Balancing Authority of Northern California

Regular Meeting of the Commissioners of BANC

2:00 P.M.
Wednesday, November 16, 2022
Teleconference Meeting

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 16, 2022** at **2:00 p.m. This meeting will be conducted pursuant to the provisions of Assembly Bill 361. Some, or all, of the Commissioners may attend the meeting electronically or telephonically.**

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

Phone: 1-253-215-8782 or 1-309-205-3325 **Meeting ID:** 812 1480 0369 **Passcode:** 340584

Meeting Link: https://us06web.zoom.us/j/81214800369?pwd=c2dROWsvNEFTZjJyem1wREIzNGhtdz09&from=addon

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. Resolution 22-11-01 *Determination that Meeting in Person Would Present Imminent Risks to the Health or Safety of Attendees as a Result of the Proclaimed State of Emergency.*

B. Minutes of the Regular Commission Meeting and Strategic Planning Session held on September 28, 2022.

C. BANC Operator Reports (September and October).

D. Compliance Officer Reports (October and November).

E. PC Committee Chair Reports (October and November).

F. 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+, WMEG, WRAP.

ii. SB100 Update.

iii. Resource Adequacy (RA) Principles & Guidelines.

B. Consider and Possibly Approve Resolution 22-11-02 *Acknowledgement and Acceptance of BANC Planning Coordinator Area 2022 Transmission Planning Assessment.*

C. Draft BANC 2022/2023 Strategic Initiatives Review and Possible Acceptance.

D. Consider and Possibly Approve Resolution 22-11-03 *Approval of Amended Management Services Agreement between BANC and Adirondack Power Consulting, LLC.*

E. Consider and Possibly Approve Resolution 22-11-04 *Approval of 2023 Annual Budget for BANC.*

F. Discussion on End of CA State of Emergency and Meeting Impacts.

G. Consider and Possibly Approve Resolution 22-11-05 *Resolution Setting the Regular Meeting Dates for 2023.*

H. 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. **Resolution 22-11-01** ***Determination that Meeting in Person Would Present Imminent Risks to the Health or Safety of Attendees as a Result of the Proclaimed State of Emergency.***

B. **Minutes of the September 28, 2022 BANC Regular Meeting and Strategic Planning Session.**

C. **BANC Operator Reports (September and October).**

D. **Compliance Officer Reports (October and November).**

E. **PC Committee Chair Reports (October and November).**

F. **General Manager Report and Strategic Initiatives Update.**

Balancing Authority of Northern California
Resolution 22-11-01

DETERMINATION THAT MEETING IN PERSON WOULD PRESENT IMMINENT RISKS TO THE HEALTH OR SAFETY OF ATTENDEES AS A RESULT OF THE PROCLAIMED STATE OF EMERGENCY

WHEREAS, on March 4, 2020 the Governor of California proclaimed a state of emergency in California as a result of the threat of COVID-19; and

WHEREAS, on March 17, 2020, the Governor issued Executive Order N-29-20 authorizing exemptions to certain notice requirements under the Ralph M. Brown Act to facilitate virtual meetings of a legislative body of a local agency; and

WHEREAS, on June 11, 2021, the Governor issued Executive Order N-08-12 extending the provisions of N-29-20 until September 30, 2021; and

WHEREAS, on September 16, 2021, the Governor of California signed Assembly Bill 361 which provides for the continued suspension of certain notice requirements for virtual meeting when a legislative body of a local agency holds a meeting during a declared state of emergency and either:

(1) state or local officials have imposed or recommended measures to promote social distancing, or

(2) the legislative body holds a meeting for the purpose of determining, by majority vote, whether as a result of the emergency, meeting in person would present imminent risks to the health or safety of attendees.

WHEREAS, pursuant to AB 361, a legislative body of a local agency must, not later than 30 days after teleconferencing for the first time pursuant to AB 361, and every 30 days thereafter, reconsider the circumstances of the state of emergency and determine that the state of emergency continues to directly impact the ability of the members to meet safely in person.

NOW, THEREFORE, BE IT RESOLVED that the Commissioners of the Balancing Authority of Northern California have reconsidered the state of emergency and hereby determine that meeting in person continues to present imminent risks to the health or safety of attendees as a result of the proclaimed state of emergency.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 16th day of November, 2022.

_____
James McFall
Chair

_____
Attest by: C. Anthony Braun
Secretary

MINUTES OF THE REGULAR MEETING AND STRATEGIC PLANNING SESSION
OF THE COMMISSIONERS OF
THE BALANCING AUTHORITY OF NORTHERN CALIFORNIA (BANC)

September 28, 2022

On this date, a Regular Meeting and Strategic Planning Session of the Commissioners of the Balancing Authority of Northern California was held telephonically, pursuant to the provisions of Assembly Bill 361.

Representatives:

Member Agency	**Commissioner**
Modesto Irrigation District (MID)	James McFall, Chair
City of Redding	Nick Zettel
City of Roseville	Dan Beans
Sacramento Municipal Utility District (SMUD)	Paul Lau
City of Shasta Lake	James Takehara
Trinity Public Utilities District (TPUD)	Absent

Other Participants:

Jim Shetler	General Manager
Tony Braun	General Counsel
Kevin Smith	General Counsel
Brittany Iles	General Counsel
Kris Kirkegaard	General Counsel Support
Mark Willis	BANC Operator
James Leigh-Kendall	BANC Compliance Officer
Janice Zewe	BANC Planning Coordinator Chair
Brian Griess	Western Area Power Administration (WAPA)
Bill Forsythe	City of Roseville
Shawn Matchim	City of Roseville
Laura Lewis	SMUD
Brian Griess	Western Area Power Administration (WAPA)
Jeanne Haas	WAPA

1. Call to Order: Mr. Shetler verified that there was a quorum to proceed; attendance is noted above. Chair McFall 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 McFall invited comments from the Commission on the Consent Agenda, and there were none.

ACTION: M/S (Lau/Beans) to **approve the Consent Agenda**. Motion carried by a unanimous roll call vote (Absent: Commissioner Hauser).

5. Regular Agenda Items.

   A. Resolution 22-09-02 *Resolution to Validate Emergency Actions.*

      Mr. Shetler and Mr. Braun introduced this item. There were no comments or questions from the Commission.

ACTION: M/S (Beans/Zettel) to **approve Resolution 22-09-02 *Resolution to Validate Emergency Actions.*** Motion carried by a unanimous roll call vote (Absent: Commissioner Hauser).

6. BANC Strategic Planning Session.

   A. Please refer to the agenda for this meeting for discussion topics. No formal action was taken by the Commission.

The Commission adjourned at 4:05 p.m.

Minutes approved on November 16, 2022.

_____

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 2022

Operations:

- BA Operations: Normal
- Significant BA Issues: Significant heat wave
- Declared BA Energy Emergency Alert Level (EEA): EEA2 9/6/22, EEA1 9/7/22, EEA1 9/8/22
- NWPP Reserve Energy Activations
  - 3 contingency requiring activation of NWPP
  - 179 MW average generation lost
  - 280 MW maximum generation lost
  - Generating unit(s) and date(s) affected: 9/1/22 Cosumnes, 9/6/22 Cosumnes, 9/7/22 Campbell CT
  - All recoveries within 25 minutes
- USF
  - 15 of 30 days with instances of USF mitigation procedure utilized
  - 1 day on Path 66
  - No operational impact on BANC
- BAAL Operation:
  - Maximum duration of BAAL exceedance: 8 Minutes (heat wave)
  - Number of BAAL exceedance >10 minutes: None
  - BAAL violation (BAAL exceedance >30 minutes): None
- Frequency Response (FR) Performance – Quarterly Metric:
  - 2022 Frequency Response Obligation (FRO): -19.0 MW/0.1Hz
  - Q2 Frequency Response Measure (FRM): -28.5 MW/0.1Hz
  - Q2 Number of Under-Performed Events: 2 out of 7
  - Q1~Q2 Frequency Response Measure (FRM): -44.5 MW/0.1Hz
  - Q1~Q2 Number of Under-Performed Events: 2 out of 12

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 2022

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- Declared BA Energy Emergency Alert Level (EEA): EEA0
- NWPP Reserve Energy Activations
    - 0 contingency requiring activation of NWPP
    - 0 MW average generation lost
    - 0 MW maximum generation lost
    - Generating unit(s) and date(s) affected: None
    - All recoveries within 0 minutes
- USF
    - 2 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: 4 Minutes
    - Number of BAAL exceedance >10 minutes: None
    - BAAL violation (BAAL exceedance >30 minutes): None
- Frequency Response (FR) Performance – Quarterly Metric:
    - 2022 Frequency Response Obligation (FRO): -19.0 MW/0.1Hz
    - Q2 Frequency Response Measure (FRM): -28.5 MW/0.1Hz
    - Q2 Number of Under-Performed Events: 2 out of 7
    - Q1~Q2 Frequency Response Measure (FRM): -44.5 MW/0.1Hz
    - Q1~Q2 Number of Under-Performed Events: 2 out of 12

Monthly Notes:

- No additional notes or impacts

Compliance Officer Report
BANC Commission Meeting
October 2022

The following summarizes routine issues for the Commission's information and consideration. Any major issues or action items will be identified separately 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.
- A final audit report from the 2022 BANC/SMUD WECC Audit is expected in November.

BANC MCRC:

- The next BANC MCRC meeting is scheduled to be held at 10:00 AM on Monday, December 5th via teleconference.

Compliance Officer Report
BANC Commission Meeting
November 2022

The following summarizes routine issues for the Commission's information and consideration. Any major issues or action items will be identified on the 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 reviewed and provided comments back to WECC on the initial draft of the Non-Public Audit Report from the 2022 BANC/SMUD WECC Audit. A final audit report is expected by the end of the month.

BANC MCRC:

- The next BANC MCRC meeting is scheduled to be held at 10:00 AM on Monday, December 5th via teleconference.

PC Committee Chair Report
BANC Commission Meeting
October 2022

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 continues to work toward demonstrating compliance with PC-related NERC reliability standards.

- PRC-026-1 Relay Performance During Stable Power Swings – Staff shared the final 2022 BANC PC PRC-026-1 assessment report with BANC PC Participants on September 16th. This report was also posted on the BANC Member website on September 28th.

- TPL-001-4 - Transmission System Planning Performance – Staff incorporated all comments received from the BANC PC participants for the report. The BANC TPL assessment report is being finalized to be sent out for BANC PC participants to approve on October 14th. Commission approval will be sought at the November meeting.

- MOD-033-2 – Dynamic portion of study is complete. Data requests for the steady state data will be sent out in the latter portion of the year.

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 new projects in BANC PC Participant area for 2022 which require FAC-002 assessments. The BANC PC Qualified Changes document has been finalized and distributed and posted on the BANC member site.
2	FAC-010-3 SOL Methodology for Planning Horizon	100%	The finalized version was sent to external stakeholders and BANC PC Participants on 12/28/20.
3	FAC-014-2 Establish and Communicate SOLs	100%	Comments received were incorporated into the 2022 BANC PC FAC-014-2 Report. This report was finalized and shared with key stakeholders and BANC PC participants on 8/26/22. This report was also posted on the BANC member website on 9/28/22.
4	IRO-017-1 Outage Coordination	0%	Awaiting completion of TPL assessment by December to send out report.
5	MOD-031-2 Demand and Energy Data	100%	2022 Loads and Resources Parts One, Two, and Supplemental were completed and uploaded to the WECC EFT server.
6	MOD-032-1 Data for Power System Modeling & Analysis		Ongoing activity.
7	MOD-033-1 System Model Validation	60%	Dynamic portion of study is complete. Steady state data request will follow later this year.

	PC Standard	Estimated % Complete	Notes
8	PRC-006-5 Underfrequency Load Shedding	100%	Staff has been participating on regular webinars hosted by WECC staff. The latest webinar was on 9/14/22. WECC staff shared the generation imbalance study results, and there were no concerns for the Southern Island and overall WECC Island that BANC identifies as being a part of BANC's UFLS program.
9	PRC-010-2 Undervoltage Load Shedding	100%	Study has been completed. The report was finalized on 12/30/19.
10	PRC-012-2 Remedial Action Schemes	80%	New Standard effective 1/1/21. Study Plan finalized 4/10/20. Working on performing studies for each RAS scheme.
11	PRC-023-4 Transmission Relay Loadability	100%	Staff finalized the 2022 BANC PC PRC-023-4 report and distributed it on 7/22/22. This report was posted on the BANC Member website on 9/28/22.
12	PRC-026-1 Relay Performance During Stable Power Swings	100%	Staff shared the final 2022 BANC PC PRC-026-1 assessment report on 9/16/22 to BANC PC participants. This report was posted on the BANC member website on 9/28/22.
13	TPL-001-4 Transmission System Planning Performance	95%	Final assessment report being drafted to be sent out for approval on 10/14/22.

