not possible to find parts for the equipment as some of the parts are no longer being manufactured. It is also very difficult to find a company willing or able to maintain the equipment. Most companies do not have the expertise to work on the aging Grayson units and are unwilling to bid on a repair project.

Costly Improvements are Continuously Needed to Meet Air Emission Regulatory Standards

As noted, there are specific maintenance issues with each unit at Grayson. In addition to the maintenance challenges is the fact that, since the existing units were designed and built, technologies have evolved and developed to increase efficiency and reduce emissions in new power plant equipment. Like all existing emission sources, the Grayson Power Plant operates under air quality permits from the SCAQMD. The permits are based on the technology available at the time the equipment is originally installed and, as technology is developed to retrofit existing equipment, the permits are updated to require the equipment to be retrofitted with the new technology. Over time, Glendale has installed the best available retrofit technology on the equipment at Grayson.

The next round of regulations coming from the SCAQMD will require significant reduction in NOx emissions to the same levels required of new plants. Specifically, in 2018, the South Coast Air Quality Management District has started rule development to replace the sun setting RECLAIM (Regional Clean Air Incentives Market) program in compliance with the state legislature's mandate to terminate such programs by 2023. The new rules are expected to be adopted in 2018 and retrofits to be in place by 2023. It is expected that under this rule development, Unit 8 (as well as Units 3, 4, and 5) will need to be brought up to current emission standards. Doing so would necessitate a substantial upgrade of the emissions control systems within the Unit 8 heat recovery steam generators.

⁶⁸ Glendale Water & Power, Grayson Power Plant Summary Outage Report.

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Achieving the required level of NOx reduction will necessitate the use of Selective Catalytic Reduction ("SCR") technology, which is incompatible with the burning of untreated landfill gas. Thus, the construction of a landfill gas treatment system will be required. Given the age and condition of the units, retrofitting the units with SCR technology does not make financial sense. The SCR retrofit would require moving exhaust stacks, cooling towers, and other equipment at Grayson in order to make room for the SCR system. Additionally, installing retrofit equipment on existing units reduces their overall efficiency even further because they were not originally designed for this equipment. Thus, besides attempting to keep the existing units simply in operation, in order to be able to use the old units in the future, upcoming air quality regulations will require extensive, costly, physical modifications and construction activities at Grayson. The end result would be to make the units even less efficient at great expense. By contrast, the new equipment proposed for the Project is already designed with the latest emissions technologies and with much higher efficiencies than the current, retrofitted units.

In short, the Grayson Power Plant is on the brink of failure and must be replaced in order for Glendale to continue to meet the energy supply needs of its residents in the next few years.

9.1.1.7 Topical Response No. 7: Demand Management

Summary of Comments

Comments were received that the City should consider demand management as an alternative to the Project.

Summary of Responses

Since 2000, the City has invested over \$46 million on energy efficiency and demand management programs to the benefit of its customers. The City has in place currently many demand management strategies and programs and each year has successfully met and exceeded its energy efficiency targets, which are consistently among the top targets among all publicly-owned utilities in the State. However, Glendale's peak load of close to 350 MW was achieved even with GWP's comprehensive demand management and energy efficiency measures in place. Relying solely on energy efficiency and demand management is not a solution that will ensure that a reliable supply of energy is available for Glendale customers on peak days. For this reason, energy efficiency and demand response programs are part of an integrated plan that includes the Project.

Response

When the demand for electricity at peak times approaches the capacity of network infrastructure, GWP must act to maintain reliable electricity supply to customers. Reliable electricity supply to customers can be maintained by either increasing the network capacity (supply-side management) or by reducing the peak electricity demand on the network (demand-side management). Demand management can involve either the voluntary



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moderation of customer electricity demand at peak times or GWP can limit the supply of electricity at peak times.

The City currently has in place many demand management strategies and programs, as described below. Nevertheless, even with these programs in place, the City's peak demand is close to 350 MW. Demand management cannot provide the power anticipated to be lost once the Grayson Units 1 through 8 fail and it cannot reliably serve the power demands of Glendale. Demand management does not meet the Project objectives and is not a feasible alternative to the Project.

GWP Energy Efficiency and Demand Response Initiatives

Since 2000, the City has invested over \$46 million on energy efficiency and demand management programs to the benefit of its customers. GWP energy efficiency and demand management programs have saved over 1.7 million MWh. At today's average electric rate, GWP energy efficiency programs will have produced over \$320 million in customer bill reductions over the life of installed measures.

Every four years each publicly owned utility is required to set a ten-year energy efficiency target and report such target to its governing body and the California Energy Commission. This past year, GWP worked with the Southern California Public Power Authority, California Municipal Utility Association, Northern California Public Power Authority, Navigant Consulting, Inc., and 38 other publicly owned utilities to develop its new ten-year energy efficiency target and report the results to the California Energy Commission. Over the next ten years, the City has committed to save an average 1.16% of forecasted retail sales each year, an 8% increase over its previous target.

GWP is one of the top performing publicly owned utilities in terms of energy savings since the adoption of AB 2021. The City's new energy efficiency target is the 4th highest of the 39 publicly owned utilities in California. Since Fiscal Year 2006-2007, the City has consistently exceeded its annual energy efficiency target, consistently ranking it among the top 10 California publicly owned utilities in achieved efficiency savings. The City has exceeded its established energy efficiency targets as reported to the California Energy Commission by an estimated 125% for the period 2007 to 2017.

In that regard, the City has in place a number of programs designed to manage demand and reduce load, particularly during hot weather periods. In Fiscal Year 2016-2017, the City budgeted \$1,810,000 (funded through the Public Benefit Charge on electric rates) for energy efficiency and demand side management programs, and expended \$1,515,851. The unused budget is maintained in a fund balance to be applied towards qualifying projects, programs and services in a future year.

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For the Fiscal Year 2016-17 reporting year, GWP's energy efficiency programs saved 18,441 MWh (1.74% of retail sales). For the current fiscal year, FY 2017-18, the City has budgeted \$7.8 Million for energy efficiency and demand side management initiatives. For example:

- **Behavioral Demand Response Programs:** the City has partnered with software provider Opower Inc. to deploy a residential Behavioral Demand Response pilot program. This program targeted 33,000 residential Glendale customers to receive electronic, Interactive Voice Response, and paper communication to encourage customers to adjust their energy consumption during periods of peak energy demand. Specifically, the program sends e-mail and/or phone communications to customers the day before a peak event (that is, a period of time when energy usage is predicted to be higher than normal due to heat or other circumstances), notifying them of the upcoming event and providing guidance for reducing energy usage during the identified peak hours. These communications include simple tips for saving energy during peak hours, such as adjusting air conditioning a few degrees or delaying the use of large appliances. Each customer also receives feedback from GWP in the days following an event with information about how much energy they used on the peak day and additional ways to save during the next event to keep customers engaged for the next event. All customers enrolled in the program have the opportunity to opt out if they no longer wish to participate. After the pilot program concluded, Opower conducted a Customer Engagement Survey. This pilot program was well accepted by City residents based on survey results conducted by Opower, which found:
 - Customers demonstrated high levels of satisfaction and engagement, combined with low opt-outs, despite ease of taking action.
 - Participants are more likely to take steps to use less energy and many show awareness of the importance of peak usage times.
 - 81% of customers were satisfied with the "peak energy day" program, compared to 78% at other utilities with similar deployments.
 - 9% of customers were unsatisfied with their experience
 - 77% took action (reduced air conditioning usage and other actions to reduce home's energy use)

Behavioral Demand Response is an innovative approach to residential demand response because it gives customers personalized feedback on their performance shortly after a peak event is complete. Customers no longer have to wait until their monthly bill to see how much they saved and this is paramount to locking in positive peak-shaving behaviors for future events. The goal is to make sure that GWP customers have the right

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information and tools to empower them to take action to reduce energy usage during the summer.

- **Conservation Voltage Reduction Program:** This program conserves electricity by operating electric customer voltages in the lower half of the ten percent (10%) voltage band required by ANSI equipment standards. Specifically, the program uses a unique, patented software that takes real-time voltage data from the existing, digital automated meters throughout the feeder circuit. Using this real-time voltage data, the system adjusts the transformer voltage to keep it at a pre-determined level. This allows voltage to be lowered at the transformer while ensuring end of the line customers' voltage is kept at satisfactory levels.

By integrating voltage data from GWP digital meters into the circuit planning and control process, the program assists GWP with planning, managing and validating energy efficiency results, and enabling a continuous improvement process for our distribution energy delivery system. In addition to energy savings, the Conservation Voltage Reduction program helps GWP identify problem areas on feeders such as poor transformer performance, so corrective action can be taken before the feeder is included in the program. This helps maximize energy savings.

The Conservation Voltage Reduction Program began as a pilot program in April 2014. GWP engineers selected one feeder with approximately 3,800 meters from the Western No. 2 substation for the pilot. The pilot program tested the technology on a limited number of GWP substation transformers. The pilot met all GWP expectations. The system functioned as proposed, and energy savings estimates were validated.

In the spring of 2015, the City Council authorized GWP to proceed with a full-scale Conservation Voltage Reduction Project. The energy and cost savings realized during the pilot program have continued through the initial full-scale deployment period. GWP has twenty feeders on the Conservation Voltage Reduction system, with another twelve feeders scheduled to be added in the next six months.

- **Ice Energy "Ice Bear" Program:** Ice Energy provides a unique, small scale packaged thermal energy storage project called an Ice Bear. The Ice Bear reduces peak electrical demand by utilizing electric energy to produce ice at night during off-peak hours and then uses the ice for cooling during the day. Through its Ice Bear project, Glendale has installed approximately 170 Ice Bear units, in addition to retrofitting some sites with energy-efficient air conditioners at local small- and medium-sized businesses in Glendale as well as on City facilities.

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In addition to the above, the City currently has in place the following Residential Customer Programs:

- **OPOWER Home Energy Reports** – Annually provides 50,000 residential customers with six print paper reports on their energy use. Reports also include action steps for each household to help them reduce their electricity consumption. Currently, the program is integrating the existing two-month billing data and a wealth of external data sources to educate customers on how they can save energy. With the installation of digital meters throughout Glendale's service territory, customers are mailed a home energy report that includes their Smart Grid data and provides customers with access to the website where they can review their energy usage.
- **OPOWER Web Portal** - Provides up to 75,000 customers with web access to electric usage information from their digital meters. The software analytics engine enables the coupling of insightful messaging with specific, targeted action steps for each household to help the customer reduce their electricity consumption. The addition of interval electric usage data has given customers the ability to view their usage in monthly, weekly, daily or hourly intervals. Access to granular information coupled with the analytic engine provides customers with greater insight into their usage and provide more in-depth ways for them to save energy and money.
- **Smart Home Energy and Water Savings Rebates** - Provides incentives to promote the purchase of approved energy and water saving appliances and devices. The City recently launched a web portal for residents to submit their rebate applications online.
- **Smart Home AC Tune-Ups** – This program helps residential customers save energy by ensuring that their air conditioning and duct systems are functioning at their optimal level.
- **Livingwise®** - Provides energy and water conservation education materials for Glendale public and private school students. These materials support 10 hours of intensive energy education as well as in-home installation of energy saving devices including compact florescent light bulbs.
- **Tree Power** - Provides up to three free shade trees and arborist services to ensure that the trees are planted correctly. When properly sited and cared for, a healthy, mature shade tree helps provide shade that cools the home and helps reduce air conditioning use.
- **Mobile My Connect** – California Municipal Utilities Association award winning program that provides residential customers a free mobile application through GWP's Smart Customer Mobile engagement program which offers residential customers an interactive app called GWP -- Mobile My Connect to better manage their energy and water usage on a smart phone, tablet and web anytime and anywhere. The user-friendly portal

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platform delivers real-time usage information and two-way communication between the customer and GWP. GWP – Mobile My Connect, allows residential customers to view current and historical bills as well as pay bills, set budget goals, submit service requests, view/report outages, send messages directly to GWP and obtain electric vehicle or solar panel usage information.

- **In-Home Display/Thermostat Program** - The City partnered with CEIVA Energy, LLC to provide a unique in-home display solution for residential customers. The CEIVA in-home display is a digital picture frame that integrates customer's personal photographs with meaningful and useful historical water usage information and near real time electric consumption information. The CEIVA display works as a home gateway that simultaneously communicates with GWP's electric digital meters as well as the customer's existing home networks via Wi-Fi or Ethernet. In addition to providing interval energy and water consumption usage information, GWP has the ability to enhance outreach, by pushing energy efficiency program, conservation and event messages directly to the in-home display. In FY 2014-15 the City's pilot consisted of 72 displays with a broad cross section of residential customers. The City expanded its current pilot with CEIVA from 72 to 710 customers in FY 2015-16, and integrated smart thermostats, and remote provisioning/web portal software. Currently in FY 2017-18 there are a total of 910 in-home displays and smart thermostats installed in customers' homes and GWP is planning to install an additional 400 by the end of the fiscal year.

The City has in place the following Commercial Customer Programs:

- **Smart Business Energy Saving Upgrades** California Municipal Utilities Association award winning program that provides small business customers with comprehensive no-cost energy surveys, customized written reports, energy education, and for each participating small business, directly installs as much as \$2,000 worth of cost-effective energy conservation measures.
- **Smart Business AC Tune-Ups** - Provided by Proctor Engineering, helps small business customers save energy by ensuring that their air conditioning systems are functioning at their optimal level.
- **Business Energy Solutions** - California Municipal Utilities Association award winning program that provides incentives for medium and large businesses to complete pre-approved energy saving retrofit projects. Qualified customers can receive up to \$50,000 in incentives per fiscal year. Projects must be cost-effective from the customer's perspective based on the value of total estimated energy savings over the life of the installed measures. Incentives for approved retrofit projects are limited to 20% of eligible project cost or 100% of the incremental costs necessary to bring a remodeling and/or new construction project above the minimum Title 24 energy standard. In no case will an

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incentive exceed the value saved energy over the life of the measures assuming \$0.06 per kWh saved.

GWP is a leader in many aspects of the utility industry. Along with aggressive conservation efforts, GWP has been giving back to the community through its Public Benefit Programs. These programs not only assist low-income customers with their electric bills, they also provide funding and education for all customers to invest in new technologies helping them save money and lower their energy and water consumption. Glendale has, and will continue to aggressively pursue demand management and energy efficiency initiatives to reduce load in Glendale.

In calculating Glendale's load, the 2015 Integrated Resource Plan load projections assumed that energy efficiency and demand response programs are and would continue to be in place and would offset increases in energy usage due to electric vehicles and development. However, a 2017 study prepared by Navigant Consulting, Inc. projects that the annual market potential for energy efficiency will decline significantly through 2027, meaning that energy efficiency, in and of itself, will not result in a sufficiently large or rapid reduction in load such that the Project is not necessary. Please refer to Topical Response No. 1, Glendale is Pursuing Both Use of Renewables and Continued Reliability of Electricity at Reasonable Rates, and Topical Response No. 2, Relationship Between Integrated Resources Plan and the Project.

Energy Efficiency Requirements

AB 2021 (Levine 2006) required that on or before June 1, 2007 each publicly owned utility must identify all potentially available cost-effective, reliable, and feasible energy savings and establish ten-year energy efficiency targets. Additionally, AB 2021 required that each publicly owned utility update its energy efficiency target every three years. The law was amended in 2012 to change the update frequency to every four years.

In collaboration with the various California publicly owned utilities, the California Municipal Utilities Association, the Southern California Public Power Authority, and the Northern California Public Power Authority, GWP contracts with an independent firm to develop its ten-year energy efficiency and demand reduction targets in compliance with AB 2021. Since 2010, the collaborative has contracted with Navigant Consulting, Inc. for these purposes. In developing efficiency targets, Navigant uses the Electric Resource Assessment Model (ELRAM). The ELRAM is substantively similar to the Navigant model used by California Public Utilities Commission to establish targets for investor owned utilities. Navigant updated the ELRAM for the new 2018 to 2027 targets as described in the March 2017 release of the *Energy Efficiency in California Public Power Sector*, 11th Edition 2017.⁶⁹

⁶⁹The ELRAM is an Excel spreadsheet model based on the integration of demand side management measure impacts and costs, utility customer characteristics, utility load forecasts, utility avoided costs, rate schedules, deemed energy savings, measure costs, and avoided costs. The methodology behind this model is described in some detail in the *Energy Efficiency in California's Public Power Sector: A 2013 Status Report*.

