Provisional Interconnection Study Report for PI-2021-4

14 MW Summer/52 MW Winter Incremental Capacity at RMEC Units 1 and 2

4/8/2022

Xcel Energy®

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1.0 Executive Summary

The “PI-2021-4” is a Provisional Interconnection request for a 14 MW (Summer)/52 MW (Winter) incremental capacity increase for the output of the existing Rocky Mountain Energy Center (RMEC) Units 1 and 2 Combustion Turbine Generating Facility. PI-2021-4 is the Provisional Interconnection request later submitted as Generation Interconnection Request GI-2022-1 in the 5DISIS-2022-001 Cluster. This is an Affiliate request.

The total estimated cost of the transmission system improvements required for PI-2021-4 to qualify for Provisional Interconnection Service is $0.05 million (Tables 4 and 5).

The initial maximum permissible output of PI-2021-4 Generating Facility is 52 MW (i.e., combined 52 MW increment, 185 MW maximum for each unit). The maximum permissible output of the Generating Facility in the PLGIA will be reviewed quarterly and updated if there are changes to system conditions compared to the system conditions previously used to determine the maximum permissible output.

Security: Based on GI-2022-1 in 5DISIS-2022-001 selection of Energy Resource Interconnection Service (ERIS), the security associated with the Network Upgrades that might be identified at the conclusion of the GI-2022-1 Large Generation Interconnection Procedure (LGIP) in the 5DISIS-2022-001 cluster is estimated to be approximately $5 million.

The Interconnection Customer assumes all risk and liabilities with respect to changes between the PLGIA and the LGIA, including changes in output limits and Interconnection Facilities, Network Upgrades, Distribution Upgrades, and/or System Protection Facilities cost responsibility.

Note: Provisional Interconnection Service in and of itself, does not convey transmission service.

2.0 Introduction

The PI-2021-4 is the Provisional Interconnection Service[1] request 14 MW (Summer)/52 MW (Winter) incremental capacity in the output of the existing RMEC Units 1 and 2 Combustion Turbine generators located in Weld County, Colorado. The incremental output is driven by turbine prime mover changes being performed as part of maintenance and modernizing the equipment and no changes to the electrical generator set are anticipated. The net generating capacity of RMEC Units 1 and 2 after the Provisional Interconnection will be 173 MW (Summer)/185 MW (Winter) each, meaning each unit will increase by 7 MW (Summer)/26 MW (Winter).

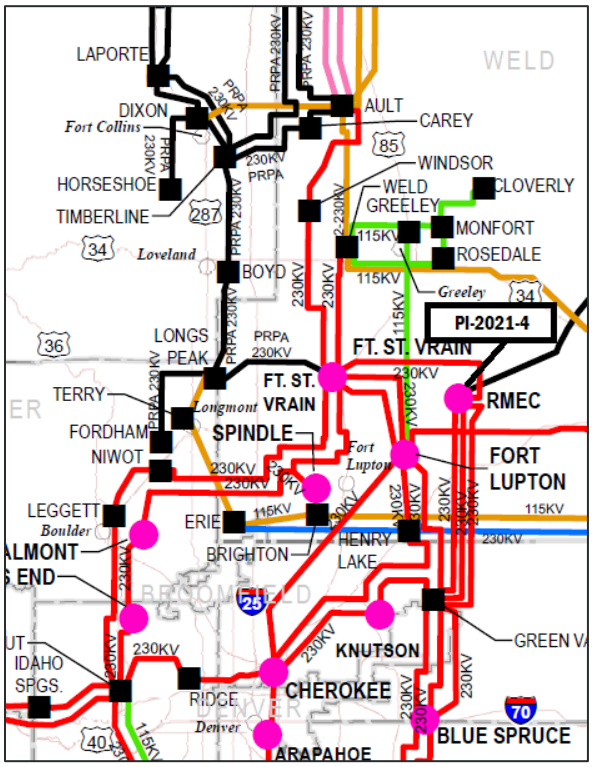
The POI of the incremental capacity is the existing RMEC Substation where RMEC Units 1 and 2 are currently interconnected.

The proposed Commercial Operation Date (COD) of PI-2021-4 for RMEC Unit 2 is May 15, 2022 and for RMEC Unit 1 is April 1, 2023. Since POI is existing, a back-feed date is not applicable.

The geographical location of the transmission system near the POI is shown in Figure 1.

[1] **Provisional Interconnection Service** shall mean an Interconnection Service provided by Transmission Provider associated with interconnecting the Interconnection Customer's Generating Facility to Transmission Provider's Transmission System and enabling that Transmission System to receive electric energy and capacity from the Generating Facility at the Point of Interconnection, pursuant to the terms of the Provisional Large Generator Interconnection Agreement and, if applicable, the Tariff.

Figure 1 – Point of Interconnection of PI-2021-4



3.0 Study Scope

The purpose of this study is to determine the impacts to the PSCo system and the Affected Systems from interconnecting PI-2021-4 for Provisional Service. Consistent with the assumption in the study agreement, PI-2021-4 selected Energy Resource Interconnection Service (ERIS)[2] in 5DISIS-2022-001.

The scope of this report includes steady state (thermal and voltage) analysis, transient stability analysis, short circuit analysis, and cost estimates for Interconnection Facilities and Station Network Upgrades. The study also identifies the estimated Security[3] and Contingent Facilities associated with the Provisional Service.

[2] **Energy Resource Interconnection Service** shall mean an Interconnection Service that allows the Interconnection Customer to connect its Generating Facility to the Transmission Provider's Transmission System to be eligible to deliver the Generating Facility's electric output using the existing firm or non-firm capacity of the Transmission Provider's Transmission System on an as available basis. Energy Resource Interconnection Service in and of itself does not convey transmission service.

[3] **Security** estimates the risk associated with the Network Upgrades and Interconnection Facilities that could be identified in the corresponding LGIA.

