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May 27, 2016

Subject: Data Response, Set 1A
Pomona Repower Project (16-SPPE-01)

Dear Lon,

On behalf of AltaGas Pomona Energy Inc. please find attached our data responses to the CEC's Data Requests 1 to 45 (Set 1) dated April 27, 2016.

Please let me know if you have any questions.

Regards,
CH2M HILL Engineers, Inc.

John L. Carrier, J.D.
Program Manager

Encl.

Pomona Repower Project

(16-SPPE-01)

Data Responses, Set 1A

(Responses to Data Requests 1 to 45)

Submitted to

California Energy Commission

Prepared by

AltaGas Pomona Energy Inc.

With Assistance from

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Contents

Introduction

AltaGas Pomona Energy Inc. (AltaGas or the Project Owner) herein provides responses to the California Energy Commission (CEC) Staff's Data Requests, Set 1 regarding the Pomona Repower Project (PRP) (16-SPPE-01), dated April 27, 2016 (TN# 211275). Applicant incorporates by reference herein its Objections to Staff's Data Requests, Set 1, dated May 13, 2016 (TN# 211460).

The data responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as the CEC Staff presented them and are keyed to their data request numbers.

New graphics or tables are numbered in reference to the data request number. For example, the first table used in response to Data Request 15 would be numbered Table DR15-1. The first figure used in response to Data Request 34 would be Figure DR34-1, and so on. Figures or tables from the SPPE Application that have been revised have "R1" following the original number, indicating revision 1 (see, for example, Data Response 34). Attachments in response to data requests also have been numbered with that data request. For example, the attachment in response to Data Request 17 is numbered "Attachment DR17-1."

Additional tables, figures, or documents submitted in response to a data request (for example, supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of each discipline-specific section and are not sequentially page-numbered consistent with the remainder of the document, though they may have their own internal page numbering system.

Project Description

BACKGROUND

Staff has identified aspects of the project description that are unclear and raise questions about potential impacts across environmental resource categories. Clarification would ensure staff's ability to assess the analysis contained in the Small Power Plant Exemption application (SPPE) and conduct its own independent analysis. Specifically, relating to underground construction activities, the Executive Summary and Project Description are in places at odds with specific proposed activities. For example, the Executive Summary on page 1-2, highlights the use of "existing natural gas pipeline, existing potable and recycled water line, existing stormwater, sanitary sewer and wastewater lines". Additionally, the project Description states on page 2-2 that "The facility does not require any new pipelines". Further into the Project Description on page 2-8, it is noted that "floor drains, hub drains, sumps and piping" will be needed to collect wastewater and that on page 2-9, "fire protection water will be provided to a dedicated underground loop piping system". These descriptions appear to contradict the statement that the "facility does not require any new pipelines". It is not clear whether these are existing facilities that will be re-used or whether new underground piping is proposed. Questions below relate to specific areas of the SPPE where seeming contradictions appear and staff seeks clarification.

DATA REQUESTS

1. Section 2.3.2.1, p. 2-13. Mobilization. *"Due to the existing site groundwork, grading and stormwater control will not be needed or will be included as part of construction. Some of the existing paved areas may require modification to account for underground piping and sumps".* Please clarify whether grading or stormwater control would be needed or not. If so, what would be the horizontal and vertical extent of excavation required for the paved area modifications to account for underground piping and sumps?

   Response: The extent of excavation for this work will not be determined until completion of final plant layout and design. The preliminary estimate is approximately 500 feet of linear horizontal excavation will be required. The width of this linear excavation will be approximately 3 feet with a depth ranging from 4 to 6 feet.

2. Section 2.1.12.2, p. 2-8. Plant Drains and Oil/Water Separator. *"Water from these areas will be collected in a system of floor drains, hub drains, sumps and piping and routed to the process drain collection system".* Please clarify whether these are existing drains and underground pipes. If new, please describe the horizontal and vertical extent of excavation that would be required for below-grade piping, drains and sumps.

   Response: The extent of excavation for this work will not be determined until completion of final plant layout and design. The preliminary estimate is approximately 200 feet of linear horizontal excavation will be required. The width of this linear excavation will be approximately 3 feet with a depth ranging from 3 to 5 feet.

3. Section 2.1.14, p. 2-9. Fire Protection. *"Fire protection water will be provided to a dedicated underground fire loop piping system."* Please describe what would be the horizontal and vertical extent of excavation required for installation of the fire water piping system.

   Response: The extent of excavation for this work will not be determined until completion of final plant layout and design. The preliminary estimate is approximately 750 feet of linear horizontal excavation will be required. The width of this linear excavation will be approximately 3 feet with a depth ranging from 4 to 6 feet.

BACKGROUND

Staff has identified aspects of the project description regarding demolition that are unclear and raise questions about potential impacts across environmental resource categories. The SPPE lacks a description in Section 2.2 of what the demolition activities entail, it only mentions what manpower (2.2.1) and demolition equipment (2.2.2) are required. In order to analyze the potential impacts from demolition as part of the project (as stated on p. 2-11), staff needs additional information on the activities that will take place during demolition of the existing San Gabriel facility.

DATA REQUEST

4. Section 2.2, page 2-11 to 2-12. The SPPE does not include a discussion of what demolition activities would take place. Please describe the type of activities that would be conducted, including, but not limited to, removal of foundations or below-grade pilings or footings from the existing plant facilities. Please identify which buildings, foundations, and equipment would be demolished, the techniques to be employed and what would be the horizontal and vertical extent of excavation required to complete the demolition.

   Response: With the exception of the maintenance building (item 44 in SPPE Figure 1.2-2), all other existing buildings, structures, and equipment will be demolished. Prior to demolition, an environmentally regulated material (ERM) survey will be conducted to identify the types and quantities of ERM requiring abatement. All structures will then be abated of all waste materials including oils, fuels, chemicals, asbestos-containing material, lead-based paint, universal waste, and any other regulated waste. The waste material will be characterized, profiled and transported to an approved facility for disposal.

   Demolition will use waste minimization techniques with the goal of recycling as much material as possible. The City of Pomona, California requires a minimum of 50 percent of all demolition materials to be recycled or reused. Materials anticipated to be recycled include high-value ferrous and nonferrous metals; universal waste, oils, fuels, and chemicals to the degree possible; wood; plastics; electronics; and concrete.

   All utilities servicing the structures will be identified, air gapped, and surveyed for as-built locations. These services include both above and below grade utilities including, but not limited to, water (potable and nonpotable), electric, sewer, phone, compressed gas, fuel, and chemical.

   All tanks, vessels, and piping will be emptied and cleaned prior to demolition. Any residual that cannot be removed will be planned for during the demolition planning so there is no release to the environment.

   All structures will be demolished to grade using an excavator with a shear to size the materials for disposal and recycling. The above-grade structures will be demolished in a manner that is protective

of any adjacent structures and utilities that will remain in operation. The excavator will start at one end of the structure and move inward taking into consideration the structural stability.

Once the structure is to the ground, the shear will begin segregation of the demolition material into construction and demolition (C&D) debris and recyclable materials. The C&D will be characterized and profiled and then transported to an approved facility for disposal. The recyclable material will be segregated by recycle type and transported to an approved facility for recycling. The foundations will be completely cleared of all materials to provide safe access for removal.

The foundations consist of reinforced concrete of varying thickness depending in the structure type it is supporting. It is estimated that the structures supporting the heavier equipment such as the turbines, will have a foundation extending approximately 6 feet below ground surface (bgs). The lighter structures such as the warehouse, will have a foundation extending approximately 4 feet bgs. The foundations will be broken up using an excavator with a hydraulic hammer into manageable pieces. These manageable pieces will further be processed using an excavator with a pulverizer that will process the concrete to approximately 6-inch minus to remove the reinforced steel and to allow the concrete to be used as backfill onsite or transported offsite for recycling. The concrete will be sampled prior to the demolition of the foundations to verify it meets California Department of Toxic Substances Control's fill requirements or meets the standards for recycling. If it does not, the concrete will be characterized, profiled, and transported to an approved facility for disposal.

Air Quality

BACKGROUND

Cumulative Air Quality Impacts

The application (Section 4.1.8.1) describes the methodology for the cumulative impact analysis but does not include the analysis itself because a project list had not been provided by the District at the time the application was prepared and submitted to the Energy Commission. The cumulative analysis should include all reasonably foreseeable new projects with a potential to emit 5 tons per year or more and located within a 6-mile radius. This includes all projects that have received construction permits but are not yet operational and those that are either in the permitting process or can be expected to be in permitting in the near future. A complete cumulative impacts analysis should identify all existing and planned stationary sources that affect the baseline conditions and consider them in the modeling effort.

DATA REQUESTS

5. Please provide a copy of the District's correspondence regarding existing and planned cumulative sources located within six miles of the project site.

   Response: The South Coast Air Quality Management District (South Coast AQMD) is still processing the Applicant's request for the following information regarding emission sources located within 6-miles of the project site (see SPPE, Appendix 4.1H):

   - A list of all new Permits to Construct and/or modified Permits to Operate issued after January 1, 2014 for projects that result in a net emissions increase of 5 tons per year or more of NOx, PM_{10}, SOx, or CO.
   - A list of projects for which Permits to Construct and/or modified Permits to Operate have not been issued to date but that are reasonably foreseeable (for example, a permit application has been filed) and are expected to result in a net emissions increase of 5 tons per year or more of NOx, PM_{10}, SOx, or CO.

   A copy of the South Coast AQMD response to the above information request will be provided to the CEC Staff as soon as the Applicant receives it.

6. Please provide the list of sources to be considered in the cumulative air quality impact analysis.

   Response: As stated in Applicant's May 13, 2016 letter, an additional 30 days has been requested to respond to this data request (see TN# 211460). Applicant intends to provide a response by June 27, 2016. The Applicant will provide the list of sources to be considered in the cumulative air quality impact analysis to the CEC Staff once the Applicant receives the information discussed under Data Response 5.

7. Please provide the cumulative modeling and impact analysis, including Pomona Repower Project (PRP) and other identified new and planned projects within 6 miles of the PRP site.

Response: As stated in Applicant's May 13, 2016 letter, an additional 30 days has been requested to respond to this data request once the cumulative air quality impact list from Data Response 6 is received. Applicant intends to provide a response by July 27, 2016. The need for a cumulative air quality modeling analysis will be determined based on the information provided by the South Coast AQMD for new projects within 6-miles of the project site. As part of the submittal to the CEC Staff discussed in Data Response 6, the Applicant will discuss the status of the cumulative air quality modeling analysis (if one is needed based on the information provided by the South Coast AQMD).

BACKGROUND

Emission Offsets

The project only triggers emission offsets of NOx and VOC based on the District offset threshold levels. At the time of the application, the applicant controlled NOx RTCs in an amount that only partially covers project NOx emissions. Additionally, the Energy Commission generally requires CEQA mitigation of all nonattainment criteria pollutants and their precursors at a ratio of at least 1:1, including NOx, VOC, SOx, PM10 and PM2.5.

DATA REQUESTS

8. Please provide NOx and VOC offset strategy to meet District requirements.

Response: The amount of NOx RECLAIM trading credits (RTCs) and VOC emission reduction credits (ERCs) required for PRP are summarized on Table 4.1-34 of the SPPE. Prior to the issuance of the final South Coast AQMD Permit to Construct (PTC) for the PRP, the Applicant will obtain the required amount of NOx RTCs and VOC ERCs by purchasing these credits on the open market.

9. Please provide the mitigation strategy for all nonattainment criteria pollutants to meet the Energy Commission's CEQA mitigation requirements, including NOx, VOC, SOx, PM10 and PM2.5.

Response: The mitigation for NOx and VOC are discussed under Data Response 8. For SOx, PM_{10}, and $PM_{2.5}$ emissions, the mitigation for PRP is discussed in Section 4.1.9.2 of the SPPE. As discussed in Section 4.1.9.2, the SOx, PM_{10}, and $PM_{2.5}$ emissions will be partially mitigated by the emission reductions achieved by the shutdown of the existing equipment at the San Gabriel Facility. For the remaining net emission increases for these pollutants shown on Table 4.1-24 of the SPPE, the Applicant will mitigate the net emission increases for these pollutants with a combination of mitigation options, including purchasing ERCs and/or funding the Carl Moyer Program, or a similar emission reduction program specific to this project.

BACKGROUND

Power Output

Section 2.1 of the application states that the LMS100PA combustion turbine generator (CTG) used in PRP has a nominal net rating of 100 MW based on ISO conditions. Figure 2.1-3 in this section indicates that based upon turbine vendor analysis of metrological conditions at the site, the CTG can generate up to 104 MW net at full load (Case 1, 74^0F, 31% relative humidity).

10. Please document or verify the maximum power output of the CTG based on site conditions.

    Response: The gas turbine vendor (General Electric) provided the performance characteristics for the LMS100PA proposed for the PRP shown in Table 4.1B-1 of the SPPE. As shown on this table, the maximum full load gross output of approximately 111.3 MW occurs for Case 200 (28°F, 60 percent relative humidity). The corresponding net output for this full load operating case is approximately 107.9 MW. These levels represent the expected maximum full load gross and net outputs for the gas turbine proposed for the PRP.

11. Please evaluate the emissions at the maximum documented power output. If the emissions are higher than the current worst scenario emissions in the application, please also update the air quality analysis accordingly.

    Response: As shown on Table 4.1B-2 of the SPPE, the gas turbine operating case resulting in the maximum gross/net output (i.e., operating Case 200) also results in the maximum hourly average heat input level (959.4 MMBtu/hr, HHV) and maximum hourly average emission levels during normal operation. These normal operation maximum hourly average emission levels were used in the air quality impact analysis performed for the PRP.

12. Please indicate if any auxiliary equipment or emergency engines will be used at PRP.

    Response: Other than the new electric natural gas compressors, cooling tower, and gas turbine generating unit, there are no other fossil-fueled (internal combustion engine) auxiliary equipment such as emergency generator or emergency fire pump associated with PRP.

13. If any auxiliary equipment or emergency engines to be used at PRP would be fossil-fueled, please estimate air pollutant emissions, provide all air quality modeling parameters of the equipment/engines and conduct the modeling analysis accordingly.

    Response: Please see Data Response 12.

Biological Resources

BACKGROUND

Nesting Bird Surveys

Section 4.2.6.1, page 4.2-8 of the Application for the Pomona Repower Project Small Power Plant Exemption (PRP SPPE) discusses methods proposed for preconstruction nesting bird surveys. Pre-construction nesting bird surveys would be required to avoid impacts on avian species protected by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS). The proposed methods do not define the timing for implementing the surveys in relation to start of project-related construction activities. In addition, staff is unclear of what is proposed by "standard Migratory Bird Treaty Act (MBTA) avian buffer practices". In order to determine if methods are adequate to avoid and minimize impacts, staff requires more details regarding how the nesting bird surveys would be implemented and how buffers would be implemented to protect any nests detected during surveys. The city of Pomona General Plan establishes how to implement nesting bird surveys as part of the Conservation Element of the General Plan under Policy 7E.P13.

DATA REQUESTS

14. Please describe in detail the methods that would be used to implement nesting bird surveys including how many days prior to start of construction activities the surveys would be conducted. Surveys should follow those methods included in city of Pomona General Plan Goals and Polices under Policy 7E.P13.

    Response: Nesting bird surveys will be conducted within 14 days prior to the start of construction, if construction begins within the nesting bird season (February 1 through August 31). The first nesting bird survey will be conducted within 14 days prior to the start of construction and the second survey a minimum of 10 days after the first survey. The surveys will be conducted in areas of suitable habitat within 300-feet of the project site. Although the City of Pomona General Plan identifies the nesting season as March 1 through August 31, we recommend that surveys be conducted as early as February 1 since nesting behaviors can start during this time and this is the standard survey window for species protected by the Migratory Bird Treaty Act. If any active nests are identified, a suitable buffer will be established and biological monitoring would be conducted on a weekly basis (one monitoring event per week).

15. Please describe in detail what the "standard MBTA avian buffer practices" are, include how the buffers would be marked and monitored, and provide references to any literature or document where this information is contained.

    Response: If any active nests are identified within the project site, a no-disturbance buffer will be established. Examples of buffer sizes are provided below in Table DR15-1. No-disturbance buffers will be marked with flagging and traffic cones and barricades will be established, as appropriate. If active nests are identified, nest monitoring would be conducted on a weekly basis (one monitoring event per week). Since the area surrounding PRP is completely developed, any birds found nesting would be tolerant of human activities and high levels of ambient noise; therefore, a standard 25-foot buffer is expected to be sufficient.

TABLE DR15-1. Potential No-Disturbance Nesting Buffers for Avian Species

Avian Group	Species Potentially Nesting within the Regional Vicinity	Buffer for Construction and Activities (feet)
Bitterns and herons	Black-crowned night heron, great blue heron, great egret, green heron, least bittern, snowy egret	250
Doves	Mourning dove	25
Geese and ducks	American widgeon, blue-winged teal, cinnamon teal, Canada goose, gadwall, mallard, northern pintail, redhead, ruddy duck	100
Grebes	Clark's grebe, eared grebe, horned grebe, pied-billed grebe, western grebe	100
Hummingbirds	Allen's hummingbird, Anna's hummingbird, black-chinned hummingbird	25
Plovers	Black-bellied plover, killdeer	50
Raptors (Category 1)	American kestrel, barn owl, red-tailed hawk	50
Raptors (Category 2)	Cooper's hawk, sharp-shinned hawk	150
Raptors (Category 3)	Northern harrier, white-tailed kite	500
Passerines (cavity and crevice nesters)	House wren, Say's phoebe, western bluebird	25
Passerines (bridge, culvert, and building nesters)	Black phoebe, cliff swallow, house finch, Say's phoebe	25
Passerines (ground nesters, open habitats)	horned lark	100
Passerines (understory and thicket nesters)	American goldfinch, blue-gray gnatcatcher, bushtit, California towhee, common yellowthroat, red-winged blackbird, song sparrow, Swainson's thrush, yellow warbler	25
Passerines (scrub and tree nesters)	American crow, American goldfinch, American robin, blue-gray gnatcatcher, Bullock's oriole, bushtit, Cassin's kingbird, common raven, hooded oriole, house finch, lesser goldfinch, northern mockingbird	25
Passerines (tower nesters)	Common raven, house finch	25
Passerines (marsh nesters)	Common yellowthroat, marsh wren, red-winged blackbird	25
Species not covered under MBTA	Domestic waterfowl, feral (rock) pigeon, European starling and house sparrow	N/A

Notes: Although the majority of the species within the table are not expected to be nesting within 300-feet of the proposed PRP site, the table was included to show examples of different buffers sizes per avian group.
N/A - not applicable

BACKGROUND

Avian Power Line Interaction

The SPPE Application contains information in Section 3.0 about the transmission line upgrades which include installation of new conductors. Avian species, including raptors, are protected by the CDFW and USFWS. Although raptors and other large birds are unlikely to use the site, they could be adversely affected by colliding with transmission lines or by getting electrocuted while perching on power poles if they were to use the transmission line while passing through the project area.

DATA REQUEST

16. Please provide additional information on the existing transmission line spacing, the existing pole design and grounding measures that are currently being implemented, and any proposed changes that would occur with the installation of the new conductors. The information may be provided in writing and/or in a figure. Measures should be consistent with the Avian Power Line Interaction Committee's publication Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (2012).

Response: In Applicant's May 13, 2016 letter, the Applicant objected to this data request as not reasonably necessary for the Commission decision in this proceeding since it ignores the baseline condition under CEQA. Without waiving this objection, Applicant provides the following response.

The Applicant does not have information on the existing transmission line spacing, the existing pole design and grounding measures that are currently being implemented. The Applicant is not planning to change any of those features, but simply reconductor about 0.2 mile of the existing transmission line as show in Figure 1.2-3 of the SPPE Application.

Hazardous Materials Management

BACKGROUND

Worst Case Analysis

Section 4.5.4.2 mentions that there are three schools located within one-quarter mile of the project site and section 4.5.6.2 mentions that CalARP requires a risk management plan (RMP) that includes hazard assessment to evaluate potential effects of an accidental release. However, the applicant has not submitted a worst case off-site consequence analysis (OCA) to determine if there would be an off-site impact to the surrounding public in case of catastrophic accidental release of the aqueous ammonia.

DATA REQUEST

17. Please provide a worst case OCA to determine the impact to the surrounding community.

    Response: In Applicant's May 13, 2016 letter, the Applicant objected to this data request as not reasonably necessary for the Commission decision in this proceeding since it ignores the baseline condition under CEQA. Without waiving this objection, Applicant has prepared an Offsite Consequence Analysis, which is provided as Attachment DR17-1.

BACKGROUND

Secondary Containment

Section 4.5.3.1 mentions that the existing vertical oriented 10,000 gallon aqueous ammonia tank would be replaced by a new 10,000 gallon horizontal tank. There is no discussion about replacing or reusing the secondary containment. There is also no information provided about the secondary containment's capacity or its dimensions.

18. Please clarify whether or not the existing secondary containment would be reused or if a new secondary containment would be built. Please provide dimensions for whichever secondary containment would meet current standards for a 24-hour, 25-year storm event plus 100 percent of the capacity of the largest tank within its boundary.

    Response: Because the existing 10,000-gallon aqueous ammonia tank would be removed and replaced with a new 10,000-gallon tank, a new secondary containment will be installed at the new tank's location (see item 12 on SPPE Figure 1.2-2). The new containment structure will be approximately 50 feet by 25 feet by 3.5 feet deep, which would be more than sufficient to hold the full contents of the tank plus rainwater from a 25-year, 24-hour storm event.

ATTACHMENT DR17-1

Offsite Consequence Analysis for the Pomona Repower Project

May 2016

ch2m

Offsite Consequence Analysis for the Pomona Repower Project

The Pomona Repowering Project (PRP) is a natural-gas-fired, simple-cycle, water-cooled, electrical generating facility with a nominal net output of 100 MW that will replace the San Gabriel Cogeneration Facility, an existing and operating power plant in Pomona, California. PRP will be located on a 2-acre parcel in the City of Pomona in Los Angeles County and located in the Pomona Valley, directly 28 miles east of the city of Los Angeles.

This offsite consequence analysis (OCA) for aqueous ammonia was conducted for the proposed PRP. PRP is required by both the Clean Air Act and the South Coast Air Quality Management District to install Best Available Control Technology to control emissions of criteria air pollutants from the proposed natural-gas-fired combustion turbine. Oxides of nitrogen (NO_x) emissions from the combustion turbine will be reduced through the use of selective catalytic reduction (SCR). The SCR control system uses ammonia as the reduction reagent in the presence of a catalyst. PRP will use a 19-percent aqueous ammonia solution, stored in a 10,000-gallon horizontal aboveground storage tank (holding 9,000 gallons of aqueous ammonia) located near the power block. As part of the new general arrangement, this horizontal ammonia storage tank will replace the existing 10,000-gallon vertical tank, which will be removed as part of the project.

The storage area for the new horizontal ammonia storage tank will include a secondary containment basin, measuring 50 feet by 25 feet by 3.5 feet, which has a depth sufficient to hold the full contents of the tank plus rainwater from a 25-year, 24-hour storm event. The ammonia storage tank will be equipped with a pressure relief valve, a vapor equalization system, and a vacuum breaker system, and will be maintained at ambient temperature and atmospheric pressure. The secondary containment basin will be filled with 4-inch diameter polymer balls designed to reduce exposed surface area by floating on the surface of any liquid present. The density of the balls is such that the liquid surface lies at the mid-line of the balls, creating an estimated surface area reduction of 90 percent.

Aqueous ammonia will be delivered to the plant by truck transport. The ammonia delivery truck unloading area will include a sloped pad surface. The truck drainage pad will slope to a collection drain that will drain into the same secondary containment basin used for the ammonia storage tank.

Analysis

An assessment of worst-case and alternative scenarios for an accidental ammonia release was considered pursuant to the guidance given in *Risk Management Program Guidance for Offsite Consequence Analysis, U.S. Environmental Protection Agency (USEPA), March 2009*. The purpose of a worst-case release scenario is to assist emergency planners by providing a maximum possible distance downwind at which an individual could be exposed to the released substance for up to 1 hour without experiencing or developing irreversible or other serious health effects, and is not representative of a probable release event. The worst-case release scenario uses a number of conservative assumptions, including the following:

- Worst-case release rate, assuming constant mass flow at the highest possible initial evaporation rate for the modeled wind speed and temperature, is used. In reality, the evaporation rate would decrease with time as the concentration in the solution decreases.
- Worst-case stability class is used with the maximum ambient temperature from the last 3 years. The worst-case meteorology stability class corresponds to nighttime hours; whereas, the maximum ambient temperature would most likely occur during daytime hours.
- Worst-case modeling does not take into account the low risk probability associated with such a catastrophic release, which is discussed separately.

The PRP worst-case release scenario assumed a spill involving the entire contents of the proposed ammonia storage tank, resulting in a release of 9,000 gallons of aqueous ammonia into the secondary containment basin. The worst-case release scenario was assessed assuming a 90 percent reduction in exposed surface area due to the presence of the polymer balls.

The purpose of an alternative release scenario is to assess the risk associated with a more probable, non-catastrophic release using less conservative assumptions. The PRP alternative release scenario assumed an uncoupling of the ammonia transfer hose during tank filling. The hose is assumed to have an inside diameter of 4 inches and a length of 20 feet, resulting in a release of 13.1 gallons of aqueous ammonia into the secondary containment basin. The alternative release scenario was assessed assuming no reduction from the polymer balls, as the estimated depth of the aqueous ammonia would not be sufficient to float the balls.

