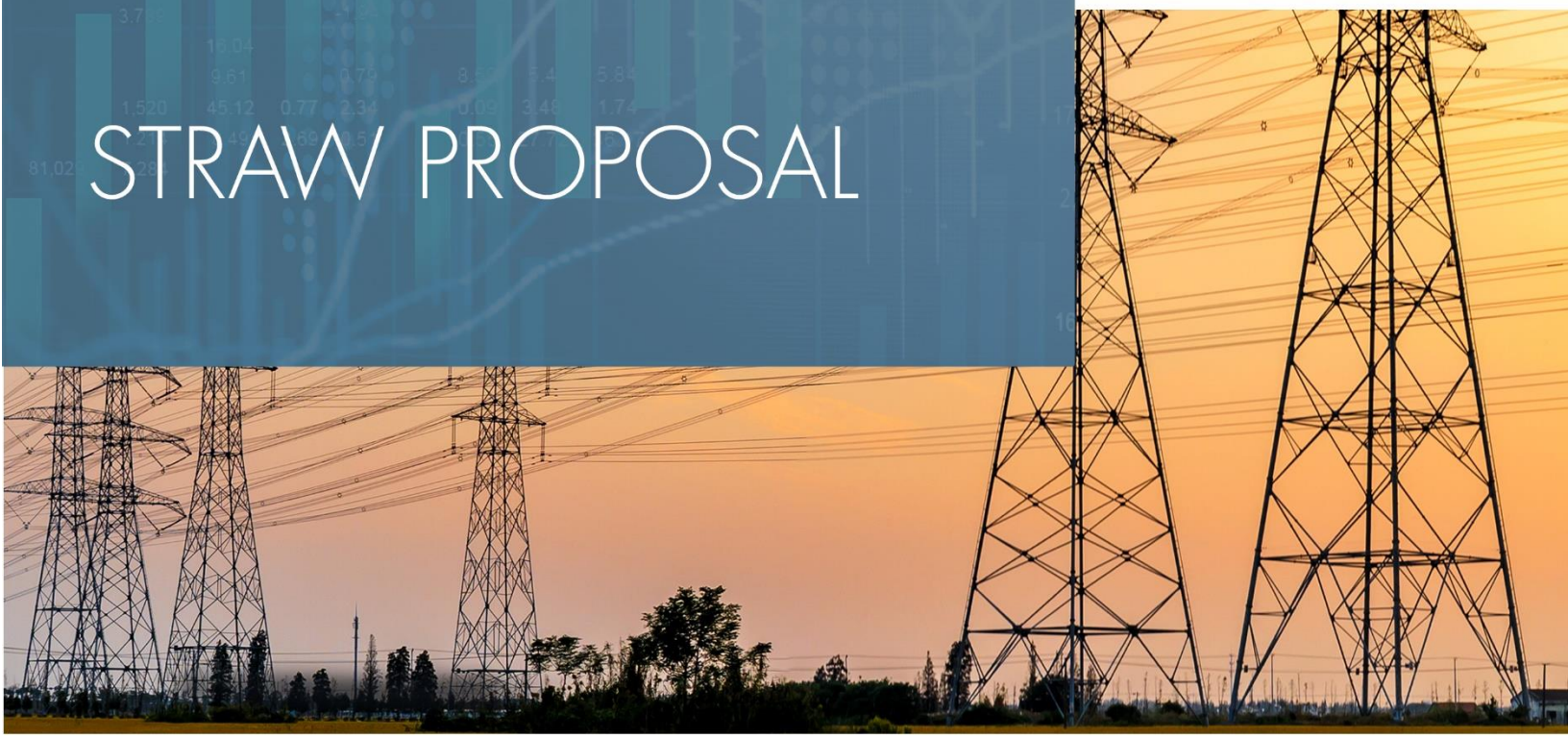
California ISO

EDAM
EXTENDED DAY-AHEAD MARKET

STRAW PROPOSAL



April 28, 2022

EDAM

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I. Introduction & Executive Summary

A. Introduction

The California ISO is pleased to present this straw proposal for the Extended Day-Ahead Market (EDAM). EDAM is a voluntary day-ahead electricity market with the potential to deliver significant economic, environmental, and reliability benefits for participants across the West. EDAM will more efficiently and effectively integrate renewable resources and address the significant operational challenges presented by a rapidly changing resource mix, emerging technologies, and the impacts of climate change. EDAM builds upon the proven ability of the Western Energy Imbalance Market (WEIM) to increase regional coordination, support state policy goals, and cost effectively meet demand.

Since its inception in 2014, the WEIM has grown to 17 participating entities and has produced more than $2 billion in benefits to its participants.[1] With the addition of two more entities later this year, WEIM participants will reach 19 entities and this number will grow to 22 entities in 2023, representing approximately 79 percent of the load across the Western Interconnection. By leveraging the significant resource diversity and transmission connectivity that exists between the major supply and demand regions of the West, the WEIM has clearly demonstrated the value of strong collaboration across a broad regional footprint. EDAM will provide significant additional benefits through optimal commitment and scheduling of supply in the day-ahead timeframe. The EDAM design will apply equitably to all EDAM entities, including the ISO, ensuring a level playing field for market participants inside and outside of California.