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In March 2013, GWP reported its average ten-year target at 1.07% of forecasted retail sales for the period 2014 through 2023. In early 2017, GWP worked with the same partners to update its new ten-year target. The new target is 1.16% for the period 2018 through 2027. GWP will report this target to the California Energy Commission as part of the March 2018 release of the *Energy Efficiency in California Public Power Sector*, 12th Edition 2018. Although Glendale's new energy efficiency target is now higher, and GWP expects to meet or exceed the target as it has done in years past, Navigant's 2017 study projected that the annual market potential for energy efficiency is expected to decline through 2027 as more stringent building codes mandating energy efficiency in construction become more prevalent.

In addition to setting a ten-year target, GWP evaluates its individual energy efficiency and demand management program results each year and reports the results to the California Energy Commission. This is done through a collaborative process that includes representatives from the California Municipal Utilities Association, the Southern California Public Power Authority, the Northern California Public Power Authority, and individual publicly owned utilities. The annual reports produced by this collaborative provide a single comprehensive document in compliance with Section 9505 of the California Public Utilities Code and in response to the requirements of AB 1890 (Brute 1996), SB 1037 (Kehoe 2005), AB 2021 (Levine 2006), AB 2227 (Bradford 2012), and SB 350 (De Leon 2015). GWP has participated in development of these annual reports since the collaborative started in 2006.

The data for the annual reports comes from the individual publicly owned utilities and the methodologies and calculation models used are to industry standard and approved by the California Energy Commission. Prior to the 2014 report, the energy efficiency and demand reduction estimates were based on California Public Utilities Commission Data Base for Energy Efficiency Resources (DEER). In 2014, recognizing various deficiencies in DEER, participating publicly owned utilities contracted with Energy & Resource Solutions to develop a new Technical Resource Manual (TRM) to update and supplement DEER to better meet the needs of publicly owned utilities. In 2014, TRM replaced DEER as the basis for calculating energy and demand savings.

For reporting purposes, publicly owned utilities use the E3 reporting tool developed by Energy and Environmental Economics. The E3 tool contains the TRM. Publicly owned utilities use E3 to evaluate existing for reporting purposes and to evaluate potential new programs. The E3 tool calculates a number of data points including gross and net energy and demand savings based on life of measures, and cost effectiveness tests, including Program Administrator Cost Test (PAC), Total Resource Cost Test (TRC), Participant Cost Test (PCT), and Ratepayer Impact Measure Test (RIM):

1. Program Administrator Cost Test (PAC). Measures the effect of the conservation measure on the administering utility's revenue requirement. The utility's costs of implementing energy efficiency measures include direct installation costs incurred by the utility (as opposed to the participant), incentives and rebates, administration, overhead and

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marketing expenses. Benefits are the utility's avoided cost of purchasing or generating energy. This test does not consider the effect on utility revenues and the rates charged to its retail customers.

2. Total Resource Cost Test (TRC). Measures the cost and benefits of an efficiency measure as a resource option based on the total cost of the measure to the utility's service territory, including both participant and utility costs. Costs include the cost incurred by the participant to purchase, install and maintain the more efficient equipment and by the utility to market and administer the efficiency program. Any direct installation costs incurred by the utility are also included. Incentives and rebates are not included as they are not a resource cost; instead, they are transfers from the utility to the customer. That is, a rebate increases the utility's cost and decreases the participant's cost by the same amount, with a net effect of zero.
3. Participant Cost Test (PCT). Measures the quantifiable costs and benefits to the customer from participating in an energy efficiency program. Participant costs include purchase and installation costs for the efficiency measure, less any incentive or rebate received from the utility. Benefits are the participant's bill savings due to reduced energy consumption.
4. Ratepayer Impact Measure Test (RIM). Measures the net impact on average rates for the utility. This test compares the cost savings to the revenue losses resulting from each measure. The cost savings are the same as those for the Program Administrator Cost Test, while revenue losses are the program implementation costs (utility incentive, direct install costs and marketing, overhead and administration) plus lost revenue from reduced energy sales to the member utilities. If the marginal cost of electricity to the utility is higher than the rates charged to member utilities, the avoided costs will more than offset the revenue losses, leading to a positive RIM test (a ratio greater than 1).

Since they began in 2000, GWP programs have averaged 4.8 for the Program Administrator Test, 2.03 for the Total Resource Cost Test, 4.21 for the Participant Cost Test, and 0.56 for the Ratepayer Impact Measure Test (each of the numeric values is the ratio of the benefit divided by the cost of implementation).

It is important to note that Glendale's peak load of close to 350 MW was achieved even with GWP's comprehensive demand management and energy efficiency measures and ambitious energy efficiency targets in place. Therefore, relying solely on energy efficiency and demand management is not a solution that will ensure that a reliable supply of energy is available for Glendale customers on peak days. For this reason, energy efficiency and demand response programs are part of an integrated plan that includes the Project.

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9.1.1.8 Topical Response No. 8: Air Quality and Public Health

Summary of Comments

Several commenters expressed concern that the Project will increase air emissions. Some commenters asserted that the increase in emissions will result in significant impacts to air quality and therefore an alternative project should be approved. Several commenters were concerned about what appears to be the use of emission offset credits to justify the Project, while ignoring local air quality. One commenter claimed that New Source Review offsets cannot properly be substituted for mitigation of significant air quality impacts. Some commenters criticized the use of population values reflected in air dispersion modeling and health risk assessment protocol that were submitted to SCAQMD and approved for use by the agency's modeling experts.

Summary of Responses

- The Draft EIR includes an extensive analysis to confirm that the Project will comply with all applicable local, state, and federal air quality regulations. These regulations are designed to ensure that the Project will not (1) increase basin-wide criteria pollutants, (2) cause an unacceptable increase in health risk, or (3) deteriorate local and regional ambient air quality. The City's analysis includes complex air quality dispersion and health risk models as mandated by both SCAQMD and the U.S. EPA. These regulatory agencies dictate how air quality and health risk impacts are evaluated and also define the significance of an impact.
- The analysis in the Draft EIR indicates that the Project will not result in an unacceptable increase in criteria air pollution. Emission increases reflected in the Draft EIR are based upon conservative assumptions associated with SCAQMD permitting regulations. These regulations require that many existing emissions be ignored when calculating the increase in emissions from the Project. By discounting existing emissions, the Project does not get full credit for the existing baseline conditions. Because only new emissions are considered impacts of the Project, this discounting of existing emissions shows greater emissions associated with the Project than what is actually expected to be experienced. In addition, SCAQMD requires conservative, worst-case assumptions for projected future emissions of the Project, which further widens the divide between existing baseline emissions and projected future emissions associated with the Project. SCAQMD makes these assumptions to ensure that emission offsets are in excess of the Project, which thereby ensures that no net increase in emissions occurs on a basin-wide basis. This topical response further explains the SCAQMD process, relative to actual emissions increases and also compares historic actual emissions from the Grayson Power Plant with expected future emissions from the Project.
- With respect to health impacts, the Draft EIR also indicates that the expected maximum increase in cancer risk (MICR) from the Project as reflected in the Draft EIR is 0.91 in one

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million, which is substantially below the allowable increase of 10 in one million. The Draft EIR does not account for health risks associated with the existing Grayson Power Plant. In fact, health risks attributed to the existing boilers and gas turbine are higher than the risks that can be attributed to the Project. The Project will actually reduce health risks by over 96%. The Project serves as a highly-viable solution to reduce health impacts while also allowing GWP to meet its obligations as an electrical utility.

- Regarding concern over use of emission offset credits, SCAQMD and the U.S. EPA mandate that there can be no increase in non-attainment pollutants in the South Coast Air Basin. This is a regional standard and cannot substitute for other regulations that mandate that the Project not cause or significantly add to a violation of state or federal air quality standards. The Federal Clean Air Act and SCAQMD permitting policy recognize that a blanket prohibition on new emissions sources in any community would be harmful to the well-being of the community. To provide a means of balancing the requirement for no net increase in regional emissions with the need to build new sources, both the U.S. EPA and SCAQMD allow for the use of emission offset credits. Offset credits used to support new projects represent permanent emission reductions that are both real and quantifiable. The Draft EIR demonstrates that the Project will not result in a significant increase in air pollution. Additionally, the Project will not cause a violation of ambient air quality standards or significantly worsen an existing violation of ambient air quality standards. Again, SCAQMD defined the way in which the City must conduct its air quality analysis. SCAQMD also defines significance thresholds related to air quality.
- The City's use of fossil power will decline in future years due to its need to meet the Renewable Portfolio Standard. The Project does not substitute or replace renewable or carbon-free power. Instead, it allows local control of fossil fuel generation that is needed to provide local reliability. To the extent that local generation of fossil fuels is required, the use of newer current technology generating units that burn less fuel and burn that fuel more cleanly is the environmentally superior solution.

Responses

The Draft EIR Utilizes Conservative Assumptions That Amplify Actual Anticipated Air Emissions from the Project

As explained below, SCAQMD's conservative permitting standards discount both past and current emissions from the existing Grayson plant. SCAQMD permitting standards also overstate maximum daily, monthly or annual emissions anticipated to result from the Project. By discounting historical and current emissions, and also by employing conservative assumptions requiring that the Project emissions be calculated as if the repowered Grayson plant would operate much more intensely than is actually anticipated, SCAQMD permitting standards ensure that a very conservative analysis is conducted, which amplifies that actual air emissions that are expected from the Project.

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Under CEQA, existing emissions are considered part of the environmental baseline and Project impacts are evaluated as compared to baseline emissions. Most of these assessments are made on a pollutant-by-pollutant, pounds per day basis unless a refined analysis of air quality impacts is conducted. As explained further in the following discussion, the SCAQMD methodology discounts historic actual emissions from the existing plant, and thereby overstates the emissions increase expected to result from the Project. This more conservative methodology is used to support permitting decisions and is not mandated for the purposes for CEQA. However, the City voluntarily used these conservative assumptions in the Draft EIR to ensure a conservative analysis.

In addition, methodological assumptions requiring analysis of worst-case emissions as part of the Project also work to overstate the emissions that will result from the Project. The Draft EIR provides a conservative analysis and employs methodologies that do both these things: discount existing baseline emissions; and amplify maximum potential emissions of the Project. These assumptions are discussed below:

- **CEQA– Actual Baseline vs. Maximum Potential Project Emissions.** CEQA is conservative and requires that maximum potential Project impacts be assessed as compared to historic actual emissions from the Grayson plant. The Grayson plant does not run at its full capacity under its current air permit, 24 hours a day, 7 days per week, nor is it expected that it will do so under its new permit once it is repowered. However, for the purposes of CEQA, the analysis in the Draft EIR assesses impacts based on the maximum potential emissions under the air permit (effectively a worst-case scenario of future emissions). Those worst-case Project emissions are then compared to current/historical actual emissions (e.g., actual emissions instead of maximum emissions under the current air permit). In reality, the repowered plant will rarely, if ever, operate as assumed by the worst-case scenario. Therefore, the actual anticipated emissions associated with the Project will be less than was assumed in the Draft EIR.
- **SCAQMD Methodology Further Discounts Existing Baseline Emissions.** As stated above, the Draft EIR does not provide full baseline credit for historic peak daily emissions. Instead, it considers historic emissions from the Grayson facility in the same manner that SCAQMD calculates emissions for permitting purposes. Instead of using peak historic daily emissions to establish baseline emissions, SCAQMD methodology uses average historic daily emissions in most of its permitting analyses. SCAQMD then further discounts the average daily emissions based upon changes to technology and utilization schedules. This is done, not to reflect true historic emissions, but rather to ensure that any emission reductions used to offset the Project are substantially surplus to the proposed emission increase.

Again, the discounts applied to historic emissions by SCAQMD for permitting purposes are not required to be used in making a significance determination under CEQA.

Nevertheless, the City chose to use the more conservative SCAQMD-discounted historic values for the sake of consistency in presenting data even when the conservative

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SCAQMD methodology is utilized for calculating baseline emissions, emission increases from the Project are below the established significance thresholds.

- **SCAQMD Methodology Further Amplifies Project Impacts.** Assumptions about future potential maximum emissions from the Project artificially inflate anticipated Project emissions due to SCAQMD permitting policies. For example, the Project is expected to require certain daily and monthly maximum facility-wide starts of each combustion turbine. SCAQMD permitting policy does not allow the City to fashion permit conditions that aggregate operating and emission limits among multiple devices, so each turbine must be permitted for a higher number of starts than may actually be expected. Emissions are notably higher during startup operations than during normal operations, so any additional allowance for startup operations has a remarkable effect on total allowable emissions. Nevertheless, although the potential emissions and the net emissions increase for the Project are overstated in the Draft EIR, they are still below SCAQMD significance thresholds. The less-than-significant status is also validated by the air quality impact analysis, which is also based upon the overstated potential emissions of the Project, rather than more conservative expected daily and annual emissions of the Project.

Draft EIR Assumptions – Project Operating Profile

To support development of the SCAQMD's air permit for the Project, an operating profile was developed for the four units proposed as part of the repowered Grayson plant. As the size (MW capacity) of the Project had already been established through the Integrated Resource Plan (IRP), the purpose of the operating profile was to establish a permitting basis by defining the number of starts and operating hours.

This estimate was then used to develop monthly and yearly estimates of startup and operating emissions (startup emissions are higher than operating emissions as it takes time for the emissions control systems to warm up and become fully effective). These emissions estimates were then used as inputs to the SCAQMD air permit as well as quantifying the offsets that would be procured.

Air permitting is unit specific, and starts and operating hours cannot be shared between units. Additionally, most limits are based upon the worst-case month while some are annual limits. Thus, each unit was provided with the minimum number of starts and operating hours to ensure reliability of supply recognizing that the combined annual total would result in more starts and operating hours than were expected to be required in actual operation.

Furthermore, as the emissions created for a unit of energy produced (pounds per megawatt-hour or lb/MWh) are higher for a simple-cycle unit than a combined-cycle unit, the operating hours for the simple-cycle units were limited, thereby recognizing the greater efficiency and

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reduced environmental impact of the combined-cycle units compared to the simple-cycle units.

Worst-Case, Maximum Permit Potential Operating Profile Assumptions and Results

In developing the operating profile for worst-case, maximum potential impacts under the air permit project, the following assumptions were used to calculate annual emissions:

- Grayson would operate in conjunction with imports over the transmission system through LADWP as well as imports from the Magnolia plant. Thus, serving all of Glendale's energy need was not a requirement. The driver was having sufficient flexibility and energy to ensure reliability, e.g., cover intermittency of renewable imports, short-term loss of imports due to the loss of the single largest and next largest contingencies, and peak loads when imports alone could not provide sufficient capacity.
- Unit 9's current function is to serve as the 10-minute start non-spinning reserve unit (it is the only unit currently at Grayson that has 10-minute start capability). It was assumed that Unit 9 would continue in this role. Unit 9's air permit was not to be modified as part of the Project. The new simple-cycle units can also serve in this role. However, as non-spinning reserve does not entail operating the unit, there is no emissions impact.
- No planned outages were included for June, July, August, or September due to wanting all units available for summer loads and reliability. No planned outages were included for November or December due to the holiday season.
- Only one planned outage could occur in any given month to maintain adequate capacity/reliability. Combined-cycle outages were assumed to occur only in April, May, or October and have a 3-week planned duration (552 hours). Simple-cycle outages were assumed to have a 2-week planned duration (384 hours).
- Both simple-cycle units were planned to be available when a combined-cycle unit is in an outage to maintain adequate capacity/reliability.
- One combined-cycle unit was planned to always be in service operating at varying loads to provide regulation up and down to firm renewables and serve load. The second combined-cycle unit was planned to be online 24 hours, 7 days per week during July, August, and September to help cover summer loads, and 24 hours, 5 days per week in December, January, February, and March to provide additional energy due to reduced solar generation, and transmission/plant maintenance outages that typically occur during those times of the year and impact the ability to import power. In addition, to maintain equal wear on both units, the operating unit would swap quarterly. In the worst-case months, seven (7) starts per month was used. When a combined-cycle was online, it was assumed to, on average, be operating at part-load.