The assessment of both the worst-case and alternative release scenarios was prepared using the USEPA's Areal Locations of Hazardous Atmospheres (ALOHA) model[1], assuming a dense gas release. Each analysis assumed the immediate release of ammonia, and the formation of an evaporating pool of aqueous ammonia within the secondary containment basin. Evaporative emissions of ammonia would be subsequently released into the atmosphere. Meteorological conditions at the time of the release would control the evaporation rate, dispersion, and transport of ammonia released to the atmosphere. Meteorological data for the worst-case and alternative release scenarios were selected pursuant to USEPA guidance and supplemented by the requirements of Title 19 California Code of Regulations § 2750.2.

Worst-Case Release Scenario

Maximum temperatures combined with worst-case meteorological conditions result in the highest ammonia concentrations at the farthest distance downwind of the release site. Therefore, the worst-case release scenario used the maximum temperature recorded at the Pomona Fairplex station, which is near PRP, in the past 3 years of 108 degrees Fahrenheit (°F)[2]. A wind speed of 1.5 meters per second and an atmospheric stability class F were used per USEPA guidance. Table 1 displays the meteorological data values used in the worst-case modeling analysis.

Table 1. Worst-Case Release Scenario Meteorological Input Parameters

Parameter	Worst-Case Meteorological Data
Wind Speed, meters/second	1.5
Stability Class	F
Relative Humidity, Percent	50
Ambient Temperature, °F	108
Surface Roughness Length, meters (based on urban land cover)	1.0

Release rates for ammonia vapor from an evaporating 19-percent aqueous ammonia solution were calculated assuming mass transfer of ammonia across the liquid surface occurs according to principles of heat transfer by natural convection. The ammonia release rate for the worst-case release scenario for the proposed ammonia storage tank was calculated using ALOHA, meteorological data displayed in Table 1, and the dimensions of the secondary containment basin (50 feet by 25 feet), assuming that the full contents of the storage tank (9,000 gallons) would be released instantaneously into the secondary containment basin.

[1] Available for download at http://www2.epa.gov/cameo/aloha-software.

[2] Accessible at http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7050.

Passive controls in the form of polymer balls were assumed for the proposed ammonia storage tank, and would reduce the exposed surface area in the secondary containment basin by approximately 90 percent.

The initial ammonia evaporation rate calculated by ALOHA was assumed to occur for 1 hour after the initial release. This is a conservative approach because, for concentrated solutions, the initial evaporation rate is substantially higher than the rate averaged over time periods of a few minutes or more since the concentration of the solution immediately begins to decrease as evaporation begins.

Although the edge of the secondary containment basin is raised above ground level, the release height used in the modeling was set at 0 meters above ground level to maintain the conservative nature of the analysis.

Alternative Release Scenario

The alternative release scenario used the average daily high temperature at the Pomona Fairplex station of 77.5 °F. An average wind speed of 2.77 meters per second was assumed based on meteorological data collected at the Ontario International Airport for the years 1996 through 2006[3]. Atmospheric stability class B was used based on the ALOHA default. Table 2 displays the meteorological data values used in the alternative modeling analysis.

Table 2. Alternative Release Scenario Meteorological Input Parameters

Parameter	Alternative Meteorological Data
Wind Speed, meters/second	2.77
Stability Class	B
Relative Humidity, Percent	50
Ambient Temperature, °F	77.5
Surface Roughness Length, meters (based on urban land cover)	1.0

Similar to the worst-case release scenario, the ammonia release rate for the alternative release scenario was calculated using ALOHA and meteorological data displayed in Table 2. For the alternative release scenario, it was assumed that 13.1 gallons of ammonia escapes from the transfer hose, forming a 0.39-inch deep pool measuring 53.7 square feet within the secondary containment basin. No passive controls were assumed for the alternative release scenario.

The initial ammonia evaporation rate calculated by ALOHA was assumed to occur for a maximum of 10 minutes after the initial release, as any remaining ammonia in the solution after that time would be more dilute than it was initially and would evaporate much less rapidly.

Consistent with the worst-case release scenario, the release height used in the alternative modeling was set at 0 meters above ground level to maintain the conservative nature of the analysis.

Toxic Effects of Ammonia

With respect to the assessment of potential impacts associated with an accidental release of ammonia, four offsite “bench mark” exposure levels were evaluated, as follows: (1) the lowest concentration posing a risk of lethality of 2,000 part(s) per million (ppm); (2) the Occupational Safety and Health Administration’s (OSHA) Immediately Dangerous to Life and Health (IDLH) level of 300 ppm; (3) the Emergency Response Planning Guideline (ERPG) level of 150 ppm, which is the American Industrial Hygiene Association’s (AIHA)

[3] Accessible at http://www.wrcc.dri.edu/climatedata/climtables/westwind/#CALIFORNIA.

updated ERPG-2 for ammonia; and (4) the level considered by the California Energy Commission (CEC) staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm.[4]

The odor threshold of ammonia is approximately 5 ppm, and minor irritation of the nose and throat will occur at 30 to 50 ppm. Concentrations greater than 140 ppm will cause detectable effects on lung function, even for short-term exposures (0.5 to 2 hours). At higher concentrations of 700 to 1,700 ppm, ammonia gas will cause severe effects; death occurs at concentrations of 2,500 to 7,000 ppm.

The ERPG-2 value of 150 ppm is based on a 1-hour exposure or averaging time. The ERPG-2 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.

Modeling Results

Table 3 shows the modeled distance for the worst-case and alternative release scenarios to the four benchmark criteria concentrations: lowest concentration posing a risk of lethality (2,000 ppm), OSHA's IDLH (300 ppm), AIHA's ERPG-2 (150 ppm), and the CEC significance value (75 ppm). Please note that the distances shown represent the distance to the instantaneous concentration from the edge of the ammonia storage tank's secondary containment basin, and do not take into account the exposure or averaging time associated with the toxic endpoints. Appendix A presents the modeling output files for the OCA.

TABLE 3. Distance to USEPA and CEC Toxic Endpoints (Ammonia) for the Worst-Case and Alternative Release Scenarios*

Scenario	Distance to 2,000 ppm	Distance to IDLH (300 ppm)	Distance to AIHA's ERPG-2 (150 ppm)	Distance to CEC Significance Value (75 ppm)
Worst-Case Release	156	519	810	1,260
Alternative Release	36	108	156	225

*All distances are presented in feet.

The proposed ammonia storage tank's secondary containment basin is approximately 33 feet to the west of the plant's closest boundary; the closest residence is approximately 870 feet to the north. The results of the OCA for the worst-case release scenario of ammonia at PRP indicates that concentrations exceeding the benchmarks above would extend beyond the project boundary, but only the CEC significance value of 75 ppm would extend beyond the distance to the nearest resident.

The results for the alternative release scenario (i.e., loading spill) show that concentrations exceeding the benchmarks above would extend beyond the project boundary, but not far enough to impact any residential receptors.

Risk Probability

Accidental releases of aqueous ammonia in industrial use situations are rare. Statistics compiled on the normalized accident rates for Risk Management Program chemicals for the years 1994-1999 from *Chemical Accident Risks in U.S. Industry-A Preliminary Analysis of Accident Risk Data from U.S. Hazardous Chemical Facilities, J.C. Belke, September 2000* indicate that ammonia (all forms) averages 0.017 accidental releases per process per year, and 0.018 accidental releases per million pounds stored per year. Data derived from *The Center for Chemical Process Safety, 1989* indicate the accidental release scenarios and probabilities of occurrence for ammonia in general, as shown in Table 4.

[4] *Preliminary Staff Assessment-Otay Mesa Generating Project, 99-AFC-5, May 2000.*

Table 4. General Accidental Release Scenarios and Probabilities for Ammonia

Accident Scenario	Failure Probability
Onsite Truck Release	0.0000022
Loading Line Failure	0.005
Storage Tank Failure	0. 000095
Process Line Failure	0.00053
Evaporator Failure	0.00015

As shown in Table 4, the probability of a catastrophic failure of the ammonia storage tank is very remote. However, given the consequences of a release due to the catastrophic failure of the ammonia storage tank, it should be evaluated to determine if a significant public health impact could occur. In the case of PRP, although the catastrophic tank failure would result in offsite ammonia concentrations exceeding all of the benchmark concentrations, the probability of a catastrophic ammonia tank failure is further mitigated by the fact that PRP is required to comply with the state and federal Risk Management Programs. These programs require PRP to prepare and submit a Risk Management Plan, which includes measures/procedures to prevent accidental releases and to conduct periodic inspections of covered components. Compliance with the Risk Management Programs, coupled with the low probability of the PRP ammonia storage tank catastrophic failure, reduces the potential impact of an accidental ammonia release to insignificant levels.

The alternative release scenario also results in offsite impacts exceeding all of the benchmark concentrations. As noted above, compliance with the Risk Management Program requires the preparation of measures to reduce the potential for accidental ammonia releases. These measure include procedures for unloading ammonia to ensure that releases associated with the alternative release scenario are minimized. As such, the mitigation measures inherent with Risk Management Program compliance result in the alternative release scenario having a less-than-significant impact on the public.

Conclusions

Several factors need to be considered when determining the potential risk from the use and storage of hazardous materials. These factors include the probability of equipment failure, population densities near the project site, meteorological conditions, and the process design. Considering the results of the above analysis, and accounting for the probability of a tank failure resulting in the modeled ammonia concentrations at the meteorological conditions modeled, the risk posed to the local community from the storage of aqueous ammonia at the PRP is not significant.

The results of the catastrophic scenario analysis indicate that the probability of a complete storage tank failure in combination with the conservatively modeled meteorological conditions would not pose a significant threat to the public.

The results of the alternative release scenario show instantaneous concentrations exceeding the benchmarks extending off the property site. However, these high concentrations would decrease quickly and would not pose a threat to nearby residences.

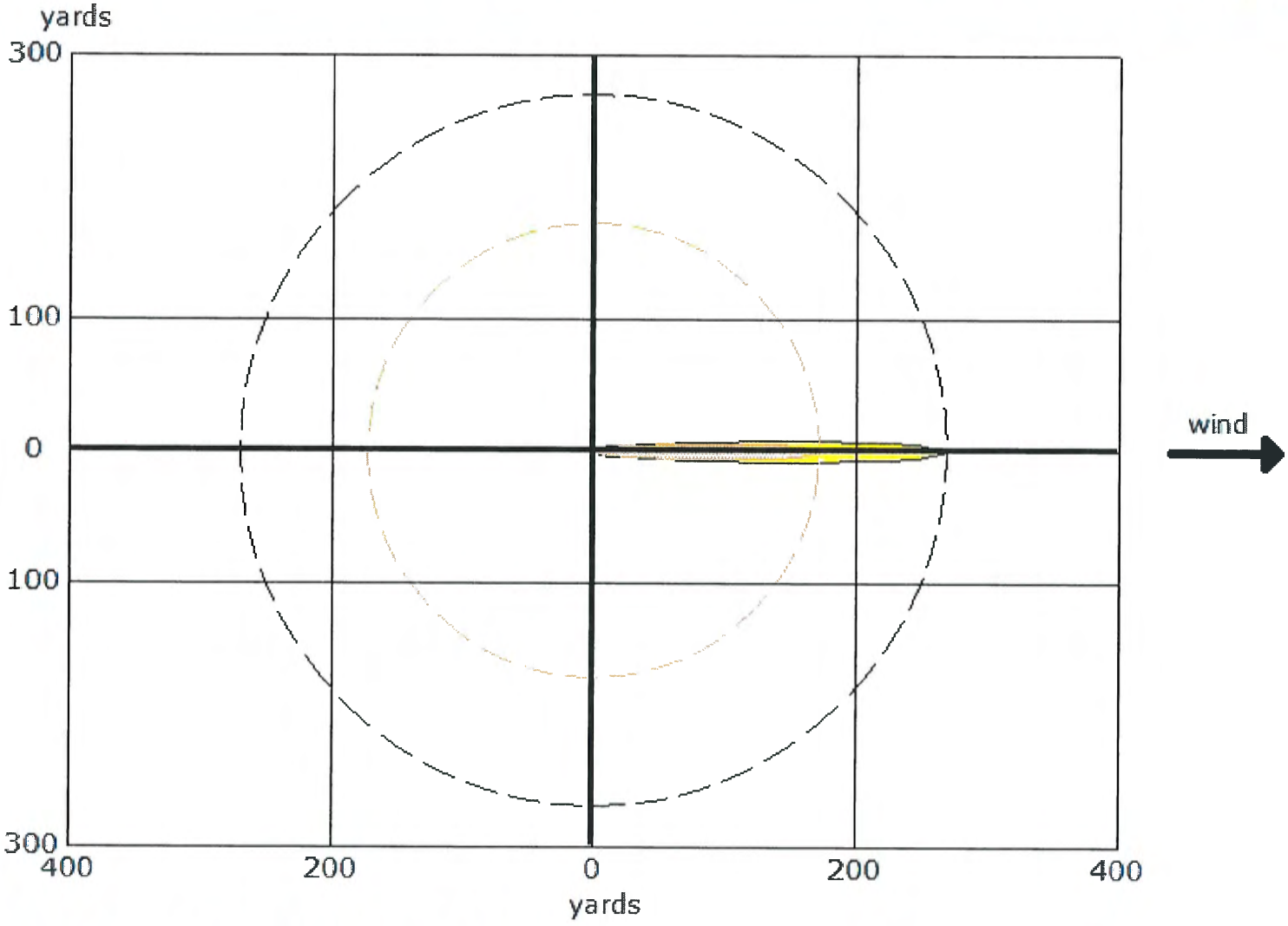
As described above, numerous conservative assumptions have been made at each step in this analysis. The conservative nature of these assumptions has resulted in a significant overestimation of the probability of an ammonia release at the PRP site, and the predicted distances and elevations to toxic endpoints do not pose a threat to the public. Therefore, it is concluded that risk from exposure to aqueous ammonia due to its presence at PRP is less than significant.

Appendix A
ALOHA Model Output

Text Summary

```
SITE DATA:
  Location: POMONA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.50 (unsheltered single storied)
  Time: July 1, 2016  1200 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: AQUEOUS AMMONIA
  Solution Strength: 19% (by weight)
  Ambient Boiling Point: 119.8° F
  Partial Pressure at Ambient Temperature: 0.69 atm
  Ambient Saturation Concentration: 709,273 ppm or 70.9%
  Hazardous Component: AMMONIA            Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 1.5 meters/second from W at 10 meters
  Ground Roughness: 100 centimeters       Cloud Cover: 5 tenths
  Air Temperature: 108° F
  Stability Class: F (user override)
  No Inversion Height                     Relative Humidity: 50%

SOURCE STRENGTH:
  Evaporating Puddle (Note: chemical is flammable)
  Puddle Area: 125 square feet            Puddle Volume: 9000 gallons
  Ground Type: Concrete                   Ground Temperature: 108° F
  Initial Puddle Temperature: Ground temperature
  Release Duration: ALOHA limited the duration to 1 hour
  Max Average Sustained Release Rate: 6.24 pounds/min
     (averaged over a minute or more)
  Total Amount Hazardous Component Released: 340 pounds

THREAT ZONE: (HEAVY GAS SELECTED)
  Model Run: Heavy Gas
  Red    : 52 yards --- (2000 ppm)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 173 yards --- (300 ppm = IDLH)
  Yellow: 270 yards --- (150 ppm = ERPG-2)
```

Toxic Threat Zone

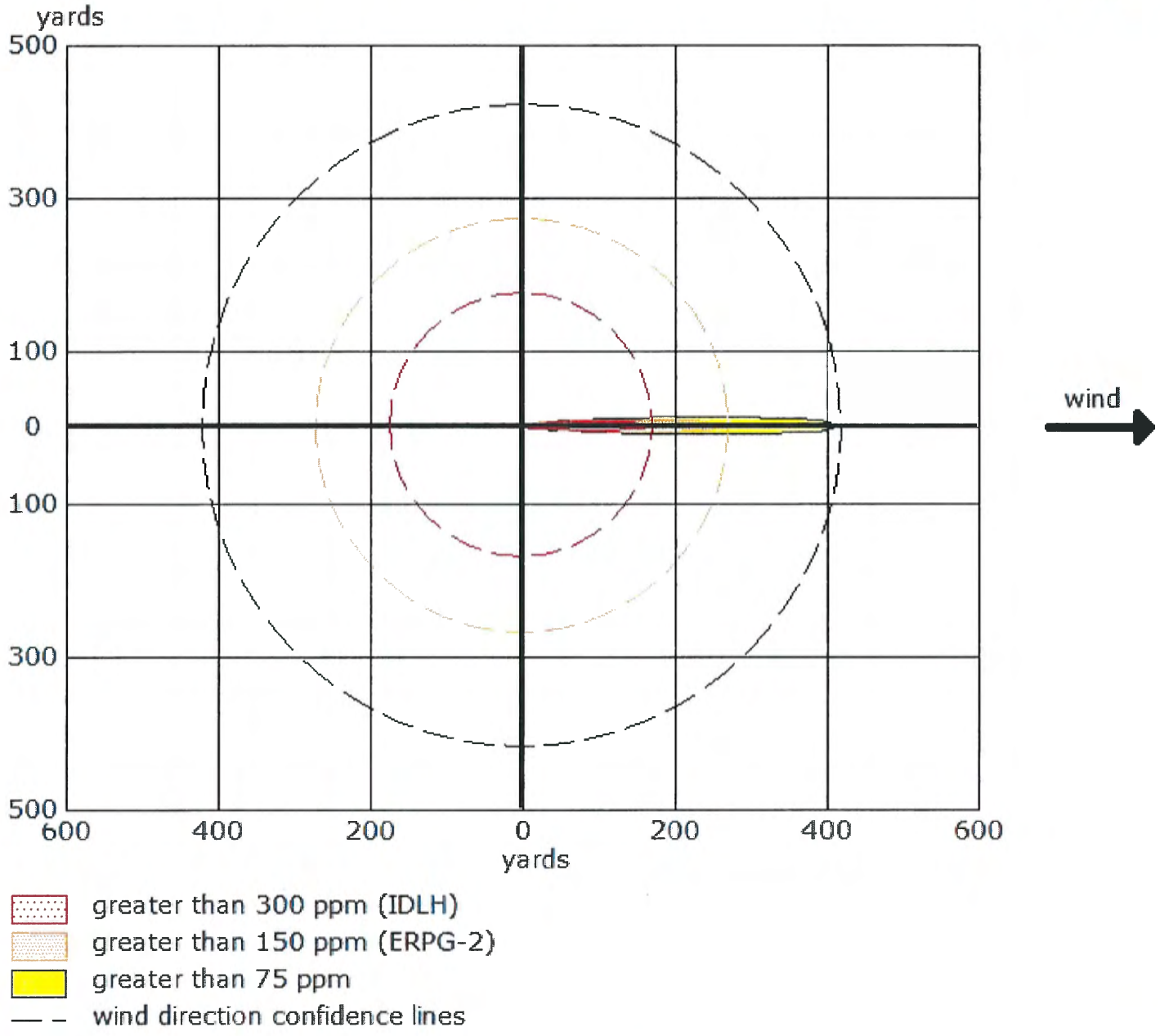


greater than 2000 ppm (not drawn)
greater than 300 ppm (IDLH)
greater than 150 ppm (ERPG-2)
wind direction confidence lines

Text Summary

```
SITE DATA:
  Location: POMONA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.50 (unsheltered single storied)
  Time: July 1, 2016  1200 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: AQUEOUS AMMONIA
  Solution Strength: 19% (by weight)
  Ambient Boiling Point: 119.8° F
  Partial Pressure at Ambient Temperature: 0.69 atm
  Ambient Saturation Concentration: 709,273 ppm or 70.9%
  Hazardous Component: AMMONIA              Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 1.5 meters/second from W at 10 meters
  Ground Roughness: 100 centimeters      Cloud Cover: 5 tenths
  Air Temperature: 108° F
  Stability Class: F (user override)
  No Inversion Height                    Relative Humidity: 50%

SOURCE STRENGTH:
  Evaporating Puddle (Note: chemical is flammable)
  Puddle Area: 125 square feet           Puddle Volume: 9000 gallons
  Ground Type: Concrete                  Ground Temperature: 108° F
  Initial Puddle Temperature: Ground temperature
  Release Duration: ALOHA limited the duration to 1 hour
  Max Average Sustained Release Rate: 6.24 pounds/min
     (averaged over a minute or more)
  Total Amount Hazardous Component Released: 340 pounds

THREAT ZONE: (HEAVY GAS SELECTED)
  Model Run: Heavy Gas
  Red    : 173 yards --- (300 ppm = IDLH)
  Orange: 270 yards --- (150 ppm = ERPG-2)
  Yellow: 420 yards --- (75 ppm)
```

Toxic Threat Zone



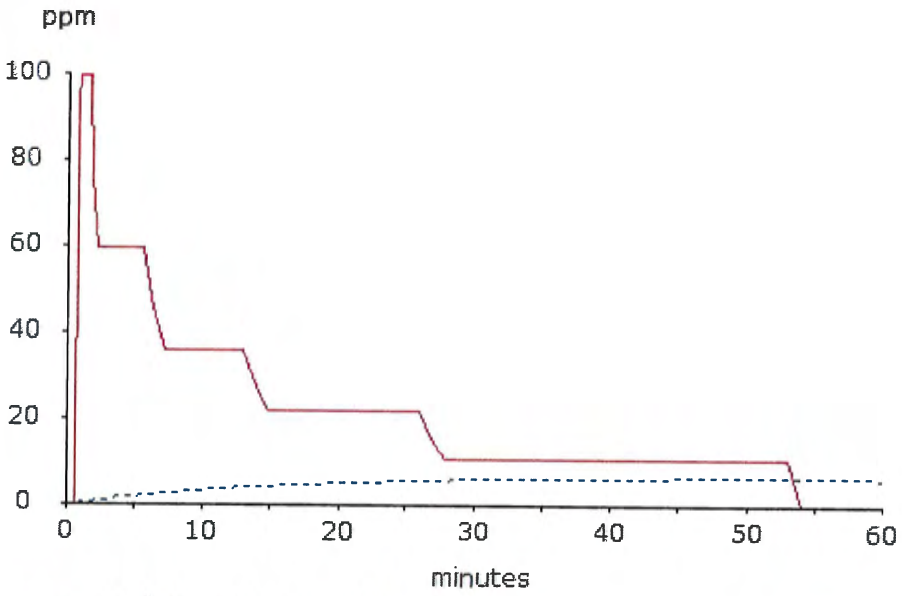
Text Summary

```
SITE DATA:
  Location: POMONA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.42 (unsheltered single storied)
  Time: July 1, 2016  1200 hours PDT (user specified)

CHEMICAL DATA:
  Chemical Name: AQUEOUS AMMONIA
  Solution Strength: 19% (by weight)
  Ambient Boiling Point: 119.8° F
  Partial Pressure at Ambient Temperature: 0.35 atm
  Ambient Saturation Concentration: 356,812 ppm or 35.7%
  Hazardous Component: AMMONIA            Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 2.77 meters/second from W at 10 meters
  Ground Roughness: 100 centimeters       Cloud Cover: 5 tenths
  Air Temperature: 77.5° F                Stability Class: B
  No Inversion Height                     Relative Humidity: 50%

SOURCE STRENGTH:
  Evaporating Puddle (Note: chemical is flammable)
  Puddle Area: 53.7 square feet           Puddle Volume: 13.1 gallons
  Ground Type: Concrete                   Ground Temperature: 77.5° F
  Initial Puddle Temperature: Ground temperature
  Release Duration: 53 minutes
  Max Average Sustained Release Rate: 1.7 pounds/min
     (averaged over a minute or more)
  Total Amount Hazardous Component Released: 19.2 pounds

THREAT ZONE: (HEAVY GAS SELECTED)
  Model Run: Heavy Gas
  Red    : 12 yards --- (2000 ppm)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 36 yards --- (300 ppm = IDLH)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Yellow: 52 yards --- (150 ppm = ERPG-2)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.

THREAT AT POINT:
  Concentration Estimates at the point:
  Downwind: 65 yards                      Off Centerline: 0 yards
  Max Concentration:
     Outdoor: 99.1 ppm
     Indoor:  6.53 ppm
```

Toxic Threat Zone

Model Run: Heavy Gas
Red : 12 yards --- (2000 ppm)
Note: Threat zone was not drawn because effects of near-field patchiness make dispersion predictions less reliable for short distances.
Orange: 36 yards --- (300 ppm = IDLH)
Note: Threat zone was not drawn because effects of near-field patchiness make dispersion predictions less reliable for short distances.
Yellow: 52 yards --- (150 ppm = ERPG-2)
Note: Threat zone was not drawn because effects of near-field patchiness make dispersion predictions less reliable for short distances.