	PC Standard	Estimated % Complete	Notes
14	TPL-007-4 Transmission System Planned Performance for Geomagnetic Disturbance Events	90%	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 is 7/1/21. Ongoing, NERC has declared a GMD event (Kp>7) for reporting purposes. 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 (6/30/22). SMUD uploaded all 3 GMD events that were requested by NERC (due 6/30/22).

PC Committee Chair Report
BANC Commission Meeting
November 2022

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.

- FAC-002-4 – Facility Interconnection Studies – NERC is updating the currently effective FAC-002-3 to include an R6 requirement. R6 requires the PC to maintain a publicly available definition of qualified change for purposes of facility interconnections. NERC also provided updated guidance with examples of qualified changes for the upcoming requirement. FAC-002-4 has been filed by NERC and is pending regulatory approval. While BANC PC currently has a definition of qualified changes on the BANC member site, this document will need to be updated and posted publicly on the BANC website once the standard has been approved/adopted by the NERC Board of Trustees. Therefore, BANC PC is planning to work with BANC PC participants to update the definition of qualified changes using the NERC guidance prior to the effective date of the new modified standard.

- TPL-001-5 - Transmission System Planning Performance – Assessment report has been reviewed by the BANC PC participants and approved by the BANC PC committee. The report will be brought to the Commission for approval at the November BANC Commission meeting.

- MOD-033-2 – Data requests for the steady state portion were sent out to the BANC PC participants, and the requested data was received as of October 28th.

- TPL-007-4 – Staff has completed benchmarking and supplemental GMD Vulnerability Assessment of the Near-Term Transmission Planning Horizon (R4 and R8). Also, the GIC flow information was provided to the BANC PC participants (R5 and R9) based on the WECC GMD study completed in September of 2022.

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

	PC Standard	Estimated % Complete	Notes
1	FAC-002-3 Interconnection Studies (FAC-002-4 after NERC BOT approval, and effective date provided)	100%	There are no new projects in BANC PC Participant area for 2022 which requires FAC-002-3 assessments. The BANC PC Qualified Changes document has been finalized and posted on the BANC member site.
2	FAC-010-3 SOL Methodology for Planning Horizon	100%	The finalized version was sent to external stakeholders and BANC PC Participants on 12/28/20.
3	FAC-014-2 Establish and Communicate SOLs	100%	Comments received were incorporated into the 2022 BANC PC FAC-014-2 Report. This report was finalized and shared with key stakeholders and BANC PC participants on 8/26/22. This report was also posted on the BANC Member website on 9/28/22.
4	IRO-017-1 Outage Coordination	0%	Awaiting completion of TPL assessment by December to send out report.
5	MOD-031-2 Demand and Energy Data	100%	2022 Loads and Resources Parts One, Two, and Supplemental were completed and uploaded to the WECC EFT server.
6	MOD-032-1 Data for Power System Modeling & Analysis		Ongoing activity.
7	MOD-033-1 System Model Validation	70%	Steady state data has been received.
8	PRC-006-5 Underfrequency Load Shedding	100%	Staff has been participating on regular webinars hosted by WECC staff. The latest webinar was on 9/14/22, and WECC staff shared the generation imbalance study results, and there were no concerns for the Southern Island and overall WECC Island that BANC Identifies as being a part of for BANC's UFLS program.

	PC Standard	Estimated % Complete	Notes
9	PRC-010-2 Undervoltage Load Shedding	100%	Study has been completed. The report was finalized on 12/30/19.
10	PRC-012-2 Remedial Action Schemes	80%	New Standard to be effective on 1/1/21. Study Plan has been finalized on 4/10/20. Working on performing studies for each RAS scheme.
11	PRC-023-4 Transmission Relay Loadability	100%	Staff finalized the 2022 BANC PC PRC-023-4 report and distributed it on 7/22/22. This report was also posted on the BANC member website on 9/28/22.
12	PRC-026-1 Relay Performance During Stable Power Swings	100%	Staff shared the final 2022 BANC PC PRC-026-1 assessment report on 9/16/22 to BANC PC participants. This report was also posted on the BANC member website on 9/28/22.
13	TPL-001-4 Transmission System Planning Performance	95%	Assessment is awaiting Commission approval.

	PC Standard	Estimated % Complete	Notes
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 is 7/1/2021 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 would be downloaded and saved for reporting prior to the annual due date (6/30/2022) SMUD uploaded all 3 GMD events that were requested by NERC (due 6/30/2022). 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 1/1/23.

GM Report
BANC Commission Meeting
November 16, 2022

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.

POU Western Markets Initiative

BANC continues to participate in this effort, which is being coordinated by APPA. The group has stepped back and is taking a less formal role with occasional update conference calls. The last call was on September 29, 2022.

Coronavirus Restrictions

With the recent lifting of restrictions, BANC has transitioned to using a hybrid meeting model, both for our own internal member meetings, as well as outside meetings. We are moving to more in-person meetings as appropriate. In addition, the BANC BA Operator (SMUD) has instituted measures to reduce coronavirus risks, including stay at home for most employees with only essential staff working at the offices. The BANC Operator did start transitioning some senior staff back to the office in late March and is transitioning more staff this fall.

Market Initiatives:

EIM Participation

Staff continues monitoring EIM participation. CAISO quarterly benefit reports continue to show that BANC is seeing benefits from EIM participation, with the 3rd

Quarter 2022 report showing gross benefits of $111.54 million for BANC, with a total of $374.04 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.

EDAM Participation

The CAISO EDAM stakeholder process was relaunched in late 2021 with an initial working group formation meeting in December and kick-off detailed working group meetings in early January. The CAISO did wrap-up the work group meetings in late March and issued the initial straw proposal on April 28, 2022. The CAISO hosted a stakeholder meeting on the straw proposal from May 25-26, 2022, with stakeholder comments filed June 16,2022, including BANC's. The CAISO held a series of technical workshops through the end of July and issued a second straw proposal on August 16, 2022. Additional stakeholder meetings were held in August and September. BANC filed comments in general support of the straw proposal. The final straw proposal was issued on October31, 2022. The CAISO proposed schedule is to have a final EDAM design ready for EIM Governing Body/CAISO Board of Governors review in mid-December 2022, approval by the Governing Body/Board of Governors in January/February 2023 and file a revised EDAM tariff at FERC by mid-2023.

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 held stakeholder information sessions on November 17, 2021, and December 1, 2021, to explain their initial concepts. Their stakeholder work group meetings were initiated in January 2022 seeking input on a final design. BANC staff participate in periodic status update meetings as appropriate. Market design is still being developed but SPP is forecasting a final design by late 2022. They would be looking for participant commitments (interest and financial) in late 2022/early 2023 with implementation in 2023-2024 and a go live in 2025. Some entities have publicly indicated their intent to fund the next phase of Markets+ development. Staff views Markets+ as a fallback option for BANC and will continue to monitor this market option.
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. They have hired a consultant to assist in this effort. BANC has executed the necessary agreements to participate in the WMEG as authorized by the Commission at the May meeting. The WMEG has selected a consultant to conduct a cost benefits analysis considering different future market options. As noted in prior communications, BANC has elected not to fund and formally participate in this study. However, we will support

providing data for the study and will be provided the overall results of the study.

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 a joint call with the CAISO.

WECC

WECC Board Meetings

The last set of Board and committee meetings was held on September 13-14, 2022, in Las Vegas, NV. This also served as the annual members meeting for WECC. The BANC GM did attend the meeting to represent BANC. The next set of Board and committee meetings are scheduled for December 5-6, 2022, in Salt Lake City, UT.

WPP

Resource Adequacy Project

As agreed previously, BANC has informed WPP that it will not be participating in Phase 3 of 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 discussions with WPP regarding our ability to participate in the future. SPP has indicated that they intend to use the WRAP as the model of a Resource Adequacy program for "Markets +" development. However, an entity does not have to be a WRAP participant to join "Markets+" but does need to have an equivalent Resource Adequacy program. WPP filed the tariff for the WRAP at FERC on August 31, 2022. There were some interventions filed by the September 30, 2022, due date. BANC has filed a "plain vanilla" intervention in order to be able to monitor the proceedings. It is not clear how long the FERC review of the tariff will take. However, it is extremely doubtful that it will be approved by the original forecast date of 12/31/22. WPP has issued requests to the WRAP participants for additional funding to continue the effort into 2023.

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 Transition

As part of moving to a FERC approved tariff for the WRAP program, the WPP board will be transitioning from its current structure to a fully independent board. A nominating committee was formed to assist in the selection of the new independent board members. The WPP members who are not in WRAP have been granted a seat on the nominating committee and the BANC General Manager was selected to fill that role. The BANC GM also served as co-chair for the nominating committee. The nominating committee finalized the new five member board slate, which was submitted to and approved by the existing Board at its October 12 meeting. The new Board will not be seated until the WRAP tariff is approved, which is expected in early 2023.

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.

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. The final, initial report was issued on 3/15/21. The CEC did reach out to the POU BAAs via CMUA in early March 2021 seeking more engagement with the BAAs for the next round of analysis for the SB100 effort. The POU BAAs are coordinating via CMUA on how to engage in this request. A subgroup of the POU BAAs, including BANC, participated in a Joint Agency SB100 workshop on June 2, 2021. We have also had several follow-up discussions with the Joint Agencies. Based upon recent discussions, the POU BAAs have hired a consultant via CMUA to assist in this effort. We are also working on concepts for a reliability analysis effort and providing current known interconnection queue information as well as forecast renewable resource procurement assumptions. The Joint Agencies have also indicated that they will be initiating the next cycle of the SB100 effort this fall to support issuing an update report by the required date of 1/1/25.

Western Electricity Industry Leaders (WEIL) Group

The WEIL CEOs last met on October 28, 2022, in Portland, OR. The next meeting of the WEIL group is being planned for March 3, 2023, in San Diego, CA.

Strategic Initiatives

The 2021/2022 Strategic Initiatives updates are attached to this report. These are considered final, and staff will be bringing the 2022/2023 Strategic Initiatives for Commission consideration at its November meeting.

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	Revisit 3rd Qtr. 2022. Based upon current status, no need to revisit at this time.
3 Medium	OUTREACH	Engage in industry forums (WECC, Peak, NWPPA, etc.)	Jim Shetler	Ongoing	Attend RC West, WECC Board, WEIL, & NWPP Exec. Forum meetings
4 Medium		Coordinate with other POU BAs (Ca and regionally)	Jim Shetler	Ongoing	Coordinating with SCL/SRP/ LA/TP/TID on EIM/EDAM & SB100
5 Medium		Outreach to regulatory and legislative bodies on key issues	Jim Shetler/BBSW	Ongoing as Necessary	Participating in WEIL group FERC staff update 5/9/22
6 Medium		More formal engagement with TID on BA/EIM/EDAM issues	Jim Shetler/BBSW	Ongoing	Continue periodic discussions on areas of collaboration
7 Medium	ASSETS	Evaluate establishing BANC criteria for RA resources	Resource Committee	4th Qtr. 2022	Sub-committee meetings in progress. Draft RA guidelines being developed.
8 Low	MEMBER SERVICES	Identify and outreach to potential new BANC members	Jim Shetler	Ongoing	Continue to have dialogue with TID, but no discussions on joining at this time.