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- The simple-cycle units were assumed to operate as needed to provide quick-start capacity to address load and balance renewables. For weekdays, one start was assumed in the morning when the electrical load increases and solar is not yet available, and a second start in the early evening when electrical load increases and solar is dropping off. Thus, for a simple-cycle unit, forty (40) starts per month was assumed (2 starts/day, 20 work days per month). An additional fourteen (14) starts (2 per week) were included to provide additional starts for unplanned events and restart following a unit trip. A minimum run time of two (2) hours at part-load (on average) was used. This was done for both units to provide the flexibility to operate either unit as well as ensuring reliability (ability to dispatch a unit).

The above assumptions provided the annual utilization factors that are reflected in the center column of Table 9-5. The right column of Table 9-5 still reflects a conservative estimate of the Project's number of starts and operating hours.

Table 9-5 Annual Capacity Factors

Type of Unit	Annual Capacity Factor Permitted and Draft EIR	Annual Capacity Factor Best Estimate
Combined-Cycle 1 (Unit 10)	78%	42%
Combined-Cycle 1 (Unit 11)	78%	44%
Simple-Cycle 1 (Unit 12)	19%	6%
Simple-Cycle 1 (Unit 13)	19%	6%
Total	51%	26%

Comparison of Worst-Case, Maximum Permit Potential and “Best Estimate” Emissions

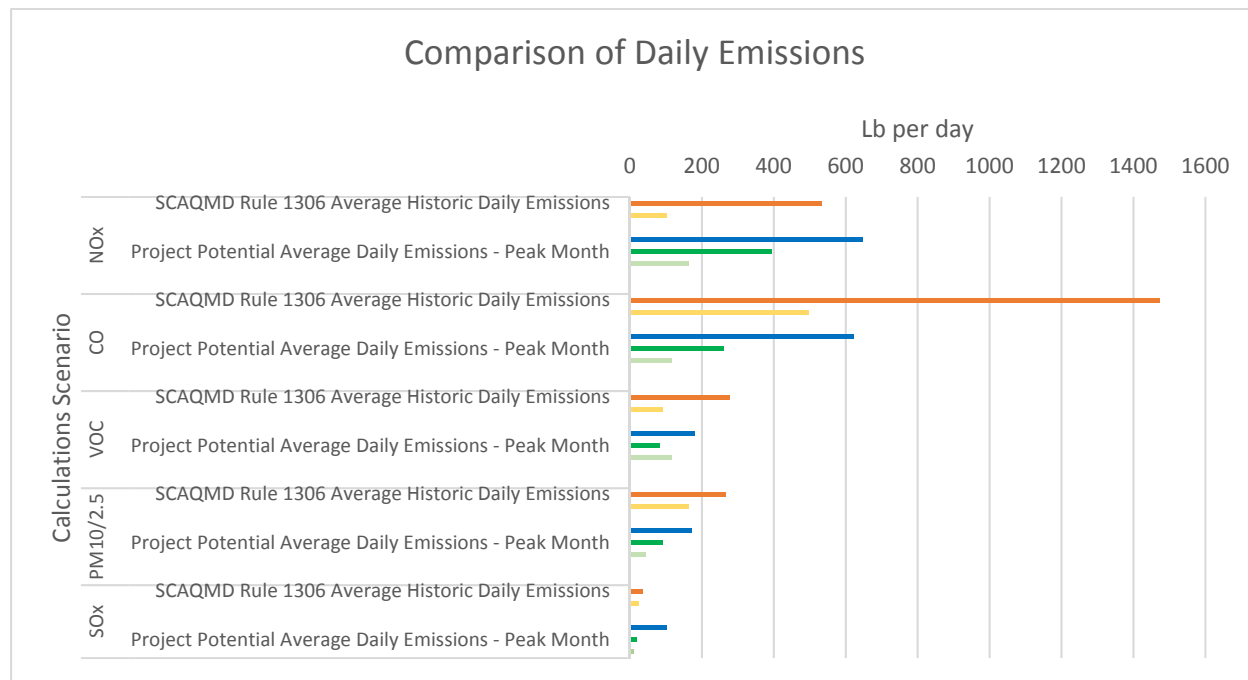
To help the reader understand the actual anticipated impacts of the Project, rather than the amplified emissions resulting from the conservative emission quantification methods in the Draft EIR, the City has calculated historic baseline emissions from the Grayson facility that are not discounted for permitting purposes, along with future expected emissions of the Project.

Figure 9-4, below, provides a summary of historic average emissions that were calculated in accordance with SCAQMD Rule 1306 (in red) along with historic average daily emissions (in gold) for the same period as discounted pursuant to SCAQMD offset policy and as reflected in the Draft EIR (in gold). Figure 9-4 also compares the two sets of historic emissions data with the future maximum potential permitted emissions of the Project used in the Draft EIR (in blue), excluding maintenance operations (maintenance operations are a notable anomaly and the Draft EIR values for maintenance operations reflect the occurrence of all allowable annual maintenance operations occurring in a single day).

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Figure 9-4 Comparison of Historic and Future Daily Emissions



Historic data was derived from 2015 and 2016 daily fuel consumption data for Grayson and annual emissions reports that GWP submitted to SCAQMD. Historic average daily emissions reflect SCAQMD calculation methodology prior to the discounts that are applied for the purpose of determining emission offset needs. SCAQMD-discounted daily emissions reflect the SCAQMD permitting emissions calculation process for the purpose of offset determinations and the values shown in the Draft EIR.

Figure 9-4 shows that historic average daily emissions are consistently higher than the SCAQMD-discounted average daily emissions that are reflected in the Draft EIR. The historic average NO_x emissions are 534 pounds, based upon SCAQMD Rule 1306 calculation methodology. NO_x emissions, which are discounted for SCAQMD offset purposes and reflected in the Draft EIR, are only slightly above 100 pounds.

Future potential daily emissions from the Project (shown in blue) that are used for CEQA analyses reflect extremely unlikely, worst-case operations when all four turbines are simultaneously operated at peak load for 24 hours, all four turbines are subjected to the maximum number of startup events (ten facility-wide turbine startup events), and that total allowable annual maintenance operations occur in a single day. Figure 9-4 shows that the potential daily emissions of NO_x are 648 pounds as reflected in the Draft EIR.

Because the Project includes peaking units that will not be permitted by SCAQMD to operate continuously, future average daily emissions will be much lower than the future peak daily

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emissions that were shown in the Draft EIR. Figure 9-4 shows future average daily emissions during a peak month (in dark green) that are also calculated in accordance with SCAQMD Rule 1306 and will be enforced through SCAQMD permits. Future average emissions of NO_x during a peak operating month are 395 pounds, and are considerably lower than both historic average emissions when not discounted for offset purposes and future peak daily emissions.

To help the reader understand the expected typical emissions profile of the Project, the City used historical operating data to estimate typical operations of the Project with consideration for variations in power demand, purchase contracts, renewable sources, transmission constraints in a typical year, and reliance on the facility to meet reserve requirements, and developed an expected emissions inventory. This inventory is also reflected in Figure 9-4 as approximately 164 pounds of NO_x (in light green).

Even with the many factors that inflate the potential emissions values, emissions from the Project are less than significant when the full scope of SCAQMD permitting regulations are applied as explained in the Draft EIR. Figure 9-4 shows, however, that when historic average emissions are compared with future permitted average emissions and future expected emissions, rather than future maximum potential emissions, the Project results in emissions decreases for all criteria pollutants. SO_x emissions in Table 9-4 differ slightly from the values reflected in the Draft EIR and now reflect SCAQMD's subsequent engineering analysis, rather than the higher emission rates that were used to support the analyses contained in the Draft EIR.

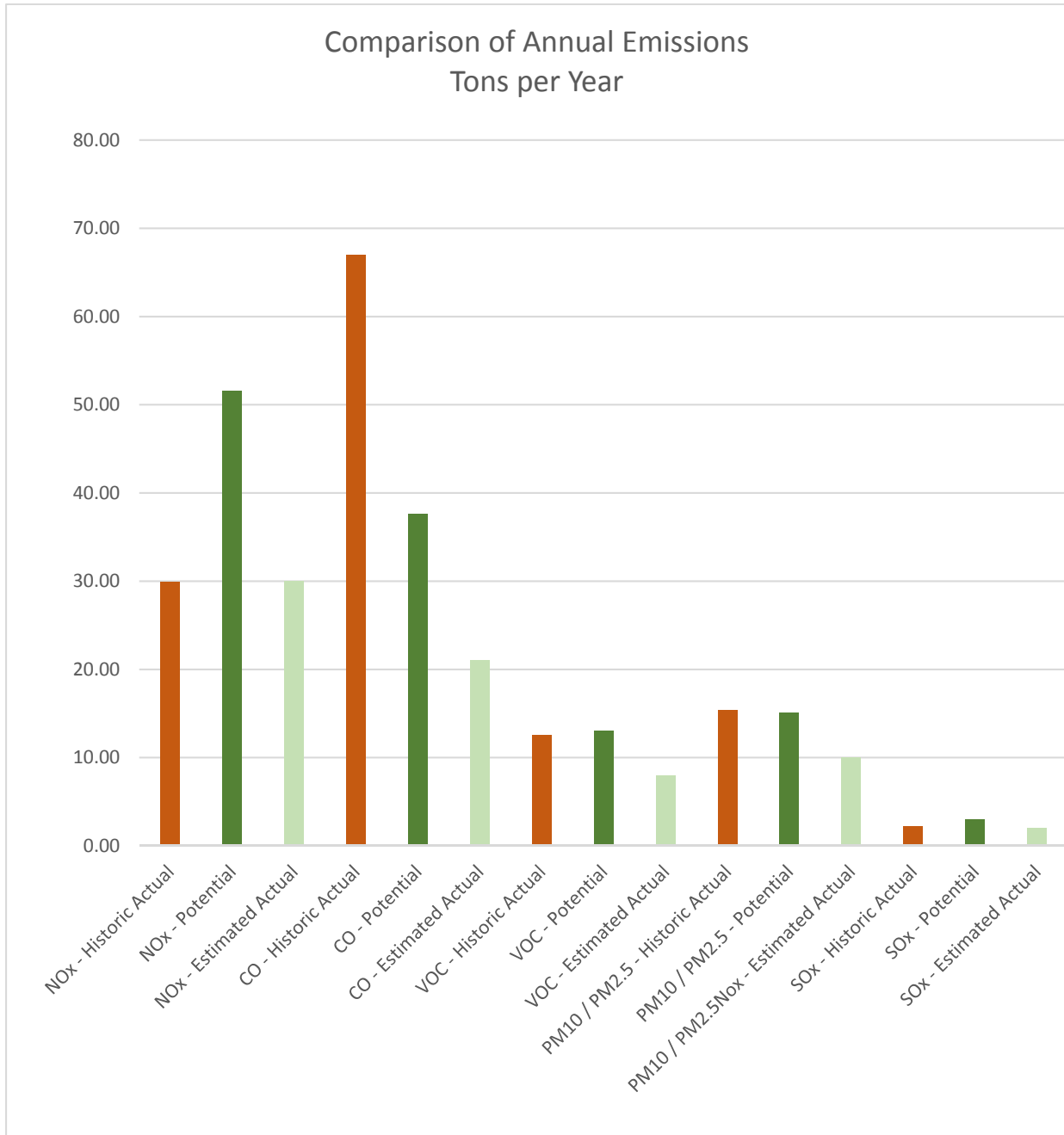
The Draft EIR discusses potential annual emissions that are used to determine compliance with SCAQMD rules and to determine average annual ambient air quality impacts. As with potential daily emissions, potential annual emissions also reflect worst-case operations under which all four turbines are operated at maximum permitted levels and all startup events and maintenance operations are exhausted. It also reflects SCAQMD permitted policies that result in higher emissions inventories. However, the worst-case annual operations used for SCAQMD permitted are unlikely to be realized.

For informational purposes, Figure 9-5, below, compares potential annual emissions from the Project with expected annual emissions that would result from the expected typical operating schedule. Although expected annual emissions are not used to make a CEQA significance determination, they are significantly lower than the maximum potential emissions of the Project and also lower than historic annual emissions. For example, historical annual emissions of NO_x in 2015 and 2016 was 30 tons. Maximum potential annual NO_x emissions from the Project are 51 tons, when all equipment is operated at 100% of proposed allowable permit conditions including maintenance operations and all allowable startup operations. The expected annual emissions of the Project, however, are approximately 30 tons when expected power generation schedules are combined with power purchase contracts and transmission line capacity. The expected future emissions are lower than both maximum potential future emissions and historic actual emissions. This relationship between historic, Project-potential, and Project-expected annual emissions is similar for all criteria pollutants.

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Figure 9-5 Historic and Future Annual Emissions (Tons / Year)



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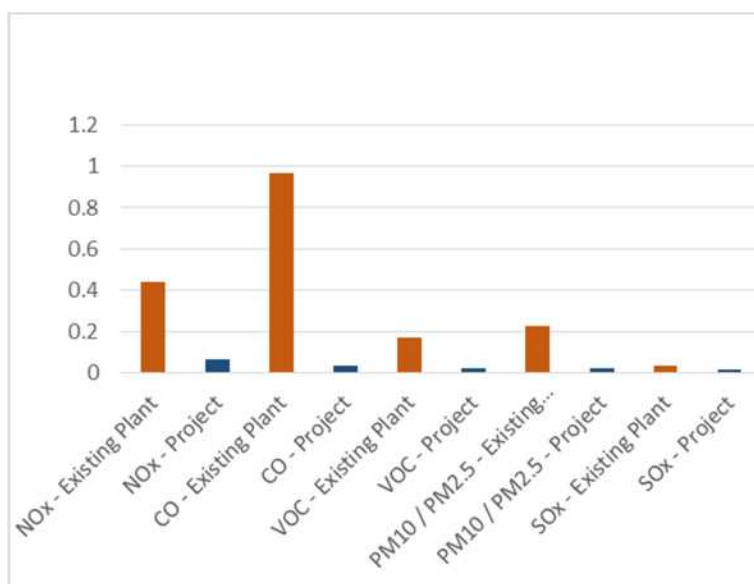
The New Equipment is More Efficient and Will Improve Fuel Consumption and Emission Rates

The Project will replace old equipment with new, modern equipment. The proposed equipment utilizes significantly newer technology than the technology that is currently operated at Grayson. The newer technologies will result in substantial efficiency improvements, both in terms in fuel consumption rates and emission rates. The existing plant utilizes equipment that is at least 40 years old and operates with no emission control systems.

The Project includes new, state-of-the-art combustion turbines that maximize fuel efficiency and minimize combustion emissions. Additionally, each turbine will be equipped with emission control systems to further reduce NO_x, CO, VOC and hazardous air pollutants (toxic emissions). The existing plant produces power with a typical heat input rate of 14,291 Btu/kWH⁷⁰, based upon total 2015 power production and fuel consumption. The Project includes technology that produces power at heat input rates significantly below the existing plant. Modern gas turbines typically have heat rates that are below 10,000 Btu/kW-hr when operated in simple-cycle mode and below 7,200 Btu/kW-hr when operated in combined-cycle mode. In other words, the proposed turbines consume less fuel than the existing power plant consumes to produce an equivalent amount of electricity.

Gas power plant efficiency also has a direct impact to emission rates on a pound per megawatt-hour (lb/MWh) basis. Figure 9-6, below, provides a summary of emission rates, on a pound per megawatt-hour basis, for both the existing plant and the Project.

