

Balancing Authority of Northern California

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Jim Shetler
General Manager

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BALANCING AUTHORITY OF NORTHERN CALIFORNIA

A JOINT POWERS AUTHORITY BETWEEN

Modesto Irrigation District | City of Redding | City of Roseville | Sacramento Municipal Utility District | City of Shasta Lake | Trinity Public Utility District

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AGENDA

- Who/What/Where/When/Why of BANC
- Market Evaluation Efforts
- EIM Evaluation
- Q&A
- Backup Slides

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who/What/Where/When/Why of BANC



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Who/What/Where/When/Why of BANC?



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Market Evaluation Efforts - Background

- Historically cautious of organized markets
- Some members have started to be more engaged in CAISO market
- Goals
 - Interest in gaining benefits for customer-owners
 - Desire to maintain ability for self-determination
 - Concerns about adequate counter-parties for future trading
 - Need to consider options for integrating increasing renewables
 - 33% by 2020
 - 60% by 2030
 - Carbon-free by 2045 (60% RPS/40% “0” carbon)
 - Desire to be responsive to CA energy and climate policies

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Market Evaluation Efforts - Approach

- Initially spent ~3 years actively engaged in NWPP MC effort
 - Hope was for simpler/more cost effective option
 - Effort did not pan out – withdrew in Nov. 2015
- EIM Evaluation
 - Viewed as a relatively low cost option/easy in and out
 - Appeared to meet our goals
 - Conducted formal cost/benefit analysis



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EIM Evaluation

- Important to have analysis of **net** benefits
- Hired third party consultants to perform cost/benefit analysis
 - E3 – benefits study
 - GridSME – cost study
 - BANC integrated the evaluations to determine net benefits
- Evaluation considered BANC as a whole and phased approach. WAPA-SNR included in study.



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Unique BANC Issues

- BANC's structure provided complications for EIM participation – requires some unique approaches for an EIM implementation
 - Not a single, vertically integrated entity
 - 6 vertically integrated utilities
 - 1 PMA
 - 1 JPA TO
 - 3 TOPs
 - 3 OATTs
 - 2 subsystems that maintain their own ACE
- **Winners and losers**
 - Not all members had net benefits



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Alternatives Considered

- Alternative 1 – No EIM Participation
- Alternative 2 – EIM Participation
 - Alternative 2A – SMUD Only
 - Alternative 2B – SMUD/MID/Redding/Roseville
 - Alternative 2C – Phased Approach
 - Phase 1 – SMUD
 - Phase 2 – Additional members as appropriate

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Analysis Results

- Net benefit for BANC as a whole and for each of the four member participants
 - Varies by amount of generation that can be bid in to EIM
 - Additional analysis needed on individual cost impacts for MID, Redding, and Roseville
- No benefit for TPUD or Shasta Lake – no resources to bid in to EIM
- No net benefit for WAPA-SNR
- Decided to move forward with Alternative 2C
 - Phased Approach with SMUD as first Participating Resource Entity and BANC as EIM Entity
 - Coordinating phasing concept with CAISO



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Gross Benefits for Phase 1 - SMUD Only

Entity	Base Case Gross Annual Benefit (\$MM)	Impact of Average Hydro Year (\$MM)	Impact of Market Price Volatility (\$MM)	Impact of High Renew. Pent. (\$MM)	Impact of EIM TAC (\$MM)	Range of Gross Benefits (\$MM)
SMUD	7.59	+0.60	-2.40	+0.17	-2.05	5.19-8.19

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Cost for Phase 1 – SMUD Only

ENTITY	Implementation (\$M)	Ongoing (\$M)
BANC	4.32	2.1
SMUD	2.43	0.51
Additional Uplift	N/A	0.9
Totals	6.75	3.51

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Net Benefits/Payback Period for Phase 1 – SMUD Only

- Annual Net Benefits for Base Case = \$7.59 M - \$3.51 M = \$4.08 M/year
- Payback Period = \$6.75 M / \$4.08 M/year = 1.7 years



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Gross Benefits for Phase 2 – All Participants

