GWF

GWF ENERGY LLC

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08-AFC-7C	
DATE	OCT 06 2011
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October 6, 2011

Mr. Eric Veerkamp
Project Compliance Manager
California Energy Commission – Siting Division
1516 9th Street - MS 40
Sacramento, CA 95814-5504

RE: GWF Tracy (08-AFC-07C) Proposed Minor Project Modifications

Mr. Veerkamp:

As you are ware, GWF Energy has initiated construction to modify the Tracy Peaker Plant (01-AFC-16) converting it to a combined cycle power plant (08-AFC-07C) with a scheduled commercial operating date of August 1, 2012. During the final project engineering and design, there was several minor equipment or project changes that are different than was described in the Application for Certification submitted to the California Energy Commission on June 30, 2008.

Please find enclosed for your review and approval the "Request for Approval of Proposed Project Minor Modifications for the GWF Tracy Combined Cycle Power Plant ", dated October 2011. GWF is submitting this request pursuant to 20 California Code of Regulations (CCR) Section 1769, which governs post certification amendments and changes. GWF believes that the proposed modifications will not have a significant effect on the environment, will not result in a change or deletion of any Conditions of Certification (COCs), and will not cause project non-compliance with any applicable laws, ordinances, regulations, and standards (LORS). Therefore, GWF believes that the requested changes can be approved by the staff pursuant to 20 CCR Section 1769(a)(2).

We would like to schedule a meeting with you and Mr. Chris Marxen the week of October 10th to discuss the proposed modifications. I will be in contact with you to schedule an appointment. Please feel free to contact me at 925.431.1440 if you have any questions prior to our meeting.

Thank you for your time and consideration regarding this request.

Respectfully,

GWF Energy LLC

Mark Kehoe
Director, Environmental and Safety Programs

Enclosure: Request for Approval of Proposed Project Minor Modifications for the GWF Tracy Combined Cycle Power Plant

cc. D. Wheeler, GWF
M. Carroll, Latham and Watkins
J. Salamy, CH2M Hill

Request for Approval of Minor Project Modifications for the GWF Tracy Combined Cycle Power Plant (08-AFC-07C)

Submitted to the

California Energy Commission

October 2011

Prepared by

GWF Energy, LLC

With Technical Assistance by

CH2MHILL

Sacramento, CA

Contents

Acronyms and Abbreviations

AFC	Application for Certification
bhp	brake horsepower
CAISO	California Independent System Operator
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
COC	Condition of Certification
CPM	Compliance Project Manager
CTG	combustion turbine generator
District	San Joaquin Valley Air Pollution Control District
FDOC	Final Determination of Compliance
GWF	GWF Energy, LLC
HHV	high heat value
HRSG	heat recovery steam generator
LORS	Laws, Ordinances, Regulations, and Standards
MMBtu/hr	million British thermal units per hour
MW	megawatt
NO_x	oxides of nitrogen
SJCOG	San Joaquin Council of Governments
SJKF	San Joaquin Kit Fox
STG	steam turbine generator
TAC	toxic air contaminant
TPP	Tracy Peaker Plant
USFWS	U.S. Fish and Wildlife Service

SECTION 1

Introduction

1.1 Background

The California Energy Commission (CEC) issued a license for GWF Energy, LLC (GWF) for the GWF Tracy Combined Cycle Power Plant (GWF Tracy) project on March 24, 2010. GWF is modifying the existing Tracy Peaker Plant (TPP) (01-Application for Certification [AFC]-16), a nominal 169-megawatt (MW) simple cycle power plant, by converting the facility into a combined cycle power plant with a nominal 145 MW net of additional generating capacity. GWF Tracy's licensed nominal generating capacity is 314 MW net. The project occupies a 16.38-acre, fenced site within the existing GWF-owned 40-acre parcel in an unincorporated portion of San Joaquin County immediately southwest of Tracy, California, and approximately 20 miles southwest of Stockton, California.

The CEC Compliance Project Manager (CPM) issued a letter authorizing the start of construction activities on January 10, 2011. Construction was initiated by the GWF Tracy project construction contractor shortly thereafter, and work activities are underway, as reported to the CPM in GWF's ongoing monthly compliance reports. Construction and commissioning activities are expected to last approximately 22 months. The commercial operations are expected to begin in August 2012.

As discussed in further detail below, GWF has completed the final design of the plant and has determined that some minor changes in several project features will be required. GWF is submitting this request pursuant to 20 California Code of Regulations (CCR) Section 1769, which governs post certification amendments and changes. As set forth herein, GWF believes that the proposed modifications will not have a significant effect on the environment, will not result in a change or deletion of any Conditions of Certification (COCs), and will not cause project non-compliance with any applicable laws, ordinances, regulations, and standards (LORS). Therefore, GWF believes that the requested changes can be approved by the staff pursuant to 20 CCR Section 1769(a)(2). Nevertheless, in order to address the possibility that staff may determine that the modifications do not meet the criteria in 20 CCR Section 1769(a)(2), or that there may be a timely objection to such a determination by staff, GWF has included herein all of the information that would be required to process the proposed modifications as a formal amendment pursuant to 20 CCR Section 1769(a)(3).

In addition, an agreement has been reached between GWF and the San Joaquin Council of Governments (SJCOG) regarding the addition of landscaping within a San Joaquin Kit Fox (SJKF) movement corridor paralleling the Delta-Mendota Canal and adjacent to the GWF Tracy project site. The landscaping is being added to mitigate visual impacts to the Tracy Hills development. These project description changes were not known when GWF received the Final Decision for the GWF Tracy project in March 2010.

1.2 Description of Proposed Project Changes

The CEC Final Decision approved the conversion of the simple cycle TPP to the combined cycle GWF Tracy. The purpose of this filing is to request the CEC's approval to amend the GWF Tracy project. As required by Section 1769(a)(1)(A), the proposed project changes (which are described further below) are as follows:

- Increase the net plant electrical generation from 314 to 337 MW
- Increase the heat recovery steam generator's (HRSG's) maximum duct burner firing rate from 324 to 345 million British thermal units per hour (MMBtu/hr)
- Reduce the auxiliary boiler maximum rated heat input from 85 to 39 MMBtu/hr
- Reduce fire water pump size from 288 brake horsepower (bhp) to 235 bhp
- Add additional landscape screening along the Delta-Mendota Canal buffer along the southwestern fence line of the project

All of these modifications are necessary to support the final design recently completed by GWF. More detailed information on these proposed changes is provided in Section 2.

1.3 Necessity of Proposed Change

Sections 1769 (a)(1)(B) and 1769 (a)(1)(C) of the CEC Siting Regulations require a discussion of the necessity for the proposed changes to the project and a discussion of whether this modification is based on information that was known by the petitioner during the certification proceeding.

The proposed changes were not known to GWF during the CEC licensing process for the GWF Tracy project. Following issuance of the CEC Final Decision and completion of the final design for the project, it was determined that several improvements in the thermal efficiency were available that would result in a more efficient and reliable design at a lower cost to construct. In addition, conversations with AKT LLC, the developer of the Tracy Hills project, have led to a final agreement for landscaping along the Delta-Mendota Canal to provide a buffer of the viewshed from the southwest. While further discussions with AKT LLC were contemplated at the time the project was licensed, it was unknown what changes to the landscaping plan would be acceptable to all parties, including the resource agencies. As a result of these proposed changes to the project, GWF is requesting CEC approval of the modifications identified in this document.