Figure 9-6 Emission Comparison (lb/MWh)



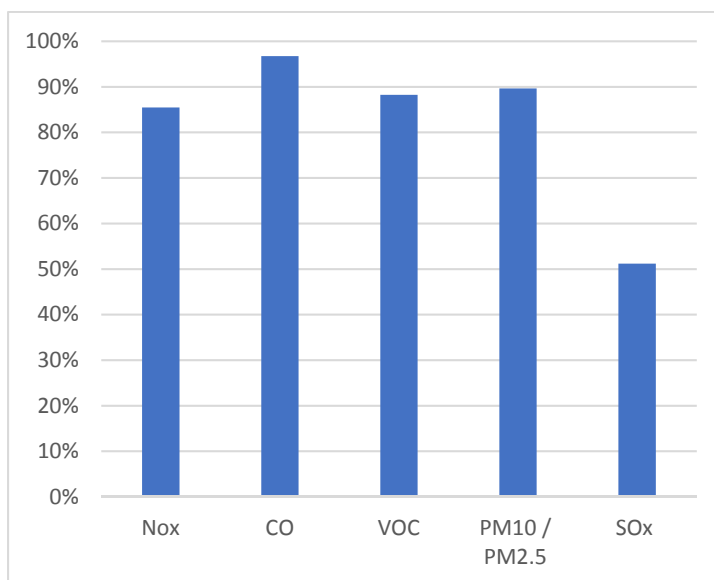
⁷⁰ BTU/kWH is the heat rate which is a measure of efficiency. It is the ratio of the fuel gas energy content (BTUs) divided by the amount of electrical energy produced (kWHs). A lower value is indicative of a more efficient plant.

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Figure 9-7, below, shows the percent reduction in emissions (in lb/MWh) that can be expected from the Project for each pollutant. For pollutants that are primarily dependent upon fuel selection and turbine efficiency (PM10, PM2.5 and SO_x), the Project will reduce emissions by approximately 50% to 90% on a lb/MWh basis. For those pollutants that are further controlled with post-combustion technology (NO_x, CO and VOC), emission rates are decreased by 85% to 97%, relative to operation of the existing power generating equipment.

Figure 9-7 Reduction in Emission Rates Attributed to Project (Pounds / MWh)



SCAQMD Regulatory Program for New Sources

Regarding concern over use of emission offset credits, emission offsets are only one of the three mandates by SCAQMD and U.S. EPA that apply to the construction of an emission source. Those mandates include: (1) the use of best available control technology to reduce emissions to the lowest achievable rate; (2) no net emission increase in the South Coast Air Basin (managed through the use of emission offsets); and (3) the demonstration through approved models that a new source would not result in significant local air quality impacts. These mandates are collectively referred to as "New Source Review". Compliance with each of the three New Source Review mandates must be made independently. In no case is compliance with one mandate (such as the requirement to offset emission increases) a substitution for compliance with the other mandates, such as the prohibition against causing a violation, or significantly worsening a violation, of ambient air quality standards. Failure to comply with any of the three mandates will disqualify the project from SCAQMD construction and operating permits. The following sections of this document summarize the three New Source Review Mandates as applied to the Project.

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(1) Best Available Control Technology / Lowest Achievable Rate

New Source Review requires that any new emission source at Grayson must incorporate current best available control technology and meet the lowest achievable rate. This is accomplished by utilizing highly efficient combustion turbines, combined with effective post-combustion emission control technology. The technology selected for the Project is at least as desirable, and in some cases more desirable, than similar combustion turbine models that were considered for the Project.

(2) No Net Emission Increase

New Source Review requires that, on a regional basis, no increase in nonattainment pollutants or their precursors would result from the Project. This provision applies to emissions of NO_x, VOC, PM₁₀ / PM_{2.5} and SO_x. CO emissions do not require offsets because the South Coast Air Basin is in attainment with both state and federal ambient CO standards. Even with the application of best available control technology, however, any proposed project could result in an increase in criteria pollutant emissions. The Federal Clean Air Act and SCAQMD permitting policy recognize that a blanket prohibition on new emission sources in any community would be harmful to the well-being of the community. To provide a means of balancing the requirement for no net increase in regional emissions with the need to build new sources, both United States Environmental Protection Agency and SCAQMD allow for the use of emission offset credits. The offset credit program allows SCAQMD or permit holders to generate an instrument reflecting a real, permanent and quantifiable emission reduction. The instrument can then be used to offset an emission increase at an existing or new facility.

Offset credits used to support new projects represent permanent emission reductions that are both real and quantifiable. SCAQMD significantly discounts emission reductions when issuing offset credits by applying best available control technologies at the time of issuance. For example, the retirement of an old boiler would likely signify a sizeable emission reduction, but SCAQMD would only consider the portion of emissions that would be reduced if a similar new boiler is retired when it issues the offset credit. In many cases, the SCAQMD discounting process alone ensures that only a small portion of the emission reduction can qualify for a credit to be used to offset a new emission source. The amount of credits available for new projects are further discounted by the degree to which the retired source had recently operated. When applied to a new emission source, the permit applicant must surrender offsets worth 120% of the proposed increase in maximum potential emissions, which in themselves are typically inflated based upon SCAQMD permitting policies.

Finally, to further ensure the validity of emission offset program, emission sources, and emission reduction credits, are segregated into coastal and inland zones. The Project is located in the coastal zone. Because wind patterns in the South Coast Basin generally flow from the ocean, emission reduction credits from the inland zone cannot be used to offset emission increases in the coastal zone.

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Because the City is repowering obsolete boilers, it will secure a portion of offset credits directly from SCAQMD through Rule 1304.1. SCAQMD policies encourage such replacements and has historically provided offsets for the project at no cost to the facility owner. Through the adoption of Rule 1304.1, however, SCAQMD now requires payment to the district for eligible offsets. The City will pay approximately \$2.3 Million to SCAQMD for boiler replacement offset credits. SCAQMD will then use at least 90% of the funds to finance new emission reduction programs from sources that are not regulated by the air district. In other words, the City will not simply apply existing real emission reductions to the Project. The City will also secure a second round of emission reduction projects. SCAQMD will give priority to emission reduction projects that are located near the Grayson Power Plant. The result will be a basin-wide emission decrease in NO_x, VOC, PM and SO_x; and new emission reduction projects that will be focused on the local community.

(3) Ambient Air Quality Demonstration

The third component of New Source Review is a required demonstration that a new emission source will not cause a violation of, or significantly add to an existing violation of, state or federal ambient air quality standards. Although the Project meets best available control technology standards to reduce potential emissions, and is fully offset to ensure no net increase in nonattainment pollutants, the City must independently demonstrate that the Project will not cause or significantly add to a violation of state and federal ambient air quality standards for NO₂, CO, PM₁₀, PM_{2.5} and SO_x (there are no ambient VOC standards). The Draft EIR contains the results of the air quality impact analysis that was prepared for the Project and demonstrates compliance with New Source Review requirements. The analysis was conducted using tools that are mandated by U.S. EPA and in accordance with policies and protocol established by SCAQMD. Prior to initiating the analysis, the City submitted an analysis protocol to SCAQMD for comment and approval; approval was subsequently granted. During the analysis process, the City continued to confer with SCAQMD as needed. SCAQMD will also review the results of the analysis and will guide the City should the analysis require further refinement for SCAQMD permitting purposes. One should note that the air quality impact analysis does not exclude air quality impacts of the existing boilers and turbines, even though they will be removed as part of the Project.

New Source Review Summary

SCAQMD requires that three independent New Source Review demonstrations be made. They include (1) best available control technology to minimize emissions to the greatest degree possible, (2) that the project does not result in an increase in regional emissions through the use of emission offsets, and (3) that the project does not result in a violation or significant increase to an existing violation of an ambient air quality standard. These demonstrations support not only the CEQA analysis contained in the Project Draft EIR, but must also be met for SCAQMD to issue construction and operating permits for the Project. The Draft EIR demonstrates that all three demonstrations have been successfully made for the Project.

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Potential Hazardous Air Pollutants and Health Risk

Regarding health risks for local populations, including commercial and residential receptors, and students at nearby schools, the Draft EIR contains results of a health risk assessment that was used to determine if increased health risks from the Project exceed significance thresholds that have been established by the Office of Environmental Health Hazard Assessment ("OEHHA") and SCAQMD. That assessment identified the highest risk levels for a commercial receptor and a residential receptor and demonstrated that the expected health risks of the Project are below the established significance thresholds.

The location of potential receptors with the highest risk are relatively close to the facility. Health risks attributed to the Project are related to the ambient concentration of hazardous air pollutants. As emissions from the Project travel away from the facility due to meteorological conditions, the concentration of hazardous pollutants decreases, as does the risk to potential receptors who are located farther away from the facility.

Table 9-6, below, shows the modeled cancer, chronic and acute risk levels and significance thresholds that were used to determine if health risks were significant. Based upon the analysis conducted for the Draft EIR, risk factors are well below established thresholds at the receptor points where the highest potential exposure to hazardous air pollutants can be expected. The table shows that at these peak concentration locations, health risks attributed to the Project are below a level of significance.

It should be noted that these risk values are based upon maximum allowable operations of all four turbines, plus the emergency engine on both an hourly and annual basis. The risk values do not consider the lower level of typical operations that would be expected when renewable contracts and other sources of power, and transmission system constraints are considered. The risks do not reflect emission reductions from the installation of catalytic oxidation units on the proposed gas turbines. Oxidation catalysts have been demonstrated to further reduce organic toxic compounds (and associated health risks) by as much as 90%.

Although the risk assessment included potential receptors that would be located farther away from the Project, risk values for those receptor locations were not itemized as the associated risk is below the levels established by the SCAQMD and OEHHA that were used to determine significance. To assist the reader in understanding the degree to which risk is reduced as emissions disperse from the facility, Table 9-6 also includes risk factors relative to potential receptors at one-quarter mile and one-half mile from the facility.

Table 9-6 shows that the highest increase in cancer risk attributed to the Project is approximately 0.91 in one million, which is substantially below the significance threshold of 10.0 in one million established by SCAQMD and OEHHA. It also shows that at a distance of one-quarter mile, cancer risk levels are approximately 0.8 in one million for residential receptors and 0.05 in one million for workplace receptors. Residential receptors are assumed to include children and the

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health risk model includes factors for the higher breathing rate of children. The model does not distinguish between residences and schools and the results reflect an assumed exposure of 24 hours per day for 30 years.

At one-half mile from the facility, cancer risk for residential receptors drops to approximately 0.4 in one million for residential receptors and 0.06 in one million for workplace receptors. In other words, the cancer risk levels at one-half mile from the facility are approximately 4% of the significance threshold that has been established by OEHHA and SCAQMD.

Table 9-6 Health Risk Factors at Various Distances from the Project

Parameter		Maximum Increase in Cancer Risk (MICR)	Health Acute Index	Health Chronic Index
Regulatory Standard	Significance Threshold	10.0 in 1 Million	1.0	1.0
Calculated Impacts	HRA Results used for EIR Significance Determination	0.91 in 1 Million (R) 0.06 in 1 Million (W)	0.0073 (R) 0.0065 (W)	0.0024 (R) 0.0026 (W)
	0.25 mile from facility	0.80 in 1 Million (R) 0.05 in 1 Million (W)	0.005 (R) 0.005 (W)	0.002 (R) 0.002 (W)
	0.50 mile from facility	0.40 in 1 Million (R) 0.025 in 1 Million (W)	0.003 (R) 0.003 (W)	0.00125 (R) 0.00125 (W)

R = Residential Receptor, W = Worker Receptor

The health risk assessment that was conducted in support of the Draft EIR, and reflected in Table 9-6, considers only the risks attributed to the proposed equipment for the Project. It does not reflect the net difference between any risks that are posed by the existing facility and the future risks of the Project. However, the existing facility does indeed present health risks that will cease to exist when the existing equipment is retired. The current equipment does not operate with emission control systems and it combusts landfill gas, which has a toxic pollutant emission profile that differs from that of the proposed new natural gas-fired turbines.

To help the reader understand the relativity of future potential health risks to those that are posed by the existing plant, a risk assessment was conducted based upon equipment and operations of the existing facility. Historic toxic air contaminant emissions reported to SCAQMD for the 2015 calendar year were averaged with emissions from the 2016 calendar year to support the risk assessment for the existing facility. Existing plant characteristics were incorporated into a dispersion model and compared with the emissions inventory to determine risks that can be attributed to current plant operations.

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Table 9-7, below, includes a summary of modeled cancer, acute and chronic health risk levels at the point of maximum exposure from the current facility based upon past actual operations, and compares those levels with the risk levels that can be expected from the Project. Table 9-7 shows that cancer risk attributed to the Project is approximately 96.4% lower than the cancer risk that can be attributed to current facility operations. Acute and chronic health risks attributed to the Project are at least 99% lower than the risks attributed to current plant operations.

Table 9-7 Comparison of Health Risks of Existing Operations and the Project

Removed vs New Equipment	Max. MICR Receptor	Max. Receptor Health Acute Index	Max. Receptor Health Chronic Index
Removed Equipment	> 25 in 1 Million	1.17	0.71
New Equipment	0.91 in 1 Million	0.0073	0.0026
Reduction, %	96.4%	99.4%	99.6%

Population Density and Health Risk Assessment

Some commenters have expressed concern with respect to population values reflected in air dispersion modeling and health risk assessment protocol submitted to SCAQMD and approved for use by the agency's modeling experts. Population data are used in two ways. First, when the maximum increase in cancer risk exceeds 1.0 in one million, population density is used to estimate the cancer burden rate (estimated cancer cases based upon the population within the geographic area in which cancer risk exceeds 1.0 in one million). Commenters expressed concern that the default density of 7,000 people per square kilometer is lower than the population density in the area surrounding the Project and as a result, the cancer burden attributed to the project may be underestimated. However, in accordance with OEHHA and SCAQMD calculation methods⁷¹, cancer burden can only be estimated when the increase in cancer risk is greater than 1.0 in one-million. For the Project, there is no mechanism to estimate a cancer burden because there is no geographic area surrounding the facility where receptors experience a maximum increase in cancer risk of 1.0 in one-million or greater. Based upon OEHHA's calculation methodology, the resulting cancer burden would be zero, regardless of local population density, so the selection of a population density value is irrelevant because there is no area outside of the facility where the cancer risk is equal to or greater than 1.0 in one million.

Population density also factors in to the AERMOD dispersion model. The model allows for the distinction between general urban, versus rural land use. Urban land use results in characteristics that may inhibit regional dispersion of the Project exhaust plume. When the urban analysis setting is triggered, regional population by county, combined with county surface area are used as model inputs. Several commenters expressed concern, once again, that the resulting population density for Los Angeles County may be lower than that of the Glendale community. In this case, however, population density is considered on a regional basis, rather than a local

⁷¹ SCAQMD Rule 1402 (c)(5).

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basis and the values that were used in the AERMOD analysis were selected based upon SCAQMD guidance.

9.1.1.9 Topical Response No. 9: Greenhouse Gas Emissions

Summary of Comments

Comments were received that the Project will increase greenhouse gas ("GHG") emissions, that baseline GHG emissions may have been double counted, and that participation in California's Cap-and-Trade program is not sufficient to support a finding of less-than-significant impacts.

Summary of Responses

The proposed new equipment for the Project is more efficient than the existing equipment. As such, the Project will result in lower GHG emissions on a ton per MWh basis.

The methodology for calculating baseline GHG emissions in the Draft EIR is conservative by assuming that landfill gas will continue to be combusted at a different location. Accordingly, the Draft EIR does not take credit for the current landfill gas combustion at Grayson as part of the baseline emissions. This methodology ensures that the net increase in GHG emissions due to the Project are not understated.

Although the impacts of climate change may vary on a regional basis, GHG emissions themselves result in impacts that are global in nature. As such, regulatory strategies that manage GHG emissions from a group of sources on an aggregate basis are suitable. The California Cap-and-Trade Program is one such strategy for reducing GHG emissions. The project's use of state-of-art combustion technology, combined with the use of emission offsets through the California Cap-and-Trade Program ensures that GHG emissions are reduced to the greatest extent possible while also mitigating any net increase in emissions.

