

Balancing Authority of Northern California

Regular Meeting of the Commissioners of BANC

2:00 P.M.

Wednesday, November 14, 2018

915 L Street, Suite 1480

Sacramento, CA 95814

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 14, 2018 at 2:00 p.m.**, at **915 L Street, Suite 1480, Sacramento, CA 95814.**

AGENDA

- 1 Call to Order.**
- 2 Matters subsequent to posting the Agenda.**
- 3 Public Comment** – any member of the public may address the Commissioners concerning any matter on the agenda.
- 4 Consent Agenda.**
 - A. Minutes of the Regular Commission Meeting held on September 19, 2018.
 - B. BANC Operator's Reports (September and October).
 - C. Compliance Officer's Reports (October and November).
 - D. PC Committee Chair's Reports (October and November).
 - E. General Manager's Report and Strategic Initiatives Update.
- 5 Regular Agenda Items – Discussion and Possible Action.**
 - A. EIM Implementation/EDAM Update.
 - i. Consider and Possibly Approve Resolution 18-11-03 *Approval of Revised 2018 Annual Budget for BANC.*
 - ii. Consider and Possibly Approve Resolution 18-11-05 *Authorization for CAISO Financial Security and Collateral Posting in Furtherance of the EIM Entity SC Certification.*
 - B. Consider and Possibly Approve Resolution 18-11-06 *Authorization of Contract for Services Related to EDAM Feasibility Assessment.*
 - C. Consider and Possibly Approve Resolution 18-11-02 *Approval of Amended Management Services Agreement Between BANC and Adirondack Power Consulting, LLC.*
 - D. Consider and Possibly Approve Resolution 18-11-04 *Approval of 2019 Annual Budget for BANC.*
 - E. Consider and Possibly Approve Resolution 18-11-01 *Resolution Setting the Regular Meeting Dates for 2019.*
 - F. Consider and Possibly Approve Resolution 18-11-07 *Acknowledgement and Acceptance of BANC PC Area 2018 Transmission Planning Assessment.*
 - G. RC Services Update.
- 6 Closed Session:** Conference with legal counsel in anticipation of litigation pursuant to subdivision (c) of Cal. Gov't Code § 54956.9; one case.
- 7 Adjournment.**

Balancing Authority of Northern California

Consent Agenda Items

- A. Minutes of the September 19, 2018 BANC Regular Meeting.**
- B. BANC Operator's Reports (September and October).**
- C. Compliance Officer's Reports (October and November).**
- D. PC Committee Chair's Reports (October and November).**
- E. General Manager's Report and Strategic Initiatives Update.**

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

September 19, 2018

On this date, a Regular Meeting of the Commissioners of the Balancing Authority of Northern California (BANC) was held at 35 Iron Point Circle, Suite 225, Folsom, CA 95630.

Representatives Present:

Member Agency	Commissioner
Modesto Irrigation District	Greg Salyer, Chair
City of Redding	Nathon Aronson (non-voting) Bill Hughes (non-voting)
City of Roseville	Michelle Bertolino
Sacramento Municipal Utility District	Arlen Orchard
City of Shasta Lake	James Takehara
Trinity Public Utilities District	Paul Hauser

Agency	Liaison
Western Area Power Administration	Carl Dobbs

1. Call to Order: Chair Salyer called the meeting to order at 2:01 p.m.
2. Matters Subsequent to Posting the Agenda: Mr. Braun noted that administrative errors were identified in the minutes and requested that they be removed from the Consent Agenda and moved to the Regular Agenda as item 5A.
3. Public Comment: Chair Salyer invited comments from the public and none were given.
4. Consent Agenda: Mr. Hauser moved, Ms. Bertolino seconded, and the participating Commissioners unanimously approved the Consent Agenda items comprised of: (B) BANC Operator's Reports for July and August; (C) Compliance Officer's Reports for August and September; (D) PC Committee Chair's Report for August and September; and (E) General Manager's Report and Strategic Initiatives Update.
5. Regular Agenda Items:
 - A. Mr. Braun noted that upon review of the July 25, 2018 minutes, Chair Salyer identified an error in references to the Chair of that meeting. Mr. McFall was identified as the Chair; however, those references were carried over from a prior meeting when, in fact, Mr. Salyer served as the Chair for the July 25th meeting. References to the meeting Chair in the following sections were revised to reflect the change: Representatives Present, agenda items 1 (Call to Order) and 3 (Public Comment). Mr. Hauser moved, Ms. Bertolino seconded, and the participating Commissioners unanimously approved the amended Minutes of the Commissioners of BANC dated July 25, 2018.
 - B. Mr. Braun provided historical context for the need to select a chair (typically done in August). Due to a prior chair leaving early, Mr. Salyer was appointed in July of 2017,

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

which, should he be reappointed, would necessitate the Commission readdressing the chair appointment in June of 2019, rather than August, as the JPA requires that a chair not serve more than two consecutive one-year terms. Ms. Bertolino nominated Mr. Salyer. Mr. Orchard moved, Mr. Hauser seconded, and the participating Commissioners unanimously approved the appointment of Mr. Salyer as the Commission Chair.

- C. Mr. Shetler reported on the status of EIM Phase I, including the EMS upgrade, other software upgrades, tabletop exercises and operator training. The EIM Entity Agreement has been signed, and the CAISO has filed it with FERC; anticipating an October/November approval. Scheduling Coordinator requirements, including the financial security and collateral posting process, are being finalized. Suggestion is to set up separate EIM Entity account; working with SMUD/CAISO to get that set up. Routine project meetings with CAISO continue. EIM Phase I is on track for the planned April 3, 2019 go-live date.

Dialogue with CAISO continues with respect to the Phase II operational approach previously discussed. The cost allocation methodology will be formalized with the EIM Oversight Committee and brought back to the Commission for approval. For a Phase 2 go-live, a Phase 2 decision would be required in Q3 2019.

Discussions with TID continue, with the understanding that if TID decides to participate in EIM with BANC, they must do so as a BANC member. TID is discussing with their board and having internal discussions; no final decision has been reached.

With respect to EDAM, white papers are being finalized on Governance, Resource Sufficiency and Transmission. Assumptions for a cost/benefit analysis are being developed. Current timelines show that analysis being performed into the 2nd quarter of 2019, the CAISO stakeholder process to follow in 2019 into 2020, tariff development in 2020, FERC/state approvals in 2021, and a go-live date in late 2021/early 2022. With AB813 not passing, the attention to EDAM has increased. EIM Entities have been holding discussions. Ms. Bertolino asked for clarification on 'EIM Entities'; Mr. Shetler clarified that this included any entity that has signed an EIM Implementation Agreement.

- D. Mr. Shetler reviewed the 2018/19 Strategic Initiatives as provided in the Commission packet. Mr. Salyer asked about potential vendors for EDAM cost/benefit analysis. Mr. Shetler responded that E3 and The Brattle Group have been considered to-date. Mr. White asked whether the CAISO's plan was still to focus on a 15-minute market and then expand to EIM Entities. Mr. Shetler responded that improvements to the day-ahead market with respect to their existing footprint were still in process. Mr. Braun mentioned that a number of things still need to be worked out on day-ahead market enhancements as they relate to IOUs. Mr. Hauser asked about the firmness of the planned 7/1 RC transition date; current expectation is that the date will be met, with possible concerns regarding systems & volume related to the number of participants that have committed to CAISO for RC services. A brief discussion regarding the PEAK budget related to the transition followed.
- E. Mr. Shetler presented an overview of the 2019 Draft 2019 BANC Budget. Mr. Shetler posed a question to the Commission regarding the EIM Phase 2 budget and whether to attempt to include estimates for implementation in the 2019 budget or come back at a later time with a budget adjustment. Ms. Bertolino and Mr. Salyer commented that the second approach was preferred, and other Commissioners agreed. The 2019 Budget will be brought back to the Commission in November for approval.

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

- F. Mr. Shetler provided an RC Services update. A BA-RC map produced by WECC was reviewed. Approximately 72% of the load in the west is committed to CAISO. An RC customer group has been set up to facilitate coordination under two tracks – Track 1 for RC-RC transition and Track 2 for Peak wind-down. CAISO has filed an RC Tariff with FERC, and BANC has communicated a desire to transition on 7/1/19 with CAISO participants; expecting WIRAB comments.
- G. Mr. Braun gave a brief 2018 Legislative Review. AB813 was defeated, and EDAM has already been discussed. With regard to SB100, there are references to coordinated efforts by BA to work with their regulated agencies as far as understanding the achievability of 60% and the impacts on grid reliability, which is something to keep an eye on.

6. Closed Session:

- A. The Commission retired to closed session for conference with legal counsel – Performance evaluation of a public employee: General Manager, pursuant to subdivision (e) of Cal. Gov't Code § 54957.

After returning to open session, Mr. Braun reported that no action was taken in closed session.

The meeting was adjourned at 3:24 p.m.

Minutes approved on November 14, 2018.

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 2018

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- NWPP
 - 0 contingencies requiring activation of NWPP
 - 0 MW average generation lost
 - 0 MW maximum generation lost
 - 0 recoveries required
- USF
 - 6 of 30 days with instances of USF mitigation procedure utilized
 - 2 days on Path 66
 - No operational impact on BANC
- BAAL Operation:
 - Number of BAAL exceedance >10 minutes: None
 - Maximum duration of BAAL exceedance: 3 minutes
 - BAAL violation (BAAL exceedance >30 minutes): None
- COI Actual Flow Greater Than TTC: 5.2 Hours

Monthly Notes:

- No additional notes or impacts for September 2018

A JOINT POWERS AUTHORITY AMONG

Modesto Irrigation District, City of Redding, City of Roseville, Trinity Public Utilities District,
City of Shasta Lake, and Sacramento Municipal Utility District



BALANCING AUTHORITY OF NORTHERN CALIFORNIA

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

TO: BANC Commission

RE: BANC Operator Report for October 2018

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- NWPP Reserve Energy Activations
 - 0 contingencies 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
 - 1 of 31 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: 2 minutes
 - Number of BAAL exceedance >10 minutes: None
 - BAAL violation (BAAL exceedance >30 minutes): None

Monthly Notes:

- No additional notes or impacts for October 2018

A JOINT POWERS AUTHORITY AMONG

Modesto Irrigation District, City of Redding, City of Roseville, Trinity Public Utilities District,

City of Shasta Lake, and Sacramento Municipal Utility District

Compliance Officer's Report

BANC Commission

October 2018

The following summarizes routine issues for the Commission's information and consideration. Any major issues or action items will be identified separately 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.
- The BANC 2019 Combo Audit will be held September 3, 2019 -September 13, 2019. Activities leading up to the audit are underway, which include: Mock Audits; 2019 Self-Certifications; Inherent Risk Assessment (IRA) Survey; and, completion and review of Reliability Standard Audit Worksheets (RSAWs) and associated program and procedure documents.

BANC MCRC:

- The most recent MCRC teleconference was held on Monday, October 15, 2018. A combined November/December MCRC teleconference will be held at 10:00 AM on Monday, December 3, 2018.

Compliance Officer's Report

BANC Commission

November, 2018

The following summarizes 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.

BA Compliance Issues:

- No significant operational Balancing Authority compliance events occurred.

All required BA compliance reports and operating data were submitted to WECC.

- BANC 2019 Combo Audit will be held September 3, 2019 -September 13, 2019. Activities leading up to the audit are underway, including: CIP and O&P Mock Audits; 2019 Self-Certifications; Inherent Risk Assessment (IRA) Survey; and, completion and review of Reliability Standard Audit Worksheets (RSAWs) and associated program and procedure documents.

BANC MCRC:

- A combined November/December MCRC teleconference will be held at 10:00 AM on Monday, December 3, 2018.

BANC PC Committee Chair's Report

October 2018

The following summarizes Planning Coordinator-related 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.

BANC PC Committee Issues:

- SMUD staff received comments on its draft 2018 BANC PC Ten-Year Transmission System Assessment report (TPL-001-4) from all PC Participants. The report will be updated and a final version issued on October 19, 2018.
- SMUD finalized its 2018 BANC PC System Operating Limit Studies report (FAC-014-2) on October 1, 2018.
- SMUD staff distributed a draft 2018 BANC PC Transfer Capability (Import) Assessment report (FAC-013-2) to all PC Participants for their review. Comments are due on October 19, 2018.
- The only remaining PC-related standards that need an update this year are the Transmission Line Loadability (PRC-023-3), the Relay Performance during Stable Power Swings (PRC-026-1), and the Facility Connection Requirements (FAC-001-2) reliability standards. Since staff already have the simulation results needed for these standards, staff should be able to develop compliance evidence by the end of October.

BANC PC Committee Chair's Report

November 2018

The following summarizes Planning Coordinator-related issues 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 Issues:

- SMUD staff finalized the 2018 BANC PC Ten-Year Transmission System Assessment (TPL-001-4). The report will be distributed to the BANC PC Participants and all adjacent entities as required by TPL-001-4 and IRO-017-1 reliability standards.
- The only remaining PC-related reliability standards that need an update this year are the Transmission Line Loadability (PRC-023-3), the Relay Performance during Stable Power Swings (PRC-026-1), and the Facility Connection Requirements (FAC-001-2) reliability standards. Since staff already have the simulation results needed for these standards, staff will finalize their compliance evidence by the end of November.

GM Report

BANC Commission Meeting

November 14, 2018

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:

TID

In late September 2018 we received feedback from TID that they have decided to stay as a standalone BA and will pursue EIM participation on their own. With this decision from TID, we plan on standing down from any further proactive discussions with TID on joining BANC.