Concentration at Point



At Point: Downwind: 65 yards Off Centerline: 0 yards

Text Summary

SITE DATA:
  Location: POMONA, CALIFORNIA
  Building Air Exchanges Per Hour: 0.42 (unsheltered single storied)
  Time: July 1, 2016 1200 hours PDT (user specified)

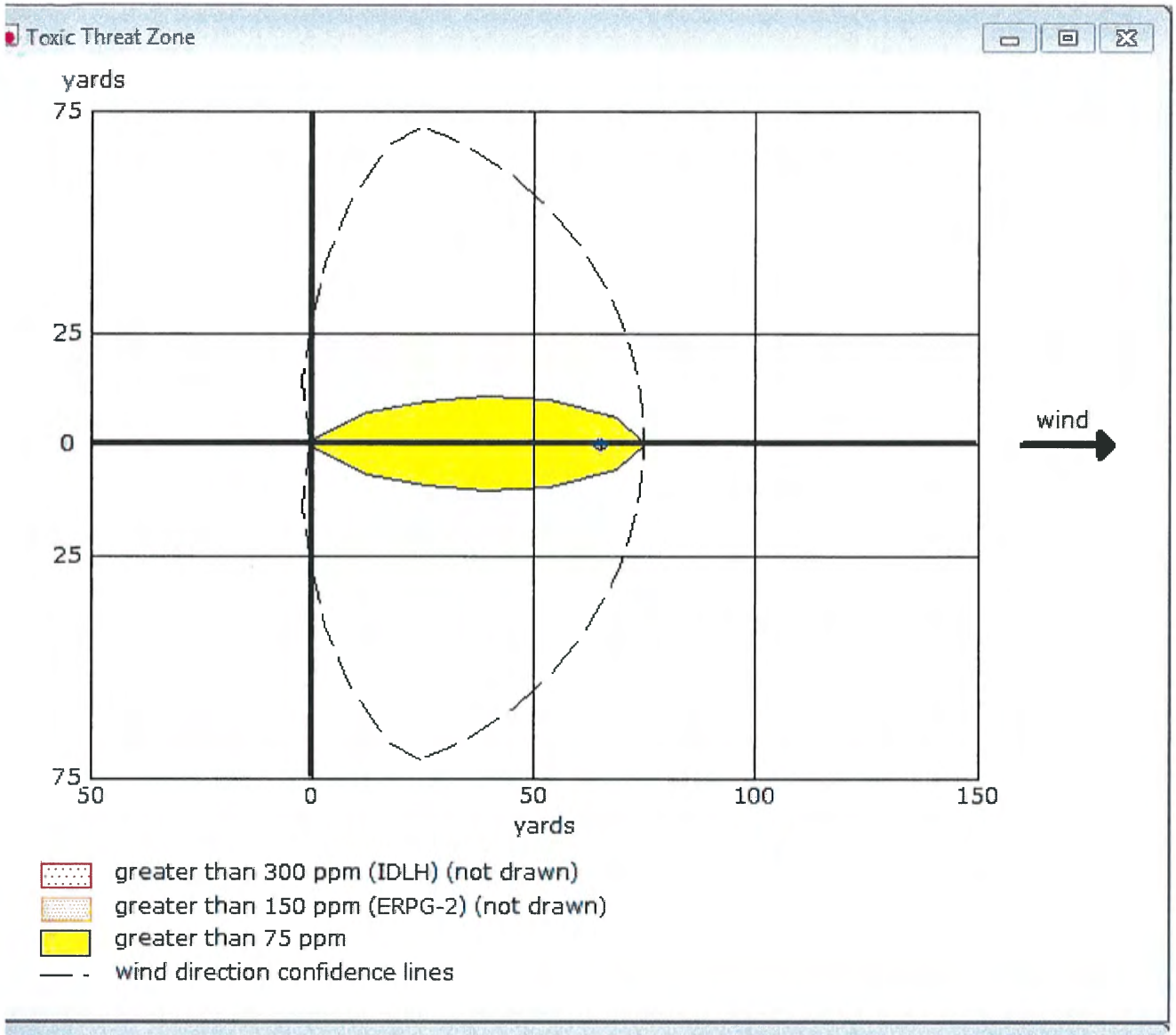
CHEMICAL DATA:
  Chemical Name: AQUEOUS AMMONIA
  Solution Strength: 19% (by weight)
  Ambient Boiling Point: 119.8° F
  Partial Pressure at Ambient Temperature: 0.35 atm
  Ambient Saturation Concentration: 356,812 ppm or 35.7%
  Hazardous Component: AMMONIA Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm AEGL-2 (60 min): 160 ppm AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm LEL: 150000 ppm UEL: 280000 ppm

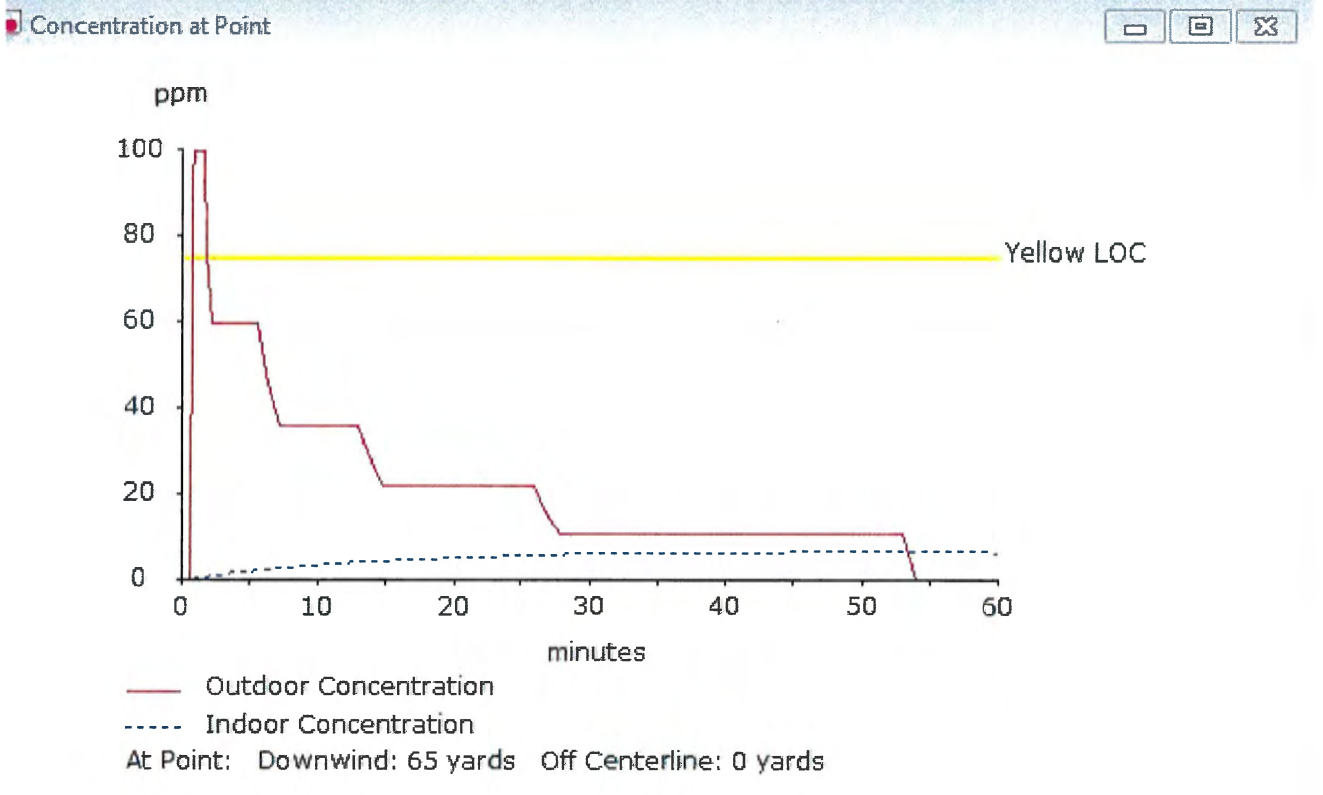
ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 2.77 meters/second from W at 10 meters
  Ground Roughness: 100 centimeters Cloud Cover: 5 tenths
  Air Temperature: 77.5° F Stability Class: B
  No Inversion Height Relative Humidity: 50%

SOURCE STRENGTH:
  Evaporating Puddle (Note: chemical is flammable)
  Puddle Area: 53.7 square feet Puddle Volume: 13.1 gallons
  Ground Type: Concrete Ground Temperature: 77.5° F
  Initial Puddle Temperature: Ground temperature
  Release Duration: 53 minutes
  Max Average Sustained Release Rate: 1.7 pounds/min
     (averaged over a minute or more)
  Total Amount Hazardous Component Released: 19.2 pounds

THREAT ZONE: (HEAVY GAS SELECTED)
  Model Run: Heavy Gas
  Red : 36 yards --- (300 ppm = IDLH)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Orange: 52 yards --- (150 ppm = ERPG-2)
  Note: Threat zone was not drawn because effects of near-field patchiness
    make dispersion predictions less reliable for short distances.
  Yellow: 75 yards --- (75 ppm)

THREAT AT POINT:
  Concentration Estimates at the point:
  Downwind: 65 yards Off Centerline: 0 yards
  Max Concentration:
     Outdoor: 99.1 ppm
     Indoor: 6.53 ppm


Toxic Threat Zone
yards
75
25
0
25
75
50
0
50
100
150
yards
wind
greater than 300 ppm (IDLH) (not drawn)
greater than 150 ppm (ERPG-2) (not drawn)
greater than 75 ppm
wind direction confidence lines


Concentration at Point
ppm
100
80
60
40
20
0
0
10
20
30
40
50
60
minutes
Yellow LOC
Outdoor Concentration
Indoor Concentration
At Point: Downwind: 65 yards Off Centerline: 0 yards

Waste Management

BACKGROUND

Waste Volume and Methods

Staff reviews the applicant's proposed solid and hazardous waste management methods and determines if the methods meet the state standards for waste reduction and recycling. Staff then reviews the available off-site treatment and disposal sites available and determines whether or not the proposed power plant's waste would have a significant impact on the disposal sites' allotted daily, yearly, or lifetime volume of waste it is allowed to receive.

DATA REQUESTS

19. Please provide estimates of the volume (in cubic yards) of nonhazardous and hazardous waste for each of the demolition, construction, and operation phases.

    Response: Estimated quantities of hazardous and nonhazardous waste for the demolition, construction, and operation phases are provided in SPPE Table 4.5-2, Waste Management Methods. Estimated quantities of wastes in Table 4.5-2 that may be disposed of by landfill have been converted from tons to cubic yards to assist the CEC in evaluating the impacts on landfill capacity and are provided in the paragraphs below. Please note that efforts will be made to divert as much waste as possible from landfills by recycling or reusing materials. Hence, the estimates below are conservative.

    It is anticipated that up to 664 cubic yards of nonhazardous demolition waste may go to landfill, including 542 cubic yards of concrete, and 75 cubic yards of scrap wood, glass, plastic, paper, calcium silicate insulation, and mineral wool insulation, because it will not be able to be recycled. During demolition, it is not anticipated that there will be hazardous waste disposed of by landfill. However, should any contaminated materials or hazardous waste be encountered that cannot be recycled or reused, it will be sent to a hazardous waste treatment or disposal facility.

    Up to 282 cubic yards of nonhazardous construction waste may go to landfill, including 170 cubic yards of empty liquid material containers, and 75 cubic yards of scrap wood, glass, plastic, paper, calcium silicate insulation, and mineral wool insulation. It is anticipated that up to 2 cubic yards of hazardous waste may be disposed at a permitted treatment, storage or disposal facility (TSDF).

    Over the life of PRP, an estimated 7 cubic yards of nonhazardous operations waste may go to landfill, including 4 cubic yards of cooling tower sludge. It is anticipated that as much as 6 cubic yards of hazardous waste may be disposed at a permitted TSDF, including 4 cubic yards of oily rags.

    Reference:
    CalRecycle. 2016. Solid Waste Cleanup Program Weights and Volumes for Project Estimates. May. http://www.calrecycle.ca.gov/swfacilities/cdi/tools/Calculations.htm.

20. Please identify the proposed disposal facilities (Class I and Class III) where waste generated from the PRP project would be disposed, including names, locations, remaining capacity, and closure dates for each facility.

Response: Hazardous waste generated at the PRP will be stored at the facility for less than 90 days. The waste will then be transported to a TSDF by a registered hazardous waste transporter.

Class I Facilities

According to DTSC, 156 facilities in California can accept batteries, used oil, solvents, and other hazardous waste for treatment, recycling, or disposal (DTSC, 2016). For ultimate disposal, California has two active hazardous waste (Class I) landfills: Waste Management's Kettleman Hills Landfill and Clean Harbors' Buttonwillow Landfill.

Waste Management Kettleman Hills Landfill. This landfill accepts Class I and II waste. The B-18 landfill is permitted for, and will accept, all hazardous wastes except radioactive, medical, and unexploded ordnance. Currently, B-18 landfill phase 1 and 2 are in operation with a permitted capacity of 10.7 million cubic yards (CalRecycle, 2016). B-18 phase 1 and 2 have nearly reached capacity, but the newly permitted B-18 phase 3 expansion has a permitted capacity of 4.9 million cubic yards and a life expectancy of 12 years, with an expected closure date of 2028 (Henry, 2016).

Clean Harbors Buttonwillow Landfill. This landfill is permitted at 13.2 million cubic yards and can accept 10,500 tons per day (CalRecycle, 2016). The landfill is permitted to accept waste until 2040 (CalRecycle, 2016). Buttonwillow has been permitted to manage a wide range of hazardous wastes, including RCRA hazardous wastes, California hazardous waste, and nonhazardous waste for stabilization treatment, solidification, and landfill. The landfill can handle waste in bulk (solids and liquids) and in containers. Typical waste streams include nonhazardous soil, California hazardous soil, hazardous soil for direct landfill, hazardous waste for treatment of metals, plating waste, hazardous and nonhazardous liquid, and debris for microencapsulation (Clean Harbors, 2015).

Transfer Stations and Class III Facilities

Approximately 946 cubic yards of nonhazardous waste will be generated during PRP construction and demolition, and nonhazardous waste will continue to be generated during its operation. Nonhazardous wastes will be recycled to the extent possible, and what cannot be recycled will be disposed at a permitted landfill as discussed below. The transfer stations and landfills are summarized in Table DR20-1.

The San Gabriel Facility currently uses Waste Management, Inc., to pick up its waste. Waste Management has indicated that wastes typically are transported to the Pomona Valley Transfer Station or to the Azusa Transfer Station (Connie, 2016).

Table DR20-1. Solid Waste Disposal Facilities in the Vicinity of the PRP

Landfill/ Transfer Station	Location	Class	Permitted Capacity[a] (cubic yards)	Remaining Capacity a (cubic yards)	Permitted Throughput[a] (tons per day)	Estimated Closure Date[a]
El Sobrante Landfill	Corona, CA	III	184,930,000	145,530,000	16,054	01/01/2045
Olinda Alpha Sanitary Landfill	Brea, CA	III	148,800,000	36,589,707	8,000	12/31/2021
Azusa Land Reclamation Co. Landfill	Azusa, CA	UC	80,571,760	51,512,201	8,000	01/01/2045
Azusa Transfer Station	Azusa, CA	NA	NA	NA	3,800	NA
Pomona Valley Transfer Station	Pomona, CA	NA	NA	NA	1,500	NA
Looney Bins/Downtown Diversion	Los Angeles, CA	NA	NA	NA	1,500	NA

Notes:

[a] Based on CalRecycle SWIS Database (California Department of Resources Recycling and Recovery. Solid Waste Information System (SWIS) Database. May 2016. http://www.calrecycle.ca.gov/SWFacilities/Directory/Search.aspx.)

UC – unclassified

The Pomona Valley Transfer Station is located at 1371 East 9th Street in Pomona, California. It is permitted as a large-volume transfer and processing facility, comprising 10.5 acres and accepting construction and demolition debris, green materials, industrial waste, mixed municipal waste, and wood waste. The waste is processed for material recovery, then the recyclable materials are transported to a recycling facility, while the remaining waste that cannot be recycled is transported to one of the area landfills for disposal (Analee, 2016).

Waste from the Pomona Valley Transfer Station will go to a landfill such as the El Sobrante Landfill, located at 10910 Dawson Canyon Road in Corona, California. It is a Class III active solid waste landfill with a 485-acre disposal area. El Sobrante Landfill accepts mixed municipal waste, construction and demolition debris, and tires (Teal, 2016).

Waste from the Pomona Valley Transfer Station may also go to the Olinda Alpha Sanitary Landfill, located at 1942 North Valencia Avenue in Brea, California. It is a Class III active solid waste landfill with a 420-acre disposal area. Olinda Alpha Sanitary Landfill accepts agricultural waste, industrial waste, construction and demolition debris, mixed municipal waste, tires, and wood waste (Randy, 2016).

The Azusa Transfer Station is located at 1501 West Gladstone Street in Azusa, California. It is permitted as a large-volume transfer and processing facility, comprising 6 acres and accepting agricultural waste, construction and demolition debris, green materials, industrial waste, inert waste, mixed municipal waste, and wood waste. The waste is processed for material recovery, then the remaining waste that cannot be recycled is transported to one of the area landfills for disposal (Teal, 2016).

It is possible that waste from the PRP facility will go to the Azusa Land Reclamation Company Landfill, located at 1211 West Gladstone Street in Azusa, California. It is an unclassified active landfill with a 266-acre disposal area. The Azusa Land Reclamation Co. Landfill accepts asbestos waste, friable asbestos waste, contaminated soil, inert waste, and tires (Teal, 2016).

It is also possible that waste from the PRP facility will go to the Looney Bins/Downtown Diversion facility, located at 2424 East Olympic Boulevard in Los Angeles, California. It is permitted as a large volume construction, demolition, and inert (CDI) debris processing facility, comprising 5-acres and accepting construction and demolition debris (Teal, 2016).

References:

Analee, Pomona Valley Transfer Station. 2016. Personal communication (telephone call) with Stephanie Curtis/CH2M HILL. May 11.

California Department of Resources Recycling and Recovery (CalRecycle). 2016. SWIS Database (California Department of Resources Recycling and Recovery. Solid Waste Information System (SWIS) Database. May. http://www.calrecycle.ca.gov/SWFacilities/Directory/Search.aspx.)

Clean Harbors. 2015. Buttonwillow Landfill Facility Fact Sheet. Available online at: http://www.cleanharbors.com/locations/index.asp?id=53. October.

Connie, Waste Management. 2016. Personal communication (telephone call) with Stephanie Curtis/CH2M HILL. May 4.

Department of Toxic Substance Control (DTSC). 2016. *California Commercial Offsite Hazardous Waste Permitted Facilities*. May. http://www.envirostor.dtsc.ca.gov/public/commercial_offsite.asp.

Henry, Bob, Waste Management, Kettleman Hills Landfill. 2016. Personal communication (telephone call) with Karen Parker/CH2M HILL. May 23.

Randy, Olinda Alpha Sanitary Landfill. 2016. Personal communication (telephone call) with Stephanie Curtis/CH2M HILL. May 6.

Teal, John, Waste Management. 2016. Personal communication (telephone call) with Stephanie Curtis/CH2M HILL. May 10.

BACKGROUND

Waste Diversion

The Integrated Waste Management Act of 1989 (AB 939) established landfill waste diversion goals of 50 percent by the year 2000 for state and local jurisdictions. To meet the solid waste diversion goals, many local jurisdictions have implemented Construction and Demolition Waste Diversion Programs.

DATA REQUESTS

21. Please identify whether the city of Pomona or Los Angeles County operates a Construction and Demolition Waste Diversion Program, and cite the jurisdiction to which the PRP would report.

    Response: Los Angeles County operates the Clean LA program, which provides recycling requirements for construction and demolition projects in the unincorporated areas of Los Angeles

County. PRP is under the jurisdiction of the city of Pomona. The city ordinance for Pomona, Section 62-873 requires "at least 50 percent of demolition and construction wastes generated be diverted from every demolition, remodeling, and construction project by using recycling, reuse or other diversion programs."

The city of Pomona Building and Safety Department administers the construction and demolition waste diversion program for projects within the city of Pomona. A demolition disclosure form is required for demolition projects 1,000 square feet or more, and with a valuation of $100,000 or more. A deposit is required, and may be returned in full or in part, based on submittal of a recycling and reuse summary report, verifying the project has diverted at least 50 percent of the material generated by the project from landfilling, including submittal of weight receipts from recycling facilities, MRFs, landfills, and transfer stations. This report is an application for the refund, and must be submitted within 60 days of the date of project completion. A non-refundable administrative fee is also required to compensate the city of Pomona for all expenses incurred in administration of the construction and demolition program, including site inspections. The fee is calculated based on the square footage of the project.

A construction waste management plan must be submitted for large scale construction projects. This plan will include information such as the waste hauling company, the overall rate of waste diversion, and plans for waste diversion.

Reference:
City of Pomona. 2016. Building and Safety Forms. May.
http://www.ci.pomona.ca.us/index.php/forms-and-docs/building-safety

22. Please describe how PRP will meet each of the requirements of the program cited in the previous data request.

Response: PRP will send construction and demolition waste directly to a recycling facility, such as Downtown Diversion, or through a transfer station that will separate out the recyclable materials from the waste that needs to be landfilled. PRP will also submit required forms to the city of Pomona Building and Safety Department.

Socioeconomics

BACKGROUND

Impacts on School Facilities

California Government Code Section 65995 expressly provides that payment of fees levied by the governing board of any school district pursuant to California Education Code, Section 17620 is full and complete mitigation of the impacts of the use and development of real property on the provision of adequate school facilities. Fees are calculated based on the square foot area of chargeable covered and enclosed space. Fees are imposed for industrial construction and construction is defined in Government Code Section 65995 (d) as new construction and reconstruction of existing building for industrial, residential, or commercial.

Based on the definition of construction in Government Code Section 65995 (d) and the proposed project as described in the SPPE, staff requests the following:

DATA REQUEST

23. Please identify the buildings, including the amount of covered and enclosed square footage AltaGas proposes to construct or reconstruct and identify the impact fee that will be paid to the school district(s).

    Response: Any industrial development in the Pomona Unified School District is charged a one-time developer fee of $0.54 per square foot of commercial/industrial development.[1] Currently, there are about 3,148 square feet of occupied structures. PRP will have about 10,020 square feet of occupied structures (Maintenance Building, Warehouse Building, Control Building), for a net increase of 6,872 square feet. Using the $0.54 per square foot developer fee, PRP will pay $3,711 in school impact fees for the increased area.

BACKGROUND

Fiscal Resources

Section 4.10 on pages 4.10-9 and Section 1.8 on pages 1-6 are the only sections in the SPPE that discuss the fiscal estimates of the project. The SPPE did not identify the dollar year used to calculate the fiscal resource estimates.

DATA REQUEST

24. Please identify the dollar year used to calculate the fiscal resource estimates.

    Response: The fiscal resource estimates are in 2015 dollars.

[1] Luna, Monica, Purchasing Clerk, Pomona Unified School District. 2016. Personal communication (telephone call) with Fatuma Yusuf/CH2M. May 6.

Traffic & Transportation

BACKGROUND

Bridge Clearance

SPPE Figure 4.12-2 depicts the truck route for trucks transporting large and heavy components for the proposed project. As shown in the figure, one portion of the truck route would potentially include the southbound off-ramps at SR-71 and East Valley Boulevard/Humane Way, then travel eastbound on West Holt Avenue to Erie Street. Trucks using this portion of the route would require travelling under SR-71 for which the bridge provides 15 feet 3 inches of clearance. Based on staff's previous experience with the size of power plant components, it is unclear how trucks transporting large and/or heavy equipment, such as a turbine, generator, or generator step-up (GSU) transformer, would clear the bridge for SR-71.

DATA REQUESTS

25. Please confirm whether large and heavy components would be transported by truck under the bridge for SR-71.

    Response: Several alternate routes are available to avoid the SR-71 bridge. For example, loads too big for the bridge could continue east on Highway 10 and exit south on Fairplex Drive or North Dudley Street. However, it is more likely that large and heavy components will be transported by rail.

26. If large and heavy components would be transported by truck under the bridge for SR-71, please identify the size of power plant components that would transported along this route.

    Response: See Data Response 25.

27. If there is not sufficient clearance, please identify and analyze an alternative route for transporting large and/or heavy equipment.

    Response: See Data Response 25.

BACKGROUND

Airspace Obstructions

As identified in the SPPE Section 4.12.4.6 (Air Traffic), Federal Aviation Administration (FAA) Regulation, 14 C.F.R. Part 77, establishes standards for determining obstructions in navigable airspace and sets forth requirements for notification of proposed construction activities that occur over 200 feet above ground level (AGL). As noted in the SPPE Section 4.12.3.1, "Brackett Field is a public airport owned by the County of Los Angeles …and is located 2.1 miles north of the project site." Section 4.12.4.6 notes PRP submitted FAA Form 7460-1, Notice of Construction or Alteration, for the exhaust stack to request that the FAA review PRP for any potential hazards to air navigation. On January 7, 2016, the FAA responded with a determination of no hazard to air navigation. Staff reviewed a copy of the determination provided in Appendix 4.12a. As

noted on page 2, the "determination does include temporary construction equipment cranes, derricks, etc. which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above [90 feet AGL]. Equipment which has a height greater than the studied structure requires separate notice to the FAA." It is likely that a construction crane would extend higher than 90 feet AGL which would require the submittal of an additional 7460-1 form to the FAA.

The SPPE does not identify the potential use of cranes during construction of the proposed project.

DATA REQUESTS

28. If cranes would be used during construction activities, please identify the height(s) of the crane(s).

    Response: It is expected that cranes will not exceed 130 feet AGL in height.

29. If the construction crane(s) would be higher than 90 feet AGL, please provide a copy of the 7460-1 form(s) submitted to the FAA and a copy of FAA's Hazard Determination(s).

    Response: A copy of form 7460-1 that was submitted to the FAA on May 9, 2016 is provided as Attachment DR29-1. As stated in Applicant's May 13, 2016 letter, receipt of the FAA's Hazard Determination is outside of Applicant's control. Therefore, an additional 30 days was requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

BACKGROUND

Thermal Plume

As identified in the SPPE Section 4.12.4.6 (Air Traffic), "[a] thermal plume analysis was conducted to determine the height where the plume velocity equals the established threshold velocity of 10.6 meters per second (m/s)" which was used to determine the potential for thermal plumes to affect the safe operation of aircraft overflights.

