Provisional Interconnection Study Report for PI-2024-23

4/15/2025

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1.0 Executive Summary

The PI-2024-23 project is a Provisional Interconnection Service (PIS)[1] request for a 49.5 MW Linear Generation Facility with a Point of Interconnection (POI) at the Alamosa 69 kV substation. The Linear Generation project connect to the POI via a 0.45-mile generation tie-line. The maximum output will be controlled via power plant controller not to exceed 49.5 MW. This PIS request is associated with Generation Interconnection Request 5RSC-2024-03 in the 5RSC cluster.

The total cost of the transmission system improvements required for PI-2024-23 to qualify for Provisional Interconnection Service is estimated to be $3.064 million (Table 5 and Table 6).

The initial maximum permissible output of PI-2024-23 Generating Facility is 49.5 MW. The maximum permissible output of the Generating Facility in the PLGIA[2] would be reviewed quarterly and updated, if there are changes to the system conditions assumed in this analysis, to determine the maximum permissible output.

Note during the Reactive Power Capability lagging power factor test, the high side of the transformer exceeded 1.05 p.u. voltage.

Security: PI-2024-23 is a request for Energy Resource Interconnection Service (ERIS). For ERIS requests, security shall estimate the risk associated with the Network Upgrades and the Interconnection Facilities is $5 million.

In addition, the Interconnection Customer would assume all risk and liabilities with respect to changes between the PLGIA and the LGIA[3], including changes in output limits and Interconnection Facilities, Network Upgrades, Distribution Upgrades, and/or System Protection Facilities cost responsibility.

The Provisional Interconnection Service in and of itself does not convey transmission service.

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[1] **Provisional Interconnection Service (PIS):** 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.

[2] **Provisional Large Generator Interconnection Agreement (PLGIA):** Shall mean the interconnection agreement for Provisional Interconnection Service established between Transmission Provider and/or the Transmission Owner and the Interconnection Customer. The pro forma agreement is provided in Appendix 8 and takes the form of the Large Generator Interconnection Agreement, modified for provisional purposes.

[3] **Large Generator Interconnection Agreement (LGIA):** Shall mean the form of interconnection agreement applicable to an Interconnection Request pertaining to a Large Generating Facility that is included in the Transmission Provider's Tariff.

2.0 Introduction

PI-2024-23 is the Provisional Interconnection Service request for a 49.5 MW Linear Generation Facility located in Alamosa County, Colorado. The Study will evaluate the impacts on the PSCo Transmission System and Affected Systems by modeling the Generating Facility at the nameplate amount minus any losses for the interconnection facilities.

- The POI of this project the Alamosa 69 kV substation, an existing substation.
- The Commercial Operation Date (COD) to be studied for PI-2024-23 as noted on the Provisional request form is March 31, 2027.

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

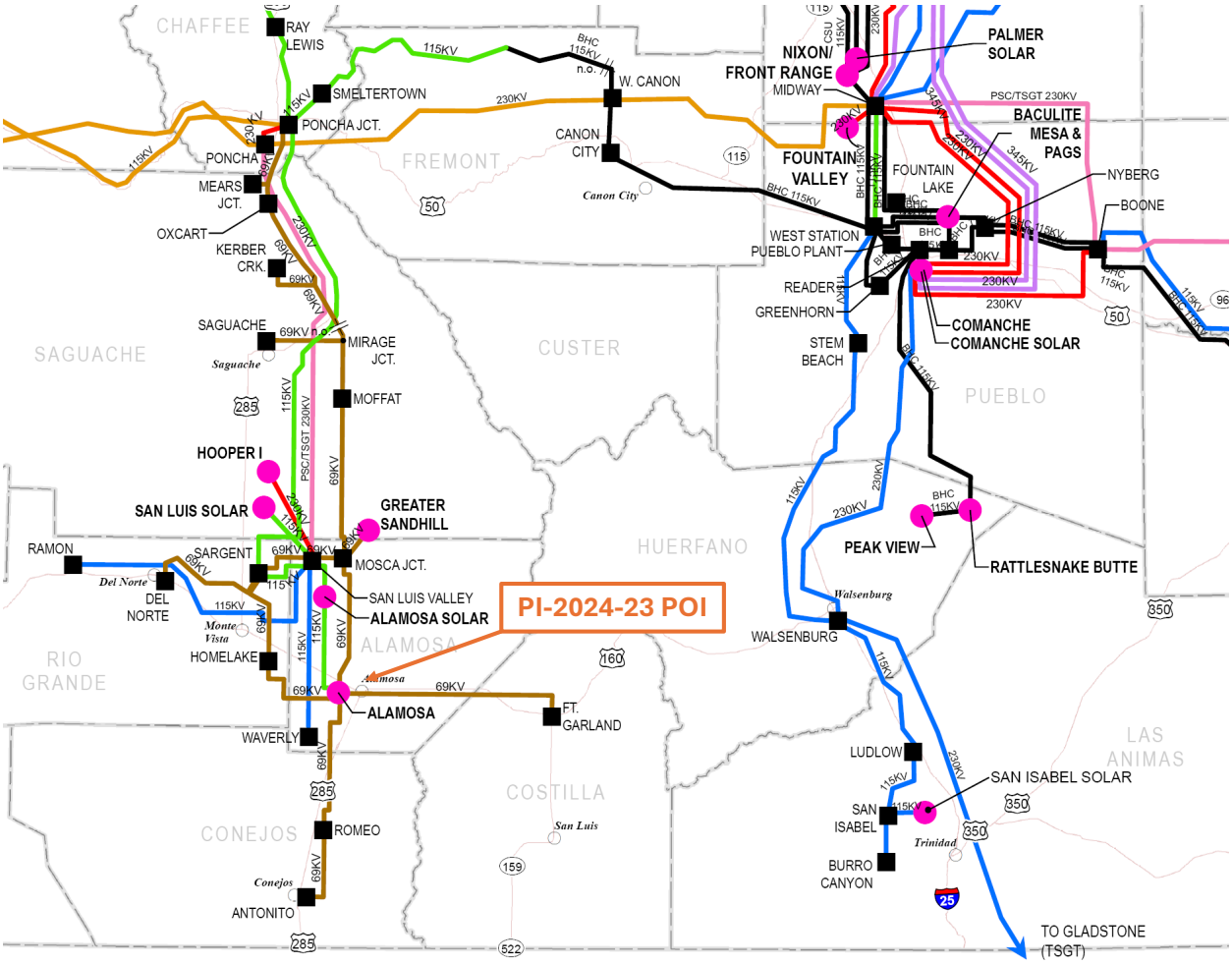

Figure 1: Point of Interconnection of PI-2024-23

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-2024-23 for Provisional Interconnection Service. Consistent with the assumption in the study agreement, PI-2024-23 selected Energy Resource Interconnection Service (ERIS)[4].

The scope of this report includes voltage and reactive capability evaluation, steady state (thermal and voltage) analysis, transient stability analysis, short-circuit analysis, and cost estimates for Transmission Provider's Interconnection Facilities and Station Network Upgrades. The study also identifies the estimated Security[5] and Contingent Facilities associated with the Provisional Interconnection Service.

3.1 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

[4] **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 and non-firm capabilities of the Transmission Provider's Transmission System on an as available basis.

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

3.2 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.

3.3 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 Transmission 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.

3.4 Study Methodology

For PSCo and non-PSCo owned 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 Generator Interconnection Request (GIR) 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 Interconnection Service, if thermal or voltage violations are seen, the maximum permissible Provisional Interconnection Service before violations is identified. For voltage violations caused by reactive power deficiency at the POI, voltage upgrades are identified.

The Provisional Interconnection Service request should meet the transient stability criteria stated in Section 3.2. If the addition of the GIR causes any violations, the maximum permissible Provisional Interconnection Service before violations is identified.

3.5 Contingency Analysis

The transmission system on which steady state contingency analysis is run includes the WECC designated area 70 and part of area 73, as applicable.

The transient stability analysis is performed for the following worst-case contingencies shown in Table 1.

Table 1 – Transient Stability Contingencies

Ref. No.	Fault Location	Fault Category	Outage(s)	Clearing Time (Cycles)
1	No Fault	P0	Flat Run	-
2	ALAMOSA 69 kV	P1	PI-2024-23 Generation	6
3	ALAMOSA to ALMSA_TM 69 kV Line	P1	ALAMOSA to ALMSA_TM 69 kV CKT 1	6
4	ALAMOSA to ALAMOSA_TP 69 kV Line	P1	ALAMOSA to ALAMOSA_TP 69 kV CKT 1	6
5	ALAMOSA to MOSCA 69 kV Line	P1	ALAMOSA to MOSCA 69 kV CKT 1	6
6	ALMSA_TM 115 kV	P1	ALMSA_TM 115/69 kV CK T4	6
7	ALMSA_TM to ATER_TAP 69 kV Line	P1	ALAMOSA to ATER_TAP 69 kV CKT 1	6
8	MOSCA to SANLSVLY 69 kV Line	P1	MOSCA to SANLSVLY 69 kV CKT 1	6

3.6 Study Area

The San Luis Valley (SLV) study area includes WECC designated zones 710. As described in Section 3.11 of the BPM, this study pocket is comprised of all generation within the SLV area, including:

- San Luis Solar (SLV 230 kV)
- Iberdrola Solar (SLV 115 kV)
- Cogentrix Solar (Blanca Peak 115 kV)
- Greater Sandhills Solar (Mosca 69 kV)

4.0 Base Case Modeling Assumptions

The study was performed using the 2029HS2 WECC base case that has been modified to represent a 2027 heavy summer loading conditions. The following planned transmission projects are modeled in the Base Case:

- Canal Crossing 345 kV substation
- Fort Saint Vrain 345 kV substation
- Goose Creek 345 kV substation
- May Valley 345 kV substation
- Sand 230 kV substation
- Kestrel 230 kV substation
- Coyote 230 kV substation
- Poder 115 kV substation
- Metro Water 115 kV substation
- Pintail 115 kV substation
- DCPL Tap 115 kV substation
- Carl Tap 69 kV substation

The following additional changes were made to the Intermountain Regional Electric Co-Op (CORE) model in the Base Case:

- Citadel 115 kV substation
- Spring Valley 115 kV substation
- Deer Trail 115 kV substation

The Base Case model includes higher-queued and existing PSCo and Affected System' resources.

While the higher-queued Network Resource Interconnection Service (NRIS) requests were dispatched at 100%, the higher-queued ERIS requests were modeled offline.

4.1 Benchmark Case Modeling

The Benchmark Case was created from the Base Case described in Section 4.0 by changing the study pocket generation dispatch to reflect heavy generation in the San Luis Valley (SLV) Colorado study pocket. This was accomplished by adopting the stressed generation dispatch given in Table 2.

Table 2 – Generation Dispatch Used to Create the San Luis Valley Benchmark Case (MW is Gross Capacity)

Bus No.	Bus Name	Base kV	ID	Status	Pgen (MW)	Pmax (MW)
70485	ALMSACT1	13.8	G1	1	17.3	19.2
70486	ALMSACT2	13.8	G2	1	16.3	18.1
70931	GSANDHIL_PV	34.5	S1	1	16.2	19.0
70932	SLVS_IBRDRLA	34.5	S2	1	25.5	30.0
70933	ALAMOSA_PV	34.5	S3	1	25.5	30.0
70935	SUNPOWER	34.5	S1	1	44.2	52.0
Total (MW)					**145.0**	**168.3**

4.2 Study Case Modeling

The PI-2024-23 project consists of fifty-four 1.043 MVA EPC Power CAB1000/AC-3L.2 linear inverters connected to transmission level voltage at project substation via inverter step-up transformers, collector systems, a 33/44/55 MVA main power transformers, and a tie-line.

A Study Case was created from the Benchmark Case by turning on the PI-2024-23 generation. The additional 49.5 MW output from PI-2024-23 was balanced against PSCo generation outside of the San Luis Valley study pocket.

4.3 Short-Circuit Modeling

This request is for the interconnection of a 49.5 MW Linear Generator Facility (PI-2024-23) to the Alamosa 69 kV substation. The output will not exceed 49.5 MW at the POI.

All connected generating facilities were assumed capable of producing maximum fault current. As such, all generation was modeled at full capacity, whether Network Resource Interconnection Service (NRIS) or ERIS is requested. Generation is modeled as a separate generating resource in PSS CAPE software and included at full capacity in the short-circuit study, regardless of any limitations to the output that would be imposed otherwise.

5.0 Provisional Interconnection Service Analysis

5.1 Voltage and Reactive Power Capability Evaluation

Per Section 4.1.1.1 of the BPM, the following voltage regulation and reactive power capability requirements are applicable to non-synchronous generators:

- Xcel Energy's OATT requires all non-synchronous generator Interconnection Customers to provide dynamic reactive power within the power factor range of 0.95 leading to 0.95 lagging at the high side of the generator substation. Furthermore, Xcel Energy requires every Generating Facility to have dynamic voltage control capability to assist in maintaining the POI voltage schedule specified by the Transmission Operator.
- It is the responsibility of the Interconnection Customer to determine the type (switched shunt capacitors and/or switched shunt reactors, etc.), the size (Mvar), and the locations (on the Interconnection Customer's facility) of any additional static reactive power compensation needed within the generating plant in order to have adequate reactive capability to meet the +/- 0.95 power factor at the high side of the main step-up transformer.
- It is the responsibility of the Interconnection Customer to compensate their generation tie-line to ensure minimal reactive power flow under no load conditions.

Per Section 4.1.1.2 in the BPM, the following voltage regulation and reactive power capability requirements are applicable to synchronous generators:

- 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.
- The reactive power analysis performed in this report is an indicator of the reactive power requirements at the POI and the capability of the generator to meet those requirements. The Interconnection Customer is required to demonstrate to the satisfaction of PSCo Transmission Operations prior to the commercial in-service date of the generating plant that it can safely and reliably operate within the required power factor and the regulating voltage of the POI.

All proposed reactive devices in customer provided models are switched favourably to provide appropriate reactive compensation in each test, therefore identified deficiencies are in addition to any proposed reactive compensation.

