



Department of Energy

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Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

CAISO 2018 Policy Initiatives Catalogue Bonneville Power Administration Comments

Submitted by	Company	Date Submitted
Mark Symonds Business Transformation Office mcsymonds@bpa.gov	Bonneville Power Administration	November 29, 2017

Bonneville Power Administration (Bonneville) appreciates the opportunity to provide California Independent System Operator (CAISO) comments on its 2018 Policy Initiatives Catalog. Bonneville supports CAISO's addition of initiatives that will increase California's cost-effective supply of highly flexible resources. Bonneville looks forward to working with CAISO on these initiatives, which address the time frame of resource commitment, clarify with more specificity the need for flexibility, and compensate capacity resources for standing ready to meet these flexibility needs similar to ancillary services. These initiatives address key issues that enhance Bonneville and other Northwest entities' abilities to help provide flexible, low-carbon hydroelectric power to California in a manner that better balances our contribution to more reliably integrating renewable energy for California with our systems' reliability, hydraulic and environmental obligations in the Northwest.

Bonneville appreciates the CAISO's efforts to pursue a more balanced outcome of this prioritization effort. To Bonneville, a balanced outcome would:

- Focus on more equally advancing generation and transmission liquidity in the EIM and ISO. Bonneville sees a more appropriate weighting of generation liquidity issues in this year's Policy Initiatives Catalogue as embodied by the suite of day-ahead market enhancements proposed by the CAISO (e.g. 6.1.7 Combined IFM and RUC; 6.1.9 Multi-Day Unit Commitment; and, 6.1.1 Day-Ahead Flexible Reserve Product).
- Focus more equally on advancing initiatives impacting the FMM and RTD for the entire ISO footprint, including that of EIM Entities, rather than focusing on initiatives that solely impact the ISO controlled grid. Bonneville sees a more balanced approach in this year's Policy Initiatives Catalogue that addresses issues for the ISO controlled grid (e.g. the day-ahead enhancements, continuing FRAC-MOO2 and resource adequacy), as well as issues for the EIM Area (e.g. EIM Greenhouse Gas Enhancements and Hourly EIM Resource Sufficiency).

- Focus more on achieving a sound and reasonable underlying policy that would diminish the need for administrative pricing (e.g. Intertie Deviation Settlement).
- Focus on governance first on regional integration and de-prioritize regional policy development initiatives like regional resource adequacy, transmission cost recovery and grid management charges until after regional bodies are in place to address these regional issues.

Bonneville is a federal power marketing administration within the U.S. Department of Energy that markets electric power from 31 federal hydroelectric projects and some non-federal projects in the Pacific Northwest with a nameplate capacity of 22,500 MW. Bonneville currently supplies 30 percent of the power consumed in the Northwest. Bonneville also operates 15,000 miles of high voltage transmission that interconnects most of the other transmission systems in the Northwest with Canada and California. Bonneville is obligated by statute to serve Northwest municipalities, public utility districts, cooperatives and then other regional entities prior to selling power out of the region.

This comment first addresses those initiatives identified by the ISO as Discretionary Initiatives. It then provides comments on Initiatives Currently Underway and Planned, a number of which Bonneville believes are important to continue through to completion.

Discretionary Initiatives

6.1.1 Day-Ahead Flexible Reserve Product (D)

HIGH PRIORITY. As the catalog indicates, “This initiative was added to the catalog by the CAISO in October 2017. In addition to residual unit commitment awards for differences between the CAISO’s load forecast and cleared bid-in demand, the day-ahead market could be enhanced to procure additional capacity to meet uncertainty needs from internal and external resources that can respond to 15-minute schedule changes and 5-minute dispatch needs in real-time. The requirement could be based on a statistical determination of uncertainty needs between the cleared day-ahead market schedules and the 15-minute market/5-minute real-time dispatch. The uncertainty requirements would likely vary by time of day and season. Scheduling coordinators would submit economic capacity bids to provide the flexible reserve product. The upward and downward capacity awards would be paid a market clearing price in the day-ahead market similar to how the CAISO currently prices ancillary services. Resources awarded upward and/or downward capacity would be obligated to submit economic bids into the real-time 15-minute market. In the event a resource does not meet its real-time bidding obligation, the CAISO would rescind the day-ahead market capacity payment.”

