REQUEST WINDOW SUBMISSION FORM

Please complete this submission form and the Attachment A (technical data) and send the documentation to the ISO contact listed in section 2. Please note that this form should be used for the purpose of submitting information that applies to the scope of Request Window that is a part of the ISO Transmission Planning Process only. For more information on the Request Window, please refer to the Business Practice Manual (BPM) for the Transmission Planning Process which is available at:
http://www.caiso.com/planning/Pages/TransmissionPlanning/Default.aspx.

The undersigned ISO Stakeholder Customer submits this request to be considered in the CAISO Transmission Plan. This submission is for (check one)[1]:

- ☒ Reliability Transmission Project (refer to section 1 of Attachment A)
  - ☒ Submission is requested by a PTO with a PTO service territory
  - ☐ Submission is requested by a non-PTO, a PTO without a PTO service territory or a PTO outside its PTO service territory.
- ☐ Merchant Transmission Facility (refer to section 1 of Attachment A)
- ☐ Location Constrained Resource Interconnection Facility (LCRIF) (refer to sections 1 & 2 of Attachment A)
- ☐ Project to preserve Long-term Congestion Revenue Rights (CRR) (refer to section 1 of Attachment A)
- ☐ Demand Response Alternatives (refer to section 3 of Attachment A)
- ☐ Generation Alternatives (refer to section 4 of Attachment A)

1. Please provide the following basic information of the submission:
   a. Please provide the project name and the date you are submitting the project proposal to the ISO. It is preferred that the name of the project reflects the scope and location of the project:

      Project Name: Redacted **230 kV Line**

      Submission Date: **9/14/2012**

   b. Project location and interconnection point(s): Redacted Redacted

   c. Description of the project. Please provide the overview of the proposed project (e.g. overall scope, project objectives, estimated costs, etc.): **The project scope is to upgrade the existing** Redacted **115 kV Line to 230 kV, then terminate the line at** Redacted **Substations. In addition, a 230/115 kV transformer will be installed at** Redacte **Substation.**

   d. Proposed In-Service Date, Trial Operation Date and Commercial Operation Date by month, day, and year and Term of Service.

[1] Please contact the ISO staff at requestwindow@caiso.com for any questions regarding the definitions of these submission categories in this form.

Proposed In-Service date: **5 / 31 / 2019**

Proposed Trial Operation date (if applicable): / /

Proposed Commercial Operation date (if applicable): / /

Proposed Term of Service (if applicable):

e. Contact Information for the Project Sponsor:

Name: Redacted

Title: **Manager**

Company Name: **Pacific Gas and Electric Company**

Street Address: Redacted

City, State:

Zip Code:

Phone Number:

Fax Number:

Email Address:

2. This Request Window Submission Form shall be submitted to the following ISO representative:

Name: Dana Young

Email Address: requestwindow@caiso.com

3. This Request Window Submission Form is submitted by:

Check here if the information is the same as the Project Sponsor information in 1 (f) of this submission: ☒

Name:

Title:

Company Name:

Street Address:

City, State:

Zip Code:

Phone Number:

Fax Number:

Email Address:

Redacted 230 kV Line Project

IN-SERVICE DATE

May 2019 or earlier

PURPOSE AND BENEFIT

Reliability – NERC compliance.

PROJECT CLASSIFICATION

This project is submitted to the CAISO for Board approval at its March 2013 meeting.

DESCRIPTION AND SCOPE OF PROJECT

The project scope is to:

- Convert the existing idle Redacted 115 kV Line into a new Redacted 230 kV Line
- Install a 3-phase 230/115 kV transformer rated to handle at least 420 MVA at Redact Substation
- Install two 115 kV bus sectionalizing circuit breakers and one bus tie circuit breaker at Redact Substation

PG&E proposes to install the new 73 mile long 230 kV line by utilizing the idle Redacted 115 kV Line. The idle line is 65 miles long and is within close proximity of Redacted Substations.

This project protects against NERC Categories C2, C3 and C5 contingencies affecting a large portion of the Redacted area. This project also works in conjunction with the Redacted Voltage Support Project to help provide another source of power and voltage support in the area to be able to meet the long term off-site power requirement needs of Redacted Power Plant. For the years 2012 to 2018, NERC compliance is provided by a temporary special protection scheme which is currently operational.

This project is expected to cost between $90M and $120M. The large cost range is due to the unknown permitting and environmental aspects of the project as well as to account for the potential high number of tower replacements.

BACKGROUND

The Redacted 115 kV transmission system provides electric service to about 95,000 customers in Redacted Electric substations interconnected to the Redacted 115 kV system include: Redacte Redacted Switching Station, Redacted Redacted. In addition, Vandenberg Air Force Base and Union Oil are large load transmission service customers that are electrically served to this transmission system.

Planning studies have concluded that a double circuit tower line (DCTL) outage of the Redacted 230 kV, Redacted Redacted (DCTL), or the loss of the two existing Redac 230/115 kV Transformers would result in voltage collapse due to severe low voltages (below 0.80 per unit) and severe thermal overload conditions on the Redacted and Redacted Switching Station 115 kV Lines greater than 70% in 2012. The Redacted Special Protection Scheme (SPS) was installed in May 2011 to temporarily mitigate these conditions by dropping load in the area to ensure that the voltage collapse does not propagate outside the area. This SPS will drop roughly 260 MW of load by opening circuit breaker 132 at Mesa and circuit breaker 132 at Redacted substations.

In addition, PG&E and CAISO operations groups have expressed great concerns of granting clearances for planned upgrades or maintenance work on the 230 kV Lines in the area. According to system studies, if either the Redacted 230 kV Line or the Redacted 230 kV Line is out of service for maintenance the next L-1 outage will cause low voltage and thermal overloads that could prevent the local area load from being served. Also, during clearances to perform planned capacity upgrades on either of the Redacted 230 kV lines, there is concern about the next worst contingency, particularly when Redacte Reda generation is off-line. In this scenario, an outage of the parallel line would result in the entire area being served by the remote Redact Substation and this could possibly cause low voltage concerns depending on the area load.

