

Balancing Authority of Northern California

Regular Meeting of the Commissioners of BANC

2:00 P.M.

Wednesday, May 15, 2019

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 **May 15, 2019 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 March 27, 2019.
 - B. BANC Operator Reports (March and April).
 - C. Compliance Officer Reports (April and May).
 - D. PC Committee Chair Reports (April and May).
 - E. General Manager’s Report and Strategic Initiatives Update.
- 5 Regular Agenda Items – Discussion and Possible Action.**
 - A. EIM / EDAM / RC Updates.
 - i. Consider and Possibly Approve Resolution 19-05-07 *Authorization of Amendment to Utilicast Contract for Services Related to Phase 2 of Energy Imbalance Market to Include WAPA-SNR, Cost Sharing Agreement with WAPA-SNR, and Related 2019 BANC Budget Amendment.*
 - ii. Consider and Possibly Approve Resolution 19-05-08 *Authorization of Contract for Services Related to EDAM Feasibility Assessment.*
 - B. 2019 WECC/NERC BANC Audit Update.
 - C. Consider and Possibly Approve Resolution 19-05-06 *Acknowledgement and Acceptance of the 2019 Summer Load & Resources Assessment of the Balancing Authority of Northern California.*
 - D. Future Meetings and Strategic Planning.
- 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 March 27, 2019 BANC Regular Meeting.**
- B. BANC Operator Reports (March and April).**
- C. Compliance Officer Reports (April and May).**
- D. PC Committee Chair Reports (April and May).**
- E. General Manager Report and Strategic Initiatives Update.**

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

March 27, 2019

On this date, a Regular Meeting of the Commissioners of the Balancing Authority of Northern California (BANC) was held at 915 L Street, Suite 1480, Sacramento, CA 95814.

Representatives Present:

Member Agency	Commissioner
Modesto Irrigation District	Greg Salyer, Chair
City of Redding	Dan Beans
City of Roseville	Michelle Bertolino
Sacramento Municipal Utility District	Steve Lins
City of Shasta Lake	James Takehara
Trinity Public Utilities District	Paul Hauser

Agency	Liaison
Western Area Power Administration	Sonja Anderson Ray Ward

1. Call to Order: Chair Salyer called the meeting to order at 2:00 p.m.
2. Matters Subsequent to Posting the Agenda: None.
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: (A) Minutes of the Regular Commission Meeting held on January 23, 2019. (B) BANC Operator's Reports for January and February; (C) Compliance Officer's Reports for February and March; (D) PC Committee Chair's Report for February and March; and (E) General Manager's Report and Strategic Initiatives Update.
5. Regular Agenda Items:
 - A. Representatives from Duke-American Transmission Company (DATC) provided a brief overview of DATC and the San Luis Transmission Project (SLTP). In late 2018, DATC entered into an MOU with San Luis & Delta-Mendota Water Authority, the Western Area Power Administration (WAPA), and the U.S. Bureau of Reclamation (BOR). WAPA has completed permitting of the SLTP and is currently developing an 80-mile, 230kV line to provide transmission service to certain water customers. The current project is designed to deliver 600MW of bi-directional transfer capability, with BOR reserving 400MW north-to-south and DATC to market the residual capacity. DATC filed with FERC for use of the WAPA Open Access Transmission Tariff (OATT) in March of 2019, with WAPA's FERC filing expected to follow in April. DATC is currently marketing the 'excess' capacity

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

(200MW north-to-south and 600MW south-to-north) and will be conducting a public 'Open Season' for available capacity, anticipated to run from approximately mid-April to mid-May. Contract negotiations are expected to follow mid-May through August, followed by DATC project financing in Q4 2019. Land acquisition is expected to begin as early as late 2019 and the in-service date is projected for 2023.

Mr. Salyer asked whether the project would be in the BANC footprint, and it was confirmed that it would be. Ms. Bertolino asked if any issues were anticipated with adjacent landowners, and Ms. Anderson responded that she had not heard of any. A representative from DATC responded that they have held multiple scoping meetings, landowners have been notified, designs completed, and the only party with any significant issues during permitting was the Dept. of Water Resources.

- B. EIM/EDAM/RC Updates - Mr. Shetler gave an update regarding EIM Phases 1 and 2. Parallel Ops is complete for Phase 1, with EMS upgrades expected to go live mid-March. Nothing is currently anticipated to affect the planned 4/3 go-live date. Mr. Salyer asked about the projected estimated savings, and Mr. Shetler clarified that the settlement information is not included in parallel ops. The budget is estimated to come close to what was estimated. For Phase 2, the cost allocation methodology has been approved by the Commission, and the basic understanding of the Phase 2 methodology has been agreed upon between members of the BANC Resources Committee, WAPA-SNR, and CAISO. Targeting the August 21, 2019 Commission Meeting for a Phase 2 decision, with the goal being going live with Phase 2 in April of 2021.
- Regarding EDAM, Feasibility Assessment (FA) results are anticipated in late April, with the FA expected to be finalized this summer. The FA is a gross benefits analysis of the market as a whole and is intended to give a sense of whether there are market-wide benefits and sufficient market size to proceed. Entities will have the ability to contract separately for more detailed individual assessments.
- Regarding RC Services, Mr. Shetler reported that efforts continue to resolve the transitioning of processes and technology to the new RCs. A Seams Summit was held on March 11th, and there are numerous sub-working groups for various other issues. The first on-site NERC/WECC RC certification visit will take place the week of 3/25 at the CAISO (RC West). Shadow Operations for RC West is expected to commence 5/1. BANC is on track to transition to RC West on 7/1, as planned. Mr. Salyer asked whether RC West was an actual separate entity from CAISO, and Mr. Shetler responded that it was not.
- C. Mr. Leigh-Kendall and Mr. Smith provided an overview of the updates to the BANC Internal Compliance Program Charter and associated program-related documents and confirmed that BANC's Member Compliance Review Committee (MCRC) was actively involved in the review process. It was noted that there was an error in the chart in Appendix C/Figure 1, and corrected diagram was distributed to show SMUD as a PC Participant. Mr. Lins moved, Mr. Beans seconded, and the participating Commissioners unanimously approved 19-03-19 *Approval of BANC Internal Compliance Program Charter*.
- D. Mr. Braun provided a Legal & Regulatory update and touched on EIM Governance changes, EDAM, RA reform/central buyer issues at the state level, and AB 56, which establishes a 'CA Alternative Energy and Advance Transportation Financing Authority.'

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BALANCING AUTHORITY OF NORTHERN CALIFORNIA (BANC)

- E. Mr. Shetler shared that BANC had received a 'clean bill of health' from the auditors and noted that the financials were included in the packet. No questions were raised. Mr. Hauser moved, Mr. Takehara seconded, and the participating Commissioners unanimously accepted the BANC 2018 Audited Financials.
- F. Mr. Shetler noted that there were no changes to the participation percentages again this year. Mr. Beans moved, Mr. Hauser seconded, and the participating Commissioners unanimously approved 19-03-20 *Accepting and Adopting the BANC Member Participation Percentages for 2019*.
- G. Mr. Shetler indicated that there may not be any agenda items for an April meeting, but no final decision will be made until closer to the planned meeting date. He also noted that he would be making visits to BANC Members in the near future. The August 21st BANC Commission Meeting is currently being targeted as this year's strategic planning session and for a decision regarding EIM Phase 2.

6. Closed Session:

- A. The Commission retired to closed session for conference with legal counsel in anticipation of litigation pursuant to subdivision (c) of Cal. Gov't Code § 54956.9; one case.

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

The meeting was adjourned at 3:42 p.m.

Minutes approved on May 15, 2019.

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 March 2019

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- NWPP Reserve Energy Activations
 - 1 contingency requiring activation of NWPP
 - 294.7 MW average generation lost
 - 294.7 MW maximum generation lost
 - Generating unit(s) and date(s) affected: CPP unit #3 relayed while performing load test on March 14.
 - All recoveries within 3.25 minutes
- USF
 - 3 of 31 days with instances of USF mitigation procedure utilized
 - 2 days on Path 66
 - No operational impact on BANC
- BAAL Operation:
 - Maximum duration of BAAL exceedance: 1 minute
 - Number of BAAL exceedance >10 minutes: None
 - BAAL violation (BAAL exceedance >30 minutes): None

Monthly Notes:

- No additional notes or impacts for March 2019

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 April 2019

Operations:

- BA Operations: Normal
- Significant BA Issues: None
- NWPP Reserve Energy Activations
 - 1 contingency requiring activation of NWPP
 - 365 MW average generation lost
 - 365 MW maximum generation lost
 - Generating unit(s) and date(s) affected: Shasta units 3, 4, 5 tripped off for a loss of 365 MW caused by lightning strike on April 19.
 - All recoveries within 2 minutes
- USF
 - 2 of 30 days with instances of USF mitigation procedure utilized
 - 2 days on Path 66
 - No operational impact on BANC
- BAAL Operation
 - Data under evaluation

Monthly Notes:

- No additional notes or impacts for April 2019

Compliance Officer Report

BANC Commission Meeting

April 2019

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

BA Compliance Issues:

- No significant operational Balancing Authority compliance events occurred.
- All required BA compliance reports and operating data were submitted to WECC.
- The Critical Infrastructure Protection (CIP) Mock Audit concluded on April 5, 2019 with no reportable instances of potential non-compliance impacting BANC. However, the exercise was valuable in identifying focus areas in preparation for upcoming 2019 WECC Audit (scheduled September 3, 2019 -September 13, 2019). The Archer Security Group made a presentation to SMUD & BANC teams and executives at the end of the on-site week, and their final report is expected by the end of April.
- WECC is expected to issue a final BANC Inherent Risk Assessment (IRA) and Compliance Oversight Plan (COP) in April. The COP will identify all NERC Reliability Standards and requirements that will be in-scope for the upcoming audit.
- The BANC MCRC Charter was presented to the BANC Commission for review and information, and the BANC ICPC was approved at the March 27, 2019 Commission meeting. Final versions have been posted to the BANC Members Only website.

BANC MCRC:

- The next BANC MCRC teleconference is scheduled to be held at 10:00 AM on Monday, April 29, 2019.

Compliance Officer Report

BANC Commission Meeting

May 2019

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.
- WECC recently issued BANC's Inherent Risk Assessment Report, the results of which will shape WECC's compliance monitoring and enforcement strategies for the foreseeable future. WECC identified five high risk areas for BANC (CIP Impact Rating Criteria, Critical Transmission, ICCP Connectivity, Transmission Portfolio, and UFLS Development and Coordination).
- BANC received its Compliance Oversight Plan ("COP"), which is based on the results of WECC's Inherent Risk Assessment and includes all NERC Reliability Standards and requirements selected for monitoring (*i.e.*, audit, self-certification). The COP recognizes the maturity of BANC's compliance program and the proactive engagement and transparency of management in identifying and fixing reliability and security issues. The requirements included in the scope for the upcoming audit are limited in comparison to previous audits, although WECC will do a deeper dive into those higher risk areas. Other applicable standards that are not being audited have been granted internal monitoring and self-certification activities at set intervals over time.
- As part of the 2019 audit, WECC will also perform Internal Controls Evaluations on 5 BA/PC-applicable requirements (4 "CIP" and 1 "O&P"). The results of these evaluations could further impact the type and frequency of monitoring activities applied to these requirements.

BANC MCRC:

- The next BANC MCRC teleconference is scheduled to be held at 10:00 AM on Monday, May 20, 2019.

PC Committee Chair Report

BANC Commission Meeting

April 2019

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:

- Staff held a BANC PC Committee meeting via WebEx on March 21, 2019 to discuss study plans for the FAC-013, FAC-014, and PRC-026 studies. Prabal Singh (SMUD) will be performing these studies on behalf of BANC.
- Staff finalized the TPL-001-4 (Ten-Year Assessment) base cases and study plan on April 5th, 2019. The steady state analysis has been performed, and the results are currently under review. The transient stability analysis is currently being performed. Preliminary results are on track to be distributed to PC Participants on April 26th.

PC Committee Chair Report

BANC Commission Meeting

May 2019

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:

- Staff distributed draft results for the TPL-001-4 (Ten-Year Assessment) to the PC Participants on April 26, 2019. Comments are due May 24, 2019.
- Staff is developing compliance evidence for MOD-033 that is due July 1, 2019. The evidence that is due pertains to dynamic model validation for the BANC PC Participant footprint.
- Staff finalized the FAC-013 Near-Term Transfer Capability Assessment on May 7, 2019.

GM Report

BANC Commission Meeting

May 15, 2019

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

Outreach Efforts:

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

LADWP/Seattle City Light/SRP

Dialogue continues with these entities regarding EIM participation. 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. We are routinely holding bi-weekly calls to provide updates and discuss issues. To date, we have collaborated with the other POUs on joint language to use in the EIM Entity agreement that we will all need to sign for EIM operations, on how to address market-based rate authority with DMM, potential common language for OATT revisions, and joint comments on the EIM governance issues. 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 most recent face-to-face meeting was held on March 18, 2019, at SRP Offices in Phoenix. An update call was held on April 22, 2019. The next face-to-face meeting has yet to be scheduled but is likely to occur sometime mid-late summer in Sacramento. We have agreed to cut back the number of conference calls and face-to-face meetings until there is a clearer understanding on where regionalization might be heading.

Market Initiatives:

EIM Participation

The BANC EIM Phase 1 implementation effort was completed on April 3, 2019, with the successful go-live of BANC as the EIM Entity and SMUD as a Participating Resource. The CAISO reported that this was one of the easiest and quickest go-lives they have experienced to date. Over all the transition to live EIM operations went well with only some minor issues. We are now monitoring EIM participation.

The BANC EIM Phase 2 effort was kicked off with a meeting of BANC, SMUD, the Phase 2 Entities (MID, Redding, and Roseville), WAPA-SNR, and the consultant (Utilicast) on 3/7/19. We are continuing with efforts to allow decision-making by the members that will support a Commission decision at the August 21st meeting regarding moving forward with Phase 2.

With regards to IBAA relief, BANC and TANC have held discussions with the CAISO, which is holding firm on the need for IBAA. However, the CAISO acknowledges that when any of the BANC entities join EIM, there will not be a need for IBAA for that entity in the future.

EDAM Participation

The CAISO has also announced the intent to allow EIM entities to participate in an extended Day-ahead Market (EDAM). Based upon the discussions among the EIM entities and the CAISO, we have agreed to perform a feasibility assessment of the proposed market design. The feasibility assessment was initiated in December 2018 and is planned for completion in June 2019. Initial model runs have been performed and the group is reviewing these initial results. 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. In accordance with the BANC plan for this effort, we are discussing a contract with the consultants for some additional BANC/SMUD focused work on the feasibility assessment. We will be bringing contracts for Commission approval in the near future.

WAPA:

Market Engagement

We are continuing to work with WAPA on integrating them in to the EIM implementation discussions. We have included WAPA-SNR in our Phase 2 discussions. WAPA-SNR and the Bureau have expressed an interest in considering EIM participation in Phase 2. As a result, we will be requesting at its May 15, 2019, meeting that the Commission approve an amendment to the Utilicast contract to include WAPA-SNR/Bureau in the Phase 2 gap analysis, a budget adjustment for the

expanded scope, and a cost sharing agreement with WAPA-SNR to reimburse BANC for the additional cost.