3.1 Study Criteria

3.1.1 Steady State Criteria

The following Criteria are used for the reliability analysis of the PSCo system and Affected Systems:

P0—System Intact conditions:

Thermal Loading: <=100% of the normal facility rating

Voltage range: 0.95 to 1.05 per unit

P1 & P2-1—Single Contingencies:

Thermal Loading: <=100% Normal facility rating

Voltage range: 0.90 to 1.10 per unit

Voltage deviation: <=8% of pre-contingency voltage

P2 (except P2-1), P4, P5 & P7—Multiple Contingencies:

Thermal Loading: <=100% Emergency facility rating

Voltage range: 0.90 to 1.10 per unit

Voltage deviation: <=8% of pre-contingency voltage

3.1.2 Transient Stability Criteria

The transient voltage stability criteria are as follows:

a. Following fault clearing, the voltage shall recover to 80% of the pre-contingency voltage within 20 seconds of the initiating event for all P1 through P7 events for each applicable Bulk Electric System (BES) bus serving load.
b. Following fault clearing and voltage recovery above 80%, voltage at each applicable BES bus serving load shall neither dip below 70% of pre-contingency voltage for more than 30 cycles nor remain below 80% of pre-contingency voltage for more than two seconds, for all P1 through P7 events.
c. For Contingencies without a fault (P2.1 category event), voltage dips at each applicable BES bus serving load shall neither dip below 70% of pre-contingency voltage for more than 30 cycles nor remain below 80% of pre-contingency voltage for more than two seconds.

The transient angular stability criteria are as follows:

a. P1—No generating unit shall pull out of synchronism. A generator being disconnected

from the system by fault clearing action or by a special Protection System is not considered an angular instability.

b. P2–P7—One or more generators may pull out of synchronism, provided the resulting apparent impedance swings shall not result in the tripping of any other generation facilities.
c. P1–P7—The relative rotor angle (power) oscillations are characterized by positive damping (i.e., amplitude reduction of successive peaks) > 5% within 30 seconds.

3.1.2 Breaker Duty Analysis Criteria

Fault Current after PI addition should not exceed 100% of the Breaker Duty rating. PSCo can only perform breaker duty analysis on the PSCo system. Before the PI goes in-service the Affected Systems may choose to perform a breaker duty analysis to identify breaker duty violations on their system.

3.2 Study Methodology

For PSCo and non-PSCo facilities, thermal violations attributed to the request include all new facility overloads with a thermal loading >100% and increased by 1% or more from the benchmark case overload post the GI addition.

The voltage violations assigned to the request include new voltage violations which resulted in a further variation of 0.01 per unit.

Since the request is for Provisional Service, if thermal or voltage violations are seen, the maximum permissible Provisional Interconnection before violations is identified. For voltage violations caused by reactive power deficiency at the POI, voltage upgrades are identified.

The Provisional Interconnection request should meet the Transient stability criteria stated in Section 3.1. If the addition of the GI causes any violations, the maximum permissible Provisional Interconnection Service before violations is identified.

3.3 Contingency Analysis

The transmission system on which steady state contingency analysis is run includes the WECC designated areas 70 and 73.

The transient stability analysis is performed for the following worst-case contingencies:

- Three-phase fault at RMEC 230 kV, trip all RMEC units
- Three-phase fault at Pawnee 230 kV, trip Pawnee generation
- Three-phase fault at RMEC 230 kV, trip Green Valley–Spruce 230 kV
- Three-phase fault at RMEC, trip RMEC–Green Valley and RMEC–Keenesburg 230 kV
- Three-phase fault at RMEC 230 kV, trip Green Valley–Keenesburg #1 & #2 230 kV

3.4 Study Area

The study area includes WECC designated zones 700, 703 and 706. The Affected Systems included in the analysis include Tri-State Generation and Transmission Inc. (TSGT) system in the study area.

4.0 Base Case Modeling Assumptions

The study was performed using the 2023HS3 WECC base case released on May 14, 2021. The following planned transmission projects are modeled in the Base Case:

- Cloverly 115 kV Substation—ISD 2021
- Rebuild Villa Grove–Poncha 69 kV Line to 73 MVA—ISD 2021

Also, the following facility uprate projects are modeled at their planned future ratings:

- Upgrade Allison–Soda Lakes 115 kV line to 318 MVA—ISD 2021
- Upgrade Buckley34–Smoky Hill 230 kV line to 506 MVA—ISD 2021
- Upgrade Daniels Park–Prairie1 230 kV line to 635 MVA[4] —ISD 2023
- Upgrade Greenwood–Prairie1 230 kV line to 571 MVA—ISD 2022
- Upgrade Daniels Park–Prairie3 230 kV line to 635 MVA[5]—ISD 2023
- Upgrade Greenwood–Prairie3 230 kV line to 571 MVA—ISD 2022
- Upgrade Waterton–Martin2 tap 115 kV line to 189 MVA—ISD 2021
- Upgrade Daniels Park 345/230 kV # T4 to 560 MVA—ISD 2021
- Upgrade Leetsdale–Monaco 230 kV line to 560 MVA—ISD 2021
- Upgrade Greenwood–Monaco 230 kV line to 560 MVA—ISD 2021

The following additional changes were made to the Black Hills Energy (BHE) model in the Base Case per further review and comment from BHE:

[4] Modeled at 756 MVA. However, the rating has been requested to be at least 635 MVA. Final rating has yet to be determined.
[5] *Id.*

- Pueblo West substation—ISD 4/13/2021
- Pueblo Reservoir–Burnt Mill 115 kV Rebuild—ISD 8/31/2021
- Boone–South Fowler 115 kV Project—ISD 10/1/2021

The Base Case model includes existing PSCo generation resources and existing Affected System generation. In addition, the following generation with approved Transmission Service and their associated Network Upgrades are modeled:

- GI-2018-24, 1RSC-2020-1[6], 1RSC-2020-2, 2RSC-2020-5 in the PSCo queue
- T-2021-2, 200 MW at Comanche 230 kV in the PSCo queue
- T-2021-3, 100 MW at Midway 115 kV Substation. Midway 230/115 kV, 280 MVA transformer replacement project identified in T-2021-3
- TI-18-0809 and TI-19-1016 in the TSGT queue
- Victory Solar, Pioneer Solar, Hunter Solar and Kiowa Solar in the IREA system

4.1 Benchmark Case Modeling

The Benchmark Case was created from Base Case described in Section 4.0 by changing the study pocket generation dispatch to reflect a heavy north to south flow. This was accomplished by adopting the stressed generation dispatch given in Table 1.

