Balancing Authority of Northern California

Regular Meeting of the Commissioners of BANC

2:00 P.M.
Wednesday, November 15, 2023
35 Iron Point Circle, Suite 225
Folsom, CA 95630

Balancing Authority of Northern California
NOTICE OF REGULAR MEETING AND AGENDA

Notice is hereby given that a regular meeting of the Commissioners of the Balancing Authority of Northern California (BANC) will be held on **November 15, 2023** at **2:00 p.m.** at **35 Iron Point Circle, Suite 225, Folsom, CA 95630.**

The following information is being provided as the forum by which members of the public may observe the meeting and offer public comment:

Phone: 1-309-205-3325 or 1-719-359-4580 **Meeting ID:** 856 9498 9152 **Passcode:** 875985

Meeting Link: https://us06web.zoom.us/j/85694989152?pwd=blBpRw5BNiFTjtR3mh1CLyPGPGDDJk.1&from=addon

Additional Public Meeting Location(s):

In addition to the primary meeting location listed above, any member of the public may also observe the meeting and offer public comment at the following address(es):

City of Shasta Lake
4332 Vallecito Street, Training Room (2nd Floor)
Shasta Lake, CA 96019

AGENDA

1 Call to Order and Verification of Quorum.

2 Matters subsequent to posting the Agenda.

3 Public Comment – any member of the public may address the Commissioners concerning any matter on the agenda.

4 Consent Agenda.

A. Minutes of the Regular Commission Meeting held on September 27, 2023.

B. BANC Operator Report (September and October).

C. Compliance Officer Report (October and November).

D. PC Committee Chair Report (October and November).

E. General Manager's Report and Strategic Initiatives Update.

5 Regular Agenda Items – Discussion and Possible Action.

A. General Manager Updates.

i. Market Updates – EIM, EDAM, Markets+, WRAP.

ii. Draft BANC 2023/2024 Strategic Initiatives Review and Possible Acceptance.

B. Consider and Possibly Approve Resolution 23-11-01 *Acknowledgement and Acceptance of BANC Planning Coordinator Area 2023 Transmission Planning Assessment.*

C. Consider and Possibly Approve Resolution 22-11-02 *Approval of Amended Management Services Agreement between BANC and Adirondack Power Consulting, LLC*.

D. Consider and Possibly Approve Resolution 23-11-03 *Approval of BANC Commission Policies – Delegations of Authority, Financial Policy, Budget Policy*.

E. Consider and Possibly Approve Resolution 23-11-04 *Resolution Setting the Regular Meeting Dates for 2024*.

F. Member Updates.

6 Adjournment.

Accessible Public Meetings - Upon request, BANC will provide written agenda materials in appropriate alternative formats, or disability-related modification or accommodation, including auxiliary aids or services, to enable individuals with disabilities to participate in public meetings. Please send a written request, including your name, mailing address, phone number and brief description of the requested materials and preferred alternative format or auxiliary aid or service at least 3 days before the meeting. Requests should be sent to: Kris Kirkegaard, 555 Capitol Mall, Suite 570, Sacramento, CA 95814 or to administrator@braunlegal.com.

Balancing Authority of Northern California

Consent Agenda Items

A. **Minutes of the September 27, 2023 BANC Regular Meeting.**
B. **BANC Operator Reports (September and October).**
C. **Compliance Officer Reports (October and November).**
D. **PC Committee Chair Reports (October and November).**
E. **General Manager Report.**

MINUTES OF THE REGULAR MEETING
OF THE COMMISSIONERS OF
THE BALANCING AUTHORITY OF NORTHERN CALIFORNIA (BANC)

September 27, 2023

On this date, a Regular Meeting of the Commissioners of the Balancing Authority of Northern California was held was held at 555 Capitol Mall, Suite 570, Sacramento, CA 95814.

Representatives:

Member Agency	**Commissioner**
Modesto Irrigation District (MID)	Absent
City of Redding	Joe Bowers, alternate
City of Roseville	Dan Beans
Sacramento Municipal Utility District (SMUD)	Paul Lau
City of Shasta Lake	Absent
Trinity Public Utilities District (TPUD)	Paul Hauser, Chair

Other Participants:

Jim Shetler	General Manager
Tony Braun	General Counsel
Kris Kirkegaard	General Counsel Support

1. Call to Order and Verification of Quorum: Mr. Shetler verified that there was a quorum to proceed; attendance is noted above. Chair Hauser called the meeting to order at 2:04 p.m.

2. Matters Subsequent to Posting the Agenda: None.

3. Public Comment (any matter on the agenda): None.

4. Consent Agenda: Chair Hauser invited comments from the Commission and a motion on the Consent Agenda; no comments.

ACTION: M/S (Beans/Bowers) to **approve the Consent Agenda**. Motion carried by a unanimous roll call vote (Absent: Commissioners Caballero & Takehara).

5. Regular Agenda Items.

   A. General Manager Updates:

      i. Market Updates – EIM, EDAM, Markets+, WRAP.

      Mr. Shetler provided a brief overview of ongoing operations; EIM Committee oversight, including subcommittee updates; an EDAM markets update; and updates on SPP Markets+, WMEG, and WRAP. As a part of the EDAM update, he noted that BANC did announce its intention to implement EDAM, subject to individual participant decisions, at the CAISO EDAM Forum and via a press release on August 30th. Ongoing work continues with WAPA-SNR to address challenges related to EDAM.

ii. Draft BANC 2023/2024 Strategic Initiatives Review and Possible Acceptance.

Mr. Shetler clarified that he was not asking for any Commission action at this meeting. He overviewed the draft initiatives, requested input, and stated that they would be brought back in November for possible concurrence by the Commission.

B. Budget updates.

i. Consider and Possibly Approve Resolution 23-09-01 *Approval of Revised 2023 Annual Budget for BANC.*

Mr. Shetler overviewed the amendment to the 2023 budget to increase funding for Utilicast to perform a WAPA-SNR gap analysis under PA-4: EDAM and Other Markets, noting that no budget increase was required due to lower than expected planned expenditures in other areas.

ACTION: M/S (Bowers/Beans) to **approve Resolution 23-09-01 *Approval of Revised 2023 Annual Budget for BANC***. Motion carried by a unanimous roll call vote (Absent: Commissioners Caballero & Takehara).

ii. Consider and Possibly Approve Resolution 23-09-02 *Accepting and Adopting the BANC Member Participation Percentages for 2024*.

Mr. Shetler introduced this item, noting that there was enough of a change to require adjustments to the percentages for 2024.

ACTION: M/S (Beans/Lau) to **approve Resolution 23-09-02 *Accepting and Adopting the BANC Member Participation Percentages for 2024***. Motion carried by a unanimous roll call vote (Absent: Commissioners Caballero & Takehara).

iii. Consider and Possibly Approve Resolution 23-09-03 *Approval of 2024 Annual Budget for BANC*.

Mr. Shetler overviewed the proposed 2024 budget with the Commission.

ACTION: M/S (Bowers/Beans) to **approve 23-09-03 *Approval of 2024 Annual Budget for BANC***. Motion carried by a unanimous roll call vote (Absent: Commissioners Caballero & Takehara).

C. Consider and Possibly Approve Resolution 23-09-04 *Approval of BANC Internal Compliance Program Charter.*

Mr. Shetler introduced Mr. James Leigh-Kendall, BANC Compliance Officer, who noted that only minor updates and conforming changes were made this year. There were no questions from the Commission.

ACTION: M/S (Lau/Beans) to **approve Resolution 23-09-04 *Approval of BANC Internal Compliance Program Charter***. Motion carried by a unanimous roll call vote (Absent: Commissioners Caballero & Takehara).

D. Member updates.

Mr. Shetler notified the Commission that he would be updating and sharing the BANC 101 presentation on November 2nd at Redding and was willing to do the same at other member organizations upon request. He also noted that he did not have any planned agenda items for an October Commission meeting and was currently anticipating cancelling the next meeting.

Alternate Commissioner Bowers noted that Redding wrapped up their WECC audit last week and that they had submitted comments in support of EDAM and DAME. Commissioner Beans shared that Roseville recently met with Bosch. Commissioner Lau provided updates on the following on behalf of SMUD: commissioning of long-duration batteries at Hedge Substation, a carbon capture sequestration project, a recent board passed rate resolution, and Station G commissioning. Commissioner Hauser touched on the status of TPUD's multi-year rate adjustment.

The Commission adjourned at 2:51 p.m.

Minutes approved on November 15, 2023.

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C. Anthony Braun, Secretary

BALANCING AUTHORITY OF NORTHERN CALIFORNIA

P.O. BOX 15830 • D109 • SACRAMENTO • CA 95852 -1830

TO: BANC Commission

RE: BANC Operator Report for September 2023

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- Declared BA Energy Emergency Alert Level (EEA): EEA0
- RSG Activations
  - 3 Qualifying Events
  - 0 MW Qualifying Event request
  - 269 MW average generation lost
  - 395 MW maximum generation lost
  - Generating unit(s) and date(s) affected:
    9/09/23 – New Melones (NML)
    9/09/23 – Cosumnes (CPP)
    9/25/23 – Cosumnes (CPP)
  - All recoveries within 14 minute(s)
- USF
  - 4 of 30 days with instances of USF mitigation procedure utilized
  - 0 days on Path 66
  - No operational impact on BANC
- BAAL Operation:
  - Maximum duration of BAAL exceedance: 4 Minutes
  - Number of BAAL exceedance >10 minutes: None
  - BAAL violation (BAAL exceedance >30 minutes): None
- Frequency Response (FR) Performance – Quarterly Metric:
  - 2023 Frequency Response Obligation (FRO): -18.8 MW/0.1Hz
  - Q2 Frequency Response Measure (FRM): -60.7 MW/0.1Hz
  - Q2 Number of Under-Performed Events: 0 out of 7
  - Q1~Q2 Frequency Response Measure (FRM): -52.5 MW/0.1Hz
  - Q1~Q2 Number of Under-Performed Events: 0 out of 11

Monthly Notes:

- No additional notes or impacts

BALANCING AUTHORITY OF NORTHERN CALIFORNIA

P.O. BOX 15830 • D109 • SACRAMENTO • CA 95852 -1830

TO: BANC Commission

RE: BANC Operator Report for October 2023

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- Declared BA Energy Emergency Alert Level (EEA): N/A
- RSG Activations
  - 0 Qualifying Events
  - 0 MW Qualifying Event request
  - 0 MW average generation lost
  - 0 MW maximum generation lost
  - Generating unit(s) and date(s) affected: N/A
  - All recoveries within 0 minute(s)
- USF
  - 9 of 31 days with instances of USF mitigation procedure utilized
  - 0 days on Path 66
  - No operational impact on BANC
- BAAL Operation:
  - Maximum duration of BAAL exceedance: 3 Minutes
  - Number of BAAL exceedance >10 minutes: None
  - BAAL violation (BAAL exceedance >30 minutes): None
- Frequency Response (FR) Performance – Quarterly Metric:
  - 2023 Frequency Response Obligation (FRO): -18.8 MW/0.1Hz
  - Q2 Frequency Response Measure (FRM): -60.7 MW/0.1Hz
  - Q2 Number of Under-Performed Events: 0 out of 7
  - Q1~Q2 Frequency Response Measure (FRM): -52.5 MW/0.1Hz
  - Q1~Q2 Number of Under-Performed Events: 0 out of 11

Monthly Notes:

- Partial solar eclipse 10/14/23, no issues

Compliance Officer Report
BANC Commission Meeting
October 2023

The following summarizes routine issues for the Commission's information and consideration. Any major issues or action items will be identified on a future Commission agenda for action.

BA Compliance Issues:

- No significant operational Balancing Authority compliance events occurred.
- All required BA compliance reports and operating data were submitted to WECC.

BANC MCRC:

- The next BANC MCRC meeting is scheduled to be held at 10:00 AM on Monday, October 23rd via teleconference.

Compliance Officer Report
BANC Commission Meeting
November 2023

The following summarizes routine issues for the Commission's information and consideration. Any major issues or action items will be identified on a future Commission agenda for action.

BA Compliance Issues:

- No significant operational Balancing Authority compliance events occurred.
- All required BA compliance reports and operating data were submitted to WECC.

BANC MCRC:

- The next BANC MCRC meeting is scheduled to be held at 10:00 AM on Monday, December 4th via teleconference.

PC Committee Chair Report
BANC Commission Meeting
October 2023

The following summarizes Planning Coordinator-related activities and updates for the Commission's information and consideration. Any major issues or action items will be identified separately on a future Commission agenda for action.

BANC PC Committee Updates and/or activities:

SMUD staff continue to work toward demonstrating compliance with PC-related NERC reliability standards.

- TPL-001-5 - Transmission System Planning Performance – BANC PC TPL Assessment Report has been completed and sent to BANC PC Participants and committee members for approval.

- FAC-014 SOLs – Staff finalized the annual study and submitted the finalized 2023 BANC PC FAC-014 SOLs study report to BANC PC participants on October 6th.

- PRC-026-1 Draft report – Staff submitted the draft PRC-026-1 report to BANC PC Participants for review and comment, which is due by October 13th. Any comments or updates will be added to the final report by October 27th.

The table below shows the current status of all PC-related NERC standards:

	PC Standard	Estimated % Complete	Notes
1	FAC-002-3 Interconnection Studies	100%	There are no BES interconnection projects for 2023-24 for BANC PC Participants.
2	FAC-010-3 SOL Methodology for Planning Horizon	100%	An updated version was sent to external stakeholders and BANC PC Participants on 12/31/2022.
3	FAC-014-2 Establish and Communicate SOLs	100%	Staff submitted draft 2023 BANC PC FAC-014 SOLs study report to BANC PC participants on 08/25/2023 for review and comment by 09/08/2023.
4	IRO-017-1 Outage Coordination	0%	Awaiting the completion of the 2023 annual assessment to send to the Reliability Coordinator.
5	MOD-031-2 Demand and Energy Data	100%	Staff is coordinating the 2023 data request cycle. The two sets of data have been uploaded to WECC. BANC also provided responses to L&R Narrative questions on 03/20/2023.
6	MOD-032-1 Data for Power System Modeling & Analysis		Ongoing activity. Data request to fulfill 13 month cycle for compliance was sent on 02/03/2023.
7	MOD-033-1 System Model Validation	0%	Data requests and study will be performed later in the year.
8	PRC-006-5 Underfrequency Load Shedding	100%	The WECC Off Frequency System & Protection Restoration Committee (OFSPR) data collector sent out the new 2023 data request, and BANC PC Participants provided BANC PC and the OFSPR their responses for the Southern Island Load Tripping Plan (SILTP) report. The provided data will be aggregated into the coordinated load tripping plan and report for WECC by SMUD. The BANC PC portions of this data request was completed in June.
9	PRC-010-2 Undervoltage Load Shedding	0%	Another study is due by 12/30/2024.
10	PRC-012-2 Remedial Action Schemes	80%	New Standard effective on 01/01/2021. Study Plan finalized on 04/10/2020. Working on performing studies for each RAS scheme.
11	PRC-023-4 Transmission Relay Loadability	100%	Staff shared the finalized PRC-023-4 report with BANC PC Participants on 07/28/2023.