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. There is a possibility that the DWR may also consider bringing some of the State Water Project in to the BANC through participation in the SLTP. We are participating in follow-up meetings with WAPA-SNR, DWR, and the State Water Contractors on this project. In December the State Water Contractors board voted to recommend that DWR participate in the SLTP with at least a 50 MW share. A follow-up meeting was held in mid-March. In addition, the SLTP developers (DATC) updated the Commission on the project status at the March Commission meeting. The parties are initiating discussions with CAISO and BANC will participate as appropriate.

Peak Reliability:

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; however, we have not seen any movement on this potential.

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. BANC has executed the CAISO RC Services Agreement. We have confirmed with the CAISO that the BANC footprint will move to what is now being called RC West for RC services by July 1, 2019. Activities are on track to support the July 1st transition. NERC and WECC conducted the onsite certification review of the CAISO in March and there were no significant findings. RC West initiated "shadow operations" with Peak on May 1, 2019, and no significant issues have been identified to date.

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 the April 30th Annual Meeting it was announced that the Peak membership had approved by an 81% majority the resolution to dissolve Peak effective in December.

Peak MAC and Board Meetings

The quarterly meeting of the Peak MAC and Board was held on April 30, 2019, in Portland. I attended these meetings in my roles as both the BANC executive sponsor and as the Peak MAC Chair. This also served as the annual meeting of Peak and is expected to be the last in-person meetings of Peak. Any remaining meetings will be held via webinar/conference call.

WECC

Electricity/Natural Gas Reliability Interface

WECC initiated its natural gas/electricity interface study in September 2017. WECC continues its outreach on this effort and is planning some next steps on industry coordination regarding follow-up actions.

WECC Board Meetings

I attended the WECC Reliability Summit in Phoenix on May 1st and will plan on attending the next WECC MAC and Board meetings on June 18-19 in Salt Lake City.

RC Services for the West

WECC and NERC are focused on the RC transition in the West and view it as a major reliability issue for the coming year. WECC/NERC are gearing up for the certification effort for the new RCs. They have determined that Peak will not require a formal recertification on each of the four RC transitions in 2019. 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.

NERC Section 1600 Data Request

WECC has initiated a Section 1600 data request process, under the NERC Rules of Procedure, as an alternative to participation in the Western Interconnection Data Sharing (WIDSA) agreement that is currently being negotiated by the RCs. Working with BBSW, BANC filed comments on the proposed process. These comments suggested that it would be preferred if WECC continued to participate in the WIDSA, but if they proceed with approval of the Section 1600 process that they provide assurances that data will be protected as outlined in Section 1500 of the NERC Rules of Procedure

BANC/SMUD NERC/WECC Audit

Out triennial audit for NERC standards' compliance is scheduled for 9/3-13/19 this year. BANC is working with SMUD to coordinate this effort. To date SMUD has conducted an operations readiness review and brought in a third party to conduct a CIP mock audit. We have also been in discussions with WECC regarding the scope of the planned audit this fall.

CDWR Delta Pumping Load:

BANC is coordinating with SMUD, CDWR, WAPA, and the CAISO regarding how the construction and pumping loads and ancillary services will be provided for this project. The CAISO has reached out to BANC/SMUD/WAPA-SNR regarding contacts for initiating discussions on how CAISO will supply energy for the construction loads in our footprints. With the Governor's recent announcement that the project will be downsized from two to one tunnel, we expect at least a 2-3 year delay in any start to the project.

Strategic Initiatives:

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

BANC 2018/2019 Strategic Plan - Routine Initiatives - May 2019 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	Attend CREPC/WIRAB Mtg 4/17-18/19
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 - May 2019 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	COMPLETE Go-live 4/3/19	
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	Initiated Phase 2 Effort Initial effort started On-going w/ CAISO	
11 High		EDAM Phase 1 evaluation ~ Feasibility Assessment ~ CAISO Stakeholder Process	Jim Shetler/BBSW Jim Shetler/BBSW	2nd Qtr. 2019 4th Qtr. 2019	FA effort initiated	
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	Reviewing EIM Gov. Prop. 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	Shadow ops initiated 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		MEMBER SERVICES	Evaluate TP services for Redding & Roseville	Jim Shetler/J. Gillette	12/31/18	Direct between SMUD and Redding/Roseville

Balancing Authority of Northern California

Agenda Item 5A

1. **Resolution 19-05-07 *Authorization of Amendment to Utilicast Contract for Services Related to Phase 2 of Energy Imbalance Market to Include WAPA-SNR, Cost Sharing Agreement with WAPA-SNR, and Related 2019 BANC Budget Amendment.***
2. **Attachment A - 2019 BANC Budget Amendment to PA-6.**
3. **Utilicast Consulting Services Agreement – WAPA-SNR Phase 2 Gap Analysis Amendment.**
4. **Cost Sharing Agreement : BANC EIM Phase 2 Gap Analysis of WAPA-SNR’s Participation in the CAISO EIM Market.**
5. **Resolution 19-05-08 *Authorization of Contract for Services Related to EDAM Feasibility Assessment.***
6. **The Brattle Group Draft Agreement/Cost Proposal.**

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

5/07/19

To: BANC Commission

From: BANC Counsel

RE: Authorization of Amendment to Utilicast Contract for Services Related to Phase 2 of Energy Imbalance Market to Include WAPA-SNR, Cost Sharing Agreement with WAPA-SNR, and Related BANC Budget Amendment

In January of 2019, the BANC Commission authorized the General Manager to enter into a contract with Utilicast, who was subsequently engaged to provide consulting services related to participation in the Energy Imbalance market (EIM) and the proposed Enhanced Day Ahead Market (EDAM). “BANC EIM Phase 1” (Phase 1) refers to the development and deployment of EIM within the BANC footprint, with the Sacramento Municipal Utility District (SMUD) as the sole participant. “BANC EIM Phase 2” (Phase 2) generally refers to the incremental participation by other BANC members and/or the Western Area Power Administration – Sierra Nevada Region (WAPA-SNR).

The proposed work was divided into four (4) discreet tasks, and only authorization for tasks 1, 2 and 4 was requested and approved:

- Task #1: BANC/SMUD EIM Phase 2 Post Go-Live Support and Analysis
- Task #2: BANC EIM Phase 2 System and Process Gap Analysis and Implementation Plan
- Task #3: BANC EIM Phase 2 Project Implementation and Project Management support
- Task #4: CAISO Extended Day Ahead Market (EDAM) Support for BANC/SMUD

Following execution of the contract with Utilicast, WAPA-SNR determined that they, too, would like to have an EIM Gap Analysis performed for their footprint to determine what might be required for them to participate in BANC EIM Phase 2. The United States Bureau of Reclamation (USBR) will also be participating in this analysis, given the integration of USBR generation within WAPA-SNR operations. As a result, Utilicast was asked to provide a revised contract proposal to include WAPA-SNR and USBR resources in the EIM Phase 2 Gap Analysis (Task #2).

In the proposed contract revision that follows, Task #2 has been divided into two sub-tasks. The addition of Task 2b has been reflected in both Exhibit A (Scope of Work) and Exhibit B (Fee Schedule):

- Task 2a: BANC EIM Phase 2 Gap Analysis and Implementation Plan: BANC Members

- Task 2b: BANC EIM Phase 2 Gap Analysis and Implementation Plan: WAPA-SNR

In support of this contract revision, a cost sharing agreement between BANC and WAPA-SNR has been drafted to set forth the terms and conditions for WAPA-SNR to reimburse BANC for the costs it incurs from Utilicast to perform this work on WAPA-SNR's behalf. That contract is also included in the meeting materials.

Finally, in order to accommodate this effort within the approved BANC budget for 2019, an amendment to PA-6 ("EIM Phase 2 Preparation") is required to include the WAPA-SNR gap analysis effort. Based on the estimates received from Utilicast, this additional scope can be included without any impacts to the total amount already approved for PA-6 and the approved 2019 BANC budget.

The Commission is being asked to authorize BANC staff to do the following:

1. Amend BANC's contract with Utilicast to include Task 2b: BANC EIM Phase 2 Gap Analysis and Implementation Plan: WAPA-SNR
2. Enter into a cost sharing agreement with WAPA-SNR to obtain reimbursement for their share of the costs related to the effort in Task 2b of the amended Utilicast contract
3. Amend PA-6 to include the increased scope with no financial impact to either the budget item or the approved 2019 BANC budget

**Balancing Authority of Northern California
Resolution 19-05-07**

Authorization of Amendment to Utilicast Contract for Services Related to Phase 2 of Energy Imbalance Market to Include WAPA-SNR, Cost Sharing Agreement with WAPA-SNR, and Related 2019 BANC Budget Amendment

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

WHEREAS, BANC has entered into a contract with Utilicast to evaluate and review current anticipated market design issues that may arise due to participation in the Energy Imbalance Market (“EIM”) or the proposed Extended Day Ahead Market (“EDAM”); and

WHEREAS, BANC has determined using a phased approach through a BANC EIM Project would allow BANC and its members to proceed with participation in the EIM; and

WHEREAS, BANC EIM Phase 1 went live April 3, 2019, with the Sacramento Municipal Utility District as the sole initial BANC Member participant ; and

WHEREAS, three additional BANC Members - the City of Roseville, the City of Redding, and the Modesto Irrigation District – are considering entry into the CAISO EIM market in April of 2021, referred to as BANC EIM Phase 2; and

WHEREAS, the Western Area Power Administration – Sierra Nevada Region (WAPA-SNR) – is also considering entry into the CAISO EIM market in April of 2021; and

WHEREAS, BANC needs additional analysis performed on behalf of its three additional BANC Members - the City of Roseville, the City of Redding, and the Modesto Irrigation District – and WAPA-SNR to determine the feasibility and costs of their participation in BANC EIM Phase 2; and

WHEREAS the BANC General Manager’s delegated contracting authority is limited to \$25,000;

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

1. Authorizes the General Manager to enter into an amended contract with Utilicast for an amount not to exceed \$240,800 and including a revised Task 2 with new subtask ‘Task 2b: BANC EIM Phase 2 Gap Analysis: Western Area Power Administration – Sierra Nevada Region (WAPA-SNR).’
2. Authorizes the General Manager to enter into a cost sharing agreement with WAPA-SNR to obtain reimbursement for their share of the costs related to the effort in Task 2b of the amended Utilicast contract.
3. Approves the amended 2019 BANC Budget item PA-6, attached hereto as Attachment A.

**Balancing Authority of Northern California
Resolution 19-05-07**

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of May 2019, 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

Attachment A to Resolution 19-05-07

1. Project Agreement #6 (PA-6) – EIM Phase 2 Preparation (Revision 1)

a. Assumptions

- i. MID, Redding, Roseville, and WAPA-SNR/Bureau participate in the Phase 2 preparation effort (no commitment to Phase 2; go/no-go decision will be August 2019)
- ii. Each potential participant will pay their share of activities that directly benefit them. Shared costs for the Phase 2 members 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 member 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. (\$~40,000/each member x 3 = \$120,000; \$~60,000 for WAPA-SNR => \$~180,000 Total)
 - 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

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b. Cost Estimates:

MEMBER	GAP ANALYSIS	PHASE 2 IMP. AGR.	BANC PROC.	TOTAL
MID	\$40,000.00	\$14,075.00	\$8,400.00	\$62,475.00
Roseville	\$40,000.00	\$6,650.00	\$4,000.00	\$50,650.00
Redding	\$40,000.00	\$4,275.00	\$2,550.00	\$46,825.00
WAPA-SNR	\$60,000.00	\$-	\$-	\$60,000.00
SMUD	\$-	\$-	\$35,050.00	\$35,050.00
TOTAL	\$180,000.00	\$25,000.00	\$50,000.00	\$255,000.00

Consulting Services Agreement

This **Consulting Services Agreement** ("Agreement") is made and entered into by and between the **Balancing Authority of Northern California** ("BANC") and **Utilicast LLC** ("Consultant"), effective as of the latest date set forth in the signature block. BANC and the Consultant are collectively referred to herein as the Parties. The Parties enter into this Agreement to, among other things, allow Consultant to provide services as described in the Scope of Work set forth in Exhibit A and to perform such other duties as BANC may reasonably request from time to time.

Recitals

WHEREAS, BANC desires to engage Consultant to provide the services described herein, as an independent contractor;

WHEREAS, Consultant desires to provide such services to BANC, on the terms and subject to the conditions of this Agreement;

NOW THEREFORE, in consideration of the mutual agreements set forth in this Agreement and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, BANC and Contractor agree as follows:

Agreement

The Parties agree as follows:

- 1. Term and Termination.** This Agreement shall be effective as of the latest date set forth in the signature block and shall continue until terminated as provided in Section 5.
- 2. General Scope of Services.** BANC retains Consultant to provide services as described in the attached Scope of Work (Exhibit A), as it may be amended from time to time.
- 3. Fees.** For professional services provided under this Agreement, compensation shall occur in accordance with the following: (a) BANC shall pay Consultant for services set forth in the attached Fee Schedule (Exhibit B) on a monthly basis, pursuant to monthly invoices either derived as budgets or direct labor rates for time and expenses in accordance with the Fee Schedule; and (b) the total compensation to Consultant shall not exceed the amount set forth in the Fee Schedule, which shall constitute BANC's maximum financial obligation under this Agreement.
- 4. Billing and Payment.** Consultant shall provide monthly invoices to BANC for all fees and expenses.
- 5. Termination.** BANC may terminate this Agreement, in whole or in part, at any time, upon written notice to the Consultant, for any reason or no reason. The Consultant may terminate this Agreement at any time, upon thirty (30) days advance written notice to BANC. In the event that BANC terminates this Agreement, so long as the Consultant is not in breach of the Agreement, BANC shall pay the Consultant for all services performed through the date of termination, subject to the other terms and conditions of this Agreement. The Consultant shall not be entitled to receive any lost profits or other consequential damages as a result of an early termination.

6. Confidentiality. The materials reviewed by Consultant in the course of performing services under this Agreement shall be deemed sensitive and are not to be distributed or discussed with other parties or outside of the performance of the services under this Agreement. Further, some materials and advice provided by Consultant to BANC are prepared in anticipation of litigation and may contain or constitute materials covered by attorney-client or work product privileges. All written communications providing analysis or work products produced by Consultant shall be made directly to representatives of BANC, unless otherwise specified by representatives of BANC. The Consultant agrees to be bound by the Non-Disclosure Agreement ("NDA") substantially similar to that included as Exhibit C to this Agreement and has executed the "Acknowledgment" attached thereto.

7. Notices. All notices, invoices, reports or other communication required herein shall be properly given if delivered in person or sent by first-class mail or overnight delivery to the following addresses.

BANC: James R. Shetler
The Balancing Authority of Northern California
P.O. Box 15830, MS D109
Sacramento, CA 95852-1830

Consultant: David Luedtke
P.O. Box 38
Kirkland, WA 98083

8. Dispute Resolution and Attorneys Fees.

- a. Any legal suit, action or proceeding arising out of or based upon this Agreement or the transactions contemplated hereby may be instituted in the federal courts of the United States of America in the Eastern District of California or the courts of the state of California, and each party irrevocably submits to the exclusive jurisdiction of such courts in any such suit, action or proceeding. The parties irrevocably and unconditionally waive any objection to the laying of venue of any suit, action or any proceeding in such courts, or to the exercise of personal jurisdiction by such courts, and irrevocably waive and agree not to plead or claim in any such court that any such suit, action or proceeding brought in any such court has been brought in an inconvenient forum. It is further agreed that service of process in any such litigation may be made in the manner provided for in Section 415.40 of the California Code of Civil Procedure or in any other manner provided for in said code for service upon a person outside the State of California.
- b. If any legal action or any mediation, arbitration or other proceeding is brought for the enforcement of this Agreement or because of any dispute, or alleged breach, default or misrepresentation in connection with any of the provisions of this Agreement, the prevailing party or parties shall be entitled to recover reasonable attorneys' fees and other costs, including, without limitation, expert witness fees and costs, incurred in that action or proceeding, in addition to any other relief to which the prevailing party or parties may be entitled.