Table 1 – Generation Dispatch Used to Stress the Benchmark Case

Bus Number	Bus Name	ID	PGen (MW)	PMax (MW)	Owner
70825	CEDAR2_W1 0.66	W1	100	125	PSCO
70826	CEDAR2_W2 0.69	W2	80.6	100.8	PSCO
70827	CEDAR2_W3 0.66	W3	20	25	PSCO
70823	CEDARCK_1A 34.50	W1	176	220	PSCO
70824	CEDARCK_1B 34.50	W2	64	80	PSCO
70106	CHEROK4 22.00	G4	335	335	PSCO
70188	FTLUP1-2 13.80	G1	39.5	50	PSCO
70188	FTLUP1-2 13.80	G2	44.6	50	PSCO
70495	JMSHAFR1 13.80	G1	35.8	35.8	TSGT

[6] 1RSC-2020-1 has since been withdrawn and has no effect on this study.

Bus Number	Bus Name	ID	PGen (MW)	PMax (MW)	Owner
70495	JMSHAFR1 13.80	G2	35.0	35	TSGT
70493	JMSHAFR2 13.80	ST	25.2	50.7	TSGT
70490	JMSHAFR3 13.80	G3	35	36.1	TSGT
70490	JMSHAFR3 13.80	ST	32	50	TSGT
70487	JMSHAFR4 13.80	G4	15	34.8	TSGT
70487	JMSHAFR4 13.80	G5	21	33	TSGT
70565	KNUTSON1 13.80	G1	40	64.5	TSGT
70566	KNUTSON2 13.80	G2	40	64.5	TSGT
70310	PAWNEE 22.00	C1	536	536	PSCO
70314	MANCHEF1 16.00	G1	100	151.3	PSCO
70315	MANCHEF2 16.00	G2	100	151.3	PSCO
70580	PLNENDG1_1 13.80	G0	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G1	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G2	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G3	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G4	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G5	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G6	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G7	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G8	3.8	5.4	PSCO
70580	PLNENDG1_1 13.80	G9	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G0	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G1	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G2	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G3	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G4	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G5	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G6	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G7	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G8	3.8	5.4	PSCO
70587	PLNENDG1_2 13.80	G9	3.8	5.4	PSCO
70585	PLNENDG2_1 13.80	G1	7.3	8.1	PSCO

Bus Number	Bus Name	ID	PGen (MW)	PMax (MW)	Owner
70585	PLNENDG2_1 13.80	G2	7.3	8.1	PSCO
70585	PLNENDG2_1 13.80	G3	7.3	8.1	PSCO
70585	PLNENDG2_1 13.80	G4	7.3	8.1	PSCO
70585	PLNENDG2_1 13.80	G5	7.3	8.1	PSCO
70585	PLNENDG2_1 13.80	G6	7.3	8.1	PSCO
70585	PLNENDG2_1 13.80	G7	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G1	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G2	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G3	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G4	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G5	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G6	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G7	7.3	8.1	PSCO
70586	PLNENDG2_2 13.80	G1	7.3	8.1	PSCO
70588	RMEC1 15.00	G1	185.0	185	PSCO
70589	RMEC2 15.00	G2	185.0	185	PSCO
70591	RMEC3 23.00	ST	316	316	PSCO
70593	SPNDLE1 18.00	G1	128.8	157	PSCO
70594	SPNDLE2 18.00	G2	126.5	157	PSCO
70409	ST.VRAIN 22.00	ST	280.8	310	PSCO
70406	ST.VR_2 18.00	G2	169.5	169.5	PSCO
70407	ST.VR_3 18.00	G3	178	178	PSCO
70408	ST.VR_4 18.00	G4	130.9	177	PSCO
70950	ST.VR_5 18.00	G5	141.7	183	PSCO
70951	ST.VR_6 18.00	G6	141.7	183	PSCO
70448	VALMONT6 13.80	G6	37.5	53	PSCO
70557	VALMNT7 13.80	G7	37.5	44.3	PSCO
70558	VALMNT8 13.80	G8	51.3	44.3	PSCO
70818	MTNBRZ_W1 34.50	W1	135.2	169	PSCO

4.2 Study Case Modeling

Since the difference between the summer incremental capacity request of 14 MW and winter incremental capacity request of 52 MW is minimal, the study was performed using the 52 MW winter capacity. A Study case was created from the Benchmark Case by proportionally increasing the combined output of RMEC Units 1 and 2 by 52 MW. The additional 52 MW output from PI-2021-4 was sunk to Comanche 3.

5.0 Provisional Interconnection Service Analysis

5.1 Voltage and Reactive Power Capability Evaluation

Xcel Energy's OATT requires all synchronous Generator Interconnection Customers to provide dynamic reactive power within the power factor range of 0.95 leading to 0.95 lagging at the POI.

See the Interconnection Guidelines for Generators Greater than 20 MW for additional details:https://www.transmission.xcelenergy.com/staticfiles/microsites/Transmission/Files/PDF/Interconnection/Interconnections-POL-TransmissionInterconnectionGuidelineGreat20MW.pdf.

The reactive Qmax and Qmin models for RMEC Units 1 and 2 were updated using the 2016 Machine Test & Model Derivation Report. The gross Mvar maximum and minimum was determined from the Figure A.2.4.2 Reactive Capability Curve with Limits D-Curve using 185 MW real power. The Qmax and Qmin was determined to be 90 Mvar and -64 Mvar, respectively.

The RMEC generating station Units 1 and 2 are currently capable of voltage control at the POI, since the reactive capability curve of the generator is not expected to change due to the prime mover modifications. The analysis indicates that the Provisional Interconnection Service is capable of meeting +/-0.95 power factor at the POI.

