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September 10, 2019

MEMORANDUM

TO: Council Members

FROM: Ben Kujala

SUBJECT: Presentation on Bonneville Power Administration plan to join Energy Imbalance Market

BACKGROUND:

Presenter: Steve Kerns, Director of Grid Modernization, BPA

Summary: The Western Energy Imbalance Market is a real-time bulk electricity trading market. Utilities maintain control of their assets and remain responsible for balancing requirements. The market allows the utilities to coordinate the dispatch of their generating resources to reduce the cost of intra-hour dispatch while respecting the transmission constraints of the electric grid.

Most of the bulk electricity traded among the utilities in the western electric grid is scheduled prior to the real-time market. Utilities forecast the amount of power they will need in advance, and then if the use of electricity is different than they anticipated within the hour, the utilities fine-tune their generating resource output to match the demand for electricity. The Western Energy Imbalance Market allows utilities to cooperate to reduce the cost of these adjustments in generation while respecting the limitations of the transmission system's ability to transmit electricity.

Bonneville has [proposed signing an Implementation Agreement](#) with the California Independent System Operator to move toward joining the

Western Energy Imbalance Market. Steve Kerns will discuss this Bonneville proposal.

Background: In November of 2014 the California ISO and PacifiCorp [launched the Energy Imbalance Market](#). Since the inception of the market, it has spread rapidly across the western electric grid. The utilities that later joined the market are: [NV Energy](#) (2015), [Puget Sound Energy](#) (2016), [Portland General Electric](#) (2017), [Idaho Power](#) (2018), and [Sacramento Municipal Utility District](#) (2019).

Utilities expected to join in the future are: Salt River Project (2020), Seattle City Light (2020), Los Angeles Department of Water & Power (2021), Public Service Company of New Mexico (2021), NorthWestern Energy (2021), Turlock Irrigation District (2021), Avista (2022), Tacoma Power (2022), and Tucson Electric Power (2022).

Briefing on BPA's Evaluation of Joining the Western EIM

Steve Kerns

Director, Grid Modernization
Bonneville Power Administration

Sep 17, 2019

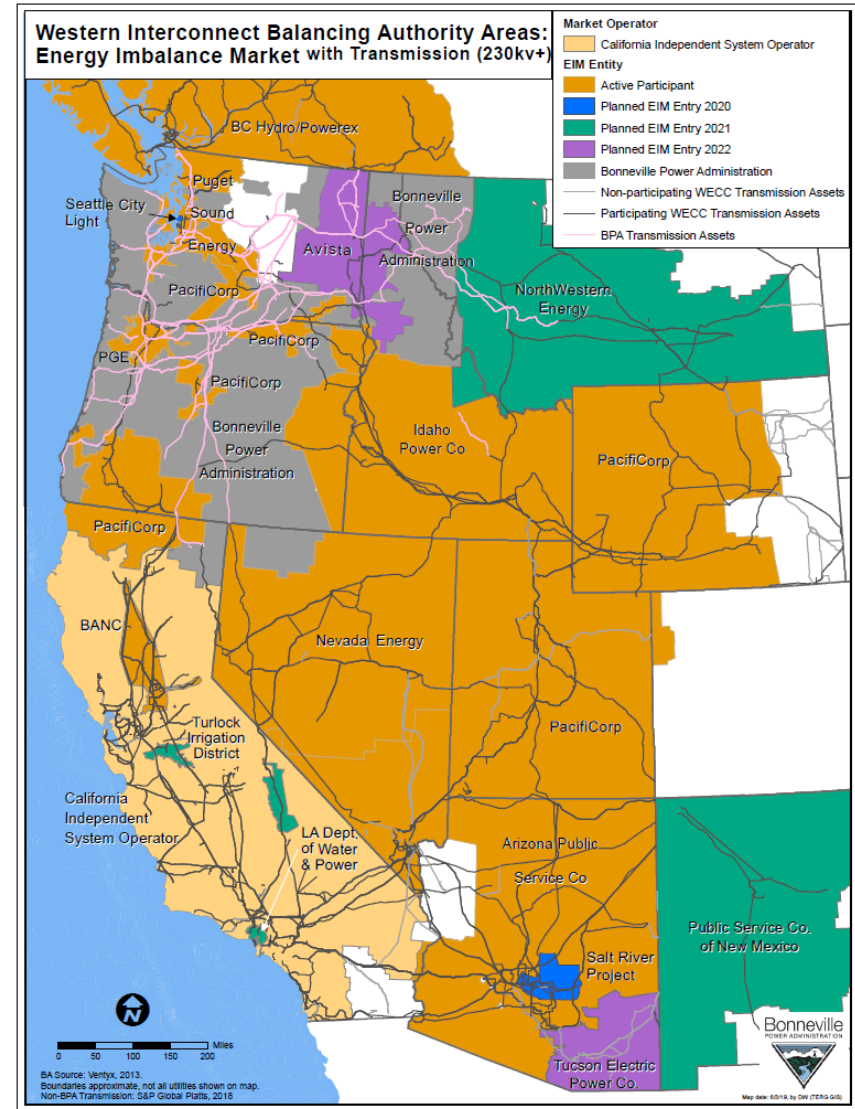


Agenda

- Market Context
- Western EIM Evaluation
- Business Rationale
- Letter to the Region
- Next Steps