No./Priority	Focus Area	Initiative	Responsibility	Target Due Date	Status
9 High	INDEPENDENCE	Manage EIM Phase 2 Going Forward	Jim Shetler/SMUD	Ongoing	Manage Phase 2 operations including EIM, Tech Anal. & Settlements committees
10 High		EDAM evaluation effort ~ CAISO Stakeholder Process ~ CAISO Tariff Development	 Jim Shetler/BBSW Jim Shetler/BBSW	 Late 2021 - 2022 2022 - 2023	 Final Straw Proposal Issued by CAISO 10/31/22
11 Medium	OUTREACH	Evaluate opportunities to engage other entities in market development	Jim Shetler	Ongoing	Coordinating with SCL, SRP, LADWP, TID, & Tacoma
12 Medium		Regional Policy Issues: Monitor/ weigh-in where appropriate	Jim Shetler/Commission	Ongoing	Participating in WEIL effort on WIRED issues
13 High		Market Regionalization: ~Monitor ongoing discussions at WEIL & other venues	Jim Shetler/BBSW	4th Qtr. 2022	SPP Mkts+ Stkldr Mtgs Mar. 29-30, Jun 1-2, Aug 9-10
14 High		Coordinate with CA BAs on SB100 effort	Jim Shetler/BBSW	12/31/22	CEC issued report 3/15/21; Continuing coordination between CEC & BAAs
15 Medium	ASSETS	Evaluate resource criteria for BANC long-term needs ~ Issue solicitation for projects	Jim S./Res. Com.	 4th Qtr. 2021	GSCE notified us that project no longer viable
16 Medium	MEMBER SERVICES	Evaluate possible support to participants for EIM operations	Jim S.	Ongoing	None at this time

Balancing Authority of Northern California

Agenda Item 5B

1. **BANC PC Area 2022 Transmission Planning Assessment.**
2. **Resolution 22-11-02 *Acknowledgment and Acceptance of BANC PC Area 2022 Transmission Planning Assessment*.**

11/04/22

TO: **BANC Commission**

FROM: **BANC Counsel**

RE: **Acknowledgement and Acceptance of BANC PC Area 2022 Transmission Planning Assessment**

Included in the Commission packet for the November 16, 2022 Balancing Authority of Northern California (BANC) Commission meeting is the BANC Planning Coordinator (PC) Area 2022 Transmission Planning Assessment.[1] This document was produced by the Sacramento Municipal Utility District (SMUD), which serves as the BANC PC Services Provider. Approval from each member of the BANC Planning Committee was received on or before October 18, 2022. 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 2023 through 2032 (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 SMUD and Roseville Electric portions of the BES that have not already been addressed in previous assessments. For the MID and REU systems, contingencies were identified, but mitigations have been identified and/or corrective action plans have been developed. 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 Participant's 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 2022 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 2022 for more information regarding the status of all PC-related NERC reliability standards.

Balancing Authority of Northern California

BANC PC Area
2022 TPL-001-5 Assessment

October 13th, 2022

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 2023 through 2032 (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 SMUD and RE portions of the BES that have not already been addressed in previous assessments. For the MID system, there is a P5 contingency that causes thermal overloads exceeding the emergency rating of two 115 kV lines. A corrective action plan has been developed to address this contingency and will be in place by the end of 2024. An interim solution has also been developed in the event this contingency occurs before the CAP has been installed. The REU system has a single P6 contingency that causes a thermal overload, but this can be mitigated with allowable system adjustments in between outages. Cascading was not identified for any of the extreme events evaluated. 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 REU
RE	Roseville Electric
REU	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 (REU), 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 REU (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 2022 to demonstrate that it meets all performance and other requirements specified in the TPL-001-5 NERC Reliability Standard [1] for the years 2023 through 2032 (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 2023 through 2032 (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 (2024) and year five (2027). The long-term horizon shall be assessed using a peak load case for year ten (2032) 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 (2024) 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 (2024) shall be used in the assessment for the near-term analysis and the peak case for year ten (2032) 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 2024 and 2027 for MID, RE and REU. For SMUD's year two (2024) heavy summer sensitivity, the system will model the retirement of SMUD's Campbell Soup and McClellan thermal generators as well as the addition of a project from SMUD's current interconnection queue. SMUD's year five (2027) heavy summer sensitivity will model the same retirements and generator additions as the 2024 sensitivity, but with the additional retirement of SMUD's Carson Ice thermal plant. For the off-peak sensitivity case for year 2024 for MID, RE, and REU, a reduced generation dispatch with the largest generation plant in each BANC PC participants'

area turned off (to stress imports) was chosen. For SMUD's 2024 off peak sensitivity, a case modeling the same generation retirements and additions as the heavy summer sensitivity, but with the off peak load was used. A stability analysis of the 2024 peak and off peak sensitivity cases was performed.

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 REU showed that REU's Airport 230/115 kV transformer could be out of service for one year or more. Studies were performed with this facility 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 2.1 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 2.1 – 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	2023	'24	'25	'26	'27	'28	'29	'30	'31	'32
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	-	-	-	-	-

Analysis	Scenario	Near-term horizon year 1 2023	2 '24	3 '25	4 '26	5 '27	Long-term horizon year 6 '28	7 '29	8 '30	9 '31	10 '32
Stability sensitivity	Off-peak	-	X	-	-	-	-	-	-	-	-
	Peak	-	X	-	-	-	-	-	-	-	-
	Off-peak	-	X	-	-	-	-	-	-	-	-
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
2024	Summer Peak	23HS3a1	23HS31
2024	Light Spring	24LSP1sa1	24LSP1S1
2027	Summer Peak	27HS2a1	27HS21
2032	Summer Peak	32HS1a1	32HS11

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] 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.

3.1.1 Existing Facilities

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

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 REU 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. 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 3.2 below summarizes the load forecast data for all BANC PC Participants.

Table 3.2 – Load demand forecasts

		Real Power (MW)			
PC Participant	Scenario	2024	2027	2032	Power Factor
SMUD	1-in-10 Summer Peak	3154	3152	3230	0.983 lag
	Heavy Spring Off-Peak	1892	-	-	0.99 lag
MID	1-in-10 Summer Peak	722	726	735	0.987 lag
	Heavy Spring Off-Peak	683	-	-	
REU	1-in-10 Summer Peak	226	223	220	0.977 lag
	Heavy Spring Off-Peak	140	-	-	
RE	1-in-10 Summer Peak	375	386	406	0.985 lag

Heavy Spring Off-Peak	228	-	-

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 3.3 –Supply-side resources and associated dispatch for the peak and off-peak scenarios

PC Participant	Type	Plant	Real power dispatch (MW) Peak Year 2	Peak Year 5	Peak Year 10	Off-Peak 2
SMUD	Thermal	Cosumnes Power Plant	560	560	560	192
		Campbell Soup	163	163	163	0
		Procter & Gamble	165	165	165	76
		Carson Ice	90	0	0	50
		McClellan	65	65	65	0
		UCD Med Center	25	0	0	25
		Total	**1068**	**953**	**953**	**343**
	Hydro	Loon Lake	25	25	25	0
		Robbs Peak	20	20	20	0
		Jones Fork	10	10	10	0
		Union Valley	44	44	44	44

		Jaybird	132	132	132	66
		Camino	75	75	75	75
		White Rock	216	216	216	110
		Total	**522**	**522**	**522**	**295**
	Solar	Solar Shares	112	112	112	112
		SVEC	250	250	250	250
		Total	**362**	**362**	**362**	**362**
MID	Thermal	Woodland	119	119	119	94
		McClure	0	0	0	0
		Ripon	60	60	60	0
	Hydro	Don Pedro	45	45	45	45
	Solar	McHenry	19	19	19	15
REU	Thermal	Redding Power Plant	134	133	146	48
RE	Thermal	Roseville Energy Park	165	165	165	80
		Roseville Peakers	40	40	40	0
Total			2,535	2,418	2,431	1,282

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 2023 through 2032 (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 (2024, 2027, and 2032) to span the near-term and long-term planning horizons. Years two (2024) and five (2027) 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 of 2032 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 (2024). 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 2024 and 2027 peak load years by using the 1-in-10 peak load forecast and further stressing the system by increasing the load by an additional 5% for MID, RE, and REU. For SMUD's 2024 peak, 2024 off peak, and 2027 peak year sensitivities, the system was modified to represent a loss of some of SMUD's thermal generating units and an addition of a PV/BESS plant from SMUD's current generation interconnection queue. The load power factors in the sensitivity cases were assumed to remain the same. Table 4.1 lists SMUD's altered generation dispatch for the 2024 peak, 2024 off peak, and 2027 peak load sensitivity cases.

Table 4.1.4.1 –SMUD Heavy Summer Sensitivity Generation Dispatch

PC Participant	Type	Plant	MW Output (2024 Peak)	MW Output (2024 Off Peak)	MW Output (2027 Peak)
SMUD	Thermal	Cosumnes Power Plant	560	192	560
		Campbell Soup	0	0	0
		Procter & Gamble	165	76	0
		Carson Ice	90	0	0
		McClellan	0	0	0
		UCD Med Center	25	25	0
		Total	**840**	**293**	**560**
	Hydro	Loon Lake	25	0	25
		Robbs Peak	20	0	20
		Jones Fork	10	0	10
		Union Valley	44	44	44
		Jaybird	132	66	132
		Camino	90	75	90
		White Rock	216	110	216
		Total	**537**	**295**	**537**

Solar/Battery Storage	Solar Shares	112	112	112
	SVEC	250	250	250
	PV/BESS in the Elverta area	344	344	500
	Total	**706**	**706**	**867**
Total		2,083	1,294	1,964

A sensitivity analysis was also performed on the 2024 off peak sensitivity for MID, RE, and REU 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 4.1.4.2 lists the scenarios for each BANC PC Participant in the sensitivity study base cases.

Table 4.1.4.2 – Spring off-peak sensitivity scenarios

		Scenario	
PC Participant	Element	Off-Peak	Off-Peak Sensitivity
MID	Woodland Power Plant	94 MW	0 MW
REU	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 (REU)

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 2024 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 REU. 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 4.2 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 4.3** 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 4.2 – 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)

Contingencies	Description
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)
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 4.3 below.

[4] For the MID system, updated P5 contingencies due to the change in definition from "non-redundant relays" to "non-redundant components of the protection system" as part of the TPL-001-5 updated were not available at the time of this assessment. MID has performed their own assessment with these updated contingencies and the study results can be found in the MID 2022 TPL assessment report.

Table 4.3 – Steady State Voltage Criteria

System	Nominal Voltage	Normal Conditions Vmin (pu)	Normal Conditions Vmax (pu)	Contingency Conditions Vmin (pu)	Contingency Conditions Vmax (pu)	Voltage Deviation (P1 & P2.1 only)
SMUD	230 kV	0.95	1.05	0.90[5]	1.05	≤ 8%
MID	230 kV	0.95	1.05	0.90	1.10	≤ 8%
MID	115 kV	0.95	1.05	0.90	1.10	≤ 8%
RE	230 kV	0.95	1.05	0.90	1.10	≤ 8%
REU	115 kV	0.974	1.078	0.92	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 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 and REU. MID and RE provided new studies for this year's assessment. 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 4.4.

Table 4.4 - Years Studied for Short Circuit Analysis

System	Year Performed	Year(s) Studied

[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.

SMUD	2020	2021, 2025
MID	2022	2024, 2028
REU	2021	2021, 2026
RE	2022	2022

4.2.1 Simulation Software

The short circuit studies provided by SMUD, REU 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 (2032) case was studied to assess potential impacts from neighboring systems.

4.3.1 Peak Load Years

This assessment included a stability analysis of the 2024 peak load year in the near-term planning horizon and year 2032 peak load year in the long-term planning horizon.

The rationale for selecting year two (2024) and year ten (2032) 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 2024 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 2024 and 2027 peak load years by using the 1-in-10 peak load forecast and further stressing the system by increasing the load by an additional 5% for MID, RE, and REU. For SMUD's 2024 peak, 2024 off peak, and 2027 peak year sensitivities, the system was modified to represent a loss of some of SMUD's thermal generating units and an addition of a PV/BESS plant from SMUD's current generation interconnection queue. The load power factors in the sensitivity cases were assumed to remain the same.

A sensitivity analysis was also performed on the 2024 off peak sensitivity for MID, RE, and REU 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. The scenarios chosen can be found in Table 4.1.4.2.

4.3.4 Long-Term Planning Horizon

The 2032 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 4.2.

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

[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).

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 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 serving load 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.

5.1 Steady State

The steady state analysis identified performance deficiencies in the MID system for the Category P0 to P7 contingencies that were evaluated. There were performance deficiencies identified following P6 contingencies as well for REU and SMUD, but upon making allowable system adjustments, the performance deficiencies were resolved. These are documented in the results summaries in Appendix C. There was a Corrective Action Plan developed for the MID system that is documented below to address a performance deficiency. A summary of the steady state study results can be referenced in Appendix C.