LADWP/Seattle City Light/SRP

Dialogue continues with these entities regarding EIM participation. Based upon the group's discussions, we have agreed to continue to interact on an informal basis to make sure we are on the same page on EIM issues from a POU perspective. In addition, we collaborated with the other POUs on joint language to use in the EIM agreement that we will all need to sign for EIM operations, on how to address market-based rate authority with DMM, and potential common language for OATT revisions. We have also worked with the other three entities to agree upon the joint funding of BBSW to monitor CAISO interfaces for us.

POU Western Markets Initiative

BANC continues to participate in this effort, which is being coordinated by APPA. The group continues to evaluate how best to represent the POUs in the ever-changing power markets in the West. The last in-person meeting was held in Sacramento on September 24, 2018. We held discussions on the next steps regarding regional markets with the failure of AB-813 and the future direction for this group. We will have further discussions, but at this point it appears we will cut back on the number of meetings and evaluate next steps early next year after there is some clearer understanding of any potential new CA legislation and the status of the EDAM effort.

Market Initiatives:

EIM Participation

The BANC EIM Phase 1 effort is moving forward on schedule with no major issues. All of the software updates have been delivered and testing is underway. We have resolved most of the issues around EIM agreements. We have started Day-in-the-Life preparation and testing and are scheduled to start Market Simulation in early December. We are on schedule to meet our go-live date of 4/3/19.

The BANC EIM Oversight Committee has agreed upon an approach for cost allocation, which was presented to the Commission at the July meeting. We expect to bring a final proposal to the Commission in January 2019 for approval.

BANC, SMUD, and the other members continue to discuss the issue of internal bilateral trading within the BANC footprint once SMUD participates in EIM in 2019. We have outlined the scope of the problem, have held discussions with the CAISO to better understand the limitations on SMUD in EIM, and are shooting to return to the Commission January 2019 with a final proposal.

BANC and TANC continue to hold discussions with the CAISO regarding IBAA relief. At this stage the CAISO is holding firm on the need for IBAA but has acknowledged that when any of the BANC entities join EIM, there will not be a need for IBAA for that entity in the future.

The CAISO has also announced the intent to allow EIM entities to participate in an extended Day-ahead Market (EDAM). The details of how this will work will be discussed in 2018, including a feasibility assessment for the market as a whole and for individual participants. It is expected that if an EDAM looks feasible the CAISO would use the second half of 2019 to conduct a formal stakeholder process followed by tariff filings at FERC. An EDAM go-live is currently estimated to be in the late 2021-early 2022 timeframe. The EIM entities have initiated discussions among themselves and with the CAISO regarding the key issues that will need to be addressed for potential participation in the day-ahead market.

WAPA:

Market Engagement

We are working with WAPA on integrating them in to the EIM implementation discussions. SMUD has offered some concepts around moving forward with a possible Phase 2, which the group reviewed in December 2017. We followed-up with WAPA-SNR regarding their role in potential Phase 2 and believe we have resolved any issues. We have also held preliminary discussions with the CAISO on the SMUD Phase 2 concepts and received initial, favorable response. This concept

was discussed at the Strategic Planning Session in July. We also had a follow-up meeting with the CAISO and appear to be in agreement on how to proceed with a Phase 2. The goal is to have this finalized with the CAISO by the end of 2018.

San Luis Transmission Project

WAPA-SNR has announced its intent to work with the Bureau of Reclamation and CDWR to construct the SLTP. BANC met with WAPA and the other parties to fully understand the implications of having this new transmission project in the BANC BA/WAPA-SNR sub-BA. We are participating in follow-up meetings with WAPA-SNR, DWR, and the State Water Contractors on this project.

Peak Reliability:

Aliso Canyon

Though partial injection of gas in to the fields has begun, the Governor has also requested that shutdown of the field within 10 years be evaluated.

Peak/PJM Connex Partnership

On July 18, 2018, Peak announced that it had terminated its partnership with PJM Connex as part of Peak's decision to wind down operations. There is a possibility that PJM Connex may still pursue market development in the West on its own.

RC Services Alternatives

BANC and the three TOPs (SMUD, MID, and WAPA-SNR) in the BANC footprint submitted in late March their revocable notices of withdrawal from Peak. In addition, BANC and the TOPs have entered in to non-binding letters of intent to evaluate RC services from the CAISO. This effort has formally kicked off. Also, based upon the discussions at the July meeting, BANC has informally notified the CAISO of its intent to take RC services from the CAISO in the future. We have confirmed with the CAISO that the BANC footprint will move to the CAISO for RC services by July 1, 2019.

On July 18, 2018, Peak unilaterally made the decision to wind down its operations based upon the informal feedback it had been receiving from the Funding Parties. BANC is working with the other Funding Parties to coordinate on the wind down and closure efforts for Peak. At its meeting in September, the Peak Board approved the 2019 Wind Down budget.

Peak MAC and Board Meetings

The quarterly meeting of the Peak MAC and Board is scheduled for November 13, 2018, as a webinar. I will attend these meetings in my roles as both the BANC executive sponsor and as the Peak MAC Chair.

WECC

Electricity/Natural Gas Reliability Interface

WECC initiated its natural gas/electricity interface study in September 2017. Based upon further discussions with WECC, I have been asked to participate on the executive oversight committee for this effort. The status of this effort was discussed at the February 2018, WEIL meeting in San Diego, which I attended. This was discussed at the WECC Board meeting on 3/6-7/18 in Salt Lake City. An update was also provided at the WEIL meeting in early May 2018. WECC provided a public version of the report at its meetings on June 19-20, 2018.

WECC Board Meetings

The next WECC MAC and Board meetings are December 4-5, 2018, in Salt Lake City, UT. I will plan on attending these meetings as BANC's executive sponsor to WECC.

RC Services for the West

WECC and NERC issued a joint letter to the BAs and TOPs in the West seeking input by September 4, 2018, as to which RC footprint the entities will be using for their long-term RC. WECC/NERC are trying to gauge what level of certification support they will need to be providing over the next year to allow RC transitions to occur. I responded to this request on behalf of BANC in late August and identified the CAISO as the future RC service provider for the BANC BA and the three TOPs (MID, SMUD, and WAPA-SNR) in our footprint. WECC has posted a map on its website that shows the basic boundaries of the future four RC's in the Western Interconnection in 2019.

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. We have received feedback that CDWR intends to use SMUD for transmission service at the north end of the project and WAPA for the south end. CDWR is also waiting on formal decisions by the water contractors to fund the project.

Strategic Initiatives:

An update of the new 2018/2019 Strategic Initiatives is attached to this report.

BANC 2018/2019 Strategic Plan - Routine Initiatives - November 2018 Update

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		Develop long-term succession plan and traits for General Manager	Jim Shetler/Commission	4th Qtr. 2019	
3 Low		Organizational Issues: ~ Develop BANC procedures & processes as appropriate	Jim Shetler/BBSW	4th Qtr. 2019	
4 Medium	OUTREACH	Engage in industry forums (WECC, Peak, NWPPA, etc.)	Jim Shetler	Ongoing	Continue attending Peak & WECC Board mtgs, WEIL, & NWPP Exec. Forum
5 Medium		Coordinate with other POU BAs (Ca and regionally)	Jim Shetler	Ongoing	Coordinating with SCL, SRP, LADWP, & TID on EIM
6 Medium		Outreach to regulatory and legislative bodies on key issues	Jim Shetler/BBSW	Ongoing as Necessary	Attended CRECP/WIRAB meeting - 10/24-26/18
7 Medium	ASSETS	Evaluate joint dispatch options	Resource Committee	4th Qtr. 2019	Based upon current EIM Phase 2 this has been put on hold.
8 Low	MEMBER SERVICES	Identify and outreach to potential new BANC members	Jim Shetler	Ongoing	Follow-on discussions with TID suspended

BANC 2018/2019 Strategic Plan - Focused Initiatives - November 2018 Update

No./Priority	Focus Area	Initiative	Responsibility	Target Due Date	Status
9 High	INDEPENDENCE	Manage implementation of EIM Phase 1 participation effort	Jim Shetler/SMUD	4/3/19	Phase 1 on schedule; no major issues
10 High		Planning efforts for possible EIM Phase 2 ~ Gap analysis by Utilicast ~ Develop BANC processes ~ Finalize Phase 2 processes ~ Phase 2 EIM Impl. Agrmt.	Jim Shetler Jim Shetler/BBSW Jim S./BBSW/Mark W. Jim Shetler/BBSW	10/1/19 7/1/19 10/1/19 12/31/18 10/1/19	
11 High		EDAM Phase 1 evaluation ~ Feasibility Assessment ~ CAISO Stakeholder Process	Jim Shetler/BBSW Jim Shetler/BBSW	2nd Qtr. 2019 4th Qtr. 2019	Finalizing scope
12 Medium	OUTREACH	Evaluate opportunities to engage other entities in market development	Jim Shetler	4th Qtr. 2017	~ Continue coordination w/ LA, SCL, SRP ~TID discussions on hold
13 Medium		Regional Policy Issues: Monitor/weigh-in where appropriate	Jim Shetler/Commission	Ongoing	
14 High		Regionalization: ~Monitor CAISO governance ~EDAM discussions	Jim Shetler/BBSW Jim Shetler/BBSW	Ongoing	Active participation
15 High		Transition of RC Services ~Transfer from Peak to CAISO ~Coordinate Peak Wind Down to support transition	Jim Shetler Jim Shetler	7/1/19 12/31/19	Engaged in CAISO RCSC Participating in RCTCG
16 Medium	ASSETS	2018 IRP Review Issues ~SMUD UARP Capabilities ~WAPA/BOR CVP Capabilities ~Coordination w/ CAISO/TID ~Discuss DWR capabilities ~Coordinate on next IRPs	Jim S./Res. Com./SMUD Jim S./Res. Com./WAPA Jim S./Res. Com. Jim S./Res. Com. Jim S./Res. Com.	12/31/19 12/31/19 12/31/19 12/31/19 12/31/19	Discussions initiated Discussions initiated
17 Medium		Evaluate TP services for Redding & Roseville	Jim Shetler/J. Gillette	12/31/18	

Balancing Authority of Northern California

Agenda Item 5A

1. Resolution 18-11-03 *Approval of Revised 2018 Annual Budget for BANC.*
2. Attachment A to Resolution 18-11-03.
3. Resolution 18-11-05 *Authorization for CAISO Financial Security and Collateral Posting in Furtherance of the EIM Entity SC Certification.*

**Balancing Authority of Northern California
Resolution 18-11-03**

APPROVAL OF REVISED 2018 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 staff to develop a revised budget as a result of changes in costs related to EIM Phase 1 Implementation and assumptions related to the EDAM Evaluation effort; and

WHEREAS, 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 Revised 2018 Annual Budget for BANC in the form attached hereto as Attachment A.
2. Directs the BANC Treasurer to assess each BANC Member in accordance with Resolution 12-02-03.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November, 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary

2018 BANC Budget – November 2018 Revision

BACKGROUND

As the EIM Phase 1 Implementation effort has proceeded, it was realized that we did not explicitly budget for the required CAISO EIM minimum participation and collateral deposits. After discussions with both the CAISO and SMUD/BANC Treasury, we have determined the required amounts for the deposits and decided that it does make sense for these to be deposited as BANC funds, which would be provided by SMUD for Phase 1. Staff will be asking the Commission to approve a revision to Project Agreement #3 (PA-3) – EIM Implementation (Phase 1) to cover this increase and to authorize the deposit of the funds to the CAISO. In addition, there has also been a slippage in the EDAM Evaluation effort, which warrants a revision.

IMPACT ON 2018 BUDGET

As noted above, the Commission did not specifically authorize dollars towards the minimum participation or the collateral deposits in the 2018 Budget. We have reviewed the EIM project expenditures to date and the forecasted expenditures through go-live on 4/3/2019. In addition, the EDAM cost/benefit analysis effort has slipped and instead of being completed in 2018, will not start until approximately December 1, 2018, with completion forecasted in 1st Quarter 2019. There were sufficient “contingency” dollars in the original PA-3 EIM Implementation to cover the revised PA-3 forecast, but not enough to fully cover for the revised, originally unbudgeted PA-4. Now that we have both a better understanding of the expected EDAM effort for 2018 and a clearer picture of expected expenditures for 2018 EIM implementation, staff believes it is appropriate to provide an update on the 2018 Budget and seek Commission approval of the planned revised budget. Attached to this report are the following:

1. Revised 2018 Budget for PA-3: EIM Implementation
2. Revised 2018 Budget for a new PA-4: EDAM Evaluation
3. Revised 2018 Budget member assessments.

Based upon this evaluation, the overall 2018 Budget increases in the amount of \$47,500, which would be applied to SMUD. However, Staff will not be seeking an increase in the overall current authorized budget amount of \$5,610,200. We believe there are enough overall contingencies in the 2018 Budget to handle this additional increase. Staff will be presenting the revised budget proposal in more detail at the November Commission meeting and seeking Commission approval of the 2018 Budget revisions.

Attachment A to Resolution 18-11-03

1. Revision 2: Project Agreement #3 (PA-3) – EIM Participation (Phase 1)
 - a. Assumptions
 - i. BANC participates in the EIM as an EIM Entity
 - ii. SMUD is only Participating Resource
 - iii. EIM program development in 2017 and 2018
 - iv. BANC go live with Phase 1 EIM in April 2019
 - v. Costs allocated to SMUD as the sole Phase 1 participant.
 - vi. No Phase 2 participation until Spring 2020 at earliest
 - b. Revised estimated costs under PA-3 for second year of implementation based upon estimates provided from GridSME evaluation for BANC, current work effort, including addition of market consultation support, and deposit requirements.