Staff continues to advocate that a plume-average vertical velocity of 4.3 m/s, which includes a centerline peak vertical velocity of 8.6 m/s, more properly measures risk of upset conditions to light aircraft. The SPPE does not identify the reasoning for selecting a 10.6 m/s velocity threshold and does not provide any details or calculations in modeling the thermal plumes.

DATA REQUESTS

30. Please justify the use of a thermal plume velocity of 10.6 m/s as the threshold for determining the potential effects to safe operation of light aircraft.

    Response: A detailed discussion of the thermal plume velocity threshold of 10.6 m/s was submitted to the CEC Staff for the Sonoran Energy Project. (See Sonoran Energy Project Petition to Amend Proceeding (02-AFC-01C), Project Owner's Comments on the Preliminary Staff Assessment (TN# 210578).) As discussed in that document, the thermal plume threshold of 4.3 m/s was based on

guidance issued by the Australian Government Civil Aviation Safety Authority (CASA) in 2004.[2] However, that guidance is outdated, and the CASA guidance was revised in 2012[3] to include a new critical plume velocity criterion of 10.6 m/s, along with a revised plume assessment methodology and new mitigation options if the plume assessment shows a potential hazard to aircraft. The new 10.6 m/s criterion is based on Airservices Australia's "Manual of Aviation Meteorology"[4] that defines severe turbulence as vertical wind gusts in excess of 10.6 m/s, which may cause a momentary "loss of control." If CEC Staff wishes to rely on CASA guidance for determining the significance of plume velocities, the current threshold velocity of 10.6 m/s should be used instead of relying exclusively on the outdated 4.3 m/s threshold.

31. Please provide the necessary data (e.g., input parameters, model used) for staff to replicate the thermal plume output modeling and calculations.

Response: The exhaust parameters for the new PRP gas turbine and cooling tower necessary for the thermal plume modeling/calculations (i.e., exhaust temperature, flow rate, and velocity) are summarized in the SPPE, Appendix 4.1B, Tables 4.1B-1 and 4.1B-6, respectively. The PRP gas turbine and cooling tower stack heights and diameters are presented in the SPPE, Appendix 4.1E, Tables 4.1E-2 and 4.1E-4, respectively.

32. Please provide the height AGL where the plume-average vertical velocity equals an established threshold of 4.3 m/s.

Response: In Applicant's May 13, 2016 letter, the Applicant objected to this data request as not reasonably necessary for the Commission decision in this proceeding since vertical velocity of 4.3 m/s is not an accepted standard, but a trigger for further assessment. Without waiving this objection, Applicant provides the following response.

For the new gas turbine proposed for the PRP, the winter ambient condition at maximum load (with air inlet conditioning turned on) results in the highest thermal plume velocity. The height at which the plume velocity equals 4.3 m/s for this operating condition is approximately 1,192 feet above ground level elevation.

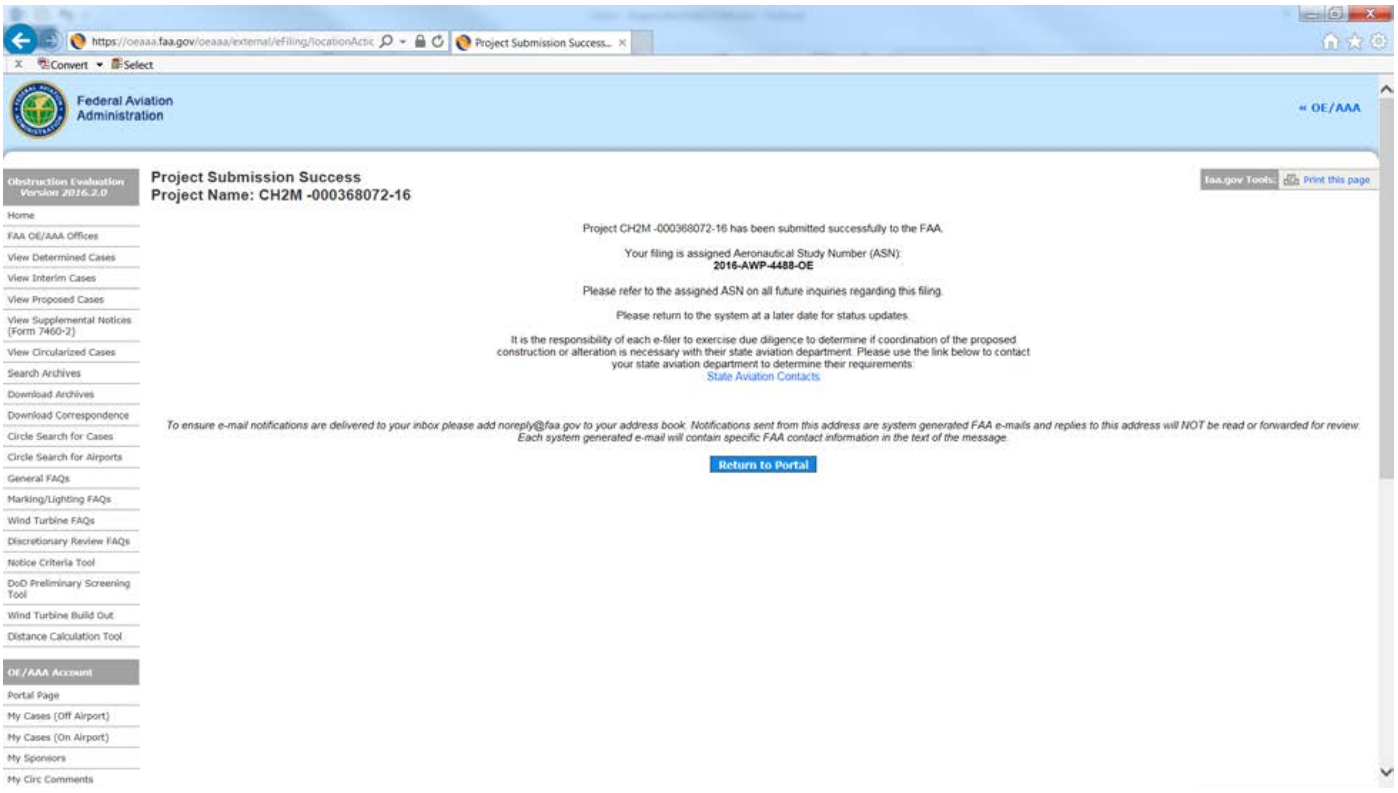
For the new cooling tower proposed for the PRP, the height at which the plume velocity equals 4.3 m/s is approximately 191 feet above ground level elevation. Please note that the merging of the two plumes from the two active cooling tower cells occurs above this height, so there is no issue with merged plumes resulting in an increase in this height for the cooling tower.

[2] Australian Government Civil Aviation Safety Authority (CASA) Advisory Circular AC 139-05(0), June 2004.

[3] Australian Government Civil Aviation Safety Authority (CASA), Advisory Circular (AC) 139-5(1), November 2012. "Plume Rise Assessments". The June 2004 advisory circular is no longer referenced on the CASA website.

[4] Airservices Australia, "The Manual of Aviation Meteorology," 2003.

ATTACHMENT DR29-1,
FAA FORM 7460-1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View Determined Cases
View Interim Cases
View Proposed Cases
View Supplemental Notices (Form 7460-2)
View Circularized Cases
Search Archives
Download Archives
Download Correspondence
Circle Search for Cases
Circle Search for Airports
General FAQs
Marking/Lighting FAQs
Wind Turbine FAQs
Discretionary Review FAQs
Notice Criteria Tool
DoD Preliminary Screening Tool
Wind Turbine Build Out
Distance Calculation Tool
OE/AAA Account
Portal Page
My Cases (Off Airport)
My Cases (On Airport)
My Sponsors
My Circ Comments
Project Submission Success
Project Name: CH2M -000368072-16
faa.gov Tools:
Print this page
Project CH2M -000368072-16 has been submitted successfully to the FAA.
Your filing is assigned Aeronautical Study Number (ASN):
2016-AWP-4488-OE
Please refer to the assigned ASN on all future inquiries regarding this filing.
Please return to the system at a later date for status updates.
It is the responsibility of each e-filer to exercise due diligence to determine if coordination of the proposed construction or alteration is necessary with their state aviation department. Please use the link below to contact your state aviation department to determine their requirements.
State Aviation Contacts
To ensure e-mail notifications are delivered to your inbox please add noreply@faa.gov to your address book. Notifications sent from this address are system generated FAA e-mails and replies to this address will NOT be read or forwarded for review. Each system generated e-mail will contain specific FAA contact information in the text of the message.
Return to Portal

Federal Aviation Administration

« OE/AAA

Notice of Proposed Construction or Alteration - Off Airport

Add a new Case Off Airport - Desk Reference Guide V_2016.2.0

Add a New Case Off Airport for Wind Turbines - Met Towers - Desk Reference Guide V_2016.2.0

Please enter a Duration Days between 0 and 31
Please enter a Current AGL Height between 1 and 9999 in whole feet

Sponsor (person, company, etc. proposing this action)

* **Sponsor:** CH2M HILL

Construction / Alteration Information

* **Notice Of:** Alteration
* **Duration:** Temporary
if Temporary : Months: 18 Days: 31
Work Schedule - Start: (mm/dd/yyyy)
Work Schedule - End: (mm/dd/yyyy)
**For temporary cranes-Does the permanent structure require separate notice to the FAA? To find out, use the Notice Criteria Tool. If separate notice is required, please ensure it is filed. If it is not filed, please state the reason in the Description of Proposal.*
State Filing:

Structure Summary

* **Structure Type:** Crane
* **Structure Name:** Crane
NOTAM Number:
FCC Number:
Prior ASN: - - - OE Validate Prior
Micro-Siting: Yes
**For Wind Turbine/Met Tower-Only check this box if you are re-filing a location previously studied due to micro-siting. The FAA will validate your latitude/longitude coordinates against the prior ASN to ensure the structure has not moved more than 500 feet.*

Structure Details

* **Latitude:** 34 ° 03 ' 32.92 " N
* **Longitude:** 117 ° 46 ' 25.22 " W
* **Horizontal Datum:** NAD83
* **Site Elevation (SE):** 827 (nearest foot)
* **Structure Height (AGL):** 130 (nearest foot)
* **Current Height (AGL):** 130 (nearest foot)
** For notice of alteration or existing provide the current AGL height of the existing structure. Include details in the Description of Proposal*
Minimum Operating Height (AGL): 130 (nearest foot)
** For aeronautical study of a crane or construction equipment the maximum height should be listed above as the Structure Height (AGL). Additionally, provide the minimum operating height to avoid delays if impacts are identified that require negotiation to a reduced height. If the Structure Height and minimum operating height are the same enter the same value in both fields.*
* **Nacelle Height (AGL):** (nearest foot)
** For Wind Turbines 500ft AGL or greater*
* **Requested Marking/Lighting:** Flag Marker
Other :
Aircraft Detection Lighting System(ADLS): Yes
** Only check this box if you are proposing the installation and use of an Aircraft Detection Lighting System*
* **Current Marking/Lighting:** N/A Proposed Structure
Other :
* **Nearest City:** Pomona
* **Nearest State:** California
* **Description of Location:** 1507 Mt Vernon Avenue, Pomona, California 91768 The facility was
On the Project Summary page upload any certified survey.
* **Description of Proposal:** Proposed use of a temporary 130-foot crane for demolition and

Common Frequency Bands

	Low Freq	High Freq	Freq Unit	ERP	ERP Unit
☐	698	806	MHz	1000	W
☐	806	824	MHz	500	W
☐	824	849	MHz	500	W
☐	851	866	MHz	500	W
☐	869	894	MHz	500	W
☐	896	901	MHz	500	W
☐	901	902	MHz	7	W
☐	930	931	MHz	3500	W
☐	931	932	MHz	3500	W
☐	932	932.5	MHz	17	dBW
☐	935	940	MHz	1000	W
☐	940	941	MHz	3500	W
☐	1850	1910	MHz	1640	W
☐	1930	1990	MHz	1640	W
☐	2305	2310	MHz	2000	W
☐	2345	2360	MHz	2000	W

Specific Frequencies

Add Specific Frequency

Clone Prior ASN frequencies
**Note: Selecting this link will only add frequency(ies)/power from the prior ASN listed in Structure Summary. Additional frequency (ies)/power must be manually added before submitting to the FAA if they are to be considered with your new filing.*

Additional Location(s)

Add New Location(s)

☑ I hereby certify that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to mark and/or light the structure in accordance with established marking and lighting standards as necessary.

Transmission System Engineering

BACKGROUND

Transmission Facilities

Applicants should provide a detailed description of the change in design, construction, and operation of any electric transmission facilities, such as generators, transformers, interconnection power lines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the Pomona Repower Project (PRP) to the SCE Ganesha Substation.

DATA REQUESTS

33. Clarify the point of interconnection of the PRP.

    A. If the point of the interconnection is the Ganesha Substation, provide the following:

    - Provide a one-line diagram of the existing Ganesha Substation before the interconnection of the PRP.
    - Provide a one-line diagram of the Ganesha Substation after the addition of the PRP. Show all equipment ratings, including bay arrangement of the breakers, disconnect switches, buses, etc., which are required for the addition of the PRP.

    Response: Please refer to Attachment DR33-1, the Queue Cluster 8, Phase I –Attachment 1. Southern California Edison (SCE) would need to provide the current and revised one-line diagrams of the Ganesha Substation. The Applicant does not have them.

    B. If the point of the interconnection is where the generator tie-line taps into the Ganesha-Simpson 66 kV line, provide a one-line diagram showing all the required equipment with ratings.

    Response: Please refer to Attachment DR33-1, Attachment 1, Item 7 (page 8 of Attachment 1).

    C. In either case, provide a map showing the generator tie-line route, the segment which requires reconductoring, include the length of the reconductored segment.

    Response: The gen-tie route is shown in SPPE Figure 1.2-3. The yellow segment, about 0.2 miles in length, is the segment that would be reconductored.

    D. Clarify the conductor type and rating of the generator tie-line.

    Response: A new 397.5-thousand-circular-mil (kcmil) 66-kV conductor will replace about 0.2 miles of the existing gen-tie line as shown on the referenced figure.

34. Resubmit Figure 2.1-4. Show all equipment ratings including generators, transformers, isolated phase bus, circuit breakers, disconnect switches, etc., that are required for the project.

    Response: The one-line electrical diagram has been revised and is attached as Figure 2.1-4R1.

35. Provide detail drawings for the take-off structures, pole and tower configurations required to interconnect the PRP to the SCE system.

    Response: The take-off structures, pole and tower configurations will be the same as are currently being used by the San Gabriel Facility. (See also Data Response 16).

36. Provide a completed Phase I and/or Phase II Interconnection Study from the California Independent System Operator for the PRP.

    Response: Please refer to Attachment DR33-1, which contains the Queue Cluster 8 Phase I Report.

ATTACHMENT DR33-1

Appendix A – WDT1288

AltaGas Pomona Energy Inc.

Pomona Energy

Queue Cluster 8 Phase I Report

January 15, 2016

This study has been completed in coordination with the California Independent System Operator Corporation (CAISO) per Southern California Edison Company's Wholesale Distribution Access Tariff, Attachment I Generator Interconnection Procedures (GIP)

Table of Contents

Attachments:

1. Interconnection Facilities, Network Upgrades, and Distribution Upgrades
2. Escalated Cost and Time to Construct for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades
3. Allocation of Network Upgrades for Cost Estimates and Maximum Network Upgrade Cost Responsibility
4. Distribution Provider's Interconnection Handbook
5. Short Circuit Duty Calculation Study Results (see Appendix H of the Bulk Area Report)
6. Interconnection Customer Provided Dynamic Data
7. Not Used
8. Subtransmission Assessment Report – Chino 66 kV System

A. Introduction

AltaGas Pomona Energy Inc., the Interconnection Customer (IC), has submitted a completed Interconnection Request (IR) to Southern California Edison Company (SCE) for their proposed Pomona Energy Project (Project). The Project requested a Point of Interconnection (POI) at Southern California Edison Company's (SCE) Ganesha-Simpson 66 kV Line located in Pomona, California. The IC elected that the Project have Full Capacity Deliverability Status (FCDS) for their Project. The IC desires an In-Service Date (ISD) of March 1, 2018 and a Commercial Operation Date (COD) of June 1, 2018. Such dates are specified in the Project's IR submittal. Actual ISD and COD will depend on detailed design, engineering, and construction requirements to interconnect the Project after the Generator Interconnection Agreement (GIA) has been executed and filed at Federal Energy Regulatory Commission (FERC) for acceptance.

In accordance with FERC approved CAISO Tariff Appendix DD Generator Interconnection and Deliverability Allocation Procedures (GIDAP), the Project was grouped with Queue Cluster 8 (QC8) Phase I projects to determine the impacts of the group as well as impacts of the Project on the CAISO Controlled Grid.

Please note that the discussion related to the impacts at the Transmission and Subtransmission levels of the group reside in the SCE Metro Area and Chino Subtransmission Assessment Reports; both are included in the QC8 PI report package. This report focuses only on the impacts or impact contributions of the Project at the local system, and it is not intended to supersede any contractual terms or conditions specified in a GIA.

The report provides the following:

1. Transmission System impacts caused by the Project;
2. Distribution System impacts caused by the Project;
3. System reinforcements necessary to mitigate the adverse impacts caused by the Project under various system conditions;
4. A list of required facilities and a unit cost estimate of the Project's cost responsibility and time to construct[1] these facilities. Such information is provided in Attachment 1 and Attachment 2 as separate documents in the Appendix A Project report package.

All the equipment and facilities comprising the Project's Generating Facility are located in Pomona, California, as disclosed by the IC in its IR, as may have been amended during the Interconnection Study process, which consists of (i) one (1) GE-LM600 Gas Turbine rated at 155.07 MVA with a requested output that will be limited to 99 MW at the generator terminals (net increase of 50 MW at the POI over existing); (ii) the associated infrastructure and step-up transformers, (iii) meters and metering equipment, (iv) appurtenant equipment, and (v) 5.8 MW of auxiliary load.

Based on the technical data provided, internal project losses were identified to be 0.2 MW and auxilary loads defined as 5.8 MW resulting in a net output (as measured at the high-side of the main transformer bank) of 93 MW. Losses on the 0.28 miles 66 kV line (generation tie-line) connecting Project to SCE'

[1] It should be noted that construction is only part of the duration of months specified in the study, which includes detailed engineering, licensing, and other activities required to bring such facilities into service. These durations are from the execution of the GIA, receipt of: all required information, funding, and written authorization to proceed from the IC as will be specified in the GIA to commence the work

Distribution System were found to be 0.2 MW which results in an estimated capacity delivery of 92.8 MW at the Point of Interconnection (POI).

The Project shall consist of the Generating Facility and the IC's Interconnection Facilities as illustrated below in Figure A.1 and summarized below in Table A.1. Figure A.2 provides a map that illustrates the geographic location of the Project.

Figure A.1: Project IC Facilities One-Line Diagram

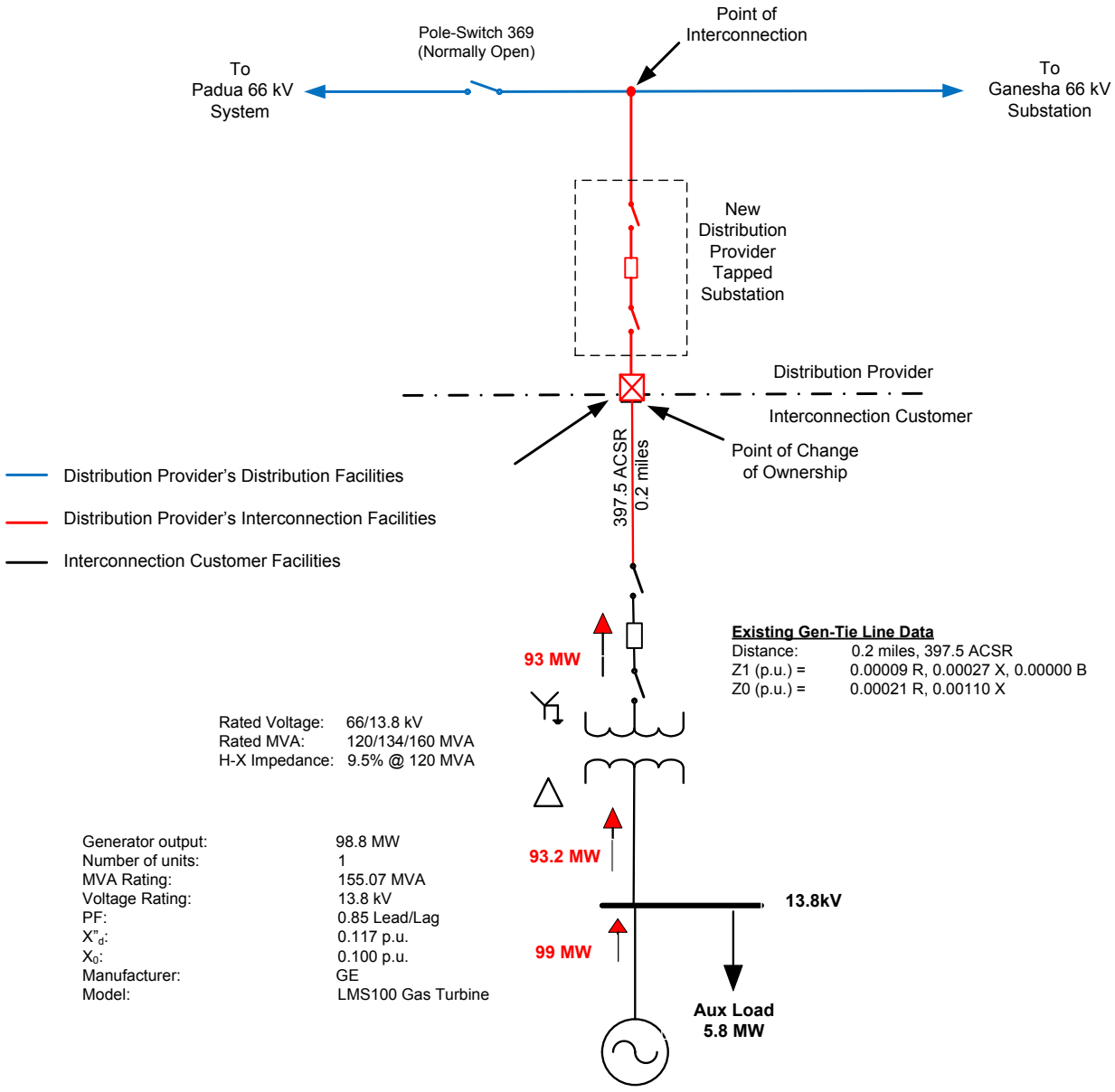


Figure A.2: Project Location Map

Table A.1 Project General Information

Project Location	1507 Mount Vernon Avenue Pomona, CA 91768
Distribution Provider's Planning Area	SCE's Metro Area
Number and Types of Generators	One (1) GE-LMS100, 155.07 MVA Gas Turbine generator with an output of 99 MW at the generating terminal
Requested Maximum Project Output as measured at POI	92.8 MW
Interconnection Voltage	66 kV
POI	Tap connection to segment of existing Ganesha-Simpson 66 kV line
Gen-Tie	0.28 miles, existing 653 and 336 Aluminum Conductor Steel Reinforced (ACSR)
Step-up Transformer(s)	Main Transformer (1): 66/13.8 kV (YG-D), 120/134/160 MVA H-X Impedance Value: 9.5% @ 120 MVA
Estimated Losses on Gen-Tie Facilities (All Gen-Tie Facilities used to deliver to POI)	0.2 MW
Step-Up Transformer(s) Losses	0.2 MW
Total Auxiliary Load	5.8 MW
Estimated Deliver at POI	92.8 MW
Power Factor Range	0.85 Lead/Lag
IC Requested COD	June 1, 2018

B. Study Assumptions

For detailed assumptions regarding the group cluster analysis, please refer to the QC8 Phase I area report. Below are the assumptions specific to the Project.

1. The following is the Plan of Service (POS) assumed for the Project in the Phase I Study:

   The Project was modeled as interconnecting 92.8 MW of generation with an interconnection by tapping to the Ganesha-Simpson 66 kV Line via a proposed new SCE WDT1288 Substation.

   NOTE: Currently there is 42.8 MW of generation connected to SCE's grid through Simpson 66 kV Substation. This study addressed to remove the existing Simpson 66 kV Substation and install SCE WDT1288 Substation to support combined of 92.8 MW of generation to SCE's grid. At the end, this Project will create Ganesha-W1288 66 kV Line.

2. The following facilities will be installed by SCE and **are included** in this Phase I Study:
   - Removal of Simpson 66 kV Substation
   - The 66 kV single circuit breaker SCE WDT1288 Substation.
   - The 66 kV tap line from the Ganesha-Simpson 66 kV line to the SCE WDT1288 Substation.
   - The segment of the Project 66 kV line inside the SCE WDT1288 Substation property line.

- The extension of each of the two generators – owned fiber optic cables inside the SCE WDT1288 Substation and at the Generating Facility.
- FO cable between Ganesha and SCE WDT1288.
- The required retail metering cabinet and retail load meters.

NOTE: SCE installation does not include metering, voltage, and current transformers, and metering cabinet. The SCE meters will be connected to the generator – owned voltage and current transformers to be installed for their CAISO metering.

3. The following facilities will be installed by the IC and **are not included** in this Phase I Study:
   - The 66 kV generation tie-line from the Generating Facility to the last structure outside the SCE WDT1288 Substation property line.
   - The two (2) diversely routed fiber optic cables to provide telecommunication paths required for the line protection relays.
   - The required CAISO metering equipment (voltage and current transformers and CAISO meters).