5.1.1 Corrective Action Plans

MID

In the steady state analysis, it was revealed that following the loss of the Westley 230 kV Bus due to a protection system failure (a bus differential relay failure followed by a bus fault) (P5.5) the Hetch-Hetchy owned Warnerville-Standiford 115 kV lines exceed their emergency ratings. MID currently has a project in place to install redundant relaying at the Westley 230 kV bus to prevent this contingency from occurring that is set to finish construction by the end of 2024. An interim solution has also been jointly developed between MID, TID, and Hetch-Hetchy Water & Power in the event

[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.

this outage occurs before construction at the Westley Substation is completed[8]. The interim solution has two parts, as follows:

Mitigation 1:

In situations where one of the relays goes into alarm, the mitigation is to de-energize the bus section that's protected by that relay to eliminate the P5 contingency.

Mitigation 2:

If there is a situation where there is a non-monitored relay failure, and a bus fault occurs causing the Westley 230kV Switchyard to be remotely cleared, then there will need to be system adjustments. The mitigation is to increase MID generation to reduce MID's imports and coordinate with TID to increase TID generation to reduce imports.

More details on this interim plan can be found in the *Westley P5 Mitigation Plan_8.18.22-signed.pdf* document which can be provided upon request.

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.

The contingencies listed below diverged in at least one of the base cases when ran during the steady state analysis:

- Natural gas pipeline 700A outage (SMUD)
- Loss of all lines south of Elk Grove 230 kV station – B (SMUD)

Further analysis was performed for these contingencies that simulated load tripping in accordance with SMUD's OP-204 operating procedure. More specifically, load was dropped as outlined in the UVLS and DLT schemes housed in OP-204. The study concluded no cascading nor voltage collapse were identified.

In the REU system, the following contingency would cause three 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 (REU)

[8] From "Westley P5 Mitigation Plan_8.18.22-signed.pdf" by MID

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 thermal overloads or voltage criteria violations other than those identified in the main study scenarios were identified in the sensitivity analyses for MID, RE, and REU. 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 REU's Airport 230/115 kV transformer spare equipment unavailability analysis 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. 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, RE, and REU systems. The sensitivity analyses did identify several cases of instability 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. Issues will be resolved in the respective system impact studies for the individual projects.

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-204 Voltage and Reactive Control.* Sacramento Municipal Utility District. April 1, 2021.

[9] *Westley P5 Mitigation Plan_8.18.22-signed.* Modesto Irrigation Utility District. August 18, 2022.

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

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

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	5
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	7
R2.1.1	4.1.1	7
R2.1.2	4.1.2	7
R2.1.3	4.1.3	8
R2.1.4	4.1.4	8
R2.1.5	4.1.5	9
R2.2	4.1.1	7
R2.2.1	4.1.1	7
R2.3	4.2, 5.2	12,17
R2.4	4.3	13
R2.4.1	4.3.1	13
R2.4.2	4.3.2	13
R2.4.3	4.3.3	13
R2.5	4.3.4	14
R2.6	4.2	12
R2.6.1	4.2	12
R2.6.2	4.2	12
R2.7	5	16
R2.7.1	5	16
R2.7.2	5	16
R2.7.3	5	16
R2.7.4	5	16
R2.8	5.2	17
R2.8.1	5.2	17
R2.8.2	5.2	17
R3	4.1	7
R3.1	4.1.6	9
R3.2	4.1.6	9
R3.3	4.1.6	9
R3.3.1	4.1.6	9
R3.3.1.1	4.1.6	9
R3.3.1.2	5.1.1	16

Table A.1 continued

Requirement	Section	Page
R3.3.2	4.1.6	9
R3.4	4.1.6	9
R3.4.1	4.1.6	9
R3.5	4.1.6	9
R4	4.3.5	14
R4.1	4.3.5	14
R4.1.1	4.3.6	15
R4.1.2	4.3.6	15
R4.1.3	4.3.6	15
R4.2	4.3.6	15
R4.3	4.3.6	15
R4.3.1	4.3.6	15
R4.3.1.1	4.3.5	14
R4.3.1.2	4.3.5	14
R4.3.1.3	4.3.5	14
R4.3.2	4.3.6	15
R4.4	4.3.6	15
R4.4.1	4.3.6	15
R4.5	4.3.6	15
R5	4.3.6	15
R6	4.3.6	15
R7	6	18
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	Hurley 230 kV bus-tie breaker	Split the Hurley 230 kV bus with a bus-tie breaker so that bus faults do not take the entire bus out of service.	Purpose is to increase future reliability. Not needed to address any immediate reliability concerns.	Approved	Summer 2023
	Station J 115 kV Substation	Installation of a new 115 kV substation between the existing Elverta and Station E 115 kV substations.	Will allow for more load growth in the 115 kV system. Not needed to address any immediate reliability concerns.	Approved	Summer 2030
	SVEC Generation	A new 250 MW PV generation and BESS storage plant	No reliability need, was approved as part of the SMUD interconnection queue.	Approved	Spring 2024
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-redundant relay failure followed by a fault.	Approved	End of 2024

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 2024 1-in-10 peak load steady state results

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading	Mitigation
MID	P5	Westley Bus Outage after protection system failure	Warnerville-Standiford 115 kV Line #1	183 MVA	157%	A CAP has been created to install redundant relaying at the Westley 230 kV substation to prevent this contingency from occurring. This will be installed by the end of 2024. MID has an operation procedure as an interim solution.
			Warnerville-Standiford 115 kV Line #2	183 MVA	157%	
RE	N/A	None	N/A	N/A	N/A	N/A
REU	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	193%	Post contingency, the Oregon-Waldon and Keswick-Beltline 115 kV lines were tripped as they exceeded 150% of their winter emergency ratings. After these lines were tripped, all overloads were cleared.
			Waldon-Moore 115 kV Line	118 MVA	169%	
			Keswick-Eureka 115 kV Line #2	159 MVA	145%	
			Eureka-Oregon 115 kV Line	179 MVA	134%	
			Keswick-Beltline 115 kV Line	159 MVA	127%	
			Beltline-College View 115 kV Line	199 MVA	101%	

			Airport-Moore 115 kV Line	199 MVA	96%	
			College View-East Redding 115 kV Line	199 MVA	94%	
SMUD	P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage	Camino-Lake 230 kV Line	368 MVA	144%	Real time operator will adjust system after initial outage to prepare for second line outage by reducing UARP Hydro generation.
	P7	Camino-Lake and Cordova-White Rock 230 kV line outage	Orangevale-White Rock 230 kV Line	368 MVA	143%	The UARP RAS will activate and reduce UARP generation until the line overload clears.
	Extreme	Loss of all lines north of Lake 230 kV station	Orangevale-White Rock 230 kV Line	368 MVA	143%	The UARP RAS will activate and reduce UARP generation until the line overload clears.
		Loss of all lines north of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	130%	N/A
		Loss of transmission line tower 303	Carmichael-Hurley 230 kV Line	363 MVA	128%	Load will be dropped in accordance with the Carmichael RAS.
		Loss of all lines north of Orangevale 230 kV station	Carmichael-Hurley 230 kV Line	363 MVA	128%	Load will be dropped in accordance with the Carmichael RAS.
		Loss of all lines west of Folsom 230 kV station	Cordova-Hedge 230 kV Line	368 MVA	110%	SVEC generation would be ramped down in accordance with the SVEC RAS.

	Cordova-SVEC 230 kV Line	368 MVA	103%	
Rancho Seco 230 kV switching station outage	Hedge-Procter 230 kV Line	368 MVA	100%	Procter RAS will initiate to trip Hurley-Procter 230 kV Line. This will load the Cordova-Hedge 230 kV line to 98% and the SVEC-Cordova 230 kV line to 124%.
Loss of all lines south of Elk Grove 230 kV station - B	Goldhill-Lake 230 kV Line	369 MVA	101%	N/A
	Cordova-SVEC 230 kV Line	368 MVA	117%	N/A
Loss of all lines west of Rancho Seco 230 kV station	Hedge-Procter 230 kV Line	368 MVA	99%	N/A

Table C.2 – The 2027 1-in-10 peak load steady state results

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading		Mitigation
MID	N/A	None	N/A	N/A	N/A	N/A	
RE	N/A	None	N/A	N/A	N/A	N/A	

REU	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	176%	Post contingency, the Oregon-Waldon and Keswick-Beltline 115 kV lines were tripped as they exceeded 150% of their winter emergency ratings. After these lines were tripped, all overloads were cleared.
			Waldon-Moore 115 kV Line	118 MVA	152%	
			Keswick-Eureka 115 kV Line #2	159 MVA	139%	
			Eureka-Oregon 115 kV Line	179 MVA	139%	
			Keswick-Beltline 115 kV Line	159 MVA	133%	
			Beltline-College View 115 kV Line	199 MVA	123%	
			Airport-Moore 115 kV Line	199 MVA	117%	
			College View-East Redding 115 kV Line	199 MVA	93%	
SMUD	P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage	Camino-Lake 230 kV Line	368 MVA	144%	Real timer operator to adjust system after initial outage to prepare for second line outage by reducing UARP Hydro generation.

P7	Camino-Lake and Cordova-White Rock 230 kV line outage	Orangevale-White Rock 230 kV Line	368 MVA	143%	The UARP RAS will activate and reduce UARP generation until the line overload clears.
Extreme	Loss of all lines north of Lake 230 kV station	Orangevale-White Rock 230 kV Line	368 MVA	143%	The UARP RAS will activate and reduce UARP generation until the line overload clears.
	Loss of all lines north of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	123%	N/A
	Loss of transmission line tower 303	Carmichael-Hurley 230 kV Line	363 MVA	120%	Load will be dropped in accordance with the Carmichael RAS.
	Loss of all lines north of Orangevale 230 kV station	Carmichael-Hurley 230 kV Line	363 MVA	120%	Load will be dropped in accordance with the Carmichael RAS.
	Loss of all lines west of Folsom 230 kV station	Cordova-Hedge 230 kV Line	368 MVA	104%	SVEC RAS will initiate and ramp down SVEC generation to clear the overload.
		Cordova-SVEC 230 kV Line	368 MVA	107%	N/A
		Hedge-Procter 230 kV Line	368 MVA	119%	Procter RAS will initiate to trip Hurley-Procter 230 kV Line. This will overload the Cordova-

Rancho Seco 230 kV switching station outage	Cordova-SVEC 230 kV Line	368 MVA	104%	Hedge 230 kV Line which will trigger the SVEC RAS to ramp down SVEC generation to 0 MW. This will cause overloads on the Lake-SVEC 230 kV lines and Station E-Station B #1 and #2 Lines. The Cordova-Hedge 230 kV line overload is not mitigated after initiating the SVEC RAS.
Loss of all lines west of Rancho Seco 230 kV station	Hedge-Procter 230 kV Line	368 MVA	118%	Procter RAS will initiate to trip Hurley-Procter 230 kV Line. This will overload the Cordova-Procter RAS will initiate to trip Hurley-Procter 230 kV Line. This will overload the Cordova-Hedge 230 kV Line which will trigger the SVEC RAS to ramp down SVEC generation to 0 MW. This will cause overloads on the Lake-SVEC 230 kV lines and Station E-Station B #1 and #2 Lines. The Cordova-Hedge 230 kV line overload is not mitigated after initiating the SVEC RAS.
	Cordova-SVEC 230 kV Line	368 MVA	104%	
Loss of all lines south of Elk Grove 230 kV station - B	N/A		Diverge	OP-204 to drop load to prevent voltage collapse in real time. Dropping load enables case to solve.
Natural gas pipeline 700A outage	N/A		Diverge	OP-204 to drop load to prevent voltage collapse in real time. Dropping load enables case to solve.

*Note: Results have been summarized as there are many combinations with the listed P1 contingencies that cause the same overloads. These have been omitted for brevity. Full list is available.