IMPLEMENTATION CATEGORY	COST ESTIMATE	4/18 ESTIMATE	11/18 ESTIMATE
Personnel - EIM Desk - 5	\$1,500,000.00	\$1,125,000.00	\$600,000.00
Personnel - Stakeholder Efforts	\$100,000.00	\$100,000.00	\$-
Personnel - Settlements	\$30,000.00	\$30,000.00	\$-
Training	\$70,000.00	\$70,000.00	\$-
Software Upgrades	\$400,000.00	\$400,000.00	\$400,000.00
Utilicast Support	\$500,000.00	\$500,000.00	\$260,000.00
Network Model Maint.			
Project Management	\$84,000.00	\$84,000.00	\$84,000.00
Integration Development			
Consultant Support		\$25,000.00	\$5,000.00
CAISO Minimum Deposit			\$500,000.00
Legal Support	\$120,000.00	\$120,000.00	\$140,000.00
CAISO Collateral Deposit			\$1,000,000.00
CAISO Implementation Fees	\$180,000.00	\$180,000.00	\$180,000.00
Total Estimate	\$2,984,000.00	\$2,634,000.00	\$3,169,000.00
Contingency	\$300,000.00	\$155,000.00	\$10,000.00
TOTAL for 2018	\$3,284,000.00	\$2,789,000.00	\$3,179,000.00

Attachment A to Resolution 18-11-03

2. Revision 1: Project Agreement #4 (PA-4) – EDAM Evaluation

a. Assumptions

- i. BANC participates in the EDAM as an EIM Entity
- ii. SMUD is only Participating Resource
- iii. EDAM program development in 2018, initiating feasibility assessment, which will be completed in 1st Quarter 2019
- iv. Formal CAISO stakeholder process in 2nd half of 2019
- v. EDAM “go-live” no earlier than 2021
- vi. Costs allocated to SMUD as the sole initial EDAM participant.

- b. Estimated costs for EDAM under PA-4 are initial estimates based upon discussions among the EIM entities, CAISO, and BANC staff

IMPLEMENTATION CATEGORY	ORIG. ESTIMATE	REV. ESTIMATE
Energy GPS Support	\$75,000.00	\$2,500.00
Legal Support	\$120,000.00	\$115,000.00
Cost/Benefit Analysis	\$200,000.00	\$30,000.00
Total Estimate	\$395,000.00	\$147,500.00
Contingency	\$100,000.00	\$5,000.00
TOTAL for 2018	\$495,000.00	\$152,500.00

Attachment A to Resolution 18-11-03

3. 2018 BANC Member Assessments

MEMBER	2018 BASE BUDGET	PA-1: PA/PC	PA-2: PEAK	PA-3: EIM	PA-4: EDAM	MEMBER TOTAL
SMUD	\$1,341,714.00	\$125,000.00	\$-	\$3,179,000.00	\$152,500.00	\$4,798,214.00
MID	\$321,552.00	\$75,000.00	\$-	\$-	\$-	\$396,552.00
ROSEVILLE	\$153,120.00	\$26,250.00	\$68,828.00	\$-	\$-	\$248,198.00
REDDING	\$97,614.00	\$23,750.00	\$43,372.00	\$-	\$-	\$164,736.00
SHASTA LAKE	\$25,000.00	\$-	\$-	\$-	\$-	\$25,000.00
TPUD	\$25,000.00	\$-	\$-	\$-	\$-	\$25,000.00
BANC TOTAL	\$1,964,000.00	\$250,000.00	\$112,200.00	\$3,179,000.00	\$152,500.00	\$5,657,700.00
WASN	\$-	\$-	\$-	\$-	\$-	\$-
GRAND TOTAL	\$1,964,000.00	\$250,000.00	\$112,200.00	\$3,179,000.00	\$152,500.00	\$5,657,700.00

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

11/05/18

To: BANC Commission

From: BANC Counsel

**RE: Authorization for CAISO Financial Security and Collateral Posting in
Furtherance of the Energy Imbalance Market Entity Scheduling
Coordinator Certification**

In accordance with Federal Energy Regulatory Commission (FERC) Order 741,¹ FERC's landmark order on minimum participation requirements in organized markets, the California Independent System Operator Corporation (CAISO) adopted minimum capitalization requirements in its tariff. More specifically, the CAISO requires that new Market Participants post financial security with the CAISO if they have less than \$1 million in tangible net worth or \$10 million in total assets. Because the Balancing Authority of Northern California (BANC) does not meet this threshold (i.e., it does not own assets), it must post financial security in the amount of \$500,000 – the amount established in Section 12.1 of the CAISO Tariff, which applies for a prospective or existing Market Participant with fewer than six months of CAISO market activity.

In addition, because BANC, as the Energy Imbalance Market (EIM) Entity Scheduling Coordinator, will be actively settling its real time market imbalances with the CAISO for the BANC EIM Entity footprint, and in accordance with Section 6.3 of the CAISO Business Practice Manual for Credit Management & Market Clearing, it must also establish an initial Aggregate Credit Limit (Collateral Posting) sufficient to cover a minimum of forty five (45) Trading Days of estimated obligations. As such, SMUD staff, in consultation with the BANC General Manager, have estimated such an amount to be \$1 million. Thus, we are adding these two line items (financial security of \$500,000 and collateral of \$1 million) to the 2018 BANC budget for approval. Because SMUD will be the only BANC EIM participant in Phase 1, SMUD will be funding both the financial security and the collateral amounts (i.e., a total of \$1.5 million) to be deposited into CAISO interest-bearing accounts.²

To the extent other entities within BANC decide to participate in EIM, the Collateral Posting may be increased to address any incremental risks. However, because the collateral amounts are estimates only, it is possible that ongoing settlement data will allow BANC to decrease its Collateral Posting over time. Should the collateral be too low, the CAISO can require additional funds to be deposited within two business days. For this reason, we have assumed an amount sufficient to avoid significant cash calls soon after BANC EIM go-live.

¹ "Credit Reforms in Organized Wholesale Electric Markets," 133 FERC ¶ 61,060; FERC Docket No. RM10-13-000 (October 21, 2010).

² Funds deposited with the CAISO are invested into four different governmental money market accounts which earn just over 1% (according to the CAISO, these are variable rates which change daily. Interest is earned daily and compounded monthly).

**Balancing Authority of Northern California
Resolution 18-11-05**

**AUTHORIZATION FOR CAISO FINANCIAL SECURITY AND COLLATERAL POSTING IN
FURTHERANCE OF THE ENERGY IMBALANCE MARKET ENTITY
SCHEDULING COORDINATOR CERTIFICATION**

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 proposes to become the Energy Imbalance Market ("EIM") Entity for the BANC EIM footprint; and

WHEREAS, in Phase 1, the Sacramento Municipal Utility District ("SMUD") will be the sole EIM participant in the BANC EIM Entity footprint; and

WHEREAS, as the EIM Entity, BANC will settle all imbalances within its EIM footprint with the California Independent System Operator Corporation ("CAISO"); and

WHEREAS, BANC must become an EIM Entity Scheduling Coordinator ("SC"), and in order to transact with the CAISO in BANC's role as the EIM Entity, BANC must be certified as an SC by the CAISO; and

WHEREAS, in accordance with the legal requirements set forth in the CAISO Tariff and Business Practice Manuals, in order for BANC to become the certified EIM Entity SC, it must satisfy Minimum Participation Requirements by transferring funds for Minimum Participation and Financial Security into an account established by CAISO.

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

1. In support of EIM Phase 1, authorize the General Manager to proceed with directing the BANC Treasurer to transfer BANC funds to an account established by the CAISO for the following:
 - a. \$500,000 cash to meet the minimum capitalization financial security requirement as set forth in Section 12.1 of the CAISO Tariff.
 - b. \$1,000,000 cash required to establish an initial Aggregate Credit Limit (Collateral Posting) sufficient to cover a minimum of 45 Trading Days of estimated obligations, as specified in Section 6.3 of the CAISO Business Practice Manual for Credit Management & Market Clearing.
2. Require the General Manager and BANC Counsel to inform the Commission of any additional CAISO Financial Security requests, should BANC's Estimated Aggregate Liability exceed its Aggregate Credit Limit at any point.
3. Require the General Manager and BANC Counsel to revisit this issue with the Commission should BANC proceed with a subsequent EIM implementation phase with new EIM Participants and to bring a recommendation and/or proposal back to the Commission for additional approvals.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November, 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5B

1. **Resolution 18-11-06 *Authorization of Contract for Services Related to Enhanced Day Ahead Market Feasibility Assessment.***

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

11/06/2018

To: BANC Commission
From: BANC Counsel
RE: EDAM Feasibility Assessment Approvals

As has been discussed in prior Commission meetings and detailed in the General Manager's reports, BANC has been participating with other EIM Entities in discussions to assess what additional market functionalities, commonly referred to as an Extended Day Ahead Market (EDAM), might have benefits for the market footprint as a whole and the ratepayers of individual EIM Entities.

After considerable discussion to develop parameters for that feasibility assessment, the EIM Entities are proposing, along with the California Independent System Operator Corporation, to engage consultants to assess benefits of an extended market. The EIM Entities are engaging Energy + Environmental Economics (E3) and The Brattle Group to assess such benefits. It is currently contemplated that an individual EIM Entity, tentatively Arizona Public Service Corporation ("APS"), will contract with the above-referenced consultants, and BANC will enter into a cost sharing agreement with APS. BANC will be responsible for its load ratio share, calculated on SMUD load only, for the costs of the assessment. Working estimates are that BANC's share of the total costs of the feasibility assessment will be \$35,000 to \$45,000. However, it is contemplated that there may be a desire to do follow-up studies on both benefits and costs for individual EIM Entities, such as BANC, to augment the initial effort. In anticipation of this possibility, the Commission is asked to authorize total costs not to exceed \$100,000. This is above the General Manager's delegated authority.

The Commission is being asked to approve two things. First, to approve the BANC General Manager to enter into a contract to engage such services for a feasibility assessment, and, second, to collect the costs related to the feasibility assessment in a manner authorized by the Commission in the 2018 annual BANC budget -- which would allocate the costs to SMUD as the sole EIM (thus, EDAM) participant.

**Balancing Authority of Northern California
Resolution 18-11-06**

**AUTHORIZATION OF CONTRACT FOR SERVICES RELATED TO ENHANCED DAY AHEAD
MARKET FEASIBILITY ASSESSMENT**

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

WHEREAS, BANC has engaged in discussions with other EIM Entities to consider the benefits and feasibility of participating in a proposed Enhanced Day Ahead Market ("EDAM") that would extend Day Ahead Market functionality to the EIM footprint; and

WHEREAS, EIM Entities are ready to move forward with such an assessment;

WHEREAS, the EIM Entities have proposed to engage The Brattle Group and Energy + Environmental Economics (E3) to perform this assessment;

WHEREAS, BANC's share of the costs of the assessment may exceed the General Manager's delegated contracting authority, which is limited to \$25,000;

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

1. Authorize the General Manager to enter into all necessary agreements, in an amount not to exceed \$100,000, to allow BANC to participate in such an assessment and other related activities.
2. Allocate the costs in a manner authorized by the Commission in its "Approval of Revised 2018 Annual Budget for BANC," (BANC Resolution No. 18-11-03).

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5C

1. **Management Services Agreement between the Balancing Authority of Northern California and Adirondack Power Consulting, LLC – redline version.**
2. **Management Services Agreement between the Balancing Authority of Northern California and Adirondack Power Consulting, LLC – clean version.**
3. ***Resolution 18-11-02 Approval of Amended Management Services Agreement between the Balancing Authority of Northern California and Adirondack Power Consulting, LLC.***

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

11/02/18

To: BANC Commission

From: BANC Counsel

RE: Approval of Amended Management Services Agreement between BANC and Adirondack Power Consulting, LLC

Each year during the Third Quarter the Commission provides a performance evaluation of the General Manager and considers amendments to the underlying consulting services agreement (“Agreement”). This review occurred during the September Commission meeting. Attached, we have provided amendments to the Agreement for Commission consideration and possible approval.

Changes to Agreement

General Updating

The base agreement dates back to BANC formation and includes language which references executive functions performed by members. This language is stale, and we have made changes to make it more current.

Compensation and Related Matters

Pursuant to the performance evaluation, the compensation has been adjusted. We are providing suggestions here for Commission consideration. While the Commission directed an increase of \$1500 per month in the flat consulting fee, we have made additional changes to the Agreement that we believe help reduce confusion with respect to the nature of the consulting services provided, and reduce exposure to claims that the agreement is actually an employment agreement. As such, we have made it the responsibility of the Adirondack Power Consulting to pay for computer, phone, insurance and other expenses. We have also added language to clarify the nature of the contract. To rebalance and restore the Commission’s intent to provide an increase in compensation under the Agreement, we have increased the compensation by \$2000.00 per month to reflect that BANC is no longer responsible for insurance and other costs of business incurred by Adirondack.

Recommendation

Attached are redline and clean versions of the Agreement. We recommend adoption of the changes through the resolution attached.

