California ISO Extended Day-Ahead Market Issue Paper

Comments of Public Interest Organizations: Western Resource Advocates, Environmental Defense Fund, Natural Resources Defense Council, NW Energy Coalition, Renewable Northwest, and Western Grid Group

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Public Interest Organizations ("PIOs") support the decision of the California ISO ("CAISO") to begin the stakeholder process necessary to finalize the market design for the Extended Day-Ahead Market ("EDAM"). PIOs concur with EIM Entities that the potential benefits of EDAM warrant moving forward.[1] The below comments respond to specific issues raised by CAISO in its October 10 EDAM Issue Paper.

1. Transmission Provision and Compensation

Transmission Provision

Issues of transmission availability and compensation will be critical to the potential future success of EDAM and are therefore appropriately addressed within the scope of this initiative.

Benefits to consumers increase substantially as more transmission is made available for both real-time and day-ahead dispatch. This is particularly true in the day-ahead timeframe, as 90-95% of energy transactions occur in day-ahead, while only 5-10% of energy transactions occur in real-time. Therefore, as we move from real-time to day-ahead operations via EDAM, transmission

[1] PIOs believe the EIM Entities' Feasibility Assessment underestimates potential market benefits for EDAM. This issue is discussed in more detail on page 11 of these comments.

itself becomes more valuable in that it now has an opportunity cost. For example, EIM Entities may not be able to make all transmission available that is "unused" in the day-ahead timeframe because a transmission customer may have wanted to procure this transmission on a point-to-point basis from the transmission provider under their Open Access Transmission Tariff ("OATT"). An obvious tension arises: EDAM participants will still need to make transmission available under their respective OATTs, but will simultaneously be making certain transmission available in EDAM, since maximizing the amount of transmission available in EDAM will be critical to the market's success.

Presently, CAISO is proposing five potential mechanisms for making transmission available to support energy transfers between Balancing Authority Areas ("BAAs") in the EDAM:

1. **Transmission needed to use external resources to fulfill bilateral contracts or pass the day-ahead resource sufficiency evaluation.** This transmission has already been procured prior to the day-ahead market and is considered a sunk cost that does not have a marginal cost in the day-ahead timeframe.[2]
2. **Transmission that a Balancing Authority ("BA") sets aside to capture the downward imbalance reserve diversity benefit.** In order for a BAA to benefit from the downward diversity benefit, the BAA must have sufficient export transmission to support transfers into another BAA. Likewise, sufficient import transmission is needed to capture the upward diversity benefit.[3]
3. **Transmission that a transmission customer makes available for EDAM use in return for congestion revenue on the EDAM transfer.** A transmission customer would utilize this approach if it procured transmission to facilitate additional economic displacement utilizing its resources. The congestion revenue compensates the transmission customer for the price difference from source to sink.[4]
4. **Transmission that a transmission customer makes available for EDAM use in return for compensation through a transmission charge.** A transmission customer would utilize this approach if it procured transmission but does not plan for its resources to participate in the market in a given hour.[5]
5. **Transmission that a transmission service provider makes available for use at a tariff approved transmission rate.** It will be necessary to discuss the scheduling priority of this transmission since it can be scheduled for either day-ahead energy or imbalance reserves which must be available for use in real-time.[6]

PIOs recommend that CAISO consider adding a *sixth* mechanism for consideration:

6. **Modified and voluntary form of Financial Transmission Rights ("FTRs").** This basic system for efficiently using the transmission system is employed by all other Regional Transmission Operators ("RTOs") and Independent System Operators ("ISOs"), including CAISO. Under this proposed option, an EDAM participant *could* elect to make all transmission available for EDAM dispatch, while providing a perfect "hedge" against

[2] EDAM Issue Paper, p. 9.
[3] *Id.*
[4] *Id.*
[5] *Id.*
[6] *Id.*

transmission congestion charges through Congestion Revenue Rights ("CRRs"). Additionally, for EDAM participants, using this mechanism would allow for a more seamless transition if and when they choose to become CAISO Participating Transmission Owners ("PTOs").

The proposed EDAM will expand the reach of the day-ahead market to include BAs that currently operate with physical transmission rights and contract path dispatch. However, PIOs believe a modified and voluntary form of FTRs could provide significant flexibility and additional value for the EDAM.