All the summary tables representing the GIR's Voltage and Reactive Power Capability tests adhere to the following color formatting representing the different aspects of the tests:

- Values highlighted in red indicate a failed reactive power requirement.
- Voltages outside the range of 0.95 p.u. to 1.05 p.u. are highlighted in yellow to provide additional information.

The PI-2024-23 GIR is modeled as follows:

Linear Generation Technology: Pmax = 56.322 MW, Pmin = 0.0 MW, Qmax = 19.923 Mvar, Qmin= -19.923 Mvar

The summary for the Voltage and Reactive Power Capability Evaluation for PI-2024-23 is:

- The GIR is capable of meeting ±0.95 pf at the high side of the main step-up transformer while maintaining a normal operating voltage at the POI. Note during the lagging test, the high side of the transformer exceeded 1.05 p.u. voltage.
- The GIR is capable of meeting ±0.95 pf at its terminals while meeting the interconnection service request.
- The reactive power exchange and voltage change across the gen-tie are acceptable under no load conditions.

The Voltage and Reactive Power Capability tests performed for PI-2024-23 are summarized in Table 3.

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Table 3 – Reactive Capability Evaluation for PI-2024-23

Generator Terminals					High Side of Main Transformer				POI			
Pgen (MW)	Qgen (Mvar)	Qmax (Mvar)	Qmin (Mvar)	V (p.u.)	P (MW)	Q (Mvar)	V (p.u.)	PF	P (MW)	Q (Mvar)	V (p.u.)	PF
50.3	19.4	19.9	-19.9	1.048	49.5	16.4	1.051	0.9493	49.5	16.3	1.049	0.9498
50.3	-7.6	19.9	-19.9	1.017	49.5	-17.0	1.028	-0.9458	49.5	-17.1	1.029	-0.9452
0.0	-2.1	19.9	-19.9	1.025	-0.1	-2.3	1.027	-0.0434	-0.1	-2.4	1.033	-0.0416

5.2 Steady State Analysis

Contingency analysis was performed on the SLV study pocket Study Case.

- No thermal or voltage violations were observed during system intact analysis.
- Single Contingency analysis showed no thermal or voltage violations attributed to PI-2024-23.

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 4. The transient stability plots are shown in Appendix A in Section 10.0 of this report.

Table 4 – Transient Stability Analysis Results

Ref. No.	Fault Location	Fault Category	Outage(s)	Clearing Time (Cycles)	Post-Fault Voltage Recovery	Angular Stability
1	No Fault	P0	Flat Run	-	Stable	Stable
2	ALAMOSA 69 kV	P1	PI-2024-23 Generation	6	Stable	Stable
3	ALAMOSA to ALMSA_TM 69 kV Line	P1	ALAMOSA to ALMSA_TM 69 kV CKT 1	6	Stable	Stable
4	ALAMOSA to ALAMOSA_TP 69 kV Line	P1	ALAMOSA to ALAMOSA_TP 69 kV CKT 1	6	Stable	Stable
5	ALAMOSA to MOSCA 69 kV Line	P1	ALAMOSA to MOSCA 69 kV CKT 1	6	Stable	Stable
6	ALMSA_TM 115 kV	P1	ALMSA_TM 115/69 kV CK T4	6	Stable	Stable
7	ALMSA_TM to ATER_TAP 69 kV Line	P1	ALAMOSA to ATER_TAP 69 kV CKT 1	6	Stable	Stable
8	MOSCA to SANLSVLY 69 kV Line	P1	MOSCA to SANLSVLY 69 kV CKT 1	6	Stable	Stable

5.4 Short-Circuit and Breaker Duty Analysis Results

A study was completed to determine whether any overstressed breakers resulted when several Provisional Interconnections (PIs) were added to the PSCo transmission system in the order of their Commercial Operation Date (COD). If the addition of the interconnection resulted in a requirement that one or more breakers be replaced in the PSCo transmission system, it was considered that that customer would not be able to connect under a Provisional Interconnection agreement and it was removed from the study.

Taken into consideration were any existing plans for breaker replacement by PSCo. Breakers that had already been assigned to projects were not considered as needing replacement by the interconnection customer.

The breaker duty study on the PSCo transmission system did not identify any circuit breakers that became over-dutied because of adding the PI-2024-23. Should any circuit breakers become overdue, the fault currents at the POI for three-phase and phase-to-ground will be provided in this report. Conversely, the fault currents can be made available upon request by the customer.

5.5 Affected Systems

No Affected Systems were identified.

5.6 Summary of Provisional Interconnection Analysis

The maximum allowable output of the GIR without requiring any additional System Network Upgrades is 49.5 MW.

6.0 Cost Estimates

The total cost of the required Upgrades for PI-2024-23 to interconnect for Provisional Interconnection Service at the Alamosa 69 kV substation is estimated to be **$3.064 million**.

- **Cost of Transmission Provider's Interconnection Facilities (TPIF) is $2.821 million** (Table 5)
- **Cost of Station Network Upgrades is $0.243 million** (Table 6)
- **Cost of System Network Upgrades is $0**

The list of improvements required to accommodate the Provisional Interconnection of PI-2024-23 are given in Table 5, and Table 6.

Table 5 – Transmission Provider's Interconnection Facilities

Element	Description	Cost Est. (Million)
PSCo's Alamosa Terminal 69 kV substation	Interconnection of 5RSC-2024-03 (PI-2024-5) at the Alamosa Terminal 69 kV substation. The new equipment includes: • (1) 69 kV single bay dead end structure • (1) 69 kV 3-phase arrester • (2) 69 kV disconnect switches • (3) 69 kV CT/VT metering units • Dual fiber communication equipment • Associated electrical equipment, bus, wiring and grounding • Associated foundations and structures • Associated transmission line communications, fiber, relaying and testing	$2.471
PSCo's Alamosa Terminal 69 kV substation	Transmission Provider's dead-end structure at the Point of Change of Ownership (PCO) outside the substation fence line and transmission line into substation from the PCO. Single span, dead end structure, 3 conductors, insulators, hardware, jumpers and labor.	$0.350
Total Cost Estimate for Interconnection Customer-Funded, PSCo-Owned Interconnection Facilities		**$2.821**

Table 6 – Station Network Upgrades

Element	Description	Cost Est. (Million)
PSCo's Alamosa Terminal 69 kV substation	Install required communication in the EEE at the Alamosa Terminal substation	$0.193
PSCo's Alamosa Terminal 69 kV substation	Siting and Land Rights permitting, no land purchase costs included	$0.050
Total Cost Estimate for PSCo-Funded, PSCo-Owned Interconnection Facilities		**$0.243**

PSCo has developed cost estimates for Transmission Provider's Interconnection Facilities and Network/Infrastructure Upgrades required for the interconnection of PI-2024-23 for Provisional Interconnection Service. The estimated costs provided in this report are based upon the following assumptions:

- The estimated costs are in 2025 dollars with escalation and contingencies applied.
- Allowances for Funds Used During Construction (AFUDC) is not included.
- The estimated costs include all applicable labor and overheads associated with the siting, engineering, design, and construction of these new PSCo facilities.
- The estimated costs do not include the cost for any Customer owned equipment and associated design and engineering.
- Labor is estimated for straight time only—no overtime included.
- PSCo (or its Contractor) will perform all construction, wiring, testing, and commissioning for PSCo owned and maintained facilities.

The customer requirements include:

- Interconnection customer will install two (2) redundant fiber optic circuits (one primary circuit with a redundant backup) into the Transmission Provider's substation as part of its interconnection facilities construction scope.
- Power Quality Metering (PQM) will be required on the Customer's generation tie-line terminating into the POI.

- The Customer will be required to design, procure, install, own, operate and maintain a Remote Terminal Unit (RTU) at their Customer substation. PSCo will be provided with indications, readings and data from the RTU.
- The Interconnection Customer will comply with the Interconnection Guidelines for Transmission Interconnected Producer-Owned Generation Greater Than 20 MW, as amended from time to time, and available at: XEL-POL-Transmission Interconnection Guideline Greater 20MW

6.1 Schedule

This section provides proposed milestones for the interconnection of PI-2024-23 to the Transmission Provider's Transmission System. The customer requested a back-feed date (In-Service Date for Transmission Provider Interconnection Facilities and Station Network Upgrades required for interconnection) for the Provisional Interconnection of March 31, 2027. This is attainable by the Transmission Provider, based upon the current schedule developed for this interconnection request. The Transmission Provider proposes the milestones provided below in Table 7.

Table 7 – Proposed Milestones for PI-2024-23

Milestone	Responsible Party	Estimated Completion Date
LGIA Execution	Interconnection Customer and Transmission Provider	July 2025
In-Service Date for Transmission Provider Interconnection Facilities and Station Network Upgrades required for interconnection	Transmission Provider	November 2, 2026
In-Service Date & Energization of Interconnection Customer's Interconnection Facilities	Interconnection Customer	November 2, 2026
Initial Synchronization Date	Interconnection Customer	November 11, 2026
Begin trial operation & testing	Interconnection Customer and Transmission Provider	November 18, 2026
Commercial Operation Date	Interconnection Customer	March 31, 2027

Some schedule elements are outside of the Transmission Provider's control and could impact the overall schedule. The following schedule assumptions provide the basis for the schedule milestones:

- Construction permitting (if required) for new facilities will be completed within 12 months of LGIA execution.
- The Transmission Provider is currently experiencing continued increases to material lead times which could impact the schedule milestones. The schedule milestones are based upon material lead times known at this time.
- Availability of line outages to interconnect new facilities to the transmission system.

7.0 Summary of Provisional Interconnection Service Analysis

The total estimated cost of the PSCo transmission system improvements required for PI-2024-23 to qualify for Provisional Interconnection Service would be $3.064 million.

The initial maximum permissible output of PI-2024-23 Generating Facility is 49.5 MW. The maximum permissible output of the Generating Facility in the PLGIA will be reviewed quarterly and updated, if there are changes to the system conditions assumed in this analysis, to determine the maximum permissible output.

Note during the Reactive Power Capability lagging power factor test, the high side of the transformer exceeded 1.05 p.u. voltage.

Security: PI-2024-23 is a request for Energy Resource Interconnection Service (ERIS). For ERIS requests, security shall estimate the risk associated with the Network Upgrades and the Interconnection Facilities and is assumed to be a minimum of $5 million.

The Provisional Interconnection Service in and of itself does not convey transmission service.

8.0 Contingent Facilities

Contingent Facilities identified for PI-2024-23 include the TPIF and Station Network Upgrades identified in Table 5 and Table 6, respectively.