Table 2 – Reactive capability evaluation of PI-2021-4 RMEC Units 1 & 2

Gen MW/Mvar	Gen Terminal Voltage (p.u.)	POI Voltage (p.u.)	POI MW	POI MVar	POI power Factor
185 MW / 90 Mvar	1.03	1.01	180	68.0	0.94 (lag)
185 MW / -64 Mvar	0.95	1.00	180	-88.0	0.90 (lead)

5.2 Steady State Analysis

The single contingency analysis (P1 and P2-1) and multiple contingency analysis (P4 and P7) did not result in any new thermal or voltage violations after the addition of the 52 MW Provisional Interconnection at the RMEC generating facility.

5.3 Transient Stability Results

The following results were obtained for the disturbances analysed:

- ✓ No machines lost synchronism with the system
- ✓ No transient voltage drop violations were observed
- ✓ Machine rotor angles displayed positive damping

The results of the contingency analysis are shown in Table 3. The transient stability plots are shown in Appendix A to this report.

Table 3 – Transient Stability Analysis Results

Stability Scenarios						
#	**Fault Location**	**Fault Type**	**Facility Tripped**	**Clearing Time (cycles)**	**Post-Fault Voltage Recovery**	**Angular Stability**
1	RMEC 230 kV	3ph	All RMEC units	5	Maximum transient voltage dips within criteria	Stable with positive damping
2	Pawnee 230 kV	3ph	Pawnee Generation	5	Maximum transient voltage dips within criteria	Stable with positive damping
3	RMEC 230 kV	3ph	Green Valley–Spruce 230 kV	5	Maximum transient voltage dips within criteria	Stable with positive damping
4	RMEC 230 kV	3ph	RMEC–Green Valley & RMEC–Keenesburg 230 kV	5	Maximum transient voltage dips within criteria	Stable with positive damping
5	RMEC 230 kV	3ph	Green Valley–Keenesburg #1 & #2 230 kV	5	Maximum transient voltage dips within criteria	Stable with positive damping

5.4 Short Circuit and Breaker Duty Analysis Results

Since there are no changes to the RMEC Units 1 and 2 electrical characteristics, there is no short circuit current contribution due to the incremental output.

6.0 Cost Estimates

The POI is existing, and the Provisional Interconnection study did not identify any new Interconnection Facilities or Station Network Upgrades required to accommodate the 52 MW incremental output at RMEC Units 1 and 2.

The total cost of the required Upgrades for PI-2021-4 to interconnect for Provisional Service at the RMEC Substation is **$50,000.**

- **The cost of Transmission Provider's Interconnection Facilities is $50,000**
- **The cost of Station Network Upgrades is $0**

The list of improvements required to accommodate the Provisional Interconnection of PI-2021-4 are given in Tables 4 and 5. The work needed to interconnect the Provisional Interconnection only includes testing of fibre, communication and relaying installed to accommodate the incremental 52 MW output. Since the POI is existing, a CPCN will not be required to accommodate the interconnection.

Table 4 – Transmission Provider's Interconnection Facilities

Element	Description	Cost Est. (millions)
Existing RMEC Substation POI	Interconnect PI-2021-4 Generating Facility. The new equipment includes: • Testing of communications, relays	$0.05
	Transmission line tap into substation:	0
	Siting and Land Rights support for siting studies, land and ROW acquisition and construction	0
	Total Cost Estimate for Transmission Provider's Interconnection Facilities	**$0.05**
Time Frame	**Site, design, procure and construct**	**12 Months**

Table 5 – Station Network Upgrades

Element	Description	Cost Est. (millions)
N/A	N/A	0
	Siting and Land Rights support for substation construction	0
	Total Cost Estimate for Network Upgrades for Interconnection	**0**
Time Frame	**Site, design, procure and construct**	**N/A**

PSCo has developed cost estimates for Interconnection Facilities and Network/Infrastructure Upgrades required for the interconnection of PI-2021-4 for Provisional Service. The cost estimates are in 2022 dollars with escalation and contingencies applied. Allowances for Funds Used During Construction (AFUDC) is not included. These estimated costs include all applicable labor and overheads associated with the siting, engineering, design, and construction of these new PSCo facilities. This estimate does not include the cost for any Customer owned equipment and associated design and engineering.

- Labor is estimated for straight time only—no overtime included.
- The POI is existing and metered, so no costs for retail load metering are included in these estimates.
- PSCo (or its Contractor) will perform all construction, wiring, testing and commissioning for PSCo owned and maintained facilities.
- Breaker duty study determined that no breaker replacements are needed.
- Existing Power Quality Metering (PQM) is adequate.
- Existing Load Frequency/Automated Generation Control (LF/AGC) RTU is adequate.

7.0 Summary of Provisional Interconnection Service Analysis

The total estimated cost of the PSCo transmission system improvements required for PI-2021-4 to qualify for Provisional Interconnection Service is: $0.05 million.

The initial maximum permissible output of PI-2021-4 Generating Facility is 52 MW (i.e., combined 52 MW increment, 185 MW maximum for each unit). The maximum permissible output of the Generating Facility in the PLGIA will be reviewed quarterly and updated if there are

changes to system conditions compared to the system conditions previously used to determine the maximum permissible output.