Indeed, market theory has long suggested that more efficient system operation can be achieved by transitioning from physical transmission rights and contract path dispatch to system (i.e., "flow-based") dispatch. The inclusion of an FTR mechanism could accommodate varying appetites for innovation among market participants, as well as enhance the market's ability to resolve transmission congestion and achieve a more optimal economic outcome. RTOs and ISOs have generally incorporated some form of FTRs in their market design. In the case of CAISO, it is the understanding of PIOs that CRRs have been included in the market since 2009.

However, many observers, as well as RTOs and ISOs themselves, have concluded that these approaches (while superior to a sole reliance on physical transmission rights), have not always performed optimally. Designing a modified and voluntary approach to FTRs for EDAM would involve significant efforts, including modifications to BAs' OATTs. That said, PIOs believe that a revised design for FTRs is well worth exploring due to the significant advantages it could offer when compared to any of the five transmission availability options identified in the EDAM Issue Paper.

Opportunities for Increasing Transfer Capacity

In addition to considering the FTR mechanism as an option for transmission provision in the EDAM, **PIOs also recommend that the Transmission Provision section of the next iteration of the Issue Paper address opportunities to increase transfer capacity over existing wires.** One option is the use of dynamic (or at least ambient air temperature adjusted) line ratings.[7] Accurate dynamic line ratings enable a transmission owner to know the true transfer capacity of transmission lines in real-time.[8]

Additionally, CAISO should foster opportunities to make investments that would relax current System Operating Limits and Interconnection Reliability Operating Limits, thereby increasing transfer capacity over existing wires, while maintaining reliability. As the Reliability Coordinator in the EIM footprint, CAISO has the necessary data on system operating conditions to highlight opportunities for EDAM participants (and their regulators) to make such investments.

One recent example of enabling more flow over existing wires (while maintaining reliability) is the recent decision of Arizona Public Service ("APS") to delist the following WECC paths and move to a flow-based transmission regime: (1) Southwest Four Corners (Path 23), Cholla-

[7] *See* U.S. Department of Energy, Dynamic Line Rating Systems for Transmission Lines: Topical Report 7-8 (2014), https://www.smartgrid.gov/files/SGDP_Transmission_DLR_Topical_Report_04-25-14_FINAL.pdf.
[8] *Id.* at 12.

Pinnacle Peak (Path 50), and Southern Navajo Transmission System (Path 51).[9] While the utility identified a number of drivers for its delisting decision, including plant closures, it may ultimately result in increased utilization of the existing transmission system.

Transmission Compensation

PIOs understand that due to the sheer volume of energy transactions occurring in day-ahead, some form of transmission compensation will be necessary. **However, PIOs caution that any transmission pricing system that levies charges per transaction may impact the economic efficiency of EDAM dispatch.** An exception may be a per MWh charge for EDAM imports and exports. Additionally, rate pancaking, where a transmission customer is charged separate access charges for each utility service territory that the customer's contract path crosses, should be avoided in EDAM market design. Rate pancaking in organized markets has long been discouraged by FERC.[10]

2. Distribution of Congestion Rents

As the volume of energy transactions increases when moving from real-time to day-ahead operations in EDAM, transmission congestion will need to be addressed and thus, addressing the appropriate distribution of congestion rents is well within the scope of the EDAM stakeholder initiative.

As noted by CAISO, congestion occurs in the day-ahead market when generation that is economic cannot be fully dispatched to serve load because it is located in a transmission constrained area. In this sense, transmission congestion does not refer to deliveries that are simply held up or delayed, but rather, it refers to requests for deliveries (i.e., transactions) that cannot be physically implemented as requested.[11] This leads to load paying a higher locational marginal price ("LMP") than what the generation is paid. In CAISO, this resulting over-collection in market revenue (i.e., congestion rent) must be distributed to market participants. Generally speaking, reducing congestion is likely to increase electricity prices in exporting regions, but should be offset by lower prices in importing regions.[12]

PIOs support exploring the use of CRRs – not only to allocate revenues derived from the difference in LMPs between the source node and the sink node in the day-ahead market, but also as an incentive for transmission owners to offer their transmission for EDAM dispatch, knowing that CRRs are designed to fully hedge any congestion charges transmission owners might incur from using their own wires.