MANAGEMENT SERVICES AGREEMENT BETWEEN THE BALANCING AUTHORITY OF NORTHERN CALIFORNIA AND ADIRONDACK POWER CONSULTING, LLC

This Management Services Agreement (Agreement) is entered into on and effective as of December 1, 2018, by and between the Balancing Authority of Northern California (BANC) and Adirondack Power Consulting, LLC, and has been made with reference to the following facts, among others, which are stated in these:

Deleted: 7

RECITALS:

- A. BANC is a public agency, created pursuant to a joint powers agreement ("JPA"), as an entity that is separate and distinct from its member public entities.
- B. BANC relies on consultants for the provision of necessary administrative, financial, managerial, and expert services, not having desired to hire employees for such purposes.
- C. JPA Section 11.4.4 authorizes the BANC Commission to hire or appoint officers, employees, and contractors, as it may deem necessary.
- D. The BANC Commission has determined that its interests require contract chief executive services (hereinafter "Contract Executive"), independent of the members and of the other consulting professionals who furnish other expert services to the BANC and wishes to extend the services provided by Mr. James Shetler, employee of Adirondack Power Consulting, LLC, for such purposes.

Deleted: has, since its creation, relied upon its members and upon

Deleted: <#>The BANC Commission has in the past designated a representative from among the managers of its members to act on behalf of BANC in various forums.¶

Deleted: <#>

Deleted: <#>.

Deleted: <#>The Contract Executive has familiarized itself with BANC's business and its Designated Employee, Mr. James Shetler, is ready and willing to accept the appointment as General Manager, pursuant to this Agreement.¶

THEREFORE, in consideration of the premises, and the terms, conditions and covenants of this Agreement, BANC and Adirondack Power Consulting, LLC do hereby enter into this Agreement as follows:

Section 1. Services of the Contract Executive.

- a. The Contract Executive shall render to BANC the Services that are described in this Agreement and in the Commission-General Manager Authority Delegation Policy as it may be amended from time to time, attached hereto as Exhibit C.
- b. The Contract Executive shall determine in its sole discretion the method, details, and means of performing the Services for BANC.
- c. The Services to be rendered by the Contract Executive are the assumption of the appointment as General Manager and the accomplishment of the objectives as set forth by the BANC Commission strategic issues paper, and Scope of Work, attached hereto as Exhibit B.
- d. The Contract Executive's Services shall include the provision of leadership and

communication services to assist BANC in completing its objectives.

- e. The Contract Executive, as General Manager, shall make recommendations to the BANC Commission to preserve and enhance BANC's position with regard to balancing authority matters and reliability in the electricity industry for the benefit of BANC's members.
- f. In assuming the responsibilities of the General Manager, the Contract Executive shall remain an independent contractor and for no purpose shall the Contract Executive be deemed an employee of BANC.
- g. The Contract Executive shall act as a non-voting member of any standing committee that may be chartered from time to time by the BANC Commission. As determined by the BANC Commission, the Contract Executive may act as BANC's representative pursuant to the relative balancing authority agreements.
- h. The Contract Executive, as General Manager, shall also exercise the managerial authority in connection with the expert consulting professionals engaged by the BANC for accounting, auditing, financial, managerial, or other professional services. The Contract Executive shall manage the assignments of these expert consulting professionals engaged by BANC.

Deleted: Assistant Secretary to the BANC Commission and as an ex officio,

Section 2. Term

a. Appointment, Term, and Termination

BANC does hereby appoint the Contract Executive as its General Manager to serve for the term of this Agreement. The Contract Executive hereby accepts such appointment. This Agreement shall have a term that commences on its effective date of December 1, 2018 and continue until terminated as provided in this Agreement. Upon termination, the Contract Executive shall surrender any office equipment, supplies, and documents in its possession or control that may have been purchased by or for BANC, except for any equipment or furniture purchased pursuant to Section 4.c, below.

Deleted: 2017

b. Early Termination.

Either the BANC Commission or the Contract Executive may terminate this Agreement at any time, without any cause, at its pleasure or convenience, by providing one-hundred-eighty (180) days written notice to the other, such notice specifying the Effective Termination Date. If the BANC Commission terminates this Agreement, then BANC shall pay the Contract Executive a lump sum equal to the whole Monthly Fee payable for the month in which termination occurs, and any Reimbursable Costs and Office Expense and Support Component, not to exceed the amount budgeted by BANC for four succeeding months, if any obligation for such component was incurred by the Contract Executive.

Formatted: Indent: Left: 0.1", Right: 0.27", Space Before: 0.05 pt, Line spacing: Multiple 1.05 li

Deleted: ¶

c. Early Termination by the Contract Executive.

If the Contract Executive terminates this Agreement pursuant to Section 2.b, BANC will

pay the Contract Executive for the work performed up to the Effective Termination Date. In no event shall BANC be obligated to pay for any services that are not provided, nor for any services provided or expenses incurred beyond the Effective Termination Date. Mutual Termination.

This Agreement may be terminated by written mutual agreement of both Parties. Termination under this provision may be immediate.

Section 3. Time Devoted to Service.

- a. The Contract Executive understands that while the General Manager position is generally expected to require part-time service, BANC expects that the position will require more than part-time service from time-to-time. The general expectation for time devoted to service is approximately 115 hours per month.
- b. BANC and the Contract Executive agree that the Contract Executive shall determine the hours and the days devoted to service under this Agreement, provided that if the Contract Executive determines that the demands of service exceed the general expectation in Section 3.a for an extended period, it will consult with the Commission on recommendations for reducing the demands, modifying this Agreement, or retaining another contract chief executive and terminating this Agreement as provided in Section 2.b, Early Termination by the Contract Executive.
- c. Personal leave of the Contract Executive's Designated Employee is anticipated by BANC.
- d. The Contract Executive's Designated Employee shall not serve any other person or entity in an executive or managerial capacity during the term of this Agreement. BANC acknowledges that the Contract Executive's Designated Employee may enter limited consulting assignments or may serve as a compensated director of a governing, policy, or advisory board, provided that such positions or assignments do not create unlawful conflicts of interest or require, on average, more than five (5) days a month of service. Nothing in this Agreement is intended to prevent the Contract Executive's Designated Employee from participating in electricity industry academic and policy seminars for compensation.

Section 4. Fees and Costs.

a. Monthly Fees.

The BANC shall pay the Contract Executive a Monthly Fee of ~~\$25,500~~ during the term of this Agreement, by the last day of each month. BANC shall have no liability for taxes, insurance, or other expenses except as specified in this section.

Deleted: 23,500.00

The BANC shall add Office Expenses to the base Monthly Fee when they are incurred, as provided in this Agreement. The Contract Executive shall be entirely responsible for its employees and subcontractors, and it shall, at its expense and in its name, provide disability, workers' compensation or other insurance, required of an employer.

b. Reimbursable Costs.

BANC shall reimburse the Contract Executive the costs of reasonable, necessary, and supported expenses incurred while on BANC business, including the costs of airfare or air charter, lodging, meals, and other travel expenses while on BANC business.

c. Automobile Expense Reimbursement.

BANC shall reimburse the Contract Executive for all miles driven on BANC business at the current rate published by the Internal Revenue Service.

d. Performance Review

During the term of this Agreement, BANC shall conduct a performance review of the Contract Executive no later than September 15 of each year to consider a possible fee increase that would take effect no later than January 1 of the following year. This requirement to conduct a review does not obligate BANC to increase the fees at any time during the term of this Agreement.

Section 5. The Contract Executive's Assurances.

During the term of this Agreement, the Contract Executive shall maintain professional, property and comprehensive liability insurance, including automobile insurance. Attached as Exhibit A are the insurance requirements and coverage limits. BANC shall be included as a named insured on any policy providing such insurance coverage.

Section 6. BANC's Assurances.

BANC does hereby agree to defend, indemnify, and hold the Contract Executive harmless from and against, any and all claims of injury, damage, or death, including but not limited to, damages that are characterized as special, consequential, or exemplary, to the maximum extent permitted by law, arising out of or related to this Agreement, regardless of whether the claim was the result of a negligent act or omission of the Contract Executive, its employees, or subcontractors, both during the term of this Agreement and afterwards, in connection with Services rendered under this Agreement, except for any claim which is proven to have resulted from fraudulent or willful misconduct of the Contract Executive, taken or not taken with a conscious disregard of the consequences. In undertaking the defense of the Contract Executive, BANC may consult the Contract Executive on the selection of defense counsel. The Contract Executive shall cooperate with BANC in the defense of any claim. The obligation of this Section 6 shall survive the termination of this Agreement.

Deleted: <#>Office and Start-Up Expense.¶
<#>¶
<#>BANC shall reimburse the Contract Executive for costs to purchase equipment, including computers, supplies, and services, such as telephone and e-mail service, as reasonably required and supported for the performance of BANC business.¶

Deleted: <#>Professional Insurance Reimbursement¶
<#>¶
<#>Until such time as BANC adopts an insurance policy and procures insurance to cover the Contract Executive and other officers of the BANC, BANC shall reimburse the Contract Executive for the cost of such insurance policy.¶

Section 7. BANC's Confidences and Records.

- a. The Contract Executive shall retain the papers and computer media the Designated Employee drafts, collects, or uses as General Manager and make them available for collection or copying by BANC at its expense at the termination of this Agreement. The Contract Executive shall not destroy or discard such papers or media, except in conformance with BANC's document retention policies, without the advance written consent of BANC's General Counsel.
- b. During the term of this Agreement, the Contract Executive will be made privy to confidential information regarding BANC's potential and pending litigation, its negotiations and its trade and proprietary business interests and property. The Contract Executive or its Designated Employee shall not disclose any confidential information without the advance written approval of BANC's General Counsel. The Contract Executive acknowledges that a breach of this Agreement may not be remedied by an award of damages and that the BANC shall be able to enforce its confidentiality claims in law or in equity, or both.
- c. The obligations of this Section 7 shall survive the termination of this Agreement.

Section 8. Financial and Conflict of Interest Laws.

The Contract Executive's Designated Employee, serving as General Manager, shall comply with BANC's Conflict of Interest Code and the laws of the State of California relating to public officials, which require the disclosure of certain financial interests and which prohibit participation in governmental decisions that may affect a personal financial interest.

Section 9. Integration of Agreement.

This Agreement contains the entire agreement between the Parties and supersedes all prior oral and written agreements, understandings, and commitments.

Section 10. Choice of Law.

The formation, construction, and performance of this Agreement shall be construed in accordance with the laws of California. This Agreement shall be enforced in California.

Section 11. Severability.

If any provision of this Agreement is held invalid or unenforceable, the remainder of this Agreement shall nevertheless remain in full force and effect. If any provision is held invalid or unenforceable with respect to particular circumstances, it shall nevertheless remain in full force and effect in all other circumstances.

//

//

//

Section 12. Notices.

Any notice to BANC shall be addressed to its Chair, with a copy to its General Counsel:

Presiding Chair, Balancing Authority of Northern California
c/o Braun Blaising Smith Wynne, P.C.
915 L Street, Suite 1480
Sacramento, CA 95814

General Counsel - Balancing Authority of Northern California
Braun Blaising Smith Wynne, P.C.
915 L Street, Suite 1480
Sacramento, CA 95814

Any notice to the Contract Executive shall be addressed to:

Adirondack Power Consulting, LLC
Attention: James R. Shetler
687 Summit Lakes Ct.
Galt, CA 95632

Notices may be delivered by facsimile, express mail, or delivery service. A party may change its address by notice.

Section 13. Independent Advice.

This Agreement is the product of discussion and it shall not be construed against BANC.

The Contract Executive has not looked to BANC or BANC's legal counsel for advice with regard to the form of this Agreement and he has had the opportunity to consult his own counsel regarding it.

Section 14. Arbitration.

Any controversy or claim arising out of or relating to this Agreement or the breach of the Agreement will be settled by arbitration in accordance with the rules of the American Arbitration Association. Judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction over the award.

Section 15. Attorneys' Fees.

If any legal action, including an action for declaratory relief, is brought to enforce or interpret the provisions of this Agreement, the prevailing party will be entitled to reasonable attorney's fees, which may be set by the court in the same action or in a separate action brought for that purpose, in addition to any other relief to which that party may be entitled.

//

Section 16. Execution.

This Agreement, having been reviewed and duly approved by the parties, they each intending to be bound by it, in accordance with each and every term, and representing to each other that they have all requisite authority, they have subscribed this Agreement below, with the signatures of their duly authorized representatives.

BALANCING AUTHORITY OF NORTHERN CALIFORNIA

By _____ Greg Salyer, Chair

CONTRACT EXECUTIVE

By _____

James R. Shetler, Principal Adirondack Power Consulting, LLC

Exhibit A

Contract Executive agrees to procure insurance pursuant to the following minimum coverage amounts, for which Contract Executive will be recompensed by the BANC. The BANC shall be included as an additional insured:

Professional Liability Insurance	\$1,000,000 aggregate
General Commercial Liability	\$1,000,000 per occurrence
Damage to Premises	\$1,000,000 per occurrence
Medical Expenses	\$10,000, any one person
Personal Injury	\$1,000,000 aggregate
General Comprehensive	\$2,000,000 aggregate

Exhibit B

SCOPE OF WORK

General Manager

Designated Employee: James Shetler

1. Management of BANC: Oversee the day-to-day management of the BANC organization, including:

- a. Oversight of the BA contract operator (SMUD),
- b. Oversight of the BA compliance function (SMUD),
- c. Oversight of the BANC legal contract (Braun Blasing Smith Wynne, P.C.),
- d. Oversight of treasury, accounting, and other support services,
- e. Coordination and development of BANC member relations.

Deleted: BMS

2. Future Direction of BANC: Develop options, based upon BANC Commission direction, for:

- a. BANC becoming a more "independent" BA operation,
- b. BANC acquiring assets that support its BA mission.