Entity	Base Case Gross Annual Benefit (\$MM)	Impact of Average Hydro Year (\$MM)	Impact of Market Price Volatility (\$MM)	Impact of High Renew. Pent. (\$MM)	Impact of EIM TAC (\$MM)	Range of Gross Benefits (\$MM)
SMUD	7.59	+0.60	-2.40	+0.17	-2.05	5.19-8.19
MID	3.09	+0.07	-1.05	+0.08	-0.48	2.04-3.16
Redding	1.12	-0.04	-0.41	+0.08	-0.09	0.71-1.20
Roseville	1.82	-0.10	-0.41	-0.02	-0.65	1.17-1.82
TOTAL	13.62	+0.53	-4.27	+0.32	-3.27	9.35-14.15

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Cost for Phase 2 – All Participants

ENTITY	Implementation (\$M)	Ongoing (\$M)
BANC	4.32	2.1
SMUD	2.43	0.51
MID	1.3	0.2
Redding	1.77	0.47
Roseville	1.0	0.3
WAPA-SNR Operations	2.73	0.84
WAPA/TPUD/Shasta Load	N/A	0.68
Additional Uplift	N/A	1.3
Totals	13.55	6.40

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Net Benefits/Payback Period for Phase 2 – All Participants

- Annual Net Benefits for Base Case = \$13.62 M
- \$6.40 M = \$7.22 M/year
- Payback Period = $\$13.55 \text{ M} / \$7.22 \text{ M/year} = 1.9 \text{ years}$



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EIM Issues & Lessons-learned

- Good assistance from industry
 - CAISO training
 - Willingness on those who went before to offer insights
- EIM is complicated, data/IT project
- BANC/SMUD well positioned for EIM
- Operational cultural issues
 - Different mind-set for managing day-to-day operations
 - More reliance on market solutions rather than operational control
 - Different trading focus
 - Sub-hourly rather than hourly



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EIM Issues & Lessons-learned (2)

- Staffing issues
 - Need added desk in system operations
 - Need additional staff for settlements
- Challenges in identifying all costs
 - Struggle to find good estimates for uplifts and imbalance charges
- Overall, there was marginal net benefit for BANC as a whole
- Size does matter
- Believe EIM does meet BANC goals

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EIM Issues & Lessons-learned (3)

- FERC Jurisdiction
 - Don't believe EIM participation will involve undue FERC jurisdiction
 - Subject to EIM tariff oversight
- Market-based rate authority
 - Issue for IOU participants to date
 - CAISO working to resolve
 - FERC acknowledgement that POUs are not subject to FERC oversight for this issue – need to understand how to address this going forward



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Jim Shetler – BANC General Manager
E-mail: jimshetler@thebanc.org
Phone: (916) 870-3774

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Who is BANC?

- Group of N. CA POU's
 - Members
 - Modesto Irrigation District
 - City of Redding
 - City of Roseville
 - Sacramento Municipal Utility District
 - Trinity PUD
 - Contract Relationships
 - WAPA – SNR: 230kV system
 - Transmission Agency of Northern California: 500kV California-Oregon Transmission Project (COTP)

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What is BANC?

- Joint Powers Agency formed by its members
- Provides BAA services to its members and contracted parties
 - Complies with appropriate NERC standards
- Services are provided to BANC through contract arrangements with other entities
- Jointly owns control center and energy management system assets with one of TOPs
- ~5000 MW Peak Capacity BA
 - 16th largest in West; 3rd largest in CA

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When was BANC formed?

- BANC JPA created in 2010 and went live on May 1, 2011
- Formed from the original SMUD control area/balancing authority, which had contract relationships with WAPA-SNR, TANC, and the current members

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Why BANC?

- Members are POUs whose customer-owners expect electricity delivered in a manner that is
 - Safe
 - Reliable
 - Cost effective
 - Environmentally sensitive
- Historically, this has meant
 - vertically integrated oversight to allow local innovation and decision-making, and
 - minimizing exposure to market fluctuations and a view to the long-term to ensure predictability
- Members view BANC as one tool to help deliver on their customer-owners' expectations while sharing the risk of BA operations

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