Detailed Responses

The Efficiency of the Proposed Equipment Leads to Lower Emission on a ton per MWh Basis

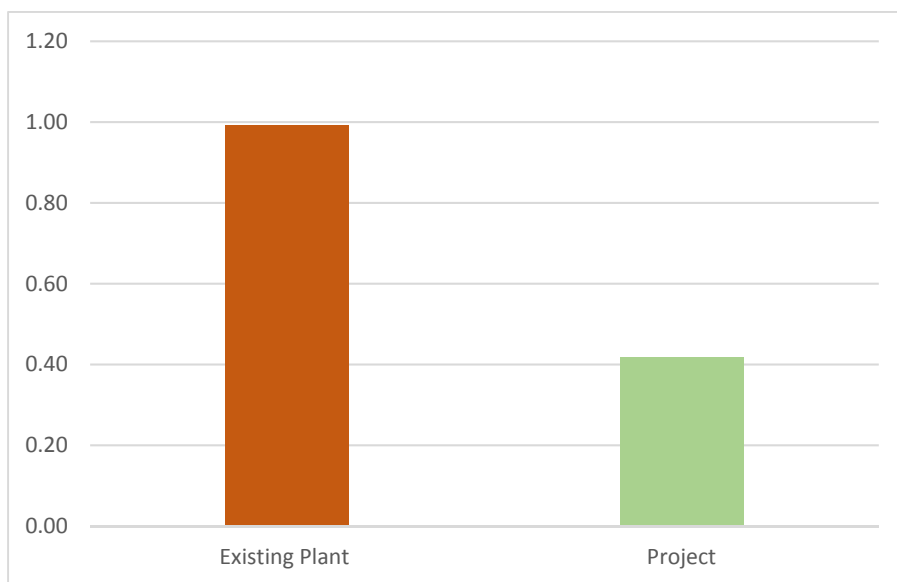
For combustion sources such as the existing Grayson boilers and gas turbines, GHG emissions are largely dependent upon fuel type and equipment fuel efficiency. Alternative emission control technologies or GHG capture technologies have not been shown to be viable for power generating equipment that combusts natural gas (as opposed to solid or liquid fuels). Management of GHGs is, therefore, dependent upon selecting efficient equipment that minimizes fuel consumption, relative to power output. As discussed in Topical Response No. 8, Air Quality and Public Health, the proposed equipment is significantly more efficient than the existing Grayson power generation sources, and also slightly more efficient than alternative power generating equipment that the City considered for the Project. Figure 9-X, below, includes a comparison of GHG emission rates from the existing power generating equipment at

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Grayson and the proposed equipment for the Project. Based upon 2015 – 2016 operations, the existing plant produces CO₂e emissions at an average rate of 0.99 MT / MWh, while the Project is expected to produce CO₂e at a rate of 0.42 MT / MWh.

Figure 9-8 Comparison of GHG Emission Rates (CO₂e MT / MWh)



Accounting for GHG Baseline Emission Inventories

Several commenters expressed concern that GHG emissions may have been double counted in the Draft EIR. The CEQA process requires the development of a baseline emissions inventory for the existing site, to compare with the Project potential emissions.

The GHG emissions from the existing facility are the result of both natural gas and landfill gas combustion. However, for the purpose of determining baseline emissions and the net increase in emissions from the Project, only emissions from natural gas combustion were considered as part of the baseline. The exclusion of landfill gas-related emissions reflects the fact that landfill gas will continue to be combusted, but at a different location and also ensures that the net increase in emissions is not understated. One hundred percent of emissions from the Project turbines will be offset in accordance with California regulations.

Participation in Cap-and-Trade Programs Appropriately Supports Finding of Less-Than-Significant GHG Impacts

As stated in the Draft EIR at Section 4.5, the Project is required to comply with the State Cap-and-Trade program by reporting CO₂ emissions from the Grayson Power Plant. The City must offset 100% of GHG emissions from the combustion equipment. The City holds allowances that have been allocated to it by CARB and are based upon 1990 emissions of approximately

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604,000 metric tons (MT). The annual CARB allowance for 2021 is approximately 400,000 MT and it will continue to decrease until it reaches approximately 136,000 MT in 2030.

As discussed in Topical Response No. 8, Air Quality and Public Health, typical operations of the Project are significantly lower than the maximum potential emissions that are disclosed in the Draft EIR. Glendale expects that future GHG emissions from the Project are approximately 222,000 metric tons (MT) of CO₂e per year, which is approximately 37% of 1990 levels for the GWP portfolio.

The California Cap-and-Trade Program requires the City to offset any difference between its allowance and its annual emissions by securing offset instruments. To obtain additional instruments the City can purchase additional allowances in the CARB auction and the advance sale program. the City can also purchase allowances from individual holders. the City can also purchase GHG offset credits to accommodate a small portion of its compliance obligation. The offset credits represent emission reductions that are generated pursuant to CARB protocol, but that are not part of the allocation program.

After the City meets its annual compliance obligation, the remaining emissions that are not offset will include only emissions related to facility occupants (i.e., workers), and those will be well below the 10,000-metric ton threshold for determining significance. In fact, the Project is not expected to increase emissions related to facility occupants beyond current baseline levels.

Two recent decisions of the California Supreme Court provide overviews of California's regulatory scheme addressing GHG emissions for the purpose of slowing climate change. *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497, 504-507; *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 215-217.

In *Center for Biological Diversity*, the Court explained some of the difficulties inherent in determining whether a project's GHG emissions will have a significant adverse effect on the environment. *Center for Biological Diversity, supra*, 62 Cal.4th at 219. "First, because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself. The challenge for CEQA purposes is to determine whether the impact of the project's emissions of greenhouse gases is cumulatively considerable, in the sense that 'the incremental effects of [the] individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.'" (*Ibid.*, quoting section 21083, subd. (b)(2).) "Second, the global scope of climate change and the fact that carbon dioxide and other greenhouse gases, once released into the atmosphere, are not contained in the local area of their emission means that the impacts to be evaluated are also global rather than local." *Id.* at 219-220.

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CEQA Guidelines section 15064.4, subdivision (a) provides:

The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:

- (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or*
- (2) Rely on a qualitative analysis or performance based standards.*

Subdivision (b) of Guidelines section 15064.4 provides a nonexclusive list of factors a Lead Agency should consider when assessing the environmental significance of the project's impacts from greenhouse gas emissions:

- (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;*
- (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;*
- (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.*

The Cap-and-Trade program consists of "regulations ... adopted to implement a statewide ... plan for the reduction or mitigation of greenhouse gas emissions" as that phrase is used in Guidelines section 15064.4, subdivision (b)(3). The Project's compliance with the Cap-and-Trade program is properly considered by City in its evaluation of GHG emissions in the Draft EIR.

As required by the California Global Warming Solutions Act of 2006, CARB pursued a number of strategies for reducing GHG emissions. One of those strategies was the Cap-and-Trade program, which CARB implemented by promulgating regulations in 2011. Cal. Code Regs., tit. 17, §§ 95801-96022. The express regulatory purpose was "to reduce emissions of greenhouse gases associated with entities identified in this article through the establishment, administration, and enforcement of the California Greenhouse Gas Cap-and-Trade Program by applying an

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aggregate greenhouse gas allowance budget on covered entities and providing a trading mechanism for compliance instruments." Cal. Code Regs., tit. 17, § 95801.

An allowance is a limited tradable authorization to emit up to one metric ton of CO₂e. Cal. Code Regs., tit. 17, § 95802, subd. (a). An offset credit is a tradable compliance instrument issued by CARB that represents a GHG reduction or GHG removal enhancement of one metric ton of CO₂e. Cal. Code Regs., tit. 17, § 95802, subd. (a). The Cap-and-Trade program established a system of market-based declining annual aggregate emission limits for GHG emission sources. The program imposes enforceable GHG emission caps for covered facilities (e.g., refineries, electric power providers, cement production facilities, oil and gas production facilities, and other industrial facilities). Grayson and this Project are subject to California's Cap-and-Trade program.

Capped facilities are required to surrender GHG emission compliance instruments equal to their emissions at the end of each compliance period. Over these periods, GHG emissions from capped facilities are expected to be 75 million metric tons per year less than baseline conditions, which would represent an 18 percent reduction from the statewide 1990 GHG emissions. Pursuant to the Cap-and-Trade program, in September 2012, CARB distributed 97.7 million metric tons in free 2013-vintage greenhouse gas allowances to California electrical distribution utilities.

Compliance with the Cap-and-Trade program is a factor to be considered and, in the circumstances presented here, is part of the substantial evidence on which the City may rely to support a finding that the impact of the GHG emissions from the Project is less than significant.

The importance of the overall effect of a statewide plan, rather than the plan's specific effect on the particular project's emissions, was illustrated in the *Center for Biological Diversity* case. There, the California Supreme Court stated the significance of the environmental impact of GHG does not depend on where they are emitted because of the global scope of the climate change impact. *Id.*, at 219-220. Thus, examining the amount and location of the Grayson's emissions is too narrow of an inquiry when the ultimate question is global climate change. The Supreme Court also stated:

For projects, like the present residential and commercial development, which are designed to accommodate long-term growth in California's population and economic activity, this fact gives rise to an argument that a certain amount of greenhouse gas emissions is as inevitable as population growth. Under this view, a significance criterion framed in terms of efficiency is superior to a simple numerical threshold because CEQA is not intended as a population control measure. Id. at p. 220.

By comparison, repowering of Grayson is necessary to accommodate the needs of residents and businesses in Glendale. This demand for energy will exist whether or not the Project is

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approved. Therefore, an inquiry into significance that is based on compliance with a program that sets limits and requirements for California's electrical industry as a whole is a rational approach to regulating that industry's contribution to global climate change.

The idea underlying the Cap-and-Trade program is not that capped facilities relying on allowances will decrease their GHG emissions and help the state achieve its target, but that the limited allocation and use of allowances means they are not available for use elsewhere, which affects California's electricity production as a whole. Specifically, the use or expenditure of allowances will diminish the supply of allowances, which will cause their price to rise and incentivize investment in technologies and equipment that reduce GHG emissions. Consequently, the overall (i.e., cumulative) impact of the Cap-and-Trade program cannot be judged by whether a particular project uses allowances, offset credits, or reduces its emissions. Rather, the significance of the cumulative impact should be assessed based on the program as a whole. Under the Cap-and-Trade program, the allowances issued for each compliance period decrease and this decrease provides the mechanism for meeting the targets for reduced greenhouse gas emissions in California. Based on this industry-wide perspective, it is appropriate for a Lead Agency to conclude a project's compliance with the Cap-and-Trade program provides a sufficient basis for determining the impact of the project's GHG emissions will be less than significant.

The ability to extend the Cap-and-Trade program past 2030 is retained through future legislative and regulatory action should CARB determine that the program would continue to be a useful tool in managing the statewide inventory of GHG emissions. If the Cap-and-Trade program does indeed sunset in 2030, the California GHG Reduction Program would remain in effect and the facility will be subject to alternative suitable regulations to ensure that future GHG emission targets are met.

9.1.1.10 Topical Response No. 10: Liquefaction

Summary of Comments

Comments were received that the Project site is within a mapped liquefaction zone and therefore the Project results in significant impacts to Geology and Soils. A comment was received that the EIR improperly shifts mitigation identification and adoption to after approval.

Summary of Responses

The Project would be designed and constructed in accordance with the applicable ASCE7-10 and California Building Code that provides for the manner in which to incorporate design that mitigates any significant effects of liquefaction on buildings and structures located in a liquefaction Hazard Zone. The major equipment would be placed on concrete foundations supported by piles approximately 55-feet long that passes through the zone of liquefaction into

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solid support. The design of these foundations would be the responsibility of the engineering, procurement, and construction (EPC) contractor and reviewed by the City.

The City appropriately relied on the Project's required compliance with building codes and with recommendations of supporting technical reports to determine that the Project will not result in a significant impact. These requirements are enforceable and contain specific criteria and performance standards. More refined geotechnical assessments may be completed in the future to refine and enhance the requirements of the geotechnical investigations that have been completed to date. However, the Draft EIR and this Final EIR include substantial evidence supporting the City's determination that impacts to Geology and Soils are less than significant.

Response

Section 4.4.4 of the Draft EIR addresses the Project impacts to Geology and Soils. The threshold of significance under CEQA is whether the Project would expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction. The Draft EIR analysis determined that the site is located within a current, mapped California Liquefaction Hazard Zone. A liquefaction evaluation for the Site was completed under the guidance of Special Publication 117a: "Guidelines for Evaluating and Mitigating Seismic Hazards in California", published by the California Department of Conservation, California Geologic Survey, dated 2008 and based on empirical procedures described in Martin and Les et al. (1999).

Subsequent to the conceptual technical studies prepared to support the Draft EIR analysis, a more refined geotechnical investigation study was performed and a Geotechnical Investigation Report, dated April 26, 2016, was prepared. The geotechnical investigation study determined that the layer of soil that is subject to liquefaction potential at the Project site is between 35 and 45 feet below the existing ground surface. It should be noted wherever the ground water table is relatively shallow, within 50 feet below the ground surface and there is relatively loose, clean sandy soil, and there exists a source of ground shaking, such as earthquake, capable of generating soil mass distortion, this sets the condition for the potential for liquefaction during the seismic event. Building codes provide for the manner in which to incorporate design that mitigates any significant effects of locating building and structures in a Liquefaction Hazard Zone.

Based on a quantitative evaluation as presented in April 26, 2016 report, the loose saturated sand and silty sand appear to be susceptible to liquefaction in the event of a major earthquake. As for the effect of potential soil liquefaction, soil liquefaction alone does not pose a risk to a site development, but the effects of soil liquefaction on a site can pose a risk. Such risks from the effect of potential soil liquefaction may include sand boils, lateral spreading, foundation bearing failure, and ground settlement. The geotechnical studies at the Grayson Power Plant Site determined that the potential for surface manifestation of sand boils and lateral spreading are

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minimal. The primary potential impact of liquefaction at the Project site is settlement, specifically differential settlement. Settlement may also occur in unsaturated zones as well.

The potential magnitude of seismically-induced ground settlement resulting from liquefaction was estimated based on the empirical procedures described in Seen (2003). Assuming that the epicenter of the design earthquake occurs at the closest horizontal distance from the fault to the site, the anticipated settlement in the potentially liquefiable layer is expected to be approximately one (1) inch, with differential settlements on the order of ½ to ¾ inches. Surface settlements due to compression in the unsaturated zone were estimated to be on the order of 10 inches. Taken together, earthquake shaking might cause 10 to 11 inches of total settlements following the method of Takimatsu and Seed (1987).

CEQA requires agencies to adopt feasible measures to reduce or avoid a project's significant environmental effects. Impermissible deferral of mitigation measures occurs when an environmental document puts off analysis or orders a future report without either setting standards or demonstrating how the impact can be mitigated. However, an agency may rely on a project's required compliance with building codes and its compliance with recommendations of supporting technical reports to determine that the project will not result in a significant impact. Compliance with building codes and with recommendations of supporting geotechnical reports is enforceable and contains specific criteria and performance standards. Engineering design and building codes require incorporation of design features that mitigate any potential for exposing people or structures to potential substantial adverse effects, including the risk of loss, injury, or death as the result of liquefaction and seismically-induced settlement at the site. Further, more refined geotechnical assessments may be completed in the future to refine and enhance the requirements of the geotechnical investigations that have been completed to date. However, the Draft EIR and this Final EIR include substantial evidence supporting the City's determination that impacts to Geology and Soils are less than significant.

The potential for settlement in the event of a major earthquake will be considered in selecting the repowered power plant foundation systems. In order to address the potential for settlement in the event of a major earthquake, methods for reducing the potential for damage to the new facilities have been developed and will be implemented by the EPC Contractor dependent on the structure type and its location within the overall proposed development. Specifically, deep foundation (driven piles 55-feet long) that provide the necessary support in the dense and stiff alluvial soils below the liquefiable zone will be used to ensure that critical buildings and equipment will be designed to accommodate down-drag forces and seismically-induced settlement that will ensure the structural integrity of the structures and foundations at the Site during the design earthquake.

These studies provide substantial evidence supporting the City's determination that Geology and Soils impacts relating to liquefaction are less than significant when the Project is designed and built in accordance with the California Building Code.