1.4 Consistency of Proposed Changes with License

Section 1769 (a)(1)(D) of the CEC Siting Regulations requires a discussion of the consistency of each proposed project revision with the assumptions, rationale, findings, or other bases of the Final Decision and whether the revision is based on new information that changes or undermines the bases of the Final Decision. Also required is an explanation of why the changes should be permitted. As set forth in the following sections, the proposed revisions do not undermine the assumptions, rationale, findings, or other bases of the Final Decision for the project.

1.5 Summary of Environmental Impacts and LORS Compliance

Section 1769 (a)(1)(E) of the CEC Siting Regulations requires that an analysis be conducted to address impacts that the proposed revisions may have on the environment and proposed measures to mitigate significant adverse impacts. Section 1769 (a)(1)(F) requires a discussion of the impacts of proposed revisions on the facility's ability to comply with applicable LORS.

The proposed changes referenced in this petition will not result in any additional potential significant impacts beyond those already identified in the Final Decision. Section 3 discusses the potential impacts of the proposed changes on the environment, as well as the proposed revisions' consistency with LORS.

1.6 Effect of Proposed Changes on Public and Nearby Property Owners

Sections 1769(a)(1)(F)(G) and (H) require a discussion of the potential effect of the proposed changes on the public in general and nearby property owners. As discussed in more detail below, because the changes will not result in any additional environmental effects or LORS non-compliance, they are not expected to have any adverse impacts on the public, including nearby property owners. The modifications to the proposed landscaping plan are expected to have a positive impact on the future residents of the Tracy Hills development.

SECTION 2

Description of Project Changes

Consistent with the CEC Siting Regulations Section 1769(a)(1)(A), this section includes a description of the requested project modifications, as well as the necessity for the changes.

2.1 Proposed Changes

Following issuance of the CEC Final Decision and during final design for the project, it was determined that small changes to project components described in the project description would result in a more efficient and reliable design. The changes described below were identified.

An increase in the net plant electrical generation from 314 to 337 MWs can be achieved by improving efficiency of the combustion turbine generators (CTGs), the HRSG, and the steam turbine generator (STG). Upgrades to CTG seals, shrouds, nozzles, and coatings will be installed to reduce turbine leakages. The recapture of previously lost energy will increase overall efficiency resulting in an increase in power output. Because the increase in power output will result from improved efficiency rather than additional fuel combustion or inlet cooling, no increase in air emissions or water use is anticipated.

The final engineering design determined that the HRSGs could accept a slightly higher duct burner firing rate than the duct burner included in the project license. Making this change will optimize the designed performance of the STG. The project was licensed with a duct burner heat input of 324 MMBtu/hr, and the final design of the HRSGs and STG can accommodate a maximum duct burner firing rate of 345 MMBtu/hr. This slightly higher duct burner firing rate required the installation of a duct burner system with a maximum firing rate of 380 MMBtu/hr. The duct burner system final design has added one additional burner row to provide redundancy in the duct burner system and the slightly higher maximum firing rate of 345 MMBtu/hr. To limit the maximum firing rate to 345 MMBtu/hr, the HRSG manufacturer has specified the fuel supply system to supply a maximum of 345 MMBtu/hr. This step was taken to ensure that the maximum duct burner firing rate did not exceed the 345 MMBtu/hr to avoid potential overpressure damage to the HRSG steam drums. The increase in the duct burner firing rate is not expected to increase the hourly, daily, or annual air emissions, and no changes in those conditions are being requested (see Section 3.2).

The engineering contractor determined that the permitted auxiliary boiler exceeded the capacity required to support plant start up requirements and recommended reducing the maximum rating from 85 MMBtu/hr to 39 MMBtu/hr. An English Boiler and Tube Company water tube boiler, Model 28-DR-285, with a Coen C-RMB ultra-low oxides of nitrogen (NO_x) burner with a maximum heat input of 39 MMBtu/hr, was identified as a replacement unit for the originally licensed 85-MMBtu/hr boiler. The air emission rates for the proposed boiler would be identical on a per MMBtu/hr basis as the licensed auxiliary boiler (see Section 3.2).

During final design, the fire water pumping requirements were refined allowing for a smaller fire water pump engine to be used. As a result, GWF proposes to install a Tier 3, 235-bhp Cummins CFP7E-F50 fire water pump engine in lieu of the Tier 3, 288 bhp fire water pump engine included in the original license application. As discussed in further detail in Section 3.2, the overall hourly and annual air emission rates for the proposed fire water pump would be lower than the proposed and licensed fire water pump engine.

The final project design change is to incorporate landscaping along the southwestern project fence line within the area between the plant and the Delta-Mendota canal. The purpose of this landscaping is to effectuate an agreement with AKT LLC, the developer of the Tracy Hills project. The landscape mitigation includes the planting of Lombardi Poplar or Italian Cypress within the Delta-Mendota Canal buffer to provide a viewshed buffer for the Tracy Hills planned development, which is located south of GWF Tracy. Figure 1 presents the proposed landscaping plan. Section 3.3 presents a discussion of the potential biological resource impacts associated with this proposed change.

2.2 Necessity and Basis of Proposed Changes

Sections 1769 (a)(1)(B)(C) and (D) of the CEC Siting Regulations require a discussion of the necessity for the proposed changes to the project, whether this modification is based on information that was known by the petitioner during the certification proceeding, and whether the modification is based on new information that changes or undermines the assumptions, rationale, findings, or other bases of the Final Decision.

The changes in project design are necessary to improve the efficiency of the project. During the licensing process, GWF provided information on the project components based on preliminary design engineering. The proposed changes in project equipment were identified during the final design process, which was initiated after the license was issued. Hence, GWF could not have known during the CEC licensing process that these changes would be needed. The proposed changes are based on new information, which is not the type of information that alters or undermines the assumptions, rationale, findings, or other bases of the Final Decision, and the modifications are relatively minor in nature.

The changes to the project landscaping plan are necessary to implement an agreement with the Tracy Hills development related to additional visual screening of the project. At the time of project licensing, it was contemplated that additional discussions between GWF and Tracy Hills might occur. However, it was unknown at that time whether such discussions would lead to changes in the project. Among other things, it was not clear that the biological resource agencies would approve additional project screening. Thus, GWF could not have known about the currently proposed changes at the time the project was licensed. The proposed changes to the landscaping plan are based on new information, which is not the type of information that alters or undermines the assumptions, rationale, findings, or other bases of the Final Decision.