Drivers for Market Changes

- Variable energy resources are increasing in the West
- Ability to realize the value of sub-hourly dispatch with flexible and low carbon hydro resources
- Transmission use and system operations are changing
- Western EIM footprint is growing
- Market evolution



Market Context

- A well designed electricity market is built on a foundation of resource adequacy and has features that:
 - Provide for intra-hour energy balancing
 - Compensate explicitly for capacity resources that provide system reliability and flexibility
- BPA views the EIM as *one piece* of a well-designed market
 - Additional market functions are required to fully compensate BPA for the capacity value of the flexible and carbon-free federal power system
- BPA will continue to work with CAISO and stakeholders to enhance regional resource adequacy by ensuring that flexible resources are appropriately compensated for the services that they provide

Western EIM Evaluation

- Bonneville initiated a formal Stakeholder process in July 2018
- Bonneville began discussion with CA-ISO in September 2018
- Four Key Principles
 - Consistent with statutory, regulatory, and contractual obligations.
 - Maintain reliability
 - Voluntary participation
 - Sound business rationale

Business Rationale

- Modeling suggests that dispatch benefits from EIM participation will quickly pay for itself and result in ongoing annual net benefits of **\$29-34M**:
 - Four sensitivities that were evaluated did not fundamentally change this conclusion
- Analysis has determined that EIM participation is a cost-effective non-wires solution and an effective intra-hour congestion management tool
- EIM participation will also:
 - Result in an efficient dispatch of generation to meet load across the entire EIM footprint
 - Provide increased visibility and discipline in the dispatch and marketing of Federal power and transmission assets
 - Create additional visibility of conditions across the grid which will enhance reliability
 - Allow BPA to effectively participate in the development of future markets which will appropriately compensate flexible resources for the services that they provide

Evaluation Issues*

- Relationship of EIM to Other Emerging Markets
- BA Resource Sufficiency
- EIM Settlements
- Market Power
- Treatment of Transmission
- Generation Participation Model (FCRPS)
- Governance
- Carbon Obligation in EIM

* Additional information on these issues may be found in the Appendix

Letter to the Region

- Provides notice to the public that Bonneville is considering signing an EIM Implementation Agreement and moving forward toward joining the EIM
- Includes:
 - Description of Bonneville’s decision-making process for joining the EIM
 - Discussion of legal authority to join the EIM
 - Business case for joining the EIM
 - Proposed principles for joining the EIM
 - Draft EIM Implementation Agreement
 - Policy proposals on certain policy topics
 - Brief descriptions of additional policy decisions that will need to be made in the future
- Seeking input from stakeholders
 - Letter to the Region will be issued on June 20th with comments due on July 22nd
- Record of Decision planned for September 2019
 - Bonneville will address comments received and make final decision whether to sign Implementation Agreement and on other items covered in Letter to Region