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[9] Arizona Public Service, Remarks at the Reliability Assessment (RAC) Meeting: Delisting of WECC Paths (Oct. 18, 2019), https://www.wecc.org/Administrative/APS%20WECC%20Path%20Delisting.pdf.

[10] Rate pancaking occurs when a transmission customer is charged separate access charges for each utility service territory that the customer's contract path crosses. *See* RTO Realignment Order II, 103 FERC ¶ 61,274 at PP 24-26 (citing Regional Transmission Organizations, Order No. 2000, FERC Stats. & Regs. ¶ 31,089, at 31,024 (1999) (citing the elimination of rate pancaking as one of the benefits of Order No. 2000), order on reh'g, Order No. 2000-A, FERC Stats. & Regs. ¶ 31,092 (2000), aff'd sub nom. Pub. Util. Dist. No. 1 v. FERC, 272 F.3d 607 (D.C. Cir. 2001)).

[11] Ernest Orlando Lawrence Berkeley National Laboratory, Electricity Transmission Congestion Costs: A Review of Recent Reports 1 (2003), https://www.energy.gov/sites/prod/files/oeprod/DocumentsandMedia/review_of_congestion_costs_october_03.pdf.

[12] *Id.* at viii.

3. Resource Sufficiency Evaluation (including forward planning and procurement; trading imbalance reserves and capacity; EIM resource sufficiency evaluation)

As with EIM, EDAM will require a resource sufficiency evaluation. This is because (as EDAM is currently conceived), EDAM participants will retain their BA boundaries and NERC-related reliability responsibilities, including responsibilities related to resource adequacy. CAISO must therefore be able to determine that EDAM's participating utilities can come into the operating hour resource sufficient, to ensure that the market is being appropriately used as an economic opportunity rather than as a capacity surrogate. Thus, determining a resource sufficiency test for EDAM is appropriately considered within the scope of this stakeholder initiative.

Because BA boundaries and NERC-related reliability responsibilities will remain intact for EDAM's participating utilities, meeting resource adequacy requirements will continue to be the responsibility of these utilities, with oversight provided by state regulatory commissions (as is current practice). PIOs therefore concur with EIM Entities that participation in the EDAM "should not modify state or local control over long-term resource adequacy planning and integrated resource planning, or any other aspect of state or local generation planning and certification."[13] This will enable states and local jurisdictions to consider their unique policy goals, resource availability, local environmental concerns, and the broader interests of their ratepayers.[14]

While PIOs acknowledge that adequate supply and demand-side resources to meet load is a necessary condition for successful operation of EDAM, we caution against an *excessively stringent* resource sufficiency test. Such a test could result in increased emissions and increased costs to ratepayers through the required maintenance of uneconomic existing generation and the potential overbuilding of new generation (that may side idle much of the time).

Suggested Resource Sufficiency Enhancements

To avoid the potentially negative repercussions of an overly stringent resource sufficiency test, **PIOs recommend that CAISO consider the following resource sufficiency enhancements:**

- **Regional Resource Adequacy Advisory Reports.** Regional Resource Adequacy Advisory reports would be generated one year, one month, and one week in advance of EDAM dispatch. The purpose of these reports is to provide EDAM participants, regulators and potential providers of supply and demand-side resources timely information upon which to make investment and trading decisions to enable market participants to pass the EDAM resource sufficiency test at least system-wide cost. Such reports would include, but not be limited to, information on approved or acknowledged IRPs and utility resource procurement results.
- **Seasonal Resource Sufficiency Test.** As the rapid transformation of the resource mix continues across the U.S., and particularly in the West, it is becoming evident that there

[13] EIM Entities, EDAM Principles Document 4 (2019), http://www.caiso.com/Documents/PublicCommentLetter-EIMEntites-EDAM-Sep16-2019.pdf ("EDAM Principles Document").
[14] Organization of MISO States, State Regulatory Sector Response: September Hot Topic on Resource Adequacy 2 (2016), http://www.misostates.org/images/stories/Filings/HotTopics/2016/Item_7_OMS_Hot_Topic_Comments_FINAL.pdf.

will be an increasing trend of excess supply in both the spring and fall.[15] This trend has been observed in California for years. As noted by CAISO, "a swift rise in California's renewable energy capacity, especially solar generation, is the main driver behind the growing occurrence of oversupply."[16] By employing a seasonal EDAM resource sufficiency test, resource sufficiency requirements could be relaxed during times of excess supply, allowing EDAM participating utilities an even greater opportunity to benefit from regional resources, enhancing market efficiency while still avoiding the previously discussed "capacity surrogate" concerns.