With the expected future retirement of the Redacted Generating Units, which when available provide support to the local area, the entire Redacted area will be even more susceptible to potential outages and voltage concerns. Not having the Redacted units available will also have an impact in the ability of meeting the DCPP off-site power requirements as described in PG&E's O-23 Operating Procedure

PG&E has also proposed the Redacted Voltage Support Project to address this issue in conjunction with this project.

BASE CASE AND STUDY ASSUMPTIONS

PG&E used base cases and assumptions approved in the CAISO Unified Planning Assumptions and Study Plan for the 2012/2013 Transmission Planning Process cycle.

STUDY CRITERIA

NERC Transmission Planning Reliability Standards
WECC Transmission Planning System Performance Criterion
California ISO Planning Standards

OTHER ALTERNATIVES CONSIDERED

Alternative 1: Status Quo

This alternative is not recommended because it does not mitigate the expected capacity constraints without having to rely on special protection schemes that result in dropping a large amount of customer load in a wide geographical area in the Los Padres Division. It also does not address the long term needs for the area and DCPP.

Alternative 2: Construct 230 kV Line from Redacted *to* Redacted *substations.*

This alternative proposes to construct a 230 kV Line from Redacted to Redacted substation. This alternative is not recommended because it does not provide as much operational flexibility and the required voltage support as the preferred alternative especially in the event the Redacted Generating Units are retired.

Alternative 3: 230 kV Line from Redacted *to* Redacted *Substation*

This alternative proposes to construct a 230 kV Line from Redacted to a new 230/115 kV substation. In addition, it is proposed to loop the new substation 115 kV bus into the Redacted and Redacted 115 kV Lines. These 115 kV Lines are in close proximity of the idle Redacted 115 kV Line, thus requiring minimal 115 kV transmission line work to loop the new substation. This alternative reduces the dependency on Redacted by providing a new and diverse source to the local 115 kV system. This alternative is also effective in mitigating all of the concerns caused by loss of 230 kV sources at Redacted as well as the loss of both 115 kV buses due to a stuck bus tie breaker event. For the scenario of a Redacted 230 kV Lines (DCTL) outage when the entire DCPP off-site power load is served from the 230 kV system, this alternative results on high loadings on the 115 kV tie lines from Redacted within the next 10 to 15 years.

Alternative 4: Redacted *230 kV Line with Substation*

This alternative proposes to loop a new 230/115 kV substation into the upgraded Redacted 230 kV Line. The new substation 115 kV bus would also be looped into the Redacted and Redacted 115 kV Lines. These 115 kV Lines are in close proximity of the idle Redacted 115 kV Line, thus requiring minimal 115 kV transmission line work to loop the new substation. This alternative reduces the dependency on Redacted Substation by providing a new and diverse source to the local 115 kV system. This alternative is also effective in mitigating all of the concerns caused by loss of 230 kV sources at Redacte Substation as well as the loss of both 115 kV buses due to a stuck bus tie breaker event. For the scenario of a Redacted and Redacted 230 kV Lines (DCTL) outage when the entire DCPP off-site power load is served from the 230 kV system, the new 230 kV line into Redacted better supports the load at DCPP substantially reducing the loading on the 115 kV tie lines from San Luis Obispo.

PROJECT SCHEDULE

- Environmental and Permitting Processes – TBD
- Design – TBD
- Major Equipment – Transformer, Towers, Conductor
- Construction – TBD

KEY ISSUES

- Land-Use Restrictions – TBD
- Environmental Concerns – TBD
- Special Metering or Protection - None
- Common Mode Exposure Items - None
- Interaction with other Projects or Studies – Redacted Voltage Support Project

GEPSLF MODELING INFORMATION

```
#73 mile 230 kV Line from Redacted
#1113 AAC Conductor (230 kV): Rpu=0.000180 Xpu=0.001485 Bpu=0.00287
NEWSECDD  30930, 30970, CKT=1, SEC=1, RPU=0.01314, XPU=0.1084, BPU=0.2095,  +
       MVA1=366, MVA2=420, MVA3=478, MVA4=478, STATUS=1, AREA=20, ZONE=320,
OWN=390
#Add new 230/115 kV transformer at Redacted
NEW_TRAN  36256, 30930, CKT=4, ZR=0.001200, ZX=0.056400, BMAG=0.000206,  +
    MVA1=420, MVA2=462, MVA3=420, MVA4=462, VNOMF=115, VNOMT=230,
MVABASE=252.0,  +
    STAT=1, TYPE=1, TAPF=1, ANGLP=0, REG=36256, VMAX=1.5, VMIN=.51,  +
    STEPP=.00625, TMAX=1.5, TMIN=.5, TAPFP=1, TAPFS=1, AREA=20, ZONE=320
END
```