9.0 Preliminary One-Line Diagram and Conceptual One-Line Diagram of PI-2024-23

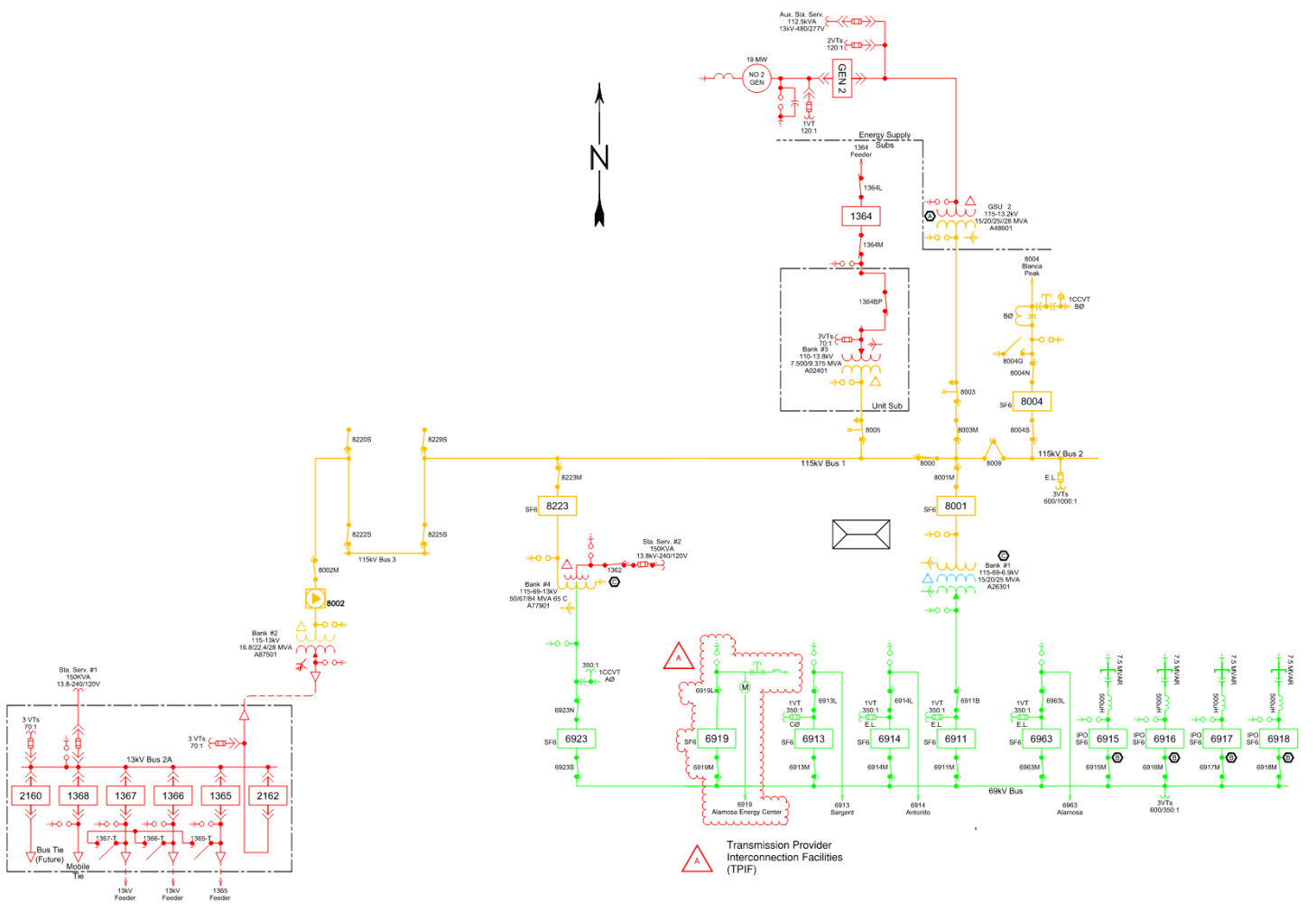


Figure 2: Preliminary One-Line of PI-2024-23 at the Alamosa 69 kV substation

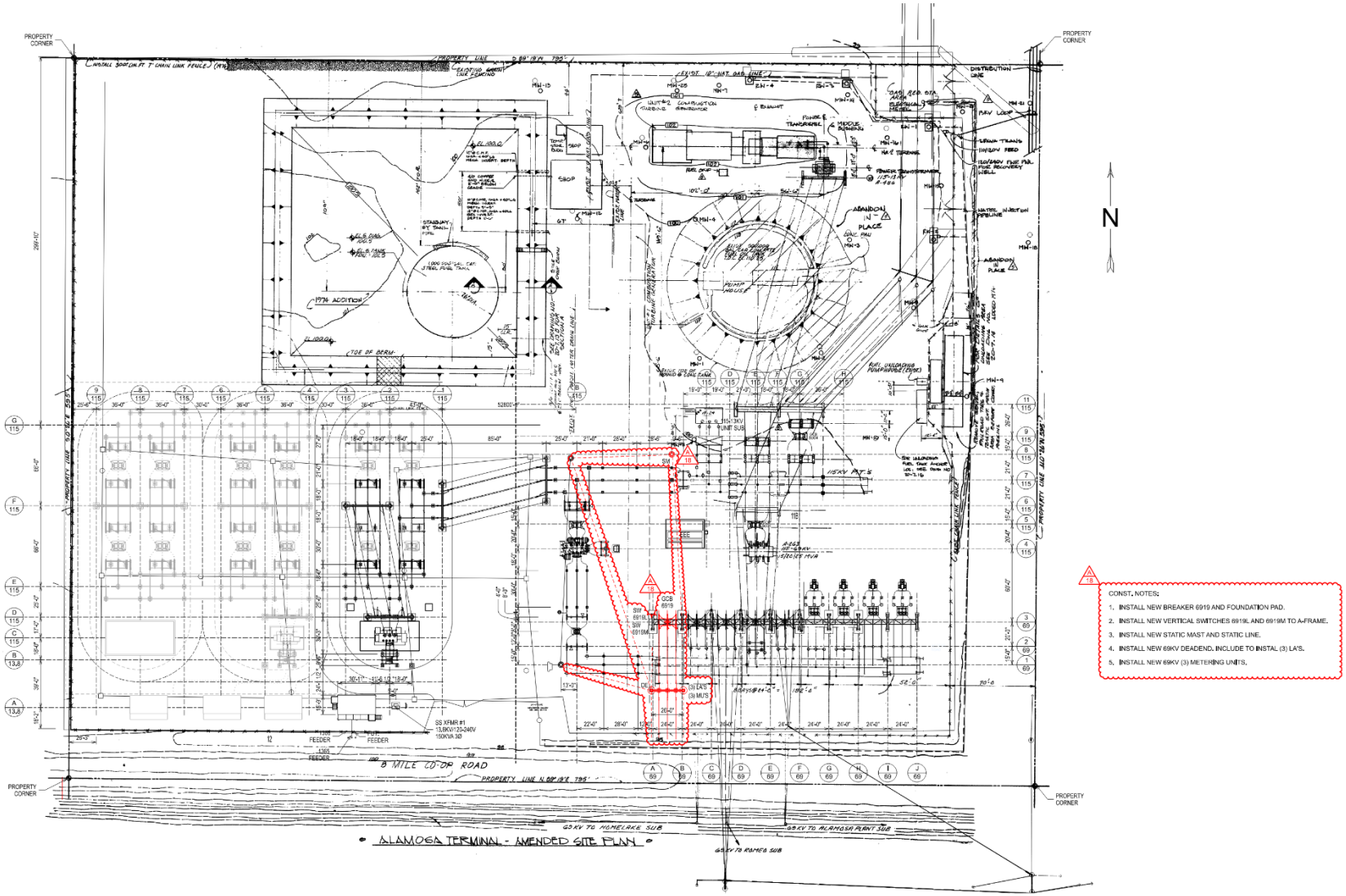
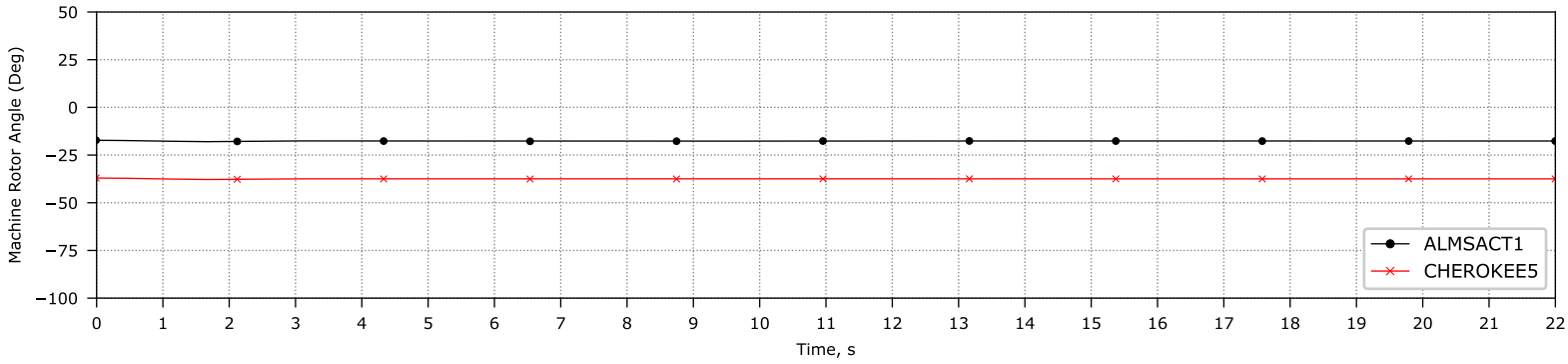


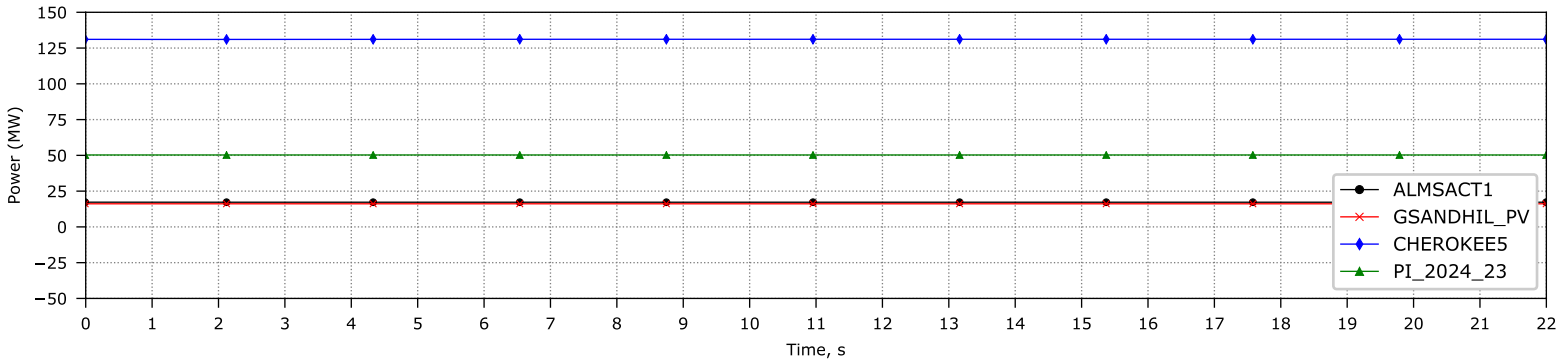
Figure 3: Preliminary General Arrangement for PI-2024-23 at the Alamosa Terminal 69 kV substation

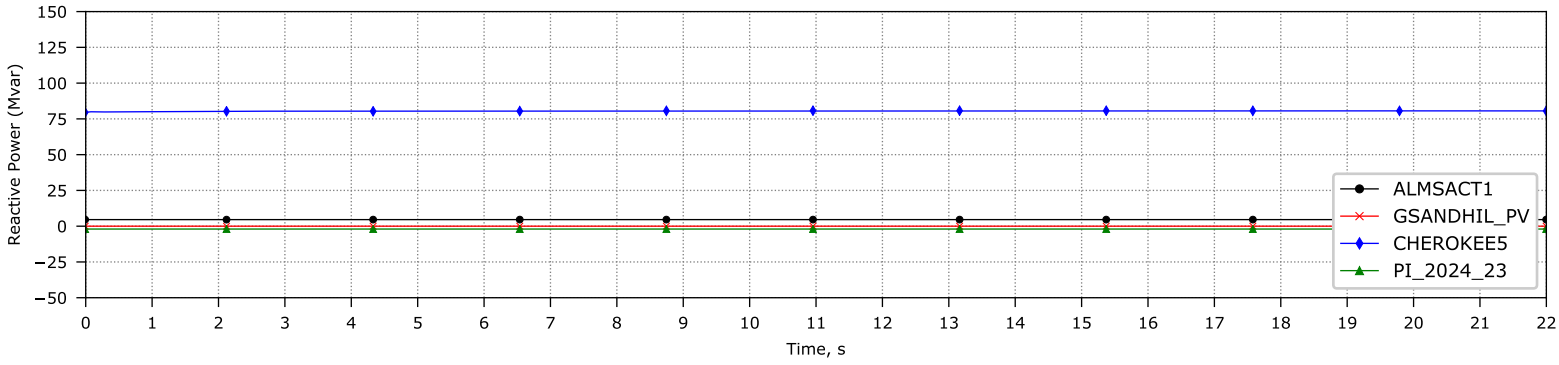
10.0 Appendices

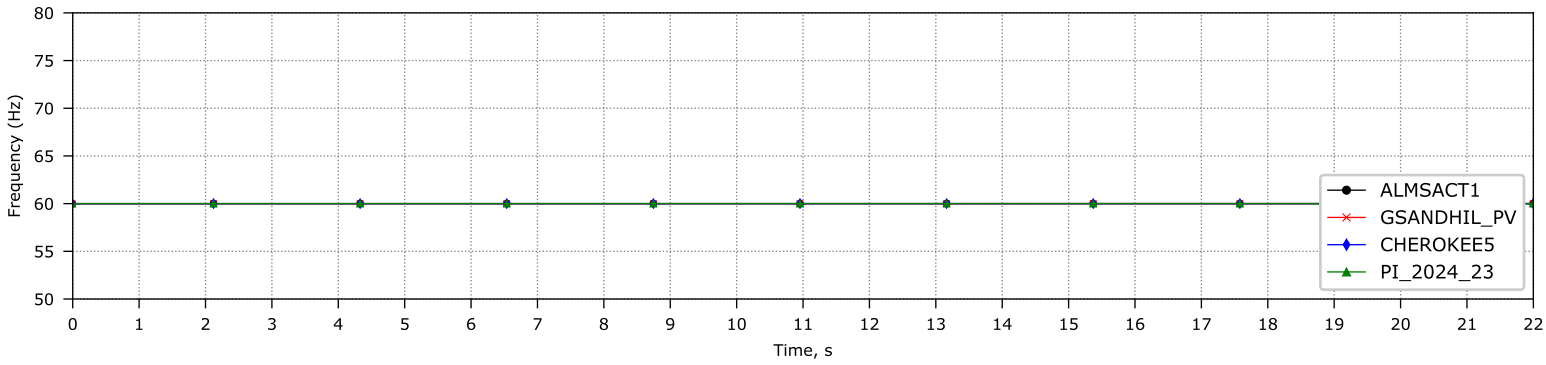
Appendix A: Transient Stability Plots	PI-2024-23_Transient _Stability_Plots.pdf