Table C.3 – The 2032 1-in-10 peak load steady state results

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading	Mitigation
MID	N/A	None	N/A	N/A	N/A	N/A
RE	N/A	None	N/A	N/A	N/A	N/A
REU	P6	Moore - AirportR 115 kV TL outage and Redding Power - Texas Springs 115 kV TL outage	Waldon-Moore 115 kV Line	118 MVA	101%	Real time operator to reduce REU internal generation by 40.7 MW to prepare for the second outage.
	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	169%	Post contingency, the Oregon-Waldon and Keswick-Beltline 115 kV lines were tripped as they exceeded 150% of their winter emergency ratings. After these lines were tripped, all overloads were cleared.
			Waldon-Moore 115 kV Line	118 MVA	145%	
			Airport 230/115 kV TX #1	120 MVA	142%	
			Airport 230/115 kV TX #2	120 MVA	142%	
			Keswick-Eureka 115 kV Line #2	159 MVA	128%	

			Eureka-Oregon 115 kV Line	179 MVA	119%	
			Keswick-Beltline 115 kV Line	159 MVA	115%	
			Beltline-College View 115 kV Line	199 MVA	92%	
			Airport-Moore 115 kV Line	199 MVA	91%	
			College View-East Redding 115 kV Line	199 MVA	128%	
SMUD	P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage	Camino-Lake 230 kV Line	368 MVA	143%	Real time operator to adjust system after initial outage to prepare for second line outage by reducing UARP Hydro generation.
		Hurley-Natomas 230 kV TL outage and O'Banion-Sutter 230 kV TL outage	Natomas 230 kV Bus	>0.948	0.937 pu	Real time operator to adjust system to prepare for second line outage by energizing the Natomas 230 kV capacitor.
	P7	Camino-Lake and Cordova-White Rock 230 kV line outage	Orangevale-White Rock 230 kV Line	368 MVA	143%	The UARP RAS will activate and reduce UARP generation until the line overload clears.
	Extreme	Loss of all lines north of Lake 230 kV station	Orangevale-White Rock 230 kV Line	368 MVA	142%	The UARP RAS will activate and reduce UARP generation until the line overload clears.

Loss of all lines north of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	115%	N/A
Loss of transmission line tower 303	Carmichael-Hurley 230 kV Line	363 MVA	114%	Load will be dropped in accordance with the Carmichael RAS.
Loss of all lines north of Orangevale 230 kV station	Carmichael-Hurley 230 kV Line	363 MVA	114%	Load will be dropped in accordance with the Carmichael RAS.
Loss of all lines west of Folsom 230 kV station	Cordova-Hedge 230 kV Line	368 MVA	95%	N/A
Rancho Seco 230 kV switching station outage	Hedge-Procter 230 kV Line	368 MVA	126%	Procter RAS will initiate to trip Hurley-Procter 230 kV Line. This will overload the Cordova-Hedge 230 kV Line which will trigger the SVEC RAS to ramp down SVEC generation to 0 MW. This will cause overloads on the Lake-SVEC 230 kV line. The Cordova-Hedge 230 kV line overload is not mitigated after initiating the SVEC RAS.
	Cordova-SVEC 230 kV Line	368 MVA	105%	
Loss of all lines south of Elk Grove 230 kV station - B	N/A		Diverge	OP-204 to drop load to prevent voltage collapse in real time. Dropping load enables case to solve.
	Hedge-Procter 230 kV Line	368 MVA	123%	Procter RAS will initiate to trip Hurley-Procter 230 kV Line. This will overload the

Loss of all lines west of Rancho Seco 230 kV station	Cordova-SVEC 230 kV Line	368 MVA	105%	Cordova-Hedge 230 kV Line which will trigger the SVEC RAS to ramp down SVEC generation to 0 MW. This will cause overloads on the Lake-SVEC 230 kV line. The Cordova-Hedge 230 kV line overload is not mitigated after initiating the SVEC RAS.
Natural gas pipeline 700A outage	N/A		Diverge	OP-204 to drop load to prevent voltage collapse in real time. Dropping load enables case to solve.

Table C.4 – The 2024 off-peak load steady state results

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading	Mitigation
MID	P5	Westley Bus Outage after protection system failure	Warnerville-Standiford 115 kV Line #1	183 MVA	147%	A CAP has been created to install redundant relaying at the Westley 230 kV substation to prevent this contingency from occurring. This will be installed by the end of 2024. MID has an operation procedure as an interim solution.
			Warnerville-Standiford 115 kV Line #2	183 MVA	147%	
RE	N/A	None	N/A	N/A	N/A	N/A
REU	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	129%	N/A
			Waldon-Moore 115 kV Line	118 MVA	116%	
			Keswick-Eureka 115 kV Line #2	159 MVA	95%	

SMUD	Extreme	Loss of all lines south of Elk Grove 230 kV station - B	N/A	Diverged	OP-204 to drop load to prevent voltage collapse in real time. Dropping load enables case to solve.

*Note: For contingencies that diverged, the facility loading percentage is given for *after* the cascading prevention was applied.

Appendix D. Steady State Sensitivity Analysis Results

Table D.1 – The 2024 1-in-10 peak load +5% steady state sensitivity results
*Note: For contingencies that diverged, the facility loading percentage is given for *after* the cascading prevention was applied.

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading	Mitigation
MID	P5	Westley Bus Outage after protection system failure	Warnerville-Standiford 115 kV Line #1	183 MVA	166%	A CAP has been created to install redundant relaying at the Westley 230 kV substation to prevent this contingency from occurring. This will be installed by the end of 2024. MID has an operation procedure as an interim solution.
			Warnerville-Standiford 115 kV Line #2	183 MVA	166%	
RE	N/A	None	N/A	N/A	N/A	N/A
REU	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	192%	Post contingency, the Oregon-Waldon and Keswick-Beltline 115 kV lines were tripped as they exceeded 150% of their winter emergency ratings. After these lines were tripped, all overloads were cleared.
			Waldon-Moore 115 kV Line	118 MVA	167%	
			Keswick-Eureka 115 kV Line #2	159 MVA	146%	

Eureka-Oregon 115 kV Line	179 MVA	135%
Keswick-Beltline 115 kV Line	159 MVA	126%
Beltline-College View 115 kV Line	199 MVA	101%
Airport-Moore 115 kV Line	199 MVA	95%
College View-East Redding 115 kV Line	199 MVA	93%

Table D.2 – The 2027 1-in-10 peak load +5% steady state sensitivity results

*Note: For contingencies that diverged, the facility loading percentage is given for *after* the cascading prevention was applied.

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading	Mitigation
MID	N/A	None	N/A	N/A	N/A	N/A
RE	N/A	None	N/A	N/A	N/A	N/A
REU	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	175%	Post contingency, the Oregon-Waldon and Keswick-Beltline 115 kV lines were tripped as they exceeded 150% of their winter emergency ratings. After these lines were tripped, all overloads were cleared.
			Waldon-Moore 115 kV Line	118 MVA	150%	

Keswick-Eureka 115 kV Line #2	159 MVA	134%
Eureka-Oregon 115 kV Line	179 MVA	134%
Keswick-Beltline 115 kV Line	159 MVA	134%
Beltline-College View 115 kV Line	199 MVA	123%
Airport-Moore 115 kV Line	199 MVA	116%
College View-East Redding 115 kV Line	199 MVA	92%

Table D.3 – The 2024 off-peak load steady state sensitivity results

*Note: For contingencies that diverged, the facility loading percentage is given for *after* the cascading prevention was applied.

BANC PC Participant	Category	Contingency	Affected Facility	Facility Rating	% Loading	Mitigation
MID	P5	Westley Bus Outage after protection system failure	None	N/A	Diverge	A CAP has been created to install redundant relaying at the Westley 230 kV substation to prevent this contingency from occurring. This will be installed by the end of 2024. MID has an operation procedure as an interim solution.

RE	N/A	None	N/A	N/A	N/A	N/A
REU	Extreme	Keswick - Airport and Flanagan - Keswick and Keswick - Olinda and Keswick - O'Banion 230 kV line outage	Oregon-Waldon 115 kV Line	118 MVA	129%	N/A
			Waldon-Moore 115 kV Line	118 MVA	116%	
			Keswick-Eureka 115 kV Line #2	159 MVA	98%	

Table D.4 – SMUD 2024 Peak Zero Carbon Sensitivity Results

Category	Contingency	Affected Facility	Facility Rating	% Loading
P0	None	N/A	N/A	N/A
P2	Hurley 230 kV bus-tie breaker fault	Elverta 230/115 kV TX #2	140 MVA	105%
P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage	Camino-Lake 230 kV Line	368 MVA	144%
		Cordova-SVEC 230 kV Line	368 MVA	99%
	Cordova-White Rock 230 kV TL outage and Hedge-Procter 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	106%
P7	Camino-Lake and Cordova-White Rock 230 kV line outage	Orangevale-White Rock 230 kV Line	368 MVA	143%

	Cordova-White Rock 230 kV TL outage and Cordova-SVEC 230 kV TL outage	Hedge-Procter 230 kV Line	368 MVA	102%
Extreme	Loss of all lines North of Lake 230 kV station	Orangevale-White Rock 230 kV Line	368 MVA	143%
		Hedge-Procter 230 kV Line	368 MVA	103%
		Carmichael-Orangevale 230 kV Line	361 MVA	99%
	Loss of all lines North of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	161%
		Carmichael-Hurley 230 kV Line	363 MVA	119%
	Loss of all lines South of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	110%
	Loss of transmission line tower 303	Carmichael-Hurley 230 kV Line	363 MVA	127%
	Loss of all lines North of Orangevale 230 kV station	Carmichael-Hurley 230 kV Line	363 MVA	127%
	Loss of all lines West of Folsom 230 kV station	Cordova-Hedge 230 kV Line	368 MVA	103%
		Cordova-SVEC 230 kV Line	368 MVA	101%
	Rancho Seco 230 kV switching station outage	Hedge-Procter 230 kV Line	368 MVA	122%
		Cordova-SVEC 230 kV Line	368 MVA	105%
	Loss of all lines south of Elk Grove 230 kV station - B	Goldhill-Lake 230 kV Line	359 MVA	101%
		Cordova-SVEC 230 kV Line	368 MVA	125%
		Hedge-Procter 230 kV Line	368 MVA	107%

	Loss of all lines west of Rancho Seco 230 kV station	Hedge-Procter 230 kV Line	368 MVA	121%
		Cordova-SVEC 230 kV Line	368 MVA	106%

Table D.5 – SMUD 2027 Peak Zero Carbon Sensitivity Results
SMUD 2027 HS ZCP

Category	Contingency	Affected Facility	Facility Rating	% Loading
P0	None	N/A	N/A	N/A
P1	Cordova-White Rock 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	95%
P2	Hurley 230 kV bus-tie breaker fault	Elverta 230/115 kV TX #2	140 MVA	140%
		Cordova-SVEC 230 kV Line	368 MVA	106%
P3	Cosumnes CTG2 generator outage and Cordova-White Rock 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	107%
	Cosumnes CTG3 generator outage and Cordova-White Rock 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	107%
P6	Cordova-White Rock 230 kV TL outage and Orangevale-White Rock 230 kV TL outage	Camino-Lake 230 kV Line	368 MVA	144%
		Cordova-SVEC 230 kV Line	368 MVA	112%
	Carmichael-Orangevale 230 kV TL outage and Cordova-White Rock 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	109%

	Cordova-White Rock 230 kV TL outage and Hurley-Procter 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	115%
	Cordova-White Rock 230 kV TL outage and Hedge-Procter 230 kV TL outage	Cordova-SVEC 230 kV Line	368 MVA	115%
P7	Camino-Lake and Cordova-White Rock 230 kV line outage	Orangevale-White Rock 230 kV Line	368 MVA	143%
	Cordova-SVEC and Cordova-White Rock 230 kV line outage	Carmichael-Orangevale 230 kV Line	361 MVA	103%
		Hedge-Procter 230 kV Line	368 MVA	101%
Extreme	Loss of all lines north of Lake 230 kV station	Orangevale-White Rock 230 kV Line	368 MVA	143%
		Carmichael-Orangevale 230 kV Line	361 MVA	109%
	Loss of all lines north of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	174%
		Carmichael-Hurley 230 kV Line	363 MVA	136%
	Loss of all lines south of Natomas 230 kV station	Carmichael-Orangevale 230 kV Line	361 MVA	130%
	Loss of all lines west of Hurley 230 kV station	Elverta 230/115 kV TX #2	140 MVA	111%
	Loss of transmission line tower 303	Carmichael-Hurley 230 kV Line	363 MVA	118%
	Loss of all lines north of Orangevale 230 kV station	Carmichael-Hurley 230 kV Line	363 MVA	118%
	Loss of all lines west of Folsom 230 kV station	Cordova-Hedge 230 kV Line	368 MVA	104%