MISCELLANEOUS DATA

1. PG&E will construct, own, and finance the project
2. PG&E will be the planned operator of the project

ATTACHMENTS

1. Single Line Diagrams
2. Demand Forecast
3. Power Flow Summary
4. Pre and Post Project Power Flow Plots

Attachment 1

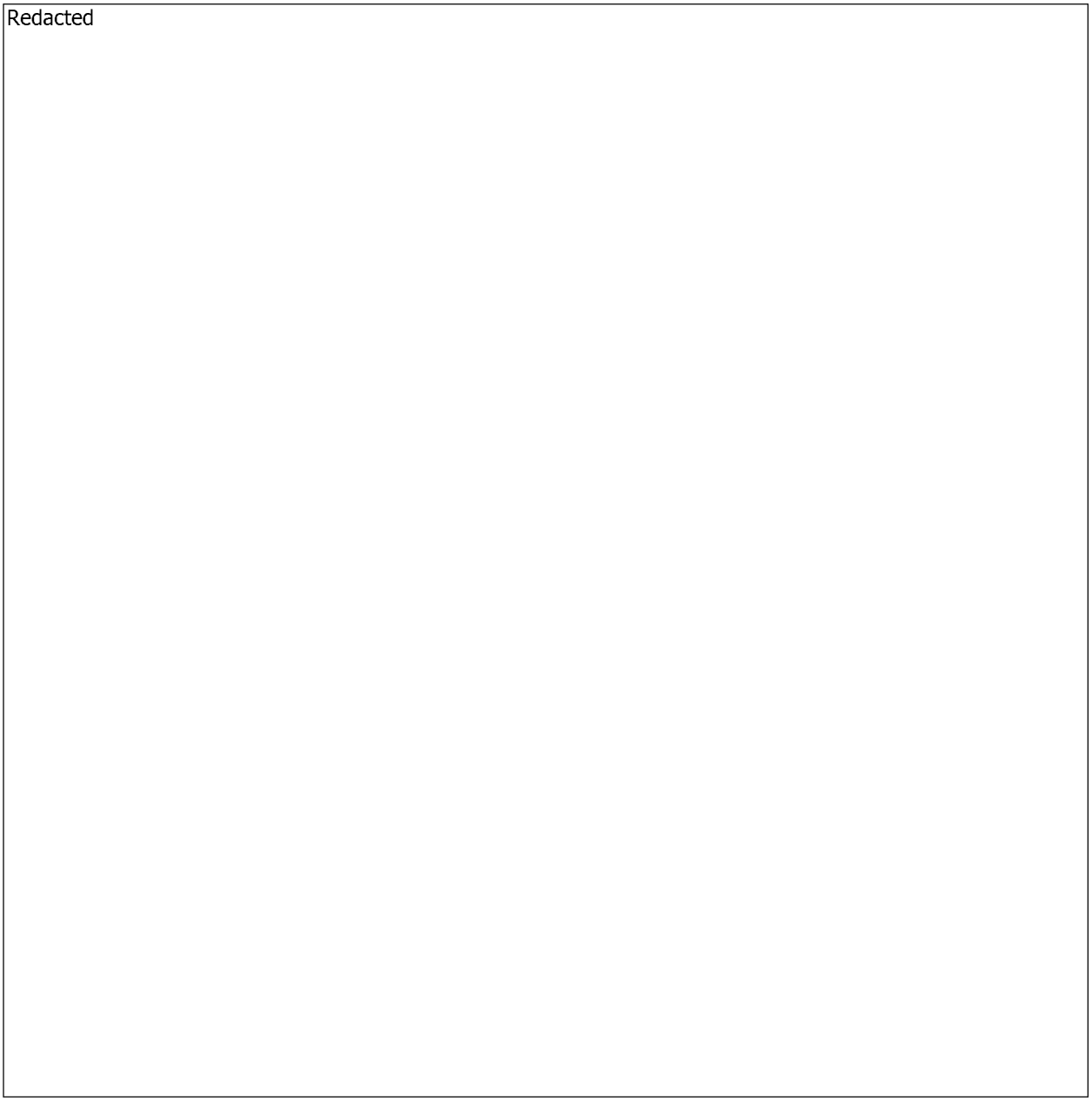

Figure 1: Geographical Location

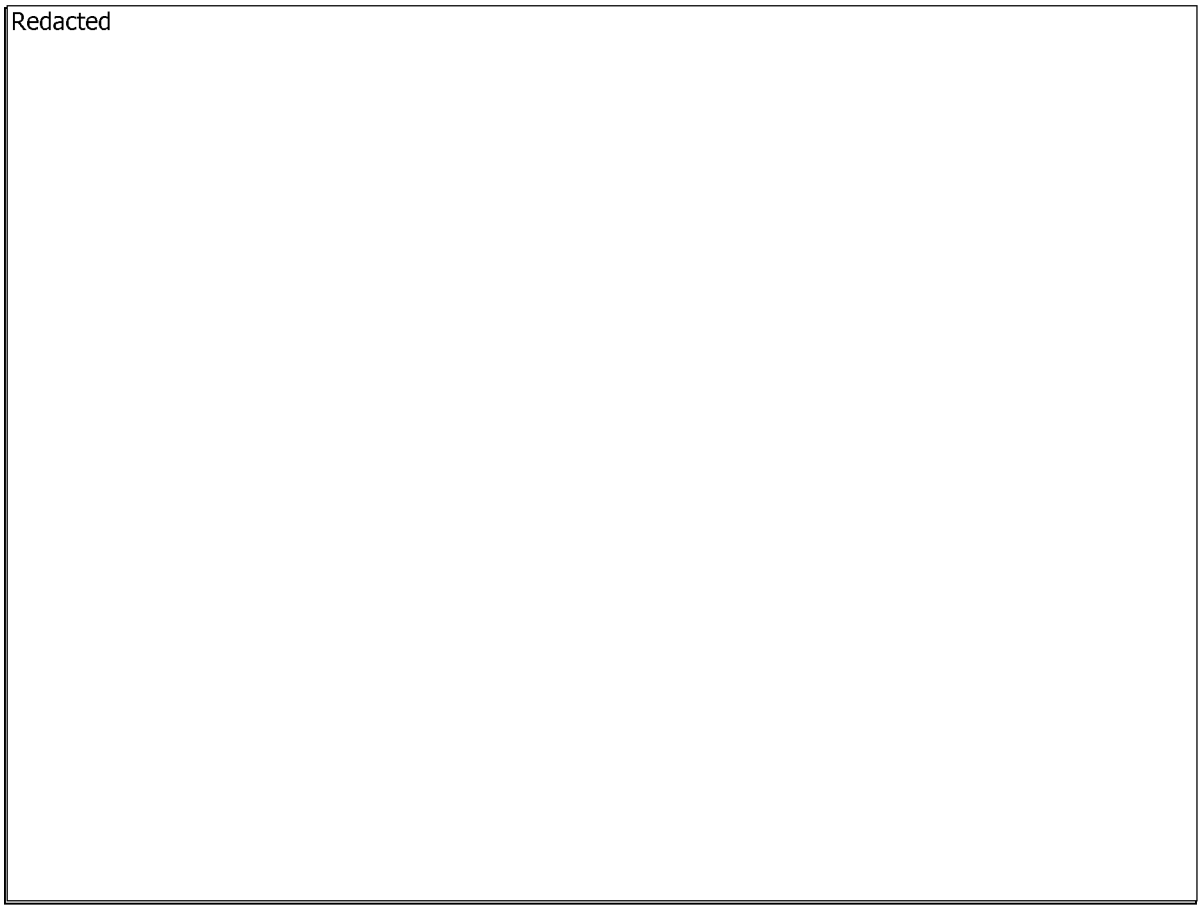

Figure 2: Existing Single Line Diagram

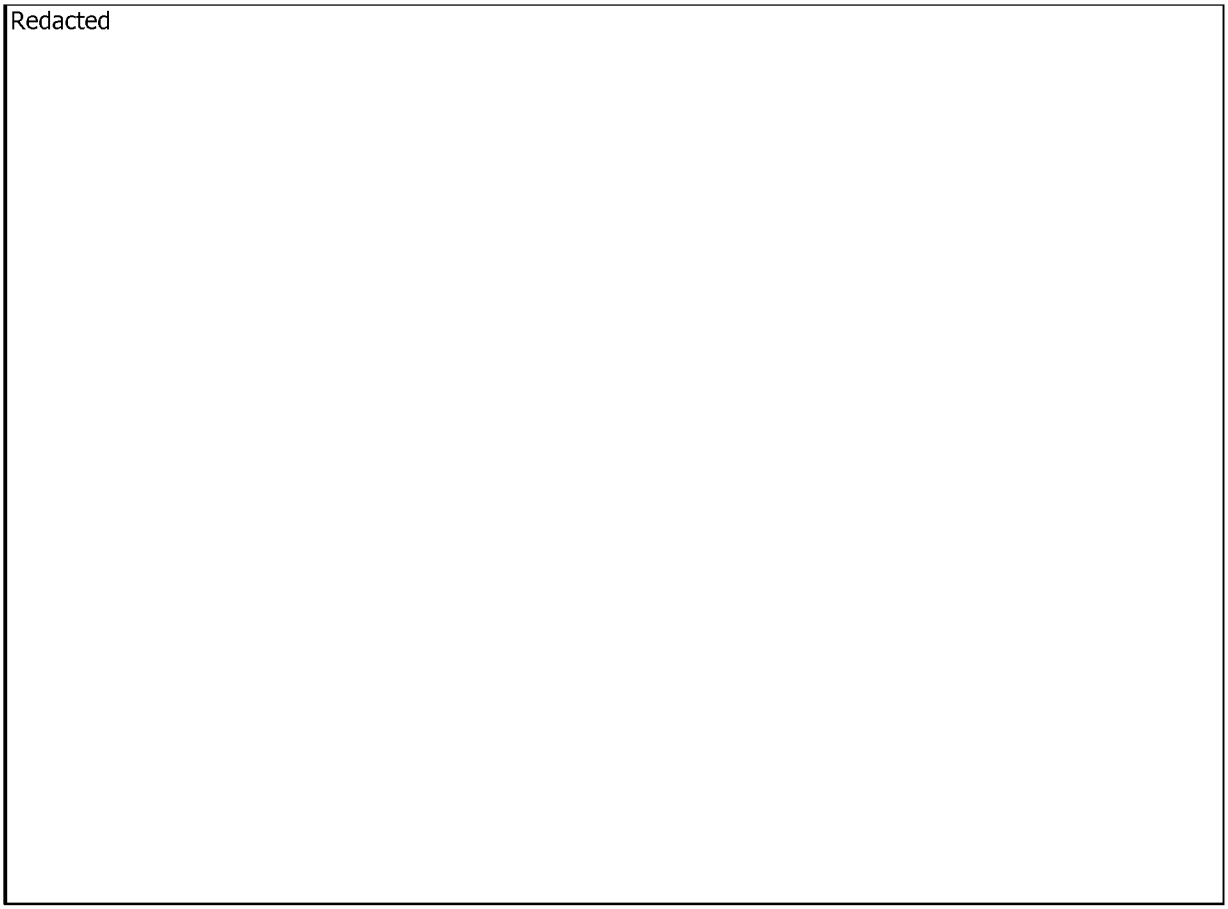

Figure 3: Proposed Single Line Diagram