     NOTE: The metering voltage and current transformers installed for the CAISO metering will also be used for the SCE owned retail load meters.
   - The following line protection relays to be installed at the Generating Facility end of the 66 kV generation tie-line:
     (a) One (1) G.E. L90 current differential relay with dual dedicated digital communication channels on diverse paths to SCE W1288 Substation.
     (b) One (1) SEL 311L current differential relay with dual dedicated digital communication channels on diverse paths to SCE W1288 Substation.

C. Reliability Standards, Study Criteria and Methodology

The generator interconnection studies were conducted to ensure the CAISO-controlled grid is in compliance with the North American Electric Reliability Corporation (NERC) reliability standards, WECC regional criteria, and the CAISO planning standards. Refer to Section C of the Bulk Area Report for details of the applicable reliability standards, study criteria and methodology.

D. Power Flow Reliability Assessment Results

I. Steady State Power Flow Analysis Results – 220 kV and above

1. Thermal Overloads

The study did not identify any power flow issues on the Bulk Electric System not addressed via the use of CAISO Congestion Management or via already approved transmission upgrades. Consequently, the Project is not allocated cost for any Network Upgrades identified to address power flow issues. The details of the power flow analysis are provided in Section D of the Area Report.

2. Voltage Performance

   The Project is required to provide power factor regulation capability to alleviate transmission level voltage constraints. Power factor requirements are 0.95 lead/lag at POI for asynchronous generation and 0.90 lagging to 0.95 leading at generator terminals for synchronous generators as detailed in the Distribution Provider's Interconnection Handbook.

II. Steady State Power Flow Analysis Results – 66 kV

1. Thermal Overloads

   The study identified that the existing 66 kV line segment that tap connects the Simpson 66 kV Substation to the 66 kV line which heads to Ganesha on one side and has a normally open disconnect on the other loads in excess of maximum 336 ACSR conductor capability. The details of the power flow analysis are provided in the Subtransmission Assessment Report.

2. Voltage Performance

   With the Project providing power factor regulation capability, no additional voltage performance issues were identified at the subtransmission voltage level.

3. Required Mitigations

   No mitigations on the Subtransmission System were identified to be required by the Project.

E. Short Circuit Duty Results

Short circuit studies were performed to determine the maximum fault duty impact of adding the QC8 Phase I projects to the transmission system and to ensure system coordination. The fault duties were calculated with and without the projects to identify any equipment overstress conditions. Once overstressed circuit breakers caused by the inclusion of the QC8 projects and/or queued ahead generation, were identified, the fault current contribution from each individual project in QC8 Phase I were determined. Each project in the cluster will be responsible for its share of the upgrade cost based on the rules set forth in CAISO Tariff Appendix DD.

1. Short Circuit Duty Study Input Data

   <u>"Synchronous Gen"</u>
   Data for generation unit:
   $X"_1$ - positive sequence subtransient reactance: 0.117 p.u.
   $X"_2$ - negative sequence subtransient reactance: 0.152 p.u.
   $X"_0$ - zero sequence subtransient reactance: 0.100 p.u.

Generation tie-line:

Length:	0.2 miles
Conductor:	397.5 ACSR
Z_1(p.u.) conductor impedance information:	0.00009 + j 0.00027, B = 0.000000
Z_0(p.u.) conductor impedance information:	0.00021 + j0110000, B = 0.000000

Main Generation Step-Up Transformer

Technical details are provided above in Table A-1.

As the IC did not provide a resistance value associated with the Main Step-Up and pad-mount transformer, a value was derived by using a "typical" X/R ratio for similar equipment. Please note, an X/R value of 50/1 was applied for this study. This value will be required to be submitted prior to the commencement of Phase II.

2. Short Circuit Duty Study Results

   All bus locations where the QC8 Phase I projects increase the short-circuit duty by 0.1 kA or more and where duty was found to be in excess of 60% of the minimum breaker nameplate rating are listed in the QC8 Phase I Area Report (Appendix H). These values have been used to determine if any equipment is overstressed as a result of the inclusion of QC8 Phase I interconnections and corresponding network upgrades, if any.

   The responsibility to finance short circuit related Reliability Network Upgrades identified through a Group Study shall be assigned to all IRs in that Group Study pro rata on the basis of SCD contribution of each Generating Facility.

   Please refer to the QC8 Phase I Subtransmission Assessment Report for the QC8 Phase I breaker evaluation of overstressed circuit breakers triggered with the inclusion of QC8 Phase I without ADNUs.

3. SCE Substations with Ground Grid Duty Concerns

   The short circuit studies flagged for further review a total of twenty-seven (27) existing substations where the QC8 Phase I Projects increased the substation ground grid duty by at least 0.25 kA. Additional review will be performed as part of Phase II to determine if any of these locations will require a detailed ground grid analysis performed as part of project execution once GIAs are in place and projects proceed forward towards interconnection.

4. Preliminary Protection Requirements

   Protection requirements are designed and intended to protect the Distribution Provider's system only. The preliminary protection requirements were based upon the interconnection plan as shown in the one-line diagram depicted in line item #7 in Attachment 1.

   The IC is responsible for the protection of its own system and equipment and must meet the requirements in the Distribution Provider's Interconnection Handbook provided in Attachment 4.

F. Transient Stability Evaluation

1. Area Study Transient Stability Results – 220 kV and above

   With the Project providing power factor correction and including the required mitigation identified above, transient stability performance was found to be acceptable. Refer to enclosed Area Report in the QC8 Phase I report package, for the QC8 PI transient stability evaluation criteria, and assessment results, respectively, at the 220 kV and above voltage level.

2. Area Transient Stability Results – 66 kV or below

   At the 66 kV and below voltage level this study is not performed.

G. Power Factor Requirements

Based on the results of the Study, the Project will need to be designed to maintain a composite power delivery at continuous rated power at a power factor within the range of 0.90 lagging to 0.95 leading at generator terminals for synchronous generators. Additionally, the generation system must be designed to accommodate a VAR schedule provided by SCE. SCE will determine if the VAR schedule is necessary based on future re-arrangements of SCE's Transmission System.

H. Deliverability Assessment Results

1. On Peak Deliverability Assessment

   The Project does not contribute to any deliverability constraint.

2. Required Mitigations

   No Delivery Network Upgrades are required.

I. Interconnection Facilities, Network Upgrades, and Distribution Upgrades

Please see **Attachment 1** for the Distribution Provider's Interconnection Facilities (IF), Reliability Network Upgrades (RNUs), Delivery Network Upgrades (DNUs) and Distribution Upgrades (DUs) allocated to the Project. Please note that SCE will not "reserve" the identified IF for the proposed POI. The identified scope/facilities will be allocated to the Project upon the successful execution of the GIA and SCE has completed the detailed design and engineering of the facilities according to tariff timelines.

J. Cost and Construction Duration Estimates

To determine the cost responsibility of each generation project in QC8 Phase I, the CAISO developed cost allocation factors (Attachment 3) for RNUs, Local Delivery Network Upgrades (LDNUs) and Area Delivery Network Upgrades (ADNUs). Attachment 2[2] provides the 'constant' 2015 dollars and their escalation to the estimated COD year for IF, RNUs, DNUs, and DUs which the Project was allocated cost.

[2] For Energy Storage Projects the Attachment 2 includes upgrade(s) identified from the "Charging" analysis.

For the QC8 Phase I Study, the estimated COD is derived by taking into account time requirements to complete the QC8 Interconnection Process to tender a GIA. A GIA is not scheduled to be tendered until after completion of the QC8 Phase II Studies, Reassessment and Transmission Planning Deliverability (TPD)[3] Allocation Study Process. The QC8 Phase II Study is scheduled to start on May 2016 and be completed by November 2016. Subsequently, the CAISO's Annual Reassessment effort and TPD Allocation Study does not commence until late January or early February 2017. The TPD Allocation Study is scheduled to be completed by April 2017. If the CAISO and SCE can make a determination that the TPD Allocation Study Process outcomes do not change the scope requirements, a letter will be provided at the end of April 2017[4] informing the IC that there are no changes to Network Upgrade requirements and initiating the GIA negotiation process. Otherwise, further re-assessment will be performed for the Project. Any updates to scope, cost and schedule are developed and updated Interconnection Study reports will be issued by the end of July 2017. The GIA negotiations commence after either the issuance of the letter of no change to Network Upgrade requirements at the end of April 2017 or upon issuance of the updated reports at the end of July 2017. Provided the Project does not elect to Park for one (1) year, the letter issued by the CAISO and/or the updated Interconnection Study reports will be used as the basis to proceed with the GIA negotiations. Assuming a three (3) month timeframe for GIA negotiations after the draft GIA has been issued to the IC, an executable GIA is not expected until either early August 2017 or early November 2017 depending on TPD Allocation Study Process results, which requires a decision from the IC to Park or proceed and will determine if the Project needs to complete the CAISO's Reassessment Study. QC8 Phase I assumed the duration of the work element begins in December 2017, which accounts for the GIA and submittal of required funds by the IC.

Based on the above, the requested IC ISD of March 1, 2018 cannot be met due to the estimated 80 month timeline identified as required to construct the DUs and IF needed to physically interconnect the Project to the existing Ganesha-Simpson 66 kV Line (portion requires rebuild). Following the standard interconnection process, the ISD should be modified to reflect October 2023 but may be later advanced to July 2023 depending on TPD Allocation Study Process results. This date may be improved upon provided the IC includes all scope needed to interconnect the project into the Project's environmental efforts. If the IC desires to accelerate timelines, SCE is open to discussing accelerating GIA execution during Results Meetings.

The IC should note that any LDNUs and ADNUs allocated to the Project may be assessed 35% Income Tax Component of Contribution (ITCC) pending the results of the TPD Allocation Study Process several months after the QC Phase II Study Reports are released, in addition to the 35% ITCC assessed for the IF, DUs, and RNUs above the $60K/MW repayment cap allocated to the Project. For your information, Attachment 2 contains a potential ITCC estimate[5] based on the Phase I cost in this study. It does not represent the "maximum ITCC exposure" of the Project. Attachment 3 provides an estimated non-reimbursable RNU

[3] Transmission Plan Deliverability: Deliverability supported by the CAISO's Transmission Plan

[4] The TPD Allocation Process is estimated to complete in April 2017. The actual date may vary

[5] The maximum ITCC exposure applies ITCC (35%) to assigned IF and DU facilities. For Network upgrades, costs that are not subject to transmission credits and/or exceed the $60k/MW cap will be subject to ITCC (35%). For Option A facilities: The maximum ITCC exposure is calculated by applying the following formula: (IF*35%) + ((RNU Costs – (Project MW*($60k/MW)))*35%) + (DU*35%). For Option B facilities: The maximum ITCC exposure is calculated by applying the following formula: (IF*35%) + ((RNU Costs – (Project MW*($60k/MW)))*35%) + (LDNU*35%) + (ADNU*35%) + (DU*35%)

cost that would be subject to ITCC, taking into account the Network Upgrade maximum cost responsibility. The maximum ITCC warranted by the Project will be addressed, calculated, and included during the GIA development phase once the IC submits the TP Deliverability Allocation Study Process options form used to confirm the acceptance, waiver (parking), or denial of the awarded deliverability assigned to the Project.

K. SCE Technical Requirements

The IC is responsible for the protection of its own system and equipment and must meet the requirements in the Distribution Provider's Interconnection Handbook provided in Attachment 4.

L. Sub synchronous Interaction Evaluations

Certain generators or inverter based generators when interconnected within electrical proximity of series capacitor banks on the transmission system are susceptible to Sub-Synchronous Interaction (SI) conditions which must be evaluated. Subsynchronous Interaction evaluations include Subsynchronous Resonance (SSR) and Subsynchronous Torsional Interactions (SSTI) for conventional generation units, and Subsynchronous Control Instability (SSCI) for inverter based generators using power electronic devices (e.g. Solar PV and Wind Turbines).

For projects interconnecting at the 220 kV voltage level and above in close electrical proximity of series capacitor banks on the transmission system a study will need to be performed to evaluate the SI between generating facilities and the transmission system.

The IC is 100% responsible for any studies related to the SSR or SSTI. The only study that SCE will perform (at the IC's expense) is for SSCI; to ensure that the Project does not damage SCE's control systems.

The SSCI study will require that the IC provide a detailed PSCAD model of its Generating Facility and associated control systems, along with the manufacturer representative's contact information. The study will identify any mitigation(s) that will be required as part project execution and need to be completed prior to initial synchronization of the Generating Facility. The study and the proposed mitigation(s) shall be at the expense of the IC.

It is the IC's responsibility to select, purchase, and install turbine/inverter based generators that are compatible with the series compensation in the area.

M. Environmental Evaluation, Permitting, and Licensing

Please see Appendix K of the QC8 Phase I Area Report.

N. Affected Systems Coordination

Please see Section H of the QC8 Phase I Area Report.

O. Items not covered in this study

1. Conceptual Plan of Service

The results provided in this study are based on conceptual engineering and a preliminary POS and are not sufficient for permitting of facilities. The POS is subject to change as part of detailed engineering and design.

2. IC's Technical Data

   The study accuracy and results for the QC8 Phase I Study are contingent upon the accuracy of the technical data provided by the IC. Any changes from the data provided could void the study results.

3. Study Impacts on Neighboring Utilities

   Results or consequences of this QC8 Phase I Study may require additional studies, facility additions, and/or operating procedures to address impacts to neighboring utilities and/or regional forums. For example, impacts may include but are not limited to WECC Path Ratings, short circuit duties outside of the CAISO Controlled Grid, and sub-synchronous resonance (SSR). Refer to Affected Systems Coordination Section of the QC8 Phase I Bulk Area Report for additional information.

4. Use of Distribution Provider's Facilities

   The IC is responsible for acquiring all property rights necessary for the IC's Interconnection Facilities, including those required to cross Distribution Provider facilities and property. This Interconnection Study does not include the method or estimated cost to the IC of Distribution Provider mitigation measures that may be required to accommodate any proposed crossing of Distribution Provider facilities. The crossing of Distribution Provider property rights shall only be permitted upon written agreement between Distribution Provider and the IC at Distribution Provider's sole determination. Any proposed crossing of Distribution Provider property rights will require a separate study and/or evaluation, at the IC's expense, to determine whether such use may be accommodated.

5. Distribution Provider's Interconnection Handbook

   The IC shall be required to adhere to all applicable requirements in the Distribution Provider's Interconnection Handbook. These include, but are not limited to, all applicable protection, voltage regulation, VAR correction, harmonics, switching and tagging, and metering requirements.

6. Western Electricity Coordinating Council (WECC) Policies

   The IC shall be required to adhere to all applicable WECC policies including, but not limited to, the WECC Generating Unit Model Validation Policy.

7. System Protection Coordination

   Adequate Protection coordination will be required between Distribution Provider-owned protection and IC-owned protection. If adequate protection coordination cannot be achieved, then modifications to the IC-owned facilities (i.e., Generation-tie or Substation modifications) may be required to allow for ample protection coordination.

8. Standby Power and Temporary Construction Power

   The QC8 Phase I Study does not address any requirements for standby power or temporary construction power that the Project may require prior to the ISD of the Interconnection Facilities. Should the Project require standby power or temporary construction power from Distribution Provider prior to the ISD of the IF, the IC is responsible to make appropriate arrangements with Distribution Provider to receive and pay for such retail service.

9. Licensing Cost and Estimated Time to Construct Estimate (Duration)

   The estimated licensing cost and durations applied to this Project are based on the Project scope details presented in this study. These estimates are subject to change as Project environmental and real estate elements are further defined. Upon execution of the GIA, additional evaluation including but not limited to preliminary engineering, environmental surveys, and property right checks may enable licensing cost and/or duration updates to be provided.

10. Network/Non-Network Classification of Telecommunication Facilities

    The cost for telecommunication facilities that were identified as part of the IC's Interconnection Facilities was based on an assumption that these facilities would be sited, licensed, and constructed by the IC. The IC will own, operate, maintain, and construct diverse telecommunication paths associated with the IC's generation tie line, excluding terminal equipment at both ends. In addition, the telecommunication requirements for SPS were assumed based on tripping of the generator breaker as opposed to tripping the circuit breakers at the Distribution Provider substation. Due to uncertainties related to telecommunication upgrades for the numerous projects in queue ahead of QC8 Phase I, telecommunication upgrades for higher queued projects were not considered in this study. Depending on the outcome of interconnection studies for higher queued projects, the telecommunication upgrades identified for QC8 Phase I may be reduced. Any changes in these assumptions may affect the cost and schedule for the identified telecommunication facilities.

11. Ground Grid Analysis

    A detailed ground grid analysis will be required as part of the detailed engineering for the Project at the SCE substations whose ground grids were flagged with duty concerns.

12. Applicability

    This document has been prepared to identify the impact(s) contributions of the Project on the SCE electrical system; as well as establish the technical requirements to interconnect the Project to the POI that was evaluated in the QC8 Phase I Study for the Project. Nothing in this report is intended to supersede or establish terms/conditions specified in fully executed GIAs.

13. Process for synchronization/trial operations and commercial operations of the Project

    The IC is reminded that the CAISO has implemented a New Resource Implementation (NRI) process that ensures that a generation resource meets all requirements before synchronization/trial operations and commercial operations. The NRI uses a bucket system for deliverables from the IC that are required to be approved by the CAISO. The first step of this process is to submit an "ISO Initial Contact Information Request form" at least seven (7) months in advance of the planned initial synchronization. Subsequently an NRI project number will be assigned to the project for all future communications with the CAISO. The Distribution Providers

have no involvement in this NRI process except to inform the IC of this process requirement. Further information on the NRI process can be obtained from the CAISO Website using the following links:

New Resource Implementation webpage:
http://www.caiso.com/participate/Pages/NewResourceImplementation/Default.aspx

NRI Checklist:
http://www.caiso.com/Documents/NewResourceImplementationChecklist.xls

NRI Guide:
http://www.caiso.com/Documents/NewResourceImplementationGuide.doc

14. Potential Changes in Cost Responsibility

    The IC is hereby placed on notice that interconnection of its proposed Generating Facility may be dependent upon certain Network Upgrades which are currently the cost responsibility of projects ahead of the proposed Generating Facility in the interconnection application queue. Section 14.2.2 of the GIDAP provides that should Network Upgrades required for queued-ahead projects be included in an executed GIA (or unexecuted GIA filed at FERC) at the time of withdrawal of the earlier queued Generating Facility, and the upgrades are determined to still be needed by later queued generating facilities, the financial responsibility for such upgrades falls to the Distribution Provider. However, if the Network Upgrades required by earlier queued Generating Facilities are not subject to an executed GIA (or unexecuted GIA filed at FERC) the financial responsibility for such upgrades may fall to the IC. Section 14.2.2 also discusses how Network Upgrades required by interconnection customers selecting Option (B) might be required to be reapportioned among interconnection customers selecting Option (B) in the case of withdrawals of earlier queued generating facilities. Changes in costs allocated to the IC could also arise as the result of the CAISO's Reassessment Study process described in Section 7.4 of the GIDAP. SCE encourages the IC to review Sections 7.4 and 14.2.2 of the GIDAP for the rules and processes under which the financial responsibility might be reapportioned to the IC. Potential changes in the IC's cost responsibility resulting from application of the provisions of these Sections of GIDAP are not included in this QC8 Phase I Study, nor are the potential impacts to the IC's maximum cost responsibility outlined.

15. Charging restrictions may occur in the future under future base case overloads.

16. Additional limitations may be driven by the CAISO market and distribution system operations.

17. Please note that SCE has made its best efforts to convey as much information possible based on information provided by the IC about its proposed project. The information contained herein may indicate to ICs that a project of its magnitude may be better suited to interconnect at higher voltage levels, or downsize as to not incur significant amount of restrictions. Any determination to change POIs or downsize is purely at the IC's discretion and would be subject to a SCE material modification review pursuant to the tariff.

Queue Cluster 8 Phase I - Attachment 1
WDT1288– Pomona Storage Project
Interconnection Facilities, Network Upgrades and Distribution Upgrades

Interconnection Facilities, Network Upgrades and Distribution Upgrades [1]

To determine the cost responsibility of each generation project in QC8, the California Independent System Operator Corporation (CAISO) developed cost allocation factors (Attachment 3) for Reliability Network Upgrades and Local Delivery Network Upgrades. The CAISO developed the $/MW cost rate for incremental Area Delivery Network Upgrades. The cost rate multiplied by the requested deliverable MW capacity provides the cost estimate for the Area Delivery Network Upgrades. The Interconnection Facilities are the sole cost responsibility of the Project. The Interconnection Facilities and Network Upgrades are listed below.

1. Interconnection Facilities.

(a) **Interconnection Customer's Interconnection Facilities.** The Interconnection Customer shall:

(i) Install a substation, referred to as ProjectSub in this document, with one (1) 66/13.8 kV main step-up transformer with a 9.5 percent impedance on a 120 MVA base.

(ii) Install 0.2 miles 397.5 kcmil 66 kV line from the Generating Facility to a position designated by the Distribution Provider, outside of the Distribution Provider's SCE WDT1288 Substation, where Interconnection Customer shall install a structure designed and engineered in accordance with the Distribution Provider's specifications ("Last Structure"). This line will be referred to as the ProjectSub–SCE WDT1288 66 kV Line. The right-of-way for the ProjectSub–SCE WDT1288 66 kV Line shall extend up to the edge of the SCE WDT1288 Substation property line.

(Note: The ProjectSub–SCE WDT1288 66 kV Line name is subject to change by the Distribution Provider based upon its transmission line naming criteria. Should ProjectSub–SCE WDT1288 66 kV Line name be changed, this GIA may be amended to reflect such change.)

(iii) Install All Dielectric Self Supporting (ADSS) fiber optic cable on the ProjectSub–SCE WDT1288 66 kV line to a point designated by the Distribution Provider near the Distribution Provider's SCE WDT1288 Substation to provide one of two telecommunication paths required for the line protection scheme, and the Remote Terminal Units ("RTU"). A minimum of eight (8) strands within the ADSS fiber optic cable shall be provided for the Distribution Provider's exclusive use into SCE WDT1288 Substation.

(iv) Install appropriate ADSS fiber optic cable from the Generating Facility to a point designated by the Distribution Provider near the Distribution

[1] Such descriptions are subject to modification to reflect the actual facilities that are constructed and installed following the Distribution Provider's detailed engineering and design, identification of field conditions, and compliance with applicable environmental and permitting requirements.

Provider's SCE WDT1288 Substation to provide the second telecommunication path required for the line protection scheme. A minimum of eight (8) strands within the fiber optic cable shall be provided for the Distribution Provider's exclusive use. The telecommunication path shall meet the Applicable Reliability Standards criteria for diversity.

(v) Own, operate and maintain both telecommunication paths (including fiber optic cables and appurtenant facilities), with the exception of the terminal equipment at both SCE WDT1288 Substation and at the Generating Facility, which terminal equipment will be installed, owned, operated and maintained by the Distribution Provider

(vi) Allow the Distribution Provider to review the Interconnection Customer's telecommunication equipment design and perform inspections to ensure compatibility with the Distribution Provider's terminal equipment and protection engineering requirements; allow the Distribution Provider to perform acceptance testing of the telecommunication equipment and the right to request and/or to perform correction of installation deficiencies.

(vii) Provide required data signals, make available adequate space, facilities, and associated dedicated electrical circuits within a secure building having suitable environmental controls for the installation of the Distribution Provider's RTU in accordance with the Distribution Provider's Interconnection Handbook.

(viii) Make available adequate space, facilities, and associated dedicated electrical circuits within a secure building having suitable environmental controls for the installation of the Distribution Provider's telecommunications terminal equipment in accordance with the Distribution Provider's Interconnection Handbook.

(ix) Extend the ADSS fiber optic cables for the two telecommunication paths to an Interconnection Customer provided and installed patch panel located adjacent to the Distribution Provider's telecommunications terminal equipment specified above.

(x) Install all required CAISO-approved compliant metering equipment at the Generating Facility, in accordance with Section 10 of the CAISO Tariff.

(xi) Install a revenue metering cabinet and revenue metering equipment (typically, voltage and current transformers) at the Generating Facility to meter the Generating Facility retail load, as specified by the Distribution Provider. The metering cabinets must be placed at a location that would allow twenty-four hour access for the Distribution Provider's metering personnel.

(xii) Install relay protection to be specified by the Distribution Provider to match the relay protection used by the Distribution Provider at SCE WDT1288 Substation, in order to protect ProjectSub–SCE WDT1288 66 kV Line, as follows:

1. Two (2) current differential relays connected via diversely routed dedicated digital communication channels to SCE WDT1288 Substation. The make and type of current differential relays will be

specified by the Distribution Provider during detailed engineering of the Distribution Provider's Interconnection Facilities.

(xiii) Install all equipment necessary to comply with the power factor requirements of Article 9.6.1 of the GIA, including the ability to automatically regulate the power factor to a schedule (VAR schedule) in accordance with the Distribution Provider's Interconnection Handbook.

(xiv) Install disconnect facilities in accordance with the Distribution Provider's Interconnection Handbook to comply with the Distribution Provider's switching and tagging procedures.