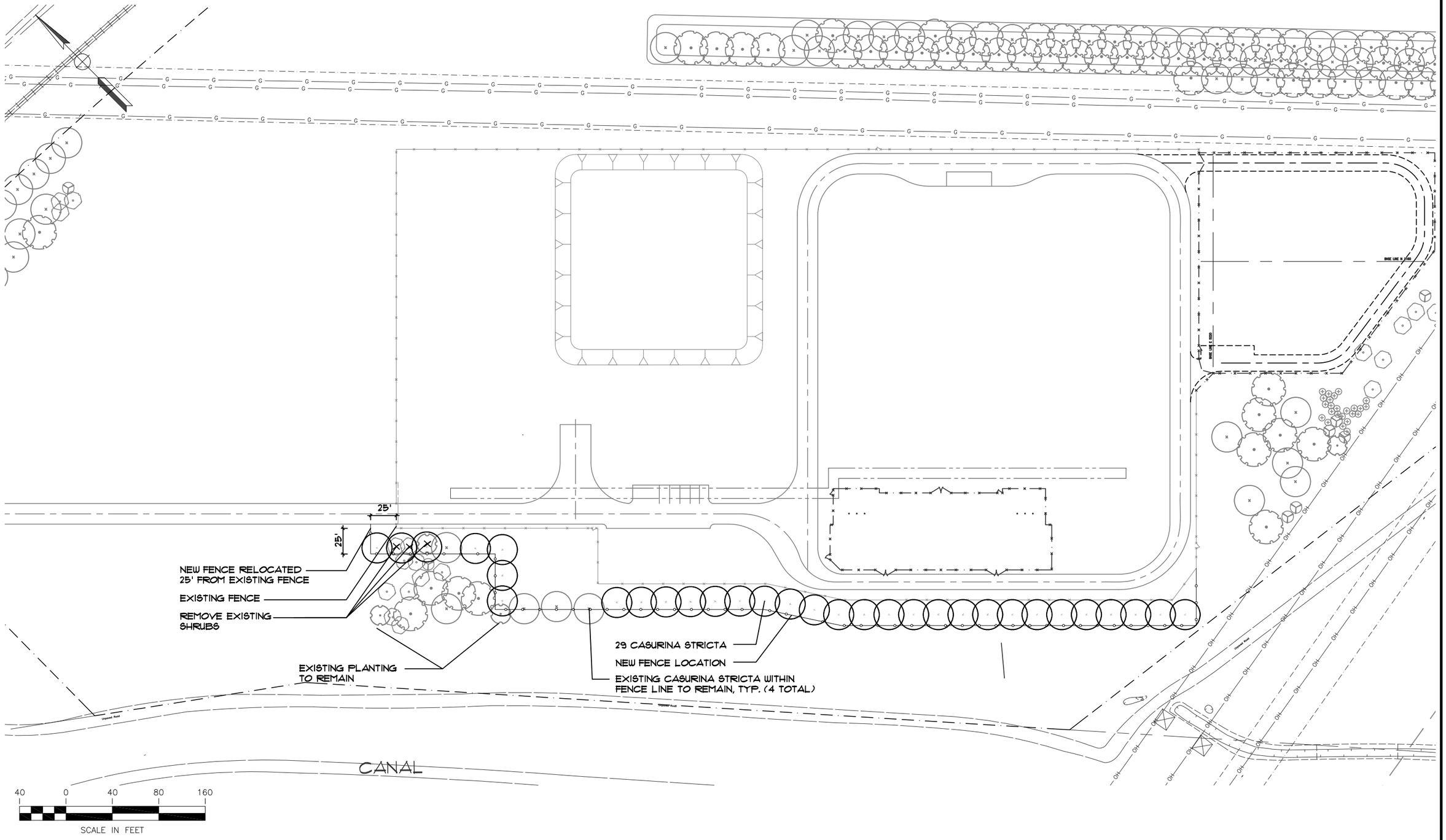

FIGURE 1
PROPOSED TRACY HILLS LANDSCAPING PLANTINGS
GWF TRACY COMBINED POWER PLANT PROJECT
SAN JOAQUIN COUNTY, CALIFORNIA

Source: Orsee Design Associates, 03/29/2009.

CH2MHILL

SECTION 3

Environmental Analysis of the Project Changes

As required by Section 1769(a)(1)(E), GWF has reviewed the modifications proposed herein to determine whether the changes will result in any environmental impacts that were not originally analyzed by the CEC when it approved the project in March 2010.

The project component changes will result in a more efficient and reliable project. An analysis of these changes for each of the environmental areas analyzed in the Final Decision is presented below.

3.1 Subject Matter Unaffected by the Project Changes

Given the nature of the project changes, the following disciplines clearly will not be affected by the proposed changes to the project components in this amendment, and there is no need for detailed analysis. Impacts as a result of these changes will be equal or less than those described in the Final Decision. These subjects include Cultural Resources, Geologic Resources and Hazards, Hazardous Materials Management, Land Use, Noise and Vibration, Paleontological Resources, Socioeconomics, Traffic and Transportation, Waste Management, Water Resources, and Worker Safety and Fire Protection.

3.2 Air Quality

3.2.1 Increase Total Plant Capacity

The preliminary engineering for the GWF Tracy AFC estimated the total electrical generating capacity for the plant at 314 MW. However, as a result of the final design engineering, it was determined that with efficiency upgrades of the CTGs and the optimization of HRSG and STG design, the efficiencies were significantly improved. With the improvements in the efficiencies of the CTGs, HRSGs, and the STG, total electrical generating capacity increased from 314 to 337 MW. These efficiency improvements are not expected to increase the natural gas fuel consumption or water requirements for inlet cooling. Therefore, no increases in air emissions are anticipated and no modifications to the COCs would be required as a result of this change. This change will not result in an increase in air quality impacts beyond those analyzed in the Final Decision or the Final Determination of Compliance (FDOC).

3.2.2 Increase HRSG Duct Burner Capacity

The preliminary design of the HRGSs estimated a maximum duct burner heat input rate of 324 MMBtu/hr, and this value was used during the licensing of the project. However, during final design of the HRSGs, the design engineers determined that the HRSGs could accept up to 345 MMBtu/hr of duct burner firing. To facilitate this higher duct burner firing rate and operational flexibility, a slightly larger duct burner system was required. The new duct burner system has a maximum design capacity of 380 MMBtu/hr. The 380 MMBtu/hr resulted from

the addition of one additional row of burners. This final design will provide the slight increase in the maximum firing rate of 345 MMBtu/hr and will also provide redundancy should one row fail during operation. The HRSG manufacturer has specified a maximum duct burner firing limitation of 345 MMBtu/hr and has designed the natural gas supply system supporting the duct burner at a maximum duct burner heat input of 345 MMBtu/hr.

The increased duct burner firing rate is not expected to result in an emissions increase on an hourly, daily, or annual basis as the existing emission limits were based on very conservative assumptions. Therefore, GWF is not requesting a change to any COCs because GWF believes the existing emission and fuel use limits are sufficient. GWF has requested that the San Joaquin Valley Air Pollution Control District (District) modify the emission unit descriptions in the FDOC to correct the MW production capacity and maximum duct burner firing rate. A copy of the permit modification application has been submitted to the CPM as required by COC AQ-SC6.

This change will not result in an increase in air quality impacts beyond those analyzed in the Final Decision or the FDOC.

3.2.3 Approval of an Equivalent Auxiliary Boiler

The auxiliary boiler included in the AFC was assumed to have a maximum heat input of 85 MMBtu/hr. However, during the final design, it was determined that a smaller boiler was sufficient to support plant start up requirements. Therefore, the use of an English Boiler and Tube Company water tube boiler, Model 28 DR-375, with a maximum heat input of 39 MMBtu/hr, has been proposed in lieu of the 85 MMBtu/hr unit. Table 3-1 presents a comparison of the proposed auxiliary boiler performance characteristics provided by the vendor compared to the 85 MMBtu/hr unit. The proposed auxiliary boiler's emission rates on an hourly, daily, and annual level will be lower than those proposed and evaluated during the licensing proceeding because of the lower maximum heat input. Furthermore, the exhaust characteristics for the proposed auxiliary boiler are equivalent to those used to demonstrate compliance with the ambient air quality standards. GWF has requested that the District revise the description for the auxiliary boiler in the FDOC to accurately reflect the new make, model, and maximum heat input. As noted above, a copy of the GWF's permit modification request has been submitted to the CPM.