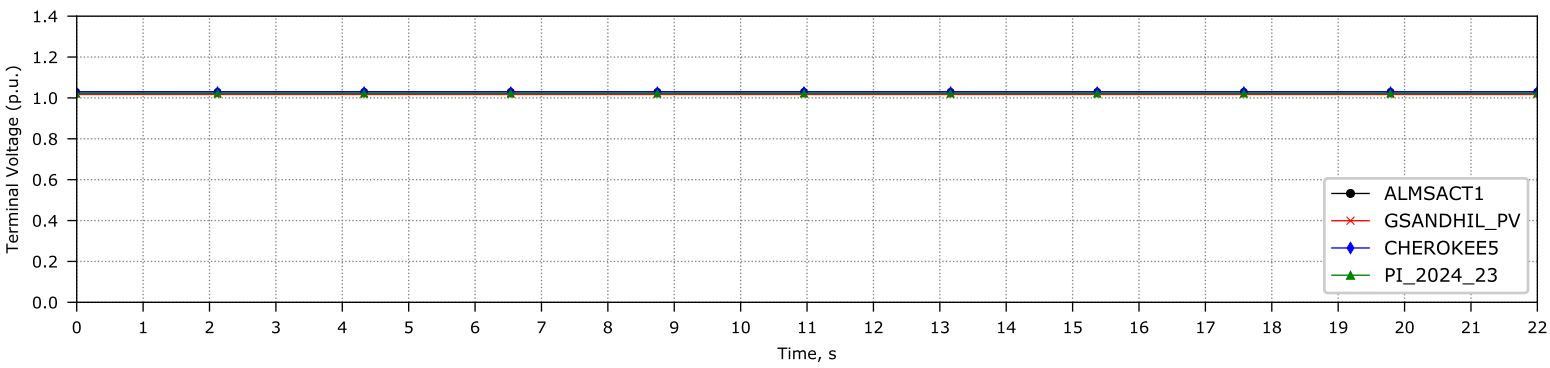
PI-2024-23_Study_flatrun

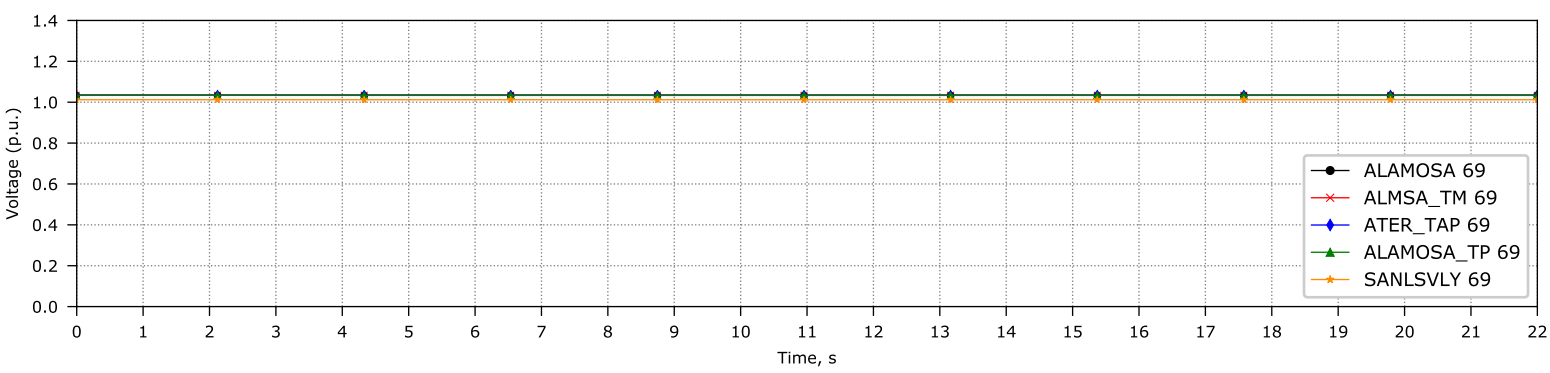




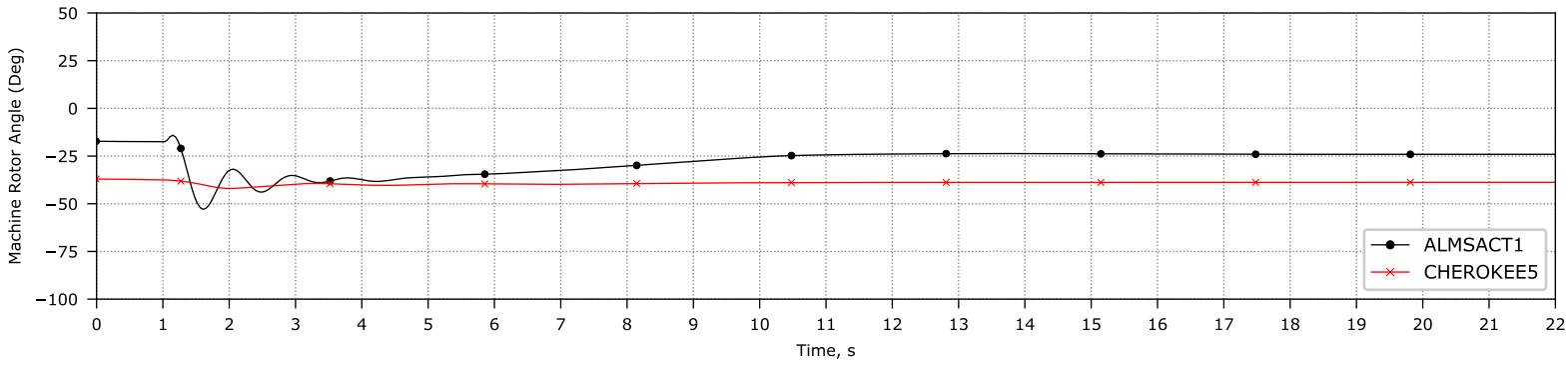


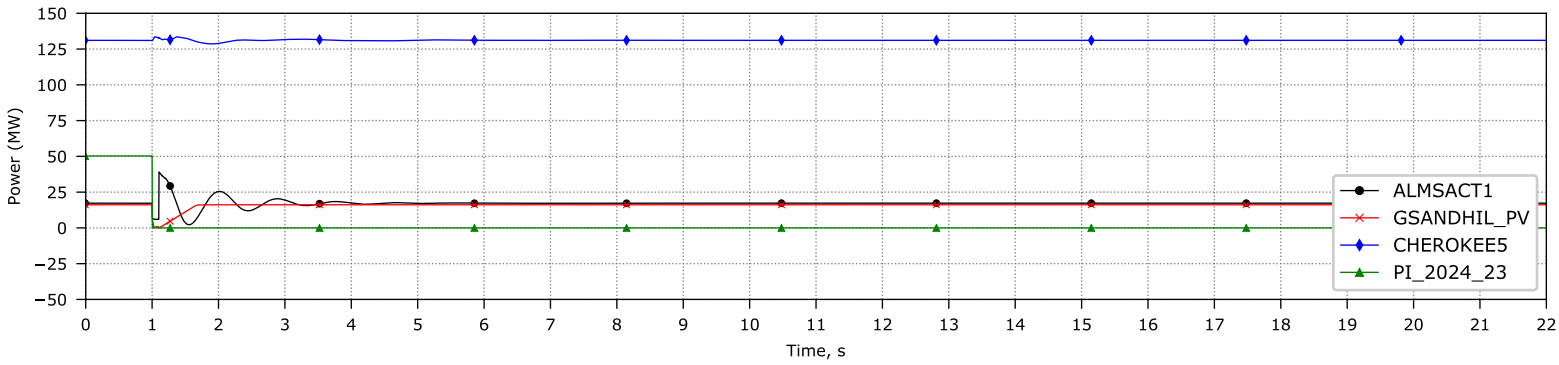


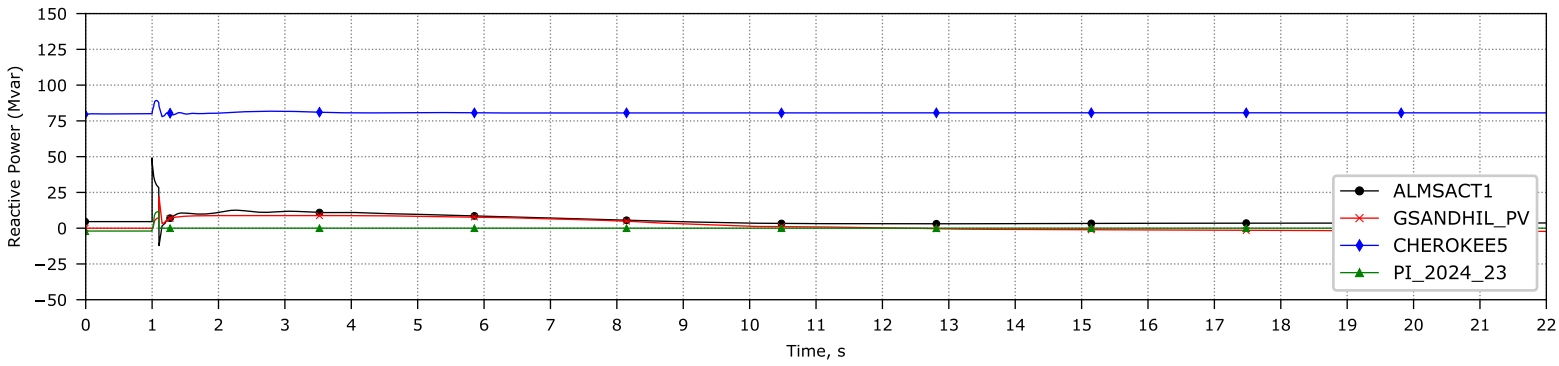


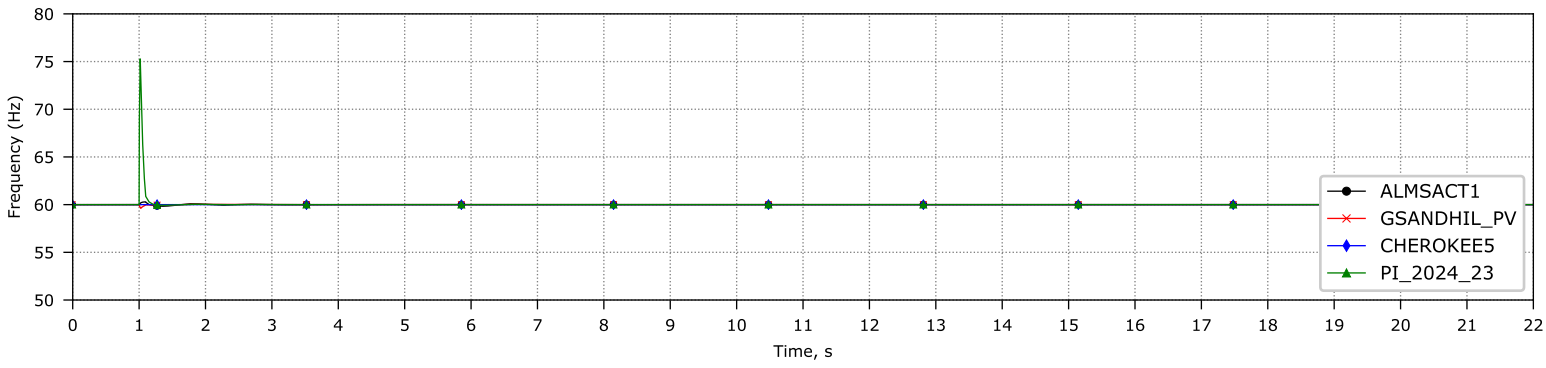


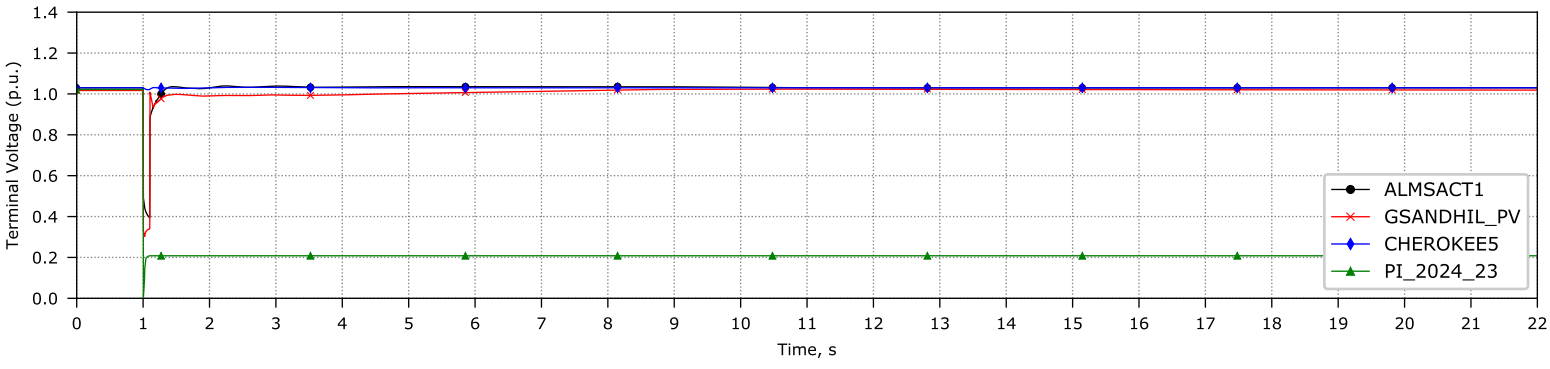
PI-2024-23_Study_PI-2024-23

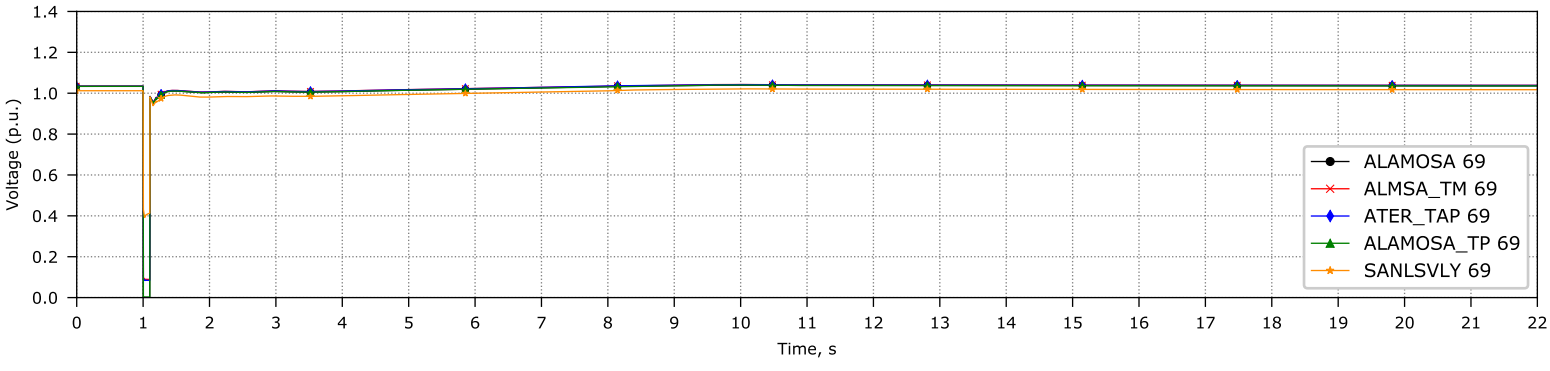