Bonneville strongly supports a high priority for this Day-Ahead Flexible Reserve Product stakeholder initiative. The CAISO has a growing need for flexibility to meet the net load ramps and over-supply issues caused in part by the increasing amount of renewable generation being built in California. Currently, Northwest hydro generation is providing a limited amount of within hour flexibility to the CAISO. The flexibility of Northwest hydro generators is under-utilized by the CAISO due to a combination of physical limitations and current market rules that result in inadequate economic incentives. This initiative has the opportunity to better describe an uncertainty requirement in the day-ahead timeframe, align market rules with that uncertainty requirement, and provide a day-ahead market capacity payment to incent flexible resources to

sell ramping capability that needs to be available to address uncertainty in subsequent market runs to meet operational objectives.

6.1.7 Combining IFM and RUC (D)

HIGH PRIORITY. As the catalog indicates, “This initiative would consist of combining the integrated forward market and the residual unit commitment process to co-optimize energy, ancillary services, and backstop capacity in the day-ahead market. Combining the integrated forward market and residual unit commitment process allows the market optimization to consider the CAISO’s demand forecast in the market’s clearing of bid-in demand. This increases the efficiency of the integrated forward market and residual unit commitment process solutions because they are co-optimized. In addition, this initiative would consider allowing the residual unit commitment process to de-commit resources to better manage the potential for over-generation because of increased amounts of variable energy resources.”

Bonneville strongly supports a high priority for this initiative to combine IFM and RUC. As net load forecast uncertainty grows, it is important for operators to consider the net load forecast in the day-ahead market clearing process and co-optimize that with ancillary services, including both an upward uncertainty requirement and a downward uncertainty requirement as described in the Day-Ahead Flexible Reserve Product stakeholder initiative. The CAISO’s current approach of separately clearing the IFM, which clears bid in supply and bid in demand, and the RUC, which subsequently clears additional requirements, is less efficient and less effective than a combined approach. The separate IFM and RUC have different requirements which are solved sequentially rather than co-optimized simultaneously, do not allow for de-commitment and only recently began to consider decremental requirements. The combination of IFM and RUC should also enhance participation from resources external to the CAISO Balancing Authority Area which can be excluded from RUC currently if they are not RA resources.

6.1.9 Multi-Day Unit Commitment (D)

HIGH PRIORITY. As the catalog indicates, “This initiative would evaluate if the day-ahead market should include a multi-day unit commitment. Having the day-ahead market look out two to three days would create more efficient commitment decisions that better reflect whether resources are expected to run for a single or multiple days.”

Bonneville supports a high priority for this Multi-Day Unit Commitment initiative. Day-ahead and multi-day unit commitment better accommodate operational and commercial objectives for Bonneville and other Northwest entities while addressing California’s net load ramp and providing the flexibility to address within-hour uncertainty through the 15-minute market. Bonneville and other Northwest entities, whose resources are predominantly hydroelectric generation, manage availability of water to fuel generation over a multi-day horizon. Better aligning this characteristic with California’s unit commitment and scheduling would yield more cost effective outcomes.

6.1.2 Full Network Model Expansion – Phase 2 (N, E2)

HIGH PRIORITY. As the catalog indicates, “Phase 2 will explore modeling imports and exports into the CAISO balancing at their actual source and sink to improve the CAISO market’s modeling of actual electrical flow. Although the CAISO market currently uses an approximation

of this for imports and exports to and from EIM areas, it currently models imports and exports to and from the CAISO balancing areas as point injections and withdrawals at the intertie scheduling point. Consistent modeling across the CAISO and EIM balancing areas would improve the market's accuracy."

Bonneville strongly supports improving modeling of imports and exports to reflect their actual source/sink instead of modeling them at the border. This should bring actual physical flows closer to modelled market flows, thereby potentially reducing inadvertent flows, particularly on the edge of the ISO controlled grid where Bonneville's neighboring balancing authority is located. Further, the calculations of market flows and the associated controls specified in the Coordinated Transmission Agreement signed by Bonneville and CAISO in 2017 would be improved by this enhancement. In doing so, however, it is important to respect the functions of the existing Open Access Transmission Tariff framework so that commercial and operational objectives are aligned.

6.1.5 Limiting EIM Energy Transmission Scheduled Resources Transfers (D, E1)

PRIORITY for 2018. As the catalog indicates, "This initiative would explore limiting the magnitude of inter-interval changes to transfers of power dispatched by the EIM between EIM balancing areas. Idaho Power Company states that that large transfer changes between intervals has the potential to cause reliability issues."