TABLE 3-1
Comparison of Proposed and Permitted Auxiliary Boiler Parameters

Parameter	Units	Permitted	Proposed	Notes
Rated Heat Input	MMBtu/hr-HHV	85	39	
NO_x	lb/MMBtu	0.0073	0.0073	Or less than 6.0 ppm
CO	lb/MMBtu	0.037	0.037	Or less than 50.0 ppm
VOC	lb/MMBtu	0.005	0.005	
PM	lb/MMBtu	0.007	0.007	
SO_2	lb/MMBtu	0.0019	0.0019	
Exhaust Stack Height	Feet	50	50	

TABLE 3-1
Comparison of Proposed and Permitted Auxiliary Boiler Parameters

Parameter	Units	Permitted	Proposed	Notes
Exhaust Stack Diameter	Feet	3.5	3.5	
Exhaust Stack Temperature	Fahrenheit	300	300	
Exhaust Stack Velocity	Feet/Second	19.1	19.1	

Notes:

CO = carbon monoxide
HHV = high heat value
lb = pound
MMBtu = million British thermal units
NO_x = oxides of nitrogen
PM = particulate matter
ppm = parts per million
SO_2 = sulfur dioxide
VOC = volatile organic compound

This change will not result in an increase in air quality impacts beyond those analyzed in the Final Decision or the FDOC.

3.2.4 Approval of an Equivalent Fire Water Pump

During final design, the design engineers determined that a smaller fire water pump engine would satisfy the fire suppression requirements for the facility. The proposed fire water pump engine is a Tier 3, Cummins Model CFP7E-50, 235-bhp unit. Table 3-2 presents a comparison of the emissions performance for the proposed and permitted engines. As shown in Table 3-2, the proposed engine has lower emission rates than the current permitted engine, which translates into reduced hourly, daily, and annual emissions. GWF has requested that the District revise the fire water pump unit description in the FDOC to accurately reflect the new fire water pump make and model.

TABLE 3-2
Comparison of Proposed and Permitted Fire Pump Parameters

Parameter	Units	Permitted	Proposed	Notes
Rated Brake Horsepower	bhp	288	235	At 1,760 rpm
NO_x	Grams/bhp/hr	2.67	2.475	
CO	Grams/bhp/hr	2.39	1.193	
VOC	Grams/bhp/hr	0.16	0.062	
PM	Grams/bhp/hr	0.12	0.111	Use of ULSD
SO_2	% Sulfur	0.0015	0.0015	Use of ULSD

Notes:

bhp = brake horsepower
CO = carbon monoxide
NO_x = oxides of nitrogen
PM = particulate matter
rpm = revolutions per minute
SO_2 = sulfur dioxide
ULSD = Ultralow Sulphur Diesel
VOC = volatile organic compound

This change will not result in an increase in air quality impacts beyond those analyzed in the Final Decision or the FDOC.

3.3 Biological Resources

GWF has negotiated an agreement with the developer of the Tracy Hills project to install landscape screening on the southwestern boundary of the project, within the Delta-Mendota Canal buffer. The Final Decision (COC BIO-7) states that any landscaping within the Delta-Mendota Canal buffer will require approval by U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) because this buffer area provides a critical SJKF migration corridor. GWF has met with representatives of the SJCOG, the USFWS, and CDFG to discuss the need for this landscaping and its potential impacts to the SJKF.[1] During this meeting, agency representatives determined that the plantings were appropriate for screening and that the addition of Lombardy Poplars or Italian Cypress would be acceptable. Therefore, the proposed changes do not require a modification to the COCs or mitigation requirements. This change will not result in an increase in biological resource impacts beyond those analyzed in the Final Decision or the FDOC.

3.4 Public Health

During the licensing proceeding, GWF used very conservative assumptions to estimate toxic air contaminant (TAC) emissions. These assumptions were based on hourly and annual heat inputs for fired project equipment and CEC-approved TAC emission factors. The proposed increase in duct burner firing would result in an annual duct burner heat input increase of 130,200 MMBtu/year for the turbine/HRSGs.[2] The auxiliary boiler heat input would decrease by 184,000 MMBtu/year.[3] Therefore, TAC emissions associated with the combustion of natural gas are expected to be similar to those used as the basis of the Final Decision.

Furthermore, as diesel particulate matter (PM) emissions were the major contributor in the health risk assessment conducted by the CEC staff,[4] a reduction in the fire water pump maximum horsepower rating would also tend to reduce public health risks. The proposed fire water pump engines hourly PM emission rate is approximately 25 percent lower than the licensed engine because of the decrease in horsepower rating.

As the overall TAC emissions from the proposed project changes are expected to be comparable to those analyzed by the CEC during the licensing proceeding, no significant impacts to public health are expected.

3.5 Visual Resources

The Final Decision indicates that visual resource impacts at key observation points [5] southwest of GWF Tracy were less than significant with the incorporation of mitigation, specifically COCs VIS-1, VIS-3, and VIS-4. These COCs require the implementation of a

[1] Personal Communication with Steve Mayo, Senior Habitat Planner, 209-235-0585, SJCOG, September 1, 2011.

[2] (345 MMBtu/hr – 324 MMBtu/hr) * 2 units * 3,100 hours/year of duct burner firing = 130,200 MMBtu/year

[3] (85 MMBtu/hr – 39 MMBtu/hr) * 4,000 hours/year = 184,000 MMBtu/year

[4] GWF Tracy Combined Cycle Power Plant Project Final Staff Assessment, Public Health Table 8, page 4.7-18.

[5] GWF Tracy Combined Cycle Power Plant Project Final Decision, Appendix VR-1, page 247.

perimeter landscaping plan and architectural treatment of new plant facilities to allow them to blend into the surrounding landscaping. The proposed landscaping for the southwestern project boundary is expected to further reduce visual impacts, which is consistent with the intent of the visual resources COCs. Therefore, visual resource impacts are expected be less than those described in the Final Decision.

3.6 Electrical Transmission

GWF submitted an Interconnection Request to the California Independent System Operator (CAISO) for the 23-MW increase in net electrical generation (see the Appendix). CAISO determined that an increase to a net 337-MW output "did not violate any parts of voltage criteria and hence caused no adverse voltage impacts on the grid. Also, the Project did not significantly impact the transmission system's transient stability performance following selected contingencies." The increase in output did not contribute to overloading of transmission facilities; as a result, CAISO determined no additional interconnection facilities or network upgrades are required.

3.7 Laws, Ordinances, Regulations, and Standards

The proposed changes do not affect the project's ability to comply with applicable LORS, as required by Section 1769(1)(1)F).

SECTION 4

Conditions of Certification

Consistent with the requirements of the CEC Siting Regulations Section 1769 (a)(1)(A), this section addresses the proposed modifications to the project's COCs. GWF is not proposing any changes to the COCs. However, GWF does expect the District to approve the following changes/corrections to the equipment descriptions contained in the FDOC.