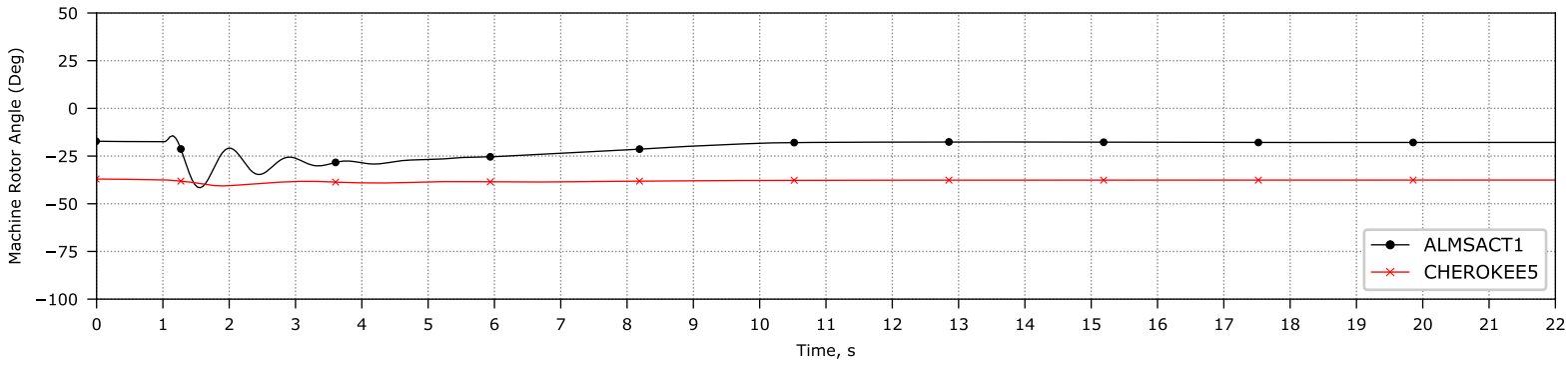


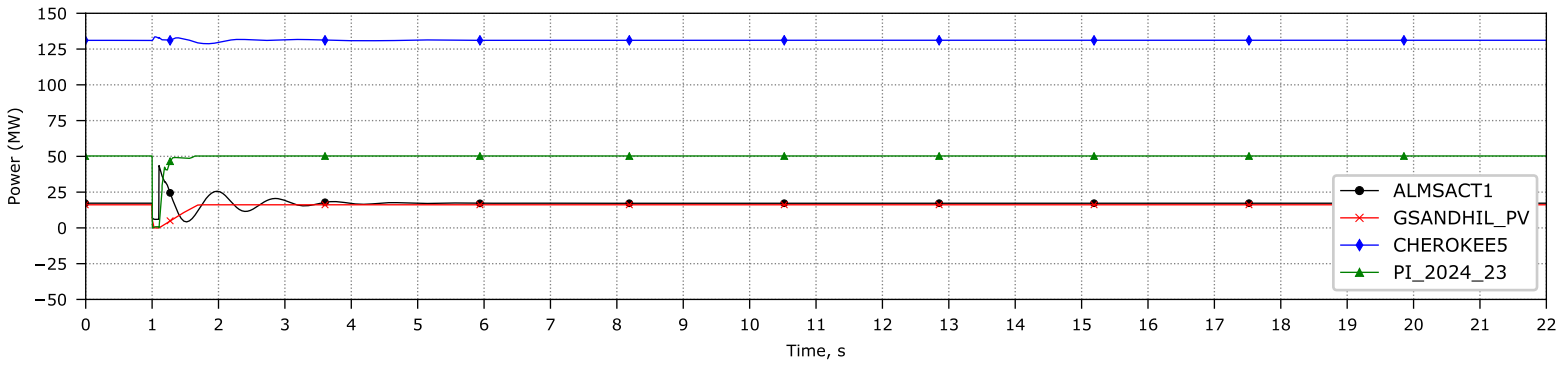


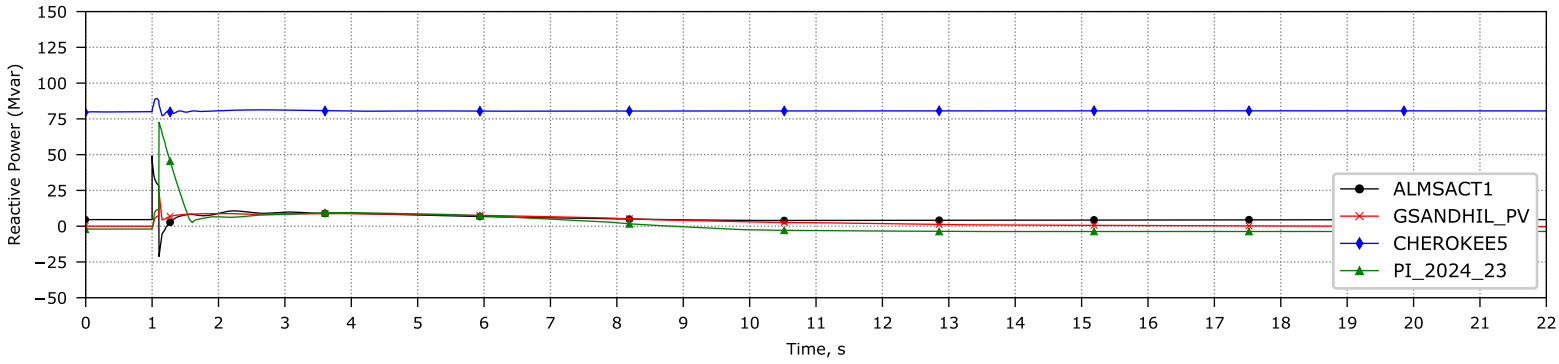


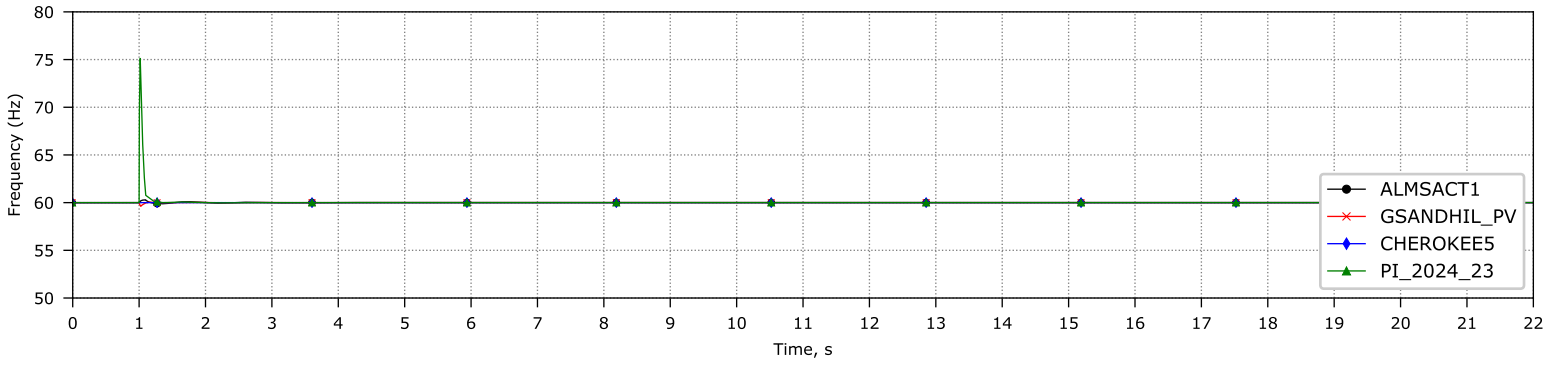


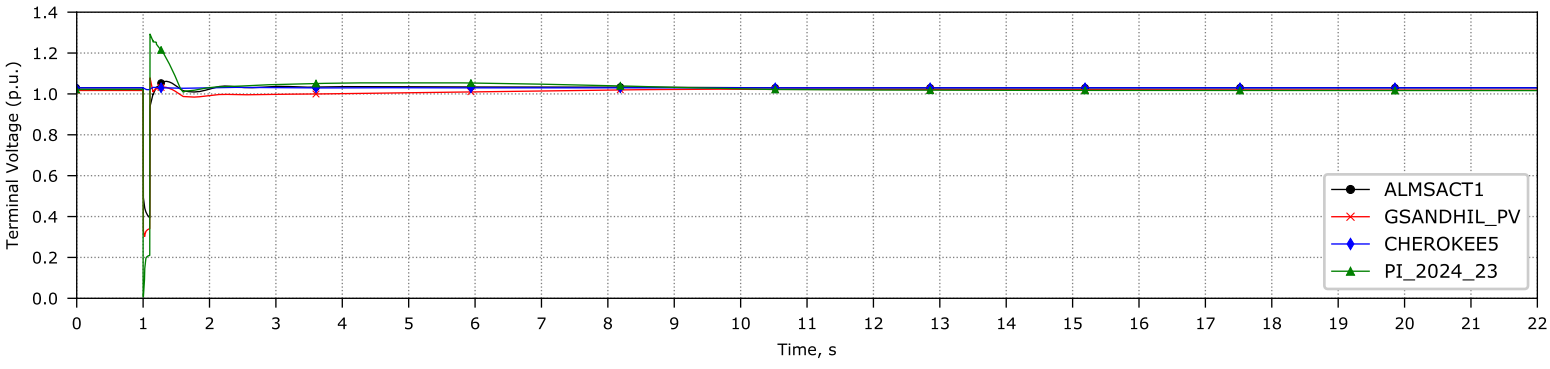
PI-2024-23_Study_Alamosa-Almsa_TM

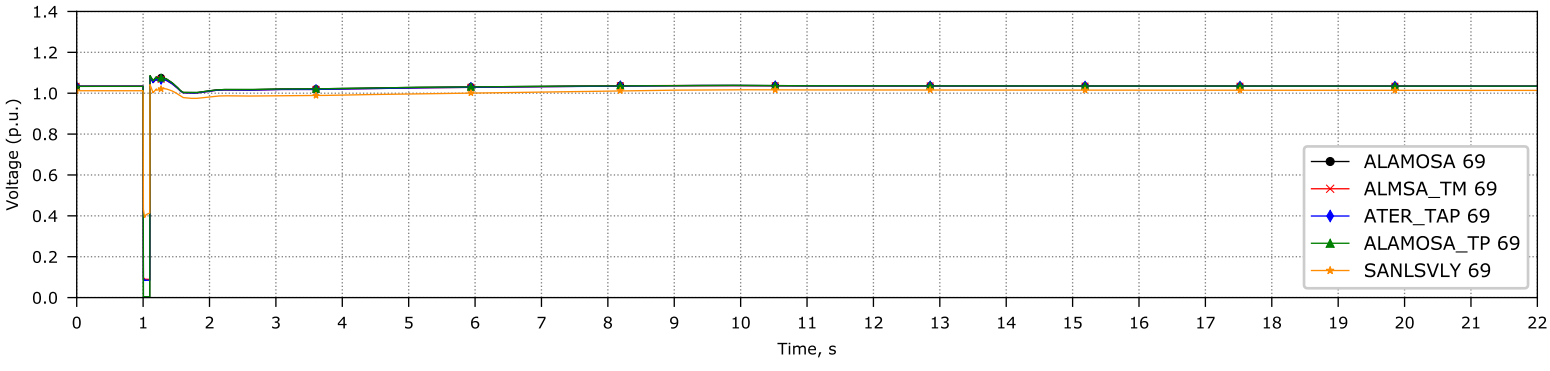




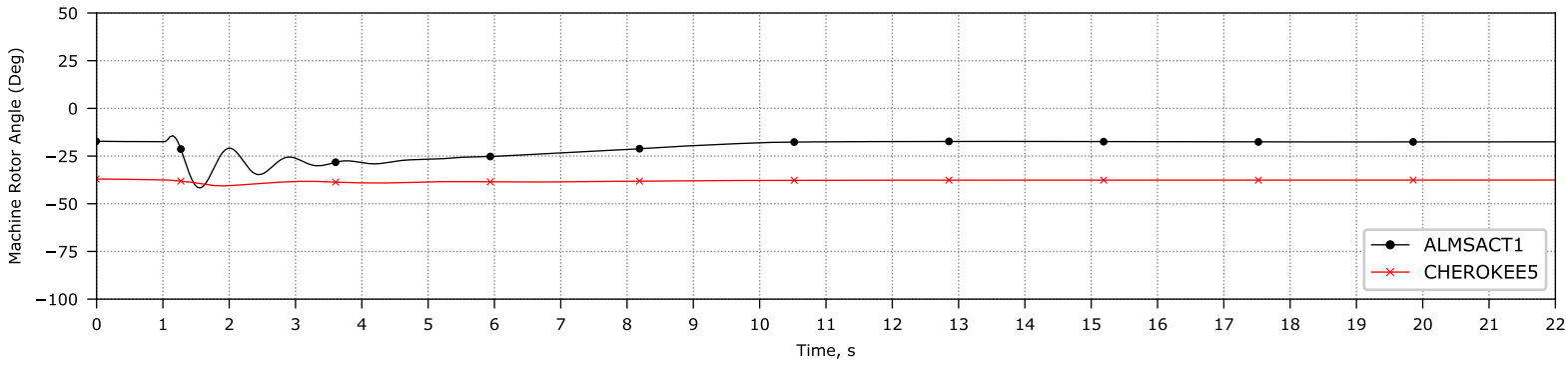


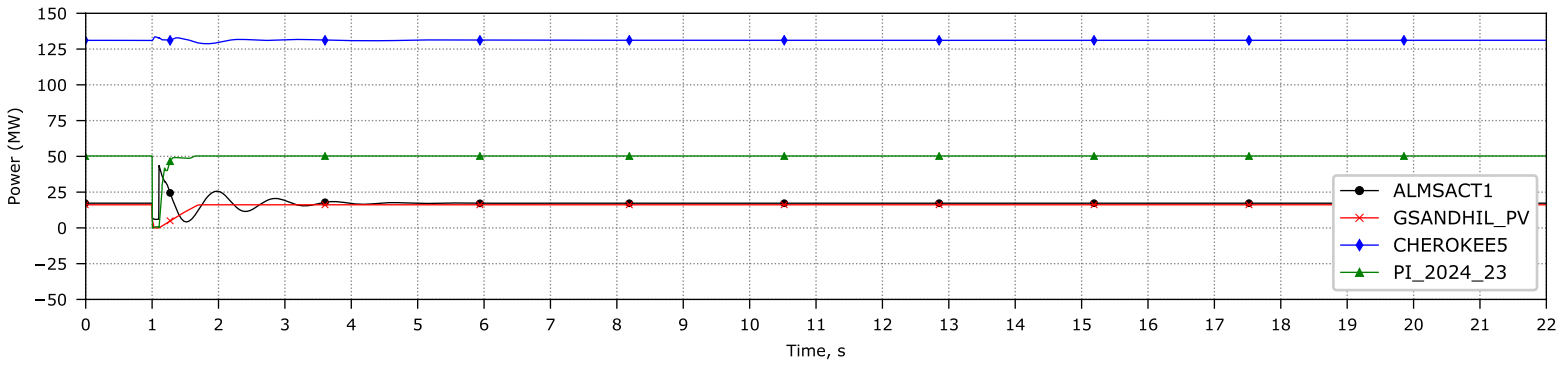