9. Miscellaneous.

- a. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of California, exclusive of conflict of laws provisions.
- b. This Agreement and Attachments constitute the entire agreement between the Parties concerning the subject matter hereof.
- c. This Agreement may not be modified or amended without the express written agreement of the Parties.
- d. In the performance of work, duties, and obligations assumed under this Agreement, it is mutually understood and agreed that Consultant, including any and all of Consultant's officers, agents, and employees, will at all times be acting and performing as an independent contractor. This Agreement shall not be construed to create any association, partnership, joint venture, employee or agency relationship between the Consultant and BANC. Consultant has no authority to bind BANC and shall make no agreements or representations on BANC's behalf without BANC's prior written consent.
- e. Consultant may, in its discretion and at its own expense, employ such assistants as Consultant deems necessary to perform the services. If any specific employee is designated in Exhibit B to perform the services under this Agreement, the Consultant may only replace such designated employee with BANC's prior written approval, and with a replacement satisfactory to BANC.
- f. Consultant agrees to indemnify and hold harmless and defend BANC from any and all injuries, damages, claims, demands, costs, expenses, losses or liabilities, in law or in equity arising from acts or failure to act by Consultant's officers, employees, subcontractors, and any other person, firm, or corporation furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement. The Parties mutually agree and understand that the preceding sentence is applicable only to the extent that any of the above are caused by the negligent acts, errors, omissions or willful misconduct of Consultant or its agents, and not to claims resulting from or arising out of BANC's sole negligence acts, errors, omissions or willful misconduct.
- g. This Agreement may be executed in counterparts and by facsimile or electronic signature, each of which shall be deemed an original and all of which together shall constitute one instrument.

The Parties hereby agree to the terms and conditions set forth in the foregoing text.

**The Balancing Authority
of Northern California**

Utilicast LLC

James R. Shetler
Title: General Manager

David Luedtke
Title: President

Date: _____

Date: _____

Exhibit A Scope of Work

Task Descriptions & Assumptions

Task #1: BANC/SMUD EIM Phase 1 Post Go-Live Support and Analysis

- This task will be completed in the period between May 1, 2019 and approximately August 31, 2019.
- This task is estimated to require 180 hours to complete.
- Consultant will provide ongoing, post go-live support and analysis for the BANC EIM Phase I Implementation project.
- Consultant will provide day-to-day subject matter expertise, and expert analysis of BANC EIM Entity's and SMUD Participating Resource Entity's EIM Market participation and results.
- Consultant will analyze and support resolution of issues which are observed by the consultant and/or assigned by the BANC/SMUD EIM Project leadership team.

Task #2a: BANC EIM Phase 2 Gap Analysis and Implementation Plan: BANC Members

- This task will be completed in the period between May 1, 2019 and August 31, 2019.
- This task is estimated to require 540 hours to complete.
- Consultant will perform an analysis of each BANC EIM candidate's current state versus the desired EIM end-state, across software/telemetry systems, staffing, and business processes.
- Consultant will work with BANC Member teams to clearly identify and define the functional gaps and requirements for EIM.
- Consultant will present identified gaps with options and recommendations for closure. The gap closure options will include making maximum effective use of existing BANC Member systems (including SMUD's), processes, and staff.
- Consultant will deliver an "EIM Gap Analysis Report," which will identify critical gaps and how they can best be addressed in the BANC Phase 2 EIM Implementation Project. The EIM Gap Analysis Report deliverable for each BANC EIM candidate will include a review of at least the following areas for system and/or business process gaps:
 - Full Network Model
 - Merchant Generation/Trading Base Schedule and EIM Energy Bid Submissions
 - Outage Management
 - EIM Entity Intertie Schedule Creation, Management, and Submission
 - EIM Entity Desk and Situational awareness, Training & Testing
 - Generation Dispatch, EMS, and CAISO ADS system integration
 - CAISO EIM Metering
 - Demand & Variable Energy Resource Forecasting
 - EIM Market Settlement and Billing
 - Open Access Transmission Tariff (OATT) Update for EIM Market Participation
 - User/Staff Training and Software System Testing
 - ICCP data provision/integration
 - Transmission paths for EIM participation
 - Existing Contracts
- Consultant will gather input from interviews with BANC Member management, subject matter experts, (SMEs) and key personnel.

- Consultant will leverage BANC/SMUD Phase 1 EIM Implementation Project experience and the BANC/SMUD Phase 1 System and Process Gap Analysis Reports delivered in that project.
- Consultant will include an initial assessment of requirements for Western Area Power Administration – Sierra Nevada Region (WAPA-SNR) EIM process enabling support.
- Consultant will analyze the BANC BAA 'big picture' options - how best to organize and implement the expanded Phase 2 BANC EIM Entity to take advantage of the BANC scale; maintain accountability for balancing at the sub-BAA level; and produce greatest benefits to EIM members.
- Consultant will deliver a BANC EIM Phase 2 Implementation Plan and Schedule which incorporates the EIM Gap Analysis Report findings; the CAISO's EIM Implementation Plan/Schedule; any required EIM software additions or extensions; and existing SMUD sub-BAA EIM participation into a coherent, executable plan.

Task #2b: BANC EIM Phase 2 Gap Analysis: Western Area Power Administration – Sierra Nevada Region (WAPA-SNR)

- This task will be completed in the period between May 1, 2019 and August 31, 2019. It will be executed/supported in parallel with Task #1 and #2a.
- This task is estimated to require 280 hours to complete:
 - 240 hours to assess WAPA-SNR systems, staffing, and capabilities against EIM requirements. Roughly 3 weeks on-site plus 3 weeks analysis and write-up.
 - 40 hours to include WAPA-SNR in the larger BANC-EIM 'big picture' participation options. Could include: discussions with other BANC EIM candidates; discussion with WAPA-SNR; discussion with CAISO SMEs; and discussions with SMUD SMEs.
- Consultant will perform an analysis of WAPA-SNR current state versus the desired EIM end-state, across software/telemetry systems, staffing, and business processes.
- Consultant will work with WAPA-SNR staff to clearly identify and define the functional gaps and requirements for EIM.
- Consultant will present identified gaps with options and recommendations for closure. The gap closure options will include making maximum effective use of existing BANC and WAPA-SNR systems (including SMUD's systems), processes, and staff.
- Consultant will deliver an "EIM Phase 2 Gap Analysis Report," which will identify critical gaps and how they can best be addressed in the BANC Phase 2 EIM Implementation Project. The EIM Phase 2 Gap Analysis Report deliverable for WAPA-SNR will include a review of at least the following areas for system and/or business process gaps:
 - Full Network Model
 - Merchant Generation/Trading Base Schedule and EIM Energy Bid Submissions
 - Outage Management
 - EIM Entity Intertie Schedule Creation, Management, and Submission
 - EIM Entity Desk and Situational awareness, Training & Testing
 - Generation Dispatch, EMS, and CAISO ADS system integration
 - CAISO EIM Metering
 - Demand & Variable Energy Resource Forecasting
 - EIM Market Settlement and Billing/Finance process
 - Open Access Transmission Tariff (OATT) Update for EIM Market Participation
 - User/Staff Training and Software System Testing
 - ICCP data provision/integration
 - Transmission paths for EIM participation
 - Existing Contracts
 - EIM Software/Systems

- The final BANC “EIM Phase 2 Gap Analysis Report” will present the EIM implementation gaps for WAPA-SNR and will include a written discussion of the options for bringing multiple BANC Members (inclusive of WAPA-SNR) into a coherent BANC EIM Entity, including a recommendation for project structure.
- Consultant will gather input from interviews with WAPA-SNR management, SMEs, and key personnel.
- Consultant will leverage BANC/SMUD Phase 1 EIM Implementation Project experience and the BANC/SMUD Phase 1 System and Process Gap Analysis Reports delivered in that project.
- Consultant will analyze the BANC BAA 'big picture' options - how best to organize and implement the expanded Phase 2 BANC EIM Entity to take advantage of the BANC scale; maintain accountability for balancing at the sub-BAA level; and produce greatest benefits to EIM members (inclusive of WAPA-SNR).
- Consultant will include WAPA-SNR tasks and goals in the BANC EIM Phase 2 Implementation Plan and Schedule identified above in Task #2a, which incorporates the EIM Gap Analysis Report findings; the CAISO’s EIM Implementation Plan/Schedule; any required EIM software additions or extensions; and existing SMUD sub-BAA EIM participation into a coherent, executable plan.
- To accommodate this additional scope and meet the overall task timeline, Utilicast may utilize an additional consultant to support the services provided in Tasks #2a and #2b.

Task #3 (NOT CURRENTLY APPROVED): BANC EIM Phase 2 Project Implementation and Project Management Support¹

- *This task will be completed in the period between September 1, 2019 and April 30, 2021 (87 Weeks).*
- *This task is estimated to require 3,045 hours to complete. Consultant is expected to require an average of 35 hours per week to successfully deliver this project.*
- *Consultant will assist in developing a detailed project plan (including cost and schedule estimate, and project organization).*
- *Consultant will maintain and manage the project plan and schedule,*
- *Consultant will advise the leadership team on project issues.*
- *Consultant will support the leadership team during project meetings for both in-house and CAISO discussions.*
- *Consultant will also act as EIM/CAISO Market Subject Matter Expert for the implementation project.*
- *Consultant will leverage previous EIM Implementation experiences, and the Consultant network to address questions and issues as they arise.*
- *Consultant will ensure issues are resolved timely.*
- *Consultant will work with the assigned BANC Member staff and SMEs in executing the EIM Implementation Project.*
- *Consultant is responsible for delivering these key project tasks:*

¹ *This Task 3 is subject to separate BANC Commission Approval and dependent upon a decision by Phase 2 Participants to proceed with EIM implementation. Initial development of this Task 3 did not contemplate WAPA-SNR participation in the BANC EIM Phase 2, except in its facilitative role for interconnected BANC Members. However, given WAPA-SNR’s recent decision to have the Consultant perform a separate WAPA-SNR gap study (Task 2b, above), this Task 3 will need to be revised to address a potential inclusion of WAPA-SNR as part of the Phase 2 implementation. Based on this change in scope, Consultant has determined that it is necessary to gain further information via their Task 2b (BANC EIM Phase 2 Gap Analysis: Western Area Power Administration – Sierra Nevada Region) efforts before providing a revised Task 3 estimate (likely, the Task 3 revisions will be addressed like Task 2 by being broken into two separate tasks – i.e., Task3a and Task 3b). Furthermore, should WAPA-SNR proceed, not only will a separate Task 3 need to be developed for WAPA-SNR implementation, Task 3 may also need revisions regarding the estimates related to BANC Member implementation, since this implementation will no doubt be impacted by a parallel WAPA-SNR implementation. Upon BANC Commission approval of Task 3, written approval shall be provided to Consultant by the BANC General Manager to commence work in accordance with the Fee Schedule provided Exhibit B to this Agreement.*

- *Institute a formal review and reporting process that ensures that the project team has regular meetings and that results are reported to BANC General Manager and any other key stakeholders on a regular basis.*
- *Establish a communication process and knowledge repository where key project documents are maintained and available to the project team members.*
- *Create and maintain a detailed project plan.*
 - *Consultant will extend the BANC EIM Phase 2 Implementation Plan and Schedule created in Task #1 above to manage the project's schedule, deliverables, and key dates. Using deliverables for similar sized utilities as a guide, the consultant will work with BANC Member staff to create a custom-tailored project plan that includes all the elements critical to EIM implementation with special consideration given to following CAISO's published guidelines and milestones.*
- *Consultant will create and execute a risk and issue management plan.*
- *Consultant will create and manage an EIM Market change management process.*

Task #4: *Extended Day Ahead Market (EDAM) Support for BANC/SMUD*

- Consultant believes this task can be completed successfully on a part-time, as needed, basis, during the period between May 1, 2019 and approximately April 30, 2020.
- This task is estimated to require 120 hours to complete.
- Consultant will provide EIM and CAISO Market subject matter expertise for the BANC Members in their evaluation of the CAISO's EDAM.
- Consultant will also provide an implementation assessment of impacts to the BANC/SMUD organizations if the BANC EIM members decide to move forward with the EDAM implementation.
- Consultant understands that support for this Task 4 is primarily required during the EDAM feasibility study phase, and the EDAM Stakeholder design phase.

Assumptions

- The BANC Phase 2 EIM Implementation project is a priority for BANC. The leadership team and BANC EIM members will provide resources and support to the project as needed to ensure its success and will empower and delegate appropriate authority to the BANC and Consultant project leads be able to assign work, direct resources, and make daily project decisions.
- BANC Phase 2 EIM Implementation includes four potential EIM additions: Roseville, REU, MID and WAPA-SNR.
- Consultant will assist in the definition and design of interfaces, but BANC Members and WAPA-SNR will develop interfaces to integrate legacy systems with the EIM systems. Consultant can provide development services if needed, but costs for this support are not included in this Scope of Work.
- BANC Members and WAPA-SNR have internal Training and Organizational Change Management (OCM) teams which will manage knowledge transfer long term. Consultant will provide support for training content and has included a limited amount of OCM support. Consultant can provide additional support if needed, but costs for this support are not included in this Scope of Work.
- BANC Members and WAPA-SNR will be responsible for physical construction at generation stations and transmission substations. Consultant will work with assigned BANC Project Managers to coordinate and integrate schedules and provide EIM related information. Consultant does not provide construction services.
- BANC General Manager, BANC Member and WAPA-SNR staff will provide timely reviews of Consultant work products so as not to hinder project timelines.
- BANC Members and WAPA-SNR will provide an appropriate workspace and access for Consultant(s) when working onsite. This includes a desk, chair, phone and internet. Additionally, unescorted badge

access, extended hours / 24-hour access, CIP access when appropriate, and corporate network access for SharePoint, email, conference room reservation, etc. will be provided. Consultant will complete training, background checks, execute Non-Disclosure Agreements, or other use agreements, as requested, to obtain this access and agrees to comply with BANC Member and WAPA-SNR policies and procedures.

- Consultant assumes BANC EIM candidate members will assign capable Project Manager(s) to support Consultant and Consultant shall ensure BANC Project Manager(s) are kept apprised of the ongoing schedule and timelines.
 - BANC EIM candidate Project Managers will be responsible for managing and assuring timely execution/delivery of EIM Phase 2 deliverables for their companies.
- Consultant assumes BANC Members and WAPA-SNR, including SMUD and WAPA-SNR Business SMEs will be providing most of the implementation staffing and additional subject matter expertise for the EIM Implementation and ongoing operations.

**Exhibit B
Fee Schedule**

As-Needed Utilicast Subject Matter Expertise (SME) Allowance

- Consultant will provide 120 hours of “as-needed” EIM Operations, Modeling, and Technical SME support.
- These hours allow for the inclusion of specialized Consultant Subject Matter Experts to be utilized across all four tasks above if needed.
- The hours will only be utilized if a need for expertise is required, and the expertise is outside of the assigned consultant’s knowledge area.
- These hours would require approval by the BANC General Manager prior to any billable work being done.

Total Statement of Work Fees

The fees associated with this Scope of Work are provided in the Fee Schedule below.