		Cordova-SVEC 230 kV Line	368 MVA	107%
	Rancho Seco 230 kV switching station outage	Hedge-Procter 230 kV Line	368 MVA	125%
		Cordova-SVEC 230 kV Line	368 MVA	126%
	Loss of all lines west of Rancho Seco 230 kV station	Hedge-Procter 230 kV Line	368 MVA	124%
		Cordova-SVEC 230 kV Line	368 MVA	126%
	Loss of all lines south of Elk Grove 230 kV station - B	N/A		Diverge
	Natural gas pipeline 700A outage	N/A		Diverge

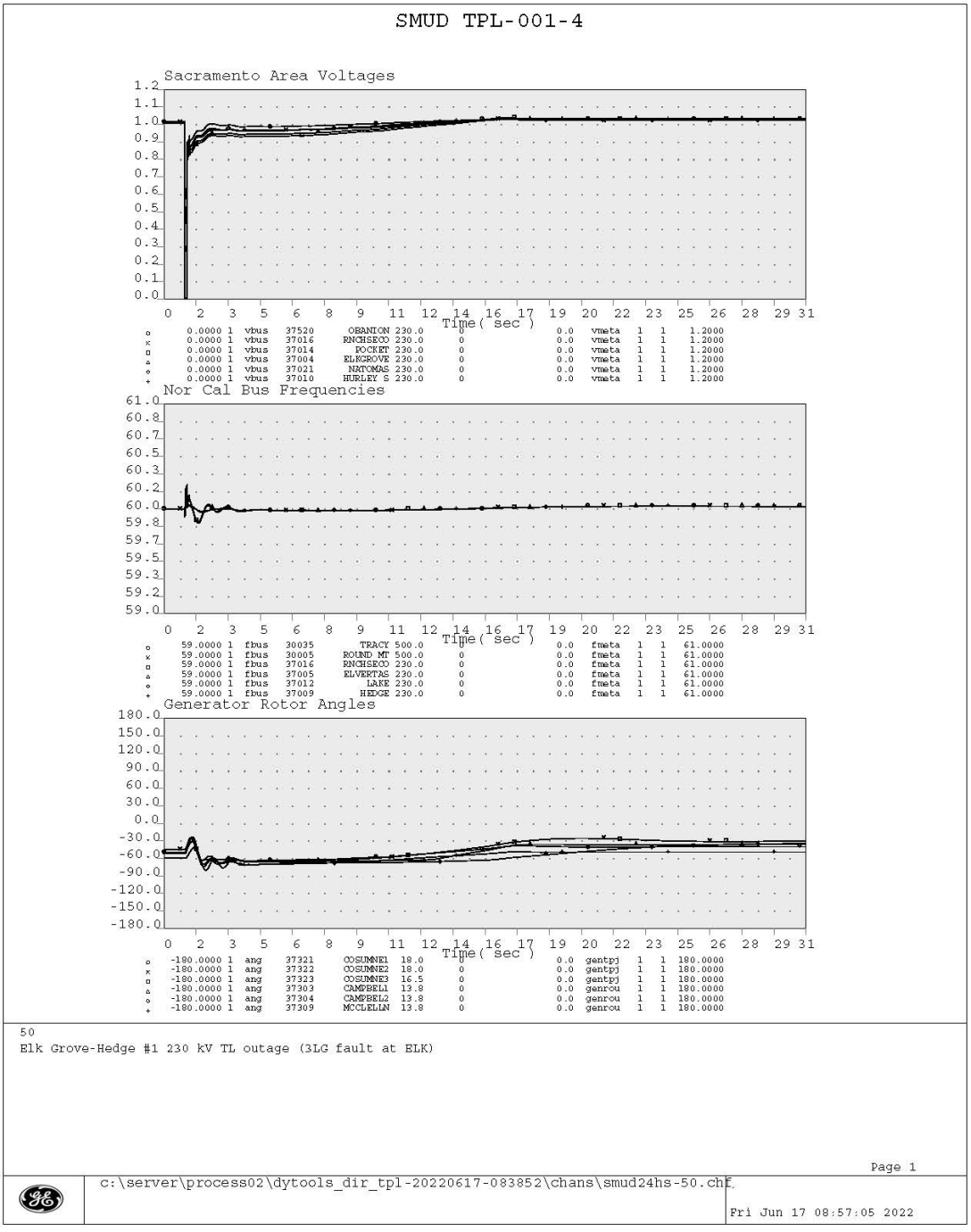
*Note: Results summarized as there were many overlapping contingencies that caused overloads on the same facilities. Full list is available, but the most severe are shown.

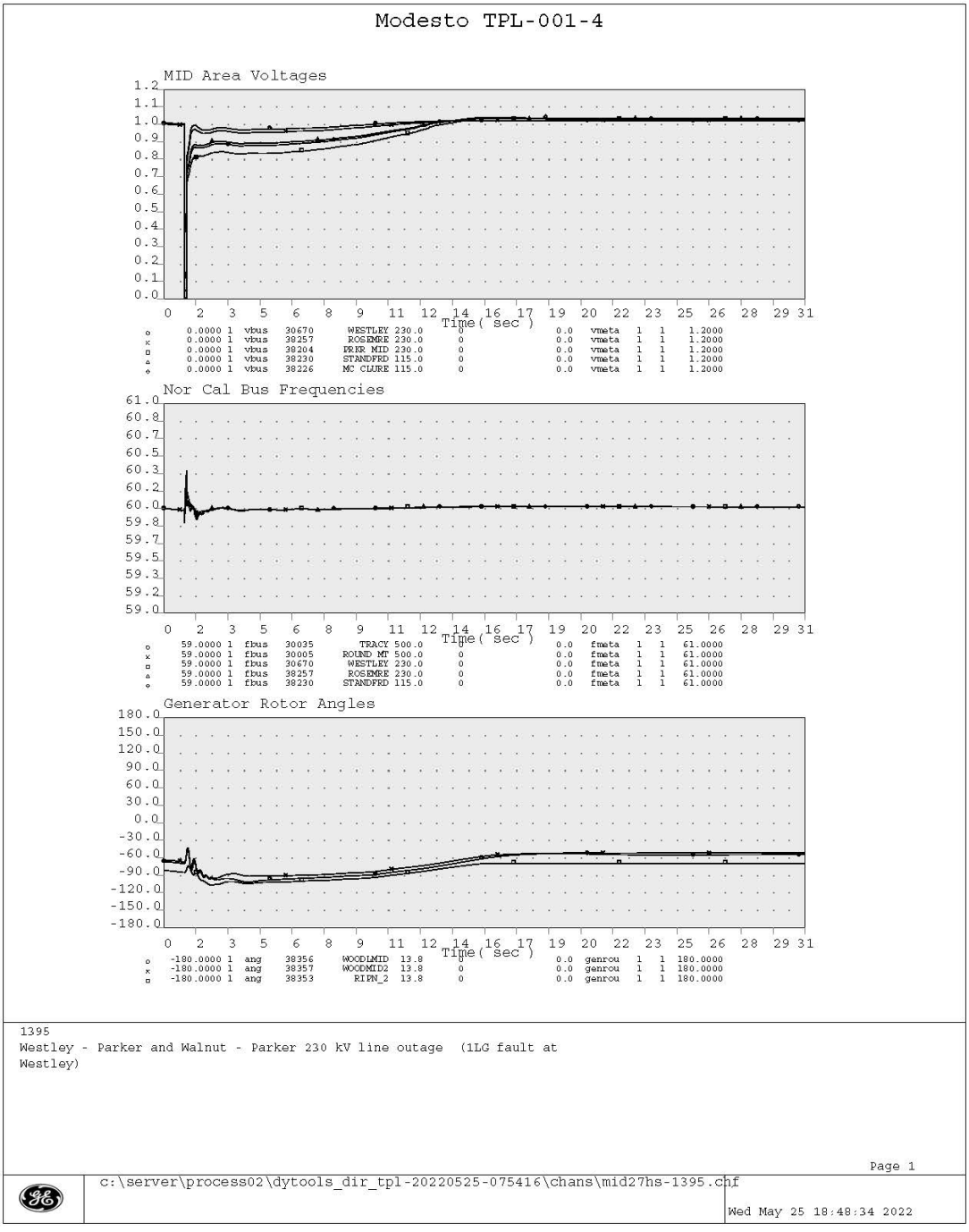
Table D.6 – SMUD 2024 Off Peak Zero Carbon Sensitivity Results

Category	Contingency	Affected Facility	Facility Rating	% Loading
P0	None	N/A	N/A	N/A

Appendix E. Sample Transient Stability Plots

Sample plots for each PC Participant are shown below.

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MID Area Voltages
Time (sec)
Nor Cal Bus Frequencies
Time (sec)
Generator Rotor Angles
Time (sec)
1395
Westley - Parker and Walnut - Parker 230 kV line outage (1LG fault at Westley)
Page 1
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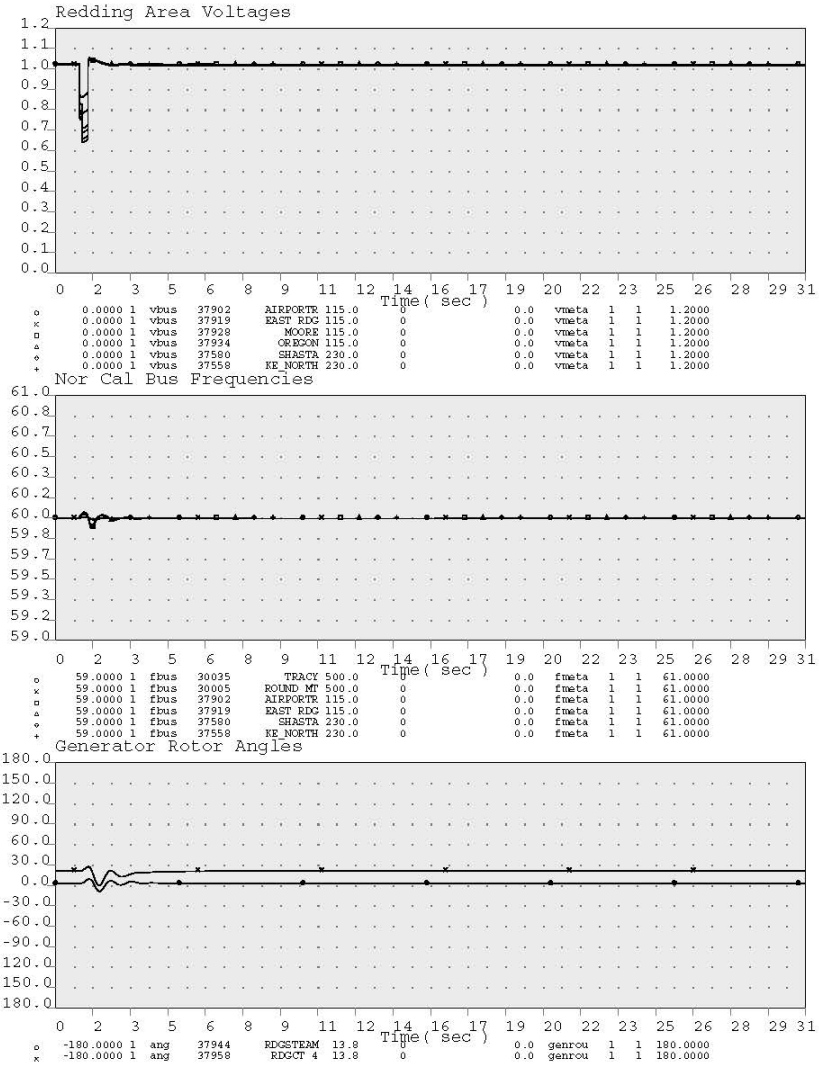
Redding TPL-001-4