(b) **Distribution Provider's Interconnection Facilities.** The Distribution Provider shall**:**

(i) **Simpson Substation:** Remove the following:

1. One (1) 27.6/35.8/46 MVA 66-12 kV ASEA transformer bank with associated structures.
2. One (1) 66 kV ASEA HLR-145 600 A circuit breaker with associated structures.
3. One (1) 12 kV YIN FYBS 3000 A circuit breaker with associated structures.
4. Two (2) 66 kV disconnect switches with associated structures.
5. One (1) 66 kV A frame dead end.
6. Approximately 240 feet of conductor for equipped 66 kV position.
7. One (1) 66 kV lightening arrester.
8. Two (2) relays in one rack inside the relay house (total of 8 relays and 4 racks).
9. Three (3) sets of 25 kVA 66 KV-108/63V PTs with associated structures.
10. About 5 switchrack lightings.
11. One (1) set of S&C type SMD-2B 3E fuse with structures.
12. MEER with all associated relays for the line and bank.

(ii) **Power Systems Control.**
Upgrade EMS program to reflect the removal of the Simpson Substation.

NOTE: This removal may be re-classified as Distribution Facilties in the Phase II Study. The classification is dependent on how Simpson Substation was described in the existing agreement.

(iii) **SCE WDT1288 Substation.**

1. Install facilities for a new 66 kV tap substation to terminate the ProjectSub–SCE WDT1288 66 kV Line. This work includes the following:
   a. One (1) 66 kV circuit breaker
   b. One (1) 66 kV dead-end substation structure
   c. Three (3) 66 kV disconnect switches
   d. One (1) Mechanical Electrical Equipment Room
2. Install the following relays to protect the ProjectSub–SCE WDT1288 66 kV Line and the newly formed Ganesha - SCE WDT1288 66 kV Line:
   a. Two (2) current differential relays connected via diversely routed dedicated digital communications channels to the Generating Facility.
   b. Two (2) current differential relays for protection on the Ganesha 66 kV Line.

(iv) **66 kV Sub-transmission Lines.**

1. **Tap Line:** Install an appropriate number of 66 kV sub-transmission structures including insulator/hardware assemblies, switches, and appropriate number of spans of conductor between the Last Structure and the dead-end substation structure at SCE WDT1288 Substation. The actual number and location of the transmission tower structures and spans of conductor cable will be determined by the Distribution Provider following completion of detailed engineering of the Distribution Provider's Interconnection Facilities. The Phase I Interconnection Study assumed nine (9) wood poles, one (1) new 66 kV switch, and 5000 feet 653 Aluminum Conductor Steel Reinforced (ACSR) conductor between SCE WDT1288 and to the tap point on the the Ganesha 66 kV line.

2. **Generation Tie Line:** Based on the data provided by the IC and the close proximity of the IC equipment to the Distribution Provider's SCE WDT1288 Substation, the Phase I Interconnection Study assumed no new structures between SCE WDT1288 Substation and the Facility.

3. **Telecommunications.**
   a. Install all required channel banks, and associated equipment (including terminal equipment), supporting protection and Supervisory Control and Data Acquisition (SCADA) requirements at the Generating Facility and SCE WDT1288 Substation for the interconnection of the Generating Facility. Notwithstanding that

certain telecommunication equipment, including the telecommunications terminal equipment, will be located on the Interconnection Customer's side of the Point of Change of Ownership, the Distribution Provider shall own, operate and maintain such telecommunication equipment as part of the Distribution Provider's Interconnection Facilities.

b. Install appropriate length of fiber optic cable, including conduit and vaults, from the point designated by the Distribution Provider near the Distribution Provider's SCE WDT1288 Substation to extend the fiber optic cable into the communication room at SCE WDT1288 Substation. The actual location and length of fiber optic cable and conduit, and location and number of vaults, will be determined during detailed engineering of the Distribution Provider's Interconnection Facilities.
c. Install appropriate length of fiber optic cable, including conduit and vaults, to extend the Interconnection Customer's diverse telecommunications from the point designated by the Distribution Provider near the Distribution Provider's SCE WDT1288 Substation into the communication room at SCE WDT1288 Substation. The actual location and length of fiber optic cable and conduit, and location and number of vaults, will be determined during detailed engineering of the Distribution Provider's Interconnection Facilities.

(v) **Real Properties, Permits, and Licensing.**
Obtain easements and/or acquire land, obtain licensing and permits, and perform all required environmental activities for the installation of the Distribution Provider's Interconnection Facilities, including any associated substation facilities, sub-transmission lines, and telecommunication equipment.

(vi) **Metering.**
Install revenue meters and appurtenant equipment required to meter the retail load at the Generating Facility. Notwithstanding that the meters and appurtenant equipment will be located on the Interconnection Customer's side of the Point of Change of Ownership, the Distribution Provider shall own, operate and maintain such facilities as part of the Distribution Provider's Interconnection Facilities.

(vii) **Power System Control.**
1. Install one (1) RTU at the Generating Facility to monitor typical generation elements such as MW, MVAR, terminal voltage and circuit breaker status for the Generating Facility and plant auxiliary load, and transmit the information received thereby to the Distribution Provider's grid control center. Notwithstanding that the RTU will be located on the Interconnection Customer's side of the Point of Change of Ownership, the Distribution Provider shall own,

operate and maintain the RTU as part of the Distribution Provider's Interconnection Facilities.

2. Install one (1) RTU at SCE WDT1288 Substation to monitor MW, MVAR, terminal voltage and circuit breaker status and transmit the information received thereby to the Distribution Provider's grid control center.

2. Network Upgrades.

(a) **Stand Alone Network Upgrades.**
None identified in the Phase I Interconnection Study.

(b) **Other Network Upgrades.**

(i) **Distribution Provider's Reliability Network Upgrades.**
None identified in the Phase I Interconnection Study.

(ii) **Distribution Provider's Delivery Network Upgrades.**

1. **Area Delivery Network Upgrades.**
None identified in the Phase I Interconnection Study.

2. **Local Delivery Network Upgrades.**
None identified in the Phase I Interconnection Study.

3. Distribution Upgrades. The Distribution Provider shall:

(a) **Substation:**
Install two (2) current differential relays at Ganesha Substation.

(b) **66 kV Sub-transmission Line.**
Reconductor the existing distribution line from the new tap substation SCE WDT 1288 to Ganesha 66kV Line to 954 SAC (approximately .28 miles).

(c) **Telecommunications.**
1. Install all required lightwave, channel banks, router, CRIAR, and associated equipment at SCE WDT1288 and Ganesha Substation.
2. Install FO cable between SCE WDT1288 Ganesha and Substation.

(d) **Power Systems Control.**
Substation Automation System (SAS) point additions to the existing Ganesha SAS to accommodate new relay protection, status, and alarm.

(e) **Real Properties, Permits, and Licensing.**
Obtain easements and/or acquire land, obtain licensing and permits, and perform all required environmental activities for the installation of the Distribution Upgrades.

(f) **Short Circuit Duty (SCD) Mitigation – DU.**
Refer to Subtransmission Assessment Report for scope information and Attachment 2a for associated costs assigned to the Project, if applicable.

4. Affected System Upgrades.
Not used.

5. Point of Change of Ownership.

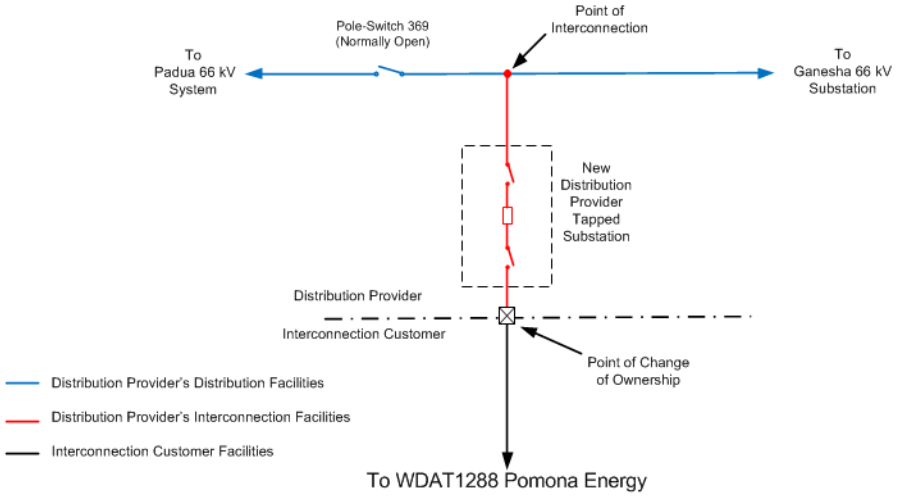
(a) ProjectSub–SCE WDT1288 66 kV Line: The Point of Change of Ownership shall be the point where the conductors of the ProjectSub–SCE WDT1288 66 kV line are attached to the Last Structure, which will be connected on the side of the Last Structure facing SCE WDT1288 Substation. The Interconnection Customer shall own and maintain the Last Structure, the conductors, insulators and jumper loops from such Last Structure to the Interconnection Customer's Generating Facility. The Distribution Provider will own and maintain the SCE WDT1288 Substation, as well as all circuit breakers, disconnects, relay facilities and metering within SCE WDT1288 Substation, together with the line drop, in their entirety, from the Last Structure to SCE WDT1288 Substation. The Distribution Provider will own the insulators that are used to attach the Distribution Provider-owned conductors to the Last Structure.

(b) Telecommunication fiber optic cable: The Point of Change of Ownership shall be the point where the fiber optic cable for the Project Sub–SCE WDT1288 66 kV Line is connected to the Distribution Provider's fiber optic cable in the Distribution Provider's vault.

(c) Telecommunication diverse fiber optic cable: The Point of Change of Ownership shall be the point at a Distribution Provider owned vault, where the Interconnection Customer's fiber optic cable is connected to the Distribution Provider's fiber optic cable.

6. Point of Interconnection. The Distribution Provider's Ganesha 66 kV Line.

7. One-Line Diagram of Interconnection tapping the Ganesha 66 kV Line.



Attachment 2
Escalated Cost and Time to Construct for Interconnection Facilities, Reliability Network Upgrades, Delivery Network Upgrades, and Distribution Upgrades

Please refer to separate document

Attachment 3
Allocation of Network Upgrades for Cost Estimates and Maximum Network Upgrade Cost Responsibility

No Network Upgrade costs were assigned to the Project

Attachment 4
Distribution Provider's Interconnection Handbook

Preliminary Protection Requirements for Interconnection Facilities are outlined in the Distribution Provider's Interconnection Handbook (separate document)

Attachment 5
Short Circuit Duty Calculation Study Results

BUS NAME	BUS KV	PRE CASE		POST CASE		DELTA KA
		X/R	KA	X/R	KA	
Anaverde_1	12.47	12.629	14.227	26.274	16.023	1.8
Anaverde_2	12.47	21.152	8.196	46.198	8.780	0.6
Apple Valley	12.47	10.894	36.715	10.862	36.859	0.1
Calcity_1	12.47	2.370	2.584	2.581	2.727	0.1
Chino_4	12.47	42.472	18.843	41.796	18.952	0.1
Delano	12.47	22.323	17.4904	21.75	17.6585	0.2
Delano_2	12.47	17.6284	17.6996	17.2231	17.8738	0.2
Diamond Bar_E	12.47	60.8918	9.11815	64.979	9.21304	0.1
Diamond Bar_W	12.47	59.1498	8.94843	63.1007	9.04434	0.1
Earlimart	12.47	26.7548	10.0949	30.4523	10.3159	0.2
Estrella	12.47	19.6404	17.346	20.3036	17.888	0.5
Firehouse_2	12.47	44.1462	16.2966	43.4952	16.3803	0.1
Firehouse_3	12.47	45.8774	16.8147	45.2096	16.8978	0.1
Francis	12.47	39.4524	16.5525	38.9216	16.6378	0.1
Ganesha	4.16	295.937	12.6152	423.639	12.705	0.1
Ganesha1	12.47	72.608	17.1513	101.666	17.6605	0.5
Ganesha2	12.47	131.376	9.2362	186.391	9.38566	0.1
Kimball	12.47	19.7947	16.5455	19.6118	16.6265	0.1
La Veta_1	12.47	24.1019	17.4074	24.1837	17.5148	0.1
La Veta_2	12.47	25.9619	15.8252	26.0497	15.9109	0.1
Lancaster_1	12.47	30.9777	18.8521	31.1865	18.9235	0.1
Little Rock	12.47	7.56631	14.8617	8.1843	15.384	0.5
Mariposa	12.47	13.1339	11.301	13.0629	11.3943	0.1
Modena_1	12.47	16.337	17.1816	16.2778	17.257	0.1
Modena_2	12.47	23.3381	18.196	23.2564	18.2781	0.1
Narod1	12.47	74.5747	17.4628	72.9367	17.5599	0.1
Narod2	12.47	16.4612	17.5186	16.3078	17.6166	0.1
Oasis	12.47	14.439	23.827	14.43	24.06	0.2
Orange_1	12.47	17.9092	24.3436	24.8348	18.0932	-6.3
Orange_2	12.47	14.7735	22.3104	22.6621	14.9061	-7.4
Peyton_2	12.47	97.9204	17.2028	100.458	17.3553	0.2
Peyton_3	12.47	91.5209	17.5997	93.8347	17.7667	0.2
Piute	12.47	8.50152	11.1073	8.85	11.3	0.2
Pixley	12.47	7.86035	16.0489	7.76757	16.1356	0.1
Poplar	12.47	10.1993	10.1942	10.1219	10.2724	0.1
Rector	12.47	18.991	8.1128	19.246	8.14593	0.0
Redman	12.47	133.967	6.0024	138.72	6.048	0.0
Rosamond	12.47	49.4233	16.5257	55.161	16.609	0.1
Soquel	12.47	25.1056	18.0725	24.8694	18.1771	0.1
Tortilla1	34.5	49.4923	4.33654	51.2973	4.36178	0.03
Tortilla2	12.47	17.3383	16.5762	17.5721	16.7268	0.2
Trophy	12.47	41.095	16.1671	46.1309	16.5466	0.4
Villa Park_6	12.47	469.655	18.4542	483.902	18.583	0.1
Villa Park_7	12.47	476.328	17.7256	490.825	17.8475	0.1
Washington	12.47	14.4495	16.2068	14.4972	16.3344	0.1

Wheatland	12.47	16.6956	11.0408	16.609	11.1345	0.1

Attachment 6
Interconnection Customer Provided Dynamic Data

The following data were submitted by the IC for Dynamic simulation:

```
#   dynamics data written  Wed May 20 11:08:50 2015
#
#
#   title
# Generation Interconnection
#
# 48 MW THERMAL UNIT
#
genrou   103 "THERMAL    "  13.80  "1 " : #9 mva=77.5560   "tpdo" 9.7000 "tppdo" 0.0500 "tpqo" 3.0000 "tppqo" 0.0500 "h" 0.9890 "d" 0.0000
"ld" 2.5600 /
 "lq" 2.3400 "lpd" 0.2670 "lpq" 0.3800 "lppd" 0.1970 "ll" 0.1410 "s1" 1.1100 "s12" 1.7900 "ra" 0.0013 "rcomp" 0.0000 "xcomp" 0.0000 "accel"
0.5000
rexs    103 "THERMAL    "  13.80  "1 " : #9 "tr" 0.022000 "kvp"  26.5800 "kvi"  26.5800 "vimax" 0.100000 "ta" 0.010000 "tb1" 0.0 "tc1" 0.0 "tb2"
0.0 "tc2" 0.0 "vrmax"  47.0000 /
 "vrmin" 0.0 "kf" 0.050000 "tf" 0.0 "tf1" 0.600000 "tf2"   1.2000 "fbf" 1.000000 "kip" 1.000000 "kii"   1.8320 "tp" 0.0 "vfmax"  47.0000 /
 "vfmin" 0.0 "kh"   1.4959 "ke" 1.000000 "te"   1.2000 "kc" 0.470000 "kd"   1.6450 "e1"   7.1000 "se1" 0.410000 "e2"   9.4000 "se2"   4.0100 /
 "rcomp" 0.0 "xcomp" 0.0 "nvphz" 0.0 "kvphz"   1.0900 "flimf" 0.0 "xc" 0.0 "vcmax" 0.0 "kefd" 0.0 "limflg" 0.0
ggov1    103 "THERMAL    "  13.80  "1 " : #9 mwcap=102.8000 "r" 0.050000 "rselect" 1.000000 "tpelec" 1.000000 "maxerr" 0.023000 "minerr" -
0.023000 "kpgov"   2.4000 "kigov"   1.1000 "kdgov" 0.0 "tdgov" 1.000000 "vmax" 1.000000 /
 "vmin" 0.240000 "tact" 0.400000 "kturb"   2.7000 "wfnl" 0.260000 "tb" 0.100000 "tc" 0.0 "flag" 0.0 "teng" 0.0 "tfload" 0.300000 "kpload"
1.000000 /
 "kiload"   3.3000 "ldref" 1.000000 "dm" 0.0 "ropen"  99.0000 "rclose" -99.0000 "kimw" 0.0 "pmwset"  48.0000 "aset"  99.0000 "ka"  10.0000
"ta" 0.100000 /
 "db" 0.0 "tsa" 1.000000 "tsb" 1.000000 "rup"  99.0000 "rdown" -99.0000
pss2b    103 "THERMAL    "  13.80  "1 " : #9 "j1" 1.000000 "k1" 0.0 "j2"   3.0000 "k2" 0.0 "vsi1max"   999.00 "vsi1min"  -999.00 "tw1"   2.0000
"tw2"   2.0000 "vsi2max"   999.00 "vsi2min"  -999.00 /
 "tw3"   2.0000 "tw4" 0.0 "t6" 0.0 "t7"   2.0000 "ks2" 0.746000 "ks3" 1.000000 "t8" 0.500000 "t9" 0.100000 "n" 1.000000 "m"   5.0000 /
 "ks1"  15.0000 "t1" 0.150000 "t2" 0.030000 "t3" 0.150000 "t4" 0.030000 "t10" 0.070000 "t11" 0.010000 "vstmax" 0.100000 "vstmin" -
0.100000 "a" 1.000000 /
 "ta" 0.0 "tb" 0.0 "ks4" 1.000000
#
#BATTERY STORAGE UNIT
#
lodrep
models
gencls           101 "POI    "  66.0  "1 "  : #9 mva=100.0000  10.0000 0.0000 0.0000 1.0000 0.0000 0.0000 0.0000
regc_a           104 "BATTERY    "   0.48  "1 "  : #9 mva=35.2000    0.000000  10.000 0.900000 0.500000 1.000000   1.1000 0.800000 0.400000 -
0.33 0.010000 /
 0.020000 0.015000   999.00  -999.00 0.0
reec_b           104 "BATTERY    "   0.48  "1 "  : #9   35.2000 0.900000   1.1000 0.016680 -0.10000 0.10000 3.000000   1.000  -1.000   1.0000 /
 0.016680 0.330000 -0.330000   1.1500 0.850000 0.200000  10.0000 0.0200000  0.6000 0.016680 /
  0.4500 -0.4500 1.000000 -1.0   1.1100 0.016680 0.0 0.0 0.000000 0.0
lhvrt            104 "BATTERY    "   0.48  "1 "  : #8 1.000000 0.220000 0.100000 -0.200000 -0.300000 0.0 0.0 0.0 0.0 0.0 /
 0.0 0.080000  30.0000   2.0000 0.600000 0.008334 0.008334 0.008334 0.008334 0.008334 /
 0.008334 0.0
lhfrt            104 "BATTERY    "   0.48 "1 "  101 "POI    "  66.0  "1 "  1  : #9  60.0000   6.0000   2.4000  -3.6000  -6.0000 0.0 0.0 0.0 0.0 0.0 /
 0.0 0.100000   2.0000   2.0000 0.100000 0.008334 0.008334 0.008334 0.008334 0.008334 /
 0.008334 0.0
#
#  template for PSLF dynamic models
#
# genrou : tpdo tppdo tpqo tppqo h d ld lq lpd lpq lppd ll s1 s12 ra rcomp xcomp accel
# rexs : tr kvp kvi vimax ta tb1 tc1 tb2 tc2 vrmax vrmin kf tf tf1 tf2 fbf kip kii tp vfmax vfmin kh ke te kc kd e1 se1 e2 se2 rcomp xcomp nvphz
kvphz flimf xc vcmax kefd limflg
# ggov1 : r rselect tpelec maxerr minerr kpgov kigov kdgov tdgov vmax vmin tact kturb wfnl tb tc flag teng tfload kpload kiload ldref dm ropen
rclose kimw pmwset aset ka ta db tsa tsb rup rdown
# pss2b : j1 k1 j2 k2 vsi1max vsi1min tw1 tw2 vsi2max vsi2min tw3 tw4 t6 t7 ks2 ks3 t8 t9 n m ks1 t1 t2 t3 t4 t10 t11 vstmax vstmin a ta tb ks4
```

Attachment 7
Not Used

Queue Cluster 8 Phase I

Attachment 8

Subtransmission Assessment Report

Chino 66 kV System

January 15, 2016

Table of Contents

1. Purpose

Impacts of QC8 Projects on the CAISO controlled transmission grid are addressed in the SCE Metro Area Report. Because some QC8 projects are seeking to interconnect distribution facilities served out of the Chino 66 kV Subtransmission System, which is not under CAISO control, additional analysis is required to evaluate the 66 kV subtransmission system performance. Individual project details are provided in the project's corresponding Appendix A. These additional analyses focus on the QC8 Interconnection Request (IR) in the Chino 66 kV Subtransmission System and consider various levels of load demand with maximum generation dispatch within the local subtransmission system.

The purpose of this study is to determine the adequacy of SCE's electrical 66 kV subtransmission system (non-CAISO controlled) to accommodate the IR and to identify system limitations that would require Distribution Upgrades on the subtransmission system to mitigate any identified impacts. The study included all existing and queued ahead generation projects in the Chino 66 kV Subtransmission System, regardless of the in-service dates of such prior queued generation projects. Results of the study will be used as the basis to determine appropriate cost allocation for the identified Distribution Upgrades taking into account every project in this cluster. It is important to note that withdrawals of projects in this cluster could result in reallocating costs among the remaining projects.

The accuracy of the subtransmission assessment results are contingent on the accuracy of the technical data provided as part of the IR. Any changes from the data provided as allowed by the tariff would need to be submitted in Appendix B prior to commencement of the Phase II study. The study report provides detailed study assumptions and conditions of the Chino 66 kV Subtransmission System in which the study was performed. The single QC8 Project is seeking interconnection to distribution served out of the Chino 66 kV Subtransmission System with the connection requested to be at the 66 kV voltage level.

This Subtransmission Assessment Report provides the following:

- Subtransmission system impacts caused by the addition of the QC8 Phase I project requesting interconnection in the Chino 66 kV Subtransmission System;
- A unit cost estimate of the cost of any identified subtransmission level Distribution Upgrades

To determine the system impacts caused by the QC8 Phase I project seeking interconnection in the Chino 66 kV Subtransmission System, the following studies were performed:

- Steady State Power Flow Analyses
- Subtransmission level Short Circuit Duty Analyses

2. QC8 Phase I Generation Project Interconnection Information

The single QC8 IR, totaling 99 MW requested interconnection to the Chino 66 kV Subtransmission System. The request represents an incremental output of 50 MW over the current project output. Table 2 summarizes the new QC8 generator project with essential data obtained from the SCE WDAT Generation Queue.

Table 2: SCE QC8 Phase I Project at Chino 66 kV System

CAISO Queue	Point of Interconnection (CAISO Delivery Point)	Full Capacity Energy Only	Fuel	Max MW
WDT 1288	Ganesha-Simpson 66 kV Line	FC	Gas	92.8
			Total QC8 Generation	**92.8**

3. System Assumptions

3.1 Planning Criteria

The generator interconnection studies were conducted utilizing SCE's Reliability Planning Criteria. More specifically, the main criteria applicable to this study are as follows:

Power Flow Analysis

The following contingencies are considered for subtransmission lines and 220/66 kV transformer banks ("A-banks"):

- Single Contingencies (N-1) – Loss of one line or one A-bank
- Double Contingencies (N-2) – Common-mode loss of two 66 kV lines

The following reliability criteria are used:

Subtransmission Lines	Base-Case	Limiting Component Normal Rating
	N-1 and N-2	Limiting Component Emergency Rating
220/66 kV Transformer banks (A-banks)	Base Case	Normal Loading Rating*
	Long Term Emergency Loading Limit (LTELL) & Short Term Emergency Loading Limit (STELL)	As defined by SCE Operating Bulletin

3.1.1. Normal Overloads

Normal overloads are those that exceed 100 percent of normal facility rating with all facilities in-service (base case), except where otherwise indicated, such as A-bank loading for charging cases. Mitigation will be required to address any identified normal overload triggered by the inclusion of QC8.

3.1.2. Contingency Overloads

Contingency overloads are those that exceed 100 percent of emergency ratings under outage conditions. Mitigation will be required to address any identified contingency overload triggered by the inclusion of QC8.

3.1.3. Voltage Criteria

Voltage performance under single and double outage conditions will be limited to 5 percent and 10 percent deviation respectively.