	PC Standard	Estimated % Complete	Notes
12	PRC-026-1 Relay Performance During Stable Power Swings	90%	Staff notified BANC PC Participants of preliminary transient stability assessment results per application of PRC-026-1 R1 Criteria 4. The results will be added to the upcoming 2023 BANC PC PRC-026-1 draft report for review by 09/29/2023.
13	TPL-001-5 Transmission System Planning Performance	90%	Report is out for Participant Approval
14	TPL-007-4 Transmission System Planned Performance for Geomagnetic Disturbance Events	100%	Registered the SMUD/BANC PC GIC monitoring device at Carmichael with NERC – compliance requirement. Made request to the GIC manufacturer to increase sampling rate from the default once every hour to once every 10s or faster per NERC recommendation. SMUD sent the TPL-007-4 requirement R12 and R13 to the BANC PC members. The effective date for these requirements was 07/01/2021. Ongoing, NERC has declared a GMD event (Kp>7) for reporting purpose. The GMD event duration was from 11/3 2021 3:00pm to 11/4/2021 11:59pm. Recording data for these two events downloaded and saved for reporting prior to the annual due date (06/30/2022). SMUD uploaded all 3 GMD events that were requested by NERC (due 06/30/2022). Completed benchmarking and supplemental GMD Vulnerability Assessment of the Near-Term Transmission Planning Horizon (R4 and R8), provided GIC flow information to the BANC PC members (R5 and R9) – Due 01/01/2023.

PC Committee Chair Report
BANC Commission Meeting
November 2023

The following summarizes Planning Coordinator-related activities and updates for the Commission's information and consideration. Any major issues or action items will be identified separately on the Commission agenda for action.

BANC PC Committee Updates and/or activities:

SMUD staff continue to work toward demonstrating compliance with PC-related NERC reliability standards.

- TPL-001-5 - Transmission System Planning Performance – BANC PC TPL Assessment Report was completed and sent out to PC Participants and committee members for approval. The report was approved and finalized on October 13th and will be presented to the BANC Commissioners to seek their acceptance at the upcoming BANC Commission meeting scheduled for November 15th, 2023.

- PRC-026-1 Final Report – Staff processed comments received and submitted the finalized PRC-026-1 report to BANC PC Participants on October 27th.

- MOD-033 – Dynamic portion of the study has been completed. The steady state data request will be sent out to BANC PC Participants in November.

The table below shows the current status of all PC-related NERC standards:

	PC Standard	Estimated % Complete	Notes
1	FAC-002-3 Interconnection Studies	100%	There are no BES interconnection projects for 2023-24 for BANC PC Participants.
2	FAC-010-3 SOL Methodology for Planning Horizon	100%	An updated version was sent to external stakeholders and BANC PC Participants on 12/31/2022.
3	FAC-014-2 Establish and Communicate SOLs	100%	Staff submitted draft 2023 BANC PC FAC-014 SOLs study report to BANC PC participants on 08/25/2023 for review and comment by 09/08/2023.
4	IRO-017-1 Outage Coordination	0%	Awaiting the acceptance of the 2023 annual assessment to send to the Reliability Coordinator.
5	MOD-031-2 Demand and Energy Data	100%	Staff is coordinating the 2023 data request cycle. The two sets of data have been uploaded to WECC. BANC also provided responses to L&R Narrative questions on 03/20/2023.
6	MOD-032-1 Data for Power System Modeling & Analysis		Ongoing activity. Data request to fulfill 13 month cycle for compliance was sent on 02/03/2023.
7	MOD-033-1 System Model Validation	50%	Dynamic portion has been completed. Steady State data request will be sent in November
8	PRC-006-5 Underfrequency Load Shedding	100%	The WECC Off Frequency System & Protection Restoration Committee (OFSPR) data collector sent out the new 2023 data request, and BANC PC Participants provided BANC PC and the OFSPR their responses for the Southern Island Load Tripping Plan (SILTP) report. The provided data will be aggregated into the coordinated load tripping plan and report for WECC by SMUD. The BANC PC portions of this data request was completed in June.
9	PRC-010-2 Undervoltage Load Shedding	0%	Another study is due by 12/30/2024.
10	PRC-012-2 Remedial Action Schemes	10%	New Standard effective on 01/01/2021. Study Plan finalized on 04/10/2020. The R4 assessment is not required until 1/1/2026 which means that the assessment and report must be finalized and published by 1/1/2026.
11	PRC-023-4 Transmission Relay Loadability	100%	Staff shared the finalized PRC-023-4 report to BANC PC Participants on 07/28/2023.
12	PRC-026-1 Relay Performance During Stable Power Swings	100%	Staff processed comments received and submitted the finalized PRC-026-1 report to BANC PC Participants on 10/27/2023.

	PC Standard	Estimated % Complete	Notes
13	TPL-001-5 Transmission System Planning Performance	95%	Report approved by BANC PC Participants and BANC PC Committee on 10/13/2023. Awaiting BANC Commissioners' acceptance on 11/15/2023.
14	TPL-007-4 Transmission System Planned Performance for Geomagnetic Disturbance Events	100%	Registered the SMUD/BANC PC GIC monitoring device at Carmichael with NERC – compliance requirement. Made request to the GIC manufacturer to increase sampling rate from the default once every hour to once every 10s or faster per NERC recommendation. SMUD sent the TPL-007-4 requirement R12 and R13 to the BANC PC members. The effective date for these requirements was 07/01/2021. Ongoing, NERC has declared a GMD event (Kp>7) for reporting purpose. The GMD event duration was from 11/3 2021 3:00pm to 11/4/2021 11:59pm. Recording data for these two events downloaded and saved for reporting prior to the annual due date (06/30/2022). SMUD uploaded all 3 GMD events that were requested by NERC (due 06/30/2022). Completed benchmarking and supplemental GMD Vulnerability Assessment of the Near-Term Transmission Planning Horizon (R4 and R8), provided GIC flow information to the BANC PC members (R5 and R9) – Due 01/01/2023.

GM Report
BANC Commission Meeting
November 15, 2023

I wanted to summarize routine issues for the Commission's information and consideration. Any major issues or action items will be identified separately on the Commission agenda for action.

Outreach Efforts:

Refer to GM outreach report provided under separate distribution. In addition, here are some other noteworthy items:

LADWP/Seattle City Light/SRP

Dialogue continues with these entities regarding EIM participation. We continue to interact on an informal basis to make sure we are aligned on EIM issues from a POU perspective. We are routinely holding bi-weekly calls to provide updates and discuss issues. We have also used this forum to discuss POU positions regarding the EDAM development, other market design issues (e.g.- SPP Markets+), and to discuss potential summer heat wave impacts on EIM and EDAM design.

Market Initiatives:

EIM Participation

Staff continues monitoring EIM participation. CAISO quarterly benefit reports show that BANC is seeing benefits from EIM participation, with the 3rd Quarter 2023 report showing gross benefits of $22.17 million for BANC, with a total of $542.00 millions of gross benefits for BANC since joining in 2019.

With respect to BANC EIM Phase 2 effort, BANC has been passing both the EIM Capacity and Flex Ramp tests with a high success rate. Both the Technical Evaluation Subcommittee and the Settlements Subcommittee are meeting routinely and evaluating EIM operations, with reports out to the EIM Committee. We are also discussing with the EIM Committee how to move forward with accounting for non-participating demand response in EIM for interested participants, as well as the request by CAISO for detailed behind the meter solar and storage data.

EDAM Participation

The CAISO filed the final proposed EDAM/DAME tariff with FERC on 8/22/23. BANC staff worked with the Legal Committee and other interested EDAM parties on a set of supportive comments which were filed at FERC in late September. The CAISO

responded to comments in October and is still seeking FERC approval of the tariff by 12/21/23.

A group of Western state regulators (AZ, CA, NM, OR, and WA) have sent a letter to CREPC/WIRAB supporting the creation of an independent entity that would leverage the existing CAISO infrastructure for EIM and eventually EDAM to develop a cost-effective West-wide market. This would include a range of market services from EIM to EDAM to an RTO. It also deals with the CAISO governance issue by creating a separate independent entity. BANC views this as a positive development in ensuring a West-wide market that will include CA and supports the effort. BANC has joined other parties in supplying responses to a set of questions that the group raised on how to proceed with this effort. The Western Markets Governance Pathways Initiative has proposed the formation of a "launch committee" made up of stakeholders from various groups to organize this effort. One of the stakeholder groups is for POUs. The BANC General Manager has been selected as a representative for the POU Sector and the Launch Committee efforts have been initiated.

Based upon the Commission's unanimous approval at its 8/23/23 meeting, BANC staff have initiated the project efforts for the EDAM Implementation effort which includes starting dialogue with the CAISO project management group for EDAM and establishing the internal BANC project team.

Other Market Developments

In parallel with the re-initiation of the EDAM process, two other West-wide market developments are also in process:

1. SPP has announced its "Markets +" effort to support utilities in the West with a range of market options from EIM to full RTO services. SPP provided a final straw proposal in late 2022. SPP has received funding from twenty-two entities for the current phase of market and tariff development. Staff views Markets+ as a fallback option for BANC and will continue to monitor this market option but does not plan on seeking funding for participation in this next phase of their efforts. SPP is currently forecasting a Markets+ tariff ready for filing at FERC by the end of 2023 to early 2024. They will be seeking additional funding for the next phase of market development as well.
2. A group of Western utilities have formed a group called Western Market Exploratory Group (WMEG) with a stated purpose of identifying what a full market in the West should entail. The cost benefit study and other WMEG efforts were completed in June 2023 and the project was declared finished as of June 30, 2023. The output of the WMEG cost benefit study is being used by some participants in their decision-making for day ahead market evaluation.

WAPA:

Market Engagement

WAPA-SNR continues to be an active participant in the EIM.

We have also held several discussions with WAPA-SNR on how staff could assist in their decision-making on EDAM participation. This has included more detailed discussions with the Brattle Group on the benefits study, joint discussions with the CAISO, and making the Utilicast consultant available for assistance. WAPA-SNR has requested that the BANC contract with Utilicast be used as the mechanism for their EDAM "gap" analysis. The Commission approved this request at its 9/27/23 meeting. Staff have released Utilicast to support this review.

WECC

WECC Board Meetings

The last set of Board and committee meetings were held on September 13-14, 2023, in Vancouver, BC, Canada, which was also the annual meeting. The next set of meetings will be December 5-6, 2023, in Salt Lake City, UT.

Western Power Pool (WPP)

Western Resource Adequacy Program (WRAP)

As agreed previously, BANC has informed WPP that it will not be participating in the Western Resource Adequacy Program (WRAP) due to our lack of ability to have firm, long-term transfer capability at Mid-C, which is the hub for the WRAP interchanges. BANC continues to monitor development of the WRAP and hold periodic discussions with WPP regarding our ability to participate in the future. The new WPP independent board held its first public meeting on May 31, 2023. WRAP continues to evaluate when it can move to a "binding" program with imposed penalties. The preference is to be at the "binding" stage by 2026, but it could be as late as 2028. The WRAP program has also been working with the CAISO to ensure that there is interoperability between the WRAP and the proposed EDAM.

RSG and FRSG Participation

BANC continues to participate in the Reserve Sharing Group and the Frequency Response Sharing Group through the WPP and receive benefits in doing so.

WPP Strategic Planning Effort

WPP has initiated a strategic planning effort to determine member interest in the future direction of the power pool. This includes a series of member town halls to obtain member input. One of these sessions was held in Spokane, WA, on October 24, 2023, which the BANC GM along with BANC Operator representatives attended. WPP staff stated that they view one of their roles as providing services to its

members that are not currently available since there is no West-wide RTO in place. An example would be integrated transmission planning.

CDWR Delta Pumping Load:

BANC is coordinating with SMUD, CDWR, WAPA, and the CAISO regarding how the construction and pumping loads and ancillary services will be provided for this project. The CAISO has reached out to BANC/SMUD/WAPA-SNR regarding contacts for initiating discussions on how CAISO will supply energy for the construction loads in our footprints. With the Governor's announcement that the project will be downsized from two to one tunnel, CDWR has withdrawn the current applications and will be submitting revised environmental documentation. SMUD reported that CDWR has approached them regarding the revised environmental review and updated project schedule and SMUD is initiating updated studies. The current schedule for the project is to initiate construction in 2033 with operations initiated in 2040's.

SB100 Implementation

As part of SB100, the CPUC, CEC, and CARB (Joint Agencies) are required to collaborate with the California BAs to develop a quadrennial report on the status of achieving the goals of SB100. The four POU BAs (BANC, IID, LADWP, and TID) are collaborating on positions and responses, facilitated by CMUA. The final, initial report was issued on 3/15/21. The CEC did reach out to the POU BAAs in early March 2021 seeking more engagement with the BAAs for the next round of analysis for the SB100 effort. Based upon recent discussions, the POU BAAs have hired a consultant via CMUA to assist in this effort. The Joint Agencies have also indicated that they will be initiating the next cycle of the SB100 effort to support issuing an update report by the required date of 1/1/25. The CEC held an initial public meeting on 8/22/23 to kickoff this effort. Jon Olson (SMUD) represented BANC at this meeting. The CEC is gearing up for engaging on the next SB100 report this fall. BANC is working with IID, LADWP, and TID to coordinate our response to this effort.

Western Electricity Industry Leaders (WEIL) Group

The WEIL CEOs last met on September 29, 2023, in Portland, OR. The next meeting of the WEIL group is planned for February 2, 2023, in San Diego, CA.

Strategic Initiatives

The proposed 2023/2024 Strategic Initiatives are attached to this report and which will be discussed for Commission concurrence at the November Commission meeting.

Balancing Authority of Northern California

Agenda Item 5A

1. **Draft BANC 2023/2024 Strategic Initiatives.**

No./Priority	Focus Area	Initiative	Responsibility	Target Due Date	Status
1 Medium	INDEPENDENCE	Effectively oversee the BA operations.	Jim Shetler	Ongoing	See monthly Ops, PC, Compliance, & GM Reports
2 Medium		Maintain long-term succession plan and traits for General Manager	Jim Shetler/Commission	Ongoing as Necessary	No update planned for 2024
3 Medium		Develop appropriate policies, procedures, & action tracking	Jim Shetler/BB&W	4th Qtr. 2024	Finalize policies & procedures
4 Medium	OUTREACH	Engage in industry forums (WECC, RC West, NWPPA, etc.)	Jim Shetler	Ongoing	Attend RC West, WECC Board, WEIL, & WPP mtgs.
5 Medium		Coordinate with other POU BAs (Ca and regionally)	Jim Shetler	Ongoing	Coordinating with SCL/SRP/ LA/TP/TID on EIM/EDAM & SB100
6 Medium		Outreach to regulatory and legislative bodies on key issues	Jim Shetler/BB&W/WEL	Ongoing as Necessary	
7 Medium		More formal engagement with TID on BA/EIM/EDAM issues	Jim Shetler/BB&W/WEL	Ongoing	Continue periodic discussions on areas of collaboration
8 Medium	ASSETS	Monitor RA development in WI	Jim S./BB&W/Res. Com.	4th Qtr. 2024	
9 Low	MEMBER SERVICES	Identify and outreach to potential new BANC members	Jim Shetler	Ongoing as Appropriate	

No./Priority	Focus Area	Initiative	Responsibility	Target Due Date	Status
10 High	INDEPENDENCE	Manage EIM Phase 2 Going Forward	Jim Shetler/SMUD	Ongoing	Manage Phase 2 operations including EIM, Tech Anal. & Settlements committees
11 High		EDAM evaluation effort ~ Engage Stakeholder Processes ~ Participate in CAISO Tariff Process ~ Manage BANC EDAM implementation	 Jim Shetler/BB&W/WEL Jim Shetler/BB&W/WEL Jim Shetler/BB&W/WEL/ Utilicast	 Ongoing 1st Qtr. 2024 Apr-26	
12 Medium	OUTREACH	Evaluate opportunities to engage other entities in market development	Jim Shetler	Ongoing	Coordinating with SCL, SRP, LADWP, TID, Tacoma, Idaho, PAC, & PGE
13 Medium		Regional Policy Issues: Monitor/ weigh-in where appropriate	Jim Shetler/Commission	Ongoing	
14 High		Market Regionalization: ~Monitor ongoing discussions at WEIL, WMGPI, & etc.	Jim Shetler/BB&W/WEL	Ongoing	
15 High		Coordinate with CA BAs on SB100 effort	Jim Shetler/BB&W	Ongoing	
16 Medium	ASSETS	~ Develop agreements for Sutter CS Project ~ Develop agreements for GSCE project participation	Jim S./BB&W/Res. Com. Jim S./BB&W/Res. Com.	6/30/24 6/30/24	
17 Medium	MEMBER SERVICES	Evaluate possible support to participants for EIM operations	Jim S.	Ongoing	

Balancing Authority of Northern California

Agenda Item 5B

1. **BANC PC Area 2023 Transmission Planning Assessment.**
2. **Resolution 23-11-01 *Acknowledgment and Acceptance of BANC PC Area 2023 Transmission Planning Assessment*.**

11/06/23

TO: **BANC Commission**

FROM: **BANC Counsel**

RE: **Acknowledgement and Acceptance of BANC PC Area 2023 Transmission Planning Assessment**

Included in the Commission packet for the November 15, 2023 BANC Commission meeting is the BANC Planning Coordinator (PC) Area 2023 Transmission Planning Assessment.[1] This document was produced by the Sacramento Municipal Utility District (SMUD), which serves as the BANC PC Services Provider. Concurrence from each member of the BANC Planning Committee was received on or before October 13, 2023. The performance of the BANC PC Area's portion of the Bulk Electric System (BES) was assessed in order to demonstrate that all of the performance requirements specified in the North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-5 (Transmission System Planning Performance) were met for years 2024 through 2033 (planning years one through ten).