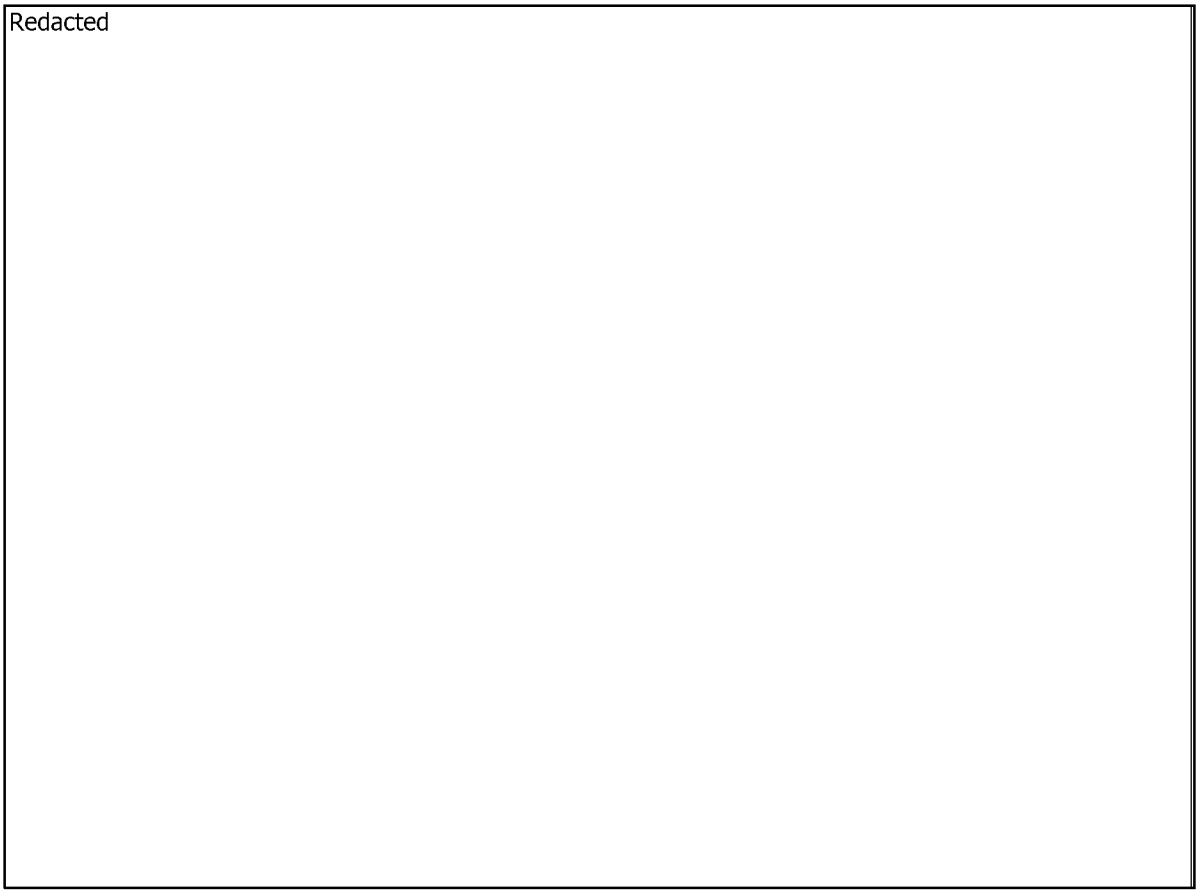

Figure 4: Alternative 2 Single Line Diagram

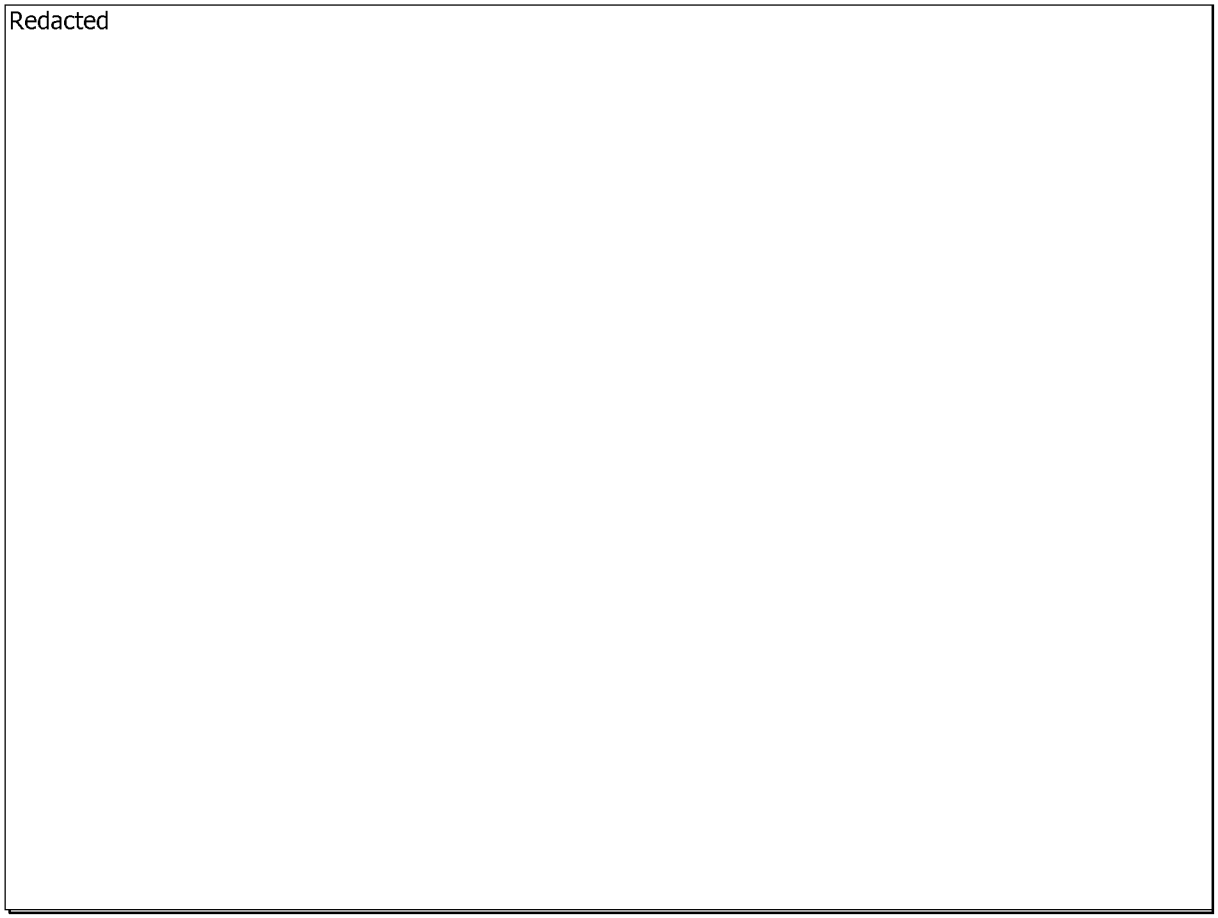

Figure 5: Alternative 3 Single Line Diagram

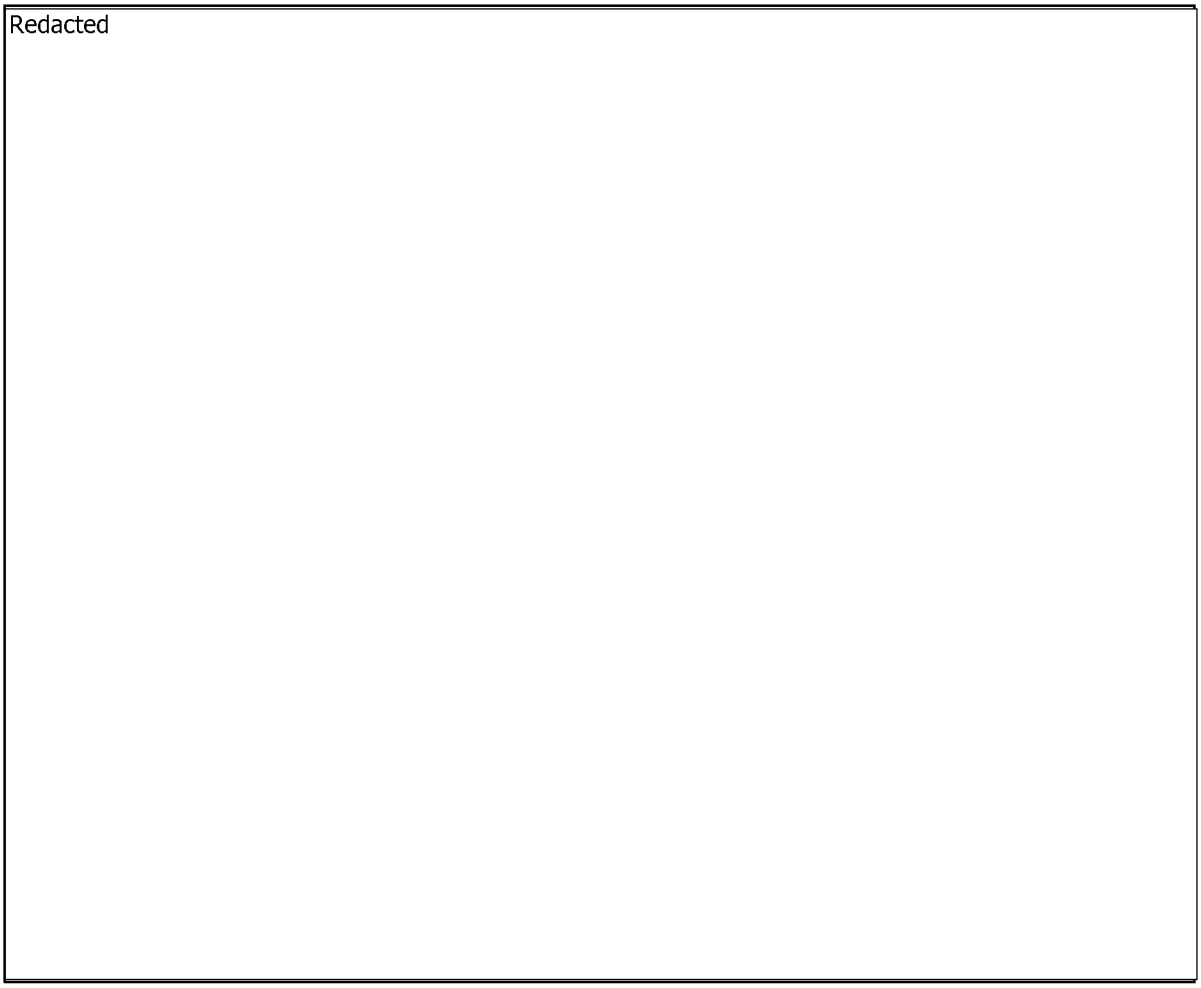

Figure 6: Alternative 4 Single Line Diagram

Attachment 2

Table 1: Demand Forecast in the Mesa Area

Substation/Bank	2013 (MW)	2014 (MW)	2015 (MW)	2016 (MW)	2017 (MW)	Growth Rate (MW/yr)
Redacted	2.5	17.7	17.9	18.1	18.3	3.95
	8.4	8.5	8.7	8.9	9.1	0.175
	6.4	6.6	6.8	7	7.2	0.2
	10.0	10	10	10	10	0
	2.1	2.1	2.2	2.3	2.4	0.075