FEE SCHEDULE					
Task	Start	End	Total Hours	Rate	Total \$
Task #1: BANC/SMUD EIM Phase 1 Post Go-Live Support and Analysis	5/1/2019	7/12/2019	180	\$215/hr	\$38,700
Task #2a: BANC EIM Phase 2 Gap Analysis and Implementation Plan	5/1/2019	8/31/2019	540	\$215/hr	\$116,100
Task #2b: BANC EIM Phase 2 Gap Analysis: WAPA-SNR	Execution of this agreement	8/31/2019	280	\$215/hr	\$60,200
<i>Task #3 (Not Currently Approved)²: BANC EIM Phase 2 Project Implementation and Project Management Support</i>	<i>9/1/2019</i>	<i>4/30/2021</i>	<i>3,045/0</i>	<i>\$215/hr</i>	<i>\$654,675/\$0</i>
Task #4: EIM Day Ahead Market (EDAM) Support for BANC/SMUD	5/1/2019	4/30/2020	120	\$215/hr	\$25,800
TOTALS³			1120		\$240,800

<i>As-Needed Market/Operations Subject Matter Expert Support</i>	<i>5/1/2019</i>	<i>4/30/2021</i>	<i>120</i>	<i>\$215/hr</i>	<i>\$25,800</i>
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Travel Expenses

² *This task is subject to BANC Commission Approval and dependent upon a decision by Phase 2 Participants to proceed with EIM implementation. The Fee Schedule will require additional Task 3 modifications to address WAPA-SNR’s potential participation. Upon BANC Commission approval, written approval shall be provided to Consultant by the BANC General Manager to commence work under this Task.*

³ **This is subject to change should WAPA-SNR proceed with implementation along with other BANC Members.**

Travel expenses are anticipated to be about 10% of fees but may vary based on the time of year and frequency of travel. Consultant will be reimbursed as follows:

- Travel Expenses – When traveling within the BANC region, reimbursement at cost for lodging and mileage at the current federal mileage rate at the time of travel. If travel to/from outside the BANC region is required, reimbursement at cost of actual coach class air travel, lodging, ground transportation (rental car, cab, Uber, mileage) and parking.
- Meals & Incidentals – When traveling at BANC’s request, Consultant resources will be reimbursed the current US General Services Administration (GSA) Per Diem rate for Meals and Incidentals for the city in which work is performed. This is anticipated to be primarily Redding, CA and Modesto, CA, but could include other locations.
- Receipts – Receipts will be provided for expenses over \$25 except for mileage and the Meals & Incidentals Per Diem, which will be at the current rates described above in lieu of receipts.

Notice to BANC When Consultant Reaches Eighty (80) Percent of Individual Task Fee Total

Consultant shall provide notice to BANC when eighty (80) percent of the total is reached in any task set forth in this Fee Schedule. Such notice may be delivered to the BANC General Manager via email communication as follows: jimshetler@thebanc.org.

Consultant shall use reasonable efforts to confirm receipt of said notice with the BANC General Manager (e.g., request for return email confirmation).

Exhibit C
Non-Disclosure Agreement

**CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT
AMONG THE
BALANCING AUTHORITY OF NORTHERN CALIFORNIA, ITS MEMBERS,
AND THE
WESTERN AREA POWER ADMINISTRATION**

This **CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT** (Agreement) is initially entered into by and among the Balancing Authority of Northern California (BANC), a joint powers authority, each of its members individually (Member), and the United States of America, acting by and through the Administrator, Western Area Power Administration, Department of Energy (Western), each hereinafter referred to as a "Party" and jointly as the "Parties."

WHEREAS, BANC is a North American Electric Reliability Corporation - certified Balancing Authority and is responsible for meeting Reliability Standards defined by NERC and the Western Electricity Coordinating Council for such entities to maintain reliable operation of the Bulk Electric System;

WHEREAS, each Member operates and plans for its electric system within the BANC Balancing Authority Area,

WHEREAS, Western is a power marketing administration of the Department of Energy that operates an electric system bounded by sufficient metering to measure interchange with others and is capable of controlling its resources to match actual interchange and actual frequency with scheduled interchange and scheduled frequency within its metered boundaries;

WHEREAS, BANC, Members, and Western possess certain non-public, Confidential Information (as defined in Section B.1 below) related to the Parties' operations of its respective systems;

WHEREAS, to allow the Parties to identify and fully assess options and opportunities relating to participation in the markets operated by the California Independent System Operator Corporation (Market Analysis), the Parties have agreed to exchange data by disclosing certain non-public, confidential, business-sensitive Information to the other Parties and/or the other Party's Designee and any BANC Consultant, retained to perform the Market Analysis; and

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

A. EXCHANGE OF DATA AND INFORMATION

The Parties agree to share operations review-related data and Information specific to each Party's business operations as needed for the Consultant to perform the Market Analysis. The Parties agree that it is the understanding and intent of both Parties to have 100% reciprocal sharing of comparable

Information related to the Market Analysis.

B. DEFINITIONS

1. The term "Confidential Information" as used in this Agreement, is Information which is in the possession of a Party or Designee and requested by another Party to be treated as confidential, and is marked pursuant to Section C below.

2. The term "BANC Consultant" means any consultant retained by BANC to assist with the Market Analysis.

3. The term "Designee" as used in this Agreement, means any agent, advisor, attorney, BANC Consultant, consultant, contractor, and/or subcontractor of any Party whom a Party has engaged to assist it in the support of the Market Analysis and whom the Parties have designated in writing in accordance with Section D of this Agreement, as an authorized recipient, for purposes of receiving Confidential Information from another Party. All terms in this Agreement concerning Confidential Information apply to the Designee, including but not limited to terms regarding the exchange, protection and disposition of Confidential Information.

4. The term "Information" as used in this Agreement, means information of any kind, in whatever form, including without limitation, business data, specifications, drawings, sketches, models, samples, reports, plans, forecasts, current or historical data, computer programs or documentation, and all other technical and financial data, whether disseminated orally, in writing, electronically or otherwise.

C. INFORMATION MARKING

1. All Information which is disclosed among or between Parties or any Designee, that the disclosing Party believes should be protected hereunder as Confidential Information shall be managed as follows:

- a. If in writing or other tangible form, be conspicuously labeled on every page as "Confidential," "Protected," "Official Use Only," or "Internal Discussion Only," or with a similar legend (e.g.: Confidential Information) at the time of delivery. This Confidential Information may not be disclosed outside of the Parties or Designees without the prior written approval of the disclosing Party;
- b. If oral Information is identified as Confidential Information at the time of disclosure, it shall be treated as Confidential Information;
- c. If oral Information is identified as Confidential Information and, if subsequently it is reduced to writing by a Party or Designee, it shall be treated as Confidential Information and shall be labeled in accordance with this Section C;

- d. If by electronic transfer, a description in the transmittal indicating "Confidential," or with similar legend, shall indicate that the files include in such transfer be treated as Confidential Information.
2. The Parties shall have the right at any time to correct, by written notification to the other Parties and/or their Designees, any failure to designate Information as Confidential Information. Immediately upon receiving said notification, the Parties and their Designees shall treat such Information as Confidential Information, and shall protect the Information in accordance with this Agreement.
3. A Party or Designee receiving Confidential Information shall not remove, overprint or deface any notice of copyright, trademark, logo, or other proprietary identification or notice of confidentiality from any Confidential Information.

D. INFORMATION DISCLOSURE AND RESTRICTIONS

1. The Parties shall:
 - a. Hold and maintain the Confidential Information in the strictest confidence and only use such Confidential Information as provided in furtherance of those tasks related to the work functions/projects identified in this Agreement;
 - b. Ensure that access to any Confidential Information released by a Party to another Party or Designee is restricted to only those individuals who have a legitimate need for the Confidential Information and:
 - i. each Party employee to whom disclosure is to be made (1) has been notified that the Confidential Information will be received in confidence and shall be kept in confidence by the employee, as set forth in this Agreement; and (2) has signed the attached "Acknowledgement" in a form, indicating that he or she has read this Agreement and understands and agrees that it governs the handling of Confidential Information;
 - ii. Designees, who have a legitimate need for the Confidential Information for purposes of assisting a Party with respect to its performance of data services under this Agreement, but only after any individuals to whom disclosure is to be made (1) have been notified that the Confidential Information will be received in confidence and kept in confidence by the individuals as set forth in this Agreement; and (2) have signed the "Acknowledgement";
 - c. Ensure that Confidential Information provided hereunder is used only for purposes directly related to activities identified in this Agreement;
 - d. Have processes in place to ensure that Confidential Information is safeguarded and kept in confidence and in a secure place by its employees and Designee;

- e. Immediately notify the Parties if it believes or has reason to believe that any Confidential Information may have been improperly released. The Parties and Designees shall cooperate with each other in the event there is or there is a reason to believe that Confidential Information has been improperly released.

2. The obligations imposed on the Parties and Designees shall not apply to certain Information – whether or not designated as Confidential Information, which is:

- a. Received in the ordinary course of business from a third party without restriction and without breach of this Agreement;
- b. Independently developed by a Party without the use of Confidential Information;
- c. Disclosed without restriction to a third party by a disclosing Party;
- d. Approved for release in writing by the disclosing Party, provided that the Confidential Information released is solely that of the disclosing Party;
- e. Required to be disclosed by any law, rule, regulation, or valid order of a court of competent jurisdiction, *provided* that the Party or Designee demanded to disclose notifies the Party or Parties as soon as practicable upon becoming aware of any court or other proceeding, process or request in which the release of Confidential Information is at issue or is reasonably anticipated to be at issue, and the Party or Designee demanded to disclose reasonably cooperates with other Party or Parties seeking a protective order to prevent the release of the Confidential Information, the expense of which shall be the responsibility of the Party, or Parties as applicable, seeking the protective order;
- f. Available to the general public at the time of disclosure or has become available to the general public after the time of disclosure other than as a result of any act or omission of a Party or Designee.

3. Except as set forth in Section 3, the Parties and Designees must return Confidential Information to the disclosing Party or destroy Confidential Information within fifteen days of a written request by the disclosing Party to do so. Within the fifteen day time period, each of the other Parties and Designees, if requested to do so, shall also submit to the disclosing Party an affidavit stating that, to the best of its knowledge, all Confidential Information has been returned or destroyed.

E. INFORMATION OWNERSHIP RIGHTS

Nothing in this Agreement shall be construed as granting or conferring any ownership rights in any Confidential Information disclosed by one Party to another Party or Designee. No disclosure of any Confidential Information hereunder shall be construed to be a public disclosure of Confidential Information for any purpose whatsoever.

F. UNAUTHORIZED DISCLOSURE

In the event that a Party or Designee discloses, disseminates, releases or otherwise makes available any Confidential Information received from another Party, except as provided by this Agreement, the disclosure, dissemination, or release will be deemed a material breach of this Agreement requiring the breaching Party or Designee to expeditiously, but within no later than five calendar days, return or destroy any and all Confidential Information previously provided by the other Parties. The provisions of this paragraph apply in addition to any other legal rights or remedies that the Parties may have under applicable law.

G. RELIABILITY AND ACCURACY OF CONFIDENTIAL INFORMATION

While any Confidential Information provided by a Party hereunder is believed to be reliable, no representation or warranty is made by any Party or its Designee as to the accuracy or completeness of the Confidential Information. By receipt of Confidential Information, the Parties agree that no Party shall have responsibility for any misstatement or omission of fact or for any opinion expressed in Confidential Information, and the Parties hereby mutually release all other Parties, their employees and agents, from any liability in connection with loss or damage suffered by another Party or its customers, employees, agents or clients resulting from use of or reliance upon the Confidential Information provided.

H. ENTIRE AGREEMENT; MODIFICATION

This Agreement constitutes the entire agreement between the Parties and supersedes any prior or contemporaneous oral or written representation or understanding with regard to the exchange of Confidential Information for purposes of the Market Analysis. This Agreement may not be modified except by a written agreement signed by the Parties.

I. EFFECTIVE DATE; DURATION; TERMINATION

1. This Agreement shall be effective for five (5) years from last date as executed by the Parties, expiring at 2400 hours (PT) thereon, unless later amended, in writing, by mutual agreement of the Parties. Any Party may terminate this Agreement upon 30 days written notice to the other Parties. Notwithstanding the above, the provisions concerning non-disclosure of Confidential Information received under this Agreement shall survive the expiration of the term of this Agreement.

2. Upon expiration of this Agreement, or at any time prior thereto upon the written or oral request of any Party, the other Parties and Designees shall take all necessary steps to ensure that any and all individuals in possession of Confidential Information pursuant to Section C of this Agreement immediately cease to use Confidential Information received from the disclosing Party. In such event, the Parties and Designees shall within fifteen

days of termination either (a) appropriately destroy all of the Confidential Information, including copies thereof, and, if requested, shall also submit to the disclosing Party an affidavit stating that, to the best of its knowledge, all Confidential Information has been returned or destroyed, or (b) at the disclosing Party's election, return all of the Confidential Information to the disclosing Party.

J. GOVERNING LAW

This Agreement shall be governed by Federal law and the laws of the State of California, each as applicable.

K. ELECTRONIC DATA BACKUPS

Notwithstanding other terms of Confidential Information return or destruction in the Agreement, the Parties and Designees are not obligated to remove the Confidential Information from their backed up electronic records outside of their normally scheduled retention policies, provided that the Parties and Designees do not make use of the Confidential Information. The term of this Agreement will apply to the backed up Confidential Information until it is deleted in the normal course of business.

L. EXHIBIT MADE A PART OF THIS AGREEMENT

Exhibit A, attached hereto, is made a part of this Agreement and shall be in full force and effect in accordance with its terms and conditions until superseded by a subsequent Exhibit.

IN WITNESS WHEREOF, the Parties have executed this Agreement in duplicate originals, each of which shall constitute and be an original effective Agreement between the Parties as of the date set forth in Section I above.

Acknowledgment

I, _____, hereby affirm that I have read the Confidentiality and Non-Disclosure Agreement executed February 24, 2016 among and between the Balancing Authority of Northern California, its Members and the United States of America, acting by and through the Western Area Power Administration, regarding Confidential Information and understand that the Non-Disclosure Agreement governs and restricts my use and disclosure of such information. I agree to be bound by the terms and conditions of the Confidentiality and Non-Disclosure Agreement.

Signature: _____

Printed Name: _____

Title: _____

Company: _____

Date: _____

BANC EIM Phase 2 Gap Analysis of Western Area Power Administration – Sierra Nevada Region’s Participation in the CAISO EIM Market

This Agreement (“Agreement”) is made this [date], between the Balancing Authority of Northern California, (“BANC”); and THE UNITED STATES OF AMERICA, Western Area Power Administration, Department of Energy, (“WAPA-SNR”), who may be referred to individually as a "Party" or collectively as the "Parties".

As California and other states in the Western Interconnection have moved to higher renewable portfolio standards and carbon reduction goals, the resulting increase in variable energy resources (“VERs”) has raised the concept of needing more real-time energy management capabilities. This in turn has led to the development of the Energy Imbalance Market (“EIM”) and expansion of the California Independent System Operator Corporation (“CAISO”) Real Time Market.

In response, BANC, certain of its members, and WAPA-SNR, commissioned studies to evaluate the pros and cons of participating in the CAISO EIM markets. Such studies supported the concept of a phased approach to BANC EIM participation, whereby BANC’s largest member, the Sacramento Municipal Utility District (“SMUD”), due to its existing infrastructure and higher net benefits, would participate in Phase 1 and the other BANC members and WAPA-SNR would continue to evaluate their participation after Phase 1.