A number of studies were performed to assess BES performance under various scenarios. The Assessment did not identify any new system deficiencies or criteria violations for the MID and Roseville Electric portions of the BES. For the REU and SMUD systems, contingencies were identified, but in one case, mitigation has been identified, and in the other, an established remedial action scheme already exists to mitigate. The attached report provides additional information. This assessment demonstrates BANC's compliance with the NERC TPL-001-5 Reliability Standard, the WECC TPL-001-WECC-CRT-3.2 Transmission System Performance Criterion, and the BANC PC Participants' respective voltage criteria.

Compliance with NERC Reliability Standard TPL-001-5 is one of several that must be met by the BANC PC, and the Commission is requested to acknowledge receipt and accept the BANC PC Area 2023 Transmission Planning Assessment by resolution.[2]

[1] Entities included in the BANC PC Area include: the Modesto Irrigation District (MID), Redding Electric Utility (REU), Roseville Electric and SMUD. The City of Shasta Lake and the Trinity Public Utilities District are part of the Western Area Power Administration – Sierra Nevada Region PC Area.

[2] Refer to BANC PC Committee Chair's Report for November 2023 for more information regarding the status of all PC-related NERC reliability standards.

Balancing Authority of Northern California

BANC PC Area
2023 TPL-001-5 Assessment

October 3rd, 2023

Executive Summary

An assessment was performed to demonstrate that the Balancing Authority of Northern California (BANC) Planning Coordinator (PC) portion of the Bulk Electric System (BES) meets the performance requirements specified in the TPL-001-5 NERC Reliability Standard for the years 2024 through 2033 (planning years one through ten).

Analyses were performed for steady state and stability to assess the BES performance following various NERC Category P0-P7 contingencies and extreme events as well as sensitivity studies. A spare equipment unavailability analysis was conducted with NERC Categories P0, P1 and P2 contingencies. The short circuit analysis of interrupting capability was supported by current and qualified past studies from each BANC PC Participant, whereas the steady state and stability analyses were supported by current studies.

For all analyses performed, there were no new system deficiencies or criteria violations identified for the MID and RE portions of the BES. The RDNG and SMUD systems have P6 contingencies that cause thermal overloads, but these can be mitigated with allowable system adjustments in between outages. SMUD also has pre-existing deficiencies that have already established remedial action schemes to mitigate. As such, there were no corrective action plans developed per this assessment.

The assessment demonstrates BANC PC's compliance with the NERC TPL-001-5 Reliability Standard, the WECC TPL-001-WECC-CRT-3.2 Transmission System Performance Criterion, and the BANC PC participant's respective voltage criteria.

Appendix A documents the TPL-001-5 requirements and the associated sections in this assessment that demonstrate compliance.

Table of Contents

Terms

BA	Balancing Authority
BANC	Balancing Authority of Northern California
MID	Modesto Irrigation District
NERC	North American Electric Reliability Corporation
PC	Planning Coordinator
PC Participants	SMUD, MID, RE, and RDNG
RE	Roseville Electric
RDNG	Redding Electric Utility
SMUD	Sacramento Municipal Utility District
TP	Transmission Planner
WECC	Western Electricity Coordinating Council

1 Introduction

The Balancing Authority of Northern California (BANC) is a Joint Powers Authority (JPA) consisting of the Sacramento Municipal Utility District (SMUD), Modesto Irrigation District (MID), Roseville Electric (RE), Redding Electric Utility (RDNG), Trinity Public Utilities District, and the City of Shasta Lake Utilities. BANC assumed the Balancing Authority (BA) responsibilities on May 1, 2011, with SMUD providing the BA operator services on a contract basis.

On January 1, 2017, BANC registered as the NERC Planning Coordinator (PC) for four of its members with a goal of fully complying with all PC-related reliability standards by January 1, 2018. The four BANC members that are in the BANC PC area are SMUD, MID, RE, and RDNG (individually "PC Participant" and collectively "PC Participants"). The City of Shasta Lake and Trinity Public Utility District are BANC members but are not PC Participants[1]. BANC and SMUD entered into an agreement wherein SMUD provides PC services to BANC on a contractual basis.

An assessment was performed for the BANC PC[2] portion of the Bulk Electric System (BES) in 2023 to demonstrate that it meets all performance and other requirements specified in the TPL-001-5 NERC Reliability Standard [1] for the years 2024 through 2033 (planning years one through ten).

This report documents the assessment and is structured as follows:

- Section 2 provides the scope of this assessment.
- Section 3 provides the assumptions used in this assessment.
- Section 4 provides the analyses performed for this assessment.
- Section 5 provides the results of this assessment.

Appendix A documents the TPL-001-5 requirements and the associated sections in this assessment that demonstrated compliance.

2 Study Scope

The BANC PC annual assessment measured the BES performance at the BANC PC Participant area for the years 2024 through 2033 (planning years one through ten) with the specific goal of demonstrating compliance with the TPL-001-5 NERC Reliability Standard. As such, the assessment was comprised of the following analyses:

- Steady state analysis
- Stability analysis

[1] The Western Area Power Administration – Sierra Nevada Region (WAPA-SNR) is also inside the BANC BA, but it is not a member of the BANC JPA. However, WAPA-SNR is an active participant in BANC activities. Additionally, WAPA-SNR is a registered PC and will serve as the PC for the Trinity Public Utilities District and the City of Shasta Lake. Thus, all BANC members are covered under either the BANC or WAPA-SNR PC registrations.

[2] BANC PC annual assessment includes performing an assessment for SMUD's non-BES 115 kV elements and WAPA's – SNR portion of the BES to insure reliable operation across the BANC PC area. The results of these studies are available to BANC members and upon request to entities with an NDA.

- Sensitivity analysis
- Spare equipment unavailability analysis
- Short circuit analysis

2.1 Steady State Analysis

A steady state analysis shall assess the system performance at peak load in the near-term and long-term transmission planning horizons. The steady-state performance shall be assessed in the near-term horizon using peak load cases that model year two (2025) and year five (2028). The long-term horizon shall be assessed using a peak load case for year ten (2033) as it represents the furthest out year of the long-term planning horizon, helping to identify potential future issues that may require significant lead time to adequately address and resolve.

In addition, the system performance at off-peak shall be assessed for one of the five years. Year two (2025) was selected for the off-peak load study scenario.

2.2 Stability Analysis

A stability analysis shall be performed to assess the system performance in the near-term planning and long-term planning horizon. The peak and off-peak cases for year two (2025) shall be used in the assessment for the near-term analysis and the peak case for year ten (2033) shall be used for the long-term analysis.

2.3 Sensitivity Study Scenarios

Sensitivity cases shall be used to assess the impact of changes to the basic assumptions used in the model. The sensitivity analysis shall vary one or more of the following conditions by a sufficient amount to stress the system within a range of credible conditions that demonstrate a measurable change in System response:

- Real and reactive forecasted Load.
- Expected transfers.
- Expected in service dates of new or modified transmission facilities.
- Reactive resource capability.
- Generation additions, retirements, or other dispatch scenarios.
- Controllable loads and demand side management.
- Duration or timing of known transmission outages.

A 1-in-10 year load forecast for the BANC PC area increased by 5% shall be used as the sensitivity study scenario to assess the near-term transmission planning horizon portion of the steady state analysis for the summer peak years 2025 for MID, RE, RDNG, and SMUD. For the year 5, this will only be done for MID, RE, and RDNG. In accordance with SMUD's Zero Carbon Plan (ZCP), SMUD will be studying an altered generation dispatch for the year 5 (2028) summer peak sensitivity scenario. A description of the altered dispatch can be found in section 4.1.4. For the off-peak sensitivity case for year 2025 a reduced generation dispatch with the largest generation plant in each BANC PC participants' area turned off (to stress imports) was chosen.

2.4 Spare Equipment Unavailability Study Scenarios

An entity's spare equipment strategy could result in the unavailability of major transmission equipment that has a lead time of one year or more. The impact of possible equipment unavailability on system performance was studied for P0, P1, and P2 categories. BANC PC performed the spare equipment unavailability analysis based on the BANC PC participants' spare equipment strategies for major transmission equipment that has a potential lead time of one year or more. The spare equipment strategy from RDNG showed that RDNG's Airport 230/115 kV transformer and 115/13.8 kV GSU transformer could be out of service for one year or more. Studies were performed with these facilities out of service to assess the impact on system performance for the possible unavailability.

The spare equipment strategies from SMUD, MID and RE found no major transmission equipment with a lead time of one year or more.

2.5 Short Circuit Analysis

A short circuit analysis shall be used to assess the near-term transmission planning horizon using peak generation and determine whether circuit breakers have the interrupting capability for faults that they will be expected to interrupt. The short circuit analysis uses the system short circuit model with any planned generation and transmission facilities in service which could impact the study area. Each PC Participant is responsible for conducting their own short circuit study and providing the results of said study to be included in this assessment.

2.6 Summary of Study Years and Scenarios

Table 2.6 below summarizes the various types of analyses and study scenarios which were performed as part of transmission system planning assessment, and the study years that were selected for each analysis.

Table 2.6 – Study scenarios and years performed in this assessment

		Near-term horizon year						Long-term horizon year				
		1	2	3	4	5		6	7	8	9	10
Analysis	Scenario	'24	'25	'26	'27		'28	'29	'30	'31	'32	'33
Steady state	Peak	-	X	-	-	X		-	-	-	-	X
	Off-peak	-	X	-	-	-		-	-	-	-	-
Stability	Peak	-	X	-	-	X		-	-	-	-	X
	Off-peak	-	X	-	-	-		-	-	-	-	-
Spare equipment unavailability	Peak	-	X	-	-	-		-	-	-	-	-
	Off-peak	-	-	-	-	-		-	-	-	-	-
Steady state sensitivity	Peak	-	X	-	-	X		-	-	-	-	-
	Off-peak	-	X	-	-	-		-	-	-	-	-
Stability sensitivity	Peak	-	X	-	-	-		-	-	-	-	-
	Off-peak	-	X	-	-	-		-	-	-	-	-

		Near-term horizon year						Long-term horizon year				
		1	2	3	4	5		6	7	8	9	10
Analysis	Scenario	'24	'25	'26	'27		'28	'29	'30	'31	'32	'33
Short circuit[3]	Peak	Years vary dependent upon each PC Participant.										

3 Study Assumptions

The study assumptions used in this assessment are detailed in the sections that follow.

3.1 System Model Representations

This assessment utilized system models maintained by the PC for the BES portion and non-BES portion of the BANC PC area. These system models were developed in accordance with NERC Reliability Standard MOD-032-1 and were submitted to the WECC for use in the compilation of base cases for various study years and scenarios.

All cases used are developed from WECC approved base cases for this assessment; these cases are listed in Table 3.1 below. Each study case was updated to reflect the system operating conditions, including the load forecasts and generation dispatch levels, provided by each BANC PC Participant for the year and scenario studied.

Table 3.1 - WECC base cases that were used in the assessment

Study Year	Scenario	WECC Base Case	WECC DYD File
2025	Summer Peak	25HS3Sa1	25HS3S1
2025	Heavy Spring	23HSp1a1	23HSP11
2028	Summer Peak	28HS2a1	28HS21
2033	Summer Peak	33HS1a1	33HS11

Assumptions and modifications for the cases are further described in the subsections below. These models use data consistent with that provided in accordance with all relevant modeling data reliability standards and are supplemented with data from other sources as necessary. Prior to the start of the TPL assessment, the WECC base cases to be used are sent to the PC Participants to review and the most accurate system data is provided as updates to these cases, if necessary. These are then utilized for the assessment.

3.1.1 Existing Facilities

The system models used in this assessment represented all existing facilities.

[3] The short circuit analysis performed for different years within the Near-Term Planning Horizon was dependent upon the data submitted by the BANC PC Participants.

3.1.2 Extended Duration Outages

The system models used in this assessment did not represent any known outages of generation or transmission facilities because there are no such known outages that are expected to produce severe impacts on the BANC PC area.

3.1.3 New Planned Facilities and Changes to Existing Facilities

The system models used in this assessment represented all new planned facilities and changes to existing facilities. See Appendix B for details of the new planned facilities and changes to existing facilities.

3.1.4 Real and Reactive Load Forecasts

The system models used in this assessment represented the most recent real power load forecasts and power factor from each BANC PC Participant. A 1-in-10 peak load forecast was used in the assessment for the summer peak study scenarios and typical off-peak loads were used for the spring off-peak scenario.

SMUD has a demand side management program that incentivizes customers to reduce their energy usage during high load hours, thus reducing the overall demand on the system. The impact of SMUD's DSM program is included in SMUD's load forecast. MID has two DSM programs as well, but the purpose of MID's DSM programs are to ensure MID has the necessary resources to meet its 15% planning reserve *above* the 1-in-10 load forecast, and thus the program is not modeled *in* their load forecast. RE and RDNG do not have DSM programs in their system.

A 1-in-10 peak load forecast increased by an additional 5% was used for the sensitivity analysis. The off-peak sensitivity was performed using a reduced generation dispatch with the largest generation plant in each BANC PC participants' area turned off to stress imports. Table 3.1.4 below summarizes the load forecast data for all BANC PC Participants.

Table 3.1.4 – Load demand forecasts

		Real Power (MW)			
PC Participant	Scenario	2025	2028	2033	Power Factor
SMUD	1-in-10 Summer Peak	3,118	3,133	3,213	0.983 lag
	Spring Off-Peak	1,871			0.99 lag
MID	1-in-10 Summer Peak	753	767	788	0.987 lag
	Spring Off-Peak	297			0.987 lag
RDNG	1-in-10 Summer Peak	234	234	235	0.977 lag
	Spring Off-Peak	180			
RE	1-in-10 Summer Peak	391	402	422	0.985 lag
	Spring Off-Peak	229			

3.1.5 Firm Transmission Service and Interchange

Firm transmission service was not modeled in this assessment since BANC PC members have no commitments to provide firm transmission service.

Regarding interchange, SMUD currently has multiple contracts for interchange service from WAPA and PG&E. They are listed as follows:

- WASN has a contract with SMUD for 342 MW (bidirectional) to be delivered to SMUD at the Elverta/Hurley substations. Expires 1/15/2033.
- WASN has a contract with SMUD for 165 MW (unidirectional) to be delivered to SMUD at the Elverta/Natomas substations. Expires 7/1/2034.
- WASN has a contract with SMUD for 310 MW (unidirectional) to be delivered to SMUD at the Elverta/Hurley substations. Expires 12/31/2024.
- WASN has a contract with SMUD to deliver 318 MW of its CVP generation units' output to SMUD.
- PG&E and SMUD have a PPA for 48 MW (bidirectional) to be delivered to SMUD at the Rancho Seco substation.