	7.7	7.8	8.0	8.2	8.4	0.175
	7.5	7.7	7.8	7.9	8	0.125
	13.0	13.2	13.4	13.6	13.8	0.2
	12.5	12.5	12.5	12.5	12.5	0
	6.4	6.6	6.7	6.8	6.9	0.125
	7.9	8.1	8.2	8.3	8.4	0.125
	11.2	11.3	11.4	11.5	11.6	0.1
	29.9	29.9	29.9	29.9	29.9	0
	25.0	25.7	25.7	25.7	25.7	0.175
	25.7	26.0	26.2	26.4	26.6	0.225
	22.8	23.0	23.2	23.4	23.6	0.2
	8.4	8.6	8.8	9	9.2	0.2
	7.0	7.1	7.2	7.3	7.4	0.1
	16.7	16.8	17.0	17.2	17.4	0.175
	27.7	27.9	28.2	28.5	28.8	0.275
	1.0	1.0	1.0	1	1	0
Total Area Load	259.8	278.1	280.8	283.5	286.2	6.6

Attachment 3

Table 2: Power Flow Results

			Pre Project						Post Project	
#	Facility	Facility Rating	2013	2014	2015	2016	2017	2022	2022	Contingency
1	Redacted	115 kV	< 0.80						1.01	Redacted
2		SE Rating 470 Amps	> 170 %						98.5%	
3		115 kV	< 0.80						1.01	
4		SE Rating 470 Amps	> 170 %						96.0%	
5		115 kV	< 0.80						1.01	
6		SE Rating 470 Amps	> 170 %						96.0%	
7		115 kV	0.90 pu	0.90 pu	0.90 pu	0.90 pu	0.90 pu	0.89 pi	1.01	

Note: Pre Project and Post Project Facility Voltages are per unit values.