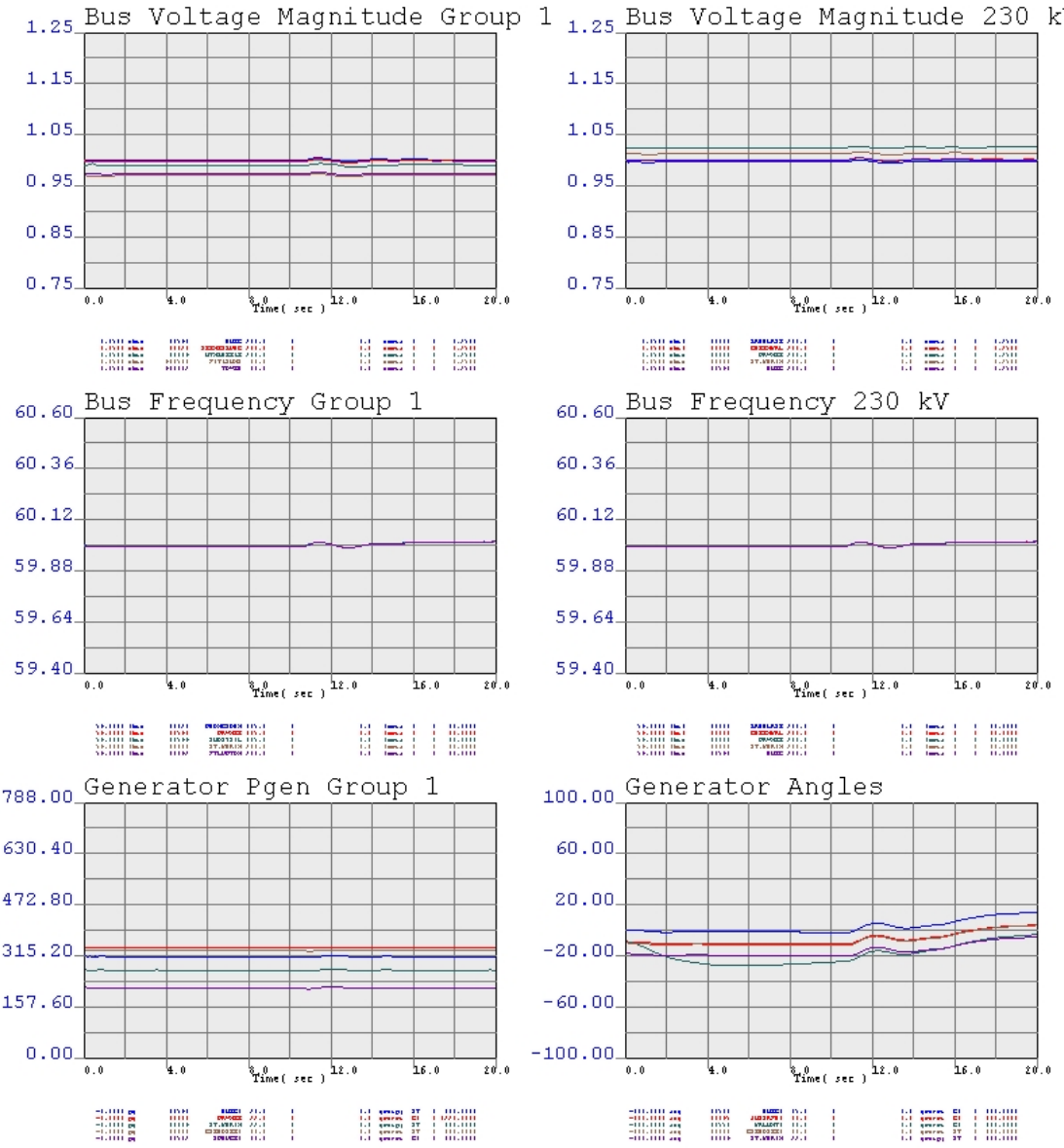
Security: Based on GI-2022-1 in 5DISIS-2022-001 selection of Energy Resource Interconnection Service (ERIS), the security associated with the Network Upgrades that might be identified at the conclusion of the GI-2022-1 Large Generation Interconnection Procedure (LGIP) in the 5DISIS-2022-001 cluster is estimated to be approximately $5 million.

Note: Provisional Interconnection Service in and of itself, does not convey transmission service.

8.0 Contingent Facilities

There are no new transmission projects planned in the immediate study area and there were no Interconnection Facilities or Station Network Upgrades identified for PI-2021-4. So, there are no Contingent Facilities identified.