Bonneville supports controls on the EIM flows both within EIM balancing areas and between EIM balancing areas to sustain reliable grid operations. Bonneville and the CAISO have worked to implement rate of change constraints on the Bonneville system and this initiative appears to have a similar objective.

6.1.1 EIM Default Energy Bid Option (D, E1)

PRIORITY for 2018. As the catalog indicates, "This initiative will explore creating a fourth option to the CAISO's current default energy bid (DEB) options. The CAISO's existing DEB options consist of a Variable Cost Option, which does not incorporate any opportunity costs; an LMP Option, which is based on a 90-day lagging metric of prices, and cannot represent same-hour or future-hour opportunity costs; and a Negotiated Rate Option based on negotiations with CAISO's Department of Market Monitoring (DMM). The Negotiated Rate Option provides a framework for a customized estimate of marginal costs. However, the market participants requesting this initiative contend it does not eliminate hour-to-hour inaccuracies of any formulaic approach that attempts to estimate EIM resources' marginal costs, including opportunity costs. This initiative would evaluate a default energy bid option that would address these inaccuracies for EIM participants."

Bonneville believes investigation of a fourth option to the CAISO's current default energy bid (DEB) options holds merit. Such an option will better address the opportunity costs for integrated hydro systems than the existing DEB options.

6.3.1 Real-Time Market Enhancements (D, E2)

PRIORITY for 2018. As the catalog indicates, “This initiative will examine market design changes needed to enable the five-minute real time dispatch to perform many of the functions that are now performed by the 15-minute real time unit commitment. These functions may include real-time unit commitment, ancillary services procurement, and local market power mitigation. The 15-minute market would continue to schedule interties and internal resources at 15-minute granularity but would run with a shorter lead time.”

Bonneville supports a 2018 priority of this initiative. Bonneville particularly supports the “shorter lead time” aspect of this initiative, especially if it mitigates existing seams between the current FMM and RTD timelines (ie. t-57.5 minutes) and the timelines of the bilateral scheduling windows, including those timelines that OATT transmission providers implemented under FERC Order 764 (ie. t-20 minutes).

6.1.24 Hourly Bid Cost Recovery Reform (D, E2)

PRIORITY for 2018. As the catalog indicates, “The CAISO implemented market changes in 2014 that separated bid cost recovery calculations and payments between the day-ahead and real-time markets. This initiative would break the bid cost recovery review horizon further in real-time which is in line with the Market Surveillance Committee’s opinion on the bid cost recovery rule changes wherein it suggests that “separable decisions” should receive separate bid cost recovery. One possibility is to afford separate bid cost recovery to separate commitments of short-start units in the real-time market.”

Bonneville supports a 2018 priority of this initiative for economic real-time markets. Bonneville believes that making bid cost recovery consistent with bidding time horizons would improve real-time market liquidity.

6.1.2 Hourly EIM Resource Sufficiency Evaluation (D, E1)

PRIORITY for 2018. As the catalog indicates, “This policy was developed to ensure that EIM balancing areas do not lean on other balancing areas to avoid incurring costs for capacity, flexibility, or transmission in the bilateral market. The evaluation tests for capacity, supply/demand balance, and ramping. In the event that a balancing area in the EIM fails a test, the balancing area is not allowed to have incremental transfers from the previous hour’s last FMM transfer. EIM entities have expressed the need to consider potential enhancements to the resource sufficiency evaluations. They contend the enhancements to the test should include: (1) Correct overstatement of the flexible ramp sufficiency requirement; (2) address under-valuing EIM Entity resources; (3) correct improper consequences for failing the flexible ramp sufficiency test; (4) performing flexible ramp sufficiency at T-40 with 5 minute granularity; (5) potentially make uncertainty histogram enhancements; and (6) enabling participating resource scheduling coordinators visibility into the test obligations. If the CAISO adds this initiative to the roadmap, the CAISO anticipates that this initiative would first begin with a stakeholder workshop to fully identify areas to address in the initiative.”

Bonneville supports a 2018 priority of this initiative. Bonneville agrees that an appropriate first step would be to begin with a stakeholder workshop to fully identify areas to address in the initiative. As indicated above, an hourly resource sufficiency evaluation for EIM Entities was

developed “to ensure that EIM balancing areas do not lean on other balancing areas to avoid incurring costs for capacity, flexibility, or transmission”. It is important to stay focused on the original intent of the resource sufficiency evaluation. Bonneville sees potential relationships between this initiative, the Day-ahead Flexible Reserve Product initiative and Intertie Deviation Settlements initiative. Bonneville also believes the breadth of this initiative needs clarification, specifically as to whether the contemplated enhancements are only intended for EIM Entities’ Balancing Authority Areas or if they would also apply to the ISO Balancing Authority Area.