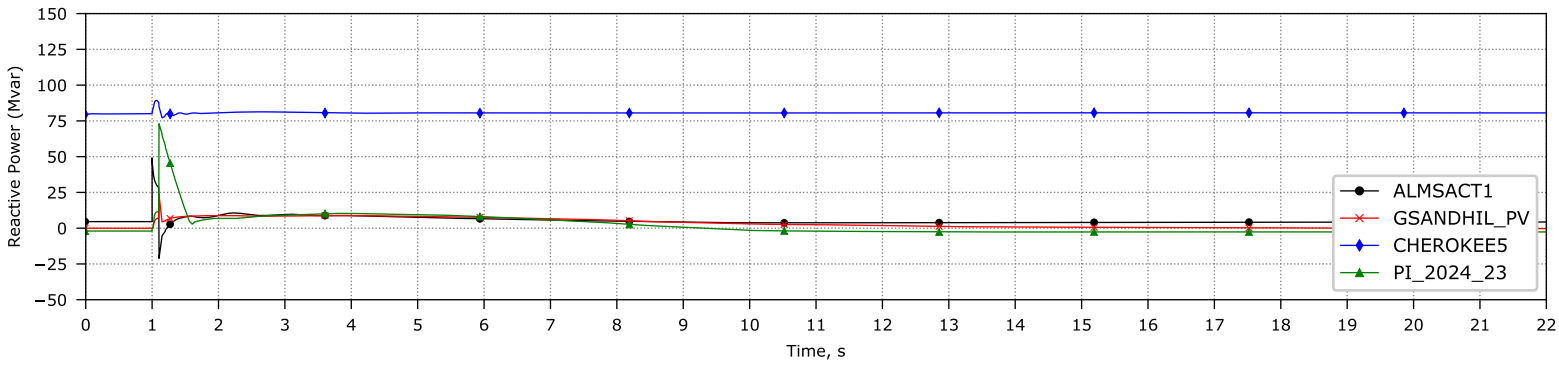


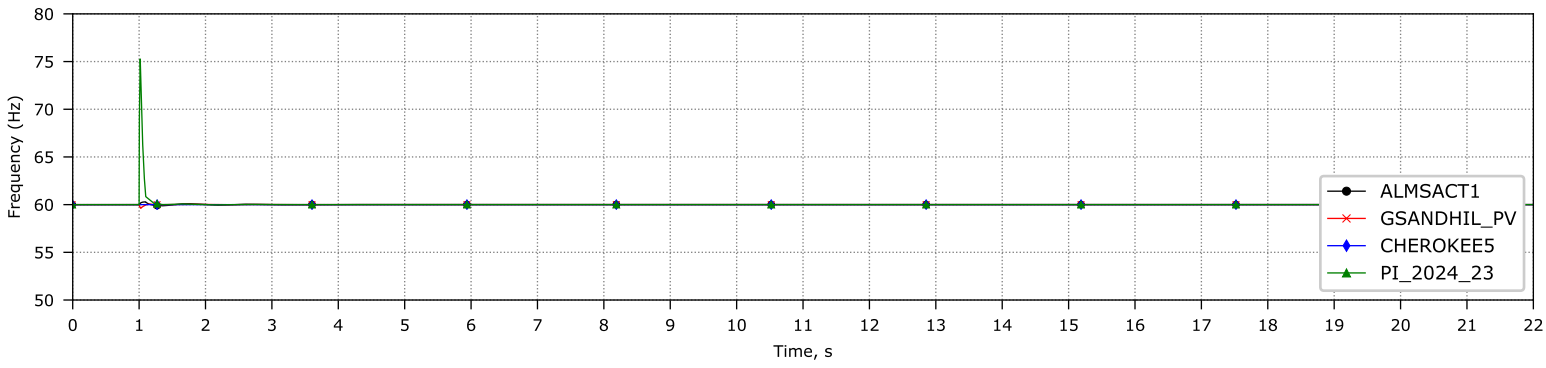


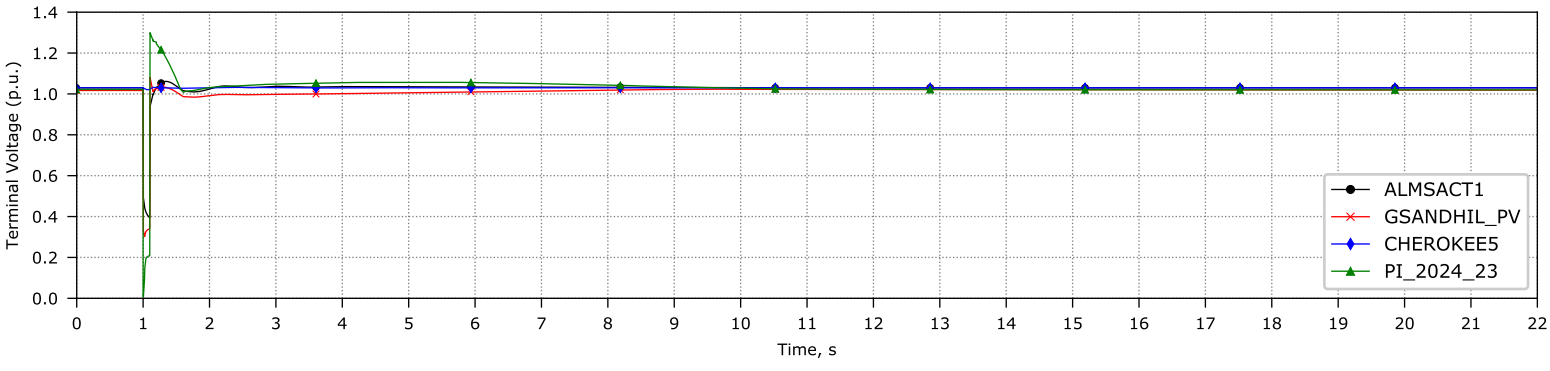
PI-2024-23_Study_Alamosa-Almsa_TP

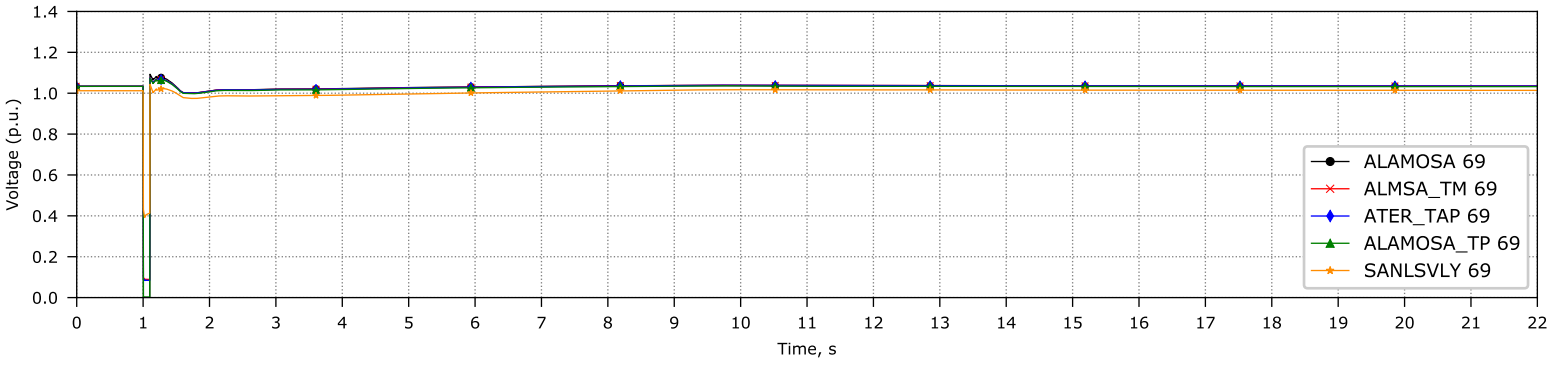




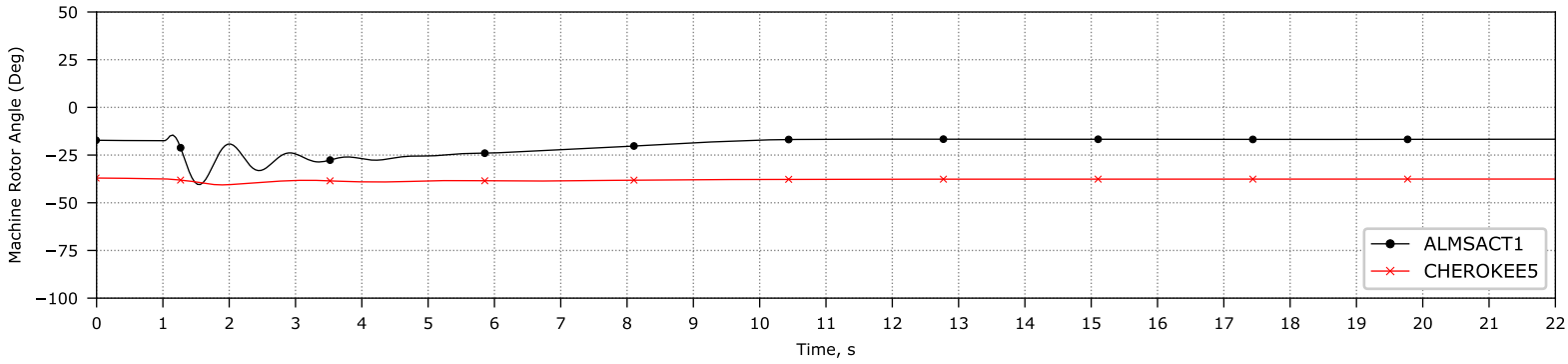


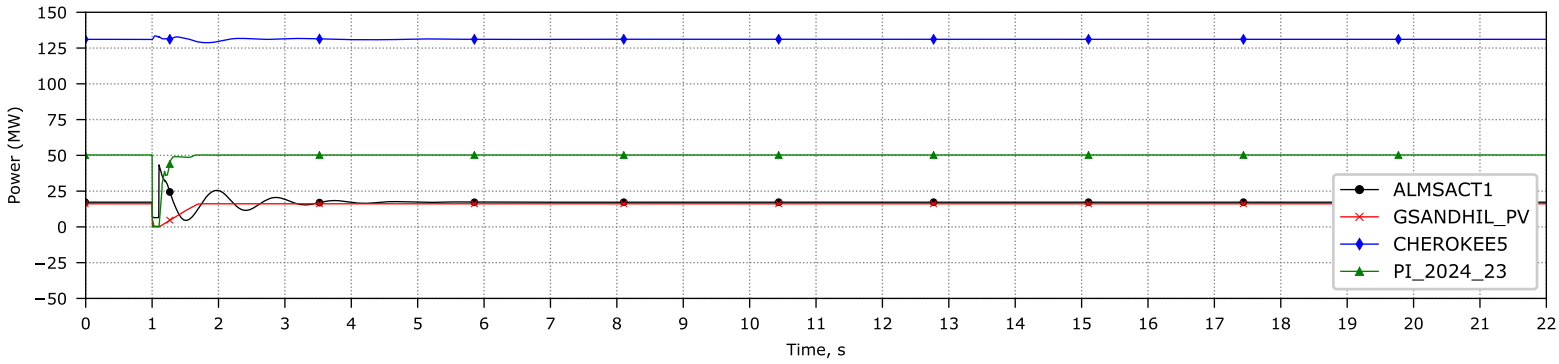


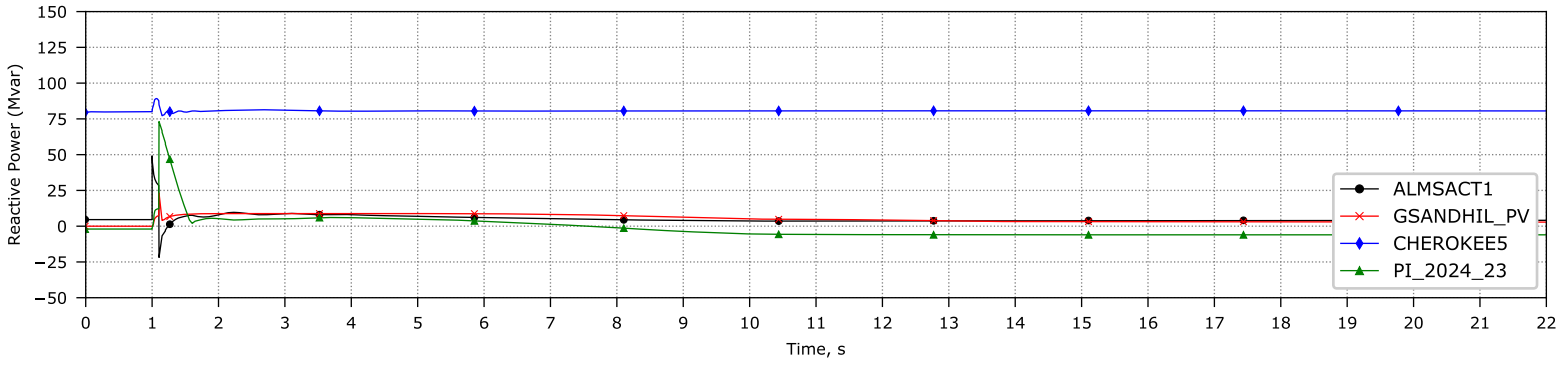


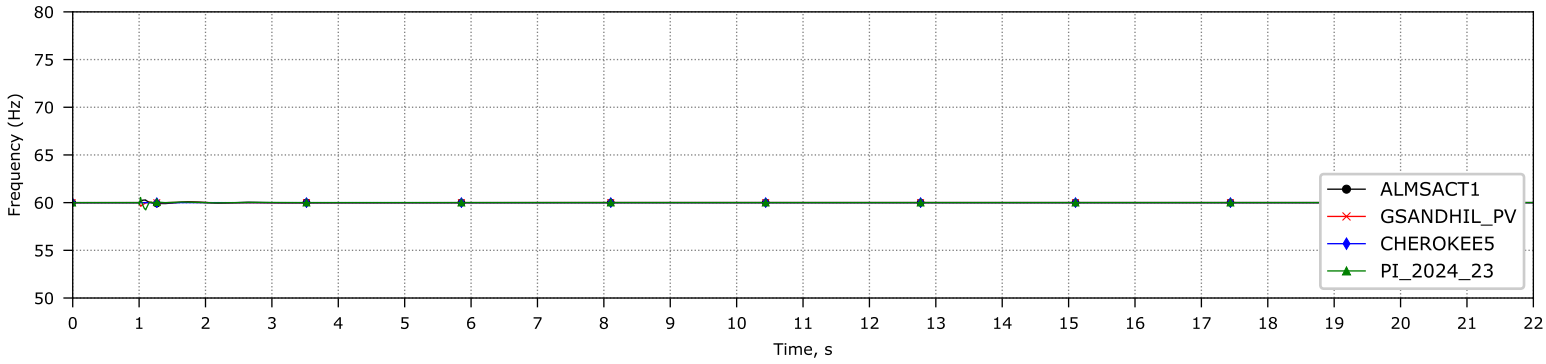