3. Industry Relations: Serve as the "face" and "voice" of BANC in appropriate industry forums, including but not limited to:

- a. CAISO, regarding BA agreements and operations, market issues, and other industry matters,
- b. WECC, regarding standards development and enforcement and transmission coordination issues,
- c. PEAK, or successor RCs, regarding coordination of BA operations with the RC and IA functions,
- d. NERC, regarding standards development and enforcement that impacts BA operations,
- e. NWPP, regarding power pool operations and related matters,
- f. WAPA, regarding the interface and coordination of BA activities,
- g. TANC, regarding the interface and coordination of BA activities,

Formatted: Character scale: 100%

Formatted: Indent: Left: 1.1", No bullets or numbering

Deleted: and the EIM efforts

- h. FERC, regarding standards development and enforcement that impacts BA operations or EIM related activities.

**MANAGEMENT SERVICES AGREEMENT BETWEEN THE
BALANCING AUTHORITY OF NORTHERN CALIFORNIA AND
ADIRONDACK POWER CONSULTING, LLC**

This Management Services Agreement (Agreement) is entered into on and effective as of December 1, 2018, by and between the Balancing Authority of Northern California (BANC) and Adirondack Power Consulting, LLC, and has been made with reference to the following facts, among others, which are stated in these:

RECITALS:

- A. BANC is a public agency, created pursuant to a joint powers agreement ("JPA"), as an entity that is separate and distinct from its member public entities.
- B. BANC relies on consultants for the provision of necessary administrative, financial, managerial, and expert services, not having desired to hire employees for such purposes.
- C. JPA Section 11.4.4 authorizes the BANC Commission to hire or appoint officers, employees, and contractors, as it may deem necessary.
- D. The BANC Commission has determined that its interests require contract chief executive services (hereinafter "Contract Executive"), independent of the members and of the other consulting professionals who furnish other expert services to BANC and wishes to extend the services provided by Mr. James Shetler, employee of Adirondack Power Consulting, LLC, for such purposes.

THEREFORE, in consideration of the premises, and the terms, conditions and covenants of this Agreement, BANC and Adirondack Power Consulting, LLC do hereby enter into this Agreement as follows:

Section 1. Services of the Contract Executive.

- a. The Contract Executive shall render to BANC the Services that are described in this Agreement and in the Commission-General Manager Authority Delegation Policy as it may be amended from time to time, attached hereto as Exhibit C.
- b. The Contract Executive shall determine in its sole discretion the method, details, and means of performing the Services for BANC.
- c. The Services to be rendered by the Contract Executive are the assumption of the appointment as General Manager and the accomplishment of the objectives as set forth by the BANC Commission strategic issues paper, and Scope of Work, attached hereto as Exhibit B.
- d. The Contract Executive's Services shall include the provision of leadership and communication services to assist BANC in completing its objectives.
- e. The Contract Executive, as General Manager, shall make recommendations to the BANC Commission to preserve and enhance BANC's position with regard to balancing authority matters and reliability in the electricity industry for the benefit of

BANC's members.

- f. In assuming the responsibilities of the General Manager, the Contract Executive shall remain an independent contractor and for no purpose shall the Contract Executive be deemed an employee of BANC.
- g. The Contract Executive shall act as a non-voting member of any standing committee that may be chartered from time to time by the BANC Commission. As determined by the BANC Commission, the Contract Executive may act as BANC's representative pursuant to the relative balancing authority agreements.
- h. The Contract Executive, as General Manager, shall also exercise the managerial authority in connection with the expert consulting professionals engaged by the BANC for accounting, auditing, financial, managerial, or other professional services. The Contract Executive shall manage the assignments of these expert consulting professionals engaged by BANC.

Section 2. Term

a. Appointment, Term, and Termination

BANC does hereby appoint the Contract Executive as its General Manager to serve for the term of this Agreement. The Contract Executive hereby accepts such appointment. This Agreement shall have a term that commences on its effective date of December 1, 2018 and continue until terminated as provided in this Agreement. Upon termination, the Contract Executive shall surrender any office equipment, supplies, and documents in its possession or control that may have been purchased by or for BANC, except for any equipment or furniture purchased pursuant to Section 4.c, below.

b. Early Termination.

Either the BANC Commission or the Contract Executive may terminate this Agreement at any time, without any cause, at its pleasure or convenience, by providing one- hundred-eighty (180) days written notice to the other, such notice specifying the Effective Termination Date. If the BANC Commission terminates this Agreement, then BANC shall pay the Contract Executive a lump sum equal to the whole Monthly Fee payable for the month in which termination occurs, and any Reimbursable Costs and Office Expense and Support Component, not to exceed the amount budgeted by BANC for four succeeding months, if any obligation for such component was incurred by the Contract Executive.

c. Early Termination by the Contract Executive.

If the Contract Executive terminates this Agreement pursuant to Section 2.b, BANC will pay the Contract Executive for the work performed up to the Effective Termination Date. In no event shall BANC be obligated to pay for any services that are not provided, nor for any services provided or expenses incurred beyond the Effective Termination Date.

d. Mutual Termination.

This Agreement may be terminated by written mutual agreement of both Parties.

Termination under this provision may be immediate.

Section 3. Time Devoted to Service.

- a. The Contract Executive understands that while the General Manager position is generally expected to require part-time service, BANC expects that the position will require more than part-time service from time-to-time. The general expectation for time devoted to service is approximately 115 hours per month.
- b. BANC and the Contract Executive agree that the Contract Executive shall determine the hours and the days devoted to service under this Agreement, provided that if the Contract Executive determines that the demands of service exceed the general expectation in Section 3.a for an extended period, it will consult with the Commission on recommendations for reducing the demands, modifying this Agreement, or retaining another contract chief executive and terminating this Agreement as provided in Section 2.b, Early Termination by the Contract Executive.
- c. Personal leave of the Contract Executive's Designated Employee is anticipated by BANC.
- d. The Contract Executive's Designated Employee shall not serve any other person or entity in an executive or managerial capacity during the term of this Agreement. BANC acknowledges that the Contract Executive's Designated Employee may enter limited consulting assignments or may serve as a compensated director of a governing, policy, or advisory board, provided that such positions or assignments do not create unlawful conflicts of interest or require, on average, more than five (5) days a month of service. Nothing in this Agreement is intended to prevent the Contract Executive's Designated Employee from participating in electricity industry academic and policy seminars for compensation.

Section 4. Fees and Costs.

a. Monthly Fees.

The BANC shall pay the Contract Executive a Monthly Fee of \$25,500 during the term of this Agreement, by the last day of each month. BANC shall have no liability for taxes, insurance, or other expenses except as specified in this section.

The BANC shall add Office Expenses to the base Monthly Fee when they are incurred, as provided in this Agreement. The Contract Executive shall be entirely responsible for its employees and subcontractors, and it shall, at its expense and in its name, provide disability, workers' compensation or other insurance, required of an employer.

b. Reimbursable Costs.

BANC shall reimburse the Contract Executive the costs of reasonable, necessary, and supported expenses incurred while on BANC business, including the costs of airfare or air charter, lodging, meals, and other travel expenses while on BANC business.

c. Automobile Expense Reimbursement.

BANC shall reimburse the Contract Executive for all miles driven on BANC business

at the current rate published by the Internal Revenue Service.

d. Performance Review

During the term of this Agreement, BANC shall conduct a performance review of the Contract Executive no later than September 15 of each year to consider a possible fee increase that would take effect no later than January 1 of the following year. This requirement to conduct a review does not obligate BANC to increase the fees at any time during the term of this Agreement.

Section 5. The Contract Executive's Assurances.

During the term of this Agreement, the Contract Executive shall maintain professional, property and comprehensive liability insurance, including automobile insurance. Attached as Exhibit A are the insurance requirements and coverage limits. BANC shall be included as a named insured on any policy providing such insurance coverage.

Section 6. BANC's Assurances.

BANC does hereby agree to defend, indemnify, and hold the Contract Executive harmless from and against, any and all claims of injury, damage, or death, including but not limited to, damages that are characterized as special, consequential, or exemplary, to the maximum extent permitted by law, arising out of or related to this Agreement, regardless of whether the claim was the result of a negligent act or omission of the Contract Executive, its employees, or subcontractors, both during the term of this Agreement and afterwards, in connection with Services rendered under this Agreement, except for any claim which is proven to have resulted from fraudulent or willful misconduct of the Contract Executive, taken or not taken with a conscious disregard of the consequences. In undertaking the defense of the Contract Executive, BANC may consult the Contract Executive on the selection of defense counsel. The Contract Executive shall cooperate with BANC in the defense of any claim. The obligation of this Section 6 shall survive the termination of this Agreement.

Section 7. BANC's Confidences and Records.

- a. The Contract Executive shall retain the papers and computer media the Designated Employee drafts, collects, or uses as General Manager and make them available for collection or copying by BANC at its expense at the termination of this Agreement. The Contract Executive shall not destroy or discard such papers or media, except in conformance with BANC's document retention policies, without the advance written consent of BANC's General Counsel.
- b. During the term of this Agreement, the Contract Executive will be made privy to confidential information regarding BANC's potential and pending litigation, its negotiations and its trade and proprietary business interests and property. The Contract Executive or its Designated Employee shall not disclose any confidential information without the advance written approval of BANC's General Counsel. The Contract Executive acknowledges that a breach of this Agreement may not be remedied by an award of damages and that the BANC shall be able to enforce its confidentiality claims in law or in equity, or both.

c. The obligations of this Section 7 shall survive the termination of this Agreement.

Section 8. Financial and Conflict of Interest Laws.

The Contract Executive's Designated Employee, serving as General Manager, shall comply with BANC's Conflict of Interest Code and the laws of the State of California relating to public officials, which require the disclosure of certain financial interests and which prohibit participation in governmental decisions that may affect a personal financial interest.

Section 9. Integration of Agreement.

This Agreement contains the entire agreement between the Parties and supersedes all prior oral and written agreements, understandings, and commitments.

Section 10. Choice of Law.

The formation, construction, and performance of this Agreement shall be construed in accordance with the laws of California. This Agreement shall be enforced in California.

Section 11. Severability.

If any provision of this Agreement is held invalid or unenforceable, the remainder of this Agreement shall nevertheless remain in full force and effect. If any provision is held invalid or unenforceable with respect to particular circumstances, it shall nevertheless remain in full force and effect in all other circumstances.

Section 12. Notices.

Any notice to BANC shall be addressed to its Chair, with a copy to its General Counsel:

Presiding Chair, Balancing Authority of Northern California
c/o Braun Blaising Smith Wynne, P.C.
915 L Street, Suite 1480
Sacramento, CA 95814

General Counsel - Balancing Authority of Northern California
Braun Blaising Smith Wynne, P.C.
915 L Street, Suite 1480
Sacramento, CA 95814

Any notice to the Contract Executive shall be addressed to:

Adirondack Power Consulting, LLC
Attention: James R. Shetler 687
Summit Lakes Ct.
Galt, CA 95632

Notices may be delivered by facsimile, express mail, or delivery service. A party may change its address by notice.

Section 13. Independent Advice.

This Agreement is the product of discussion and it shall not be construed against BANC.

The Contract Executive has not looked to BANC or BANC's legal counsel for advice with regard to the form of this Agreement and he has had the opportunity to consult his own counsel regarding it.

Section 14. Arbitration.

Any controversy or claim arising out of or relating to this Agreement or the breach of the Agreement will be settled by arbitration in accordance with the rules of the American Arbitration Association. Judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction over the award.

Section 15. Attorneys' Fees.

If any legal action, including an action for declaratory relief, is brought to enforce or interpret the provisions of this Agreement, the prevailing party will be entitled to reasonable attorney's fees, which may be set by the court in the same action or in a separate action brought for that purpose, in addition to any other relief to which that party may be entitled.

Section 16. Execution.

This Agreement, having been reviewed and duly approved by the parties, they each intending to be bound by it, in accordance with each and every term, and representing to each other that they have all requisite authority, they have subscribed this Agreement below, with the signatures of their duly authorized representatives.

BALANCING AUTHORITY OF NORTHERN CALIFORNIA

By _____

Greg Salyer, Chair

CONTRACT EXECUTIVE

By _____

James R. Shetler, Principal Adirondack Power Consulting, LLC

Exhibit A

Contract Executive agrees to procure insurance pursuant to the following minimum coverage amounts, for which Contract Executive will be recompensed by the BANC. The BANC shall be included as an additional insured:

Professional Liability Insurance	\$1,000,000 aggregate
General Commercial Liability	\$1,000,000 per occurrence
Damage to Premises	\$1,000,000 per occurrence
Medical Expenses	\$10,000, any one person
Personal Injury	\$1,000,000 aggregate
General Comprehensive	\$2,000,000 aggregate

Exhibit B

SCOPE OF WORK

General Manager

Designated Employee: James Shetler

1. Management of BANC: Oversee the day-to-day management of the BANC organization, including:
 - a. Oversight of the BA contract operator (SMUD),
 - b. Oversight of the BA compliance function (SMUD),
 - c. Oversight of the BANC legal contract (Braun Blasing Smith Wynne, P.C.),
 - d. Oversight of treasury, accounting, and other support services,
 - e. Coordination and development of BANC member relations.
2. Future Direction of BANC: Develop options, based upon BANC Commission direction, for:
 - a. BANC becoming a more "independent" BA operation,
 - b. BANC acquiring assets that support its BA mission.
3. Industry Relations: Serve as the "face" and "voice" of BANC in appropriate industry forums, including but not limited to:
 - a. CAISO, regarding BA agreements and operations, market issues, and other industry matters,
 - b. WECC, regarding standards development and enforcement and transmission coordination issues,
 - c. PEAK, or successor RCs, regarding coordination of BA operations with the RC and IA functions,
 - d. NERC, regarding standards development and enforcement that impacts BA operations,
 - e. NWPP, regarding power pool operations and related matters,
 - f. WAPA, regarding the interface and coordination of BA activities,
 - g. TANC, regarding the interface and coordination of BA activities,
 - h. FERC, regarding standards development and enforcement that impacts BA operations or EIM related activities.