In addition to the above recommendations, PIOs support aggregated demand response and distributed energy resources counting toward EDAM's resource sufficiency test. In contrast to the EIM, where EIM participants can choose whether to have these resources participate in the market, in EDAM, CAISO should examine developing a protocol that automatically enables these resources to not only participate, but to count toward an EDAM participant's resource sufficiency needs.

Although CAISO has opened a separate stakeholder process to examine the capacity value of aggregated demand response and distributed energy resources (including when hybridized with energy storage assets), PIOs do not believe that process as currently scoped is broad enough to address the significant issues associated with these resources.[17] In general, PIOs are advocating in that process for the adoption of interim rules to permit commercial experience in contracting, construction, dispatch and settlement *before* adopting "durable" tariff provisions. Regardless of how this stakeholder process proceeds, though, PIOs support the principle that these types of resources should count toward the EDAM resource sufficiency test in the same manner that they currently count in CAISO's own ancillary service markets.

Finally, PIOs recommend that CAISO consider a compliance fee for failure to pass the EDAM resource sufficiency test. If adopted, this fee (e.g., 20%) would apply to all transactions by a BA during those hours that it fails to pass the EDAM resource sufficiency test. Revenue from the compliance fee could then be distributed to the market's participants based on a measure of their EDAM transactions during the hour of non-compliance. This would be an alternative to the approach currently used in the EIM, where the resource sufficiency evaluation automatically freezes transfers in any given 15-minute interval when the BAA fails the test. Thus, where a BA fails the EDAM resource sufficiency test, instead of being "frozen out" of the market, the compliance fee would instead serve to penalize the BA for failing to meet the resource sufficiency test, while also providing an incentive for ongoing compliance.

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[15] *See* North American Electric Reliability Corporation, 2018 Long-Term Reliability Assessment 22 (2018), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2018_12202018.pdf.
[16] *See* California ISO, Fast Facts: Impacts of Renewable Energy on Grid Operations (2017), https://www.caiso.com/Documents/CurtailmentFastFacts.pdf.
[17] *See* California ISO, Energy Storage and Distributed Energy Resources Initiative: Phase 4, http://www.caiso.com/StakeholderProcesses/Energy-storage-and-distributed-energy-resources.
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4. Ancillary Services

The current CAISO day-ahead market co-optimizes both energy and ancillary services. Ancillary services – i.e., regulation (up and down) and reserves (spinning and non-spinning) – are particularly important because they help balance the transmission system as it moves electricity from generating resources to ultimate customers. Regulation is generally defined as a reliability product that corrects short-term, unforeseen fluctuations in electricity use and supply that could affect the stability of the system.[18] Regulation resources are able to adjust output or consumption in response to an automated signals (typically received every four seconds).[19] Reserves, by contrast, are generation resources that can quickly come online (within 10 to 30 minutes) in the event of an unexpected loss of generation.[20] These operating reserves also help balance the system in emergency situations.[21]

Today, most EIM Entities participate in reserve sharing groups, enabling these utilities to procure many of their ancillary service needs. For example, the Southwest Reserve Sharing Group ("SRSG") is a NERC-registered entity covering Arizona, New Mexico, southern Nevada, parts of southern California (including the Imperial Valley), and El Paso, Texas. It enables its participants to share contingency reserves in order to maximize generator dispatch efficiency. According to the SRSG, by sharing reserves, the group's participants can decrease their compliance costs related to NERC's Disturbance Control Standard, while also contributing to electric reliability in the Western Interconnection.[22]

Generally speaking, PIOs believe that ancillary service markets can provide more comprehensive reliability services – across an entire market footprint – than more fragmented reserve sharing groups can accomplish on their own. Additionally, using a market to procure needed ancillary services will be more economically efficient than relying solely on existing reserve sharing groups. Therefore, PIOs support CAISO's examination, as part of the EDAM stakeholder initiative, of whether day-ahead market ancillary services can effectively complement existing reserve sharing groups and assuming so, how best to enable the trading of ancillary services between the EDAM's participating BAAs. Additionally, PIOs recommend that any EDAM-focused ancillary services market be open to all generating resources (both supply and demand-side) that can reliably meet these needs.