Appendix A - Transient Stability Plots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1.25
1.15
1.05
0.95
0.85
0.75
0.0
4.0
8.0
12.0
16.0
20.0
Time(sec)
Bus Voltage Magnitude 230 kV
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1.15
1.05
0.95
0.85
0.75
0.0
4.0
8.0
12.0
16.0
20.0
Time(sec)
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59.64
59.40
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8.0
12.0
16.0
20.0
Time(sec)
Bus Frequency 230 kV
60.60
60.36
60.12
59.88
59.64
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0.0
4.0
8.0
12.0
16.0
20.0
Time(sec)
Generator Pgen Group 1
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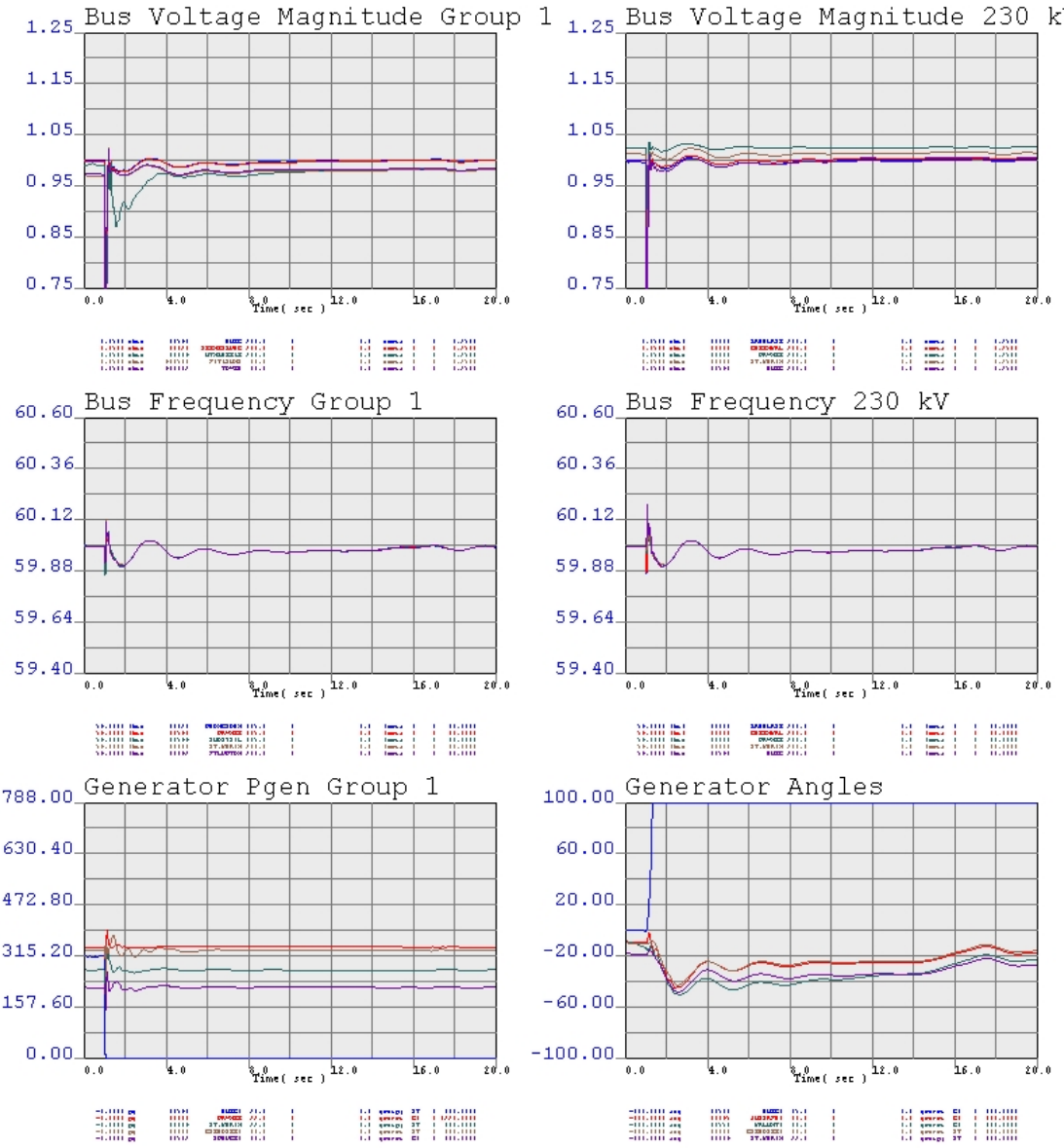
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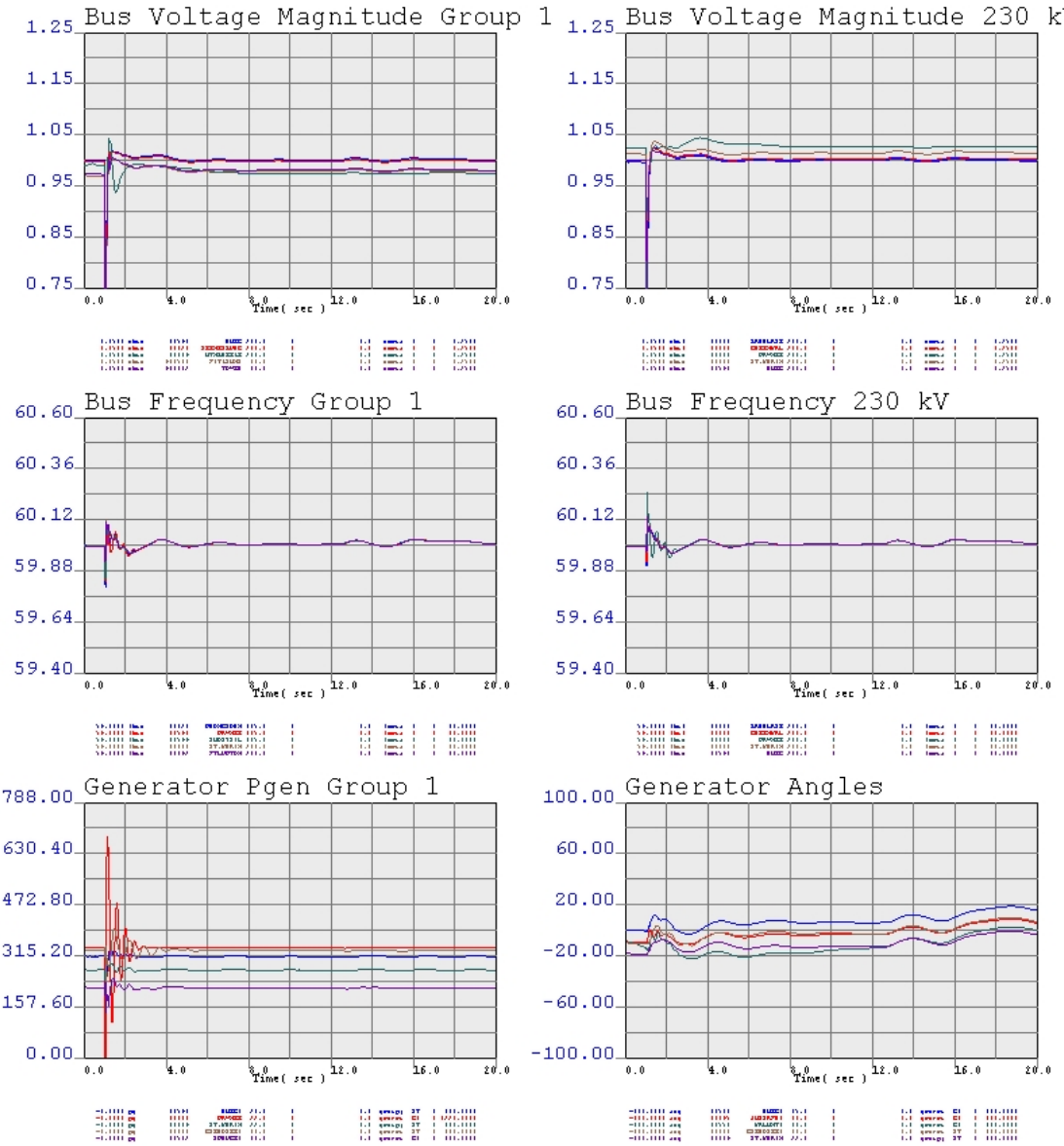
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Bus Frequency Group 1
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472.80
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Generator Angles
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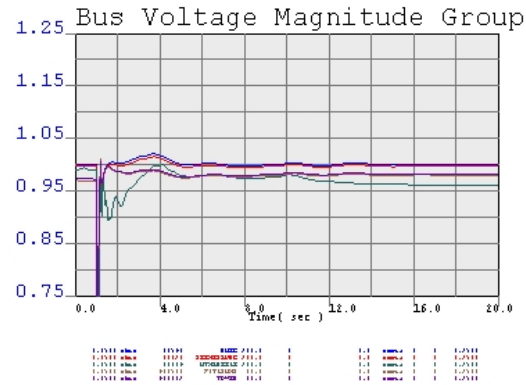
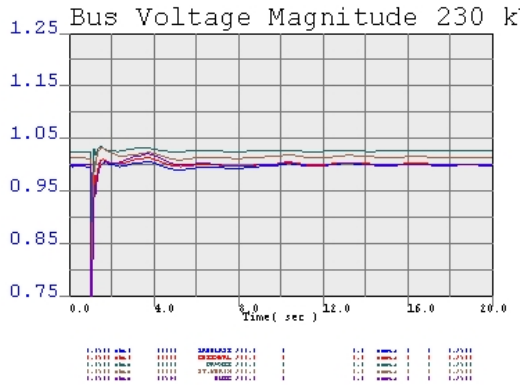
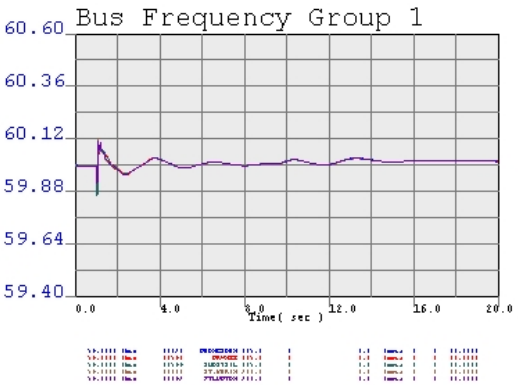
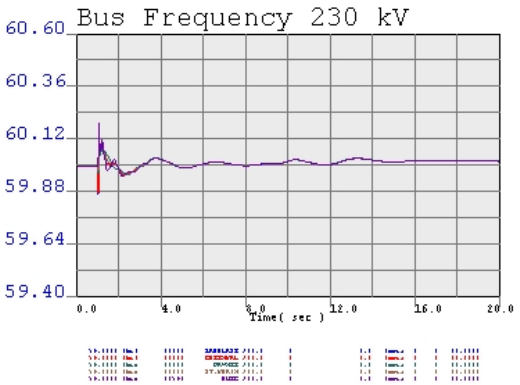
-60.00
-100.00