Equipment Description, Unit N-4597-1-5

Modification of an existing ~~84.4~~488 MW nominally rated simple-cycle peak-demand power generating system #1 consisting of a General Electric Model PG 7121 EA natural gas-fired combustion turbine generator served by an inlet air filtration and cooling system, dry low-NO_x combustors, a SCR system with ammonia injection, and an oxidation catalyst: to convert the existing system to a combined cycle configuration by (1) removing the existing oxidation and selective catalytic reduction system and the existing 100 foot exhaust stacks, (2) installing a new heat recovery steam generator equipped with a ~~324~~345 MMBtu/hr (HHV) natural gas fired duct burner, (3) installing a new oxidation catalyst and new selective catalytic reduction system, (4) installing a new 150' tall 17' diameter stack, (5) installing a new STG lube oil cooler, and (6) installing a ~~145~~168 MW nominally rated condensing steam turbine generator (shared with N-~~4~~597-2)

Equipment Description, Unit N-4597-2-6

Modification of an existing ~~84.4~~488 MW nominally rated simple-cycle peak-demand power generating system #2 consisting of a General Electric Model PG 7121 EA natural gas-fired combustion turbine generator served by an inlet air filtration and cooling system, dry low-NO_x combustors, a SCR system with ammonia injection, and an oxidation catalyst: to convert the existing system to a combined cycle configuration by (1) removing the existing oxidation and selective catalytic reduction system and the existing 100 foot exhaust stacks, (2) installing a new heat recovery steam generator equipped with a ~~324~~345 MMBtu/hr (HHV) natural gas fired duct burner, (3) installing a new oxidation catalyst and new selective catalytic reduction system, (4) installing a new 150' tall 17' diameter stack, (5) installing a new STG lube oil cooler, and (6) installing a ~~145~~168 MW nominally rated condensing steam turbine generator (shared with N-4597-1)

Equipment Description, Unit N-4597-5-0

~~85~~39 MMBtu/hr natural gas-fired ~~rentech~~ English Boiler and Tube Company model ~~rtd-2-60~~28-dr-285 boiler with a Coen model C-RMB burner and flue gas recirculation or equivalent

Equipment Description, Unit N-4597-6-0

~~288~~233 BHP Cummins model ~~CFP83-F40~~CFP7E-F50 tier 3 diesel-fired emergency IC engine powering a fire water pump or equivalent

SECTION 5

Potential Effects on the Public and Property Owners

The proposed changes described in this amendment will have no effect on the public and property owners beyond what was originally approved by the CEC.[6] The landscaping proposed on the southwestern project boundary is expected to further reduce an already less-than-significant impact, resulting in a benefit to adjacent property owners south and southwest of the project.

Changes to project components will result in no greater impacts on the public and property owners than those analyzed during project licensing. Therefore, impacts on the public and property owners are expected to be the same as those analyzed during the license proceeding for the project.

[6] CEC Siting Regulations Section 1769(a)(1)(G) and (I)

SECTION 6

List of Property Owners

The list of property owners within 1,000 feet of the proposed project provided in the AFC has not changed as a result of the modifications to the project. Therefore, the list of property owners within 1,000 feet of the proposed project is incorporated by reference from the AFC.[7]

[7] CEC Siting Regulations Section 1769(a)(1)(H).

Appendix
GWF Energy Interconnection Request to the California Independent System Operator

Appendix A – Q 606

GWF Energy LLC

GWF Tracy Additional Capacity

California ISO
Your Link to Power

November 22, 2010

This study has been completed in coordination with Pacific Gas & Electric per CAISO Tariff Appendix Y Large Generator Interconnection Procedures (LGIP) for Interconnection Requests in a Queue Cluster Window

Table of Contents

Attachments:

1. **Generator Machine Dynamic Data**
2. **Dynamic Stability Plots**
3. **Preliminary Protection Requirements (Not needed, same as Q268)**
4. **Short Circuit Calculation Study Results**
5. **Deliverability Assessment Results**
6. **Allocation of Network Upgrades for Cost Estimates**

1. Executive Summary

GWF Energy LLC, an Interconnection Customer (IC), has submitted a completed Interconnection Request (IR) to the California Independent System Operator Corporation (CAISO) for their proposed GWF Tracy Additional Capacity (Project). The maximum net output to the CAISO controlled-grid will be 20 MW. The Project will be interconnected to the Pacific Gas and Electric Company's (PG&E's) Schulte Switching Station 115 kV bus in San Joaquin County, CA. The IC did not select an alternative point of interconnection. The proposed Commercial Operation Date (COD) of the Project is June 1, 2012.

In accordance with Federal Energy Regulatory Commission (FERC) approved Large Generator Interconnection Procedures (LGIP) for Interconnection Requests in a Queue Cluster Window (CAISO Appendix Y), this project was grouped with "Kern/Fresno Cluster 2" projects (Cluster 2 Phase I Study) to determine the impacts of the group as well as impacts of this Project on the CAISO controlled-grid.

The group report has been prepared separately identifying the combined impacts of all projects in the group on the CAISO controlled-grid. This report focuses only on the impacts of this Project.

The report provides the following:

1. Transmission system impacts caused by the Project,

2. System reinforcements necessary to mitigate the adverse impacts caused by the Project under various system conditions, and

3. A list of required facilities and a non-binding, good faith estimate of this Project's cost responsibility and time to construct these facilities.

The Phase 1 study results have determined that the Project contributes to overloading of one transmission facility for which mitigation plans have been proposed.

The Project did not violate any parts of voltage criteria and hence caused no adverse voltage impacts on the grid. Also, the Project did not significantly impact the transmission system's transient stability performance following selected contingencies.

This interconnection project does not have interconnection costs. The non-binding cost estimate for the Network Upgrades[1] to interconnect the Project would be approximately **$0.07 million**.

[1] The transmission facilities, other than Interconnection Facilities, beyond the point of interconnection necessary to physically and electrically interconnect the Project safely and reliably to the CAISO Controlled Grid.

The non-binding construction schedule to engineer and construct the facilities is approximately 24-36 months from the signing of the Large Generator Interconnection Agreement (LGIA).

2. Project and Interconnection Information

Table 2-1 provides general information about the Project, as provided in the IR.

Table 2-1: Project General Information

Project Location	14950 West Schulte Road, Tracy, San Joaquin County, California 95377
PG&E Planning Area	San Joaquin Valley Region Stockton Division
Number and Type of Generators	One Steam Turbine Generator (Alstom)
Interconnection Voltage	115 kV
Maximum Generator Output	20 MW (348 MW for all 3 units at Tracy)
Generator Auxiliary Load	11 MW
Maximum Net Output to Grid	20 MW (337 MW for all 3 units at Tracy)
Power Factor Range	0.90 lag, 0.95 lead
Step-up Transformer	One 115/18 kV, 204 MVA Transformer
Point of Interconnection	The Project will be interconnected at 115 kV Schulte Switching Station. This Project is adding 20 MW's of generation to Project Q268 on the CAISO queue.
Alternative Point of Interconnection	None
Commercial Operation Date	June 1, 2012

Figure 2-1 provides the map for the Project and the transmission facilities in the vicinity. Figure 2-2 shows the conceptual single line diagram of the Project.