5. Modeling of non-EDAM Imports and Exports

In the EIM, *CAISO* imports and exports are modeled as injections at the intertie scheduling point while *EIM Entities'* imports and exports are modeled at the source/sink BAA. PIOs support CAISO's proposal to align the modeling approach of CAISO imports and exports to the approach currently used for EIM Entities, including expanding CAISO's full network model topology to

[18] PJM, Understanding the Difference Between PJM's Markets (2019), https://learn.pjm.com/-/media/about-pjm/newsroom/fact-sheets/understanding-the-difference-between-pjms-markets-fact-sheet.ashx ("PJM Markets Fact Sheet").
[19] Reishus Consulting LLC, Electricity Ancillary Services Primer 29 (2017), Cite to NESCOE report, available here (pg. 29), http://nescoe.com/wp-content/uploads/2017/11/AnxSvcPrimer_Sep2017.pdf.
[20] PJM Markets Fact Sheet.
[21] *Id.*
[22] *See* https://www.srsg.org/.

include information on resources, load, and interchange schedules in other BAAs.[23] PIOs agree that consistent modeling across the CAISO and EIM BAs will improve the market's accuracy and will be important for the successful implementation of EDAM.

Additionally, as part of this initiative, PIOs encourage CAISO to consider the potential use ot "scheduling hubs" as representations of import and export sources and sinks in non-EDAM BAAs, e-tagging or settlement rule refinements, and remapping of CRRs to the new scheduling hubs.[24] This concept has the potential to simplify the accounting of energy imports and exports. Scheduling hubs could also pave the way to greater interest in EDAM participation and could possibly improve the accuracy of accounting for GHG emissions.

When addressing scheduling hubs, PIOs recommend that consideration be given to identifying areas where external resources may want to sell, trade or inject energy into the EDAM market footprint. PIOs realize that it has not yet been decided whether and how external resources will participate in EDAM, but believe that this issue should be considered. PIOs offer specific recommendations on external resource participation in the following section.

6. External Resource Participation

PIOs support CAISO exploring the market rules needed for the economic participation of external resources in EDAM. In the next iteration of the EDAM Issue Paper, we recommend that CAISO provide additional information on the types of external resources that could participate in EDAM, any interest expressed by external resources to date, and the potential benefits and risks of external market participation. For example, CAISO should explain the impact of potential market rules governing the participation of external resources on the incentives for such resources to eventually become part of the EDAM footprint.

7. Accounting for Greenhouse Gas Costs

PIOs believe that CAISO's current system for accounting for GHG costs and emissions in the EIM strikes an appropriate balance. Through use of a bid adder, the GHG tracking mechanism in EIM ensures that California utilities are compliant with California law, while not creating a compliance obligation on those utilities outside of California.[25] As other western states, including Washington and Oregon, adopt or consider adopting similar GHG policies, the CAISO's system for accounting for GHG costs and emissions will need to adapt. Additionally, this mechanism will need to change to accommodate EDAM. This is because the current EIM GHG tracking mechanism relies on EIM Entities' base schedules, but base schedules will not be used in EDAM.

[23] EDAM Issue Paper, p. 13.
[24] *Id.* at 14.
[25] For resources inside California, GHG compliance costs are already factored into their energy bids. For resources outside of California that want to serve load within California, the bid adder is included in order to account for the cost of GHG compliance. Where EIM resources are dispatched to serve load outside of California (i.e., to an EIM participating utility in a state with no GHG emissions requirements), the market optimizes to use only the energy bid. No GHG bid adder is required because the importing state does not have an equivalent GHG compliance cost. Mark Rothleder, Presentation to EIM Regional Issues Forum: Current GHG Accounting Approaches (June 18, 2019) (available at: https://www.westerneim.com/Documents/Presentation-GHGAccounting-CAISO.pdf).