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The Grayson Power Plant, which has occupied the site and been operated since the 1940s has experienced ground shaking from earthquakes. Not only did the Grayson Power Plant not suffer major damage during the 1971 San Fernando and 1994 Northridge earthquakes (magnitude of 6.6 and 6.7, respectively), it was able to come back online and return power to its customers, including critical facilities quicker than other utilities in Southern California.

9.1.1.11 Topical Response No. 11: Relationship to Biogas Project

Summary of Comments

Comments were received that the Project and another project—a proposal to construct a small power plant on a portion of the Scholl Canyon Landfill to convert landfill gas to electricity—must be analyzed as one project. Commenters claimed that both projects, if considered to be one project, would be subject to the jurisdiction of the California Energy Commission (“CEC”). A comment was received that the Draft EIR is not capturing the GHG increases of landfill gas combustion, nor the potential for even greater emissions, if the biogas project at the landfill is not built or fails to perform. A comment was received that the existing turbine for combusting landfill gas at Grayson is in excellent condition and is proposed for removal only so that the biogas project at the landfill can be developed.

Summary of Responses

The proposed Biogas Renewable Generation Project is not a part of, or the same as, or a direct or reasonably foreseeable consequence of, the Grayson Project. The Scholl Canyon Landfill has an existing Air Quality Management District-issued permit to burn the biogas emitted by the landfill regardless of whether it is burned at Grayson, flared on-site, or captured and converted to energy on-site by other means. The Biogas Renewable Generation Project, for the reasons explained in this Topical Response, is an entirely separate and independent utility, meaning that regardless of the Project, the Biogas Renewable Generation Project is viable. The proposed Biogas Renewable Generation Project is designed to efficiently capture existing landfill gas and convert that gas into energy which is fed into existing transmission lines at Scholl Canyon that connect with Glendale’s energy grid. Biogas from Scholl Canyon Landfill, which is a natural consequence of the decomposition of landfill materials, must, pursuant to the AQMD permit, either be flared off on-site or captured and converted to energy. Capturing and converting Scholl Canyon biogas is not a requirement of or prerequisite to the Grayson Project. The existing Grayson Plant and the Project are not dependent on biogas from the Scholl Canyon Landfill. Similarly, the proposed Biogas Renewable Generation Project is not dependent on the approval or implementation of the Grayson Project; the gas can be flared off if the Grayson Project is approved and implemented.

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Response

Current and Proposed Use of Landfill Gas

Currently, the landfill gas collection system at Scholl Canyon Landfill conveys the collected gas to a central location within the landfill property where the gas is compressed, liquids are removed, and the raw landfill gas is piped approximately 5.5 miles to the Grayson Power Plant via an underground, dedicated pipeline. At Grayson, the landfill gas is mixed with natural gas and is combusted in boilers to make steam for electricity generation. Currently, at Grayson, landfill gas can be combusted only in the boilers of Units 3, 4 and 5. Landfill gas combustion at Grayson is costly and detrimental to the equipment because it is not considered the “cleanest” form of natural gas available to burn for power. Furthermore, the units that currently burn landfill gas (Unit 3) is presently out of service and Units 4 and 5 have limited remaining useful life, perhaps extending to the early 2020s.

The Biogas Renewable Generation Project

The City plans to construct a small biogas conversion plant at Scholl Canyon to convert landfill gas to electricity and feed that electricity into existing transmission lines located at Scholl Canyon (“Biogas Renewable Generation Project”). Landfill gas can be flared at the Scholl Canyon Landfill under existing air permits; however, it is more beneficial to use landfill gas as fuel for power generating equipment.

According to the U.S. Department of Energy, U.S. Energy Information Administration, the five commonly-used renewable energy sources include landfill gas and biogas and municipal solid waste.⁷² Landfills for municipal solid waste are a source of this energy from anaerobic bacteria—bacteria that can live without the presence of free oxygen—living in landfills that decompose organic waste to produce *biogas*. Biogas contains methane. Methane is the same energy-rich gas found in natural gas, which is used for heating, cooking, and producing electricity. Landfills typically control the naturally occurring methane gas emissions by burning or flaring methane gas, or using it as an energy source. According to the U.S. Department of Energy, many landfills collect biogas, treat it, and then sell the methane, and some landfills use the methane gas to generate electricity.⁷³ This is important to consider because burning biogas, either in flares or in power generation equipment, is better environmentally because methane is a potent greenhouse gas. Consequently, converting biogas to energy is not only better for the environment; it is also a renewable energy source helps the City meet its California mandated Renewable Energy Portfolio.

The planned Biogas Renewable Generation Project would be located on a site within the Scholl Canyon Landfill where landfill gas is already collected and processed. As part of the Biogas

⁷² https://www.eia.gov/energyexplained/?page=renewable_home

⁷³ https://www.eia.gov/energyexplained/?page=biomass_biogas

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Project, the 5.5-mile pipeline connecting the landfill to the Grayson Power Plant would be capped off and abandoned.

Background – CEQA Requirements for Project Description

Under CEQA, a proposal that is related to a project, but has its own "independent utility" and is not necessary for the project to proceed need not be included as part of the project description, and may be reviewed in its own CEQA document, as a separate project. *Planning & Conservation League v. Castaic Lake Water Agency* (2009) 180 Cal.App.4th 210, 237. Accordingly, two projects may undergo separate environmental review when the projects serve different purposes or can be implemented independently. *Banning Ranch v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1223 (citing *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 99; *Sierra Club v. West Side Irrigation Dist.* (2005) 128 Cal.App.4th 690, 699; *Plan for Arcadia v. City Council of Arcadia* (1974) 42 Cal.App.3d, 712, 724).

In addition, an EIR must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 396. Absent these two circumstances, the future action need not be considered in the Draft EIR for the Project.

The Biogas Renewable Generation Project is a Separate Proposal

It is not necessary to review the Biogas Renewable Generation Project as part of the EIR for the Project because the Project in no way compels or presumes completion of the Biogas Renewable Generation Project.

The Project is required because most of the equipment at the Grayson Power Plant is irreparable, has failed and is likely to soon fail, leaving only Unit 9 remaining. The City must provide a reliable source of power for its residents and businesses. The Project is designed to meet those needs, as described in Topical Response No. 3, Project Need. Landfill gas from Scholl Canyon will not be required as part of the Project to meet those needs. However, the Project is not dependent on construction of a new power plant at Scholl Canyon. Under Glendale's existing Air Quality Management District permit, the landfill gas at Scholl Canyon could be flared once it is no longer capable of being combusted at Grayson. There is no requirement that landfill gas be used to generate electricity, although there are environmental and economic benefits to using the landfill gas for such generation rather than flaring it.

The Project and the Biogas Renewable Generation Project serve different purposes. The purpose of the Project is to reliably serve the power needs of the residents and businesses in Glendale. The purpose of the Biogas Renewable Generation Project is to utilize a renewable resource to provide power to assist the City in meeting state Renewable Energy Portfolio requirements.

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The Project and the Biogas Project would be implemented independently and in no way depend on each other. The Project could proceed or be abandoned with or without the Biogas Renewable Generation Project because landfill gas at Scholl Canyon can be flared. Similarly, nothing about the Biogas Renewable Generation Project depends on the Project. The Biogas Renewable Generation Project could be developed with or without the repowering of Grayson, and it could be abandoned whether or not the Project is approved and implemented.

The Draft EIR Analysis of GHG Emissions is Conservative and Avoids Double Counting of Existing Baseline Emissions

The analysis of greenhouse gas emissions in the Draft EIR for the Project does not take credit for landfill gas combustion as part of the baseline operation at Grayson. By not taking the air quality credit, the Grayson Project uses a conservative approach to existing baseline conditions and such methodology does not suggest that the Biogas Renewable Generation Project is a phase of the Project. By not including landfill gas combustion as part of existing baseline emissions for the Project and instead accounting for those existing emissions as part of the environmental analysis for the separate Biogas Project, the Draft EIR ensures that the existing emissions are not double-counted.

The Biogas Renewable Generation Project is a Separate Proposal under California Energy Commission Practice

The Biogas Renewable Generation Project and the Project are considered distinct facilities under the common practice of the CEC. As reflected in staff analyses and CEC practice, the CEC uses a “two-mile” analysis to assess whether facilities should be treated as one facility, or distinct facilities, for purposes of determining CEC jurisdiction. The Biogas Project and the Project are located approximately 5.5 miles from one another and are therefore not the same “facility” according to CEC practices. Moreover, the Biogas Renewable Generation Project involves abandonment of the existing gas pipeline between the Scholl Canyon Landfill and Grayson, thus eliminating any physical interconnection between the Biogas Renewable Generation Project site and Grayson.

9.1.1.12 Topical Response No. 12: Environmental Justice

Summary of Comments

Comments were received stating that the area surrounding the Project site is designated by the California Environmental Protection Agency (“CalEPA”) as a disadvantaged community and therefore the Project raises environmental justice concerns. In addition, a comment was received that the methodology used to analyze environmental justice impacts was flawed because it analyzed the entire City of Glendale rather than focusing on the immediate areas surrounding the Project site.

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Summary of Responses

The CalEPA disadvantaged community designation is based on that community being subject to a higher pollution level for purposes of the Cap-and-Trade funding program. The CalEPA disadvantaged community designation is not based on income or ethnicity, which are the components for identifying an environmental justice community for environmental impact analysis purposes, and such a designation alone is not necessarily indicative of environmental justice concerns. As shown below, there are no environmental justice communities that would be potentially impacted by the Project, even when isolating income and ethnicity statistics for the census tract that the Grayson Power Plant is in as well as the adjacent census tract that includes the Pelanconi neighborhood.

Response

Environmental Justice was Considered

The City considered environmental justice impacts of the Project. Potential environmental justice populations are defined as areas where the minority or low-income population percentage is meaningfully greater than the minority or low-income population percentage in the general population. For the purposes of the Project analysis, "meaningfully greater" was defined as approximately 10 percentage points greater than that of the general population area being compared to. This threshold is consistent with that which has been applied by the California Energy Commission for power plant licensing projects being evaluated for potential environmental justice impacts under their jurisdiction.

As described in the Initial Study for the Project, 14.7% of individuals residing in Glendale are living below the poverty line, compared to 18.7% for Los Angeles County as a whole. The minority population in Glendale for those reporting only one race was 22.6%, compared to 27.9% for Los Angeles County. Accordingly, Glendale does not meet the criteria for designation as an environmental justice community and the Project would not disproportionately affect a low-income or high-minority population. For these reasons, the City found no impact related to environmental justice and no further analysis was warranted in the Draft EIR.

The Project Does Not Result in Significant Environmental Impacts and Therefore Does Not Disproportionately Impact High-Minority or Low-Income Communities

The analysis in the Draft EIR finds that, with implementation of mitigation measures and compliance with applicable laws and regulations, the Project results in no significant environmental impacts. Accordingly, even if the neighborhoods surrounding the Project site are considered to be low-income or high-minority populations, the Project would not disproportionately impact those communities.

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Census Tract Analysis

If City-wide impacts are discounted and only the closest census tracts to the Project site are considered, the adjacent tracts are also not high-minority or high-poverty communities as compared to Glendale and to Los Angeles County as a whole, as described in Table 9-8 below. While Census Tract 3017.01 includes a higher percentage of minorities and Census Tract 3016.01 includes an incrementally higher percentage of poverty than the City of Glendale as a whole, these populations are comparable and also far lower than for Los Angeles County as a whole.

Table 9-8 Environmental Justice Factor

Environmental Justice Factor	Los Angeles County	City of Glendale	Census Tract 3016.01 (Grayson & Franklin School)	Census Tract 3017.01 (Pelanconi)
Minority	44.6%	24.8%	23.5%	28.8%
Poverty ⁷⁴	18.2%	14.6%	14.9%	13.9%

CalEPA's Designation Does Not Change the Analysis of Environmental Justice Under CEQA

Typically, an environmental justice analysis under CEQA determines whether the relevant communities/populations are "high-minority" or "low-income" according to demographic information. Percentages are then compared to more regional data (e.g., Major Statistical Area, city, county, state). Once high minority/low-income populations are identified, the presence of unmitigable impacts to these populations/communities is determined. The project is then assessed to determine whether its significant, unmitigable impacts on high-minority or low-income populations/communities are "disproportionate" to its significant, unmitigable impacts on "other" (i.e., mixed populous) populations/communities within the project area. This analysis is different from CalEPA's identification of disadvantaged communities targeted for funding under California's Cap-and-Trade program.

With respect to the CalEPA designation, the agency is responsible for identifying disadvantaged communities for purposes of the Cap-and-Trade funding program. CalEPA uses different criteria than described above for the typical analysis performed in the context of an environmental justice review for an industrial project. CalEPA designates as disadvantaged communities the 25% highest scoring census tracts using results of the California Communities Environmental Health Screening Tool Version 3 (CalEnviroScreen 3.0). Additionally, 22 census tracts that score in the highest 5% of CalEnviroScreen's Pollution Burden, but do not have an overall CalEnviroScreen score because of unreliable socioeconomic or health data, are also designated as disadvantaged communities. Accordingly, CalEPA's analysis is not based on income or ethnicity, but rather based on that community being subject to a higher pollution level. Under CalEPA's analysis, even a very affluent community can be listed as disadvantaged

⁷⁴ U.S. Census Bureau, 2011-2015.

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for a pollution standpoint; however, such a designation alone is not necessarily indicative of environmental justice concerns.

Disadvantaged communities throughout California are specifically targeted for investment of proceeds from the State's Cap-and-Trade program. Known as California Climate Investments, these funds are aimed at improving public health, quality of life and economic opportunity in California's most burdened communities at the same time they are reducing pollution that causes climate change.

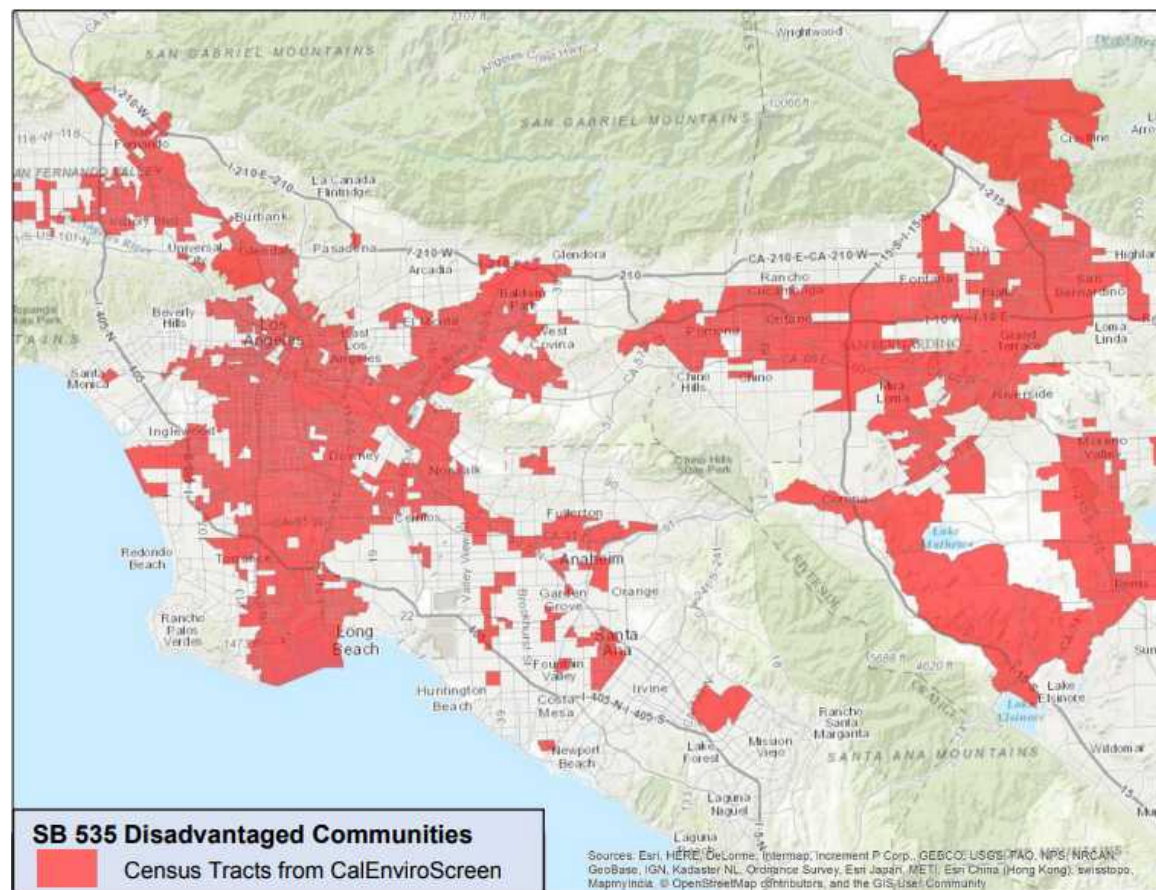
Funds received from the Cap-and-Trade program are deposited into the Greenhouse Gas Reduction Fund and appropriated by the Legislature. They must be used for programs that further reduce emissions of greenhouse gases. Senate Bill 535 (De León, Statutes of 2012) directed that at least a quarter of the proceeds go to projects that provide a benefit to disadvantaged communities and at least 10 percent of the funds go to projects located within those communities.