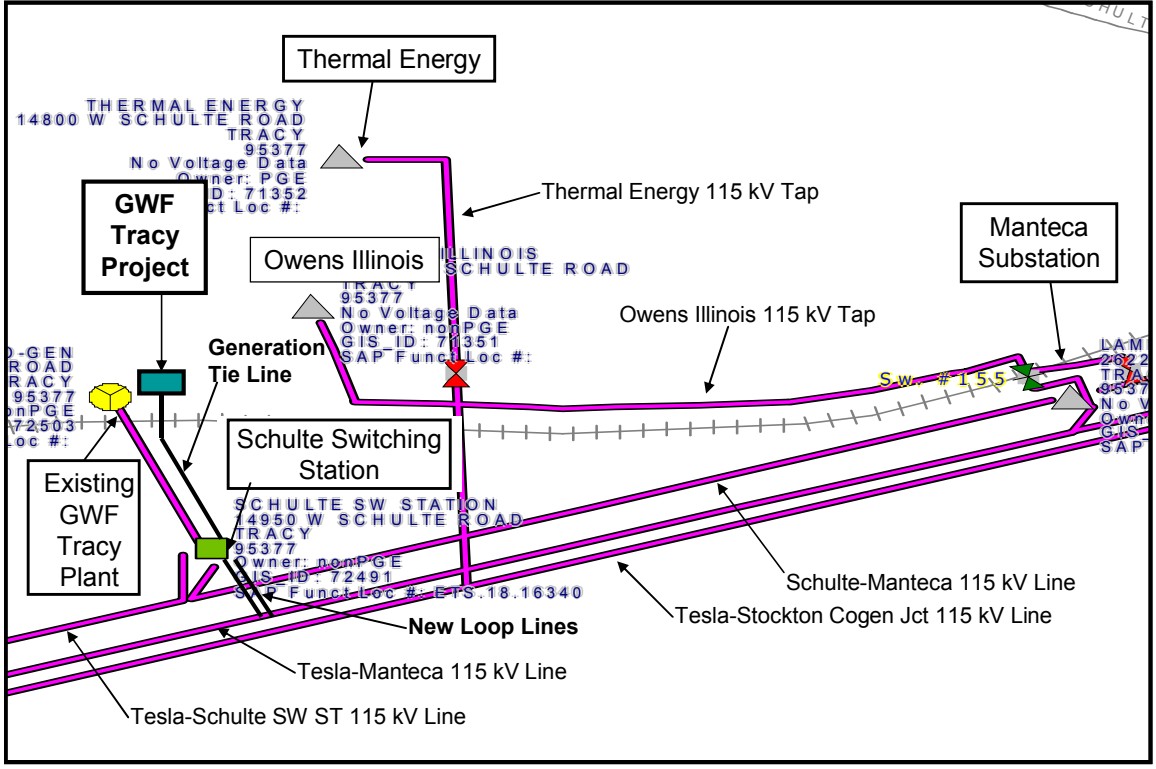

Figure 2-1: Vicinity Map

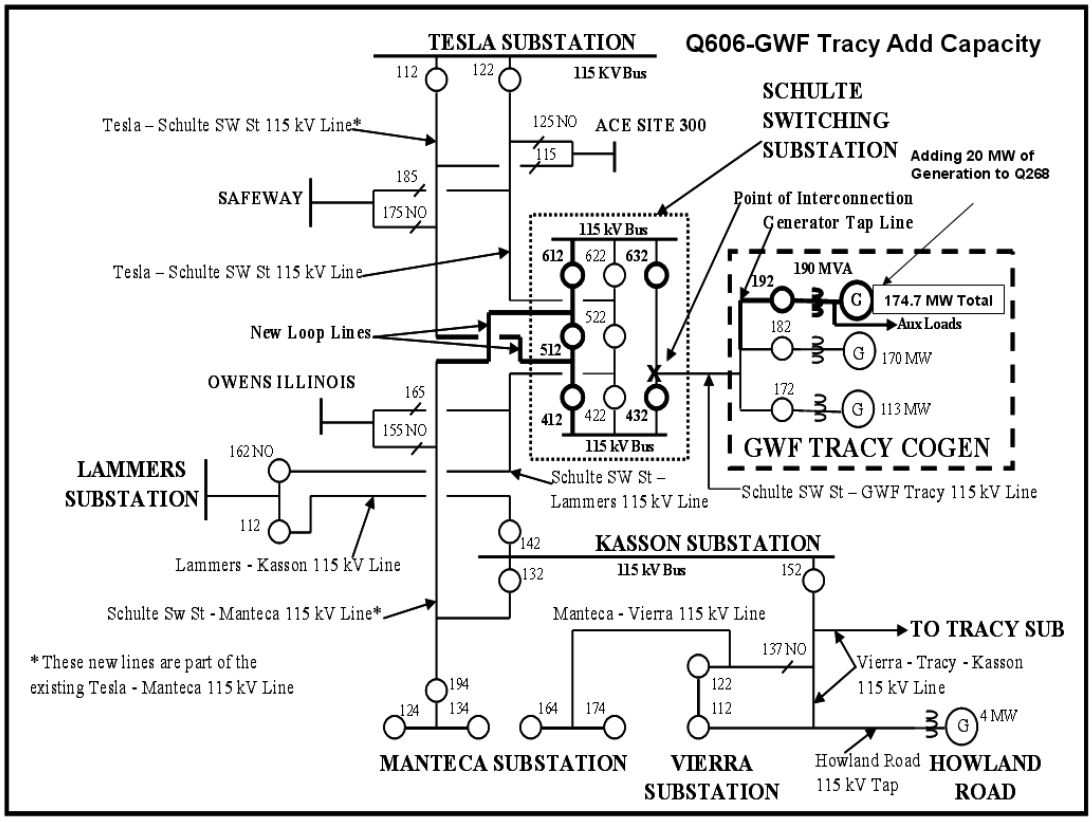

Figure 2-2: Proposed Single Line Diagram

3. Study Assumptions

For detailed assumptions, please refer to the main report. The following assumptions are only specific to this Project:

1. The Project consists of one steam turbine generator rated for 182 MW. Currently there are two generators at this site. With this proposed third generator, the total generating facility rated output will be 348 MW. With a total plant auxiliary load of 11 MW, the net output will be 337 MW.

2. The expected Commercial Operation Date of the Project is June 1, 2012.

3. The IC will engineer, procure, construct, own, operate and maintain its project facility.

4. Power Flow Analysis

The group study indicated that this project is contributing into overloading of the following transmission facilities. The details of the analysis and overload levels are provided in the group study.

4.1 Overloaded Transmission Facilities

4.1.1 Category "A" Overloads

- Q0577-Westley 230 kV Line

4.1.2 Category "B" Overloads

- Q0577-Westley 230 kV Line

4.1.3 Category "C" Overloads

- Q0577-Westley 230 kV Line

5. Short Circuit Analysis

Short circuit studies were performed to determine the fault duty impact of adding the Cluster 2 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 are identified, the fault current contribution from each individual project in Cluster 2 is determined. If the fault current contribution of any project is higher than the threshold value of

100 amperes, that project will be responsible for its share of the upgrade cost based on the rules set forth in CAISO Tariff Appendix Y.