PIOs support CAISO working closely with other western states in order to align future market design and carbon accounting rules that can work for both the EIM and EDAM. But, PIOs also caution that CAISO should not allow perfect to be the enemy of the good. We believe that regional market dispatch of resources alone will significantly accelerate the development and dispatch of zero marginal cost resources (i.e., wind and solar) and that market implementation should not be delayed until a perfect GHG accounting system has been developed. After all, history has shown that market refinements will always be needed and can be accommodated after the market begins operation.

8. Convergence Bidding

No comments at this time.

9. Price Formation

PIOs concur with CAISO that as marginal energy prices decline (due to an increased amount of zero marginal cost resources), it may be necessary for other operational attributes, including flexibility and other essential reliability services, to be appropriately valued and compensated in CAISO markets.[26] PIOs encourage CAISO to use both the EDAM and DAME stakeholder processes as a collective opportunity to refocus markets on specific grid services that are needed to maintain reliability, including the creation of market rules to enable these grid services to be acquired from any supply or demand-side resources, and to enable the fair compensation of these resources.

PIOs acknowledge that this type of market design reassessment would necessarily go beyond considerations of fast start pricing and scarcity pricing (as currently proposed in the EDAM Issue Paper), but believe that these considerations are not only critical for DAME and EDAM, but also for the future of all CAISO markets. The Energy Systems Integration Group ("ESIG") has been examining this issue for a number of years and has developed recommendations that could be prove valuable in CAISO's own examination of this issue.[27]

10. EDAM Administrative Fee

No comments at this time.

11. Review of Day-Ahead Settlement Charge Codes

No comments at this time.

[26] EDAM Issue Paper, p. 16.
[27] *See* Mark Ahlstrom, ESIG and NextEra Energy Resources, Future of Flexibility from all Resources (available at: https://arpa-e.energy.gov/sites/default/files/05_Future%20of%20Flexibility%20from%20all%20Resources_Ahlstrom.pdf).

12. Miscellaneous (e.g., inter-SC trades)

No comments at this time.

13. EIM Governing Body Classification

PIOs look forward to ongoing engagement in the EIM- and EDAM-focused governance discussions that will take place as part of the Governance Review Committee's work. Additionally, PIOs strongly support CAISO's proposal of a "joint authority" construct for approving EDAM's final market design. If approved, this would direct the CAISO to bring all aspects of the proposed EDAM market design to both the EIM Governing Body and the CAISO Board of Governors for their joint approval. In other words, CAISO would be unable to move forward with tariff amendments necessary to implement EDAM without first obtaining approvals from both boards.

14. Additional Items to be Added to Scope

Transparency

PIOs believe that current CAISO practices do not provide sufficient transparency for purposes of EDAM – i.e., where the market's participants will be determining not only what resources to offer, but also what transmission to make available for EDAM dispatch. In order to enhance transparency, PIOs recommend that CAISO consider the following monthly reports:

- **Amount of Transmission Made Available.** For all major paths in the EDAM footprint, a comparison of transfer capacity made available for EDAM dispatch to transmission that *could* have been made available but was not. Such information would be useful in market monitoring; in identifying for market participants and their regulators the tradeoffs between transfer capacity made available for EDAM and transfer capacity reserved for other uses; and for evaluating the prudency of investments in new transmission.
- **Amount and Types of Resources Offered.** This would clarify the amount of generation and demand-side resources that have been offered for EDAM dispatch. Such information would enable an informed analysis of potential future EDAM market design changes necessary to "fully tap" the value of these types of resources. Additionally, it would also help inform market participants (and their regulators) regarding the optimal mix of resources to make available for market dispatch.

Market Monitoring

PIOs support the EIM Entities' proposal for an independent market expert to provide additional perspective on the complex and technical issues that the future EDAM Governing Body would oversee.[28] This independent market expert would not replace the function provided by CAISO's Department of Market Monitoring ("DMM"), but would supplement that function, and would report directly to the future EDAM Governing Body. In addition, PIOs recommend that the expertise of this independent market expert also be made available to the Body of State Regulators.

[28] EDAM Principles Document, pg. 4.