**Balancing Authority of Northern California
Resolution 18-11-02**

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

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

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

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

WHEREAS, Mr. James Shetler, an employee of Adirondack Power Consulting, LLC, has been appointed as General Manager by the BANC Commission.

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

1. Approve the Amended Management Services Agreement between the Balancing Authority of Northern California and Adirondack Power Consulting, LLC.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November, 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary

Balancing Authority of Northern California

Agenda Item 5D

1. Resolution 18-11-04 *Approval of 2019 Annual Budget for BANC.*
2. Attachment A to Resolution 18-11-04.

**Balancing Authority of Northern California
Resolution 18-11-04**

APPROVAL OF 2019 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 staff to develop a draft budget that has been presented for Commission review on at least two occasions; 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 2019 Annual Budget for BANC in the form attached hereto as Attachment A.
2. Directs the BANC Treasurer to assess each BANC Member in accordance with Resolution 12-02-03 with the first assessment occurring no sooner than February 1, 2019.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November, 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary

DRAFT

BANC 2019 Budget

November 2018 Version

1. Base Budget

- a. General Manager Expenses = **\$339,600**
 - i. Scope: General Manager retainer (@\$25,000/mo.) and expenses (@\$3,300/mo.)
 - ii. Assumptions: Increase to reflect Commission approved increased retainer and additional travel expenses
- b. Legal Services (BBMS) = **\$585,000**
 - i. Assumptions: No increase in base legal services from 2018, with the notation that additional legal services may be required based on the level of activity in Market Engagement
- c. NWPP Membership Payments = **\$100,000**
 - i. Scope: Covers NWPP charges to BANC as an NWPP member, including RSG, FRSG, and Executive Forum
- d. Resource Committee Support = **\$100,000**
 - i. Scope: Potential follow-on consultant support for evaluating IRP recommendations and coordination with members.
- e. Asset Valuation = **\$1,082,866¹**
 - i. Energy Management System
 - 1. Assumptions:
 - a. Amortized capital cost (BANC share) = \$593,924
 - b. Annual Siemens support cost (BANC share) = \$98,942
 - 2. Total = \$692,866
 - 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 75% = \$975,000
 - 2. BANC share of TOP/BA= 40% = \$390,000

¹ This increase in 2019 Budget resulted from update of SMUD EMS in 2018 and reduction of SMUD functions/staff in EMC.

Attachment A to Resolution 18-11-04

f. Sub-total = **\$2,207,466**

g. Contingency (~5%): **\$~110,000**

Total = **\$2,317,466**

Member Breakdown Comparison of 2019 vs. 2018 Base Budgets:

MEMBER ALLOCATION	2019	2018
SMUD (68.8%)	\$1,588,678.94	\$1,341,714.00
MID (16.5%)	\$380,549.36	\$321,552.00
ROSEVILLE (7.8%)	\$181,104.81	\$153,120.00
REDDING (5.0%)	\$114,623.30	\$97,614.00
SHASTA LAKE (1.2%)	\$27,509.59	\$-
Subtotal	\$2,292,466.00	\$1,914,000.00
TPUD (fixed)	\$25,000.00	\$25,000.00
SHASTA LAKE (fixed)	\$-	\$25,000.00
TOTAL	\$2,317,466.00	\$1,964,000.00

2. Project Agreement #1 (PA-1) – PC Services

a. Assumptions:

- i. PA-1 effort started 7/1/16; 2017 is pilot year; Full compliance achieved 1/1/18
- ii. SMUD to provide contract PC services to BANC
- iii. Base Cost to BANC = \$250,000/year plus
 1. \$35,000 for overview assessment of full BANC footprint
 2. \$10,000 contingency to allow for SMUD to consider labor rate increase.
 3. In order to meet NERC Reliability Standard TPL-007-2 we will need to procure GE PSLF Geomagnetic Disturbance Tool. A one-time procurement cost of \$15,000 is incorporated in 2019 Budget. A \$3,000/year charge will be incurred each year thereafter.
 4. Total cost for 2019 = \$310,000
- iv. WAPA-SNR does not participate, TPUD and Shasta lake embedded within WAPA-SNR; all other members participate
- v. 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%)	\$155,000.00
MID (30%)	\$93,000.00
REDDING (9.5%)	\$29,450.00
ROSEVILLE (10.5%)	\$32,550.00
TOTAL	\$310,000.00

3. Project Agreement #2 (PA-2) – Peak Funding

a. Assumptions

- i. BANC will transition from Peak RC to CAISO for RC services in mid-2019. BANC and other BANC Funding Parties will pay Peak for RC services and wind down costs for entire year of 2019 and CAISO for RC services for last six months of 2019
- ii. Peak RC Funding
 1. PA-2 effective 1/1/16
 2. TPUD and Shasta Lake embedded within WAPA-SNR, which is a TOP Funding Party
 3. MID and SMUD are TOP Funding Parties
 4. BANC pays the remaining amount allocated to the BA footprint per new Peak Funding Agreement for Redding and Roseville
 5. Required 2019 Peak Funding Amount = \$55.7 million;
 6. BANC footprint share of allocation @ 2.19% = \$~1,219,731
 7. Cost to be allocated based upon share of allocated NEL per Peak allocation matrix:
 - a. SMUD = 65.4% = \$797,704 (Paid by SMUD)
 - b. MID = 15.0% = \$182,960 (Paid by MID)
 - c. WASN = 7.7% = \$93,918 (Paid by WAPA)
 - d. Roseville = 7.3% = \$89,041
 - e. Redding = 4.6% = \$56,108
- iii. CAISO RC Funding
 1. BANC joins CAISO RC effective 7/1/19
 2. TPUD and Shasta Lake embedded within WAPA-SNR, which becomes a TOP Funding Party under CAISO tariff
 3. MID and SMUD become TOP Funding Parties under CAISO tariff
 4. BANC pays the remaining amount allocated to the BA footprint per CAISO tariff for Redding and Roseville
 5. Required annual CAISO RC Funding = \$18 million
 6. BANC share assumed at 70% of 2018 Peak costs = \$~655,620/2 = \$~327,810 allocated as follows:
 - a. SMUD = 65.4% = \$214,388 (Paid by SMUD)
 - b. MID = 15% = \$49,172 (Paid by MID)
 - c. WASN = 7.7% = \$25,241 (Paid by WAPA)
 - d. Roseville = 7.3% = \$23,930
 - e. Redding = 4.6% = \$15,079

Attachment A to Resolution 18-11-04

- b. Estimated costs under PA-2 based upon 2019 Peak Funding Amount and CAISO estimated funding amount (NOTE: CAISO may not invoice for 2019 until 2020 invoice):

MEMBER	PA2: PEAK ASSESSMENT	PA2: CAISO ASSESSMENT	TOTAL
SMUD (65.4%)	\$-	\$-	
MID (15.0%)	\$-	\$-	
ROSEVILLE (7.3%)	\$89,041.00	\$23,930.00	\$112,971.00
REDDING (4.6%)	\$56,108.00	\$15,079.00	\$71,187.00
MEMBER TOTAL	\$145,149.00	\$39,009.00	\$184,158.00
WASN (7.7%)	\$-		
TOTAL	\$145,149.00	\$39,009.00	\$184,158.00

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

a. Assumptions

- i. BANC participates in the EIM as an EIM Entity
- ii. SMUD is only Participating Resource
- iii. EIM program development in 2017 and 2018
- iv. BANC go live with Phase 1 EIM April 3, 2019
- v. Costs allocated to SMUD as the sole Phase 1 participant.
- vi. No Phase 2 participation until Spring 2021 at earliest

b. Revised estimated costs under PA-3 for third year of implementation based upon estimates provided from GridSME evaluation for BANC and current work effort, including addition of market consultation support.

IMPLEMENTATION CATEGORY	COST ESTIMATE
Personnel - EIM Desk - 5	\$375,000.00
Personnel - Stakeholder Efforts	\$-
Personnel - Settlements	\$-
Training	\$-
Software Upgrades	
Utilicast Support	\$28,500.00
Network Model Maint.	
Project Management	\$21,000.00
Integration Development	
Consultant Support	\$1,000.00
Legal Support	\$30,000.00
CAISO Implementation Fees	\$110,000.00
Total Estimate	\$565,500.00
Contingency @~10%	\$25,000.00
TOTAL for 2017	\$590,500.00

5. Project Agreement #4 (PA-4) – Extended Day-Ahead Market (EDAM) Evaluation

a. Assumptions

- i. BANC participates in the EDAM as an EIM/EDAM Entity
- ii. SMUD is only Participating Resource
- iii. EDAM program development, including cost/benefit analysis, finalized 1st Qtr. 2019
- iv. Formal CAISO stakeholder process initiated mid-2019
- v. CAISO tariff filings and market implementation 2020
- vi. EDAM “go-live” no earlier than late-2021 to early 2022
- vii. Costs allocated to SMUD as the sole initial EDAM participant.

- b. Estimated costs for EDAM evaluation under PA-4 are initial estimates based upon discussions among the EIM entities, CAISO, and BANC staff

IMPLEMENTATION CATEGORY	COST ESTIMATE
Energy GPS/Utilicast Support	\$50,000.00
Legal Support	\$120,000.00
Cost/Benefit Analysis	\$100,000.00
Total Estimate	\$270,000.00
Contingency	\$50,000.00
TOTAL for 2018	\$320,000.00

Attachment A to Resolution 18-11-04

6. Project Agreement #5 (PA-5) – EIM Participation (Phase 1)

a. Assumptions

- i. BANC participates as EIM Entity/Phase 1 go-live 4/3/18
- ii. SMUD only Participating Resource and cost allocation
- iii. Labor discounted 25% based on go-live April 2018. All other costs retained at full year level.

b. Cost estimates based on GridSME evaluation, EIM Services Agreement, and latest estimates.

IMPLEMENTATION CATEGORY	COST ESTIMATE
Personnel - EIM Desk (5)	\$1,190,250.00
Personnel - Settlements (0.5)	\$88,588.50
Personnel - Outage Mgmt (1)	\$95,228.25
Personnel - Netwk Model (1)	\$200,882.25
Personal - Meter Data Mgmt (0.5)	\$29,736.00
Personal - SME/Oversight (0.4)	\$128,384.25
Personal - IT Support (0.25)	\$41,889.75
Personal Total (8.15)	\$1,774,959.00
EIM Software Support	
- ITOA	\$20,000.00
- WebEIM	\$40,000.00
EIM Software Support Total	\$60,000.00
EMS EIM Module	
- Amortized Capital	\$52,978.00
- O&M Support	\$10,000.00
EMS EIM Module Total	\$62,978.00
Legal Support	\$30,000.00
Consultant Support (EIM Perf.)	\$25,000.00
CAISO Charges	
- Fees	\$250,000.00
- Uplifts	\$500,000.00
CAISO Charges Total	\$750,000.00
TOTAL for 2019	\$2,702,937.00

7. Project Agreement #6 (PA-6) – EIM Phase 2 Preparation

a. Assumptions

- i. MID, Redding and Roseville participate in the Phase 2 preparation effort (no commitment to Phase 2; go/no-go decision will be fall 2019)
- ii. Each potential participant will pay their share of activities that directly benefit them. Shared costs for the Phase 2 participants will be allocated in accordance with load ratio share, as follows:
 1. MID = 56.3%
 2. Roseville = 26.6%
 3. Redding = 17.1%

Shared costs for activities that will benefit all EIM participants will be allocated in accordance with load ratio share, as follows:

1. SMUD = 70.1%
2. MID = 16.8%
3. Roseville = 8.0%
4. Redding = 5.1%
- iii. Preparation efforts to include
 1. Gap analysis conducted by Utilicast for each Phase 2 potential participant. Includes assessment on impacts to WAPA-SNR and technical support for analysis. (\$60,000/each participant x 3 = \$180,000)
 2. Finalization of Phase 2 cost allocation process (expected to be finished in 2018)
 3. Finalization of Phase 2 Metered EIM Sub-system concept with CAISO (expected to be finished in 2018)
 4. Drafting EIM Phase 2 Implementation Agreement with CAISO - Legal support = \$25,000
 5. Drafting BANC processes and procedures for EIM Phase 2 (e.g. – Risk Policies etc.) – Legal support = \$50,000

b. Cost Estimates:

MEMBER	GAP ANALYSIS	PHASE 2 IMP. AGR.	BANC PROC.	TOTAL
MID	\$60,000.00	\$14,075.00	\$8,400.00	\$82,475.00
Roseville	\$60,000.00	\$6,650.00	\$4,000.00	\$70,650.00
Redding	\$60,000.00	\$4,275.00	\$2,550.00	\$66,825.00
SMUD	\$-	\$-	\$35,050.00	\$35,050.00
TOTAL	\$180,000.00	\$25,000.00	\$50,000.00	\$255,000.00

Attachment A to Resolution 18-11-04

8. 2019 BANC Member Assessments

MEMBER	BASE BUDGET	PA-1: PA/PC	PA-2: PEAK	PA-3: EIM Impl.	PA-4: EDAM	PA-5: EIM Part.	PA-6: EIM Ph. 2	MEMBER TOTAL
SMUD	\$1,588,678.94	\$155,000.00	\$-	\$590,500.00	\$320,000.00	\$2,702,937.00	\$35,050.00	\$5,392,165.94
MID	\$380,549.36	\$93,000.00	\$-	\$-	\$-	\$-	\$82,475.00	\$556,024.36
ROSEVILLE	\$181,104.81	\$32,550.00	\$112,971.00	\$-	\$-	\$-	\$70,650.00	\$397,275.81
REDDING	\$114,623.30	\$29,450.00	\$71,187.00	\$-	\$-	\$-	\$66,825.00	\$282,085.30
SHASTA LAKE	\$27,509.59	\$-	\$-	\$-	\$-	\$-	\$-	\$27,509.59
TPUD	\$25,000.00	\$-	\$-	\$-	\$-	\$-	\$-	\$25,000.00
BANC TOTAL	\$2,317,466.00	\$310,000.00	\$184,158.00	\$590,500.00	\$320,000.00	\$2,702,937.00	\$255,000.00	\$6,680,061.00
WASN	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
GRAND TOTAL	\$2,317,466.00	\$310,000.00	\$184,158.00	\$590,500.00	\$320,000.00	\$2,702,937.00	\$255,000.00	\$6,680,061.00

Balancing Authority of Northern California

Agenda Item 5E

1. Resolution 18-11-01 *Resolution Setting the Regular Meeting Dates for 2019.*
2. Attachment A to Resolution 18-11-01.

**Balancing Authority of Northern California
Resolution 18-11-01**

RESOLUTION SETTING THE REGULAR MEETING DATES FOR 2019

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:

1. Approve the 2019 Regular Meeting Schedule, attached hereto as Attachment A.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November, 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary

Time and Place of Regular Meetings for 2019

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 915 L Street, Suite 1480.