5.1 Short Circuit Study Input Data

The following input data provided by the IC for this Project was used in this study:

STG Short Circuit Data @ 204 MVA Base:

- Positive Sequence subtransient reactance (X"1) = 0.12p.u.
- Negative Sequence subtransient reactance (X"2) = 0.13p.u.
- Zero Sequence subtransient reactance (X"0) = 0.057p.u.

Station Step-up Transformers (total of one)

- The transformer is a three-phase 18/115 kV rated for 204 MVA rise with an impedance of 8.7% at 204 MVA base.

5.2 Results

The available short circuit duty at the buses electrically adjacent to Cluster 2 projects is listed in Attachment 4. This data was used to determine if any equipment is overstressed by the interconnection of the Cluster 2 projects.

Using these short-circuit study results, an initial breaker evaluation found that this Project does not contribute to any overstressed breakers.

5.3 Preliminary Protection Requirements

Per Section G2.1 of the PG&E Interconnection Handbook, PG&E protection requirements are designed and intended to protect PG&E's system only. The applicant is responsible for the protection of its own system and equipment and must meet the requirements in the PG&E Interconnection Handbook.

These Preliminary Protection Requirements are based upon the interconnection plan as shown in Figure 2-2. The Preliminary Protection Requirements are detailed in Attachment 3.

Protection requirements may include but are not limited to direct transfer trip schemes installed at PG&E and IC facilities. The IC is responsible for installing the leased lines used for direct transfer trip communication and the necessary direct transfer trip transmitters.

6. Reactive Power Deficiency Analysis

The power flow studies of Category "B" and Category "C" contingencies indicate that the Cluster 2 projects did not cause voltage drops of 5% or more from the pre-project levels, or cause the PG&E system to fail to meet applicable voltage criteria. This project, therefore, did not cause any adverse voltage impacts on the CAISO Controlled Grid.

7. Transient Stability Evaluation

Transient Stability studies were conducted using the 2014 summer peak full loop base cases to ensure that the transmission system remains in operating equilibrium, as well as operating in a coordinated fashion, through abnormal operating conditions after the Cluster 2 projects begin operation. The generator dynamic data used in the study for this Project is shown in Attachment 1.

7.1 Transient Stability Study Scenarios

Disturbance simulations were performed for a study period of 10 seconds to determine whether the Cluster 2 projects will create any system instability during a variety of line and generator outages. For this Project, the following line and generator outages were evaluated:

7.1.1 Category "B" Contingencies:

- Full load rejection of the 165 MW Project
- A three-phase close-in fault on the new Tesla – Schulte SW ST 115 kV Line at the Tesla Substation 115 kV bus with normal clearing time followed by loss of the new Tesla – Schulte SW ST 115 kV Line
- A three-phase close-in fault on the new Tesla – Schulte SW ST 115 kV Line at the Schulte Substation 115 kV bus with normal clearing time followed by loss of the new Tesla – Schulte SW ST 115 kV Line
- A three-phase close-in fault on the Schulte SW ST - Manteca 115 kV Line at the Schulte Substation 115 kV bus with normal clearing time followed by loss of the Schulte SW ST - Manteca 115 kV Line
- A three-phase close-in fault on the Schulte SW ST - Manteca 115 kV Line at the Manteca Substation 115 kV bus with normal clearing time followed by loss of the Schulte SW ST- Manteca 115 kV Line

7.1.2 Category "C" Contingencies:

- A three-phase fault on the Tesla 115 kV bus with normal clearing time
- A three-phase fault on the new Schulte 115 kV bus with normal clearing time
- A three-phase fault on the Manteca 115 kV bus with normal clearing time
- A three-phase fault on the Tesla Substation 115 kV bus with normal clearing time followed by loss of the Tesla – Schulte and new Tesla – Schulte 115 kV lines
- A three-phase fault on the Schulte Substation 115 kV bus with normal clearing time followed by loss of the Tesla – Schulte and new Tesla – Schulte 115 kV lines
- A three-phase fault on the Schulte Substation 115 kV bus with normal clearing time followed by loss of the Schulte SW ST – Kasson and Schulte SW ST – Manteca 115 kV lines
- A three-phase fault on the Manteca Substation 115 kV bus with normal clearing time followed by loss of the Schulte SW ST – Kasson and Schulte SW ST – Manteca 115 kV lines

7.2 Results

The study concluded that the Project would not cause the transmission system to go unstable under Category "B" and Category "C" outages.

- The results of the study are provided in the form of plots in Attachment 2.

8. Deliverability Assessment

8.1 On Peak Deliverability Assessment

CAISO performed an On-Peak Deliverability Assessment on the 2014 Summer Peak conditions to determine the capability of the projects to be deliverable to the aggregated of load. The study was conducted using the assumptions and methodologies described in the On-Peak Deliverability Assessment Methodology which is available on the CAISO website at http://www.caiso.com/23d7/23d7e41c14580.pdf.

The power flow study results for Category "A", "B", and "C" from Deliverability Assessment are detailed in Attachment 5.

8.2 Off- Peak Deliverability Assessment

A modified version of the power flow 2013 Summer Off-Peak base case was created to perform the off-peak deliverability assessment of the Transition Cluster projects. The study was conducted using the assumptions and methodologies described in the Off-Peak Deliverability Assessment Methodology which is available on the CAISO website at http://www.caiso.com/23d7/23d7e46815090.pdf.

The impacts of this project are shown in Attachment 5.

9. Environmental Evaluation/Permitting

9.1 CPUC General Order 131-D

PG&E is subject to the jurisdiction of the California Public Utilities Commission (CPUC) and must comply with CPUC General Order 131-D (Order) on the construction, modification, alteration, or addition of all electric transmission facilities (i.e., lines, substations, switchyards, etc.). This includes facilities to be constructed by others and deeded to PG&E. In most cases where PG&E's electric facilities are under 200 kV and are part of a larger project (i.e., electric generation plant), the Order exempts PG&E from obtaining an approval from the CPUC provided its planned facilities have been included in the larger project's California Environmental Quality Act (CEQA) review, the review has included circulation with the State Clearinghouse, and the project's lead agency (i.e., California Energy Commission) finds no significant unavoidable environmental impacts. PG&E or the project developer may proceed with construction once PG&E has filed notice with the CPUC and the public on the project's exempt status, and the public has had a chance to protest PG&E's claim of exemption. If PG&E facilities are not included in the larger project's CEQA review, or if the project does not qualify for the exemption, PG&E may need to seek approval from the CPUC (i.e., Permit to Construct) taking as much as 18 months or more since the CPUC would need to conduct its own environmental evaluation (i.e., Negative Declaration or Environmental Impact Report).

When PG&E's transmission lines are designed for immediate or eventual operation at 200 kV or more, the Order requires PG&E to obtain a Certificate of Public Convenience and Necessity (CPCN) from the CPUC unless one of the following exemptions applies: the replacement of existing power line facilities or supporting structures with equivalent facilities or structures, the minor relocation of existing facilities, the conversion of existing overhead lines (greater than 200 kV) to underground, or the placing of new or additional conductors, insulators, or their accessories on or replacement of supporting structures already built. Obtaining a CPCN can take as much as 18 months or more if the CPUC needs to conduct its own CEQA review, while a CPCN

with the environmental review already done takes only 4-6 months or less.