432
Airport - Cottonwood 230 kV TL outage with stuck breaker (1LG fault at AIR with AIR BKR 1182 stuck)

Page 1

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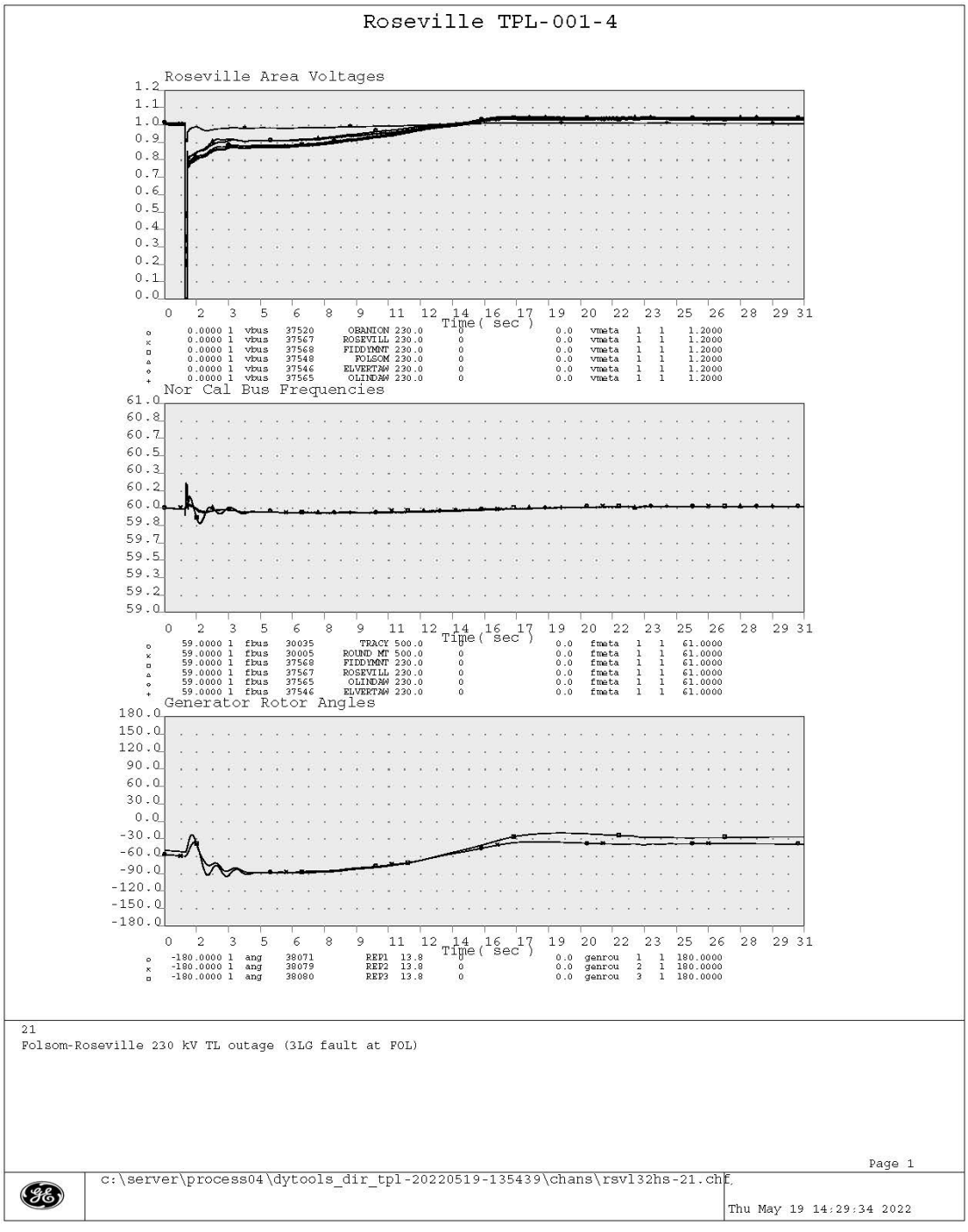
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Roseville Area Voltages
Time (sec)
Nor Cal Bus Frequencies
Time (sec)
Generator Rotor Angles
Time (sec)
21
Folsom-Roseville 230 kV TL outage (3LG fault at FOL)
Page 1
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Thu May 19 14:29:34 2022

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
REU	None					
RE	None					

Appendix G. Version History

Version	Change(s)	By	Date
0.0	Initial draft	Ryan Price	8/18/2022
1.0	Final	Ryan Price	10/06/2022
1.1	Final + Minor fix	Ryan Price	10/13/2022

Balancing Authority of Northern California
Resolution 22-11-02

ACKNOWLEDGEMENT AND ACCEPTANCE OF BANC PLANNING COORDINATOR AREA 2022 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 2022 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 2023 through 2032; and

WHEREAS, the Assessment concludes that no new system deficiencies or criteria violations were identified for the SMUD and Roseville Electric portions of the BES that have not already been addressed in previous assessments and that, while contingencies were identified for the MID and REU portions of the BES, mitigations and/or corrective action plans have been developed to address these contingencies; and

WHEREAS, each PC Committee member approved the Assessment on or before October 18th.

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

Balancing Authority of Northern California
Resolution 22-11-02

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 16th day of November, 2022, by the following vote:

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

_____
James McFall
Chair

_____
Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5C

1. **Draft BANC 2022/2023 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	
3 Medium		Develop appropriate policies, procedures, & action tracking	Jim Shetler/BBW	4th Qtr. 2023	
4 Medium	OUTREACH	Engage in industry forums (WECC, RC West, NWPPA, etc.)	Jim Shetler	Ongoing	Attend RC West, WECC Board, WEIL, & NWPP Exec. Forum meetings
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/BBW/WEL	Ongoing as Necessary	
7 Medium		More formal engagement with TID on BA/EIM/EDAM issues	Jim Shetler/BBW/WEL	Ongoing	Continue periodic discussions on areas of collaboration
8 Medium	ASSETS	Establish BANC criteria for RA	Jim S./Res. Com.	4th Qtr. 2022	
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 ~ CAISO Stakeholder Process ~ CAISO Tariff Development ~ BANC EDAM participation decison	 Jim Shetler/BBW/WEL Jim Shetler/BBW/WEL Jim Shetler/BBW/WEL/ Commission	 Dec-22 Mid-2023 4th Qtr. 2023	
12 Medium	OUTREACH	Evaluate opportunities to engage other entities in market development	Jim Shetler	Ongoing	Coordinating with SCL, SRP, LADWP, TID, & Tacoma
13 Medium		Regional Policy Issues: Monitor/ weigh-in where appropriate	Jim Shetler/Commission	Ongoing	
14 High		Market Regionalization: ~Monitor ongoing discussions at WEIL & other venues	Jim Shetler/BBW/WEL	Ongoing	
15 High		Coordinate with CA BAs on SB100 effort	Jim Shetler/BBW	Ongoing	
16 Medium	ASSETS	~ Evaluate federal IRA program funding for BANC projects ~ Evaluate future BANC projects	Jim S./BBW/Res. Com. Jim S./BBW/Res. Com.	2nd Qtr. 2023 12/1/23	
17 Medium	MEMBER SERVICES	Evaluate possible support to participants for EIM operations	Jim S.	Ongoing	

Balancing Authority of Northern California

Agenda Item 5D

1. **Resolution 22-11-03** ***Approval of Amended Management Services Agreement Between BANC and Adirondack Power Consulting, LLC*****.**

Balancing Authority of Northern California
Resolution 22-11-03

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, compensation under the contract between Adirondack and BANC has not been adjusted for the past three (3) years; 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 $3000/month effective December 1, 2022.

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 16th day of November, 2022, by the following vote:

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

_____
James McFall
Chair

_____
Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5E

1. **Resolution 22-11-04** ***Approval of 2023 Annual Budget for BANC.***
2. **Attachment A to Resolution 22-11-04** ***2023 BANC Budget – October 2022 DRAFT.***

Balancing Authority of Northern California
Resolution 22-11-04

APPROVAL OF 2023 ANNUAL BUDGET FOR BANC

WHEREAS, the Balancing Authority of Northern California ("BANC") Joint Powers Agreement ("JPA") Section 11.4 describes both the responsibilities and the non-delegable duties of the BANC Commission which include approving an annual budget and approving assessments to each Member; and

WHEREAS, JPA Section 12 provides that the BANC Commission may assess each Member for its respective Participation Percentage share of funds required to carry out BANC's purposes as specified in the annual budget; and

WHEREAS, BANC Resolution 12-02-03 established a process whereby Member assessments shall be required no less than two times per year; and

WHEREAS, the General Manager worked together with vendors and counsel to develop a draft budget that has been presented to the Commission for information and review during prior Commission meetings; and

WHEREAS, based on input and direction from the Commission, the General Manager has prepared a final version for consideration and possible adoption by the Commission.

NOW, THEREFORE, BE IT RESOLVED that the Commissioners of the Balancing Authority of Northern California hereby:

1. Approve the 2023 Annual Budget for BANC in the form attached hereto as Attachment A.
2. Directs the BANC Treasurer to assess each BANC Member and EIM Participant in accordance with Resolution 12-02-03.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 16th day of November, 2022, by the following vote:

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

_____
James McFall
Chair

_____
Attest by: C. Anthony Braun
Secretary

BANC 2023 Budget
October 2022 – Draft

1. Base Budget

    a. General Manager Expenses = **$378,000**
        i. Scope: General Manager retainer (@$30,000/mo.) and expenses (@$1,500/mo.)
        ii. Assumptions: Increase in retainer from 2020-2022 and increase travel expenses with expectation of more in-person regional meetings

    b. Legal Services = **$575,000**
        i. Assumptions: Increase in base legal services from 2022 of 8% for BBW, keep WEL at $16,000/month, with the notation that additional legal services may be required based on the level of activity in overall engagement. The proposed increase reflects several factors. Salary and other business cost pressures have increased substantially. Also, based on discussions with the General Manager, we anticipate tackling policy and delegation matters for the agency this year. Finally, given the pace of overall activity, such as ongoing state legislation, summer reliability initiatives, and similar matters, it seems reasonable to anticipate considerable non-project specific work. We believe additional travel is likely and, therefore, adding allowance for expenses (@$1,500/mo.) split 2/3 BBW; 1/3 WEL
        ii. BBW = $365,000 (retainer) + $12,000 (expenses) = $377,000
        iii. WEL = $192,000 (retainer) + $6,000 (expenses) = $198,000

    c. WPP Membership Payments = **$105,000**
        i. Scope: Covers NWPP charges to BANC as an NWPP member, including RSG, FRSG, and Executive Forum.

    d. Resource Committee Support = **$150,000**
        i. Scope: Potential consultant support for evaluating IRP recommendations and coordination with members, potential resource evaluation, and potential consultant support for SB100 report engagement at $100,000. For 2022, BANC is currently engaged with the POU BAAs to support SB 100 activities, including legal and administrative support and a contract with The Brattle Group on grid modeling and reliability assessment. That budget is likely to be exhausted during calendar year 2022. We expect the SB 100 activities to ramp up in 2023, and that the POU BAAs to

continue engagement through working groups with the joint energy agencies and the CAISO. While a rough estimate, historical expenditures would support a $120,000 administrative and legal support budget, and the BANC NEL share of that is approximately $50,000.

e. Asset Valuation = **$1,025,908**
    i. Energy Management System
        1. Assumptions:
            a. Amortized capital cost, excluding EIM module (BANC share) = $517,238
            b. Annual Siemens support cost (BANC share) = $113,470
            c. Revised to reflect latest capitalization amount for Siemens EMS upgrade ($5,508,835) and annual support services ($263,883) both excluding EIM module. Assumes capital investment is amortized over 5 years @ 3%/year. BANC share of EMS capital and support services costs is 43%.
        2. Total = $630,708

    ii. Energy Management Center/Backup Control Center
        1. Assumptions:
            a. Total estimated amount for EMC+BCC= $~1,300,000/year
            b. TOP/BA share is 76% = $988,000
        2. BANC share of TOP/BA= 40% = $395,200

f. Administrative Expenses = **$10,500**
    i. Annual Audit Fees = $8,500
    ii. Bank Charges = $2,000

g. Sub-total = **$2,244,408**

h. Contingency: **$100,000**

Total = **$2,344,408**

Member Breakdown Comparison of 2023 vs. 2022 Base Budgets (based upon 2021 Retail Sales):