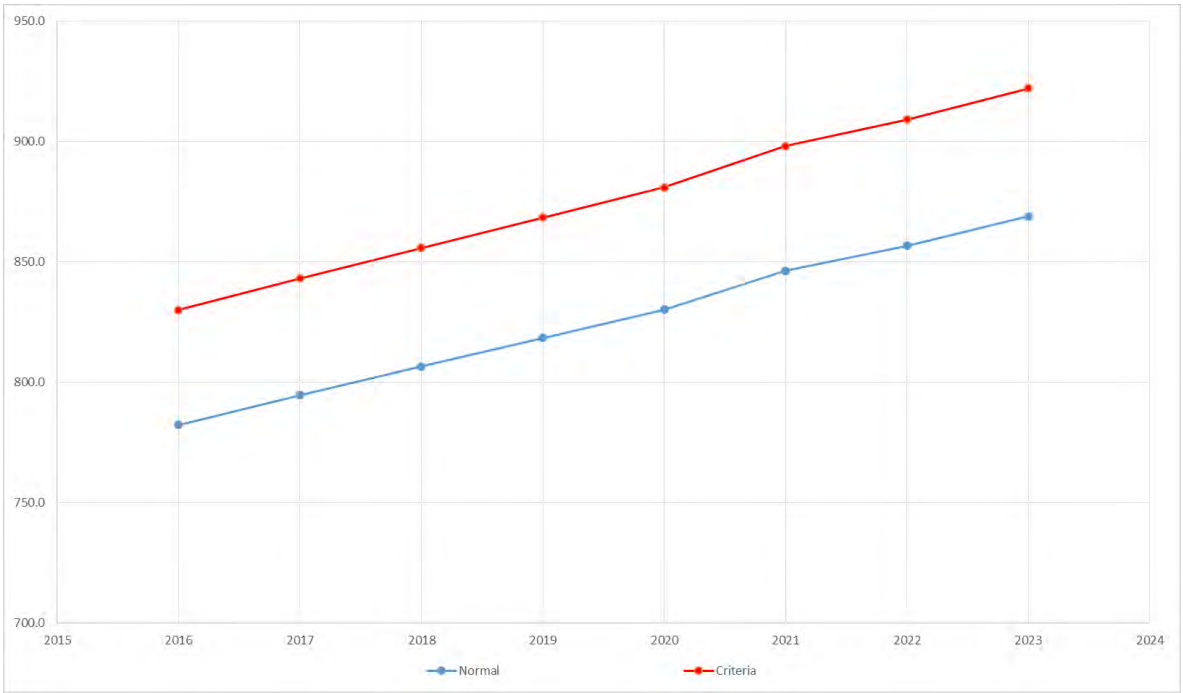
3.1.4. Power Factor Criteria

All projects will need to comply with SCE's Interconnection Handbook requirements.

3.2 Load Assumptions

The load assumptions used for local subtransmission system initially considered a 2019 load forecast. The 2019 load forecast was derived using SCE's Distribution Engineering A-bank Planning load forecast as well as the individual load serving substation (B-bank) load forecast for 2016-2023. Figure 3.2.1 below provides the local subtransmission load forecast values at the A-bank level under Normal and Criteria Planning assumptions.

Figure 3.2.1
Chino A-bank Load Forecast



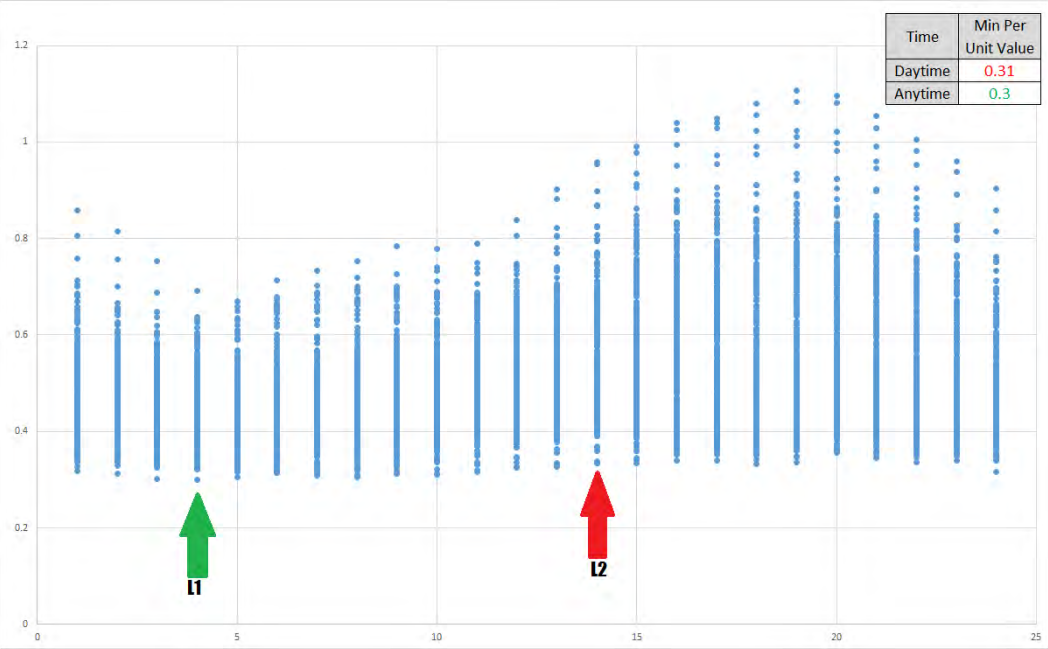
The A-bank Normal and Criteria load forecast was distributed to each individual B-bank substation (lower voltage substations served from the 220/66 kV substation) on a pro-rata basis. The resulting individual B-bank substation values are shown below in Table 3.2.1 and were used as the basis for evaluating subtransmission system performance.

Table 3.2.1
Local Subtransmission System Load Assumptions

Chino System Load Serving Substations	2019	
	Normal	Criteria
Chino	94.0	99.8
Diamond Bar	42.6	45.2
Firehouse	99.0	105.1
Francis	85.8	91.1
Ganesha	73.2	77.6
Grand Crossing	5.3	5.6
Kimball	77.7	82.4
Narod	99.0	105.0
Peyton	89.4	94.9
Plastic	18.6	19.8
Sopipe	3.5	3.7
Soquel	55.1	58.5
Trophy	75.3	79.9
Total Station Load	**818.5**	**868.5**

To model year 2019 hourly forecast load performance, historical year 2013 A-bank data were obtained and normalized (maximum historical load = 1.0). This was done in order to provide a means for scaling to reflect comparable hourly performance with a year 2019 load forecast. Shown below, Figure 3.2.2, is the normalized local subtransmission system A-bank hourly load performance.

Figure 3.2.2
Normalized Local Subtransmission System
A-bank Hourly Load Performance



The assessment evaluating maximum generation output considered the minimum load for the study. Utilizing the normalized hourly load performance shown above in Figure 3.2.2, the lowest per-unit load was applied to define two maximum generation output scenarios. The first scenario would use the minimum per-unit load during the daytime (shown as L1) while the second scenario would use the minimum value identified at any time of the day (shown as L2).

These per-unit values were used to define the specific load distribution assumptions at each load serving substation. These values were used in the base cases developed for each load scenario. The base cases multiplied the per-unit value identified for the respective load scenario, L1 and L2, with the "Normal" load distribution shown in Table 3.2.1. The resulting minimum load distribution used in the power flow study at each individual B-bank substation is provided below in Table 3.2.2.

Table 3.2.2
B-bank Load Distribution

Chino System Load	Minimum Load	
	0.31 PU	0.30 PU
	L1	L2
Chino	29.2	28.2
Diamond Bar	13.2	12.8
Firehouse	30.7	29.7
Francis	26.6	25.7
Ganesha	22.7	22.0
Grand Crossing	1.6	1.6
Kimball	24.1	23.3
Narod	30.7	29.7
Peyton	27.7	26.8
Plastic	5.8	5.6
Sopipe	1.1	1.1
Soquel	17.1	16.5
Trophy	23.3	22.6
Chino Total Load	**253.7**	**245.5**

3.3 Generation Assumptions

Generation dispatch of local subtransmission system generation (existing and queued) was done in a manner that would provide for a stressed export of generation in the system. In order to assess the subtransmission system and stress it to its maximum capacity, all local generation resources were dispatched. The existing and queued

ahead local generation that was turned on for the Chino 66 kV Subtransmission System assessment is listed in the table below.

Table 3.3.1
Existing and Queued Ahead Local Generation in Chino 66 kV Subtransmission System

Generation	Resource	Size (MW)
WDT997QFC (Sanigen)*	Gas	12.5 MW
WDT1126QFC (Trophy)*	Hydro	0.12 MW
WDT1250QFC (Simpson)*	Cogen	42.8 MW
Cimgen*	Cogen	27.7 MW
WDT327	Solar PV	1.0 MW
WDT426	Solar PV	2.0 MW
GFID2886	Diesel	1.0 MW
WDT1053	Solar PV	1.49 MW
WDT1168FT	Solar PV	1.88 MW
WDT1169FT	Solar PV	2.0 MW
WDT1170FT	Solar PV	1.5 MW
GFID2912	Diesel	0.75 MW
GFID8063	Cogen	4.26 MW
GFID8124	Solar PV	0.16 MW
GFID8236	Battery Storage	0.01 MW
GFID8255	Battery Storage	0.07 MW
GFID8214	Solar PV	1.28 MW
	TOTAL MW	100.52 MW

* Project is in-service

3.4 Subtransmission System Assumptions

The QC8 Phase I Study modeled the existing Chino Substation without any additional upgrades. The study considered existing system operating bulletins/procedures that transfer system load from Chino to adjacent systems under certain outage conditions.

3.5 Study Methodology

3.5.1. Power Flow Study

While it is impractical to study all combinations of system load and generation levels during all seasons and at all times of the day, the base cases were developed to represent stressed scenarios of loading and generation conditions for the study group area. This assessment is comprised of power flow study scenarios that represent load conditions reflected in Table 3.2.2. A Pre-case without the inclusion of the QC8 projects and a Post-case with the inclusion of QC8 projects were modeled for the applicable load conditions reflected in Table 3.2.2. Mitigation measures will be recommended for any power flow criteria violation identified to be triggered with the inclusion of QC8 projects. The critical outage conditions evaluated are provided below in Table 3.5.1.

Table 3.5.1
List of Contingencies Evaluated

#	Contingency Type	Contingency Description
1	Base Case	No Outage
2	N-1	Loss of Ganesha-Simpson 66 kV Line
3	N-1	Loss of Chino (No. 1A) 220/66 kV Transformer Bank
4	N-1	Loss of Chino (No. 2A) 220/66 kV Transformer Bank
5	N-1	Loss of Chino (No. 3A) 220/66 kV Transformer Bank
6	N-1	Loss of Chino-Diamond Bar-Ganesha 66 kV Line
7	N-1	Loss of Chino-Ganesha-Peyton 66 kV Line
8	N-1	Loss of Chino-Ganesha-Plastic 66 kV Line
9	N-1	Loss of Ganesha-Trophy 66 kV Line

3.5.2. Post Transient Voltage Study

The power flow study voltage results were used as a screen to identify those contingencies that may require additional post-transient voltage studies. Single and double contingencies identified in the power flow to have a voltage drop in excess of 5% were selected for post-transient voltage analysis. The Post-transient voltage studies compare voltage deviations to the reliability requirements for single and double contingency outages on the subtransmission system. Mitigation measures will be recommended for any criteria violation identified to be triggered with the inclusion of QC8 projects.

3.5.3. Short Circuit Duty Study

To determine the impact on short-circuit duty within the subtransmission system after inclusion of all QC8 projects (application queue), the study calculated the maximum symmetrical three-phase-to-ground (3PH) and single-line-to-ground (SLG) short-circuit duties. Generation and transformer data represented in the generator and transformer data sheets provided by the customers were utilized. Bus locations where short-circuit duty is increased with the inclusion of all QC8 projects by at least 0.1 kA and the duty is in excess of 60% of the minimum breaker nameplate rating are flagged for further review. Upon completion of the detailed circuit breaker review, circuit breakers exposed to fault

currents in excess of 100 percent of their interrupting capacities will need to be replaced or upgraded, whichever is appropriate. Cost for breaker upgrades or replacements will be allocated to QC8 projects if the study identifies QC8 as the triggering entity.

The short circuit studies also identified substations within the subtransmission where the QC8 Phase I projects increased the substation ground grid duty by 0.25 kA or more.

4. Power Flow Results

4.1 Maximum Generation Coupled with Minimum Load Conditions

The generating facility study was performed using the load assumptions discussed above in Table 3.2.2. Study results for each applicable time-block are provided below.

4.1.1 Base Case

A base case overload was identified during the L1 Minimum Load assumption with the addition of the QC8 Phase I project for the 1A, 2A, and 3A 220/66 kV Transformer Banks. The individual Appendix A reports will provide details pertaining to cost allocation. See section 4.4.a for mitigation details.

4.1.2 Contingency: Time Block L1 (Anytime/Off Peak)

The study identified loading on the Chino A-Banks following the loss of either of the A-Banks to be well within the normal rating (rating 1 is 285) as well as the long-term emergency rating (rating 2 is 336).

4.1.3 Contingency: Time Block L2 (Day Time/Peak)

Loading on the A-Bank was identified to increase during this time block. As such the loss of either of the A-Banks results in loadings that are in excess of the normal ratings and long-term emergency ratings. An existing project exists to add an additional A-Bank to correct this overloading issue. Section 4.4.a shows mitigation details regarding these overloads.

4.2 Maximum Energy Storage Coupled with Minimum Local Subtransmission Generation Conditions

No QC8 projects in this system involve energy storage.

4.3 Power Flow Study Observations, Notes, and Restriction to Energy Storage

(a) Subtransmission Power Flow Plots

Please refer to the Supplement 1 for subtransmission level power flow plots.

(b) Metro Bulk Area Export Limits

Please refer to the Metro Bulk Area Report for impacts on the CAISO controlled system

(c) N-1-1 Outages

There is an operational risk associated with non-common corridor N-2 outages. Loss of such two lines is considered an N-1-1 contingency event which allows for manual system adjustments between contingencies if an overload is anticipated for the next contingency that follows the first contingency (N-1). Consequently, it is important to note that under

such potential conditions, curtailment of generation output will be implemented, if required, in advance of the second outage to ensure potential overload is properly mitigated.

(d) Energy Storage

No QC8 projects in this system involve energy storage.

4.4 Subtransmission Assessment Mitigations

(a) Maximum Generation Coupled with Minimum Load Conditions

Based on the overloads identified in section 4.1, the proposed mitigations are shown in Table 4.4.1 for L1 and Table 4.4.2 for L2:

Table 4.4.1
Power Flow Results for L1

L1 (Anytime): Power Flow Overloads								
Overloaded Component	Rating (Amps or MVA)	Pre-Project Loading (Amps or MVA to % Rating)		Post-Project Loading (Amps or MVA to % Rating)		% Change from Pre-Project Loading	Contingency	Proposed Upgrade/Mitigation
Category A (N-0) Overloads								
Ganesha-Simpson 66 kV Line	603.6 Amps	323.17	53.5%	776.5	128.6%	75.1%	Base Case	Reconductor Line Segment
Category B (N-1) Overloads								
None Triggered by QC8								
Category C (N-2) Overloads								
None Triggered by QC8								

Table 4.4.2
Overloads with Proposed Mitigations for L2

L2 (Daytime): Power Flow Overloads								
Overloaded Component	Rating (Amps or MVA)	Pre-Project Loading (Amps or MVA to % Rating)		Post-Project Loading (Amps or MVA to % Rating)		% Change from Pre-Project Loading	Contingency	Proposed Upgrade/Mitigation
Category A (N-0) Overloads								
Ganesha-Simpson 66 kV Line	603.6 Amps	324.46	53.8%	782.49	129.6%	75.8%	Base Case	Reconductor Line Segment
Category B (N-1) Overloads								
None Triggered by QC8								
Category C (N-2) Overloads								
None Triggered by QC8								

(b) Maximum Energy Storage Coupled with Minimum Local Subtransmission Generation Conditions

There were no QC8 Projects in this system that involved energy storage.

5. Post Transient Voltage Stability Assessment Results

Review of the power flow study results identified that no voltage deviation exceeded the criteria discussed above. As a result, no further post-transient voltage stability analysis was performed. Please refer to the Metro Bulk Area Report for the post-transient analysis performed on the bulk system.

6. Short Circuit Duty Results

6.1 Application Queue – Subtransmission

The application queue three-phase-to-ground and single-phase-to-ground fault currents for the Chino 66 kV Subtransmission System are shown below in Table 6.1.1 and Table 6.1.2 respectively.

Table 6.1.1
Application Queue Three-Phase-To-Ground Short-Circuit Duty Results
Chino Subtransmission System

Bus Name	Bus kV	Pre-Case			Post-Case			Delta kA
		X/R	kA	Eff kA	X/R	kA	Eff kA	
Chino	66	54.1	32.5	45.8	42.2	35.4	47.8	2.0
Cimgen	66	16.5	23.8	24.0	14.9	25.3	25.3	1.3
Diamond Bar	66	6.3	10.5	10.5	6.1	11.6	11.6	1.1
Firehouse	66	7.9	11.4	11.4	7.6	11.7	11.7	0.3
Francis	66	6.8	11.7	11.7	6.5	12.1	12.1	0.4
Ganesha	66	10.1	15.0	15.0	11.6	19.0	19.0	4.0
Grand Crossing	66	6.7	9.8	9.8	6.6	11.0	11.0	1.2
Kimball	66	7.6	10.6	10.6	7.4	10.8	10.8	0.2
Narod	66	9.2	17.7	17.7	8.6	18.5	18.5	0.8
Peyton	66	11.3	17.9	17.9	10.8	19.4	19.4	1.5
Plastic	66	10.5	18.8	18.8	9.9	20.3	20.3	1.5
Sanigen	66	6.9	10.1	10.1	6.8	11.4	11.4	1.3
Simpson	66	9.1	14.2	14.2	10.9	18.2	18.2	4.0
Sopipe	66	6.4	9.6	9.6	6.3	10.7	10.7	1.1
Soquel	66	9.9	16.9	16.9	9.3	17.7	17.7	0.8
Trophy	66	7.6	10.6	10.6	7.7	12.1	12.1	1.5

Table 6.1.2
Application Queue Single-Phase-To-Ground Short-Circuit Duty Results
Chino Subtransmission System

Bus Name	Bus kV	Pre-Case			Post-Case			Delta kA
		X/R	kA	Eff kA	X/R	kA	Eff kA	
Chino	66	28.9	18.6	23.2	23.6	21.1	25.1	1.9
Cimgen	66	15.2	13.7	13.7	13.4	15.0	15.0	1.3
Diamond Bar	66	7.5	5.9	5.9	6.6	7.4	7.4	1.5
Firehouse	66	8.1	5.8	5.8	7.7	6.0	6.0	0.2
Francis	66	9.0	8.0	8.0	8.5	8.3	8.3	0.3
Ganesha	66	11.8	7.3	7.3	12.9	16.0	16.0	8.7
Grand Crossing	66	8.4	5.7	5.7	7.2	7.3	7.3	1.6
Kimball	66	8.4	5.3	5.3	8.1	5.5	5.5	0.2
Narod	66	8.7	10.0	10.0	8.1	10.5	10.5	0.5
Peyton	66	10.3	9.5	9.5	8.8	11.3	11.3	1.8
Plastic	66	8.8	10.7	10.7	7.3	13.6	13.6	2.9
Sanigen	66	10.2	6.4	6.4	8.5	8.3	8.3	1.9
Simpson	66	10.8	6.8	6.8	13.4	16.5	16.5	9.7
Sopipe	66	8.0	5.5	5.5	6.9	7.0	7.0	1.5
Soquel	66	9.5	9.2	9.2	8.7	10.0	10.0	0.8
Trophy	66	10.6	6.5	6.5	9.0	8.8	8.8	2.3

The QC8 Phase I breaker evaluations identified that the inclusion of QC8 projects did not trigger the need for SCD mitigation at the subtransmission level in the Chino System.

6.2 Application Queue – Distribution

6.2.1 SCD Mitigations Required

The QC8 Phase I SCD results and corresponding circuit breaker evaluations identified that the inclusion of the QC8 Phase I projects triggered the need for SCD mitigation at the following distribution substations –Chino 12 kV, Ganesha 12 kV and Peyton 12 kV. The effective three-phase-to-ground and single-phase-to-ground duties are shown in Table 6.2.1 and Table 6.2.2 respectively.

Table 6.2.1
Application Queue Three-Phase-To-Ground Short-Circuit Duty at Distribution Locations Requiring Phase I Triggered SCD Mitigation

Bus Name	Bus kV	Pre-Case			Post-Case			Delta kA
		X/R	kA	Eff kA	X/R	kA	Eff kA	
Chino	12.47	29.50	18.08	20.80	28.95	18.24	20.97	0.17
Ganesha	12.47	51.60	16.09	20.27	71.37	16.77	21.80	5.71
Peyton	12.47	68.61	16.37	21.28	70.12	16.58	21.55	0.27

Table 6.2.2
Application Queue Single-Phase-To-Ground Short-Circuit Duty Distribution Locations Requiring Phase I Triggered SCD Mitigation

Bus Name	Bus kV	Pre-Case			Post-Case			Delta kA
		X/R	kA	Eff kA	X/R	kA	Eff kA	
Chino	12.47	42.47	18.84	22.99	41.80	18.95	23.12	0.13
Ganesha	12.47	72.61	17.15	22.30	101.67	17.66	23.67	1.37
Peyton	12.47	97.92	17.20	22.88	100.46	17.36	23.26	0.38

Refer to applicable Appendix A Report for cost responsibility of this upgrade.

6.2.2 SCD Mitigation Scope

As discussed above, studies identified overstressed breaker conditions at the Chino 12 kV, Ganesha 12 kV and Peyton 12 kV Substations. The QC8 Phase I SCD mitigations required at Chino 12 kV, Ganesha 12 kV and Peyton 12 kV are the following:

- Chino 12 kV Substation

  Replace one (1) 12 kV circuit breaker to mitigate the increased SCD caused by QC8 interconnection projects.

- Ganesha 12 kV Substation

  Replace one (1) 12 kV circuit breaker to mitigate the increased SCD caused by QC8 interconnection projects.

- Peyton 12 kV Substation

Replace seven (7) 12 kV circuit breakers to mitigate the increased SCD caused by QC8 interconnection projects.

6.3 Ground Grid Evaluation

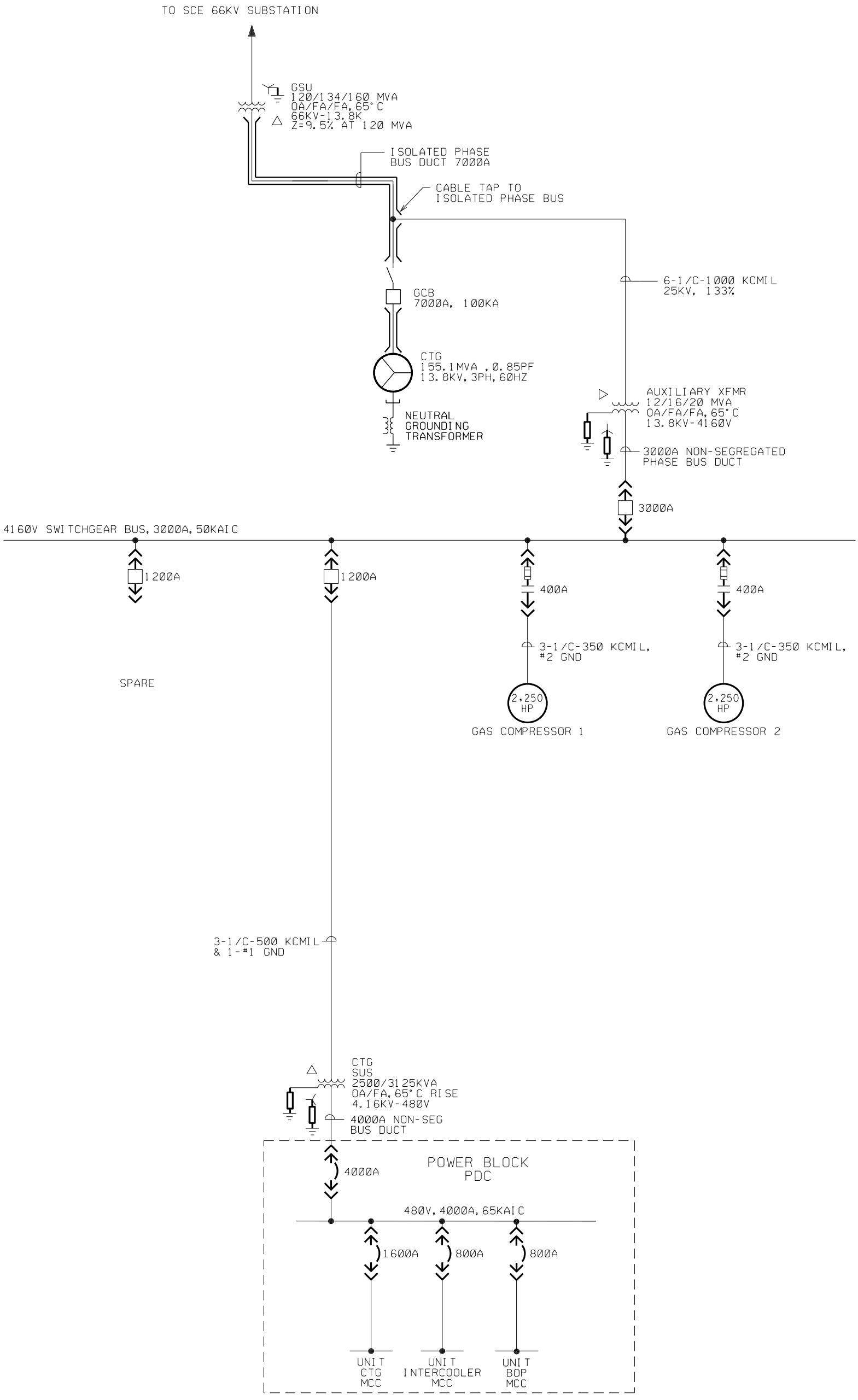
As can be observed in Table 6.1.2, single-phase-to-ground SCD, which drives ground grid requirements, were increased at fourteen locations by more than 0.2 kA. Additional review will be performed as part of Phase II to determine if any of these fourteen locations will require a detailed ground grid analysis performed as part of project execution once GIAs are in place and projects proceed forward towards interconnection.