While PIOs support the initial need for this independent market expert, we also believe that the value and need for such an expert will likely decline over time as the stakeholders become more familiar with EDAM's market design and operations, as issues arising from EDA are resolved, and as trust in the CAISO's DMM increases. Therefore, PIOs recommend that CAISO consider acquisition of an independent market expert for purposes of EDAM on a contract basis.

EDAM Benefits

PIOs appreciate that EIM Entities have concluded that even a conservative estimate of the benefits from EDAM provided sufficient justification to move forward with EDAM market design and governance.[29] In comments previously submitted to EIM Entities, PIOs requested further explanation of the assumptions and modeling used to arrive at the conservative benefits estimates.[30] However, to date, EIM Entities have not yet respond to stakeholder comments and questions.

It is important to Western state regulators, policy makers and companies that are considering participating in EDAM to have an estimate of benefits that reflects more realistic outcomes. This will also be an important consideration for developing EDAM's market design. Market design options that may not appear worth the effort when using conservative benefit assumptions can become prudent investments when evaluated against a more realistic estimate of future benefits.

Until there is greater clarity on the assumptions and modeling used to arrive at the results of the EIM Entities' feasibility assessment, PIOs recommend that a more realistic estimate of benefits be used by stakeholder, regulators and policy makers. PIOs believe that the SB 350 study developed by CAISO in 2016 provides a more accurate estimate of potential benefits when adding day-ahead market services to the EIM. That study, which assumed a smaller market footprint than the EDAM feasibility assessment (by excluding federal Power Market Administrations), found:

- Annual production cost savings of $883 million; and
- Annual load diversity benefits of $386 million.[31]

Additionally, PIOs have previously estimated annual unquantified benefits in excess of $450 million when adding day-ahead market services to the EIM.[32]

Future Workshop Considerations

PIOs appreciate that as part of the proposed schedule for the EDAM stakeholder process, that CAISO has included a number of technical workshops, including: (1) Existing Day-Ahead Market Overview; (2) Transmission and CRRs; (3) Resource Sufficiency Evaluation; (4) and Greenhouse Gas Accounting. PIOs recommend that all future workshops enable remote participation by stakeholders – via webinar and phone connection. This has been the practice for issue paper discussions and presentations, but was not offered for the recent DAM overview

[29] EIM Entities, Extended Day-Ahead Market: Feasibility Assessment Update from EIM Entities (Oct. 3, 2019), https://www.caiso.com/Documents/Presentation-ExtendedDay-AheadMarketFeasibilityAssessmentUpdate-EIMEntities-Oct3-2019.pdf.
[30] PIO Comments on EDAM Feasibility Assessment, submitted October 9, 2019 to the California ISO (not yet posted).
[31] California ISO, Senate Bill 350 Study V-50 and VI-6 (2016), https://www.caiso.com/Documents/SB350Study_AggregatedReport.pdf.
[32] PIO Comments on SB 350 Study, pp. 11-13, available at: http://www.westerngrid.net/wp-content/uploads/2016/10/Comments-on-SB-350-study-results-062216.pdf.

training. Given the regional focus of EIM and EDAM and the increasing diversity of these markets' stakeholders, enabling remote participation throughout this process will be critical.

In addition, PIOs have a specific recommendation for the "Transmission and CRRs" workshop. PIOs recommend that as part of this workshop, CAISO include hypothetical illustrations of the five transmission mechanisms currently proposed to enable EDAM energy transfers between BAs, as well as for the sixth mechanism – Financial Transmission Rights – recommended by PIOs in these comments. Comparing and contrasting the amount of transmission each mechanism enables for EDAM use would also be valuable. This recommendation is motivated by the informative scenarios used by CAISO during the November 11 Day-Ahead Market workshop that helped stakeholders visualize the tradeoffs in congestion revenues with varying levels of load, generation and CRRs.

PIOs also recommend that CAISO consider an additional workshop (or as part of an existing workshop) to more clearly address the issue of "Modeling of non-EDAM imports and exports." This would provide an opportunity for stakeholders to better understand the differences between the two modeling platforms used for CAISO and EIM. As suggested above, it could also benefit from hypothetical scenarios to clarify how aligning the modeling approach of CAISO imports and exports to the approach currently used for EIM Entities will improve the accuracy of market operations and why such an alignment will be important for EDAM implementation.