Much of Glendale, and the greater Los Angeles area, are designated as a disadvantaged community according to CalEPA's criteria, as depicted below. Accordingly, Glendale is targeted specifically for investment under the Cap-and-Trade program. However, designation by CalEPA as a disadvantaged community under Senate Bill 535 is a different analysis than typically performed for environmental justice review when reviewing an industrial project. As described above, the area surrounding the Project site is not a low minority or low-income area and the Project would not disproportionately affect these communities.

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Figure 9-9 SB 535 Disadvantaged Communities



CEQA Does Not Require Analysis of Environmental Justice

Finally, environmental justice is not a required part of an EIR analysis pursuant to CEQA. CEQA requires an analysis of physical impacts to the environment; it does not require analysis of social and economic impacts. Under CEQA, “[a]n economic or social change by itself shall not be considered a significant effect on the environment.” (CEQA Guidelines, Sections 15131 and 15382.) Effects analyzed under CEQA must be related to a physical change. (CEQA Guidelines, Section 15358(b)).

9.1.1.13 Topical Response No. 13: Puente Power Project

Summary of Comments

Comments were received that the California Energy Commission (“CEC”) is proposing to deny a permit for a gas-powered plant that would serve Southern California Edison because clean energy resources can meet local capacity requirements, indicating that the state is moving away from fossil fuels.



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Summary of Responses

- Grayson and Puente are different. Puente is an independent power producer supplying energy to the broader CAISO transmission system. Grayson is a local resource that serves a municipal utility that has an obligation to serve and that is heavily dependent on external resources.
- Puente represents 1% of the Southern California Edison ("SCE") peak load (the utility it would supply). Grayson represents 89% of the City's peak load. Not repowering Grayson has a much more dramatic impact than deferring Puente.
- The City is complying with California policy and the preferred loading order by 1) decreasing electricity demand by increasing energy efficiency and demand response, 2) meeting new generation needs first with renewable and distributed generation resources, and 3) then with clean fossil-fueled generation.

Response

Glendale and the Grayson situation is substantially different than SCE and the Puente Power Project. The Grayson plant is captive to the GWP system and serves Glendale. Secondly, the GWP system is part of the LADWP Balancing Authority Area and has only two connections to the outside world: one that supplies approximately 40 MW from the Burbank Water and Power's Magnolia Power Plant; and a second interconnection to the LADWP transmission system. It is through this second GWP-LADWP interconnection that all GWP's electrical imports from outside of the Los Angeles basin flow.

The SCE peak system load is approximately 22,500 MW, and the Puente Power Plant represents approximately 1% of this load. One percent of the City's peak load is 3.5 MW. Not repowering Grayson would have a dramatically greater impact to the GWP system than not building the Puente power plant would have to the SCE system, both because of the relative size and the SCE system having more interconnections to other electric systems.

The Puente Power Project is a 241-MW combined-cycle power plant that is being developed by NRG Energy to replace two steam boiler generating units at the Mandalay Generating Station. NRG Energy is an independent power producer that will sell the output of Puente to SCE, with the power being delivered over the SCE transmission system as managed by the CAISO. Puente would be one of many power plants – both fossil and renewable – that are interconnected to the SCE transmission system. Similarly, SCE customers are served by the SCE transmission system and distribution system, which has multiple connections to other neighboring electric systems.

California, as state policy, has a preferred loading order to address the state's electrical needs. The loading order was adopted in the 2003 Energy Action Plan and included in the California Energy Commission's 2003 Integrated Energy Policy Report. The loading order consists of

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decreasing electricity demand by increasing energy efficiency and demand response, and meeting new generation needs first with renewable and distributed generation resources, and then with clean fossil-fueled generation.

The City is already complying with state policy by:

- Having in place programs to promote energy efficiency and demand response, as described in Topical Response No. 7, Demand Management, including:
 - Solar Solutions Incentive Program;
 - Smart Thermostat program;
 - Large Business Incentive Program;
 - Smart Business AC Tune-up Program;
 - Smart Business Energy Saving Upgrade Program;
 - Ice Bear program to reduce day time air conditioning through thermal energy storage; and
- Sourcing about two-thirds of its energy supply from eligible renewable resources (47% in 2016) and other carbon-free resources (an additional 17% in 2016).

The Project is being developed consistent with the California loading order, using clean fossil-fueled generation to ensure the ability to serve peak loads, to ensure reliability, and to support the GWP's responsibility to supply its customer needs. Additionally, the Project is being developed so that GWP can provide the required firming, shaping, regulation, and other ancillary services, including those needed to balance intermittent solar and renewable generation.

9.1.1.14 Topical Response No. 14: LADWP Moratorium on Rebuilding of Gas Plants

Summary of Comments

Comments were received that the LADWP decided to “put on hold all planned local repowering projects until a system-wide, in-depth, and independent study/analysis is conducted to analyze the necessity for repowering and to identify all viable alternatives to repowering.” These comments suggested that Glendale should similarly delay the repowering of the Grayson plant.

Summary of Responses

- LADWP has already completed extensive program to repower their in-basin thermal power plants.
- Six of the units that were still to be repowered are older units that had previously been repowered.

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- Because the City has not recently added or repowered similar existing local generation and is constrained with limited existing transmission import capacity, its power supply position is less reliable and more vulnerable compared to other Southern California electrical utilities.
- LADWP's hold on new repowering projects, which potentially delays or reduces its ability to generate surplus energy, may pose an additional risk element for the City in the future as to the availability of emergency power.

Response

LADWP is a large electrical system with multiple plants and more flexibility than Glendale to meet peak demand. Unlike Glendale, LADWP has already repowered many of its older plants and therefore has more flexibility to place a moratorium on new repowering projects.

LADWP owns and operates four thermal power plants within the Los Angeles basin:

- Harbor Generating Station
- Haynes Generating Station
- Scattergood Generating Station
- Valley Generating Station

LADWP also owns or has an interest in significant hydroelectric, thermal, and nuclear generating assets outside of the Los Angeles basin.

Over the last twenty-two years, LADWP has undertaken an extensive program to repower the four in-basin plants as shown in Table 9-9 below.

Table 9-9 LADWP's Repower of their Four In-Basin Plants

Plant	Units	Repowering Operation Date
Harbor Generating Station	1, 2, 5	1995
	10, 11, 12, 14	2002
Haynes Generating Station	8, 9, 10	2005
	11, 12, 13, 14, 15, 16	2013
Scattergood Generating Station	4, 5, 6, 7	2015
Valley Generating Station	5	2001
	6, 7, 8	2003

At the time that LADWP announced its hold on new repowering projects, it had plans to repower the following units:

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Table 9-10 LADWP's Plans to Repower of the Following Units

Plant	Units	Planned Repowering Operation Date
Harbor Generating Station	1, 2, 5	2026
Haynes Generating Station	1,2	2023
	5,6	2013
	8,9,10	2029
Scattergood Generating Station	1,2	2020

It is worth noting that LADWP has already completed repowering a significant portion of its generating capacity, and that six of the units that were still to be repowered are older units that had previously been repowered (Harbor Units 1, 2, 5 repowered in 1995, and Haynes Units 8, 9, 10 repowered in 2005). Despite the hold, planning activities to repower the Intermountain Power Project, with a combined-cycle power plant are still proceeding. The Intermountain Power Project is a coal-fired plant in which LADWP holds a significant interest.

In contrast, GWP's experience is quite different from LADWP's. Over the last forty years, GWP has performed the following modifications at Grayson:

Grayson Plant	Units	Operation Date
Repowered Units 1 and 2 by retiring the Unit 1 and 2 boilers and adding Units 8A and 8BC combustion turbine generators with heat recovery steam generators to supply steam to the Unit 1 and 2 steam turbines.	8A, 8BC	1977
Replaced Units 6 and 7	9	2003

In addition to LADWP, other public electrical utilities in Southern California have added or repowered existing natural gas-fueled power plants including the following:

- Burbank Water & Power, Magnolia Power Project (approximately 310 MW of new natural-gas-fueled generation, 2005);
- Riverside Public Utilities, Riverside Energy Resource Center Project (approximately 192 MW of new natural-gas-fueled generation, 2006 & 2011).
- Anaheim Public Utilities, Canyon Power Plant (approximately 200 MW of new natural-gas-fueled generation, 2011);
- Imperial Irrigation District, Niland Gas Turbine Plant (approximately 90 MW of new natural-gas-fueled generation, 2008) & El Centro Generating Station Unit 3 Repower Project (approximately 144 MW of repowered natural-gas-fueled generation, 2012); and

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- Pasadena Water & Power, Glenarm Power Plant (approximately 71 MW of repowered natural-gas-fueled generation, 2016).

Because GWP has not recently added or repowered similar existing local generation and is constrained with limited existing transmission import capacity, its power supply position is less reliable and more vulnerable compared to other Southern California electrical utilities. In the past when GWP has been short on power to supply GWP's load, GWP has been able to go to LADWP for emergency supplies. Those situations have occurred while Grayson was in operation and already supplying part of the system load. If the Project is not completed and the units at Grayson are allowed to fail, under those same emergency conditions, the amount of emergency power that would need to be requested from LADWP would likely be greater than in the past. LADWP's hold on new repowering projects, which potentially delays or reduces its ability to generate surplus energy, may pose an additional risk element for the City in the future as to the availability of emergency power.

9.1.1.15 Topical Response No. 15: Comments Requesting an Independent Consultant

Summary of Comments

Comments were received that an independent study of clean energy alternatives for powering Glendale should be conducted by a group such as NREL or E3 with strong clean energy credentials and not by the consultants who have been working on the Grayson EIR.

Comments were also received stating that PACE Global Energy Services, Inc., the firm that prepared the IRP, has a conflict of interest and skewed the IRP results in favor of a 250 MW power plant recommendation because it is a subsidiary of Siemens.

Response

The consultants retained by the City (PACE Global Energy Services, Inc. and Stantec) were selected by the City following a competitive Request for Proposal process.

The City retained PACE Global Energy Services, Inc. to prepare the IRP following a competitive Request for Proposal ("RRP") process. PACE Global Energy Services, Inc. did not prepare the Draft EIR for the Project.

PACE Global Energy Services, Inc. is an independently operated, wholly-owned subsidiary of Siemens Industry Inc. A different corporation, Siemens Energy, Inc., was selected as the vendor for the proposed new equipment at Grayson, following a competitive RFP and a rigorous evaluation of nine proposals received from two vendors (General Electric and Siemens Energy, Inc.).

Siemens Energy, Inc. is a separate corporation from both Siemens Industry, Inc. and PACE Global Energy Services, Inc. Each of these corporations operates under the umbrella of the Siemens



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conglomerate, a global entity involved in wide-ranging industries ranging from manufacturing, healthcare, transportation, appliances, energy storage, and renewable energy including biomass, and hydropower.

PACE Global Energy Services, Inc. is one of many independent consultants that the City has retained over the years to objectively evaluate the aging Grayson Power Plant and to assess the best approach for GWP to continue to be able to reliably meet the City's electricity needs. Each of these consultants reached the same conclusion that a repowering of the Grayson Power Plant is necessary. For example:

- In 2004, GWP completed a Grayson Power Plant betterment/ Life Extension Study. The Report was managed by Larry Moorehouse of GWP and edited by Robert Baker of Edison. The purpose of the study was to "determine the viability of operating and extending the life of all the units at the Grayson Power Plant." The report notes that the Grayson Units 1 through 8A and 8BC are beyond their design life and provided recommendations to extend and improve the life of the existing plant. The report estimates the length of time that certain components can be extended through maintenance, which range from 1 year (for units that are subject to an upcoming overhaul) to 10 years.

Subsequent to the IRP process, the City retained Stantec Consulting Services, Inc. ("Stantec") to prepare the Draft EIR for the Grayson repowering Project, following a competitive RFP process. Commenters are incorrect to suggest that Stantec does not have strong clean energy credentials. Stantec is a large, multi-national environmental and engineering company founded in 1954 with substantial experience in both conventional and renewable energy projects. Stantec is comprised of over 22,000 professional, technical, and administrative staff, operating out of more than 400 locations across six continents (this includes over 3,900 environmental and engineering staff in 250-plus offices throughout North America). Stantec collaborates across disciplines and industries on energy and resource, environmental, water, and infrastructure projects.

Stantec has an environmental services group in California of over 250 environmental and planning professionals. This includes but is not limited to extensive and diverse experience preparing Environmental Impact Reports and similar documents for projects subject to the California Environmental Quality Act. Stantec has completed hundreds of such environmental documents in collaboration with cities, counties, and other lead agencies for a variety of project types, including but not limited to, housing and community development, renewable energy (solar, wind, hydroelectric), conventional power, electrical transmission and distribution, transportation, and water/wastewater infrastructure. This depth of experience facilitates the company's understanding of technical and environmental considerations for fossil-fueled electrical generation, renewable energy electrical generation, and transmission, which are all important components for evaluating the feasibility of the Project's and alternatives to the Project and their respective environmental impacts.



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Lastly, City planning, legal, and GWP staff have been an integral part of the EIR process since the beginning. City staff has independently reviewed, evaluated, and exercised judgment over all documentation prepared by Stantec with respect to the Draft and Final EIR. Independent of Stantec, the City employs professional engineers and other energy industry professionals who remain updated on emerging trends and technologies in the industry, including efforts to increase the percentage of renewable energy on the national electricity grid and also including review and analysis of reports and papers prepared by consultants active in this field," including those referenced by commenters.

For example, E3 Energy+Environmental Economics, released in December 2017 a study on the best methods to reduce carbon emissions in the electricity sector in the Pacific Northwest. That study found that the most cost-effective opportunity for reducing carbon in the Northwest is to displace coal generation with a combination of energy efficiency, renewables and natural gas. This is exactly the approach that the City is proposing to take, and the Project is a key component of that plan. In addition, the E3 study found specifically that prohibiting the construction of new natural gas generation adds significant cost but does little to reduce greenhouse gas emissions. Regarding a "No New Gas Case" scenario, E3 concluded that:

Thus, among the policy mechanisms considered in this study, the prohibition of new natural gas generation is the least effective mechanism to reduce greenhouse gas emissions within the electric sector. The investments in energy storage identified in this scenario come at a great expense to ratepayers—...over \$1.1 billion in annual costs in 2050—but do not provide any direct greenhouse gas benefit to the region.

The implications of a prohibition on new gas capacity within the region also has potential for electric reliability that are not directly addressed in RESOLVE.⁷⁵ RESOLVE ensures that each portfolio meets a regional planning reserve margin—that is, each portfolio has sufficient dependable generation capacity to meet a single hour peak demand. However, electric reliability in the Northwest—where, under low hydro conditions, the capability of the hydro fleet to sustain output across multiple days may be limited—ensuring reliability.