EIM Decision Process

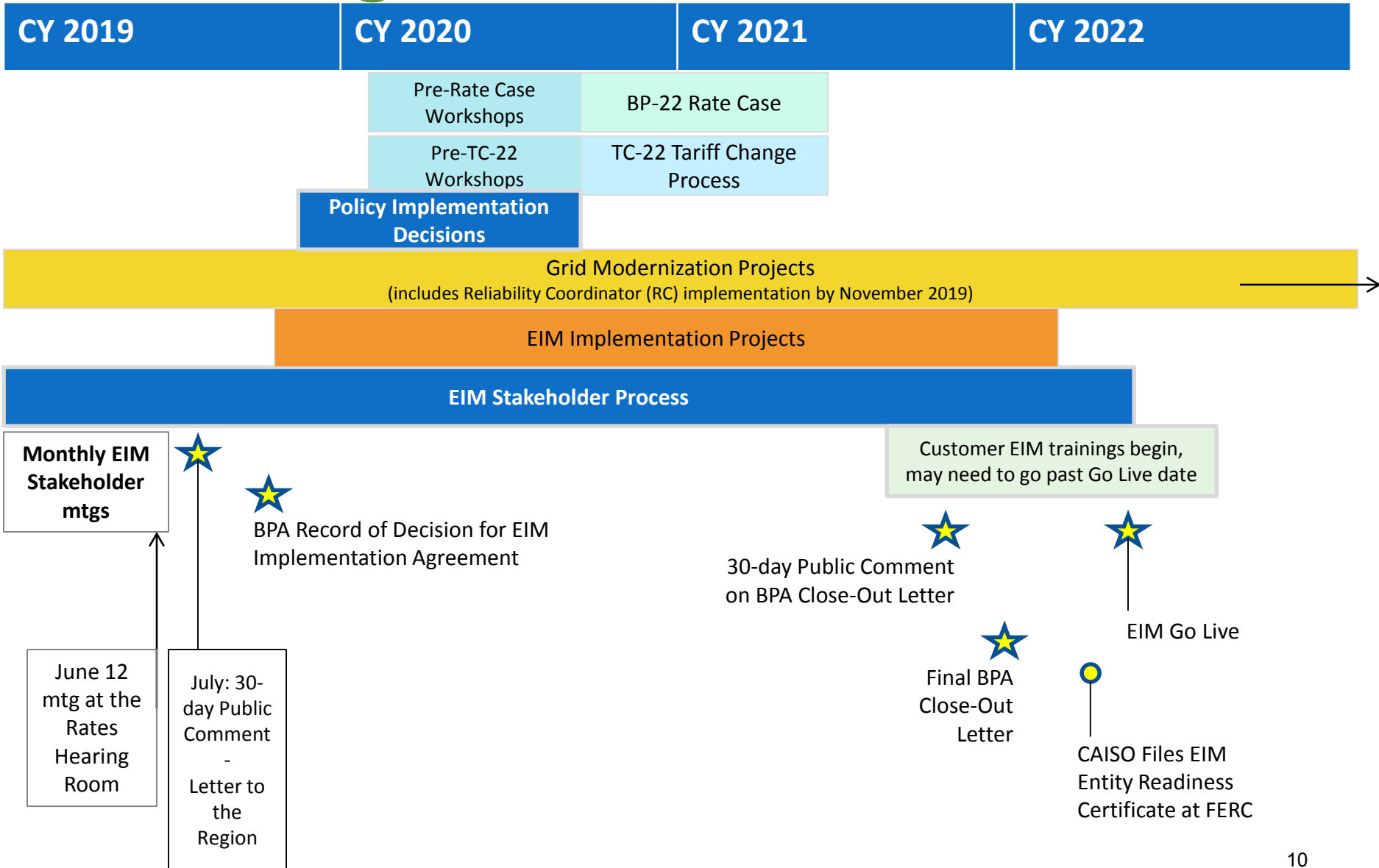
1. Letter to Region and Record of Decision June 2019 – September 2019
 - Solicit stakeholder feedback on: Draft Implementation Agreement, Cost Benefit Analysis, Legal considerations, Roadmap of process/issues, Proposed Decisions on Certain Policy Issues, Principles for Joining
 - 30-day comment period
 - Final decision to sign Implementation Agreement, and on other items covered in Letter to Region

2. Policy Implementation Decisions October 2019 – August 2020
 - Discuss all remaining policy issues with stakeholders.
 - Provide written proposal, solicit written stakeholder comment, and make final written decision(s) on policy issues
 - Final decisions on these policy issues

3. BP-22 and TC-22 Cases October 2020 – July 2021
 - Settlement discussions August – October 2020
 - Follow 7(i) process and conclude with ROD / final decision

4. Draft and Final Close-Out Letters October 2021 – December 2021
 - Draft Close-Out Letter addressing: principles for joining the EIM, any additional policy issues that have arisen, propose final decision whether to join the EIM, and incorporate final decisions made in steps 1 and 2 above.
 - 30-day comment period
 - Final Close-Out Letter: Address comments raised, Final Decision whether to join EIM, if decision is to join - move forward to sign relevant EIM Agreements

BPA's High Level EIM Timeline



Next Steps

- Letter to the Region was issued on June 20th with comments due on July 22nd
- A Record of Decision is expected to be issued in late September 2019
- For more information on BPA's EIM Stakeholder process and meetings please visit:
<https://www.bpa.gov/Projects/Initiatives/EIM/Pages/Energy-Imbalance-Market.aspx>
- For more information on BPA's Grid Modernization Initiative please visit:
<https://www.bpa.gov/goto/GridModernization>