On August 31, 2016, the BANC Commission approved the phased concept of EIM for BANC and authorized BANC to proceed with becoming an EIM Entity and for SMUD to join as an EIM Participating Resource.

On April 3, 2019, BANC and SMUD commenced operating in the CAISO EIM. Additionally, during this BANC EIM Phase 1 process, certain BANC members, including the Modesto Irrigation District, the City of Redding, and the City of Roseville made decisions to further study their participation in Phase 2 (“EIM Phase 2 BANC Members”). The EIM Phase 2 BANC Members therefore requested that BANC enter an arrangement with Utilicast LLC (“Consultant”) to perform analyses to determine what gaps might exist in order for them to participate along with SMUD in EIM (“EIM Phase 2 Gap Analysis”).

Upon consideration, WAPA-SNR has determined that it, too, would like to have an EIM Gap Analysis performed for its footprint to determine what might be required for it to participate in BANC EIM Phase 2, along with SMUD and the EIM Phase 2 BANC Members.¹

The purpose of this Agreement is to set forth the terms and conditions for WAPA-SNR to reimburse BANC for the costs it incurs from the Consultant to perform this Gap Study on WAPA-SNR’s behalf.

¹ Due to the integrated nature of United States Bureau of Reclamation (USBR) generation within the WAPA-SNR portfolio, USBR will be consulted in this evaluation; however, USBR will be evaluated as part of the WAPA-SNR portfolio.

Upon execution of this Agreement by the Parties, the following provisions will constitute the agreement of the Parties.

1. BANC will conduct an EIM Phase 2 Gap Analysis utilizing Consultant(s). The Consultant(s) shall prepare said EIM Phase 2 Gap Analysis as outlined in the BANC EIM Phase 2 Gap Analysis: Western Area Power Administration – Sierra Nevada Region set forth in Exhibit A (“Scope of Work”) to this Agreement. WAPA-SNR shall pay BANC WAPA-SNR’s share of the study costs in accordance with the Scope of Work and the Fee Schedule set forth in Exhibit B (“Fee Schedule”) to this Agreement. The Parties will coordinate scope changes and approvals by the Parties of additional expenditures, as necessary. In the event the costs will exceed the amount set forth in the Fee Schedule, BANC must obtain WAPA-SNR’s prior written approval. WAPA-SNR will have no obligation to pay for any amounts above what is set forth in the Fee Schedule without its prior written approval.
2. The Parties shall meet on a regular basis to assess the progress of work.
3. BANC will provide WAPA-SNR with a copy of the final report and associated work product(s).
4. Billing and Payment: BANC shall invoice WAPA-SNR for its share of the costs incurred consistent with this Agreement. WAPA-SNR shall pay the invoice consistent with the Prompt Payment Act. BANC will invoice WAPA-SNR after the completion of the EIM study results. BANC will send invoices to SNRAccountsPayable@wapa.gov.
5. Authorized Representatives: Each Party designates the following representatives who are authorized to act on its behalf with respect to those matters contained in this Agreement, which are the functions and responsibilities of the authorized representatives of the Parties; provided, however, that the respective authorized representatives have no power or authority to alter any of the provisions of this Agreement. Each Party may change the designation of its authorized representatives upon oral notice given to the other, confirmed promptly by written notice.

For BANC:

Balancing Authority of Northern California
Attn: Jim Shetler
P.O. Box 15830
MS D109
Sacramento, CA 95852-1830

For WAPA-SNR:

Western Area Power Administration

Attn: Arun K. Sethi
114 Parkshore Dr
Folsom CA 95630

6. Confidential Information:

- 6.1 Except as required by law, regulation or order, each Party agrees not to disclose Confidential Information without the other Party's prior written consent. Confidential Information must be marked clearly on each page with a designation such as "CONFIDENTIAL". Confidential Information may be provided by another Party in performance of the Studies. Confidential Information is defined as any information that discloses a Party's trading strategies, any information that will allow the Parties to harm the other Party's financial stability within the CAISO market participation, and any information that discloses a Party's customer information that could harm a Party's customer's financial stability. Confidential Information may be shared among a Party's employees, directors, officers, agents, affiliates, consultants, and legal counsel, (collectively, its "Representatives") where such Representatives have been informed of the confidential nature of the information and the obligations of confidentiality provided in this Agreement; provided that prior to disclosure to any consultant, such consultants must agree in writing to keep the Confidential Information confidential under terms equivalent to those set forth in this Section 6. As to each Party's respective obligations under this Section 6, Confidential Information does not include any information contained in the Studies or provided by another Party in performance of the Studies which (i) was in that Party's rightful possession prior to its receipt of such information as evidenced by tangible records and without an obligation of confidentiality; (ii) was or becomes generally available to the public other than as a result of a disclosure by that Party in breach of this Agreement; (iii) becomes available to that Party from a source not known by it to be bound by an obligation of confidentiality with respect to such information; or (iv) was or is independently developed by that Party without reliance upon the information.
- 6.2 In the event a Party ("Compelled Party") is required by applicable law, including but not limited to the Freedom of Information Act, judicial or regulatory authority to disclose any Confidential Information, such Compelled Party shall, to the extent practicable and to the extent permitted by law, regulation or legal, governmental or regulatory process, promptly notify the other Parties in writing of the existence, terms, and circumstances surrounding such requirement, so that other Parties may seek a protective order or other appropriate remedy, or waive compliance with the terms of this Agreement regarding such Confidential Information. If the Compelled Party is legally required to disclose any Confidential Information, or if the other Party waives compliance with the terms hereof, the Compelled Party will furnish only that portion of the Confidential Information as it reasonably determines, in consultation with legal counsel, that it is legally required to disclose.

- 6.3 The Parties agree that money damages may not be a sufficient remedy for breach of this Agreement as it relates to the release of Confidential Information, and the non-breaching Parties shall be entitled to seek any available remedy, including, but not limited to, injunctive relief or specific performance.
- 6.4 Notwithstanding anything herein to the contrary, the rights and obligations of the Parties under this Section 6 will survive termination of this Agreement and will terminate on December 31, 2024 unless terminated earlier by written agreement of the Parties. Upon termination of this Agreement, all Confidential Information shall be either returned or destroyed. A Party is not required to immediately remove or destroy Confidential Information stored in electronic backup, provided the Confidential Information on such electronic back up is not used after the termination of this Agreement and the Confidential Information will be removed or destroyed under a Party's normal record retention policies.
7. Entire Agreement: This Agreement, including its attached Exhibit A, constitutes the entire agreement among the Parties and supersedes all previous communications, representations, or agreements, either oral or written, with respect to the subject matter of this Agreement.
8. Amendments: The Parties may amend this Agreement only in a writing signed by the Parties.
9. Relationship Between the Parties: The Parties are separate entities, and nothing in this Agreement shall be construed to create a joint venture, trust, partnership, or other fiduciary or agency relationship among the Parties. The Parties' obligations under this Agreement are several and not joint.
10. Severability: In the event that a provision of this Agreement, in whole or in part, or the application of such provision, is held invalid by any court or administrative body having jurisdiction, all other provisions of this Agreement and their application will remain in force and effect unless such court or administrative body also holds that the provision is not severable from all other provisions of this Agreement.
11. Governing Law: Federal law shall control the obligations and procedures established by this Agreement.
12. Contingent Upon Appropriations and Authorization: Where activities provided for in this Agreement extend beyond the current fiscal year, continued expenditures by the United States are contingent upon Congress making the necessary appropriations required for the continued performance of the United States' obligations under this Agreement. In case such appropriation is not made, BANC hereby releases WAPA-

SNR from its contractual obligations and from all liability due to the failure of Congress to make such appropriation.

13. Covenant Against Contingent Fees: BANC warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by BANC for the purpose of securing business. For breach or violation of this warranty, WAPA-SNR shall have the right to annul this Agreement without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.
14. Contract Work Hours and Safety Standards: this Agreement, to the extent that it is of a character specified in Section 103 of the Contract Work Hours and Safety Standards Act (Act), 40 U.S.C. § 3701, as amended or supplemented, is subject to the provisions of the Act, 40 U.S.C. §§ 3701-3708, as amended or supplemented, and to regulations promulgated by the Secretary of Labor pursuant to the Act.
15. Equal Opportunity Employment Practices: Section 202 of Executive Order No. 11246, 30 Fed. Reg. 12319 (1965), as amended by Executive Order No. 12086, 43 Fed. Reg. 46501 (1978), as amended or supplemented, which provides, among other things, that BANC will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin, is incorporated herein by reference the same as if the specific language had been written into this Agreement, except that Indian Tribes and tribal organizations may apply Indian preference to the extent permitted by Federal law.
16. Use of Convict Labor: BANC agrees not to employ any person undergoing sentence of imprisonment in performing this Agreement except as provided by 18 U.S.C. § 3622(c), as amended or supplemented, and Executive Order No. 11755, 39 Fed. Reg. 779 (1973), as amended or supplemented.
17. Execution by Counterparts: The Parties may execute this Agreement in multiple counterparts, each of which is deemed an original and all of which constitute only one agreement. A Party may deliver an executed counterpart of this Agreement by facsimile or e-mail.
18. Effective Date and Term: This Agreement is effective on the date first written above and shall terminate on April 30, 2021.

The Parties have executed this Agreement as of the date first written above.

BALANCING AUTHORITY OF NORTHERN CALIFORNIA

By _____

Name: James R. Shetler

Title: General Manager

WESTERN AREA POWER ADMINISTRATION

By _____

Name: Arun K. Sethi

Title: Vice President of Power Marketing

Exhibit A to Contract 19-SNR-02253 Scope of Work

This Exhibit A provides a description of the analyses and studies covered by the Agreement:

Task #2b: BANC EIM Phase 2 Gap Analysis: Western Area Power Administration – Sierra Nevada Region (WAPA-SNR)

- This task will be completed in the period between the execution date of this Agreement and August 31, 2019. It will be executed/supported in parallel with Task #1 (BANC/SMUD EIM Phase 1 Post Go-Live Support and Analysis) and #2a (BANC EIM Phase 2 Gap Analysis and Implementation Plan: BANC Members).
- This task is estimated to require 280 hours to complete:
 - 240 hours to assess WAPA-SNR systems, staffing, and capabilities against EIM requirements. Roughly 3 weeks on-site plus 3 weeks analysis and write-up.
 - 40 hours to include WAPA-SNR in the larger BANC-EIM ‘big picture’ participation options. Could include: discussions with other BANC EIM candidates; discussion with WAPA-SNR; discussion with CAISO SMEs; and discussions with SMUD SMEs.
- Consultant will perform an analysis of WAPA-SNR current state versus the desired EIM end-state, across software/telemetry systems, staffing, and business processes.
- Consultant will work with WAPA-SNR staff to clearly identify and define the functional gaps and requirements for EIM.
- Consultant will present identified gaps with options and recommendations for closure. The gap closure options will include making maximum effective use of existing BANC and WAPA-SNR systems (including SMUD’s systems), processes, and staff.
- Consultant will deliver an “EIM Phase 2 Gap Analysis Report,” which will identify critical gaps and how they can best be addressed in the BANC Phase 2 EIM Implementation Project. The EIM Gap Analysis Report deliverable for WAPA-SNR will include a review of at least the following areas for system and/or business process gaps:
 - Full Network Model
 - Merchant Generation/Trading Base Schedule and EIM Energy Bid Submissions
 - Outage Management
 - EIM Entity Intertie Schedule Creation, Management, and Submission
 - EIM Entity Desk and Situational awareness, Training & Testing
 - Generation Dispatch, EMS, and CAISO ADS system integration
 - CAISO EIM Metering
 - Demand & Variable Energy Resource Forecasting
 - EIM Market Settlement and Billing/Finance process
 - Open Access Transmission Tariff (OATT) Update for EIM Market Participation
 - User/Staff Training and Software System Testing
 - ICCP data provision/integration
 - Transmission paths for EIM participation
 - Existing Contracts
 - EIM Software/Systems

- The final BANC “EIM Phase 2 Gap Analysis Report” will present the EIM implementation gaps for WAPA-SNR and will include a written discussion of the options for bringing multiple BANC Members (inclusive of WAPA-SNR) into a coherent BANC EIM Entity, including a recommendation for project structure.
- Consultant will gather input from interviews with WAPA-SNR management, SMEs, and key personnel.
- Consultant will leverage BANC/SMUD Phase 1 EIM Implementation Project experience and the BANC/SMUD Phase 1 System and Process Gap Analysis Reports delivered in that project.
- Consultant will analyze the BANC BAA 'big picture' options - how best to organize and implement the expanded Phase 2 BANC EIM Entity to take advantage of the BANC scale; maintain accountability for balancing at the sub-BAA level; and produce greatest benefits to EIM members (inclusive of WAPA-SNR).
- Consultant will include WAPA-SNR tasks and goals in the BANC EIM Phase 2 Implementation Plan and Schedule identified above in Task #2a, which incorporates the EIM Gap Analysis Report findings; the CAISO’s EIM Implementation Plan/Schedule; any required EIM software additions or extensions; and existing SMUD sub-BAA EIM participation into a coherent, executable plan.

To accommodate this additional scope and meet the overall task timeline, Utilicast may utilize an additional consultant to support the services provided in Tasks #2a and #2b.

**Exhibit B to Contract 19-SNR-02253
Fee Schedule**

FEE SCHEDULE					
Task	Start	End	Total Hours	Rate	Total \$
Task #2b: BANC EIM Phase 2 Gap Analysis: WAPA-SNR	Execution of the Agreement	8/31/2019	280	\$215/hr	\$60,200

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

5/08/19

To: BANC Commission
From: BANC Counsel
RE: Authorization of Contract for Services Related to EDAM Feasibility Assessment

In prior Commission meetings, the BANC General Manager discussed engagement of consulting services associated with evaluation of the proposed Enhanced Day Ahead Market (EDAM). This was previously budgeted for and approved under task PA-4 in the 2019 BANC Budget.

The Brattle Group was previously selected as the lead consultant supporting the EDAM Feasibility Assessment (FA) effort. Because of their unique knowledge regarding the subject matter, the General Manager requested a proposal from The Brattle Group to provide individual assistance to BANC and the Sacramento Municipal Utility District (SMUD) to evaluate the results of the EDAM FA as specific to BANC. Attached to Resolution 19-05-08 *Authorization of Contract for Services Related to EDAM Feasibility Assessment* is a scope of work and related terms and conditions.

The Brattle Group has divided the proposed work into three (3) discreet phases. These include the following:

- Phase I: Review EDAM Footprint-wide Feasibility Analysis
- Phase II: Review BANC/SMUD-specific Results
- Phase III: Sensitivity Analyses and Strategic Planning

The General Manager's delegated contracting authority is limited to \$25,000. Phase I has been authorized by the General Manager under his current delegated authority. However, the total for desired consulting services for the above-described tasks will exceed this delegated authority. As such, the General Manager is requesting Commission approval and authorization to engage The Brattle Group up to a total expenditure of \$75,000. This amount is within the authorized 2019 budget approved by the Commission under budget item PA-4 (FA Consulting Services), which is funded solely by SMUD as the only current BANC EIM participant.

This authorization is limited to this contract, and the General Manager is not seeking broader delegations at this time.