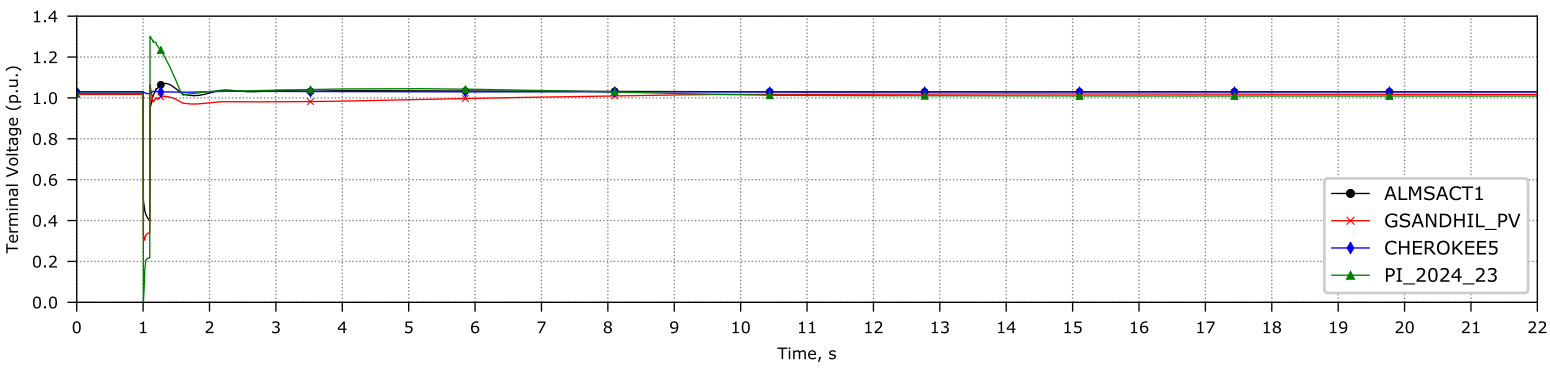
PI-2024-23_Study_Alamosa-Mosca

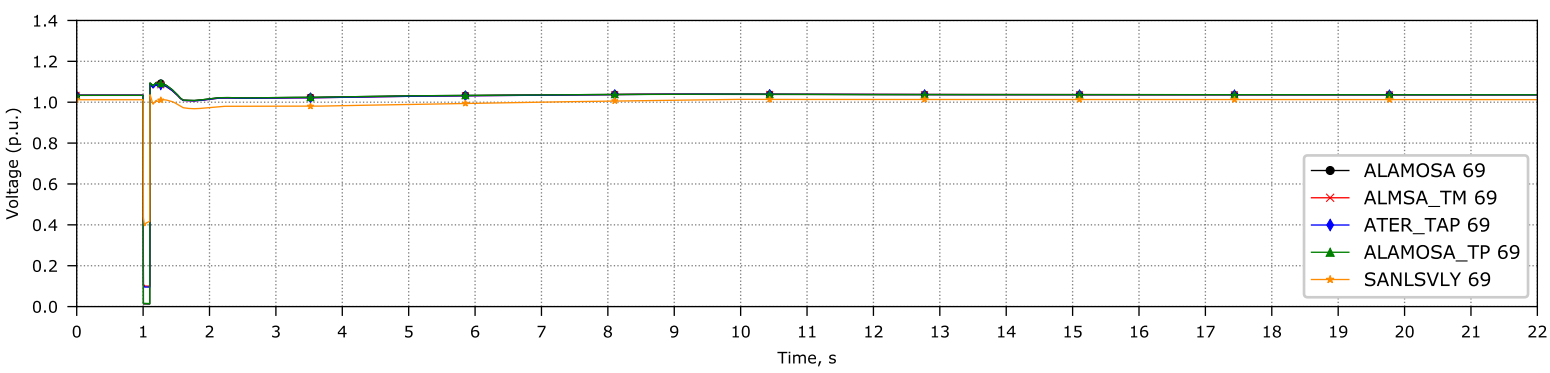




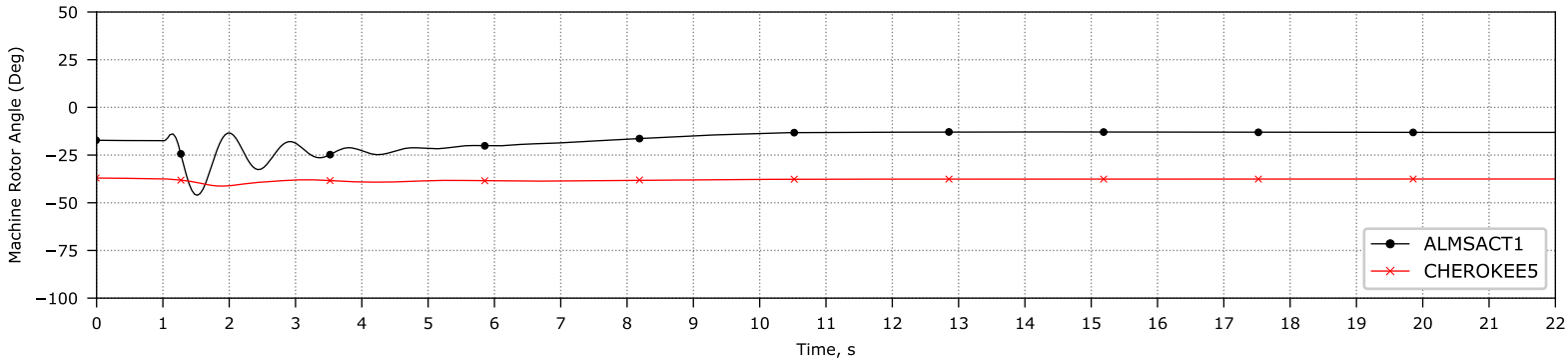


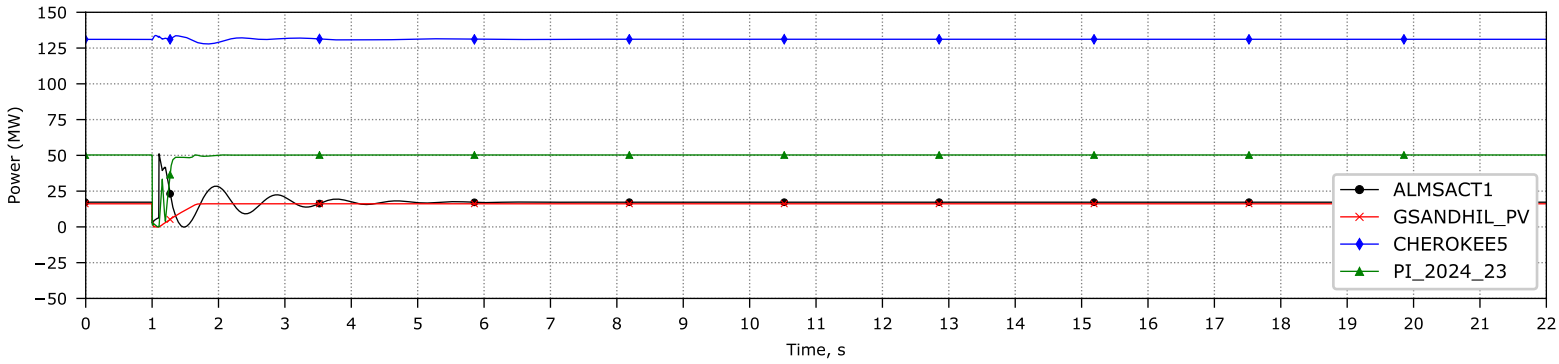


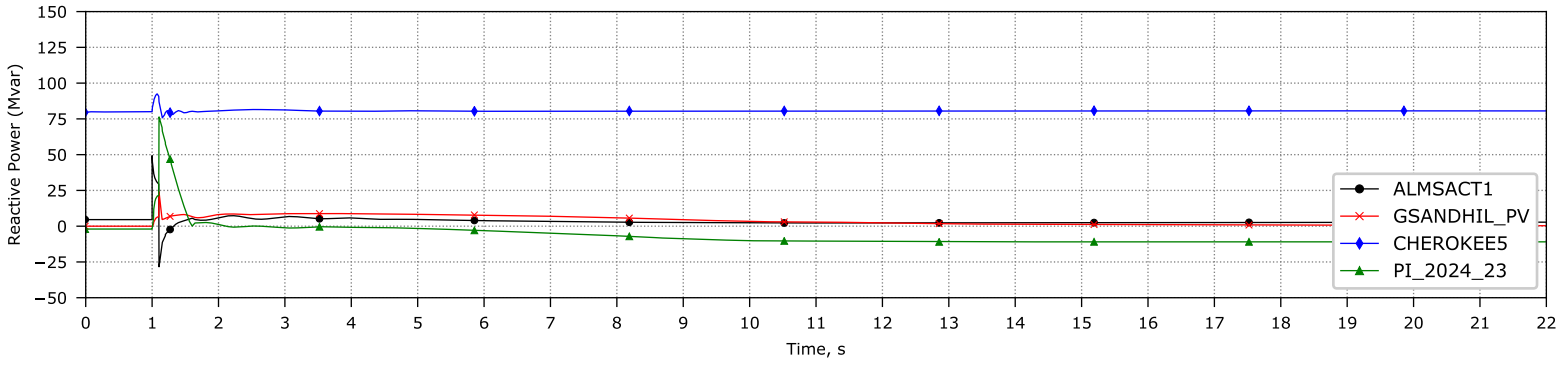


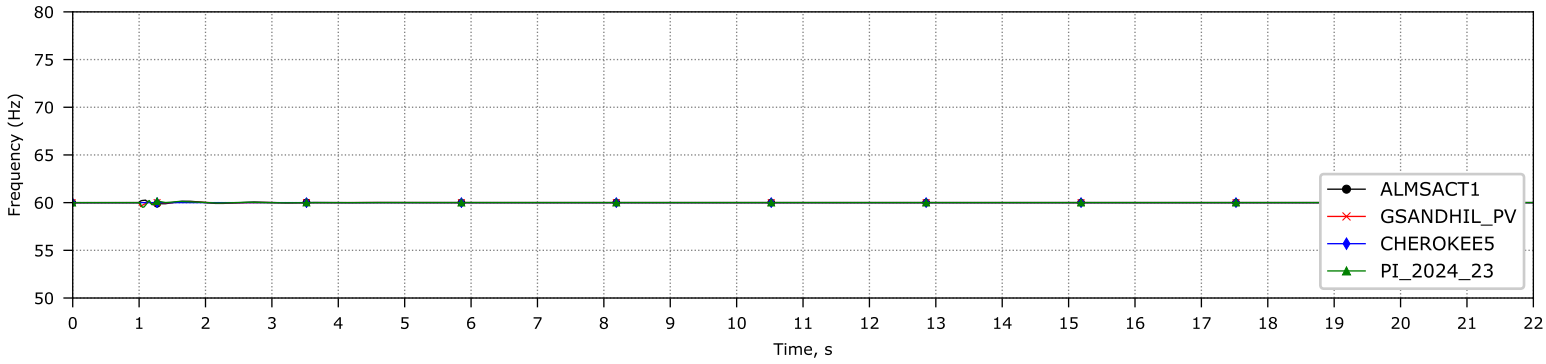


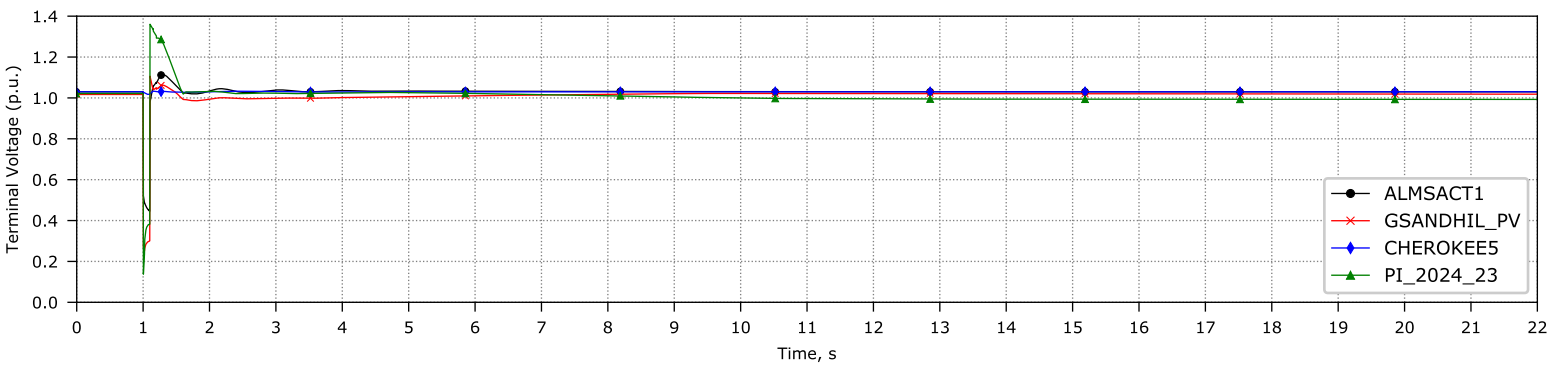
PI-2024-23_Study_Almsa_TM-Almsa_TM_tran