These imports were modeled in the appropriate base cases.

3.1.6 Resources Required for Load

The system models used in this assessment represented the supply side resources and their projected dispatches for the peak and off-peak load conditions as summarized in Table 3.3.

Demand side resources were modeled in the SMUD system in the form of distributed generation that is netted out of the load. This assessment also represented demand side load response utilizing the WECC approved composite load model.

Table 3.1.6A –Supply-side resources and associated dispatch for the peak and off-peak scenarios (Hydro)

System	Plant	Unit	Maximum Operating Capacity (MW)	Dispatch Level (MW)			
				Summer Peak Year			Spring Off-Peak
				2025	2028	2033	2025
SMUD	Loon Lake	1	79	25	25	25	0
	Robb's Peak	1	25.5	20	20	20	0
	Jones Fork	1	10	10	10	10	0
	Union Valley	1	46	44	44	44	40
	Jaybird	1	76.5	56	56	56	66
		2	76.5	76	76	76	0
	Camino	1	79	56	56	56	50
		2	77	34	34	34	0
	White Rock	1	116	100	100	100	110
		2	133	116	116	116	0
	Total		**718.5**	**537**	**537**	**537**	**266**
MID	Don Pedro	3	55	45.0	45.0	45.0	45.0
	Total		**55**	**45.0**	**45.0**	**45.0**	**45.0**

Table 3.1.6B –Supply-side resources and associated dispatch for the peak and off-peak scenarios (Thermal)

System	Plant	Unit	Maximum Operating Capacity (MW)	Dispatch Level (MW)			
				Summer Peak Year			Spring Off-Peak
				2025	2028	2033	2025
SMUD	Cosumnes Power Plant	ST1	207	192	192	192	170
		CT2	207	184	184	184	170
		CT3	207	184	184	184	170
		Total	**621**	**560**	**560**	**560**	**510**
	Campbell's Soup	CT1	121	110	0	0	0
		ST2	52	53	0	0	0
		Total	**173**	**163**	**0**	**0**	**0**
	Procter & Gamble	CTG-1A	49	42	42	42	38
		CTG-1B	49	42	42	42	0
		STG	42	34	34	34	17
		Total	**140**	**118**	**118**	**118**	**55**
	Carson Ice	CTG1	49	40	0	0	30
		STG	13.7	10	0	0	7
		Total	**62.7**	**50**	**0**	**0**	**37**
	McClellan Peaker	CT	74	65	0	0	0
	Procter & Gamble Peaker	CTG-1C	49	47	47	47	0
	Carson Peaker	CTG2	42	40	0	0	0
	UCD Med Center		27	25	0	0	15
	Total		**1201**	**1068**	**725**	**725**	**617**
MID	Woodland 1	CT	45	43	43	43	0
	Woodland 2	CT	50	49	49	49	49
		ST	33	7	7	7	7
	Woodland 3	6	49	20	20	20	23
	McClure Peaker	CT1	53.5	0	0	0	0
		CT2	53.5	0	0	0	0
	Ripon Peaker	CT1	50	30	30	30	0
		CT2	50	30	30	30	0
	Claribel Generation*	CT1	48.7	0	0	0	0
	Total		**432.7**	**179**	**179**	**179**	**79**
RDNG	Redding Power Plant	CT1	18	16	13	16	16
		CT2	27	16	17	23	23
		CT3	27	15	17	23	23
		ST1	29	27.1	27	27.37	12.28
		CT4	45	39.63	39.46	40	36.39

System	Plant	Unit	Maximum Operating Capacity (MW)	Dispatch Level (MW) Summer Peak Year 2025	Summer Peak Year 2028	Summer Peak Year 2033	Spring Off-Peak 2025
		CT5	45	39.63	39.46	40	0
	Total		**186**	**153.36**	**152.92**	**169.37**	**110.67**
RE	Roseville Energy Park	CT1	47.5	47.5	47.5	47.5	25
		CT2	47.5	47.5	47.5	47.5	25
		ST3	80	70	70	70	30
	Roseville Peaker	CT1	25	20	20	20	0
		CT2	25	20	20	20	0
	DWR Peaker*	CT5	30	0	0	0	0
	DWR Peaker*	CT6	30	0	0	0	0
	Total		**210**	**205**	**205**	**205**	**80**
External	Sutter Energy Center	CT1	175	166.7	166.7	166.7	0
		CT2	175	166.7	166.7	166.7	0
		CT3	175	166.7	166.7	166.7	0
	Total		**525**	**500**	**500**	**500**	**0**

*Note: State of California emergency peaker units.

Table 3.1.6C –Supply-side resources and associated dispatch for the peak and off-peak scenarios (Solar)

System	Plant	Maximum Operating Capacity (MW)	Dispatch Level (MW) Summer Peak Year 2025	Summer Peak Year 2028	Summer Peak Year 2033	Spring Off-Peak 2025
SMUD	Solar Share II	160	112	112	112	112
	Coyote Creek	250	0	250	250	0
	Country Acres	305	0	305	305	0
	Total	**715**	**112**	**667**	**667**	**112**
MID	McHenry Solar Farm	25	19	19	19	15
	Total	**25**	**19**	**19**	**19**	**15**
RDNG	None	0	0	0	0	0
	Total	**0**	**0**	**0**	**0**	**0**
RE	None	0	0	0	0	0
	Total	**0**	**0**	**0**	**0**	**0**

4 Analyses

This assessment included steady state, transient stability and short circuit analyses, which are described in the sections that follow. All simulations performed for the steady state and transient stability portion of this assessment were performed using the General Electric Positive Sequence Load Flow (PSLF) program. Short circuit studies were performed using Aspen One Liner, CAPE and GE PSLF. These software programs are widely used throughout the WECC.

4.1 Steady State Analysis

A steady state analysis was performed as part of this assessment to determine whether the BANC PC portion of the BES meets the performance requirements specified in the TPL-001-5 NERC Reliability Standard for the years 2024 through 2033 (planning years one through ten). The analysis was also performed to assess the impact of extreme events identified in TPL-001-5 table 1. This analysis was supported by current studies.

4.1.1 Peak Load Years

This assessment included a steady state analysis of peak loads for planning years two, five, and ten (2025, 2028, and 2033) to span the near-term and long-term planning horizons. Years two (2025) and five (2028) were selected for inclusion in this assessment since they bookend the near-term planning horizon. Year one was not selected since the summer peak load for year one will be less than one year away when this report is finalized. Year ten (2033) was selected for inclusion because it encompasses all approved projects for the long-term planning horizon.

4.1.2 Off-peak Load Years

This assessment included a steady state analysis of off-peak loads for planning year two (2025). Off-peak load is generally defined by BANC PC as spring with a light system load of about 60% of peak, or as uniquely defined by an individual BANC PC participant for their own system, with voltages higher than normal, and generation at a minimum. The off-peak load used in this assessment was determined using engineering judgment and/or historical off-peak spring load data as provided by each BANC PC Participant.

4.1.3 Extended Duration Outages

As noted in Section 3.1.2 above, there was no known generation or transmission facility outages expected to produce severe impact on the BANC PC area. As such, this assessment did not include a steady state analysis of P1 events from Table 1 in TPL-001-5 with any known extended duration outages.

4.1.4 Sensitivity Analysis

This assessment included sensitivity analyses to demonstrate the impact of changes to basic assumptions used in the system models to the steady state reliability. Sensitivity cases for the peak and off-peak load cases were developed by varying the certain conditions in such a way as to stress the system within a range of credible conditions that demonstrated a measurable change in system response.

A sensitivity analysis was performed on the 2025 and 2028 peak load years by using the 1-in-10 year load forecast for the BANC PC area increased by 5% to assess the near-term transmission planning horizon portion of the steady state analysis for MID, RE, RDNG, and SMUD. For the year 5, this will only be done for MID, RE, and RDNG. In accordance with SMUD's Zero Carbon Plan (ZCP), SMUD will be studying an altered generation dispatch for the year 5 (2028) summer peak sensitivity scenario. For the off-peak sensitivity case for year 2025 a reduced generation dispatch with the largest generation plant in each BANC PC participants' area turned off (to stress imports)

was chosen. The load power factors in the sensitivity cases were assumed to remain the same. Table 4.1.4.1 lists SMUD's altered generation dispatch for the 2028 peak load sensitivity case.

Table 4.1.4.1 - Thermal generation dispatch used in the SMUD Year 5 (2028) Sensitivity Study Scenario

System	Plant	Unit	Maximum Operating Capacity (MW)	Dispatch
SMUD	Cosumnes Power Plant	ST1	207	192
		CT2	207	184
		CT3	207	184
		Total	**621**	**560**
	Campbell's Soup	CT1	121	0
		ST2	52	0
		Total	**173**	**0**
	Procter & Gamble	CTG-1A	49	0
		CTG-1B	49	0
		STG	42	0
		Total	**140**	**0**
	Carson Ice	CTG1	49	0
		STG	13.7	0
		Total	**62.7**	**0**
	McClellan Peaker	CT	74	0
	Procter & Gamble Peaker	CTG-1C	49	0
	Carson Peaker	CTG2	42	0
	UCD Med Center		27	0
	Total		**1201**	**560**

Table 4.1.4.2 - Solar generation dispatch used in the SMUD Year 5 (2028) Sensitivity Study Scenario

System	Plant	Maximum Operating Capacity (MW)	Dispatch
SMUD	Solar Share II	160	112
	Coyote Creek	250	250
	Country Acres I	344	344
	Country Acres II	156	156
	Total	**910**	**862**

*The true generation limits of these plants may be higher than the dispatch level shown in order to meet the maximum POI output after accounting for internal plant losses.

A sensitivity analysis was also performed on the 2025 off peak sensitivity for MID, RE, and RDNG by assuming the power output from the largest generation plant in each participant's area was off-line, which would result in an increase in system imports and a decrease in online spinning generation. Table 4.1.4.3 lists the scenarios for each BANC PC Participant in the sensitivity study base cases.

Table 4.1.4.3 – Spring off-peak sensitivity scenarios

		Scenario	
PC Participant	Element	Off-Peak	Off-Peak Sensitivity
SMUD	Cosumnes Power Plant	510 MW	0 MW
MID	Woodland Power Plant	94 MW	0 MW
RDNG	Redding Power Plant	48 MW	0 MW
RE	Roseville Power Plant	80 MW	0 MW

4.1.5 Spare Equipment Unavailability Analysis

The respective spare equipment strategies of the BANC PC Participants could result in the unavailability of the following major transmission equipment for one year or more:

- Airport 230/115 kV transformer (RDNG)
- Redding Power Plant 115/13.8 kV GSU (RDNG)

The spare equipment strategies for MID, RE, and SMUD found no major transmission equipment that could result in unavailability for one year or more, due to long lead times.

A steady state analysis was performed for the 2025 peak load case to assess the impact of the possible unavailability of the long lead time equipment listed above. The steady state analysis included the evaluation of the P0, P1, and P2 category contingencies identified in Table 1 of TPL-001-5.

4.1.6 Contingencies Studied

The steady state analysis was performed using a comprehensive list of contingencies based on Table 1 of TPL-001-5. All possible contingencies for categories P0-P7 were studied for both the steady state and analyses summing to over 14,000 contingencies for SMUD, over 1,300 for MID, over 400 for RE, and over 1,600 for RDNG. P3 and P6 category contingencies were automatically generated by a computer script to cover all possible combinations. In addition, extreme events in Table 1 of TPL-001-5 were identified and included in analysis. A summary of the types of contingencies included in the steady state analysis is shown in Table 4.1.6 below.

All contingencies simulated the removal of all elements that the protection system and other automatic controls are expected to disconnect without operator intervention. Generators with post-contingency steady state bus voltages outside the specified ranges provided by each BANC PC Participant were investigated to determine if the generators should be manually tripped to reflect actual protection equipment settings and generator limits (See Table 4.1.7 for the bus voltage criteria). Transmission elements that were overloaded above 150% of their highest seasonal rating (per NERC standard PRC-023-4), were also investigated and tripped manually.

Devices designed to provide steady state control of electrical system quantities, such as phase-shifting transformers, load tap changing transformers, switched capacitors and inductors, were assumed to respond to any contingency after the post-transient contingency analysis time frames of one to three minutes. Therefore, the post-transient solution methodology was utilized, which

disabled the adjustment of transmission devices such as phase-shifting transformers, load tap changing transformers, switched capacitors and inductors.

To comply with the TPL-001-5, R3.4, contingencies used in this analysis were coordinated with all adjacent PCs and TPs to ensure that contingencies on adjacent systems that may impact the BANC PC portion of the BES were included in this assessment.

Table 4.1.6 – Contingencies Studied in this Assessment (where applicable)

Contingencies	Description
P0 (No contingency)	All Elements in Service
P1 (Single Contingency)	• Loss of one generator (P1.1) • Loss of one transmission circuit (P1.2) • Loss of one transformer (P1.3) • Loss of one shunt or SVC/STATCOM device (P1.4) • Loss of a single pole of DC lines (P1.5)
P2 (Single Contingency)	• Loss of one transmission circuit without a fault (P2.1) • Loss of one bus section (P2.2) • Loss of one breaker (internal fault) (non-bus-tie-breaker) (P2.3) • Loss of one breaker (internal fault) (bus-tie-breaker) (P2.4)
P3 (Multiple Contingency)	Loss of a generator unit followed by system adjustments and the loss of the followings: • Loss of one transmission circuit (P1.2) • Loss of one transformer (P1.3) • Loss of one shunt or SVC/STATCOM device (P1.4)
P4 (Multiple Contingency)	Loss of multiple elements caused by a stuck breaker attempting to clear a fault on one of the following: • Loss of one generator (P4.1) • Loss of one transmission circuit (P4.2) • Loss of one transformer (P4.3) • Loss of one shunt device (P4.4) • Loss of one bus section (P4.5) • Loss of a bus-tie-breaker (P4.6)
P5 (Multiple Contingency)[4]	Contingencies with delayed fault clearing due to the failure of a non-redundant component of the protection system protecting the faulted element to operate as designed for one of the following: • Loss of one generator (P5.1) • Loss of one transmission circuit (P5.2) • Loss of one transformer (P5.3) • Loss of one shunt device (P5.4) • Loss of one bus section (P5.5)
P6 (Multiple Contingency)	Loss of two or more (non-generator unit) elements with system adjustment between them, which produce the more severe system results
P7 (Multiple Contingency)	Loss of a common structure as follows: • Any two adjacent circuits on common structure (P7.1) • Loss of a bipolar DC lines (P7.2)

Contingencies	Description
Extreme (Not ran for the transient stability analyses)	Local area or wide area events affecting the Transmission System • Loss of all Transmission lines on a common Right-of-Way • Loss of a substation • Loss of major gas pipeline • Loss of all generating units at a generating station • 3 phase fault with delayed clearing for two adjacent circuits

4.1.7 Performance Requirements

The steady state analysis results for category P0 through P7 contingencies were evaluated against the performance requirements in Table 1 of TPL-001-5.

These performance requirements can be summarized as:

- The system shall remain stable.
- Cascading and uncontrolled islanding shall not occur.
- Applicable facility ratings shall not be exceeded.
- Steady state voltages and post-contingency voltage deviations shall be within acceptable limits as established by BANC PC Participants.
- Non-consequential load loss is not allowed for category P1, P2.1, and P3 contingencies.

For the steady state analysis, each BANC PC Participant defined the acceptable limits for steady state voltages and voltage deviations as listed in the Table 4.1.7 below.