Attachment 4

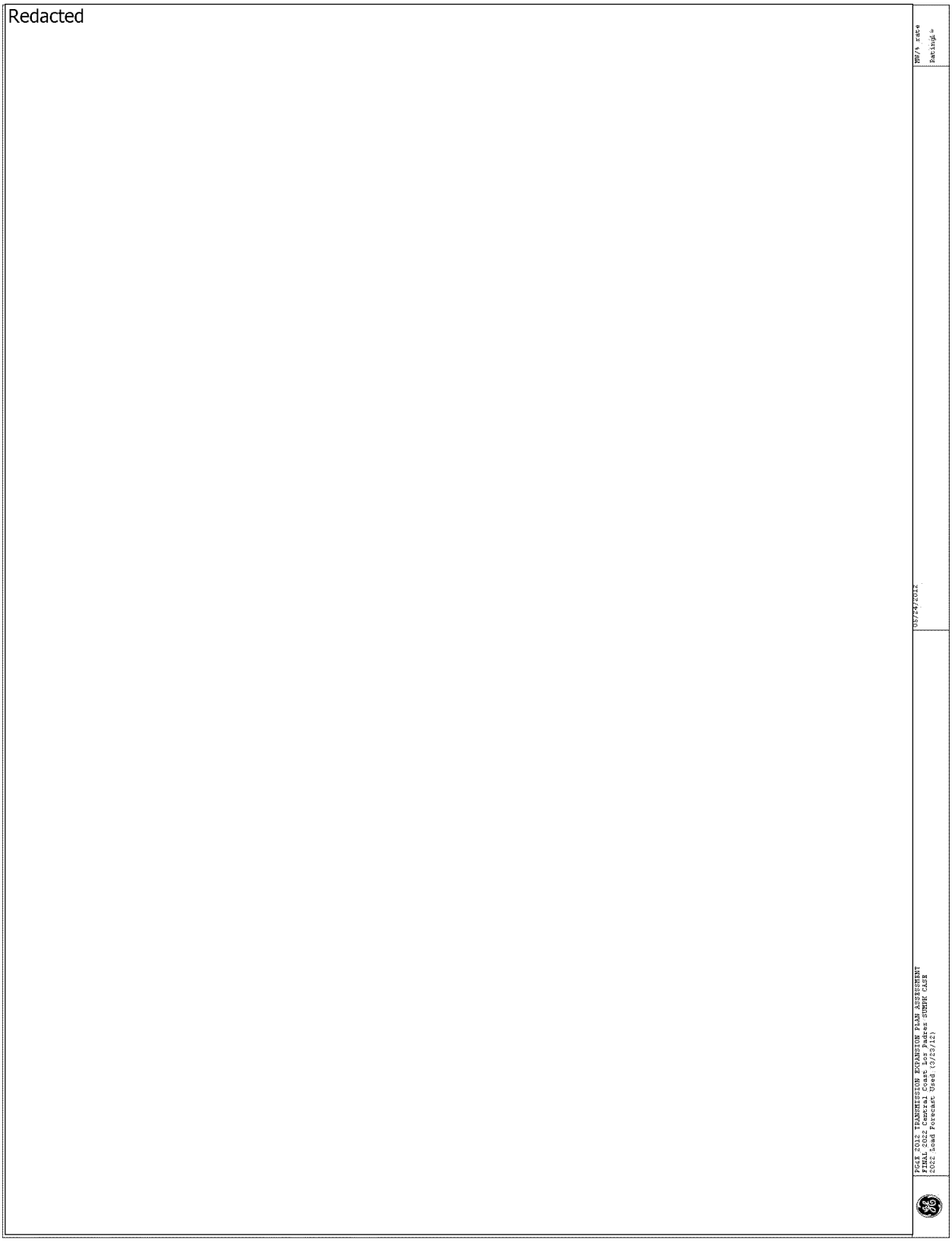

Figure 7: Pre Project – Normal Conditions

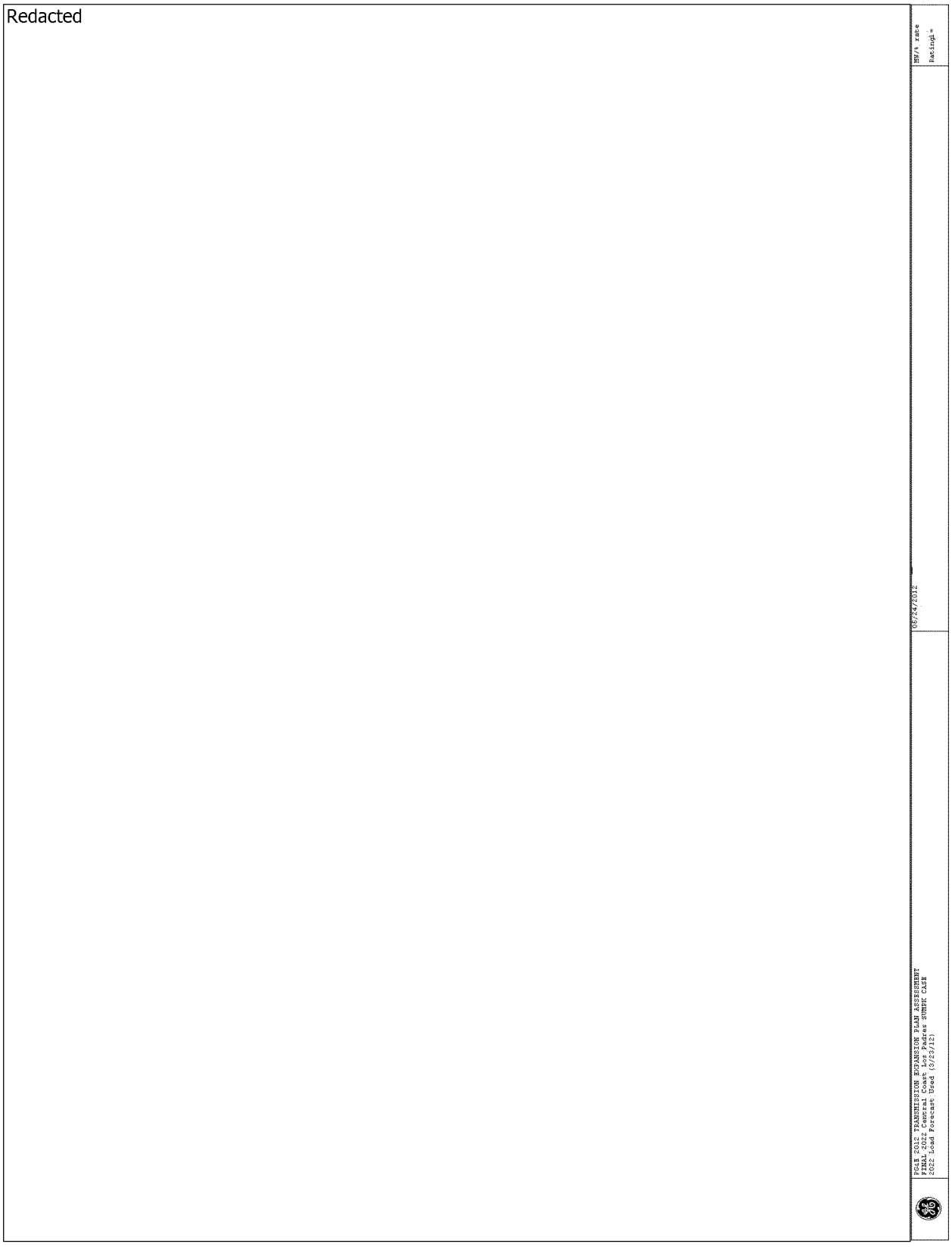