1. March 27
2. May 15
3. June 26
4. July 24

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

1. January 23
2. February 20
3. April 17
4. August 21
5. September 18
6. October 23
7. November 20
8. December 18

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.

Balancing Authority of Northern California

Agenda Item 5F

1. **BANC PC Area 2018 Transmission Planning Assessment.**
2. **Resolution 18-11-07 *Acknowledgment and Acceptance of BANC PC Area 2018 Transmission Planning Assessment.***

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

11/07/18

To: BANC Commission

From: BANC Counsel

RE: Acknowledgement and Acceptance of BANC PC Area 2018 Transmission Planning Assessment

Included in the Commission packet for the November 14, 2018 Balancing Authority of Northern California (BANC) Commission meeting is the BANC Planning Coordinator (PC) Area 2018 Transmission Planning Assessment.¹ This document was produced by the Sacramento Municipal Utility District (SMUD), which serves as the BANC PC Services Provider, and received verbal approval from each member of the BANC Planning Committee the week of November 6, 2018. 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-001-4 (Transmission System Planning Performance) were met for years 2019 through 2028 (planning years one through ten).

A number of studies were performed to assess BES performance under various scenarios. The Assessment did not identify any system deficiencies or criteria violations for the BANC PC portion of the BES. This assessment demonstrates BANC's compliance with the NERC TPL-001-4 Reliability Standard, the WECC TPL-001-WECC-CRT-3 Transmission System Performance Criterion, and the BANC PC Participant's respective voltage criteria.

Compliance with NERC Reliability Standard TPL-001-4 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 2018 Transmission Planning Assessment by resolution.²

¹ Entities included in the BANC PC Area include: the Modesto Irrigation District, Redding Electric Utility, 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 2018 for more information regarding the status of all PC-related NERC reliability standards.



Balancing Authority of Northern California

**BANC PC Area
2018 Transmission System
Planning Assessment**

November 7, 2018

Final

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-001-4 NERC Reliability Standard for the years 2019 through 2028 (planning years one through ten).

Steady state, short circuit, and stability analyses were performed to assess the BES performance following various NERC Category P0-P7 contingencies and extreme events. Sensitivity studies and a spare equipment unavailability analysis were also performed as part of the assessment.

For all analyses performed, there were no system deficiencies or criteria violations identified for the BANC PC portion of the BES. Furthermore, cascading was not identified for any of the extreme events evaluated. As such, there were no corrective action plans developed as a result of the assessment.

The assessment demonstrates BANC's compliance with the NERC TPL-001-4 Reliability Standard, the WECC TPL-001-WECC-CRT-3 Transmission System Performance Criterion, and the BANC PC Participant's respective voltage criteria.



Table of Contents

Executive Summary	ii
Terms	v
1 Introduction	1
2 Study Scope.....	1
2.1 Steady State Analysis	2
2.2 Stability Analysis.....	2
2.3 Sensitivity Study Scenarios	2
2.4 Spare Equipment Unavailability Study Scenarios	2
2.5 Short Circuit Analysis	3
2.6 Summary of Study Years and Scenarios	3
3 Study Assumptions	3
3.1 System Model Representations	3
3.1.1 Existing Facilities	4
3.1.2 Extended Duration Outages	4
3.1.3 New Planned Facilities and Changes to Existing Facilities	4
3.1.4 Real and Reactive Load Forecasts	4
3.1.5 Firm Transmission Service and Interchange Commitments	5
3.1.6 Resources Required for Load	5
4 Analyses.....	6
4.1 Steady State Analysis	6
4.1.1 Peak Load Years	7
4.1.2 Off-peak Load Years.....	7
4.1.3 Extended Duration Outages	7
4.1.4 Sensitivity Analysis	7
4.1.5 Spare Equipment Unavailability Analysis	8
4.1.6 Contingencies Studied	8
4.1.7 Performance Requirements	10
4.2 Short Circuit Analysis	10
4.2.1 Simulation Software	11
4.2.2 Rating Criteria	11
4.3 Stability Analysis.....	11
4.3.1 Peak Load Years	11
4.3.2 Off-peak Load Years.....	11
4.3.3 Sensitivity Analysis	11
4.3.4 Long-Term Planning Horizon	12
4.3.5 Contingencies Studied	12
4.3.6 Performance requirements	13
5 Study Results.....	14
5.1 Steady State.....	14
5.1.1 Impact of Extreme Contingencies	14
5.1.2 Sensitivity Analysis	14



5.1.3 Spare Equipment Unavailability Analysis	14
5.2 Short Circuit	15
5.3 Stability	15
5.3.1 Sensitivity Analysis	15
5.3.2 Impact of Extreme Contingencies	15
References	16
Appendix A. TPL-001-4 Requirement Matrix	17
Appendix B. Planned Projects	19
Appendix C. Steady State Analysis Results.....	20
Appendix D. Steady State Sensitivity Analysis Results	22
Appendix E. Sample Transient Stability Plots.....	24



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 Participants” and collectively “PC Participants”). The City of Shasta Lake and Trinity Public Utility District are BANC members, but are not PC Participants¹. BANC and SMUD entered into an agreement wherein SMUD provides PC services to BANC on a contract basis.

An assessment was performed for the BANC PC area portion of the Bulk Electric System (BES) in 2018 to demonstrate that it meets all performance and other requirements specified in the TPL-001-4 NERC Reliability Standard [1] for the years 2019 through 2028 (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.

2 Study Scope

The BANC PC annual assessment measured the BES performance at the BANC PC Participant area for the years 2019 through 2028 (planning years one through ten) with the specific goal of demonstrating compliance with the TPL-001-4 NERC Reliability Standard. As such, the assessment was comprised of the following analyses:

- Steady state analysis
- Stability analysis
- Sensitivity analysis
- Spare equipment unavailability analysis
- Short circuit 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.



2.1 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 (2020) and year five (2023). The long-term horizon shall be assessed using a peak load case for year ten (2028) because it has the highest summer peak load forecast and, thus, is the most stressed BES study scenario.

In addition, the system performance at off-peak shall be assessed using the year two (2020) spring off-peak case.

2.2 Stability Analysis

A stability analysis shall be performed to assess the system performance in the near-term planning horizon. The peak and off-peak cases for year two (2020) shall be used in the assessment.

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-20 year load forecast 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 2020 and 2023. For the spring off-peak year of 2020, a reduced and increased generation dispatch, and transformer bank offline scenarios were selected. A stability sensitivity analysis of the summer peak and spring off peak for the year 2020 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. The spare equipment strategies for SMUD and REU showed that REU's Airport 230/115 kV transformer and SMUD's 230 kV shunt capacitors could be out of service for one year or more. Studies were performed with these facilities out of service to assess the impact on system performance for these possible unavailabilities.

There are no long lead time major transmission equipment in the MID and RE systems.



2.5 Short Circuit Analysis

A short circuit analysis shall be used to assess the near-term transmission planning horizon using peak load, 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.

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

Analysis	Scenario	Near-term horizon year					Long-term horizon year				
		1 2019	2 '20	3 '21	4 '22	5 '23	6 '24	7 '25	8 '26	9 '27	10 '28
Steady state	Peak	-	X	-	-	X	-	-	-	-	X
	Off-peak	-	X	-	-	-	-	-	-	-	-
Stability	Peak	-	X	-	-	-	-	-	-	-	-
	Off-peak	-	X	-	-	-	-	-	-	-	-
Spare equipment unavailability	Peak	-	X	-	-	-	-	-	-	-	-
	Off-peak	-	-	-	-	-	-	-	-	-	-
Steady state sensitivity	Peak	-	X	-	-	X	-	-	-	-	-
	Off-peak	-	X	-	-	-	-	-	-	-	-
Stability sensitivity	Peak	-	X	-	-	-	-	-	-	-	-
	Off-peak	-	X	-	-	-	-	-	-	-	-
Short circuit ²	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 of the BANC PC area. These system models were developed in accordance with NERC Reliability Standard

² 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.



MOD-032-1 and were submitted to the WECC for use in the compilation of base cases for various study years and scenarios.

The study cases from the CAISO 2017-2018 Transmission Planning Assessment cycle were used as the seed cases for this assessment. These cases, which are listed in the Table 3.1 below, were derived from WECC-approved base cases and were used for the PG&E 500 kV bulk transmission system assessment.

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

Study Year	Scenario	WECC Base Case	Derived CAISO Base Case
2020	Summer Peak	18HS3Sa	2019HS_dyn_M1
2020	Spring Off-Peak	17LSP2sa	2019ML_dyn_M1
2023	Summer Peak	22HS1a	2022HS_dyn_M1
2028	Summer Peak	26HS1a	2027HS_dyn_M1

These study cases were updated to reflect the system operating conditions, including the load forecasts and generation dispatch levels, provided by each BANC PC Participant.

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.

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 with a duration of at least six months because there are no such known outages.

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 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. A 1-in-20 peak load forecast was used for the sensitivity analysis. Table 3.2 below lists the summary of the load forecast data for all BANC PC Participants.



Table 3.2 – Load demand forecasts

PC Participant	Scenario	Real Power (MW)			Power Factor
		2020	2023	2028	
SMUD	1-in-10 Summer Peak	3222	3248	3317	0.983 lag
	1-in-20 Summer Peak	3327	3346	3437	
	Spring Off-Peak	1909	-	-	
MID	1-in-10 Summer Peak	687	701	727	0.968 lag
	1-in-20 Summer Peak	689	707	733	
	Spring Off-Peak	324	-	-	
REU	1-in-10 Summer Peak	262	261	262	0.999 lag
	1-in-20 Summer Peak	262	261	262	
	Spring Off-Peak	185	-	-	
RE	1-in-10 Summer Peak	373	383	402	0.985 lag
	1-in-20 Summer Peak	375	385	404	
	Spring Off-Peak	95	-	-	

3.1.5 Firm Transmission Service and Interchange Commitments

Firm transmission service and interchange commitments were not represented in this assessment since there were no such commitments.

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.

The system models did not represent demand side resources since they are not considered reliable for planning purposes.



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	Off-Peak
SMUD	Thermal	Cosumnes Power Plant	560	596
		Campbell Soup	150	0
		Procter & Gamble	165	50
		Carson Ice	90	0
		McClellan	65	0
		Kiefer Landfill	15	15
		UCD Med Center	25	10
	Hydro	Loon Lake	10	25
		Robbs Peak	5	23
		Jones Fork	10	10
		Union Valley	44	40
		Jaybird	66	60
		Camino	77	70
		White Rock	110	0
	Solar	Cordova	118	0
		Elk Grove	71	0
		Hedge	1	0
		SolarShares I	73	0
		Sutter Landing North City	1	0
MID	Thermal	Woodland	85	62
		McClure	0	0
		Ripon	0	0
	Hydro	Don Pedro	45	45
	Solar	McHenry	24	0
REU	Thermal	Redding	136	0
RE	Thermal	Roseville Energy Park	150	0
		Roseville Peakers	0	0
Total			2,096	944

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). This software is 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-001-4 NERC Reliability Standard for the years 2019 through 2028 (planning years one through ten). The analysis was also performed to assess the impact of extreme events identified in TPL-001-4. 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 (i.e. 2020, 2023, and 2028) to span the near-term and long-term planning horizons. Years two (2020) and five (2023) 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 2028 was selected for inclusion because it is the year in the long-term planning horizon that is most stressed due to the higher peak load.

4.1.2 Off-peak Load Years

This assessment included a steady state analysis of off-peak loads for planning year two of 2020. Off-peak load refers to a scenario during the early morning hours of a day in spring with light system load, voltages higher than normal, and generation at a minimum. The off-peak load used in this assessment was determined using engineering judgment and historical off-peak spring load data, and provided by each BANC PC Participant.