Table 1.1.7 – Steady State Voltage Criteria

		Normal Conditions		Contingency Conditions		Voltage Deviation
System	Nominal Voltage	Vmin (pu)	Vmax (pu)	Vmin (pu)	Vmax (pu)	P1 & P2.1
SMUD	230 kV	0.95	1.05	0.90[5]	1.05	≤ 8%
	115 kV	0.95	1.05	0.90	1.05	≤ 8%
MID	230 kV	0.95	1.05	0.90	1.10	≤ 8%
	115 kV	0.95	1.05	0.90	1.10	≤ 8%
RE	230 kV	0.95	1.05	0.90	1.10	≤ 8%
RDNG	115 kV	0.974	1.078	0.923	1.10	≤ 8%

The criteria used to identify system instability are as follows:

- Cascading – The uncontrolled successive loss of system elements triggered by an incident at any location, and which results in widespread electric service interruption that cannot be restrained from sequentially spreading beyond an area predetermined by studies.
- Voltage instability – The violation of any of the low voltage criteria defined herein at any BES bus.
- Uncontrolled islanding – The unplanned and uncontrolled splitting of the power system into two or more islands. Severe disturbances may cause uncontrolled separation by causing a

[5] SMUD 230 kV buses that have a UVLS scheme associated with it are limited to Vmin of 0.948 PU, these buses include Carmichael, Elk Grove, Elverta, Foothill, Hurley, Orangevale, and Pocket.

group of generators in one area to swing against a group of generators in a different area of the power system.

The results for the extreme contingencies were assessed for their impact to the system. If the results showed cascading caused by the occurrence of an extreme event, an evaluation of possible actions designed to reduce the likelihood or mitigate the consequences and adverse impacts of the events was conducted.

4.2 Short Circuit Analysis

A short circuit analysis addressing the near-term transmission planning horizon was included in this assessment to determine whether circuit breakers have adequate interrupting capability for faults that they will be expected to interrupt.

This analysis was supported by past studies performed by SMUD. RE, RDNG, and MID. The past studies are qualified since they met the following criteria:

- The past studies are less than five calendar years old.
- No material changes have occurred since the past studies were performed.

The years studied are listed in Table 4.2.

Table 4.2 - Years Studied for Short Circuit Analysis

System	Year Performed	Year(s) Studied
SMUD	2020	2021, 2025
MID	2022	2024, 2028
RDNG	2021	2021, 2026
RE	2022	2022

4.2.1 Simulation Software

The short circuit studies provided by SMUD, RDNG and RE were performed with the ASPEN One Liner and CAPE software programs. MID utilized the GE PSLF software program.

These software programs are widely used throughout the WECC.

4.2.2 Short Circuit Modeling

The short circuit models in the ASPEN program are consistent with the system topology studied in the steady state base cases which reflect the planned projects in Appendix B.

4.2.3 Rating Criteria

The criteria used in the short circuit analysis are based on industry standards developed and approved by the Institute of Electrical and Electronics Engineers in references [2] and [3].

4.3 Stability Analysis

A stability analysis was performed as part of this assessment to assess the transient stability performance of the BANC PC area in the near-term planning horizon. This analysis was supported by current studies.

Although there are no planned material generation additions or changes in the long-term horizon for the BANC PC, the year ten (2033) case was studied to assess potential impacts from neighboring systems.

4.3.1 Peak Load Years

This assessment included a stability analysis of the 2025 peak load year in the near-term planning horizon and year 2035 peak load year in the long-term planning horizon.

The rationale for selecting year two (2025) and year ten (2033) is the same rationale described in Section 4.1.1. Previous study experience has shown that the heavy summer scenario is generally the most critical scenario for transient stability studies. The WECC composite load models, which better represents the dynamic behavior of system loads, were used in this assessment.

4.3.2 Off-peak Load Years

This assessment included a stability analysis of the 2025 off-peak load condition in the near-term planning horizon.

4.3.3 Sensitivity Analysis

Like the steady state sensitivity analysis, two stability sensitivity analyses were performed to demonstrate the impact of changes to basic assumptions used in the system models to the stability of the system.

A sensitivity analysis was performed on the 2025 and 2028 peak load years by using the 1-in-10 year load forecast for the BANC PC area increased by 5% to assess the near-term transmission planning horizon portion of the steady state analysis for MID, RE, RDNG, and SMUD. For the year 5, this will only be done for MID, RE, and RDNG. In accordance with SMUD's Zero Carbon Plan (ZCP), SMUD will be studying an altered generation dispatch for the year 5 (2028) summer peak sensitivity scenario. For the off-peak sensitivity case for year 2025 a reduced generation dispatch with the largest generation plant in each BANC PC participants' area turned off (to stress imports) was chosen. The load power factors in the sensitivity cases were assumed to remain the same.

4.3.4 Long-Term Planning Horizon

The 2033 heavy summer case was studied for potential impacts from any future facility additions external to the BANC PC area which could have a potential impact on the reliability of the BANC PC area. It was also chosen to encompass any long term transmission projects planned in the BANC PC area. The 10 year case is chosen to encompass any and all projects from neighboring systems that would be submitted to the WECC base case compilation.

4.3.5 Contingencies Studied

A stability analysis was performed based on the contingencies listed in Table 1 of TPL-001-5. All P0-P7 contingencies were ran for the stability analyses. Extreme events were not included in the stability analyses. A summary of the types of stability contingencies evaluated in the stability analysis are shown in Table 4.1.6.

All contingencies simulated the removal of all elements that the protection system and other automatic controls are expected to disconnect without operator intervention. Generators were tripped with the generator under-voltage tripping indicated by the generator protection models, which are included in the WECC approved dynamic models if simulations showed generator bus voltages or high side of the generator step-up voltages outside the ride-through voltage ranges specified in the PRC-024-2 NERC Reliability Standard. Transmission lines and transformers were tripped using the WECC approved generic relay models when transient swings showed the potential to cause protection system operation as defined under PRC-026-1[6]. MID is the only BANC PC member that utilizes high speed reclosing in their system, so successful and unsuccessful high speed reclosing were modeled and simulated for the MID system.

All existing devices that are designed to provide dynamic control of electrical system quantities were simulated. These devices include generator exciter control, power system stabilizers, static VAR compensators, power flow controllers, and DC Transmission controllers. The dynamic data used in the stability simulations included (but were not limited to) the modeling of generator governors, exciters, power system stabilizers, and other automatic control equipment.

The contingencies used in the transient stability analysis were coordinated with all adjacent PCs and TPs to ensure that contingencies on adjacent systems which may impact the BANC PC area were included in this assessment.

4.3.6 Performance requirements

The stability analysis results for category P0 through P7 contingencies included in this analysis were evaluated against the performance requirements in Table 1 of TPL-001-5. These performance requirements can be summarized as:

- The system shall remain stable.
- Cascading and uncontrolled islanding shall not occur.
- Transient voltage response shall be within acceptable limits as established by the PC and the TP.
- Non-consequential load loss is not allowed for category P1, P2.1, and P3 contingencies on the BANC PC portion of BES.
- For P1 events, no generating unit shall pull out of synchronism.
- For P2 through P7 events, generators that pull out of synchronism shall not cause apparent impedance swings that trip transmission system elements other than the generator unit and its directly connected facilities.
- For P1 through P7 events, power oscillations shall exhibit acceptable damping as established by the PC and the TP.

The results for the extreme contingencies were assessed for their impact to the system based on the above criteria. If the results showed cascading caused by the occurrence of an extreme event, an

[6] Models used to ensure relay performance during stable power swings were GE PSLF models: zonedef (zone definition for WECC distance relay model), distrel (WECC distance relay), zmetra (apparent impedance recorder), lnrelscan (line relay scanning model), lofscan (loss-of-field scanning model), and oosscan (out-of-step scanning model).

evaluation of possible actions designed to reduce the likelihood or mitigate the consequences and adverse impacts of the events was conducted.

In accordance with PRC-024, generators are not to trip while their bus voltages remain within the No-Trip zone defined within PRC-024.

The criteria in WR1 of *WECC Criterion TPL-001-WECC-CRT-3.2 Transmission System Planning Performance* were used to assess the transient stability performance of the system. These criteria are as follows:

- For all P1 through P7 events, voltages shall recover to 80 percent voltage of the pre-contingency voltage within 20 seconds of the initiating event for each applicable BES bus serving load.
- For all P1 through P7 events, following fault clearing and voltage recovery above 80 percent, voltage at each applicable BES bus servingload shall neither dip below 70 percent of pre-contingency voltage for more than 30 cycles nor remain below 80 percent of pre-contingency voltage for more than two seconds.

The criterion for acceptable damping for power oscillations, which was adopted from WR1.6 in *WECC Criterion TPL-001-WECC-CRT-3.2 Transmission System Planning Performance,* was that all oscillations must show positive damping within 30 seconds after the start of the event. Oscillations that did not meet this criterion were deemed unstable.

The criteria used to identify system instability are as follows:

- Cascading – The uncontrolled successive loss of system elements triggered by an incident at any location, and which results in widespread electric service interruption that cannot be restrained from sequentially spreading beyond an area predetermined by studies.
- Voltage instability – The violation of any of the low voltage criteria defined herein at any BES bus.
- Uncontrolled islanding – The unplanned and uncontrolled splitting of the power system into two or more islands. Severe disturbances may cause uncontrolled separation by causing a group of generators in one area to swing against a group of generators in a different area of the power system.

Simulations that resulted in cascading, voltage instability, or uncontrolled islanding were deemed unstable.

5 Study Results

The results of the steady state, short circuit, and stability analyses are described in the sections that follow for the BANC PC[7] area.

[7] BANC PC annual assessment includes performing an assessment for SMUD's non-BES 115 kV elements and WAPA's – SNR portion of the BES to insure reliable operation across the BANC PC area. The results of these studies are available to BANC members and upon request to entities with an NDA.

5.1 Steady State

The steady state analysis identified performance deficiencies for the RDNG and SMUD systems for P6 contingencies, but upon making allowable system adjustments, the performance deficiencies were resolved. There were also previously identified performance deficiencies identified in the SMUD system that have already established remedial action schemes associated with the overloaded facilities. Upon modeling the RAS action, the overloads were mitigated. The performance deficiencies and associated system adjustments for RDNG and SMUD and RAS schemes for SMUD are documented in the results summaries in Appendix C. Descriptions of the RAS actions themselves are housed in SMUD's OP-207 document. There were no performance deficiencies identified for the MID, and RE systems.

5.1.1 Corrective Action Plans

There were no Corrective Action Plans created as a result of this assessment.

5.1.2 Impact of Extreme Contingencies

The steady state analysis identified thermal overloads and voltage criteria violations for certain extreme contingencies. As these are by nature very low probability events, corrective action plans were not developed to mitigate these contingencies.

In the RDNG system, the following contingency would cause multiple 115 kV transmission lines' loading to exceed 150% of their highest emergency rating post-contingency and thus their automatic tripping was simulated manually, post-contingency:

- Loss of Keswick-Airport, Flanagan-Keswick, Keswick-Olinda, and Keswick-O'Banion 230 kV lines (RDNG)

The study concluded no cascading or uncontrolled islanding was identified when the affected three lines were tripped. A summary of the steady state study results for extreme contingencies can be referenced in Appendices C and D.

5.1.3 Sensitivity Analysis

No additional thermal overloads or voltage criteria violations other than those identified in the main study scenarios were identified in the sensitivity analyses for RDNG. The sensitivity analyses did identify several thermal overloads in the SMUD system. However, since the sensitivity cases for SMUD are exploratory and use system topologies based on a generation fleet comprised of units from its interconnection queue which are currently not approved projects and thus the system model used does not represent actual planned system topology at this time, the criteria violations will not be addressed in this assessment. No voltage criteria violations were identified.

A summary of the steady state sensitivity study results can be referenced in Appendix D.

5.1.4 Spare Equipment Unavailability Analysis

The results of RDNG's Airport 230/115 kV transformer and 115/13.8 kV GSU transformer spare equipment unavailability analyses showed no performance deficiencies. As such, there are no recommendations for the spare equipment strategy.

5.2 Short Circuit

The short circuit analysis showed that all circuit breakers in the BANC PC area have adequate short circuit current interrupting capabilities and no corrective action plans are necessary to meet the performance requirements. A list of elements that exceeded 80% of their rated fault duty is provided in Appendix F. These elements will be reviewed in future assessments due to their high interrupting duties.

The interrupting capabilities are listed in References [4] to [7].

5.3 Stability

The stability analysis for the peak and off-peak cases did not identify any system deficiencies for the Category P1 to P7 contingencies that were simulated for MID, RDNG, RE, and SMUD. All stability performance criteria were met, and no corrective action plans are necessary to meet the performance requirements.

See Appendix E for sample stability plots. Additional plots are available upon request.

5.3.1 Sensitivity Analysis

The peak load and off-peak load stability sensitivity analyses did not identify any performance deficiencies for the MID, RDNG, RE, and SMUD systems.

5.3.2 Impact of Extreme Contingencies

The stability analysis does not include an analysis of extreme contingencies.

6 Roles and Responsibilities

The PC and Transmission Planners' individual and joint role and responsibilities for performing the required studies for the Planning Assessment are listed in the subsections that follow.

6.1 Joint Roles and Responsibilities

All entities shall be jointly responsible for the following:

- Ensuring the base cases used in the study are accurate. The Planning Coordinator and all Transmission Planners/PC Participants shall endeavor to ensure the models are updated with the latest information for their respective systems.
- Responding to phone and email communications within a reasonable time.
- Working together to resolve differences with respect to study assumptions, modeling, results, or any other issue that may arise during the study.
- Working together to develop Corrective Action Plans when performance criteria violations are deemed valid.

6.2 Individual Roles and Responsibilities

The Planning Coordinator shall be individually responsible for the following:

- Performing all analyses required by NERC TPL-001-5, PRC-023-4, PRC-026-1, IRO-17-1 and documenting such analyses.
- Fulfilling other responsibilities that are jointly agreed upon by the Planning Coordinator and Transmission Planners and other PC Participants.

The Transmission Planners and other PC Participants shall be individually responsible for the following:

- Providing all information requested to perform the required studies for the Planning Assessment.
- Performing and providing the results of the short circuit studies.
- Providing a spare equipment unavailability strategy.

References

[1] *Transmission System Planning Performance Requirements*. NERC Reliability Standard TPL-001-5. January 23, 2020.

[2] *IEEE Application Guide for AC High-Voltage Circuit Breakers Rating on a Symmetrical Current Basis*. IEEE Std. C37.010-1999 (R2005).

[3] *IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers*. IEEE Std. C37.04-1999.

[4] *2020 Breaker Interrupting Study with Appendix.*. Sacramento Municipal Utility District. December 31, 2020.

[5] *RNDG brkr interruption report_2021_signed.pdf.* Redding Electric Utility. October 6, 2021.

[6] *MID Short Circuit Study 2022_Final-signed.* Modesto Irrigation District. July 26, 2022.

[7] *RSVL – Breaker Rating Analysis 2022.* Roseville Electric. April15 2022.

[8] *SMUD Operating Procedure OP-207 Sacramento Area DLT, RAS, and Nomogram Operations.* Sacramento Municipal Utility District. May 23, 2023.

[9] *Standard PRC-023-4 – Transmission Relay Loadability*. North American Electric Reliability Corporation. November 19, 2015.

[10] *Standard PRC-024-3 – Frequency and Voltage Protection Settings for Generating Resources*. North American Electric Reliability Corporation. July 9, 2020.

[11] *Implementation Plan Project 2015-10 Single Points of Failure Reliability Standard TPL-001-5*. North American Electric Reliability Corporation. October, 2018.

Appendix A. TPL-001-5 Requirement Matrix

The table below lists the TPL-001-5 requirements and the associated sections in this assessment that demonstrated compliance.