MEMBER ALLOCATION	2023	2022
SMUD (69.2%)	$ 1,605,030.34	$ 1,518,461.14
MID (16.9%)	$ 391,979.95	$ 370,838.05
ROSEVILLE (7.7%)	$ 178,594.42	$ 168,961.72
REDDING (4.9%)	$ 113,650.99	$ 107,521.09
SHASTA LAKE (1.3%)	$ 30,152.30	$ 28,526.00
Subtotal	$ 2,319,408.00	$ 2,194,308.00
TPUD (fixed)	$ 25,000.00	$ 25,000.00
TOTAL	**$ 2,344,408.00**	**$ 2,219,308.00**

2. Participation Agreement #1 (PA-1) – PC Services
    a. Assumptions:
        i. SMUD to provide contract PC services to BANC
        ii. Total Base Cost to BANC = $309,879
            1. Main PC evaluation labor = $271,824
            2. $38,055 for labor to perform an overview assessment of full BANC footprint
            3. Includes a 3.5% labor rate adjustment for 2023
        iii. WAPA-SNR does not participate, TPUD and Shasta Lake embedded within WAPA-SNR; all other members participate
        iv. Cost to be allocated based upon 50% to SMUD and 50% to remaining members prorated by share of generation/60kV and above buses among the remaining members:
            1. SMUD = (50%)
            2. MID = (30%)
            3. Redding = (9.5%)
            4. Roseville = (10.5%)
    b. Estimated costs by member:

MEMBER	PA-1 ASSESMENT	
SMUD (50%)	$	154,939.50
MID (30%)	$	92,963.70
REDDING (9.5%)	$	29,438.51
ROSEVILLE (10.5%)	$	32,537.30
TOTAL	**$**	**309,879.00**

3. Participation Agreement #2 (PA-2) – RC Funding

    a. Assumptions
        i. BANC transitioned from Peak RC to RC West (CAISO) for RC services on 7/1/19 and going forward.
        ii. RC West Funding
            1. TPUD and Shasta Lake embedded within WAPA-SNR, which becomes a TOP Funding Party under CAISO RC West tariff
            2. MID, Redding, and SMUD become TOP Funding Parties under CAISO tariff
            3. BANC pays the remaining amount allocated to the BA footprint per CAISO tariff for Roseville
            4. Assumed RC West 2022 charge-out rates = $0.03/MWH
            5. 2021 NEL for remaining BANC footprint:
                a. Roseville = 1,190,727 MWH

    b. Estimated costs under PA-2 based upon RC West proposed rates for Roseville:

MEMBER	2021 NEL - MWH	2022 ASSESSMENT
ROSEVILLE	1,190,727	$ 35,721.81
TOTAL	**1,190,727**	**$ 35,721.81**

4. Participation Agreement #3 (PA-3) – EIM Implementation (Phase 1) - CLOSED

5. Participation Agreement #4 (PA-4) – Extended Day-Ahead Market (EDAM) and Other Market Opportunities Evaluation
    a. Assumptions
        i. BANC EIM Participants elect to move forward with participation in CAISO EDAM. It is expected that 2023 will be a transition year with the focus on finalizing market design, development of CAISO tariff, scoping out BANC/participant tariff and business practices impacts, and finalizing BANC/participant decision-making on joining EDAM. EDAM implementation will be transitioned to a separate PA in 2024. We believe that continued engagement is expected for SPP Markets+ and WPP WRAP. This likely will include FERC filings, at least with respect to EDAM, and also possible FERC meetings and technical conferences. Also, RTO discussions will likely ramp up as reflected in recent Studies performed by various advocacy groups. We assume in this budget estimate the current legal resource commitment rate through the end of 2023. Total monthly legal services budget would be $25,950, allocated $9950/month BB&W, $16,000/month WEL.
        ii. It is assumed that all Participating Resources (SMUD, MID, WAPA-SNR, Roseville, and Redding) participate in this effort. (NOTE: Shasta Lake loads assumed part of Redding load for this allocation). Cost allocation based upon 2023 3-year rolling average NEL as follows:
            1. SMUD – 64.4%
            2. MID – 15.3%
            3. WAPA-SNR – 7.8%
            4. Roseville – 6.8%
            5. Redding – 5.7%
    b. Estimated costs for monitoring day-ahead market development reflect that, while the character of the engagement will change, focus and extensive effort will continue through the year, including EDAM support. Allowance has also been made for Utilicast support during this effort at ~40 hours/month.

IMPLEMENTATION CATEGORY	COST ESTIMATE	SMUD	MID	WAPA-SNR	ROSEVILLE	REDDING
Legal Support	$ 311,400.00	$ 200,853.00	$ 46,398.60	$ 25,223.40	$ 21,486.60	$ 17,438.40
~ BBW Retainer	$ 119,400.00					
~ WEL Retainer	$ 192,000.00					
Consultant Support						
~ Utilicast Support	$ 120,000.00	$ 77,400.00	$ 17,880.00	$ 9,720.00	$ 8,280.00	$ 6,720.00
~ Market Dev, Spt. (CES)	$ 24,000.00	$ 15,480.00	$ 3,576.00	$ 1,944.00	$ 1,656.00	$ 1,344.00
~ Total	$ 144,000.00	$ 92,880.00	$ 21,456.00	$ 11,664.00	$ 9,936.00	$ 8,064.00
Total Estimate	$ 455,400.00	$ 293,733.00	$ 67,854.60	$ 36,887.40	$ 31,422.60	$ 25,502.40
Contingency (~5%)	$ 22,770.00	$ 14,641.11	$ 3,324.42	$ 1,958.22	$ 1,571.13	$ 1,275.12
TOTAL for 2023	**$ 478,170.00**	**$ 308,374.11**	**$ 71,179.02**	**$ 38,845.62**	**$ 32,993.73**	**$ 26,777.52**

6. Participation Agreement #5 (PA-5) – EIM Participation
    c. Assumptions
        i. BANC serves as EIM Entity
        ii. SMUD/MID/Roseville/Redding/WAPA-SNR participate as PRSCs for full year
        iii. Costs allocated in accordance with 2023 3-year rolling average NEL for all five participants as follows:
            1. SMUD – 64.4%
            2. MID – 15.3%
            3. WAPA-SNR – 7.8%
            4. Roseville – 6.8%
            5. Redding – 5.7%
    d. Cost estimates based on EIM Services Agreement, and latest estimates, including software charges per contracts. Includes 5% adjustment for SMUD EIM Operator labor, 3.5% adjustment for other labor, and 3% adjustment for software contracts. SMUD labor for EIM Desk, SME/Oversight, and Settlements will be charged out based upon actual hours expended. Charges for all other SMUD labor will be allocated based upon the estimate provided.
    e. Allocation of TPUD load settlement charges assigned to SMUD/MID/Redding/Roseville per original agreement. Load based settlement charges assumed at $30,000 for EIM operation in 2023.

		Participant Cost Allocations					
IMPLEMENTATION CATEGORY	**ESTIMATE**	**SMUD**	**MID**	**WAPA-SNR**	**ROSEVILLE**	**REDDING**	**TOTAL**
Personnel - EIM Desk (5)	$1,834,306.00						
Personnel - Settlements (1.5)	$ 651,425.00						
Personnel - Outage Mgmt (0.4)	$ 140,096.00						
Personnel - Netwk Model (1)	$ 295,528.00						
Personnel - Meter Data Mgmt (0.5)	$ 43,746.00						
Personnel - SME/Oversight (0.4)	$ 188,873.00						
Personnel - IT Support (0.25)	$ 61,626.00						
Personnel Total (9.05)	$3,215,600.00						
EIM Software Support							
- OATI	$ 95,480.00						
- Power Settlements	$ 469,873.00		$ 53,045.00			$ 53,045.00	$ 575,963.00
- ITOA	$ 20,600.00						
- Allowance for SW Upgrades	$ 50,000.00						
- WebEIM	$ 41,200.00						

		Participant Cost Allocations					
IMPLEMENTATION CATEGORY	**ESTIMATE**	**SMUD**	**MID**	**WAPA-SNR**	**ROSEVILLE**	**REDDING**	**TOTAL**
EIM Software Support Total	$ 677,153.00						
EMS EIM Module							
- Amortized Capital	$ 52,978.00						
- O&M Support	$ 10,000.00						
EMS EIM Module Total	$ 62,978.00						
EIM OPERATOR TOTAL	$3,955,731.00	$2,547,490.76	$658,271.84	$308,547.02	$272,945.44	$277,334.95	$4,064,590.01
Miscellaneous Support							
- Legal Support	$ 30,000.00						
- EIM Stakeholder Support (CES)	$ 24,000.00						
- Utilicast Support	$ -						
Miscellaneous Support Total	$ 54,000.00						
CAISO Charges							
- Fees	$ 250,000.00						
- Uplifts	$ 500,000.00						
CAISO Charges Total	$ 750,000.00						
TOTAL EIM Operations for 2022	$4,759,731.00	$3,065,266.76	$781,283.84	$371,259.02	$328,421.44	$324,349.67	$4,870,580.73
TPUD Load Charges	$ 30,000.00	$ 20,880.000	$ 5,040.000	$ -	$ 2,220.000	$ 1,860.000	
TOTAL EIM FOR 2022	**$4,789,731.00**	**$3,086,146.76**	**$786,323.84**	**$371,259.02**	**$330,641.44**	**$326,209.67**	**$4,900,580.73**

7. Participation Agreement #6 (PA-6) – EIM Phase 2 Preparation (Revision 1 – 5/15/19) – CLOSED

8. Participation Agreement # 7 (PA-7) – EIM Phase 2 Implementation – CLOSED

9. Participation Agreement # 8 (PA-8) – EDAM Implementation – Hold for future implementation decision

10. 2022 BANC Member Assessments

MEMBER	BASE BUDGET	PA-1: PA/PC	PA-2: RC West	PA-4: EDAM	PA-5: EIM Part.	PA-8: EDAM Imp.	2023 TOTAL	Amended 2022 TOTAL
SMUD	$1,605,030.34	$ 154,939.50	$ -	$ 119,764.50	$ 3,086,146.76	$ -	$4,965,881.10	$5,125,533.20
MID	$ 391,979.95	$ 92,963.70	$ -	$ 27,651.30	$ 786,323.84	$ -	$1,298,918.79	$1,296,140.33
ROSEVILLE	$ 178,594.42	$ 29,438.51	$ 35,721.81	$ 12,813.30	$ 330,641.44	$ -	$ 587,209.48	$ 599,573.65
REDDING	$ 113,650.99	$ 32,537.30	$ -	$ 10,399.20	$ 326,209.67	$ -	$ 482,797.16	$ 490,504.83
SHASTA LAKE	$ 30,152.30	$ -	$ -	$ -	$ -	$ -	$ 30,152.30	$ 28,526.00
TPUD	$ 25,000.00	$ -	$ -	$ -	$ -	$ -	$ 25,000.00	$ 25,000.00
BANC TOTAL	$2,344,408.00	$ 309,879.01	$ 35,721.81	$ 170,628.30	$ 4,529,321.71	$ -	$7,389,958.83	$7,565,278.01
WASN	$ -	$ -	$ -	$ 15,071.70	$ 371,259.02	$ -	$ 386,330.72	$ 455,305.92
GRAND TOTAL	**$2,344,408.00**	**$ 309,879.01**	**$ 35,721.81**	**$ 185,700.00**	**$ 4,900,580.73**	**$ -**	**$7,776,289.55**	**$8,020,583.93**

Balancing Authority of Northern California

Agenda Item 5G

1. **Resolution 22-11-05** ***Resolution Setting the Regular Meeting Dates for 2023*****.**
2. **Attachment A to Resolution 22-11-05:** ***Time and Place of Regular Meetings for 2023*****.**

Balancing Authority of Northern California
Resolution 22-11-05

RESOLUTION SETTING THE REGULAR MEETING DATES FOR 2023

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 2023 Regular Meeting Schedule, attached hereto as Attachment A.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 16th day of November, 2022, by the following vote:

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

_____
James McFall
Chair

_____
Attest by: C. Anthony Braun
Secretary

Time and Place of Regular Meetings for 2023

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 25***
2. **March 22**
3. **April 26**
4. **May 24**
5. **June 28**
6. **July 26**
7. **August 23**
8. **September 27**
9. **October 25**
10. **December 20**

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

1. **February 22***
2. **November 15**

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.

***** As shall be specified in a notice issued pursuant to the Ralph M. Brown Act of the California Government Code, these meetings may be conducted via teleconference pursuant to the provisions of Assembly Bill 361.