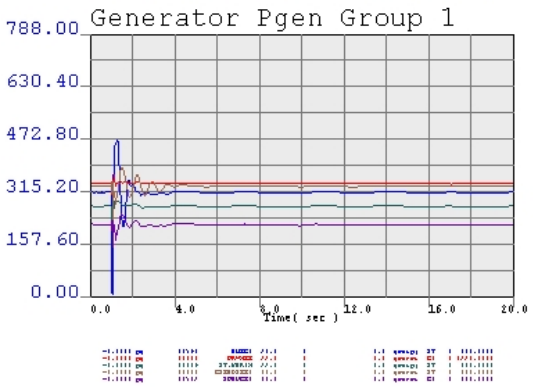
2_Pawnee
Gen

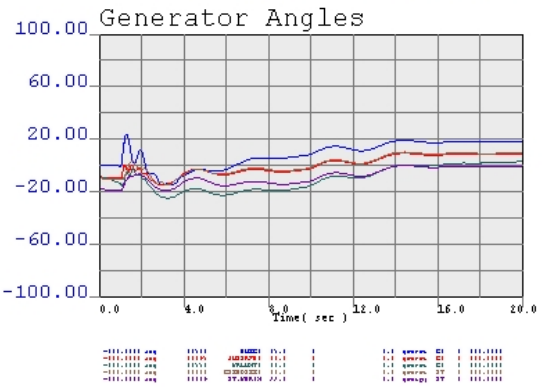




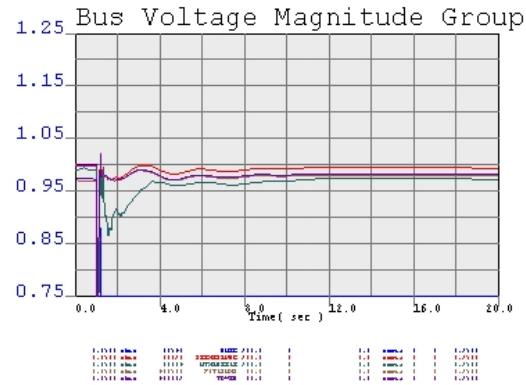


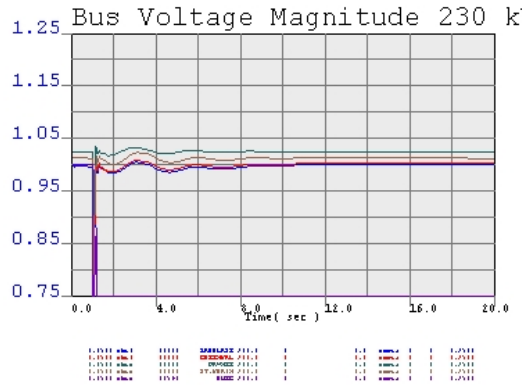


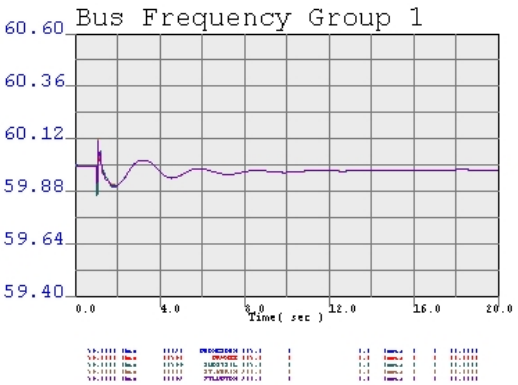


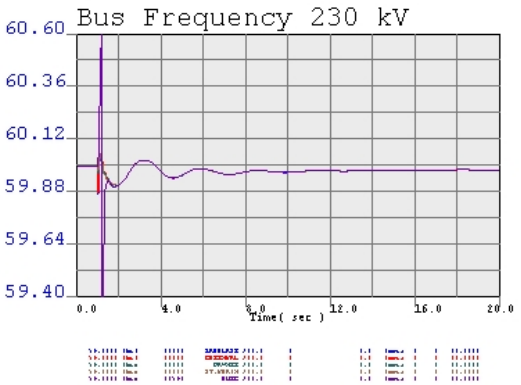


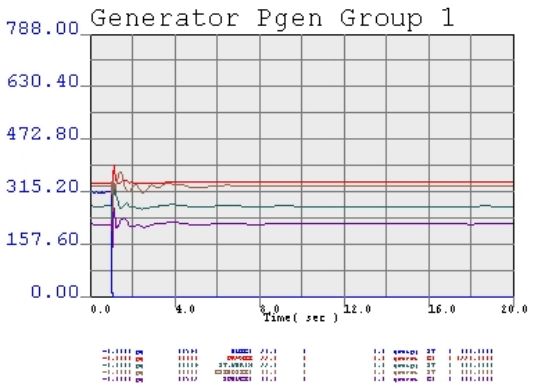
3_GreenVal-Spruce
Green Valley-Spruce 230 kV

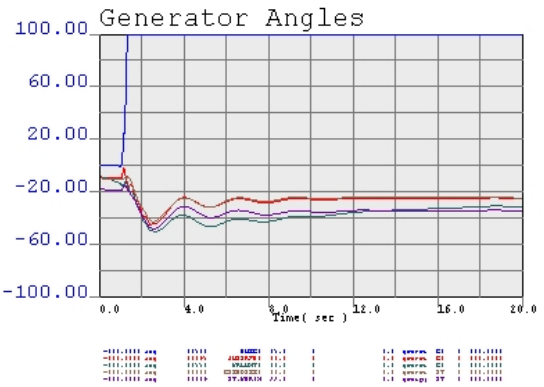












4_RMEC-GV&KeensN-2
RMEC-GreenValley & RMEC-Keenesburg

Page 1

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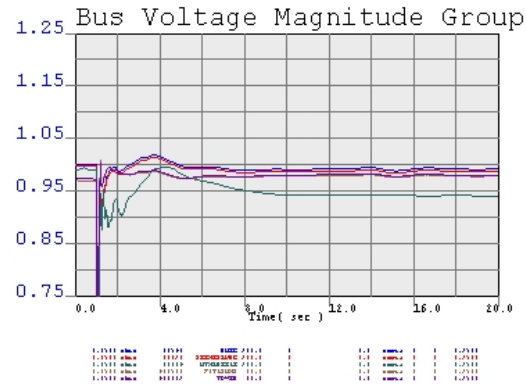

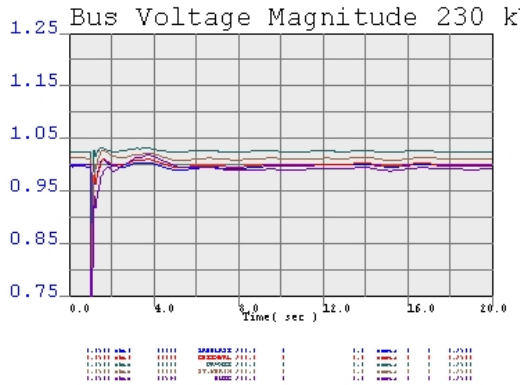

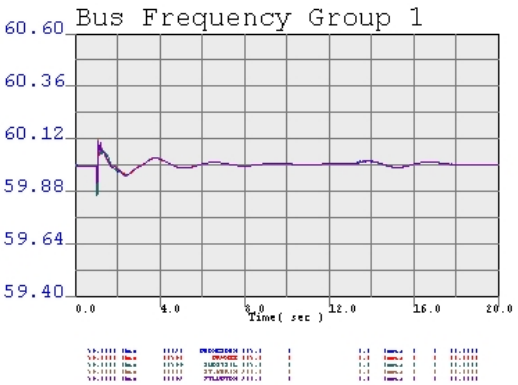

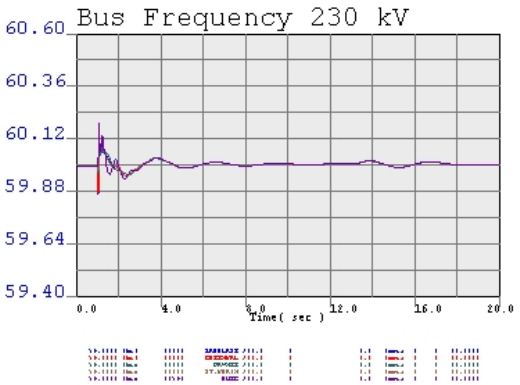

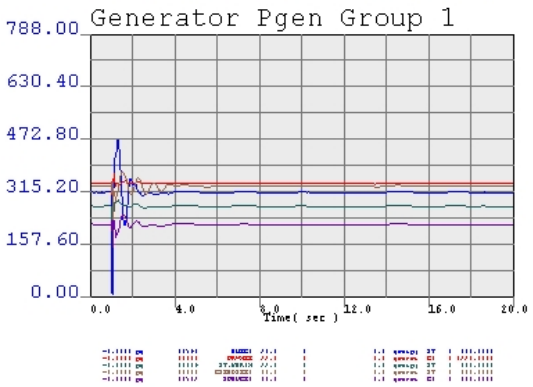

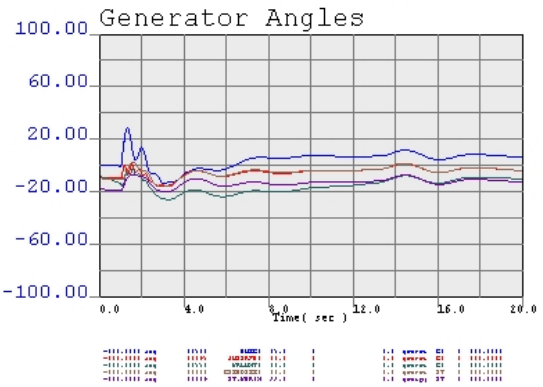

5_GV-KeensN-2
Green Valley - Keenesburg #1&2 230 kV