Table A.1 – Compliance requirements and their corresponding sections and pages

Requirement	Section	Page
R1	3.1	4
R1.1	-	-
R1.1.1	3.1.1	4
R1.1.2	3.1.2	5
R1.1.3	3.1.3	5
R1.1.4	3.1.4	5
R1.1.5	3.1.5	6
R1.1.6	3.1.6	6
R2	-	-
R2.1	4.1	9
R2.1.1	4.1.1	9
R2.1.2	4.1.2	9
R2.1.3	4.1.3	9
R2.1.4	4.1.4	9
R2.1.5	4.1.5	11
R2.2	4.1.1	9
R2.2.1	4.1.1	9
R2.3	4.2, 5.2	14,18
R2.4	4.3	13
R2.4.1	4.3.1	15
R2.4.2	4.3.2	15
R2.4.3	4.3.3	15
R2.5	4.3.4	15
R2.6	4.2	14
R2.6.1	4.2	14
R2.6.2	4.2	14
R2.7	5	17
R2.7.1	5	17
R2.7.2	5	17
R2.7.3	5	17
R2.7.4	5	17
R2.8	5.2	18
R2.8.1	5.2	18
R2.8.2	5.2	18
R3	4.1	9
R3.1	4.1.6	11
R3.2	4.1.6	11
R3.3	4.1.6	11
R3.3.1	4.1.6	11
R3.3.1.1	4.1.6	11
R3.3.1.2	5.1.1	18

Table A.1 continued

Requirement	Section	Page
R3.3.2	4.1.6	11
R3.4	4.1.6	11
R3.4.1	4.1.6	11
R3.5	4.1.6	11
R4	4.3.5	15
R4.1	4.3.5	15
R4.1.1	4.3.6	16
R4.1.2	4.3.6	16
R4.1.3	4.3.6	16
R4.2	4.3.6	16
R4.3	4.3.6	16
R4.3.1	4.3.6	16
R4.3.1.1	4.3.5	15
R4.3.1.2	4.3.5	15
R4.3.1.3	4.3.5	15
R4.3.2	4.3.6	16
R4.4	4.3.6	16
R4.4.1	4.3.6	16
R4.5	4.3.6	16
R5	4.3.6	16
R6	4.3.6	16
R7	6	19
R8	-	-
R8.1	-	-

Appendix B. Planned Projects

Table B.1 – Planned facilities and changes to existing facilities

PC Participant	Project Name	Project Description	Project Need	Project Status	Expected In-Service Date
SMUD	El Rio Substation Conversion	Converting SMUD's existing single bus, single breaker Elverta 230 kV substation to a breaker and a half scheme.	Not required for criteria violation. Approved to accommodate a new 230/69 kV transformer bank as well as increase overall reliability.	Approved	December 2026
	El Rio 250 MVA 230/115 kV Transformer	Replacing existing El Rio 230/115 kV transformer with a 250 MVA transformer.	Not required for criteria violation. For future load growth and to accommodate new generation.	Approved	December 2026
	Country Acres Generation	A new 344 MW Solar combined battery hybrid generation power plant	Not required for criteria violation, was approved as part of the SMUD 2030 Zero Carbon Plan.	Approved	Fall 2026
	Coyote Creek Generation	A new 250 MW Solar combined battery hybrid generation power plant and accompanying RAS	Not required for criteria violation, was approved as part of the SMUD 2030 Zero Carbon Plan.	Approved	Spring 2027
	Station J 115 kV Substation	Installation of a new 115 kV substation between the El Rio and Station E 115 kV substations.	Not required for criteria violation. Will allow for future load growth in the 115 kV system.	Approved	Summer 2030
MID	Westley 230 kV redundant relaying	Install redundant relaying at the Westley 230 kV substation.	To prevent an outage of the entire Westley 230 kV substation due to a non-	Approved	End of 2024

PC Participant	Project Name	Project Description	Project Need	Project Status	Expected In-Service Date
			redundant relay failure followed by a fault.		

Appendix C. Steady State Analysis Results

The thermal and voltage results for the peak and off-peak steady state results are listed below.

Table C.1 – The 2025 1-in-10 peak load steady state results

Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	P6	Moore - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage (1LG fault at RDP)	MOORE	115	WALDON	115	#1	105.9	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output
		Moore - AirportR 115 kV TL outage and Texas Springs - Sulpher Creek 115 kV TL outage (1LG fault at TSP)	MOORE	115	WALDON	115	#1	100.23	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	117.83	N/A
			KESWICK	115	EUREKA W	115	#2	132.35	N/A
			EUREKA W	115	OREGON	115	#1	121.89	N/A
			MOORE	115	WALDON	115	#1	148.01	N/A
			OREGON	115	WALDON	115	#1	173.08	N/A
RE	-	None	-	-	-	-	-	-	-
SMUD	P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage (3LG fault at ORV)	CAMINO S	230	LAKE	230	#1	143.65	Existing UARP RAS will mitigate this overload
	P7	Camino-Lake and Cordova-White Rock 230 kV line outage (1LG fault at CAM)	ORANGEVL	230	WHITEROK	230	#2	143.16	Existing UARP RAS will mitigate this overload
	Extreme	Loss of transmission line tower 303	CARMICAL	230	HURLEY S	230	#1	123.05	Existing Carmichael RAS will mitigate this overload

		Loss of all lines north of Lake 230 kV station	ORANGEVL	230	WHITEROK	230	#1	143.32	Existing UARP RAS will mitigate this overload
		Loss of all lines west of Rancho Seco 230 kV station	HEDGE	230	PROCTER	230	#1	118.95	Existing Procter RAS will mitigate this overload
		Loss of all lines north of Natomas 230 kV station	CARMICAL	230	ORANGEVL	230	#1	113.08	N/A
		Loss of all lines north of Orangevale 230 kV station	CARMICAL	230	HURLEY S	230	#1	123.05	Existing Carmichael RAS will mitigate this overload
		Rancho Seco 230 kV switching station outage	HEDGE	230	PROCTER	230	#1	120.24	Existing Procter RAS will mitigate this overload

Table C.2 – The 2025 off peak load steady state results

Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	125.1	N/A
			KESWICK	115	EUREKA W	115	#2	143.12	N/A
			BELTLINE	115	COLLEGE V	115	#1	101.1	N/A
			EUREKA W	115	OREGON	115	#1	134.13	N/A
			MOORE	115	WALDON	115	#1	174.84	N/A
			OREGON	115	WALDON	115	#1	194.32	N/A
RE	-	None	-	-	-	-	-	-	-
SMUD	ESS2b	Loss of all lines west of Folsom 230 kV station	HEDGE	230	PROCTER	230	#1	109.8	Existing Procter RAS will mitigate this overload

Table C.3 – The 2028 1-in-10 peak load steady state results

Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	P6	Moore - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage (1LG fault at RDP)	MOORE	115	WALDON	115	#1	105.42	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	117.63	N/A
			KESWICK	115	EUREKA W	115	#2	132.19	N/A
			EUREKA W	115	OREGON	115	#1	121.78	N/A
			MOORE	115	WALDON	115	#1	148.1	N/A
			OREGON	115	WALDON	115	#1	172.99	N/A
RE	-	None	-	-	-	-	-	-	-
SMUD	P6	Cordova-White Rock 230 kV TL outage and Hedge-Procter 230 kV TL outage (3LG fault at HED)	CORDOVA	230	COYOTE CREEK	230	#1	100.59	Reduce Coyote Creek generation until overload is cleared
		Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage (3LG fault at ORV)	CAMINO S	230	LAKE	230	#1	143.43	Existing UARP RAS will mitigate this overload
	P7	Camino-Lake and Cordova-White Rock 230 kV line outage (1LG fault at CAM)	ORANGEVL	230	WHITEROK	230	#1	143.05	Existing UARP RAS will mitigate this overload
	Extreme	Loss of all lines north of Lake 230 kV station	ORANGEVL	230	WHITEROK	230	#1	143.14	N/A
		Loss of all lines north of Natomas 230 kV station	CARMICAL	230	ORANGEVL	230	#1	152.46	N/A
			CARMICAL	230	HURLEY S	230	#1	112.02	Existing Carmichael RAS will mitigate this overload
		Loss of all lines north of Orangevale 230 kV station	CARMICAL	230	HURLEY S	230	#1	116.58	Existing Carmichael RAS will mitigate this overload
		Loss of all lines south of Elk Grove 230 kV station - B	CORDOVA	230	COYOTE CREEK	230	#1	134.59	N/A
			GOLDHILL	230	LAKE	230	#1	112.88	N/A
			HEDGE	230	PROCTER	230	#1	109.98	Existing Procter RAS will mitigate this overload

			HEDGE	230	CORDOVA	230	#1	100.31	Planned Coyote Creek RAS will mitigate this overload
		Loss of all lines south of Natomas 230 kV station	CARMICAL	230	ORANGEVL	230	#1	106.08	N/A
		Loss of all lines west of Folsom 230 kV station	HEDGE	230	CORDOVA	230	#1	111.94	Planned Coyote Creek RAS will mitigate this overload
			CORDOVA	230	COYOTE CREEK	230	#1	104.52	N/A
		Loss of all lines west of Rancho Seco 230 kV station	HEDGE	230	PROCTER	230	#1	123.92	Existing Procter RAS will mitigate this overload
			CORDOVA	230	COYOTE CREEK	230	#1	108.88	N/A
		Loss of transmission line tower 303	CARMICAL	230	HURLEY S	230	#1	116.58	Existing Carmichael RAS will mitigate this overload
		Rancho Seco 230 kV switching station outage	HEDGE	230	PROCTER	230	#1	125.13	Existing Procter RAS will mitigate this overload
			CORDOVA	230	COYOTE CREEK	230	#1	107.67	N/A

Table C.4 – The 2033 1-in-10 peak load steady state results

Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	P6	AirportW - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage (1LG fault at RDP)	MOORE	115	WALDON	115	#1	101.22	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output and decrease Units 2 & 3 to 95%
		Moore - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage (1LG fault at RDP)	MOORE	115	WALDON	115	#1	118.97	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output and decrease Units 2 & 3 to 95%
		Moore - AirportR 115 kV TL outage and Texas Springs - Sulpher Creek 115 kV TL outage (1LG fault at TSP)	MOORE	115	WALDON	115	#1	113.27	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output and decrease Units 2 & 3 to 95%
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	129.42	N/A
			KESWICK	115	EUREKA W	115	#2	143.45	N/A
			AIRPORTR	115	MOORE	115	#1	104.67	N/A
			BELTLINE	115	COLLEGE V	115	#1	103.55	N/A
			EUREKA W	115	OREGON	115	#1	132.62	N/A
			MOORE	115	WALDON	115	#1	163.69	N/A
			OREGON	115	WALDON	115	#1	189.16	N/A
RE	-	None	-	-	-	-	-	-	-
SMUD	P6	Cordova-White Rock 230 kV TL outage and Cordova-Coyote Creek 230 kV TL outage (3LG fault at COR)	HEDGE	230	PROCTER	230	#1	100.31	Existing Procter RAS will mitigate this overload

		Cordova-White Rock 230 kV TL outage and Hedge-Procter 230 kV TL outage (3LG fault at HED)	CORDOVA	230	COYOTECREEK	230	#1	101.58	Reduce Coyote Creek generation
		Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage (3LG fault at ORV)	CAMINO S	230	LAKE	230	#1	146.57	Reduce Coyote Creek generation
	P7	Camino-Lake and Cordova-White Rock 230 kV line outage (1LG fault at CAM)	ORANGEVL	230	WHITEROK	230	#1	145.98	Existing UARP RAS will mitigate this overload
		Cordova-Coyote Creek and Cordova-White Rock 230 kV line outage (1LG fault at CCS)	HEDGE	230	PROCTER	230	#1	100.31	Existing Procter RAS will mitigate this overload
	Extreme	Loss of all lines north of Lake 230 kV station	ORANGEVL	230	WHITEROK	230	#1	146.05	N/A
			HEDGE	230	PROCTER	230	#1	106.8	Existing Procter RAS will mitigate this overload
		Loss of all lines north of Natomas 230 kV station	CARMICAL	230	ORANGEVL	230	#1	142.23	N/A
			CARMICAL	230	HURLEY S	230	#1	104.52	Existing Carmichael RAS will mitigate this overload
		Loss of all lines north of Orangevale 230 kV station	CARMICAL	230	HURLEY S	230	#1	109.7	Existing Carmichael RAS will mitigate this overload
		Loss of all lines west of Folsom 230 kV station	HEDGE	230	CORDOVA	230	#1	102.7	Planned Coyote Creek RAS will mitigate this overload
		Loss of all lines west of Rancho Seco 230 kV station	HEDGE	230	PROCTER	230	#1	141.3	Existing Procter RAS will mitigate this overload
			CORDOVA	230	COYOTECREEK	230	#1	114.34	N/A
		Loss of transmission line tower 303	CARMICAL	230	HURLEY S	230	#1	109.7	Existing Carmichael RAS will mitigate this overload
		Rancho Seco 230 kV switching station outage	HEDGE	230	PROCTER	230	#1	142.61	Existing Procter RAS will mitigate this overload
			CORDOVA	230	COYOTECREEK	230	#1	113.37	N/A

Appendix D. Steady State Sensitivity Analysis Results

Table D.1 – The 2025 1-in-10 peak load +5% steady state sensitivity results.

Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	P6	Moore - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage (1LG fault at RDP)	MOORE	115	WALDON	115	#1	104.77	Real time operator will adjust system after initial outage to prepare for second line outage by reducing Redding Power Plant Units 4,5,6 to 70% of present MW output
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	117.32	N/A
			KESWICK	115	EUREKA W	115	#2	132.69	N/A
			EUREKA W	115	OREGON	115	#1	121.85	N/A
			MOORE	115	WALDON	115	#1	146.09	N/A
			OREGON	115	WALDON	115	#1	172.42	N/A
RE	-	None	-	-	-	-	-	-	-
SMUD	P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage (3LG fault at ORV)	CAMINO S	230	LAKE	230	#1	143.69	Existing UARP RAS will mitigate this overload
	P7	Camino-Lake and Cordova-White Rock 230 kV line outage (1LG fault at CAM)	ORANGEVL	230	WHITEROK	230	#1	143.14	Existing UARP RAS will mitigate this overload
	Extreme	Loss of transmission line tower 303	CARMICAL	230	HURLEY S	230	#1	128.57	Existing Carmichael RAS will mitigate this overload
		Loss of all lines north of Lake 230 kV station	ORANGEVL	230	WHITEROK	230	#1	143.28	N/A
		Loss of all lines west of Rancho Seco 230 kV station	HEDGE	230	PROCTER	230	#1	128.66	Existing Procter RAS will mitigate this overload
		Loss of all lines north of Natomas 230 kV station	CARMICAL	230	ORANGEVL	230	#1	112.06	N/A
		Loss of all lines north of Orangevale 230 kV station	CARMICAL	230	HURLEY S	230	#1	128.57	Existing Carmichael RAS will mitigate this overload
		Rancho Seco 230 kV switching station outage	HEDGE	230	PROCTER	230	#1	129.97	Existing Procter RAS will mitigate this overload

Table D.2 – The 2025 off peak load steady state sensitivity results.

Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	P6	AirportW - AirportR 115 kV TL outage and East Redding - Canby 115 kV TL outage (1LG fault at ERD)	OREGON	115	WALDON	115	#1	114.95	Real time operator will adjust system after initial outage to prepare for second line outage by dropping load at: Sulphur Creek Bank 1 by 52.12%, Sulphur Creek Bank 2 by 43.61%, Canby Bank 2 by 59.71%, Canby Bank 3 by 51.63% and Canby Bank 4 by 100%
		East Redding - Canby 115 kV TL outage and Moore - AirportR 115 kV TL outage (1LG fault at MOR)	OREGON	115	WALDON	115	#1	100.11	Real time operator will adjust system after initial outage to prepare for second line outage by dropping load at: Sulphur Creek Bank 1 by 52.12%, Sulphur Creek Bank 2 by 43.61%, Canby Bank 2 by 59.71%, Canby Bank 3 by 51.63% and Canby Bank 4 by 100%
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	118.86	N/A
			KESWICK	115	EUREKA W	115	#2	152.37	N/A
			EUREKA W	115	OREGON	115	#1	143.03	N/A
			MOORE	115	WALDON	115	#1	187.34	N/A
			OREGON	115	WALDON	115	#1	207.54	N/A
RE	-	None	-	-	-	-	-	-	-
SMUD	-	None	-	-	-	-	-	-	-

Table D.3 – The 2028 1-in-10 +5% peak load steady state sensitivity results.

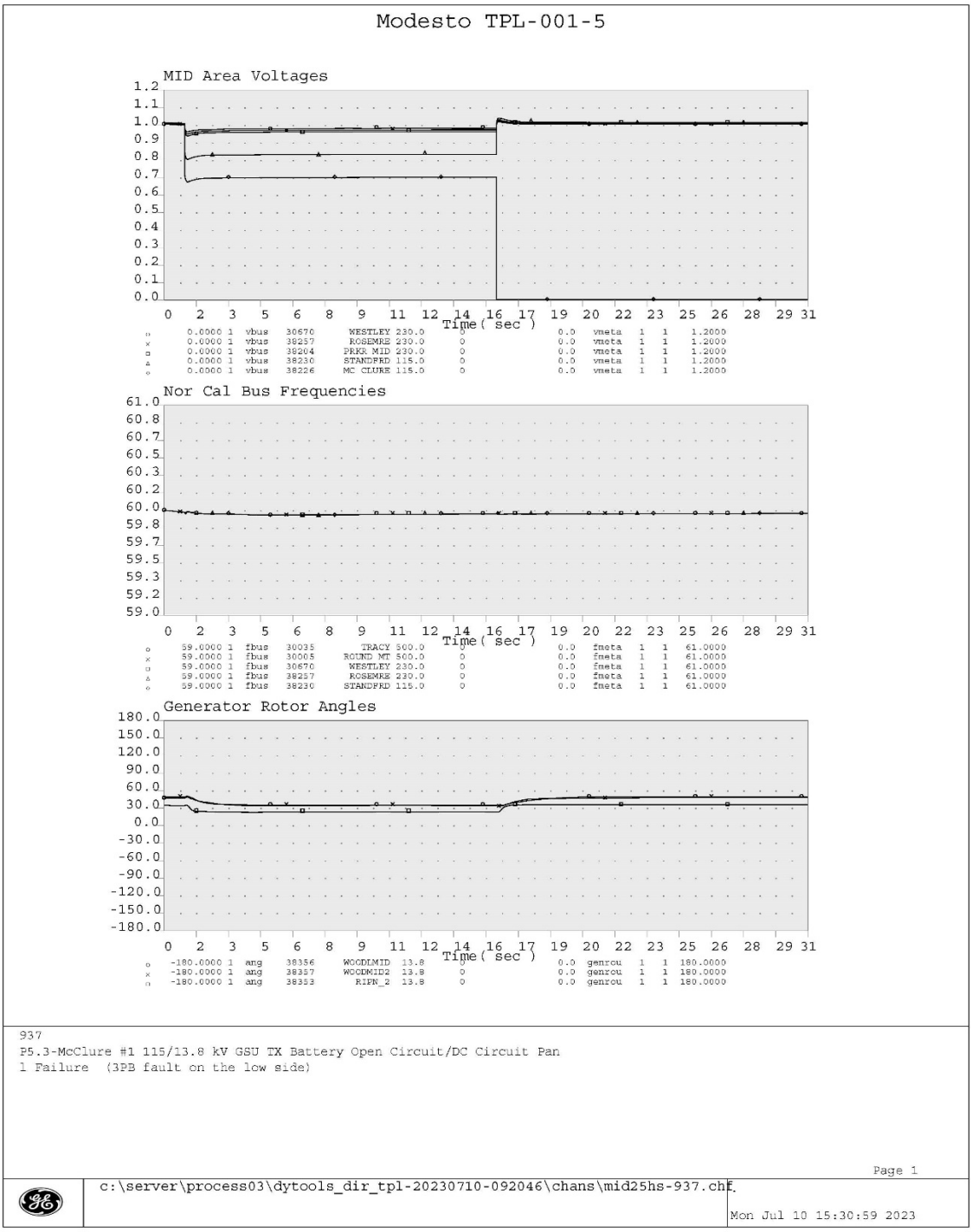
Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading	Mitigation
MID	-	None	-	-	-	-	-	-	-
RDNG	P6	Moore - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage (1LG fault at RDP)	MOORE	115	WALDON	115	#1	104.33	Real time operator will adjust system after initial outage to prepare for second line outage by decreasing Redding Power Plant units 4,5,6 to 70% of present MW output
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	KESWICK	115	BELTLINE	115	#1	117.13	N/A
			KESWICK	115	EUREKA W	115	#2	132.58	N/A
			EUREKA W	115	OREGON	115	#1	121.76	N/A
			MOORE	115	WALDON	115	#1	146.09	N/A
			OREGON	115	WALDON	115	#1	172.32	N/A
RE	-	None	-	-	-	-	-	-	-

Table D.4 – The 2028 SMUD ZCP steady state sensitivity results.

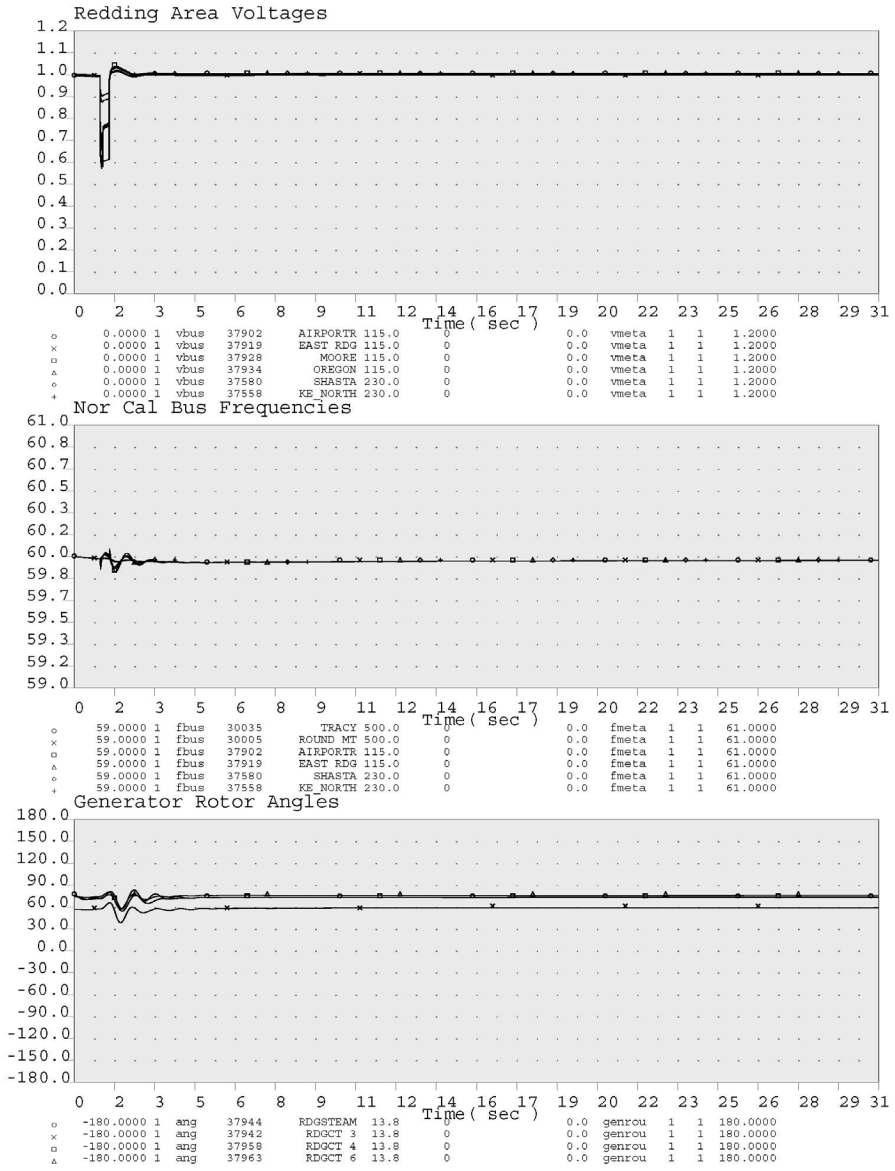
Entity	NERC Category	Contingency	From	kV	To	kV	CK	% Loading
SMUD	P6	Carmichael-Orangevale 230 kV TL outage and Cordova-White Rock 230 kV TL outage (3LG fault at COR)	CORDOVA	230	COYOTECREEK	230	#1	104.22
		Cordova-Pocket 230 kV TL outage and Orangevale-White Rock 230 kV TL outage (3LG fault at ORV)	HEDGE	230	CORDOVA	230	#1	103.5
		Cordova-White Rock 230 kV TL outage and Cordova-Coyote Creek 230 kV TL outage (3LG fault at COR)	CARMICAL	230	ORANGEVL	230	#1	106.01
		Cordova-White Rock 230 kV TL outage and Hedge-Procter 230 kV TL outage (3LG fault at HED)	CORDOVA	230	COYOTECREEK	230	#1	103.86
		Cordova-White Rock 230 kV TL outage and Hurley-Procter 230 kV TL outage (3LG fault at HUR)	CORDOVA	230	COYOTECREEK	230	#1	104.57
		Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage (3LG fault at ORV)	CAMINO S	230	LAKE	230	#1	143.82
			CORDOVA	230	COYOTECREEK	230	#1	105.27
		Elverta-Hurley #1 230 kV TL outage and Elverta-Hurley #2 230 kV TL outage (3LG fault at ELVW)	CARMICAL	230	ORANGEVL	230	#1	102.28
	P7	Elverta-Hurley #1 and #2 230 kV line outage (1LG fault at ELVE)	CARMICAL	230	ORANGEVL	230	#1	102.28
		Camino-Lake and Cordova-White Rock 230 kV line outage (1LG fault at CAM)	ORANGEVL	230	WHITEROK	230	#1	143.53
		Cordova-Coyote Creek and Cordova-White Rock 230 kV line outage (1LG fault at COR)	CARMICAL	230	ORANGEVL	230	#1	106.01

Appendix E. Sample Transient Stability Plots

Sample plots for each PC Participant are shown below. Where possible, more extreme responses were shown.



Redding TPL-001-5



401
Airport-Airport 115 kV TL outage with stuck breaker (1LG fault at AIR
ith AIR BKR 3744 stuck)

Page 1

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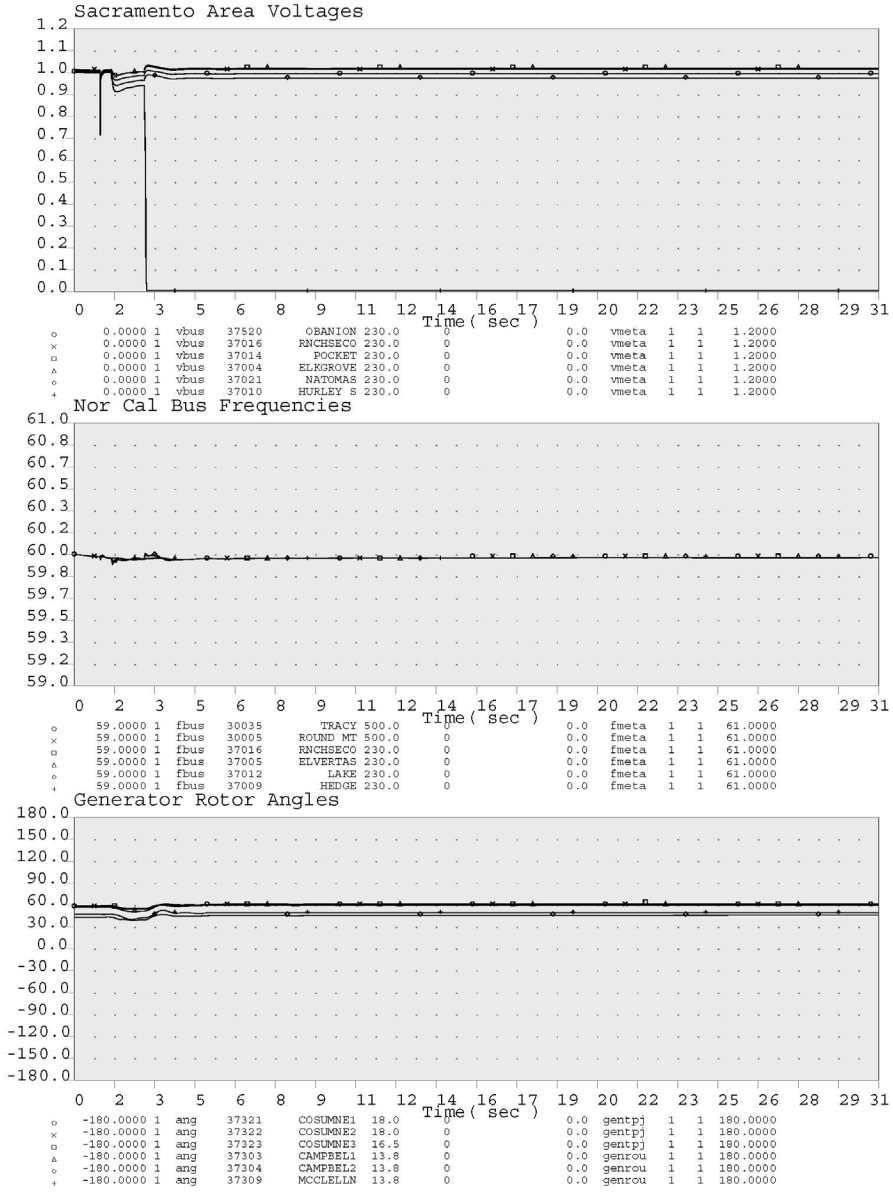
Sun Jul 16 02:39:16 2023

SMUD TPL-001-5



4726
Hurley 230 kV bus fault with relay failure (1LG fault)

Page 1

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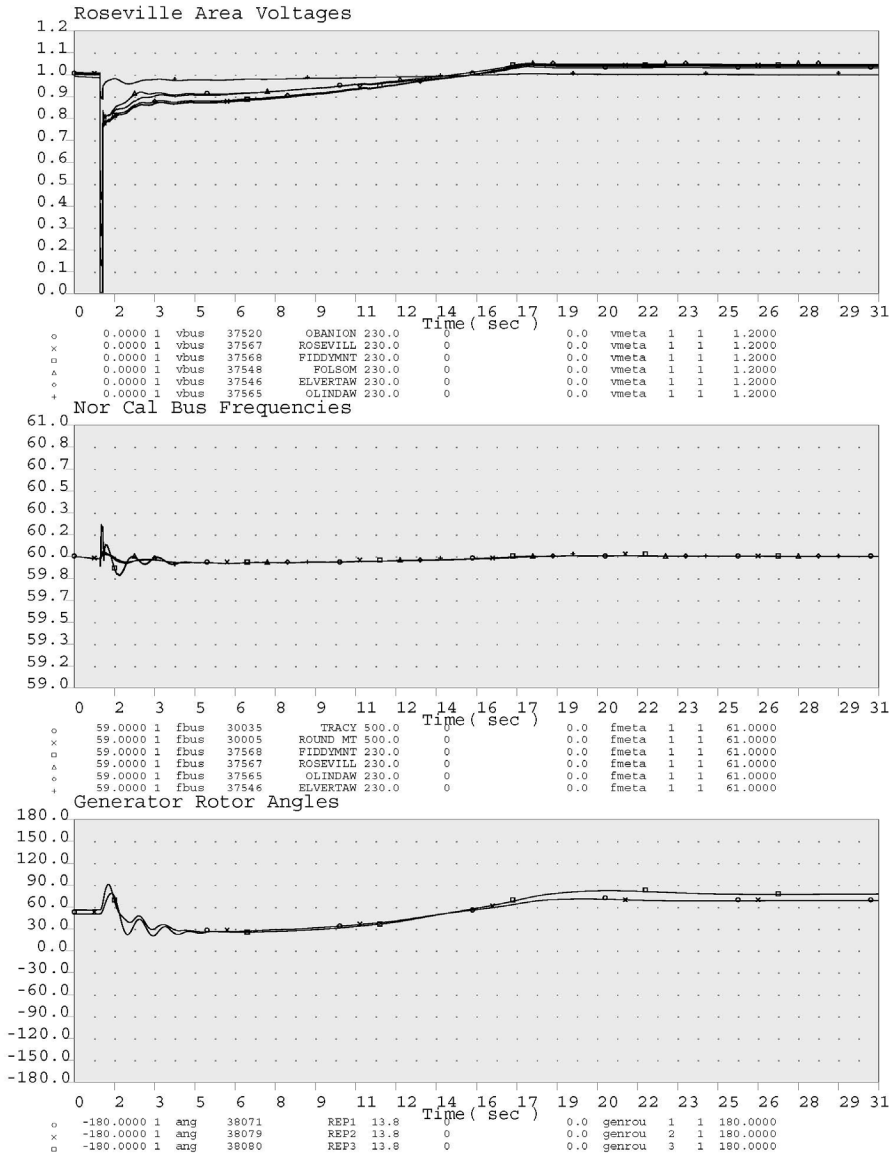
Wed Jul 19 16:36:53 2023

Roseville TPL-001-5



373
Folsom-Roseville 230 kV TL outage and Roseville #1 230/60 kV TX outage
(3LG fault on high side)

Page 1

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Fri Jul 7 18:16:44 2023

Appendix F. Short Circuit Results

Table F.1 – List of Short Circuit elements that exceed 80% duty.