Appendix

Additional information on Evaluation Issues

Relationship of EIM to Other Emerging Markets

- While we are engaged in the development of market opportunities, Bonneville is focused on whether to sign the Implementation Agreement with CAISO and move forward toward joining the EIM.
- There are two examples of CAISO policy initiatives with potential implications for EIM:
 - **Day-Ahead Market Enhancements (DAME)**
 - High-level objective: Manage uncertainty that occurs between the day-ahead and real-time markets
 - Status: CAISO is focusing the scope on a day-ahead Flexible Ramping Product (FRP) and reforming IFM & RUC; June 20th workshop to re-launch
 - **Expansion of the Day-Ahead Market to EIM (EDAM)**
 - High-level objective: Enable EIM access to a broader pool of resources by extending the enhanced day-ahead market to some or all EIM Entity BAAs
 - Status: CAISO has not yet launched this policy initiative
- Bonneville will actively participate in the advancement of these stakeholder processes and Bonneville expects that the CAISO will complete the DAME policy initiative and implement the FRP before Bonneville goes live in the EIM.

BA Resource Sufficiency

- Bonneville's preliminary analysis indicates that it would pass the RS evaluation a significant amount of the time using historical spinning availability
 - BPA has not yet determined how it will make flexibility available for the EIM
- This provides Bonneville with a high level of confidence that it can achieve the benefits described in the business case
- The likelihood of passing the RS evaluation would increase if any additional bid flexibility is made available, whether from Federal or non-Federal Participating Resources

EIM Settlements

- Bonneville will address settlements issues in the Post-ROD Policy process, subsequent Rate and Tariff Cases, and Business Practice development processes
- Bonneville staff gathered information on settlements via trainings, benchmarking with EIM Entities, reviewing CAISO materials, and internal staff who work with CAISO settlements.
- If Bonneville joins the EIM as an EIM Entity, Bonneville will need to decide whether and how to allocate the CAISO's charge and credits to Bonneville's transmission customers
- If Bonneville decides to allocate some or all of the EIM charge codes to its customers, Bonneville will need to decide how to bill its customers for these charges
- The billing and settlement mechanics policy process will be closely linked with the policy process on allocation of EIM charge codes

Market Power

- Default Energy Bids
 - If determined to have market power, a market participant may have its EIM bid prices mitigated to a Default Energy Bid (DEB) by CAISO
 - Current construct does not adequately reflect the opportunity costs of use limited hydro resources
 - CAISO worked collaboratively with stakeholders to propose a new Hydro DEB option
 - Approval of this option and subsequent implementation is important for BPA's participation in the EIM

Treatment of Transmission

- Bonneville is proposing to adopt the Interchange Rights Holder Methodology for making transmission available to the EIM
- Bonneville expects to be a significant “net wheeler” in the EIM
 - This may lead to cost shifts and free riders
- Bonneville believes the Interchange Rights Holder Methodology better balances the need to provide transmission to the EIM with collecting enough revenue to adequately and fairly recover the costs of the FCRTS

Generation Participation Model (FCRPS)

- Bonneville will initially participate in the EIM with federal hydroelectric dams aggregated into three resource zones:
 - Upper Columbia dams (Grand Coulee, Chief Joseph)
 - Lower Columbia dams (McNary, John Day, The Dalles, Bonneville)
 - Lower Snake dams (Lower Granite, Little Goose, Lower Monumental, Ice Harbor).
- These resource groups will participate in the EIM as separate aggregated participating resources (APR)
 - The amount of generation produced by these resources not bid into the EIM will be treated as an aggregated non-participating resources (ANPR) for purposes of the EIM
 - All other federal resources in the Bonneville balancing authority area will initially be non-participating resources in the EIM

Governance

- BPA has determined that the current EIM governance structure does not contain any “showstoppers” to joining the EIM.
- However, BPA would like to see some improvements to the current governance structure, including:
 - Expand the EIM Governing Body’s primary authority,
 - Improve the durability of the current EIM governance structure
 - Allow for ability to adapt to expanded market functions, and
 - A broader role for public power in the EIM governance structure.
- BPA is supporting these improvements in a current stakeholder process that the CAISO has initiated and continues to coordinate regularly with multiple parties.

Carbon Obligation in the EIM

- Energy generated in or imported into California is subject to California's greenhouse gas (GHG) regulations.
- If BPA were to participate in the EIM, any carbon attributed to imports into California would incur a compliance obligation
- BPA currently cannot purchase carbon allowances
 - Carbon allowances are considered a state tax by the U.S. DOE, BPA, and other federal agencies.
 - Federal agencies have sovereign immunity from state taxes and cannot pay them unless Congress specifically authorizes it
- Absent Congressional authorization to purchase allowances, BPA would not be able to directly deliver EIM energy into California
- BPA will be actively engaged in CAISO stakeholder processes that will seek to improve GHG accounting