Regardless of the voltage of PG&E's interconnection facilities, PG&E recommends that the project proponent include those facilities in its project description and application to the lead agency performing CEQA review on the project. The lead agency must consider the environmental impacts of the interconnection electric facility, whether built by the developer with the intent to transfer ownership to PG&E or to be built and owned by PG&E directly. If the lead agency makes a finding of no significant unavoidable environmental impacts from construction of substation or under-200 kV power line facilities, PG&E may be able to file an Advice Letter with the CPUC and publish public notice of the proposed construction of the facilities. The noticing process takes about 90 days if no protests are filed, but should be done as early as possible so that a protest does not delay construction. PG&E has no control over the time it takes the CPUC to respond when issues arise. If the protest is granted, PG&E may then need to apply for a formal permit to construct the project (i.e., Permit to Construct). Facilities built under this procedure must also be designed to include consideration of electric and magnetic field (EMF) mitigation measures pursuant to PG&E "EMF Design Guidelines for New Electrical Facilities: Transmission, Substation and Distribution". For projects that are not eligible for the Advice Letter/notice process but have already undergone CEQA review, PG&E would likely be able to file a "short-form" CPCN or PTC application, which takes about 4-6 months to process.

Please see Section III, in General Order 131-D. This document can be found in the CPUC's web page at:

http://www.cpuc.ca.gov/PUBLISHED/GENERAL_ORDER/589.htm

9.2 CPUC Section 851

Because PG&E is subject to the jurisdiction of the CPUC, it must also comply with Public Utilities Code Section 851. Among other things, this code provision requires PG&E to obtain CPUC approval of leases and licenses to use PG&E property, including rights-of-way granted to third parties for Interconnection Facilities. Obtaining CPUC approval for a Section 851 application can take several months, and requires compliance with CEQA. PG&E recommends that Section 851 issues be identified as early as possible so that the necessary application can be prepared and processed. As with GO 131-D compliance, PG&E recommends that the project proponent include any facilities that may be affected by Section 851 in the lead agency CEQA review so that the CPUC does not need to undertake additional CEQA review in connection with its Section 851 approval.

10. Upgrades, Cost Estimates and Construction schedule estimates

To determine the cost responsibility of each generation project in Cluster 2, the CAISO developed cost allocation factors based on the individual contribution of each project (Attachment 6). The cost allocation for the Interconnection Facilities and Network Upgrades for which this project is solely responsible is as follows:

Table 10.1: Upgrades, Estimated Costs, and Estimated Time to Construct Summary

Type of Upgrade	Upgrade	Description	Cost Allocation	Estimated Cost x 1,000	Estimated Time to Construct
Delivery Network Upgrades	Reconductor the Q577 - Westley 230 kV Line (*Note 1)*	• Install 1-230 kV disconnect at Westley • Install 1-230 kV disconnects at Q577 • Rebuild 30 miles of 230 kV lines with steel poles	0.45%	$60	36 months
Reliability Network Upgrades	Henrietta 70kV and 115kV system voltage instability post Gates Bus 1E contingency	• Install SPS to trip the Project Q581	1.1%	$10	18 months
Total				**$70**	

Note 1: The Estimated Time to Construct is the schedule for the PTO to complete only the construction activities for the specified facility.
Note 2: The Interconnection Customer is obligated to fund these upgrades and will not be reimbursed.

The non-binding construction schedule to engineer and construct the facilities is based on the assumptions outlined in Section 3 of this report, and is applicable from the signing of the Large Generator Interconnection Agreement (LGIA). This is also based upon the assumption that the environmental permitting obtained by the IC is adequate for permitting all PG&E activities.

It is assumed that the IC will include the PG&E's Interconnection Facilities and Network Upgrades work scope, as they apply to work within public domains, in its environmental impact report to the CPUC. However, note that CPUC may still require the PG&E to obtain a Permit to Construct (PTC) or a Certificate of Public Convenience and Necessity (CPCN) for the generator tie line and Network Upgrades work associated with the Project. Hence, the facilities needed for the project interconnection could require an additional two to three years to complete. The cost for obtaining any of this type of permitting is not included in the above estimates.

11. Technical Requirements

The PG&E Interconnection Handbook explain the technical requirements for interconnection of loads and generators to PG&E's transmission system. The Interconnection Handbook documents facility connection requirements to the PG&E system as required in NERC Standard FAC-001-0. They are based on applicable FERC and CPUC rules and tariffs (e.g., Electric Rules 2, 21 and 22), as well as accepted industry practices and standards. In addition to providing reliability, these technical requirements are consistent with safety for PG&E workers and the public.

The PG&E Interconnection Handbook applies to Retail and Wholesale Entities, which own or operate generation, transmission, and end user facilities that are physically connected to, or desire to physically connect to PG&E's electric system. All technical

requirements described or referred to in the Handbook apply to new or re-commissioned Generation Facilities. The Generation Interconnection Handbook comprising sections G-1 through G-5 applies to Generation Entities.

PG&E has established standard operating, metering and equipment protection requirements for loads and generators. The Interconnection Handbook covers such requirements for all transmission-level load and generation entities wishing to interconnect with PG&E's electric system. Additional, project-specific requirements may apply and are documented in this SIS report.

The PG&E Interconnection Handbook includes, but is not limited to such operating requirements as the following:

- The Project must be able to meet the power factor requirements of 90 percent lagging and 95 percent leading.

- The Project must have Automatic Voltage Regulation (AVR) and be able to maintain the generator voltage under steady-state conditions within ±0.5 percent of any voltage level between 95 percent and 105 percent of the rated generator voltage.

Generators must also meet all applicable CAISO, NERC, and Western Electric Coordinating Council (WECC) standards. NERC and WECC standards include, but are not limited to such requirements as the following:

- The Project must be able to remain on line during voltage disturbances up to the time periods and associated voltage levels as required by the WECC Low Voltage Ride Through (LVRT) standards that are in-line with FERC Order No. 161-A. The WECC LVRT standard is available on the WECC web site at:

  http://www.wecc.biz/committees/StandingCommittees/PCC/TSS/Shared%20Documents/Voltage%20Ride%20Through%20White%20Paper.pdf

- Currently NERC is working on a Voltage Ride Through standard, PRC-024-1, that would be applicable to all generators interconnecting to the transmission grid. Until PRC-024-1 is effective, PG&E and the CAISO will require that all generators comply with the existing WECC LVRT requirements. The PRC-024-1 standard Draft 1 can be found on the NERC web site at

  http://www.nerc.com/docs/standards/sar/PRC-024-1_Draft1_2009Feb17.pdf

All generators must satisfy the requirements of the PG&E's Interconnection Handbook and meet all applicable CAISO, NERC, and WECC standards. PG&E will not agree to interconnect any new generators unless all technical and contractual requirements are met.

The IC should be aware that the information in the PG&E Interconnection Handbook is subject to change. Parties interconnecting to the PG&E electric system should verify with their PG&E representative that they have the latest versions. The PG&E Interconnection Handbook is available on the PG&E web site at:

http://www.pge.com/about/rates/tariffbook/ferc/tih/

12. Items not covered in this study

The Phase 1 Study does not address any requirements for standby power that the Project may require. The IC should contact their PG&E Generation Interconnection Services representative regarding this service.

Note: The IC is urged to contact their PG&E Generation Interconnection Services representative promptly regarding standby service in order to ensure its availability for the Project's start up date.