PC Participant	Element	Fault Type	Year	Facility Rating (A)	Duty (A)	Duty (%)
SMUD	Hurley CB 5814	2LG	2021	35,369	30,664	86.7
	Hurley CB 5820	2LG	2021	35,369	32,291	91.3
	Hurley CB 5834	2LG	2021	35,369	32,787	93.0
MID	Westley CB 2354	3Ø	2022	40,000	37,168	92.9
	Westley CB 2355	3Ø	2022	40,000	37,168	92.9
	Westley CB 2356	3Ø	2022	40,000	37,168	92.9
RDNG	None					
RE	None					

Appendix G. Version History

Version	Change(s)	By	Date
0.0	Initial draft	Ryan Price	9/15/2023
1.0	Final draft	Ryan Price	10/3/2023

Balancing Authority of Northern California
Resolution 23-11-01

ACKNOWLEDGEMENT AND ACCEPTANCE OF BANC PLANNING COORDINATOR AREA 2023 TRANSMISSION PLANNING ASSESSMENT

WHEREAS, the Balancing Authority of Northern California ("BANC") was created by a Joint Powers Agreement ("JPA") to, among other things, acquire, construct, maintain, operate, and finance Projects; and

WHEREAS, BANC is the NERC Planning Coordinator ("PC") for four of its members, including the Sacramento Municipal Utility District ("SMUD"), Modesto Irrigation District ("MID"), Redding Electric Utility ("REU"), and Roseville Electric; and

WHEREAS, BANC must demonstrate compliance with certain PC-related NERC reliability standards, including TPL-001-5; and

WHEREAS, in order to meet this standard, SMUD, as the PC Services Provider, produced the BANC PC Area 2023 Transmission Planning Assessment ("Assessment"), in which the performance of the BANC PC area was assessed in order to demonstrate that its portion of the Bulk Electric System meets all of the performance requirements specified in the above-mentioned standard for the years 2024 through 2033; and

WHEREAS, the Assessment concludes that no new system deficiencies or criteria violations were identified for the MID and Roseville Electric portions of the BES, and that, while contingencies were identified for the REU and SMUD portions of the BES, mitigations have been developed and/or established remedial action schemes already exist to address these contingencies, so no corrective active plans were developed per this assessment; and

WHEREAS, each PC Committee member concurred with the Assessment on or before October 13th.

NOW, THEREFORE, BE IT RESOLVED that the Commissioners of the Balancing Authority of Northern California hereby acknowledge and accept the Assessment.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of November, 2023, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Martin Caballero				
City of Redding	Nick Zettel				
City of Roseville	Dan Beans				
City of Shasta Lake	James Takehara				
SMUD	Paul Lau				
TPUD	Paul Hauser				

_____
Paul Hauser
Chair

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Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5C

1. **Resolution 23-11-02** ***Approval of Amended Management Services Agreement Between BANC and Adirondack Power Consulting, LLC*****.**

Balancing Authority of Northern California
Resolution 23-11-02

APPROVAL OF AMENDED MANAGEMENT SERVICES AGREEMENT BETWEEN BANC AND ADIRONDACK POWER CONSULTING, LLC

WHEREAS, the Balancing Authority of Northern California ("BANC") was created by a Joint Powers Agreement ("JPA") to, among other things, acquire, construct, maintain, operate, and finance Projects; and

WHEREAS, BANC JPA Section 11.4.4 authorizes the BANC Commission to hire or appoint officers, employees, and contractors, as it may deem necessary; and

WHEREAS, the BANC Commission has determined that its interests require chief executive services, independent of the members and of the other consulting professionals who furnish other expert services to BANC; and

WHEREAS, Mr. James Shetler was appointed as General Manager by the BANC Commission in 2013 and has served in that role under contract between BANC and Adirondack Power Consulting, LLC ("Adirondack"); and

WHEREAS, the Commission requested that the Chair work with Mr. Shetler to assess any needed changes to the Adirondack agreement; and

WHEREAS, the Chair has recommended that the underlying monthly retainer under the Adirondack agreement be increased by 3% or $900/month effective December 1, 2023.

NOW, THEREFORE, BE IT RESOLVED that the Commissioners of the Balancing Authority of Northern California hereby approve of this increase in compensation and direct the BANC General Counsel to prepare an Amended Management Services Agreement between the Balancing Authority of Northern California and Adirondack Power Consulting, LLC, in a form substantially similar to prior agreements, for execution by the Chair without further action by the Commission.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of November, 2023, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Martin Caballero				
City of Redding	Nick Zettel				
City of Roseville	Dan Beans				
City of Shasta Lake	James Takehara				
SMUD	Paul Lau				
TPUD	Paul Hauser				

_____
Paul Hauser
Chair

_____
Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5D

1. **Resolution 23-11-03 *Approval of BANC Commission Policies – Delegations of Authority, Financial Policy, Budget Policy*.**
2. **BANC Commission Policies – Delegations of Authority, Financial Policy, Budget Policy.**

11/08/23

TO: **BANC Commission**

FROM: **BANC Counsel**

RE: **Policy Consideration and Possible Adoption**

For some time, including the most recent BANC Strategic Plan discussion, BANC General Manager and BANC General Counsel have identified the need for certain internal policies to be considered to clarify BANC business practices and evolve BANC policies as BANC assumes greater market, and possible other, responsibilities on behalf of its members.

In addressing priorities of policy development, General Counsel recommended development of policies surrounding financial and related practices as a first priority. We examined certain member practices and other policies adopted by certain joint powers authorities ("JPA") that looked to have the most structural commonality with BANC. Many JPA's have much more complex operations, obviously, and we did not want to start at a point of needlessly burdensome and lengthy policies.

Before the Commission for consideration and possible adoption are delegation polices for the General Manager, financial, and budget policies. To be sure, particularly with respect to budget policies, BANC's current practices meet or exceed the requirements we suggest, but we believe it is prudent to articulate in writing an expected standard.

BANC General Counsel circulated draft policies to the BANC Legal Committee, held a conference call, and received comments. BANC General Counsel amended the policies to reflect those comments and has received concurrence from Legal Committee representatives.

We stand ready to answer any follow up questions during the Commission meeting.

Balancing Authority of Northern California

Commission Policies

As of November 15, 2023

Table of Contents

A. Delegations of Authority Policy

Adopted November 15, 2023

The Commission will instruct the General Manager through written policies that define the results that the organization is to achieve, and which describe the delegation of authority to the General Manager.

Specifically:

- The Commission shall identify and define those results or conditions of BANC that are acceptable to the Commission and communicate them in the form of policy.
- The Commission shall develop policies that define the delegation to the General Manager with regard to the General Manager's authority.
- The General Manager shall have full charge and control of the affairs of BANC consistent with the BANC Joint Exercise of Powers Agreement, as that agreement is amended from time to time, and the policies established by the Commission.
- The General Manager is authorized to establish all further policies, make all decisions, take all actions, establish all practices, and develop all activities related to the operations or business affairs of BANC associated with Commission approved policies and approved budgets.
- The General Manager shall use prudent judgment in the exercise of the delegations and in a manner that is operationally and economically sound, serves the best interests of BANC, and BANC's members and their customers, comports with prudent business practices, balances the risks and benefits of the actions, and does not expose BANC to unreasonable risk.
- If an emergency arises and there is insufficient time to notify the Commission, the General Manager may take appropriate and reasonable action otherwise within the Commission's jurisdiction. The General Manager shall report such action to the Commission as soon as convenient.
- The Commission may change its delegation to the General Manager at any time, subject to the conditions of the Commission's contract with the General Manager, thereby expanding or limiting the authority of the General Manager. But as long as any particular delegation is in place, the Commission will abide by the General Manager's decisions in those areas that are delegated to them.

B. Financial Policy

Adopted November 15, 2023

BANC is committed to effective and efficient management of its finances. The purpose of this policy is to:

- Establish the principles that govern the delegation of financial authority.
- Support accountability in financial transactions.
- Establish expense approval limits for the General Manager of BANC.

1. Spending Authority

The General Manager is authorized to make expenditures less than $250,000 without prior Commission review or approval provided that:

- The expenditure will not result in exceeding the annual amount currently budgeted and approved in the applicable budget category;
- The expenditure is consistent with all adopted Commission policies and the BANC Joint Exercise of Powers Agreement, as that agreement is amended from time to time;
- The expenditure is in the best interest of BANC; and
- All expenditures in excess of $100,000 are reported at the next Commission Meeting.

C. Budget Policy

Adopted November 15, 2023

1. Budget development and expenditure reporting

This budget policy provides clarity about budget authority of the General Manager of BANC and lays out budget adoption and periodic budget reporting requirements. The policy also allows sufficient flexibility to address changes in the markets.

2. Budget Adoption

The General Manager shall prepare a proposed budget overview and submit it to the Commission for the following fiscal year at least two months prior to the end of the fiscal year. The Budget shall reflect all activities and expenditures of BANC.

The General Manager shall submit a recommended budget document for adoption to the Commission for approval by Resolution in the month following the proposed budget submittal. When approved by the Commission, the budget shall be considered adopted.

In the event that the Commission does not adopt the Budget by the end of the fiscal year, the Commission may adopt a continuing appropriations resolution until such time as the Budget is adopted. A continuing appropriations resolution would provide that payments for services performed on behalf of BANC, and necessary expenditures as determined by the General Manager, would continue until such time as the Budget is adopted. The total budget may be amended by the Commission during the year by Resolution.

3. Budget Control

After adoption, the budget shall be controlled by the General Manager at the total annual expenditure level.

The General Manager may institute separate budget procedures internally that give him/her further controls at the expenditure category level if desired.

4. Budget Reporting

A budget-to-actual status update report shall be presented to the Commission on a quarterly basis.

Balancing Authority of Northern California
Resolution 23-11-03

APPROVAL OF BANC COMMISSION POLICIES –
DELEGATIONS OF AUTHORITY, FINANCIAL POLICY, BUDGET POLICY

WHEREAS, the Balancing Authority of Northern California ("BANC") was created by a Joint Powers Agreement ("JPA") to, among other things, acquire, construct, maintain, operate, and finance Projects; and

WHEREAS, BANC has evolved in its operations from sole focus on operation of a Balancing Authority Areas and associated activities and obligations; and

WHEREAS, BANC has undertaken increasing activities on behalf of its members, including performing Planning Coordinator functions, considering and becoming an EIM Entity for participation in the Western Energy Imbalance Market, consideration and planned participation in the proposed Extended Day Ahead Market, and consideration on joint procurement activities on behalf of its members; and

WHEREAS, these activities have occurred under the original business rules of the agency which are spelled out in the Joint Powers Agreement; and

WHEREAS, the Commission has directed the General Manager and General Counsel to develop evolving policies for BANC that reflect the increasingly sophisticated activities in which BANC is engaged; and

WHEREAS, BANC General Manager and General Counsel are recommending that the first policies that should be considered for adoption by the Commission are centered on delegations, budgeting, and financial practices; and

WHEREAS, BANC General Counsel has consulted with the Legal Committee on the policies put forth for consideration and possible approval herein and received concurrence from the Legal Committee.

NOW, THEREFORE, BE IT RESOLVED that the Commissioners of the Balancing Authority of Northern California hereby approve these three BANC Commission Policies – Delegations of Authority, Financial Policy, and Budget Policy.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of November, 2023, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Martin Caballero				
City of Redding	Nick Zettel				
City of Roseville	Dan Beans				
City of Shasta Lake	James Takehara				
SMUD	Paul Lau				
TPUD	Paul Hauser				

_____
Paul Hauser
Chair

_____
Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5E

1. **Resolution 23-11-04** ***Resolution Setting the Regular Meeting Dates for 2024*****.**
2. **Attachment A to Resolution 23-11-04:** ***Time and Place of Regular Meetings for 2024*****.**

Balancing Authority of Northern California
Resolution 23-11-04

RESOLUTION SETTING THE REGULAR MEETING DATES FOR 2024

WHEREAS, the Balancing Authority of Northern California ("BANC") was created by a Joint Powers Agreement ("JPA") to, among other things, acquire, construct, maintain, operate, and finance Projects; and

WHEREAS, JPA Section 11.2 provides that the BANC Commission may provide for the holding of regular meetings at intervals more frequently than annually; and

WHEREAS, JPA Section 11.2 requires that the date, hour, and place of each regular meeting shall be fixed by resolution of the Commission.

NOW, THEREFORE, BE IT RESOLVED that the Commissioners of the Balancing Authority of Northern California hereby approve the 2024 Regular Meeting Schedule, attached hereto as Attachment A.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of November, 2023, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Martin Caballero				
City of Redding	Nick Zettel				
City of Roseville	Dan Beans				
City of Shasta Lake	James Takehara				
SMUD	Paul Lau				
TPUD	Paul Hauser				

_____
Paul Hauser
Chair

_____
Attest by: C. Anthony Braun
Secretary

Time and Place of Regular Meetings for 2024

Unless shown otherwise, the Regular Commission meetings shall occur on the fourth Wednesday of each month, at 2:00 p.m.

As shall be specified in a notice issued pursuant to the Ralph M. Brown Act of the California Government Code, the meetings listed below will be held in Sacramento, California at 555 Capitol Mall. Room location to be provided on posted agenda.

1. **January 24**
2. **March 27**
3. **April 24**
4. **June 26**
5. **July 24**
6. **August 28**
7. **October 23**
8. **December 18**

The meetings on the dates listed below will be held in Folsom, California at 35 Iron Point Circle, Suite 225.

1. **February 21**
2. **May 22**
3. **September 18**
4. **November 20**

The Commission Secretary shall have discretion to adjourn and to modify time and location of Commission meetings consistent with posting requirements of the Ralph M. Brown Act of the California Government Code.