6.1.17 Enhancing Participation of External Resources (D, E1)

PRIORITY for 2018-19. As the catalog indicates, “This initiative would investigate potential EIM enhancements to allow participation of resources in balancing authority areas that have not joined the energy imbalance market. The proposed changes will ensure that external participation is complementary and compatible with bilateral trades. In addition, the external resources will need to meet similar requirements of EIM participating resources. Such as locational bidding of a physical resource, modeling of resource characteristics, telemetry, and metering to enable accurate modeling of physical flows, congestion management, and ensure feasible dispatches. Also, these external resources will need to be subject to market power mitigation procedures and make transmission available to exclusively accommodate its maximum bid range. Lastly, rules will need to be developed to address potential leaning by extending the resource sufficiency evaluation to external participation.”

Bonneville supports a 2018-19 priority of this initiative. External generation resources can greatly enhance the value provided to the EIM Entities and the CAISO by lowering the cost of imbalance energy. Bonneville continues to support this initiative. Bonneville believes that an appropriate first step would be to begin with a stakeholder workshop to fully identify areas to address in the initiative. This initiative could allow for more efficient and effective integration of external resources into the EIM Area, which can lower prices and reduce incidents of market power findings, but also better support security constraints in the dispatch, more accurately model transmission and improve congestion management for all parties.

Initiatives Currently Underway and Planned

5.2 Flexible Resource Adequacy Criteria and Must Offer Obligation Phase 2 – FRACMOO2 (I, C)

HIGH PRIORITY. ISO has indicated that flexible resources will be critical to the integration of additional renewable resources. Bonneville is encouraged that the FRACMOO2 initiative has been re-started and underway in 2017. FRACMOO2 is important to the ISO’s operations, to Bonneville, and to other Northwest hydro entities. If capacity payments are made to reflect the opportunity costs of such operation, coordinated operation of hydroelectric generating plants can effectively address net load ramps brought on by the increasing penetration of renewable resources. We look to this initiative to explain the objectives driving any limitations for external resources providing flexible RA.

5.9 Intertie Deviation Settlement (D)

HIGH PRIORITY. As the catalog indicates, “The current “decline charge” for undelivered imports or exports was put into place to provide an incentive to deliver imports and exports when dispatched by the real-time market. The decline charge penalizes undelivered imports or exports to the extent they exceed a threshold amount over each month. Because of recent operational and market concerns with undelivered imports and exports, this initiative will examine if the current structure of the decline charge should be changed. The goal of this initiative is to ensure operational reliability by incentivizing intertie resources to deliver energy that has been awarded.”

Bonneville supports investigation of business practices that can better ensure the physical delivery of awarded energy. However, this initiative should also consider application of penalties if physical energy delivery was different from awarded energy pursuant to reliability actions taken by the transmission operator of the source Balancing Authority Area (e.g. energy flowing on firm transmission and schedules reduced, frozen or cut by transmission operator) rather than pursuant to an intentional action of a seller that did not acquire sufficient energy to fulfill their awarded energy when it was no longer in their commercial interest. This initiative should also consider the underlying policies for how imports and exports are awarded, tagged and delivered rather than narrowly focusing on the structure of the “decline charge”.

5.11 EIM Greenhouse Gas Enhancements (I, D, E1)

HIGH PRIORITY. As the catalog indicates, “This initiative addresses the accuracy of greenhouse gas attribution to EIM participating resources for EIM transfers into the CAISO. It has been observed that the current dispatch algorithm may not fully account for the atmospheric effect of serving CAISO load through an EIM transfers because there may be instances where a secondary dispatch has occurred. This initiative is exploring a proposed enhancement to have two passes for the real-time market optimization to calculate greenhouse gas emissions.”

Bonneville continues to support this initiative and is interested in advancing the two pass solution. We believe the two pass solution has the potential to more accurately and equitably assign greenhouse gas (GHG) emissions associated with out-of-state resources in the EIM. Such an approach is needed to appropriately credit resources of zero or very low carbon content and achieve the state’s desired GHG reduction goals. Bonneville continues to urge the CAISO to work closely with the Air Resource Board on this solution.