While adding large quantities of energy storage will increase the region's ability to meet growing single-hour peak demands, it does not address the region's needs for sustained energy production across a longer time horizon. Accordingly, unlike any of the other portfolios developed in this study, the 'No New Gas' scenario may result in a degradation of electric sector reliability, and may require significant new investment beyond those identified in this analysis at much larger costs to the region.⁷⁶

⁷⁵ RESOLVE is the model used in the E3 Energy+Environmental Economic study.

⁷⁶ Pacific Northwest Low Carbon Scenario Analysis: Achieving the Least Cost Carbon Emissions Reductions in the Electricity Sector, page 76 (E3 Energy+Environmental Economics, December 2017) (available at

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There are of course regional differences facing the Pacific Northwest and Southern California in the push for a carbon-free energy grid (e.g., the Pacific Northwest has higher coal usage and increased reliance on hydroelectricity). Nevertheless, similar reliability issues would be implicated by prohibiting new and repowered natural gas plants as part of the overall Glendale energy mix. While GWP will continue to be on the forefront of renewable energy advances, the need for the Project remains, as described in Topical Response No. 3, Project Need.

9.1.1.16 Topical Response No. 16: Groups of Similar Comments

Three sets of substantially similar or identical emails were received from multiple commenters. These submitted comments are grouped together and this Topical Response provides a collective response to these comments.

Summary of Comments in First Set of Emails

The first set of identical or substantially similar emails consists of a series of short three-paragraph emails that express opposition to the Project, states that it is more efficient to consider alternatives than to reverse a project once it starts, and requests the City to pause the CEQA process and commission an independent study of clean energy alternatives using consultants such as NREL or E3 with strong clean energy credentials instead of the consultants who have been preparing the EIR for the City.

Summary of Responses to Comments in First Set of Emails

- The Project is part of an integrated, diversified plan to provide reliable, clean energy at reasonable rates to serve Glendale businesses and residents.
- Glendale is continually seeking additional cost-effective opportunities for renewable energy projects, and will continue to do so with the Project.
- The State of California does not explicitly mandate integration of solar resources, and instead allows utilities to leverage any number of “renewable” resources, including solar, wind, geothermal, and small hydroelectricity, to meet its renewable obligations. GWP’s resource mix as of 2016 (the most recently reported year) included 47% eligible renewable resources.
- Renewable energy resources that are subject to intermittency must be “firmed and shaped” so that the combination of the renewable energy supply and the dispatchable energy source provide a source of power that matches the system load on a continuous, real-time basis. The purpose of repowering Grayson is to provide that dispatchable

<https://www.ethree.com/e3-completes-study-of-policy-mechanisms-to-decarbonize-the-electric-sector-in-the-northwest/>).



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source of power that can firm GWP's renewable sources of power and ensure reliable operation of the City's electricity supply.

Repowering Grayson is a necessary component of Glendale's long-term clean energy strategy. Glendale is planning for and moving toward a future where an increasing percentage of Glendale's energy portfolio must come from renewable and zero carbon resources. The increasing percentage of renewable energy on Glendale's system drives the need for the Project.

Response to Comments in First Set of Emails

First, the commenters' opposition to the Project will be included in the Final EIR and in the record that is submitted to the City Council for its consideration in determining whether to approve the Project, deny the Project, or approve an alternative or a modified project.

Second, with respect to consideration of alternatives, the Draft EIR at Section 5.2.3 sets forth a range of reasonable alternatives, including clean energy alternatives, as required by CEQA Guideline Section 15126.6. Please refer to Topical Response No. 4, Project Alternatives, and Topical Response No. 5, Renewable Energy.

Third, the City does not agree with the suggestion or request that the City pause the CEQA process and commission an independent study of clean energy alternatives. The alternatives analysis in the Draft EIR included analysis of an Alternative Energy Project Alternative consisting of solar and wind power combined with energy storage and transmission lines, and also evaluated an energy storage alternative and two smaller repowering projects. This provides a sufficient basis for the City to determine whether a renewable-only project is a feasible or desirable alternative, and further evaluation is not needed. Under CEQA decisions of the Supreme Court and Courts of Appeal, the City has the discretion to determine the appropriate studies to be performed. *Laurel Heights Improvement Ass'n v. Regents*, 47 Cal.3d 276, 410 (1988); *Gray v. County of Madera*, 167 Cal.App.4th 1099, 1115 (2008). Please refer to Topical Response No. 4, Project Alternatives, and Topical Response No. 5, Renewable Energy. With respect to obtaining an additional consulting firm, please refer to Topical Response No. 15, Comments Requesting an Independent Consultant.

Summary of Comments in Second Set of Emails

The second set of identical or substantially similar emails expresses opposition to the Project, followed by a list of comments, which is set forth below.

- Emissions of carbon monoxide, nitrogen dioxide, sulfur dioxide, small particulate matter and other pollutants will increase across the board. This will worsen already bad air quality in an area that houses two elementary schools (Mark Keppel and Franklin), the Disney Creative Campus and Disney Children's Center, the residential neighborhoods of

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Pelanconi Estates and Moorpark, and popular outdoor spaces such as the John Ferraro Athletic Fields and Glendale Narrows Riverwalk.

- Greenhouse gas emissions, which are heating up our region and increasing risks of drought and fire, will increase by more than 415,000 tons of carbon dioxide each year. That's an increase of six times over the current levels, and equivalent to adding 90,000 cars to Glendale's roads.
- The plant would be built in an identified liquefaction zone. That makes the plant itself, and the gas piping and transmission systems, all highly vulnerable to a serious earthquake. Apart from the obvious safety risks, this raises questions about its ability to maintain reliable service in an emergency.
- Spending \$500 million on a single, large fossil fuel plant creates huge financial risks for Glendale customers. With efforts underway in Sacramento to move the state to 100% clean energy by 2045, it's more likely than not that we'll be paying for this plant long after it's been forced to shut down.
- Glendale doesn't even need this much power. Your own reports forecast falling demand for electricity in Glendale. If demand is falling, why would we need a plant that increases generating capacity by 33% as this proposal does?
- This project would lock us into legacy technology that harms public health at a time when the rest of the state is surging forward. I urge you to halt efforts to expand Grayson and commission a study of clean energy alternatives.

Summary of Responses to Comments in Second Set of Emails

- The Project does not cause or significantly add to a violation of state or federal air quality standards and emissions offsets will result in a permanent emissions reduction that exceeds the increase in criteria pollutants from the Project.
- GWP must offset 100% of its greenhouse gas emissions in accordance with the California Cap-and-Trade program. This program ensures that overall GHG emissions are reduced to levels at 40% below 1990 baseline emissions.
- The Project will be built to conform to applicable Building Code standards and requirements. Specifically, deep foundation (driven piles 55-feet long) that provide the necessary support in the dense and stiff alluvial soils below the liquefiable zone will be used.
- The Project would have no impact on customer rates and would remain economically viable even if Senate Bill 100 passes.

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- The City is obligated to provide its customers with sufficient reliable power to meet peak demand and also to maintain sufficient reserve power to meet its balancing obligations.
- Modernizing the Grayson plant with cleaner-burning, up-to-date, energy-efficient technology is essential in order for Glendale to reliably meet the energy needs of its businesses and residents, both in the near-term and the long-term.
- The Draft EIR studied a reasonable range of alternatives, including renewable energy, which provide a sufficient basis for the City to determine whether a renewable-only project is a feasible or desirable alternative.

Response to Comments in Second Set of Emails

First, the commenters' opposition to the Project will be included in the Final EIR and in the record, that is submitted to the City Council for its consideration in determining whether to approve the Project, deny the Project, or approve an alternative or a modified project.

Second, with respect to emissions of carbon monoxide, nitrogen dioxide, sulfur dioxide, small particulate matter, and other pollutants, the Project does not cause or significantly add to a violation of state or federal air quality standards. Additionally, emission offsets reflecting real, quantifiable, and permanent emission reductions exceed the increase in criteria pollutant emissions from the Project in accordance with SCAQMD and US EPA requirements. The Project will neither result in an increase in emissions of nonattainment pollutants, nor cause or significantly add to a violation of state and federal ambient air quality standards.

In addition, maximum health risks attributed to the Project are below levels deemed by SCAQMD to be significant and that risks decrease significantly as one considers distance to the facility boundary. Additionally, health risks attributed to the Project are significantly lower than health risks attributed to the existing facility.

The calculations used to support the Draft EIR reflect SCAQMD permitting policies that are designed to overstate emissions increases for the purpose of ensuring that such increases are offset in excess of actual increases. The City chose to use the SCAQMD methods to ensure that CEQA significance determinations are based upon extremely conservative assumptions. However, even under these assumptions, air quality and health impacts are below the significance thresholds that SCAQMD requires for CEQA. A comparison of actual historic emissions with both future potential emissions and future typical emissions shows that emission increases are significantly lower than the values used to determine CEQA significance.

Please refer to Topical Response No. 8, Air Quality and Public Health, for further information.

Third, unlike other sources of GHG emissions, GWP must offset 100% of its greenhouse gas emissions in accordance with the California Cap-and-Trade program. This program ensures that overall GHG emissions are reduced to levels at 40% below 1990 baseline emissions. The annual

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emission reflected in the Draft EIR reflect maximum operations that will be permitted by SCAQMD. Actual emissions will typically be much lower and likely less than 220,000 MT, annually. Again, those emissions will be fully offset under the California Cap-and-Trade program. Please refer to Topical Response No. 9, Greenhouse Gas Emissions, for further information.

Fourth, with respect to liquefaction and seismic safety, the Project will be designed and built to conform to applicable Building Code standards and requirements adopted in order to ensure that structures built within liquefaction zones are protected against earthquakes. Specifically, deep foundation (driven piles 55-feet long) that provide the necessary support in the dense and stiff alluvial soils below the liquefiable zone will be used to ensure that critical buildings and equipment will be designed to accommodate down drag forces and seismically-induced settlement. Please refer to Topical Response No. 10, Liquefaction, for further information.

Fifth, with respect to the comment regarding financial risk, the Project would have no impact on customer rates. The Project would facilitate the City's import of renewable energy over existing transmission to assist in procuring 50 percent of its electricity from eligible renewable energy resources by 2030 pursuant with Senate Bill 350. The Project would remain economically viable even were Senate Bill 100 passed, which would 100 percent carbon-free electricity by 2045.

Sixth, with respect to the need for power, the City is obligated to provide its customers with sufficient reliable power to meet peak demand and also to maintain sufficient reserve power to meet its balancing obligations. Please refer to Topical Response No. 3, Project Need, for further information.

Seventh, with respect to the comment that this Project locks in technology, this statement is true of any capital project. Modernizing the 40- to 70-year old units with cleaner-burning, up-to-date, energy-efficient technology is essential in order for Glendale to reliably meet the energy needs of its businesses and residents, both in the near-term and the long-term. The existing power plant is well beyond its useful life and not expected to remain in service (except for Unit 9) beyond 2022. Additionally, as noted in Topical Response No. 1, Glendale is Pursuing Both Increased Use of Renewables and Continued Reliability of Electricity at Reasonable Rates, the Project is part of an integrated plan to move Glendale towards a 100% clean energy future. The existing units that will be replaced lack the ability to integrate, balance, and firm and shape intermittent and renewable energy.

Eighth, with respect to the request that the City halt efforts to expand Grayson and instead commission a study of clean energy alternatives, the City does not agree with this suggestion. The Project alternatives analysis in the Draft EIR included analysis of an Alternative Energy Project Alternative consisting of solar and wind power combined with energy storage and transmission lines, and also evaluated an energy storage alternative and two smaller repowering projects. This provides a sufficient basis for the City to determine whether a renewable-only project is a feasible or desirable alternative, and further evaluation is not needed. Under CEQA decisions of the Supreme Court and Courts of Appeal, the City has the discretion to determine the

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appropriate studies to be performed. *Laurel Heights Improvement Ass'n v. Regents*, 47 Cal.3d 276, 410 (1988); *Gray v. County of Madera*, 167 Cal.App.4th 1099, 1115 (2008). Please refer to Topical Response No. 4, Project Alternatives, and Topical Response No. 5, Renewable Energy, for further information. With respect to obtaining an additional consulting firm, please refer to Topical Response No. 15, Comments Requesting an Independent Consultant.

Summary of Comments in Third Set of Emails

The third set of identical or substantially similar emails consisted of a series of short emails forwarded to the City by the Earthjustice law firm. These emails expressed opposition to the Project, citing air quality concerns and sensitive users such as schools, day care centers, homes for the elderly, and offices. These comments stated that Glendale does not need the energy, and that Glendale has the means to power itself with renewable energy.

Summary of Responses to Comments in Third Set of Emails

- The Draft EIR provides a conservative analysis of air quality impacts. The City chose to use the SCAQMD methodology for calculating existing baseline and Project emissions to ensure that CEQA significance determinations are based upon extremely conservative assumptions. However, even under these assumptions, air quality and health impacts are below the significance thresholds that SCAQMD requires for CEQA.
- The City is obligated to provide customers with sufficient reliable power to meet peak demand and also to maintain sufficient reserve power to meet its balancing obligations.
- The Draft EIR studied a reasonable range of alternatives, including renewable energy, which provides a sufficient basis for the City to determine whether a renewable-only project is a feasible or desirable alternative.

Response to Comments in Third Set of Emails

The commenters' opposition to the Project will be included in the Final EIR and in the record, that is submitted to the City Council for its consideration in determining whether to approve the Project, deny the Project, or approve an alternative or a modified project.

First, the calculations used to support the Draft EIR air quality analysis reflect SCAQMD permitting policies that are designed to overstate emissions increases for the purpose of ensuring that such increases are offset in excess of actual increases. The City chose to use the SCAQMD methods to ensure that CEQA significance determinations are based upon extremely conservative assumptions. However, even under these assumptions, air quality and health impacts are below the significance thresholds that SCAQMD requires for CEQA. A comparison of actual historic emissions with both future potential emissions and future typical emissions shows that emission increases are significantly lower than the values used to determine CEQA significance. Please also refer to Topical Response No. 8, Air Quality and Public Health, for further information.



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Second, with respect to the need for the project, the City is obligated to provide customers with sufficient reliable power to meet peak demand and also to maintain sufficient reserve power to meet its balancing obligations. Please refer to Topical Response No. 3, Project Need, for further information.

With respect to developing renewable energy instead of the Project, the Project alternatives analysis in the Draft EIR included analysis of an Alternative Energy Project Alternative consisting of solar and wind power combined with energy storage and transmission lines. This provides a sufficient basis for the City to determine whether a renewable-only project is a feasible or desirable alternative, and further evaluation is not needed. Under CEQA decisions of the Supreme Court and Courts of Appeal, the City has the discretion to determine the appropriate studies to be performed. *Laurel Heights Improvement Ass'n v. Regents*, 47 Cal.3d 276, 410 (1988); *Gray v. County of Madera*, 167 Cal.App.4th 1099, 1115 (2008). Please refer to Topical Response No. 4, Project Alternatives, and Topical Response No. 5, Renewable Energy, for further information.

9.1.2 Response to Comments during Public Meeting

9.1.2.1 October 16, 2017 Special Meeting of the Glendale Water and Power Commission

MC - Response to Comments received from Commissioner Avanesian during the Special Meeting of Glendale Water & Power Commission, held on October 16, 2017

MC-1 This comment was addressed during the October 16, 2017, meeting. Please refer to page 60 lines 4 through 25 and page 61 lines 1 through 2 for details. Please also refer to Topical Response Nos. 1, 2, and 3.

MC - Response to Comments received from Commissioner Lall during the Special Meeting of Glendale Water & Power Commission, held on October 16, 2017

MC-2 This comment was addressed during the October 16, 2017, meeting. Please refer to page 61 lines 12 through 25 and page 62 lines 1 through 9 for details. Please also refer to Topical Response No. 3.

MC - Response to Comments received from Commissioner Kedikian during the Special Meeting of Glendale Water & Power Commission, held on October 16, 2017

MC-3 This comment was addressed during the October 16, 2017, meeting. Please refer to page 62 lines 20 through 25 and page 63 lines 1 through 3 for details. Please also refer to Topical Response Nos. 1 and 3.