4.1.3 Extended Duration Outages

As noted in Section 3.2.2 above, there was no known generation or transmission facility outage with a duration of at least six months. As such, this assessment did not include a steady state analysis of P1 events from Table 1 in TPL-001-4 with any known extended duration outages.

4.1.4 Sensitivity Analysis

This assessment included two 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 2020 peak load year by using the 1-in-20 peak load forecast instead of the 1-in-10 peak load forecast. The load power factors in the sensitivity cases were assumed to remain the same.

A sensitivity analysis was also performed on the 2020 off-peak load year by assuming the power output of one unit was reduced by approximately 50% for each BANC PC Participant, which would result in an increase in system imports and a decrease in online spinning generation. Since both REU and RE's spring off-peak generation dispatch was 0 MW, the sensitivity analysis assumed an alternate dispatch scenario with generation committed and dispatched. In addition, an additional sensitivity analysis was performed for the REU and RE spring off-peak sensitivity with the Airport 230/115 kV and Fiddymont 230/60 kV transformers assumed offline, respectively. Table 4.1 lists the scenarios for each BANC PC Participant in the sensitivity study base cases.



Table 4.1 – Spring off-peak sensitivity scenarios

PC Participant	Plant	Scenario	
		Off-Peak	Off-Peak Sensitivity
SMUD	Cosumnes Power Plant	596 MW	300 MW
MID	Woodland	62 MW	30 MW
REU	Redding Power Plant	0 MW	130 MW
	Airport 230/115 kV Transformer #1	Online	Offline
RE	Roseville Power Plant	0 MW	150 MW
	Fiddymment 230/60 kV Transformer	Online	Offline

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:

- Elk Grove 230 kV bus shunt capacitor
- Foothill 230 kV bus shunt capacitor
- Natomas 230 kV bus shunt capacitor
- Airport 230/115 kV transformer

A steady state analysis was performed for the 2020 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-001-4.

4.1.6 Contingencies Studied

The steady state analysis was performed using contingencies listed in Table 1 of TPL-001-4. Only those planning events in Table 1 of TPL-001-4 that were expected to produce more severe impacts on the BANC PC portion of the BES were identified and included in this assessment. In addition, extreme events in Table 1 of TPL-001-4 were identified and included in this analysis. The rationale for selecting the contingencies for the steady state analysis was based on engineering judgment, past studies, and knowledge of the BANC PC areas and surrounding portions of the BES. 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. Transmission facilities were tripped when simulations showed post-contingency currents that exceeded 150 percent of their respective winter emergency ratings at the SMUD area.

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-001-4, R3.4, contingencies used in this analysis were coordinated with all adjacent PC's and TP's 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 study breaker attempting to clear a fault on one of the following: <ul style="list-style-type: none"> • Loss of one generator (P4.1) • Loss of one transmission circuit (P4.2) • Loss of one transformer (P4.3) • Loss of one shunt device (P4.4) • Loss of one bus section (P4.5) • Loss of a bus-tie-breaker (P4.6)
P5 (Multiple Contingency)	Contingencies with delayed fault clearing due to the failure of a non-redundant relay protecting the faulted element to operate as designed for one of the following: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Any two adjacent circuits on common structure (P7.1) • Loss of a bipolar DC lines (P7.2)



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-001-4.

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.

Table 4.3 – Steady State Voltage Criteria

PC Participant	Nominal Voltage	Normal Conditions		Emergency Conditions		Voltage Deviation (P1 & P2.1 only)
		Vmin (pu)	Vmax (pu)	Vmin (pu)	Vmax (pu)	
SMUD	230 kV	0.95	1.05	0.95	1.05	≤ 8%
MID	230 kV	0.95	1.05	0.90	1.10	≤ 8%
	115 kV	0.95	1.05	0.90	1.10	≤ 8%
REU	115 kV	0.974	1.078	0.948	1.078	≤ 8%
RE	230 kV	0.95	1.05	0.90	1.10	≤ 8%

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, MID, REU, and RE. 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 covered the near-term planning horizon and are listed in Table 4.4.



Table 4.4 - Years Studied for Short Circuit Analysis

PC Participant	Years Studied
SMUD	2015, 2020
MID	2019, 2023
REU	2016
RE	2017

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 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.

The transient stability of the long-term planning horizon was not assessed because there are no planned material generation additions or changes in that horizon.

4.3.1 Peak Load Years

This assessment included a stability analysis of the 2020 peak load year in the near-term planning horizon.

The rationale for selecting year two (2020) instead of year one 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 2020 off-peak load condition in the near-term planning horizon.

4.3.3 Sensitivity Analysis

Similar to 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 2020 peak load year by using the 1-in-20 peak load forecast instead of the 1-in-10 peak load forecast. The load power factors in the sensitivity cases were assumed to remain the same.

A sensitivity analysis was also performed on the 2020 off-peak load year by assuming the power output of one generator unit reduced or increased, or transformer bank offline for each BANC PC Participant. The scenarios chosen can be found in Table 4.1.

4.3.4 Long-Term Planning Horizon

A stability analysis was not performed for the long-term planning horizon since there are no planned material generation additions or changes in this planning horizon.

4.3.5 Contingencies Studied

A stability analysis was performed based on the contingencies listed in Table 1 of TPL-001-4. Those planning events in Table 1 of TPL-001-4 that were expected to produce more severe stability impacts on the BANC PC portion of the BES were identified and included in this assessment. Extreme events were also identified and included in the analysis.

A summary of the types of stability contingencies evaluated in the stability analysis are shown in Table 4.2. This analysis evaluated the transient stability performance of approximately 22,000 contingencies across the BANC PC area. The rationale for selecting the contingencies for the stability analysis was based on engineering judgment, past studies, and knowledge of the BANC PC area and surrounding portions of the BES.

All contingencies simulated the removal of all elements that the protection system and other automatic controls are expected to disconnect without operator intervention. Since high speed reclosing (i.e. less than one second) is not utilized for 3-phase faults in the BANC PC area, it was not included in any of the events with 3-phase faults. 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 below the ride-through voltage limitations 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.

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

The contingencies used in the transient stability analysis were coordinated with all adjacent PC's and TP's 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-001-4. 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 and not evaluated against any 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.

The criteria in WR1 of *WECC Criterion TPL-001-WECC-CRT-3 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 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.

5.1 Steady State

The steady state analysis did not identify any performance deficiencies for the Category P0 to P7 contingencies that were evaluated. As such, there were no corrective action plans resulting from the steady state analysis.

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

5.1.1 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 and because cascading was not identified, corrective action plans were not developed to mitigate these contingencies.

A summary of the steady state study results for extreme contingencies can be referenced in Appendix C.

5.1.2 Sensitivity Analysis

The sensitivity analyses identified several facility ratings violations in the SMUD, MID, and REU portions of the PC area. A fault at Natomas 230 kV breaker 420 (P2.3) causes the Natomas 230 kV bus voltage to drop below the 0.95pu voltage criteria. A corrective action plan is not required to address this single sensitivity case based on the TPL-001-4 standard R2.7. All of the other facility ratings violations were from extreme contingencies. The extreme contingencies are very low probability events and because cascading was not identified, corrective action plans were not developed to mitigate these contingencies.

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

5.1.3 Spare Equipment Unavailability Analysis

The results of the 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. However, SMUD's Hurley circuit breakers 5814, 5820, 5828, and 5834 should be reviewed in future assessments due to their high interrupting duties.

The interrupting capabilities are listed in References [4] to [8].

5.3 Stability

The stability analysis for the 2020 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 stability performance deficiencies. All performance criteria were met.

5.3.2 Impact of Extreme Contingencies

The stability analysis did not identify any cascading or uncontrolled islanding.



References

- [1] *Transmission System Planning Performance Requirements*. NERC Reliability Standard TPL-001-4. May 7, 2014.
- [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] *Assessment of Interruption Capability of 230 kV Circuit Breaker*. Sacramento Municipal Utility District. November 6, 2015.
- [5] *Assessment of Interruption Capability of 230 kV Circuit Breaker Addendum*. Sacramento Municipal Utility District. December 18, 2015.
- [6] *2016 System Impedance Diagram & Fault Duties*. Redding Electric Utility. September 28, 2016.
- [7] *MID BES Circuit Breaker Capacity Ratings and Maximum Available Fault Current for 2017 TPL Assessment*. Modesto Irrigation District. September 15, 2017.
- [8] *2017 Fault Level-CB Breaking Capability Limits*. Roseville Electric. September 6, 2017.



Appendix A. TPL-001-4 Requirement Matrix

The table below lists the TPL-001-4 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	3
R1.1	-	-
R1.1.1	3.1.1	4
R1.1.2	3.1.2	4
R1.1.3	3.1.3	4
R1.1.4	3.1.4	4
R1.1.5	3.1.5	5
R1.1.6	3.1.6	5
R2	-	-
R2.1	4.1	6
R2.1.1	4.1.1	7
R2.1.2	4.1.2	7
R2.1.3	4.1.3	7
R2.1.4	4.1.4	7
R2.1.5	4.1.5	8
R2.2	4.1.1	7
R2.2.1	4.1.1	7
R2.3	4.2, 5.2	10,15
R2.4	4.3	11
R2.4.1	4.3.1	11
R2.4.2	4.3.2	11
R2.4.3	4.3.3	11
R2.5	4.3.4	12
R2.6	4.2	10
R2.6.1	4.2	10
R2.6.2	4.2	10
R2.7	5	14
R2.7.1	5	14
R2.7.2	5	14
R2.7.3	5	14
R2.7.4	5	14
R2.8	5.2	15
R2.8.1	5.2	15
R2.8.2	5.2	15
R3	4.1	6
R3.1	4.1.6	8
R3.2	4.1.6	8
R3.3	4.1.6	8
R3.3.1	4.1.6	8
R3.3.1.1	4.1.6	8
R3.3.1.2	4.1.6	8



Table A.1 continued

Requirement	Section	Page
R3.3.2	4.1.6	8
R3.4	4.1.6	8
R3.4.1	4.1.6	8
R3.5	4.1.6	8
R4	4.3.5	12
R4.1	4.3.5	12
R4.1.1	4.3.6	13
R4.1.2	4.3.6	13
R4.1.3	4.3.6	13
R4.2	4.3.6	13
R4.3	4.3.6	13
R4.3.1	4.3.6	13
R4.3.1.1	4.3.6	13
R4.3.1.2	4.3.6	13
R4.3.1.3	4.3.6	13
R4.3.2	4.3.6	13
R4.4	4.3.6	13
R4.4.1	4.3.6	13
R4.5	4.3.6	13
R5	4.3.6	13
R6	4.3.6	13
R7	1	1
R8	-	-
R8.1	-	-



Appendix B. Planned Projects

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

PC Participant	Project Name	Project Description	Project Status	Expected In-Service Date
SMUD	Natomas 230/69 kV Transformer #2	Additional 230/69-kV transformer at the Natomas substation.	Approved	2018
	CPP CT2 Upgrade	Upgrade the CPP CT #2 combustion components, which increases the unit's real power output.	Approved	May 2018
	Hurley Jumper Replacement Project	Increase the rating of Tracy-Hurley 230 kV #1 and #2 lines by reconductoring the Hurley jumpers, strain bus, and taps to original Elverta-Tracy lines.	Approved	Fall 2018
	Hurley - Procter 230 kV Line Reconductoring	Reconductor the Hurley-Procter 230-kV line with a higher ampacity conductor.	Approved	Spring 2019
	CPP CT3 Upgrade	Upgrade the CPP CT #3 combustion components, which increases the unit's real power output.	Approved	April 2019
	Franklin 230 kV Substation	A new 230 kV substation in the Franklin area and looped the Rancho Seco – Pocket 230 kV #1 and #2 lines into the substation.	Approved	May 2019
	Orangevale Shunt Capacitor	Install 50-MVAR Capacitor possibly at Orangevale 230 kV substation.	Approved	Fall 2019
	Hurley 230 kV bus-tie breaker	Split Hurley 230 kV bus with bus-tie breaker so that bus faults do not take out the entire bus.	Approved	2020
	Carmichael Shunt Capacitor	50-MVAR Capacitor possibly at Carmichael 230 kV.	Approved	2020
	Solar Shares II	123-MW solar PV project at Rancho Seco 230 kV.	Proposed	Fall 2020



**Balancing Authority of Northern California
Resolution 18-11-07**

**ACKNOWLEDGEMENT AND ACCEPTANCE OF BALANCING AUTHORITY OF NORTHERN
CALIFORNIA PLANNING COORDINATOR AREA 2018 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, Modesto Irrigation District, Redding Electric Utility, and Roseville Electric; and

WHEREAS, BANC must demonstrate compliance with certain PC-related NERC reliability standards, including TPL-001-4; and

WHEREAS, in order to meet this standard, SMUD, as the PC Services Provider, produced the BANC PC Area 2018 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 2019 through 2028; and

WHEREAS, the Assessment concludes that no system deficiencies or criteria violations were identified for the BANC PC portion of the Bulk Electric System; and

WHEREAS, each PC Committee member verbally approved the Assessment on or before November 10th.

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

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 14th day of November, 2018, by the following vote:

		Aye	No	Abstain	Absent
Modesto ID	Greg Salyer				
City of Redding	Dan Beans				
City of Roseville	Michelle Bertolino				
City of Shasta Lake	James Takehara				
SMUD	Arlen Orchard				
TPUD	Paul Hauser				

Greg Salyer
Chair

Attest by: C. Anthony Braun
Secretary