**Balancing Authority of Northern California
Resolution 19-05-08**

**AUTHORIZATION OF CONTRACT FOR SERVICES RELATED TO
EDAM FEASIBILITY 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 has been participating in a Feasibility Assessment (FA) among the EIM Entities and the California Independent System Operator to evaluate whether a proposed Extended Day Ahead Market (“EDAM”) would have adequate benefits and would be otherwise feasible; and

WHEREAS, BANC would benefit from more specific understanding of FA results and sensitivities that would affect BANC and its members; and

WHEREAS, it would be most efficient and BANC would benefit from extending the relationship with the current consultant being utilized to perform the broader market analysis; and

WHEREAS the BANC General Manager’s delegated contracting authority is limited to \$25,000;

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

Authorize the General Manager to enter into a contract with The Brattle Group for an amount not to exceed \$75,000, which is within the 2019 PA-4 budget amounts approved by the Commission, and to engage services relevant to EDAM analysis.

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of May 2019, 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

May 1, 2019

Mr. Jim Shetler
General Manager
Balancing Authority of Northern California (BANC)
P.O. Box 15830
MS D109
Sacramento, CA 95852-1830

Dear Jim:

The purpose of this letter is to confirm the terms of the retention of The Brattle Group, Inc. (“Brattle”) by the Balancing Authority of Northern California (“BANC” or “Client”) to perform the services described below. We encourage you to review these terms carefully and to raise any questions you may have about them before retaining us.

THE SERVICES:

Brattle will assist BANC and Sacramento Municipal Utility District (“SMUD”) in their evaluation of the results of the Enhanced Day-Ahead Market (“EDAM”) Feasibility Assessment (the “Services”). This will include providing an overview of the initial high-level results and a review of the results of the initial disaggregation of EDAM entity benefits. The Services may also include conducting additional model runs on potential BANC/SMUD benefits, as well as sensitivity studies.

CONFIDENTIALITY OBLIGATIONS:

In the performance of the Services we may have access to privileged, proprietary and confidential information belonging to Client or to a third party (“Confidential Information”). Brattle takes its obligations regarding the maintenance of Confidential Information seriously. We will handle all Confidential Information with at least the same degree of care as we handle our own proprietary and confidential information, and will not disclose any Confidential Information (or information derived therefrom) to, or use it on behalf of, third parties without Client’s consent. Of course, this obligation will not cover information that: a) at the time of disclosure is in, or later becomes part of the public domain other than as a result of our breach; b) was known by us at the time disclosed to us due to circumstances or events unrelated to this engagement; or c) is required to be disclosed pursuant to subpoena or other governmental or judicial process purporting to compel disclosure. In the event Brattle receives such a subpoena or other governmental or judicial process, unless we are prohibited by law from doing so, we will use reasonable efforts to give Client prompt notice and will reasonably cooperate at Client’s expense with any efforts to pursue legal remedies preventing or limiting disclosure. Brattle shall not be required to delay disclosure while Client pursues legal remedies aimed at preventing or limiting such disclosure, if such delay would subject us to sanctions.

In the event we are working with other professional advisers in relation to the Services, unless you instruct us otherwise, we shall be permitted to disclose confidential information to them.

At the close of the engagement, Client may request that we return or destroy our substantive files on the engagement. Except as may be otherwise required by law or judicial or regulatory order, we agree to comply with any such request, provided we may retain an anonymized version of our own work product as well as copies stored on backup storage media in accordance with our system-wide data backup for disaster recovery purposes. These copies will continue to be subject to the confidentiality terms of this letter.

BILLING ARRANGEMENTS AND TERMS OF PAYMENT:

Brattle charges on a time-and-materials basis based on the US\$ hourly billing rates in effect at the time Services are performed. Standard hourly billing rates are currently: US\$575 for Judy Chang, Principal; US\$575 for Johannes Pfeifenger, Principal; US\$430 for Onur Aydin, Senior Associate; US\$395 for Kai Van Horn, Associate; US\$450-800 for other Principals as needed; US\$330-480 for other Associates and Senior Associates as needed; and US\$250-335 for Research Analysts as needed. These rates may be revised from time to time to reflect staff promotions, conditions of the consulting labor market and periodic increases not specific to this engagement. Brattle's invoices will provide a breakdown of the hours billed by person, the applicable billing rates, and a reasonably detailed description of daily tasks performed. Out-of-pocket expenses incurred in connection with the engagement will be billed at cost. Expenses for subcontractors may be marked up to reflect administrative and other costs. Our invoices will also include any applicable sales and other taxes which are levied or imposed by reason of our performance of the Services (excluding income taxes on profits which may be levied against us).

Any estimate of what we anticipate our fees will be is our best estimate of the level of effort that will be required to complete the Services based on the information available to us at that time. Please do not interpret this estimate to be a maximum fee or a fixed price, unless we have explicitly agreed that it will be such.

Our invoices will be emailed to you at jimshetler@thebanc.org and are due and payable upon receipt. Unless you advise us otherwise, it is our understanding that there are no additional requirements for the submission of invoices.

If there are any objections to the invoice, we require written notification of the specific charges at issue within twenty (20) days of invoice receipt, as well as partial payment of the invoice to the extent of the undisputed portion. The following cannot excuse Client's obligation to pay invoices: a) if the results of the analyses or opinions fail to promote Client's commercial interests; or b) if Client disagrees with the analyses or opinions.

We reserve the right to charge interest on any undisputed balances that remain unpaid after thirty (30) days' from Client's receipt of an invoice at the rate of 1.5 percent per month or the maximum rate allowable by law, whichever is less. In the event we need to pursue collection of Client's account, Client agrees to pay the costs of collecting the account, including but not limited to court costs, filing fees and reasonable attorneys' fees. In addition, Brattle, without liability, may withhold delivery of reports and data, and may suspend performance of its obligations hereunder pending full payment of any and all undisputed balances overdue more than thirty (30) days. Prior to withholding delivery of reports, data, or to suspending performance, Brattle will provide written notification to Client, and Client shall have seven (7) days to cure. Notification will be made in the same manner as Client has directed us to send our invoices. We may also suspend performance or terminate this engagement in the event Client: a) institutes or has instituted against it insolvency, receivership or bankruptcy proceedings, makes an assignment for the benefit of creditors, or ceases doing business on a regular basis; b) engages in any activity that interferes with or impedes the professional and independent performance of the Services; or c) fails to respond promptly to any request for data that Brattle requires to perform the Services.

In the event Client instructs us that a third party (including an insurer) is responsible for payment of our invoices, we accept such instructions only on the basis that Client will pay our fees if they are not paid promptly by the third party or insurer.

If, after completing the Services, Brattle receives a subpoena to produce documents or to provide testimony regarding the Services, Client will compensate us for our time and expenses (including, without limitation, reasonable attorneys' fees and expenses) incurred in that regard.

STANDARD OF CARE; LIMITATION OF LIABILITY:

Brattle will perform the Services with the standard of care normally exercised by professional consulting firms performing comparable services under similar conditions, judged as of the time the Services are rendered. We make no other guarantees or warranties, express or implied, with respect to the Services, or that any particular outcome can result from the Services.

Except to the extent finally judicially determined to have resulted from Brattle's gross negligence, bad faith, or intentional misconduct, and other than for injuries to third persons or to personal property, the cumulative liability of Brattle and any of its officers, directors, principals, employees, agents, assigns and successors in interest, to Client for all claims related to our Services, regardless of whether sounding in contract, tort or otherwise, shall be limited to the amount paid to Brattle for the services giving rise to the claim. Any damages not subject to the foregoing cap shall be limited to Brattle's proportionate share of the damage, based on Brattle's contribution to the loss or damage relative to any other party's contribution. Further, UNDER NO CIRCUMSTANCES SHALL BRATTLE OR ITS OFFICERS, DIRECTORS, PRINCIPALS, EMPLOYEES, AGENTS, ASSIGNS OR SUCCESSORS IN INTEREST BE LIABLE FOR INDIRECT, CONSEQUENTIAL, SPECIAL OR EXEMPLARY DAMAGES, OR CLAIMS IN THE NATURE OF LOST PROFITS, REVENUE, OR OPPORTUNITY COSTS, REGARDLESS OF THE

CAUSE OR THE FORESEEABILITY THEREOF AND WHETHER BRATTLE HAD REASON TO KNOW OF THE POSSIBILITY OF SUCH LOSSES.

USE OF WORK PRODUCT:

While our work often assists clients in rendering informed decisions, it is not meant to be a substitute for the exercise of Client's own business judgment or to be for the benefit of third parties with whom we have no direct relationship. Our fees do not reflect the assumption of any additional responsibility to such third parties. In the event Client wants a third party (e.g., additional investors, financiers, etc.) to have access to our work, we will permit such disclosure provided first that each such third party acknowledges, accepts, and agrees to a release letter that we will separately provide to Client. In addition, to ensure that our work is not shared with a third party in contravention of the foregoing requirement, Client shall indemnify and hold Brattle harmless to the fullest extent provided by law from and against any and all losses, claims, damages, liabilities and expenses, joint or several (including reasonable attorneys' fees and other reasonable third party expenses and disbursements) to which Brattle may become subject under any theory based on the use of or reliance on our work product by third parties that have not provided such a release.

In addition, because we are not specifically retained in support of a litigation, regulatory or arbitration proceeding, our work product shall not be used as an expert report in support of any such proceeding. Preparation of testimony-quality reports may involve additional degrees of analysis and/or may require that different individuals be designated as experts to meet specific legal standards.

OWNERSHIP OF INTELLECTUAL PROPERTY:

Brattle brings substantial intellectual capital to our engagements. All methodologies, know-how, industry knowledge and descriptions of the same, and other reusable information and works of authorship not unique to this engagement that Brattle has used in connection with the deliverables, whether developed, enhanced or acquired prior to or during our performance of the Services, are and shall remain our proprietary property. The development of Brattle's intellectual capital shall not be deemed "works made for hire."

BRATTLE WORK FOR OTHER CLIENTS:

Client agrees that our receipt of Confidential Information shall not prevent Brattle from providing similar services for a broad range of other clients, or from performing services for other clients outside the specific matter or proceeding for which we are engaged by Client, even if the interests of such other clients are adverse to Client. In engaging us to perform these Services, Client agrees that we shall be permitted to perform such services for other clients provided that at all times our confidentiality obligations hereunder are maintained.

Mr. Jim Shetler
May 1, 2019
Page 5 of 5

If the above terms are acceptable, please have this letter signed by an authorized representative and returned to Brattle. In the event Client issues a purchase order for internal purposes with pre-printed terms, the pre-printed terms will not apply to this engagement.

We look forward to working with you on this engagement. We are committed to providing quality service, and urge you to discuss with me any concerns with the level of service being provided. Please feel free to discuss any concerns with M. Alexis Maniatis, President of Brattle.

Very truly yours,

Judy Chang
Principal

Accepted and agreed to:

Balancing Authority of Northern California
By:

(Signature)

Date

(Print Name and Title)

May 7, 2019

Based on our conversation this past Friday, below are the tasks that you had requested and our current estimated budget for each item. We've put this list together assuming that you may want some options about how we should proceed. Please feel free to email or let us know if you'd like to get back on a call to discuss any of the details. Thank you!

Phase I:

1. Review EDAM Footprint-wide Feasibility Analysis: May 15th meeting to answer questions that BANC/SMUD might have about assumptions and results
2. Further review of Refined and Updated EDAM Footprint-wide Feasibility Analysis: On a date to be determined, we will review assumptions and results with BANC/SMUD and answer questions
Estimated budget: \$15,000 to \$20,000 (not yet including travel expenses)

Phase II:

3. Review BANC/SMUD-specific results, including evaluating whether generation costs, prices, power flow are consistent with expectations and explore reasons why results might deviate from expectations. This will help BANC/SMUD determine if there are necessary sensitivity analyses to further refine the way we have simulated BANC/SMUD resources
Estimated budget: \$10,000 to \$20,000 (not yet including travel expenses)

Phase III:

4. Discuss and formulate ideas about potential sensitivity analyses that BANC/SMUD would like to conduct
5. Conduct the analyses that BANC/SMUD chooses
6. Conduct a strategic planning meeting with BANC/SMUD to evaluate options for participation: date to be determined

Estimated budget depends on the number of sensitivity analyses. Approximately \$15,000 to 25,000 per sensitivity analysis, depending on complexity, estimate includes preparing for presentation materials, results data, and detailed explanations of results for both footprint-wide and BANC/SMUD-specific results. Approximately \$20,000 to \$28,000 for preparing for and leading discussions for a strategic planning meeting, not yet including travel expenses.

Thank you and we look forward to engaging with you more closely on these items.

JUDY CHANG

Principal
The Brattle Group

Balancing Authority of Northern California

Agenda Item 5C

1. **Resolution 19-05-06 *Acknowledgement and Acceptance of 2019 Summer Load & Resources Assessment of the Balancing Authority of Northern California.***
2. **2019 Summer Load & Resources Assessment of the Balancing Authority of Northern California.**

Braun Blaising Smith Wynne, P.C.

Attorneys at Law

5/06/19

To: BANC Commission
From: BANC Counsel
RE: Acknowledgment & Acceptance of 2019 BANC Summer Load & Resources Assessment

Included in the Commission packet for the May 15, 2019 BANC Commission meeting is the 2019 Summer Load and Resources Assessment. This document is produced by the Operating Committee. It includes a summary of expected conditions, including peak loads, generation availability, planned physical outages of generation and transmission, and other information. The information is included for individual members, each of the Sacramento Municipal Utility District and Western Area Power Administration sub-areas, as well as on a BANC-wide basis.

The Assessment concludes that BANC will be able to meet the load demand for the 2019 summer operating season.

Because reliable grid operation is the central and paramount function of BANC, the Commission is requested to acknowledge receipt and accept the 2019 Summer Load and Resources Assessment by resolution.

**Balancing Authority of Northern California
Resolution 18-05-06**

**Acknowledgement and Acceptance of the 2019 Summer Load & Resources Assessment
of the Balancing Authority of Northern California**

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, the Operating Committee has produced the 2019 Summer Load & Resource Assessment (“Assessment”), which describes expected loads, resources, and operating conditions for the coming summer season.

WHEREAS, the Assessment concludes that system resources will be adequate to meet expected load for the coming Summer season.

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

PASSED AND ADOPTED by the Commissioners of the Balancing Authority of Northern California this 15th day of May 2019, 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

2019 SUMMER

LOAD & RESOURCES ASSESSMENT



May 7th, 2019
Operating Committee
Balancing Authority of Northern California

**A Joint Powers AUTHORITY AMONG
Modesto Irrigation District, City of Redding, City of Roseville, City of Shasta Lake,**

Trinity Public Utilities District, and Sacramento Municipal Utility District
www.thebanc.org

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1. Executive Summary

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), City of Roseville (RSC), Redding Electric Utility (REU), City of Shasta Lake, and Trinity Public Utilities District (TPUD). BANC assumed the Balancing Authority (BA) responsibilities on May 1, 2011 from SMUD that include the matching of generation to load and coordinating system operations with neighboring BAs – Bonneville Power Administration (BPA), Turlock Irrigation District (TID), and California Independent System Operator (CAISO). The Figure 1-1 below shows the geographical map of BANC system.



Figure 1-1: Geographical Map of BANC System

2019 BANC SUMMER LOAD & RESOURCES ASSESSMENT

There are two footprints within BANC – one being SMUD, and the other being Western Area Power Administration – Sierra Nevada Region (WAPA) which includes WAPA, MID, RSC, REU, Trinity PUD, and City of Shasta Lake.

This BANC summer load and resources assessment report summarizes BANC’s estimated peak demand, available generation, and energy imports for the 2019 summer operating season – June 1st, 2019 through October 31st, 2019.

The forecasted total BANC peak demand for 2019 summer is 4439 MW which is slightly lower than the actual 2018 BANC peak load of 4463 MW. The forecasted peak loads for the SMUD and WAPA footprints are 2925 MW and 1514 MW, respectively.