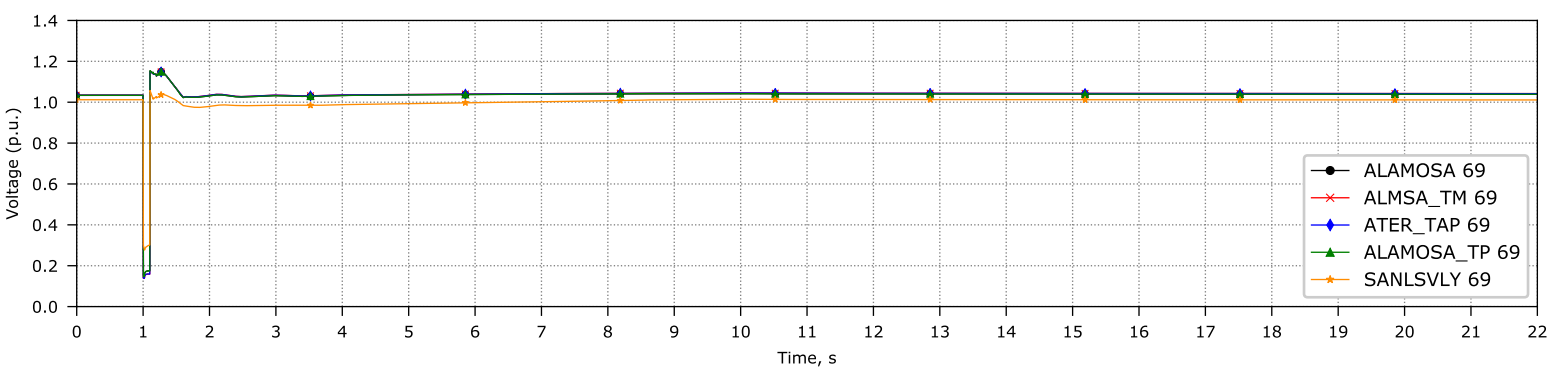




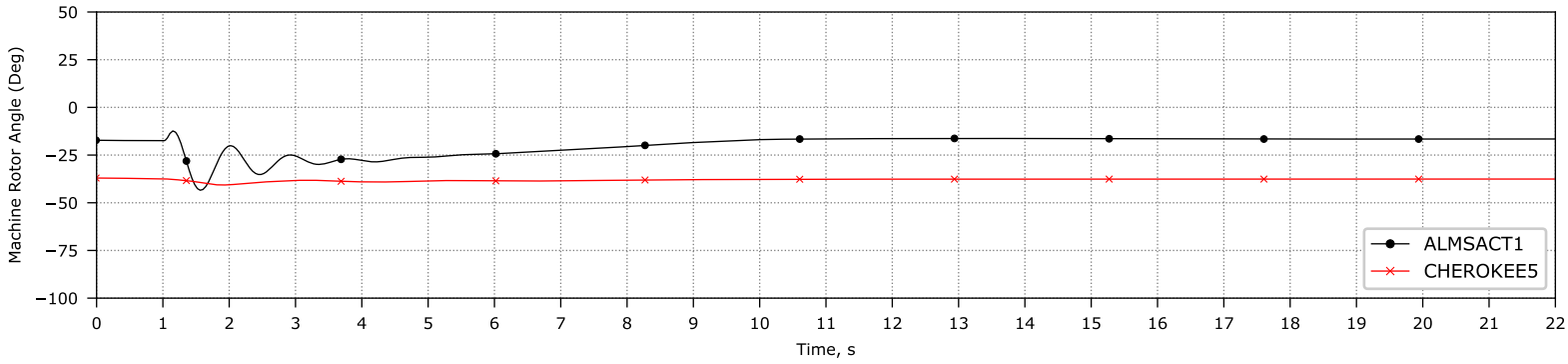


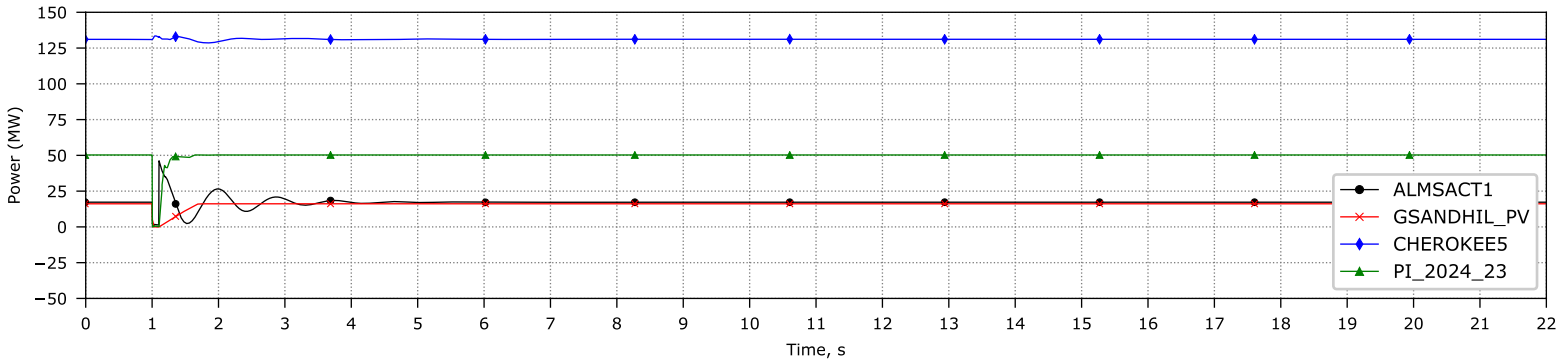


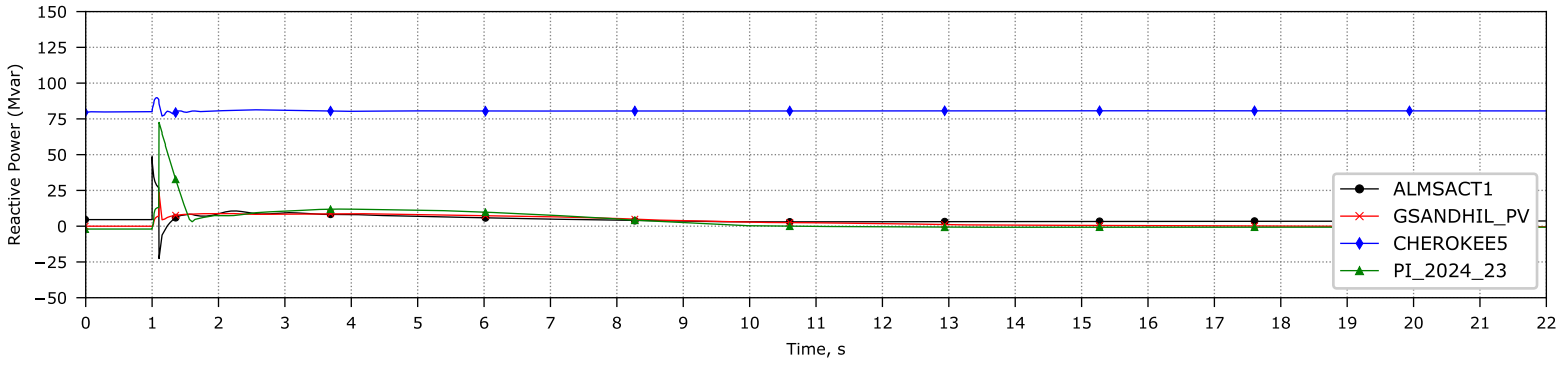


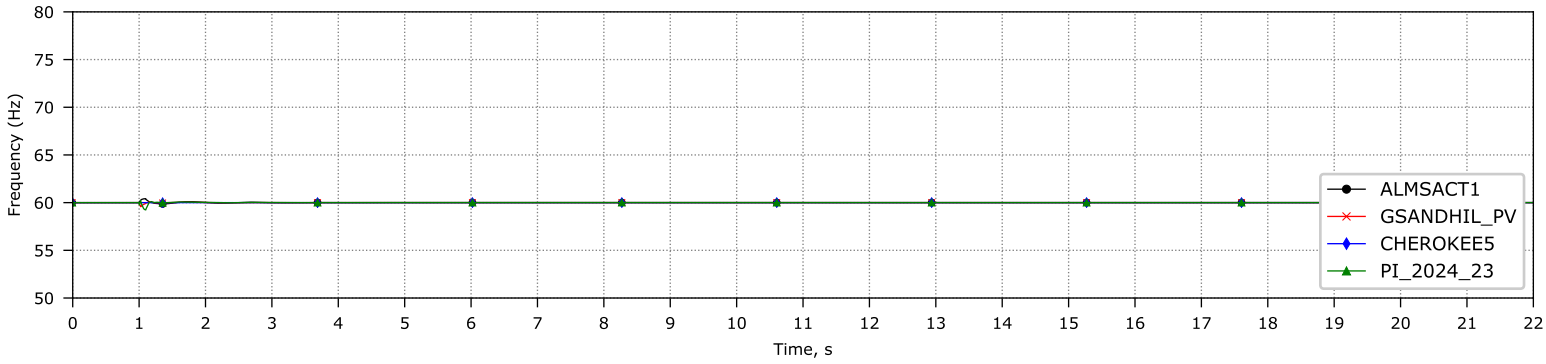


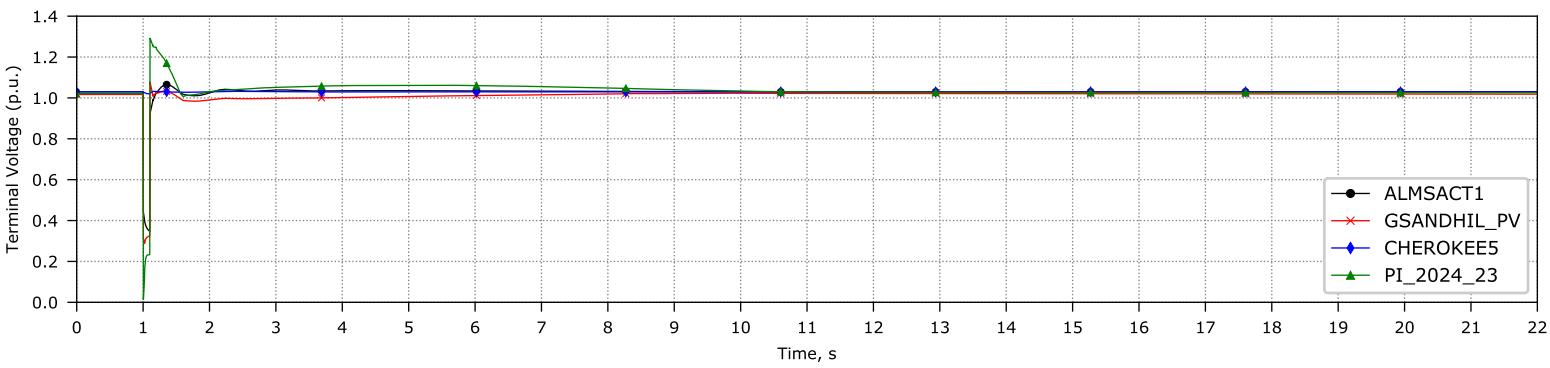
PI-2024-23_Study_Alamosa_TM-Ater_TAP

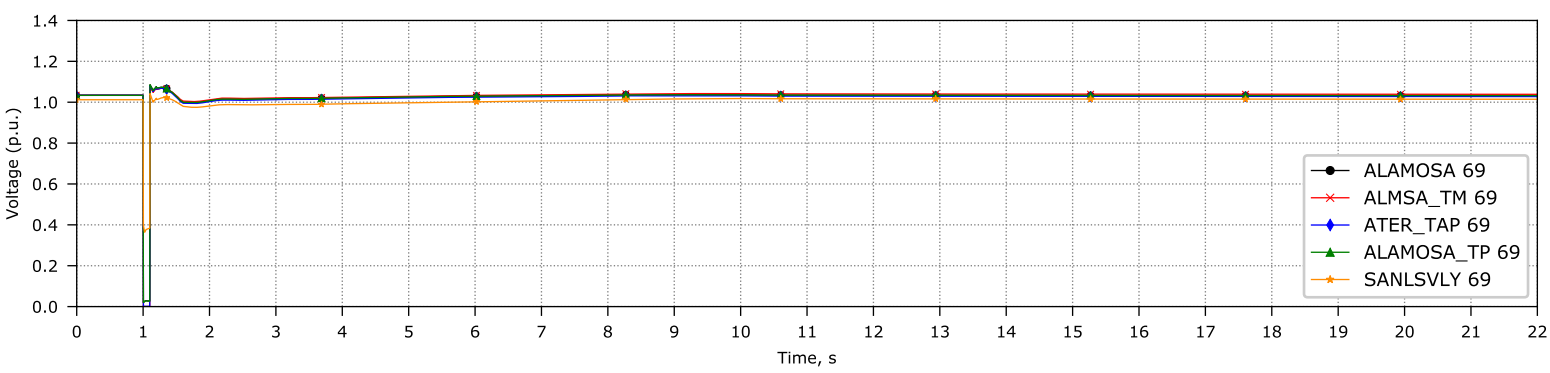












PI-2024-23_Study_Mosca-Sanlsvly