Figure 8: Post Project – Normal Conditions

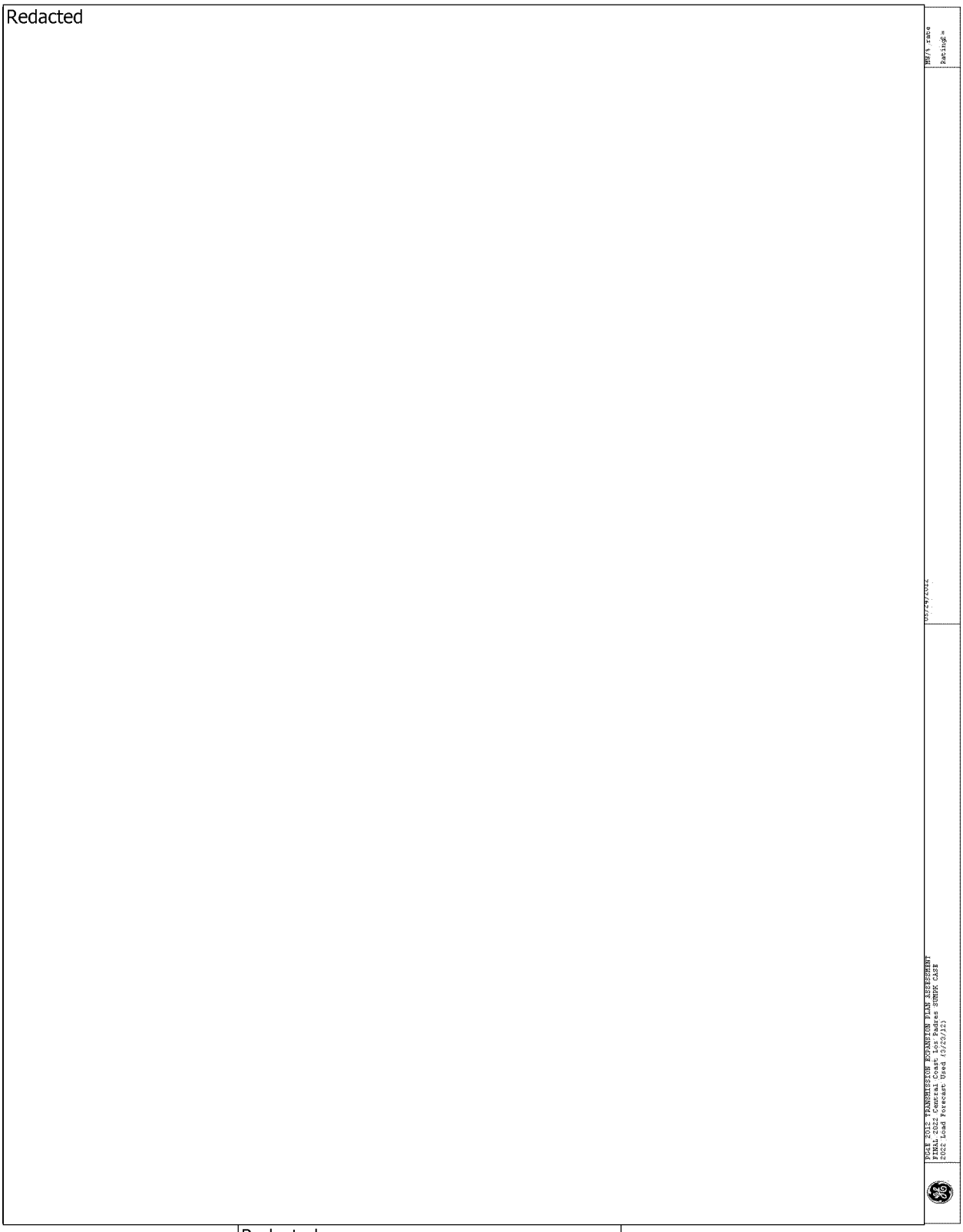

Figure 9: Post Project – Redacted **230 kV Line (L-2)**