As of April 2, 2019, the United States Bureau of Reclamation’s (USBR) Central Valley Project (CVP) reservoirs were at approximately 112% of historical average and the forecasted statewide snowmelt runoff is about 136% of an average water year.

As of April 10, 2019, SMUD’s three storage reservoirs were at 70% of capacity, which is 110% of historical April average and are expected to be full in the summer. The inflow to the storage reservoirs is projected to be at least 170% of median by the end of summer.

Based on the current outage information, all the SMUD and CVP hydro resources are expected to be available during the 2019 summer peak months and the total hydro power production is projected to be slightly higher than the historical average.

The California-Oregon Intertie (COI) is the major transmission path for BANC entities to import energy from the Pacific Northwest. Based on the seasonal study performed by the California Operating Sub-Committee (OSS), the 2019 summer COI operating nomogram is similar to 2018.

With full reservoirs and a dense snowpack, the 2018-2019 water season is classified as “wet” according to California Department of Water Resources’ (CDWR’s) Bulletin 120. BANC projects sufficient generation and transmission capacity to meet the load demand and system reliability requirements for 2019 summer and the estimated operating reserve margins for SMUD, WAPA, and BANC BA are all well above the 15% benchmark, as shown in Table 1-1 below.

Table 1-1: 2019 Summer Supply & Demand Outlook

	BANC	SMUD Footprint	WAPA Footprint
Existing Generation (MW)	5205	2399	2806
Generation Outage (MW)	(25)	(0)	(25)
Retired Generation (MW)	0	0	0
New Generation (MW)	16	16	0
Estimated Import (MW)	1039	1250	(186)
Total Net Supply (MW)	6235	3665	2595
Demand (MW)	4439	2925	1514
Operating Reserve Margin * (MW)	1796	740	1081
Operating Reserve Margin * (%)	40.5%	25.3%	71.4%
<small>* The Operating Reserve Margin (MW) = Total Net Supply – Demand * The Operating Reserve Margin (%) = (Total Net Supply – Demand) / Demand</small>			

2. 2018 Summer Review

2.1 System Demand

The recorded BANC peak demand for 2018 summer reached 4463 MW at 17:52:42 on July 25, 2018, which was 355 MW (or 7.4%) less than BANC's peak load in 2017 (4818 MW). This is due to the relatively mild temperature in 2018 summer and the increased installations of the behind-the-meter solar photovoltaic generation.

Because BANC entities are located in different geographical areas, they did not reach the peak load on the same day. The entities' load levels at the BANC peak load moment are named as Simultaneous Peak Load and the individual entities' peak load levels over the year are named as Non-simultaneous Peak Load.

On July 25, 2018, BANC BA reached peak load at the same time when SMUD footprint reached its peak load. the Simultaneous Peak Load for SMUD footprint was 2960 MW and the Simultaneous Peak Load for WAPA footprint was 1503 MW. WAPA footprint reached its Non-simultaneous Peak Load of 1514 MW at 17:30:16 on July 18, 2018.

Table 2-1 below shows the Simultaneous Peak Loads and Non-simultaneous Peak Loads and a comparison of 2018 actual Non-simultaneous Peak Loads vs. 2018 forecasted Non-simultaneous Peak Loads for BANC and all entities.

Table 2-1: 2018 Simultaneous and Non-simultaneous Peak Loads vs. 2018 Forecasts

	Non-simultaneous Peak Load Forecast (MW)	Actual Non-simultaneous Peak Load (MW)	Non-simultaneous Peak Load MW Difference	Non-simultaneous Peak Load % Difference	Actual Simultaneous Peak Load (MW)
BANC BA	4742	4474	268	6.0%	4463
SMUD	3050	2960	90	3.0%	2960
MID	704	649	55	8.5%	645
Roseville Electric	339	346	-7	-2.0%	346
REU	228	228	0	0%	228
Shasta Lake	34	35	-1	-2.9%	35
Trinity PUD	24	24	0	0%	24
WAPA Footprint	1692	1514	178	11.8%	1503

2.2 System Generation

The Sutter Energy Center (SEC) returned to service in a 1x1 mode (258 MW capacity) in March 2018. SEC is registered within BANC BA and is counted as a part of generation in SMUD footprint. In addition, 9 MW of metered solar generation went on-line in BANC footprint in 2018. BANC's total generating capacity increased to 5205 MW. Table 2-2 shows generation levels of BANC entities collected in PI at the 2018 BANC peak load moment (17:52:42 on 7/25/2018).

2019 BANC SUMMER LOAD & RESOURCES ASSESSMENT

Table 2-2: BANC Entities Generation Levels at 2018 BANC Peak Load Moment

	Generation (MW)	Simultaneous Peak Load (MW)	Generation Capacity (MW)	Gen Output %
BANC BA	3609	4463	5205	69.3%
SMUD	1724	2960	2399	71.9%
MID	235	645	469	50.1%
Roseville Electric	175	346	231	60.8%
REU	102	228	182	54.5%
Shasta Lake	0	35	0	N/A
Trinity PUD	0	24	0	N/A
WAPA Footprint	1885	1503	2806	65.8%

2.3 System Import

With the completion of PG&E's Palermo-Rio Oso 115 kV reconductoring project in 2014, the transfer capability of COI has been greatly improved since 2015 summer (up to 1175 MW increase under high Northern California Hydro condition). Table 2-3 shows the simultaneous import levels for BANC entities at the 2018 peak load moment.

Table 2-3: BANC Entities' Import Levels at 2018 Peak Load Moment

	Simultaneous Import (MW)	Simultaneous Peak Load (MW)	Import/Load Ratio
BANC BA	854	4463	19.1%
SMUD	1236	2960	41.8%
MID	410	645	63.6%
Roseville Electric	171	346	49.4%
REU	126	228	55.3%
Shasta Lake	35	35	100%
Trinity PUD	24	24	100%
WAPA Footprint	-382	1503	-25.4%

Table 2-3 showed that BANC entities relied heavily on import to serve load demands (approximately the half of the load in SMUD, MID, RSC, and REU were served by imports). However, the USBR generation balanced out the load demand in WAPA footprint.

3. 2019 Summer Assessment

3.1 Forecasted System Demand

The forecasted total BANC peak load for 2019 summer is 4439 MW, which is slightly lower than the actual 2018 BANC peak load of 4463 MW. Table 3-1 below shows the forecasted 2019 BANC peak load and the Non-simultaneous Peak Load demands for all BANC entities.

Table 3-1: 2019 Forecasted Peak Load

	2019 Forecasted Non-simultaneous Peak Load (MW)
SMUD	2925 (1-in-2)
WAPA Footprint	1514
MID	703 (1-in-10)
Roseville Electric	336 (1-in-2)
REU	229 (1-in-2)
Shasta Lake	35 (1-in-2)
Trinity PUD	24
2018 Forecasted BANC Peak Load	4439

Figure 3-1 below shows a comparison of forecasted 2019 non-simultaneous peak load with the historical peak load since 2006 (all-time peak year) for BANC, SMUD, and WAPA footprint.

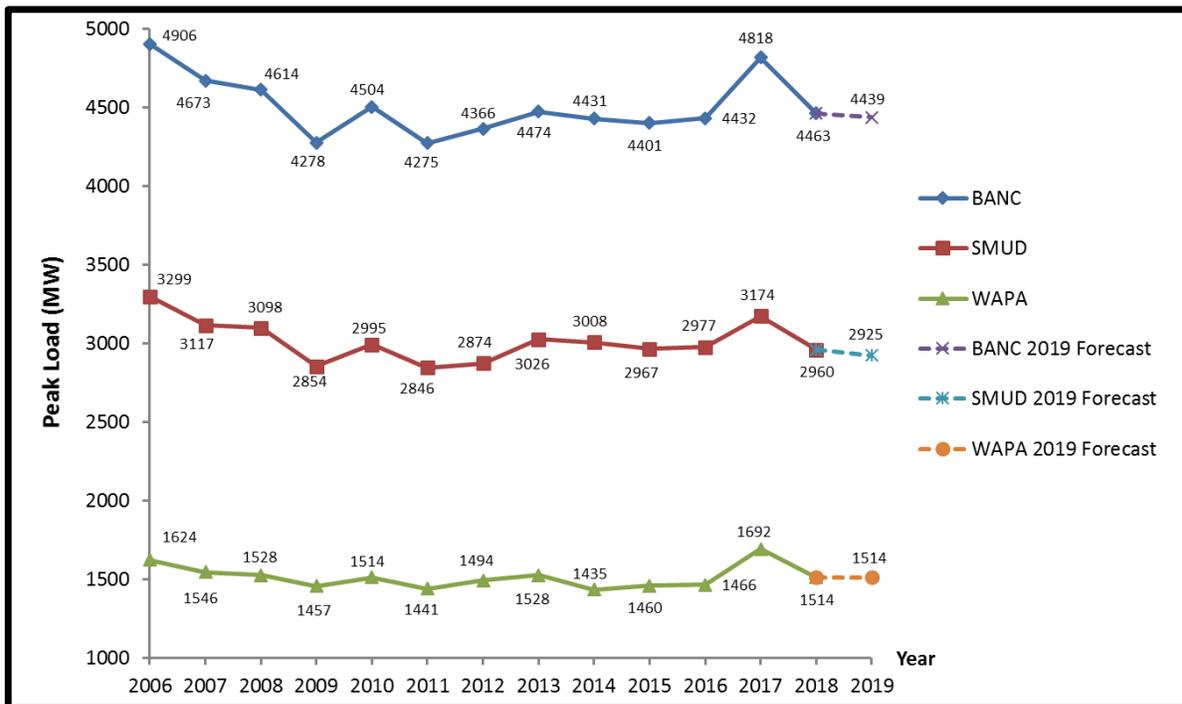


Figure 3-1: 2019 Forecasted Peak Load vs. Historical Peak Load

2019 BANC SUMMER LOAD & RESOURCES ASSESSMENT

Figure 3-1 shows that all BANC entities' peak demands started declining after the all-time peak in 2006 due to the economic recession. The load demands reached the lowest in 2011 and then started recovering. Due to the unusual heat waves and economic recovery from the recession, the 2017 peak demand reached the highest level since 2006, despite the increased installations of the behind-the-meter solar photovoltaic generation. Several BANC entities, such as MID, City of Roseville, City of Shasta Lake, and WAPA, even set their new all-time peak load records in 2017. The 2018 peak load was approximately 7% lower than the 2017 peak load due to mild summer temperature. The forecasted BANC peak load for 2019 is slightly lower than the actual 2018 peak load due to the continued increase of the behind-the-meter solar generation.

3.2 Forecasted System Generation

In 2019, there will be approximately 16 MW of metered solar generation coming on-line. BANC's total generation capacity will increase to 5221 MW, of which, 2704 MW (51.8%) is hydro generation, 2298 MW (44.0%) is thermal generation, 16 MW (0.3%) is biogas generation, and 203 MW (3.9%) is solar generation. In total, 56% of generation within BANC is carbon-free.

According to CDWR's website, as of April 2, 2019, the USBR's CVP reservoirs were at approximately 112% of historical average (as shown in Figure 3-2 below), the Northern California precipitation was 134% of historical average (as shown in Figure 3-3 below), the Northern Sierra snowpack was 162% of historical average (as shown in Figure 3-4 below), and the forecasted statewide snowmelt runoff is about 136% of an average water year.