7. Scope of Subtransmission Level Distribution Upgrades

Please refer to the Attachment 1 of the applicable Appendix A report for the scope of any subtransmission upgrades

8. Network Constraints

Please refer to the Metro Area Bulk Report for information pertaining to any network related constraints.



Source: Power Engineers, Dwg. E1-1, Rev. A, 5/4/16.

FIGURE 2.1-4R1
One-line Diagram of Electrical System
Pomona Repower Project
Pomona, California

Visual Resources

BACKGROUND

Night Lighting

Land use in the project vicinity is mixed, with residential neighborhoods and the city's main commercial street located within a short distance of the plant. Consequently, night lighting and potential nighttime light pollution are concerns.

DATA REQUESTS

37. Please provide additional information on how night lighting on the exhaust stack, cooling tower, and other tall project features could be minimized in extent, brightness, and amount of time in operation. Please address:

    A. Ways that the amount of lighting on exhaust stack and other tall features would be minimized; and ways the hours of operation of those lights would be minimized

    Response: The lighting proposed for the exhaust stack and other tall features will be minimal. The only lighting on the stack will consist of a single light-emitting diode (LED) light fixture that will be installed at the stack access platform at 80 feet above ground surface. The only exterior lighting on the cooling tower will consist of two lights that will be installed along both sides of the cooling tower fans on the cooling tower access platform at a height of approximately 20 feet above ground surface. All of these light fixtures will have switches and will be turned on only when required. As a consequence, these areas will remain dark most of the time and will only be turned on briefly when needed for work or maintenance. Thus, the amount of time that this lighting will be visible offsite will be minimal.

    B. Methods of eliminating all uplighting and night sky light pollution

    Response: In Applicant's May 13, 2016 letter, the Applicant objected to this data request as not reasonably necessary for the Commission decision in this proceeding since it ignores the baseline condition under CEQA. Without waiving this objection, Applicant provides the following response.

    The proposed PRP lighting plan does not include any fixtures with uplighting. The single LED wall-mounted lighting fixture that will be installed (HAZBLED26C) on the stack access platform has a design that directs illumination downward. The two pole-mounted LED fixtures (DMW2) around the cooling tower access platform will also have a design that directs the illumination downward. See Attachment DR37B-1 for lighting specifications.

    Switched lighting circuits will be provided at these locations where operation of lights will occur on an as-needed basis so that they will remain dark except for intermittent work or maintenance activities. Limiting the times at which these lights are in operation will limit the times when light from these fixtures reflecting off the decks below them would have the potential to make any contribution to night sky pollution. Because these areas will remain dark most of the time, the amount of lighting potentially visible offsite will be minimal. As a result, both the proposed lighting design and the proposed operation of the lights will minimize the potential for light from these fixtures to affect the night sky.

C. Methods of eliminating all direct off-site illumination

Response: In Applicant's May 13, 2016 letter, the Applicant objected to this data request as not reasonably necessary for the Commission decision in this proceeding since it ignores the baseline condition under CEQA. Without waiving this objection, Applicant provides the following response.

As mentioned above, the proposed lighting plan for PRP includes using fixtures that will be directed downward eliminating horizontal light spill. Very importantly, the lights will be switched and will be turned on only as needed to illuminate the area for intermittent work or maintenance activities. Consequently, these areas of the facility will remain dark most of the time, which will significantly minimize the occasions when light will have the potential to be visible offsite. Furthermore, because the lights on the cooling tower access platform will only be 20 feet above ground surface, in most or many views toward the PRP from the surrounding area, the views toward these fixtures will be screened by intervening structures.

ATTACHMENT DR37B-1,
LIGHT FIXTURE SPECIFICATIONS

HAZBLED26C

ATTACHMENT 37B-1

Wall Mount HAZLED is a Class I, Division 2 LED fixture designed with 57 years of experience in hazardous location lighting.

Color: Natural

Weight: 12.9 lbs

Project:	Type:
Prepared By:	**Date:**

Driver Info

Type:	Constant Current
120V:	0.25A
208V:	0.13A
240V:	0.12A
277V:	0.11A
Input Watts:	27W
Efficiency:	95%

LED Info

Watts:	26W
Color Temp:	5100K (Cool)
Color Accuracy:	72 CRI
L70 Lifespan:	100000
Lumens:	3,427
Efficacy:	125 LPW

Technical Specifications

Hazardous Location Classifications

UL 844:

Electric lighting fixtures for use in hazardous (classified) locations

UL 1598:

Electric lighting fixtures for use in non-hazardous locations

UL 8750:

Light Emitting Diode (LED) Light Sources for Use in Lighting Products

Hazardous Location Classifications:

Class I: A hazardous location in which flammable gases or vapors may be present in the air in sufficient quantities to be explosive or ignitable, such as petroleum refineries, aircraft hangars, dry cleaning plants, utility gas plants or storage areas for liquified petroleum or natural gas, and spray finishing areas.

Division 2: Abnormal condition, where igniteable concentrations of flammable gases, vapors or liquids are not like to exist under normal operating conditions, for example:

Closed storage drums containing flammable liquids in an inside storage room would not normall allow the hazardous vapors to escape into the atmosphere. But if one of the containers is leaking, you've got an abnormal condition.

Groups A - D: The gases and vapors of Class 1 locations are broken into four groups by the Code: A,B,C, and D. These materials are grouped according to the ignition temperature of the substance, its explosion pressure, and other flammable characteristics.

Group A - The only substance in group A is acetylene because it is a gas with extremely high explosion pressures.

Group B - This group includes hydrogen and other materials with similar characteristics.

Group C & D - The most usual Class 1 groups. They comprise the greatest percentage of all Class I hazardous locations. Found in Group C is ethylene. Found in Group D are many of the most common flammable substances such as butane, gasoline, natural gas and propane.

T Ratings:

HAZLED™ 26W model is T3C rated

LED Characteristics

LEDs:

Multi-chip, high-output, long-life LEDs

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2011.

Construction

Ambient Temperature:

Suitable for use in 50°C (122°F) ambient temperatures.

IP Rating:

Ingress Protection rating of IP66 for dust and water.

Thermal Management:

Superior heat sinking with external Air-Flow fins

Housing:

Die-cast aluminum housing, lens frame and mounting arm

Hardware:

All external hardware is stainless steel

Reflector:

Semi-specular aluminum

Lens/Globes:

Clear globes

Mounting:

Wall mounting with junction box included.

Gaskets:

Closed cell silicone gasket

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contain no VOC or toxic heavy metals.

Green Technology:

Mercury and UV free, and RoHS compliant. Polyester power coat finish formulated without the use of VOC or toxic heavy metals.

Electrical

Driver:

Constant Current, Class 2, 100-277V, 50/60 Hz, 700mA, THD <20%, Power Factor 95%

Other

Equivalency:

The HAZBLED26 is equivalent in delivered lumens to a 70 Watt metal halide.

California Title 24:

26 Watt HAZLED complies with 2013 California Title 24 building and electrical codes as a commercial outdoor non-pole-mounted fixture ≤ 30 Watts when used with a remote mounted photosensor control.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Technical Specifications (continued)

Other

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.

Listings

IESNA LM-79 & LM-80 Testing:

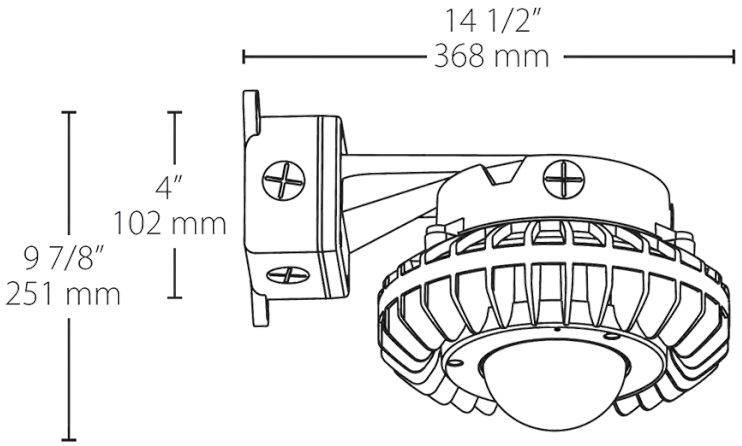
RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label.

Optical

BUG Rating:

B1 U2 G1

Dimensions



Features

- Class 1, Division2, Groups A, B, C, D
- IP66, UL1958, UL8750 and UL 844 ratings
- Resistant to shock and vibration
- Rugged construction ensures long-life and safe operation
- 100,000-Hour LED lifespan
- 5-Year, no-compromise warranty

Ordering Matrix

Family	Watts	Lens	Globes	Guard
HAZBLED				
	26 = 26W **42** = 42W	= No lens **CF** = Clear lens **FF** = Frosted lens	= No globes **C** = Clear globes **F** = Frosted globes	= No guard **#NAME?** = Die cast guard

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

LED Enclosed and Gasketed

DMW2

FEATURES & SPECIFICATIONS

INTENDED USE —Ideal for use in applications where smart, energy-efficient fixtures are desired. Typical applications include transit, parking garage, awnings, cold storage, food processing, docks, schools, hospitals, carwashes, natatoriums and exterior environments where moisture or dust is a concern. **Certain airborne contaminants can diminish integrity of acrylic.** **Click here for Acrylic Environmental Compatibility table for suitable uses.**

CONSTRUCTION — One-piece 5VA rated fiberglass housing with integral perimeter channel utilizes continuous poured-in-place NEMA 4X gasket. Simple two-piece design consists of housing and optical assembly to streamline installation process. Polymeric latches positively attach to housing and keep from becoming a hindrance during install.

OPTICS — Injection-molded, acrylic lens (.080" thick), provides high impact-resistance comparable to 100% DR. F1 rated for outdoor use, lenses resist breaking, yellowing or becoming brittle over time. UV stabilized polycarbonate diffuser available (.080" thick) in clear or frosted for additional impact strength. Polycarbonate lens is recommend for lower mounting heights where vandal protection is desired.

ELECTRICAL — Tool- less one piece optical assembly combines LEDs and lens into one component. Optical assembly easily connects to housing with plug and play harness, eliminating time consuming wiring connections. LED drivers consumes 40 input watts maximum and offers 1% dimming standard.

Integral surge protection tested in accordance with IEEE/ANSI C62.41.2 to industrial standards 6kV/3kA.

L85 at 60,000 hours.

INSTALLATION — Two-piece design makes installations faster than ever by simplifying wiring connections. Power connection is easily accommodated through pre-drilled holes at each end, optional wet location fittings available for maximum flexibility.

Stainless steel (#316) surface spring-mounting brackets with bail wires standard (2 included) allow for ceiling, wall or suspended mount.

Swivel stem(provided by others) when pendant mounting. Factory installed junction box option accommodates up to 4X4 sized boxes and includes integrated gasket to maintain wet location listings.

Quick Mount Bracket (QMB) ships installed on fixture and is recommended for fastest surface mount installs, ideal for end to end installations or larger jobs.

LISTINGS — CSA Certified to UL and C-UL standards for ambient temperatures ranging from -40°F (-40°C) to 104°F (40°C) (see Operational Data chart for actual temperature rating per lumen package). F1 rating makes luminaire suitable for wet locations without covered ceilings. IP ratings: IP65 and IP66 rated. 1500 PSI hose-down.

NSF listed for Splash Zone II.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Ambient temperatures that exceed 104°F (40°C) will result in reduced life and will void warranty.

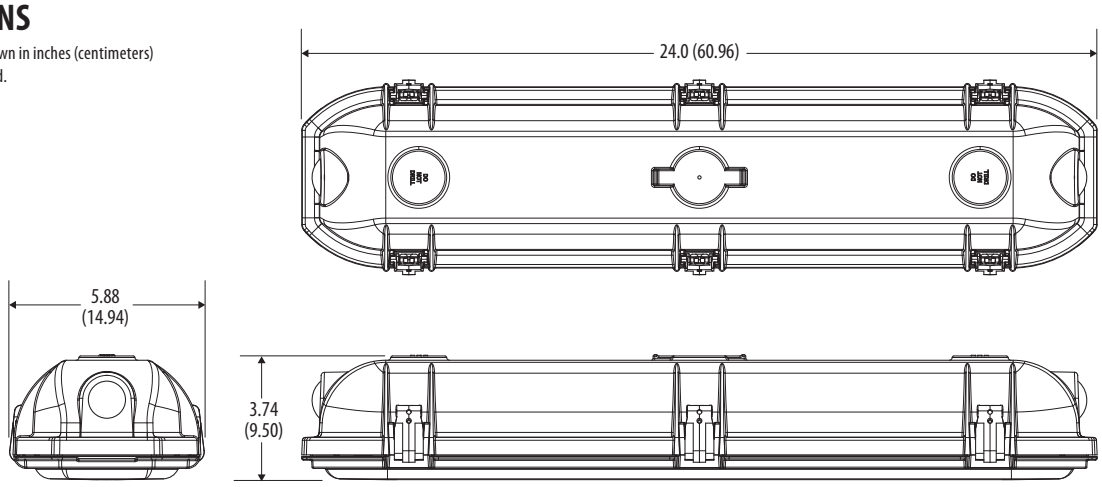
Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Note: Specifications subject to change without notice.

DIMENSIONS

All dimensions are shown in inches (centimeters) unless otherwise noted.



PHOTOMETRICS

Please see www.lithonia.com.

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example:** DMW2 L24 4000LM MD PCL MVOLT GZ1 40K 80CRI

Series	Length	Nominal lumens	Diffuser	Distribution	Voltage	Driver	Color temperature	Color rendering index
DMW2 LED wet location	L24 24"	2000LM 2,000 lumens 3000LM 3,000 lumens 4000LM 4,000 lumens	ACL Acrylic AFL Frosted acrylic PCL Polycarbonate PFL Frosted Polycarbonate	MD Medium distribution WD Wide distribution	MVOLT 120-277V 120 120V 208 208V 240 240V 277 277V 347 347V[1] 480 480V[1]	GZ1 1% dimmng	30K 3000 K 35K 3500 K 40K 4000 K 50K 5000 K	80CRI 80 CRI 90CRI 90 CRI

Options

SF	Single fusing[2,3]
DF	Double fusing[2,4]
PS1050	Emergency LED battery pack for 0°C and up (1400 lumens)[2,5]
PMP4X	Pendant monopoint with NEMA4X fitting[6,7]
WLFEND	Wet location fitting (one fitting out end)[7,8]
WLFEND2	Wet location fitting (fittings out both ends)[7,8]
WLFEND4X	Wet location fitting maintains NEMA4x rating(one fitting out end)[7,8]
WLFEND24X	Wet location fitting maintains NEMA4X rating(fittings out both ends)[7,8]
JSB	Junction box snap-bracket[6,7,9]
QMB	Quick-mount ceiling bracket
CS89	6' white cord, 16/3, no plug, wet location[7]
CS89L12	12' white cord, 16/3, no plug, wet location[7]
CS88	6' Brad Harrison 16/3 cord and straight blade plug set[2,7]
CS88L12	12' Brad Harrison 16/3 cord and straight blade plug set[2,7]
CS88R	Brad Harrison receptacle for use with CS88 cord set[7]
NOM	Nom certified
TPS	TorxT10 tamper-resistant screws
STSL	Stainless steel latches
MSI10XAWL10M DSCXAWL	Xpoint wireless integral motion sensor, On/Off operation for motion sensing, override Off due to daylight[2,10]
MSI10NWL	Low mount 360 integral motion sensor, wet location, On/Off operation[2,10]
MSI102L3VWL	Low mount 360 integral motion sensor, wet location, High/Low operation (3 level)[2,10]
MSI10NWL DSCNWL	low mount 360 integral motion sensor, wet location , On/Off operation for motion sensing, override Off due to daylight[2,10]
XAD	XPoint wireless relay[2,7,11]

Accessories: *Order as separate catalog number.*

RK1 T10BIT W/PIN U	Hex-base driver bit, Torx TX10, for tamper-resistant screws with center reject pin
RK1 T10DRV U	Torx TX10 screwdriver for use with tamper-resistant screws with center reject pin
DMW2WLF	Wet location fitting
DMW2QMB	Quick-mount ceiling bracket

Notes

1. Utilizes a step down transformer.
2. Must specify voltage.
3. 120 or 277V.
4. 208,240,347, or 480V.
5. 120,208,240, or 277V. Not available with cord, XAD, JSB, or PMP4X options. Maximum ambient temperature 25°C.
6. Factory installed only. Not field installable.
7. Not available with PS1050.
8. Not available with cordsets or sensors.
9. Not intended for wall mounting. Voids IP65 rating and NSF listing.
10. Not available with XAD. Maximum ambient temperature 35°C.
11. Minimum ambient temperature -20°C.

OPERATIONAL DATA						
DMW2, 80CRI Medium	**Wattage**	**Ambient Temperature**	**Color Temp**	**Nominal Lumens Frosted Acylic, 80CRI**	**Nominal Lumens Clear Acylic, 80CRI**	**Comparable Light Source**
2000LM	18	-20°C to 40°C	30K	2419	2419	1-32T8 lamp
			35K	2481	2556	
			40K	2536	2612	
			50K	2661	2740	
3000LM	27	-20°C to 40°C	30K	3483	3587	2-32T8 lamps
			35K	2572	3680	
			40K	3651	3761	
			50K	3831	3946	
4000LM	40	-40°C to 40°C	30K	4631	4770	3-32T8 Lamps, 2-54T5HO lamps
			35K	4751	4893	
			40K	4855	5001	
			50K	5094	5247	

OPTIONS AND ACCESSORIES

The DMW2 Series fixture offers numerous options for almost every electrical and optical component, including a long list of field-installable accessories.

SMB
Surface mounting bracket
(ships standard with fixture)

QMB
Quick mounting bracket
field installable option order as DMW2QMB

JSB
Junction mounting bracket
(factory installed only)
(Not intended for wall mounting.
Voids IP65 rating.)

PMP4X
Pendant monopoint
(factory installed only)

OPTIONS AND ACCESSORIES

The DMW2 Series fixture offers numerous options for almost every electrical and optical component, including a long list of field-installable accessories.

SBOR - WET LOCATION Motion Sensor (see www.sensorswitch.com for additional information)

- 360° coverage
- On/Off dim
- Photocell optional
- IP66 rated
- Photocell and 0-10VDC dimming options.

Fixture sensor nomenclature	SBOR sensor nomenclature
For shortest lead times use one of the following SBOR configurations	
MSI10NWL	SBOR 10 OEX EB3 WH
MSI102L3VWL	SBOR 10 OEX D EB3 WH 3V
MSI10NWL DSCNWL	SBOR 10 OEX P EB3 WH

MOTION SENSOR

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example**: MSI10NWL

Series	Lens option	Dimming	Maximum dim level	Environmental factors
MSI Passive infrared occupancy sensor	10 Low mount, 360°	N On\off 2LXX Bi level range[1] CXX Continous dim range[1] XA Xpoint wireless signal to external system	0V Off 1V 1 VDC 2V 2 VDC 3V 3 VDC 4V 4 VDC 5V 5 VDC	WL Wet location

PHOTOCELL

ORDERING INFORMATION Lead times will vary depending on options selected. Consult with your sales representative. **Example**: DSCNWL

Series	Dimming	Environmental factors
DSC Passive infrared occupancy sensor w/photocell	N On\off 2LXX Bi level range[1] CXX Continous dim range[1] XA Xpoint wireless signal to external system	WL Wet location

Notes

1 XX denotes dimming range.(Ex. 3V, 4V, etc.)

LITHONIA LIGHTING®
An AcuityBrands Company

INDUSTRIAL: One Lithonia Way Conyers, GA 30012 Phone: 800-315-4963 Fax: 770-981-8191 www.lithonia.com

Visible Plume

BACKGROUND

Cooling Tower Operating Data

Staff needs to address the visual impact associated with water vapor plumes emitted from the proposed cooling tower. The impact assessment should be based on the results of a visible plume modeling analysis.

DATA REQUESTS

38. Please summarize for the proposed cooling tower the conditions that affect vapor plume formation including cooling tower heat rejection, exhaust temperature, and exhaust mass flow rate. Please provide values to complete or correct the table below. All combinations of temperature and relative humidity, if provided by the applicant, will be used to represent the cooling tower exhaust conditions.

	Case 1	Case 2	Case 3	…
Operating Mode				
Number of Cells				
Cell Height (m)	2	2	2	
Cell Diameter (m)	10.668	10.668	10.668	
Tower Housing Length (m)	6.096	6.096	6.096	
Tower Housing Width (m)				
Ambient Temperature (°F)				
Ambient Relative Humidity				
Number of Cells in Operation				
Heat Rejection (MW/hr)				
Exhaust Temperature (°F)				
Exhaust Flow Rate per cell (lbs/hr)				

Response: As stated in Applicant's May 13, 2016 letter, an additional 30 days has been requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

39. Please provide the detailed visible plume modeling analysis. The Combined Stack Visible Plume (CSVP) model is preferred by Energy Commission staff. If another model is to be used, please justify the use of that model.

Response: As stated in Applicant's May 13, 2016 letter, an additional 30 days has been requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

Water Resources

BACKGROUND

Potable and Recycled Water

The application states that the city of Pomona has available recycled water and has agreed to serve PRP with the volume of recycled water required (estimated average of 170.8 acre feet per year (afy)). The application also states that the existing city potable water connections would be used (estimated average of 49.4 afy). The PRP proposes to use potable water for evaporative inlet air-cooling and NOx control. Recycled water would be used for intercooler cooling tower makeup water.

DATA REQUESTS

40. Please provide a will-serve letter or agreement for the recycled water supply.

    Response: A formal request for a will-serve letter for recycled water supply was made to the City of Pomona on May 12, 2016. As stated in Applicant's May 13, 2016 letter, receipt of the will-serve letter from the City is outside of Applicant's control. Therefore, an additional 30 days was requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

41. Please provide a will-serve letter or contract for the potable water supply.

    Response: A formal request for a will-serve letter for potable water supply was made to the City of Pomona on May 12, 2016. As stated in Applicant's May 13, 2016 letter, receipt of the will-serve letter from the City is outside of Applicant's control. Therefore, an additional 30 days was requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

42. Would a Water Supply Assessment (WSA) be required for the potable water supply?
    a. If no, please provide a detailed explanation why.
    b. If yes, please provide the WSA or a WSA preparation schedule for the potable water supply.

    Response: A formal request for a WSA for the potable water supply was made to the City of Pomona on May 12, 2016. As stated in Applicant's May 13, 2016 letter, receipt of the WSA from the City, or an explanation as to why one is not needed, is outside of Applicant's control. Therefore, an additional 30 days was requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

43. Would a Water Supply Assessment be required for the recycled water supply?
    a. If no, please provide a detailed explanation why.
    b. If yes, please provide the WSA or a WSA preparation schedule for the recycled water supply.

    Response: A formal request for a WSA for the recycled water supply was made to the City of Pomona on May 12, 2016. As stated in Applicant's May 13, 2016 letter, receipt of the WSA from the City, or an explanation as to why one is not needed, is outside of Applicant's control. Therefore, an additional 30 days was requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.

44. Please provide detailed explanations for why the following are not proposed or cannot be used for this project: Refrigerative (mechanical) inlet-air chilling; dry inter-cooling; dry low NOx; and recycled water for all industrial processes, not just cooling tower makeup.

Response: In Applicant's May 13, 2016 letter, the Applicant objected to this data request as not reasonably necessary for the Commission decision in this proceeding since it ignores the baseline condition under CEQA. Without waiving this objection, Applicant provides the following response.

Use of Refrigerative (mechanical) inlet-air chilling was not proposed for use at PRP because of the additional capital and maintenance cost. Use of mechanical chillers would be more cost-effective for a baseload plant, rather than a peaking plant. Use of recycled water is a more cost-effective approach and the City of Pomona is looking for recycled water users.

Use of dry inter-cooling was not considered for use at PRP because there is insufficient room for an air-cooled condenser at this site. Use of an air-cooled condenser would have additional visual impacts as well.

Use of dry low NOx was not proposed for use at PRP because of its higher capital cost and maintenance cost compared to water injection. In addition, the water injected units offer better part load operation.

Recycled water is not being proposed for non-cooling tower use because of the following reasons:

- The amount of water needed for the other industrial uses, such as inlet air cooling and steam cycle makeup, is a rather small fraction (less than 25 percent) of the total water use when compared with the amount used in the cooling tower.
- Fluctuation in the quality of the recycled water makes it more difficult to predict what will be delivered on any day, and thus PRP cannot know what treatment would be required on any particular day to use that water.
- Use of recycled water for the other industrial uses would require an expansion of the water treatment system resulting in higher capital and maintenance costs, and require additional land area on an already constrained site.
- PRP is landlocked and there is insufficient room on the project footprint to add the treatment facilities.
- Because the City of Pomona cannot guarantee the reliability of its water supply, water for fire suppression will remain with city-supplied water.

BACKGROUND

Wastewater Discharge

The AFC states that Pomona Water Reclamation Plant, operated by the Sanitation Districts of Los Angeles County, has available capacity to receive and treat the proposed wastewater discharge by PRP. PRP would discharge an estimated 37.5 afy of wastewater.

DATA REQUEST

45. Please provide a will-serve letter or agreement for the proposed wastewater discharge.

Response: A formal request for a will-serve letter for wastewater discharge was made to the City of Pomona on May 12, 2016. As stated in Applicant's May 13, 2016 letter, receipt of the will-serve letter from the City is outside of Applicant's control. Therefore, an additional 30 days was requested to respond to this data request. Applicant intends to provide a response by June 27, 2016.