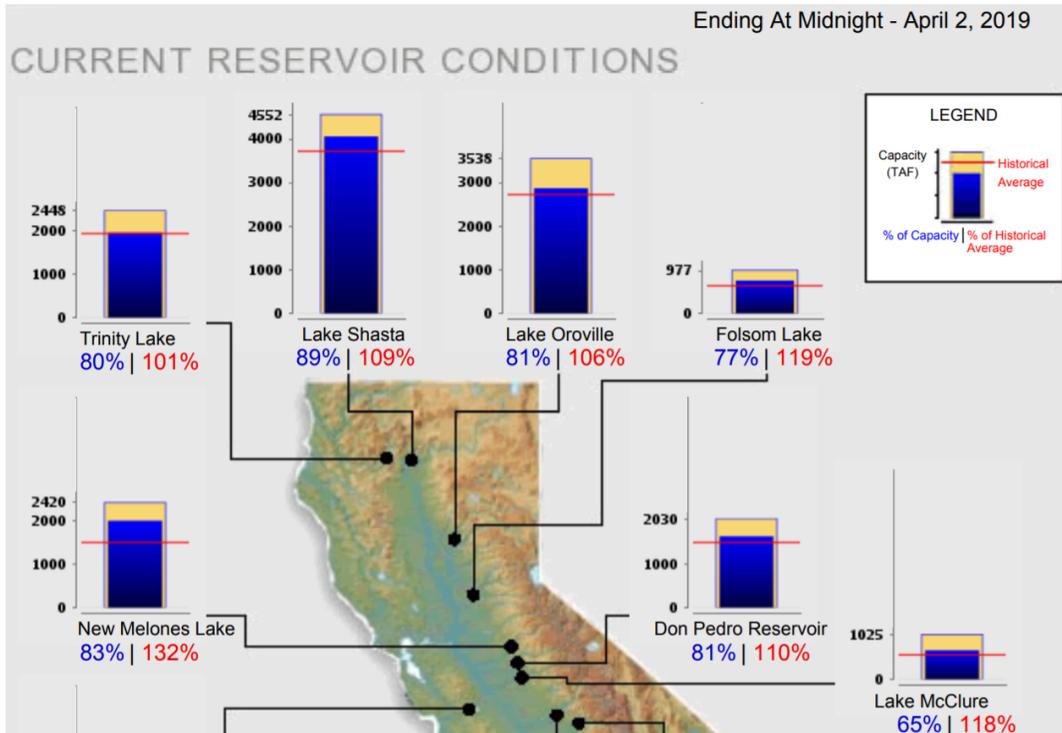


Figure 3-2: Northern California Major Reservoir Level as of 4/2/2019

2019 BANC SUMMER LOAD & RESOURCES ASSESSMENT

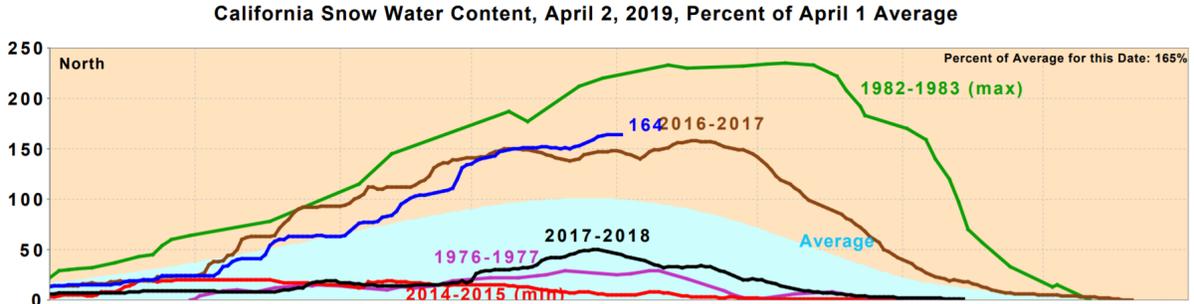


Figure 3-3: Northern Sierra Snowpack Level as of 4/2/2019

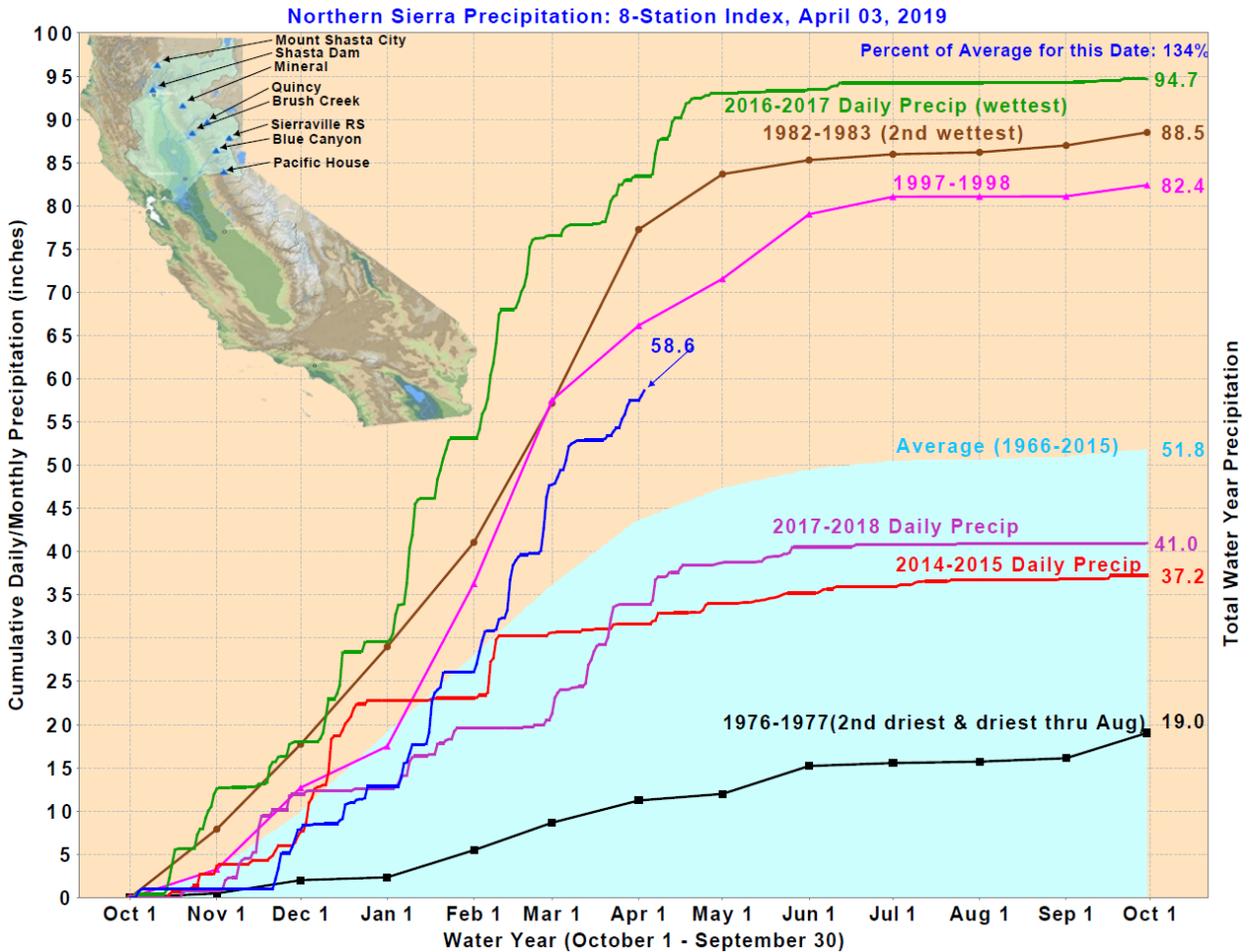


Figure 3-3: Northern Sierra Precipitation as of 4/2/2019

Figure 3-4 below shows the 2006-2019 California statewide water condition (including snowpack, precipitation, runoff, and reservoir storage level) on April 1 as the percentage of the historical average.

As of April 10, 2019, SMUD's three storage reservoirs were at 70% of capacity, which was 110% of historical April average and are expected to be full in the summer. The inflow to the storage reservoirs is projected to be at least 170% of median by the end of summer.

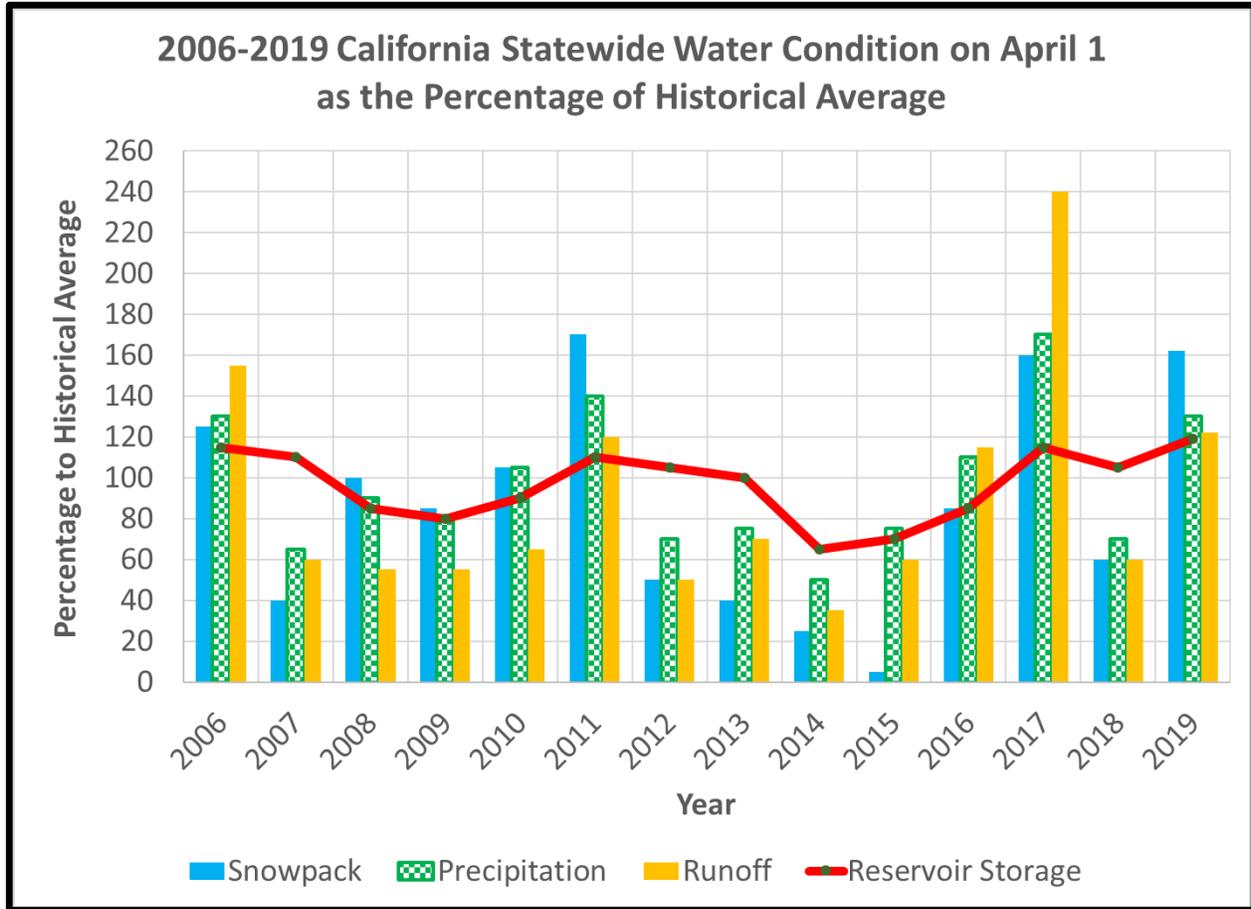


Figure 3-4: 2006-2019 California Statewide Water Condition on April 1

Based on the current outage information, all the SMUD and CVP hydro resources are expected to be available during the 2019 summer peak months and the total hydro power production is projected to be slightly higher than the historical average level. Table 3-2 below shows the forecasted 2019 summer generation levels at peak load condition for BANC entities.

Table 3-2: 2019 Forecasted Generation at Peak Load Condition

	Hydro Gen (MW)	Thermal Gen (MW)	Solar Gen (MW)	Total Gen (MW)	Non-simultaneous Peak Load (MW)	Gen/Load Ratio
BANC BA	1420	1853	127	3400	4439	76.6%
SMUD	400	1200	100	1700	2925	58.1%
MID	62	312	25	399	703	56.8%
Roseville Electric	0	170	0	170	336	50.6%
REU	0	171	0	171	229	74.7%
WAPA Footprint	1020	653	27	1700	1514	112.3%

2019 BANC SUMMER LOAD & RESOURCES ASSESSMENT

3.3 Forecasted System Import

The COI is the major path for BANC entities to import energy from Pacific Northwest (Washington and Oregon). Based on the study performed by the California OSS, the 2019 summer COI operating nomogram under all-line-in-service and normal hydro condition is similar to 2018. According to National Oceanic and Atmospheric Administration (NOAA), the water supply of the Columbia River – the major river supporting hydroelectric power generation in Pacific Northwest, was only around 80% of the 30-year normal at the Dalles Dam as of April 1, 2019 – it may indicate less available energy in Pacific Northwest in this summer. Table 3-3 shows estimated 2019 summer import levels for BANC entities.

Table 3-3: Estimated Import Levels for BANC Entities at 2019 Peak Load Condition

	Import (MW)	Non-simultaneous Peak Load (MW)	Import/Load Ratio
BANC BA	1039	4439	23.4%
SMUD	1225	2925	41.9%
MID	304	703	43.2%
Roseville Electric	166	336	49.4%
REU	58	229	35.3%
WAPA Footprint	-186	1514	-12.3%

3.4 Forecasted System Supply & Demand Outlook

With full reservoirs and a dense snowpack, the 2018-2019 water season is classified as “wet” according to CDWR’S Bulletin 120. BANC projects sufficient generation and transmission capacity to meet the load demand and system reliability requirements for 2019 summer and the estimated operating reserve margins for SMUD, WAPA, and BANC BA are all well above the 15% benchmark, as shown in Table 3-4 and Table 3-5 below.

Table 3-4: 2019 Summer Supply & Demand Outlook

	BANC	SMUD Footprint	WAPA Footprint
Existing Generation (MW)	5205	2399	2806
Generation Outage (MW)	(25)	(0)	(25)
Retired Generation (MW)	0	0	0
New Generation (MW)	16	16	0
Estimated Import (MW)	1039	1250	(186)
Total Net Supply (MW)	6235	3665	2595
Demand (MW)	4439	2925	1514
Operating Reserve Margin * (MW)	1796	740	1081
Operating Reserve Margin * (%)	40.5%	25.3%	71.4%

* The Operating Reserve Margin (MW) = Total Net Supply – Demand
 * The Operating Reserve Margin (%) = (Total Net Supply – Demand) / Demand

2019 BANC SUMMER LOAD & RESOURCES ASSESSMENT

Table 3-5: 2019 Summer Supply & Demand Outlook for Other BANC Entities

	Generation (MW)	Import (MW)	Peak Load (MW)
MID	399	304	703
Roseville Electric	170	166	336
REU	171	58	229
Shasta Lake	0	35	35
Trinity PUD	0	24	24

3.5 Scheduled Generation/Transmission Outages

According to current information, there are no major transmission or generation outages scheduled within BANC footprint during summer peak months – June, July, and August. The SEC will still be operated at 1x1 mode (258 MW capacity) in 2019 summer.

The Malin-Round Mountain #1 500 kV line is scheduled to be out of service from April 8 through June 28 and the Malin-Round Mountain #2 500 kV is scheduled to be out of service 4 times in July and August with 2 or 3 days duration each time, where these outages would derate COI to 3500 MW.

Studies showed that Sacramento Valley peak load can be served while meeting all NERC/WECC Reliability Standards. The Table 3-6 below lists the major transmission and generation outages within BANC footprint and the surrounding areas for 2019 summer.

Table 3-6: Scheduled Major Outages for 2019 Summer

Start Time	End Time	Outage Facility	Description	Outage Area	Outage Impact
2/23/2019	6/30/2019	Roseville Power Plant CT2	Repairs	BANC	25 MW generation outage
4/8/2019	6/28/2019	Malin-Round Mountain #1 500 kV Line	Insulator Replacement	CAISO	COI derated to 3500 MW
6/3/2019	6/14/2019	Folsom 115 kV Bus	Relay Work	BANC	88 MW generation outage
7/1/2019	7/2/2019	Malin-Round Mountain #2 500 kV Line	Maintenance	BPA	COI derated to 3525 MW
7/22/2019	7/23/2019				
8/5/2019	8/7/2019				
8/29/2019	8/30/2019				
9/3/2019	10/5/2019	Jaybird Unit #1	Maintenance	BANC	76 MW generation outage
9/9/2019	12/9/2019	Warnerville-Standiford 115 kV Lines 7&8	Upgrade	BANC	MID import limit reduction
9/30/2019	11/29/2019	Malin-Round Mountain #1 500 kV Line	Insulator Replacement	CAISO	COI derated to 3500 MW
10/1/2019	12/13/2019	Elverta-Fiddymont 230 kV Line	Relay Replacement	BANC	No major impact
10/1/2019	11/8/2019	Union Valley 230 kV Bus	Maintenance	BANC	117 MW generation outage
10/1/2019	10/30/2019	Don Pedro Unit #3	Maintenance	BANC	55 MW generation outage
10/14/2019	1/22/2020	Hurley-Proctor 230 kV Line	Reconductoring	BANC	No major impact
10/14/2019	10/20/2019	Proctor & Gamble Plant	Maintenance	BANC	222 MW generation outage

3.6 Potential Issues and Concerns

As the state is becoming hotter and drier than it used to be, the climate change is making California wildfires bigger, the fire season longer, and the impacts of the wildfires more severe. The wildfire has become the No.1 risk to California utility operations. The Carr Fire and the Camp Fire in 2018 caused devastating impacts to people's lives. Although California has a "wet" 2018-2019 water season, the increased vegetation growth may impose higher wildfire risk, causing potential impacts to the availability of transmission lines and/or generating units. Potential wildfires in 500 kV line corridors pose a significant risk of derate to COI, and potential wildfires in the mountain areas could affect the availability of hydro generating units.

3.7 Engineering Studies

The entities within BANC BA coordinated with the neighboring BAs, TOPs, and Peak RC and performed the following engineering studies for 2019 summer:

- California Operating Study Sub-committee (OSS)
- Sacramento Valley Study Group (SVSG)
- Westley Transmission Study Group (WTSG)

The OSS study focuses on COI transfer capability and COI operating nomogram. the SVSG study focuses on determining the Load Serving Capability (LSC) of Sacramento Valley area (SMUD and RSC) and developing operating nomograms, and the WTSG study focuses on identifying the import and export limits for MID and TID and developing operating nomograms. All studies concluded that BANC will be able to serve the load demand for the 2019 summer and meet all NERC/WECC Reliability Standards.

3.8 Reliability Coordinator Transition to RC West

The Western Interconnection is undergoing a major change in Reliability Coordinator (RC) services – The Peak RC will cease operation by the end of 2019 and three new RCs will be formed – the CAISO RC (or RC West), the Southwest Power Pool (SPP) RC, and the British Columbia Hydro Authority (BCHA) RC. BANC and 31 other BAs in the Western Interconnection have decided to transition to CAISO for RC services. The new RC West has a two-phase implementation – All California BAs, including BANC, will transition to RC West on July 1, 2019, and all other non-California BAs will transition to RC West on November 1, 2019. Figure 3-5 shows a map of the projected RC footprint in the Western Interconnection.