The EDAM design will also support the rapidly evolving western resource adequacy landscape. In addition to the resource adequacy programs in California, the emerging Western Resource Adequacy Program (WRAP) will provide a platform for participating load serving entities (LSEs) to bring forward capacity across different timeframes to demonstrate resource adequacy, and also to rely upon shared capacity in more stressed system conditions. Recognizing that there are differences in how the various programs ensure resource adequacy within their jurisdictions, we will seek to create through EDAM a market platform that complements, coordinates and helps to maximize the value of these programs through the use of the ISO's sophisticated security constrained economic dispatch capability. This will ensure participants can account for the capacity and optimize the use of resources they have procured to support reliability within their footprint.

This straw proposal is the product of extensive, open, and collaborative, stakeholder engagement. From January to mid-March 2022, the ISO facilitated stakeholder working groups and sought stakeholder input on key EDAM design elements.[2] We have endeavored to effectively synthesize and incorporate this valuable input into the straw proposal. We will continue to actively engage with stakeholders as we work towards completing the design, beginning with the in-person stakeholder meeting on May 25-26, 2022, and the June 16 submission of stakeholder comments.

[1] *Western Energy Imbalance Market Benefits Report First Quarter 2022*, April 21, 2022. Link

[2] The ISO held three stakeholder working groups: (1) Supply Commitment and Resource Sufficiency Evaluation (link); (2) Transmission Commitment and Congestion Rent Allocation (link); (3) Greenhouse Gas (GHG) Accounting and Costs (link). This straw proposal does not explicitly enumerate the full scope of comments and input received during the stakeholder process, except for certain critical areas where so indicated.

B. Executive Summary

The EDAM presents a comprehensive design of a day-ahead market that extends over multiple balancing authority areas (BAAs) participating in the WEIM. Informed by the extensive stakeholder perspectives and ideas, the straw proposal provides discrete solutions for specific design features, and identifies options where solutions are not yet evident.

Underlying the EDAM design are several threshold features that arose out of the stakeholder working groups. First, voluntary participation is a key feature, as it is with the WEIM. This will allow for voluntary entry and exit, as well as resource participation. Second, the ISO will maintain its commitment to fiscal responsibility in structuring an equitable rate design for implementation and EDAM fees, resulting in fair and reasonable rates for its market participants. Finally, the market design will ensure confidence in market transfers. This enables procurement of robust supply and flexible capacity that will position EDAM participants to effectively address changes in conditions from day-ahead to real-time, improving their response to potential reliability challenges.

The EDAM design leverages existing features of the ISO day-ahead market that are common in other day-ahead markets across the country. The design will also consider enhancements proposed in contemporaneous stakeholder initiatives, that will harness flexibility across the larger footprint by incorporating an imbalance reserve product, and that will enhance price formation.

This proposal is separated into three substantive parts to facilitate review: (1) pre-market activities, (2) day-ahead market processes and features, and (3) post-market processes and outputs.

1. Pre-Market Activities and Inputs

In the lead-up to the day-ahead market, EDAM entities must ensure there is sufficient transmission and organize their supply portfolio to meet their expected system needs.

Transmission Commitment: An EDAM entity and its transmission customers will need to make transmission available for the market to commit supply optimally within the EDAM BAA and identify transfers between EDAM BAAs. The proposal retains the transmission bucket concept previously put forward by WEIM entities, where high quality, firm or conditional firm transmission is made available to support transfers between EDAM BAAs. The proposal also suggests a transmission framework that is "hurdle-free", with no additional usage fee in the optimization, to maximize transfers. Under this framework, transmission customers holding rights under a reservation or contract can voluntarily make their rights available to the EDAM in return for transfer revenue. The EDAM proposal also introduces a framework where transmission customers' unscheduled transmission rights and transmission service providers' unsold firm available transmission capacity (ATC) would be made automatically available to the EDAM without additional usage fees in the market optimization. Compensation for this firm ATC would be through after-the-fact cost recovery that keeps entities whole with respect to transmission revenues following EDAM participation.

Day-Ahead Resource Sufficiency Evaluation (RSE): Leading up to the operation of the day-ahead market, each EDAM entity will need to have sufficient supply and reserves to meet its forecasted demand and uncertainty. EDAM entities will have opportunities to test their resource sufficiency on an advisory basis ahead of the day-ahead market run and to cure any deficiencies. The RSE recognizes the ability of different resources to count towards resource sufficiency. Finally, the proposal introduces consideration of consequences for failure to pass

the RSE in the day-ahead timeframe. This includes both the potential to limit transfers, or cure the deficiency through residual supply available, for a fee, across the footprint under normal and stressed system conditions.

2. Day-Ahead Market Processes and Features

The processes and inputs in the day-ahead market run occur as the market optimizes resource commitments across the EDAM footprint. These are:

Integrated Forward Market (IFM) and Residual Unit Commitment (RUC): The IFM and RUC are the two primary processes of the day-ahead market. The IFM balances supply and demand, which results in optimized supply commitment schedules and identification of market transfers. The RUC process runs after the IFM and will procure incremental or decremental capacity, as a backstop to the IFM, to ensure there is sufficient physical capacity to meet demand in real-time. These are integral day-ahead market processes commonly adopted across all day-ahead market designs in one form or another, and thus proposed as part of the EDAM market design. We further propose that capacity offered into the IFM, such as the resource sufficiency capacity, or even capacity above the RSE, also be offered into the RUC to ensure an optimal market solution across the footprint. Capacity awarded through these processes will be offered into the real-time market to ensure it is available and re-optimized based on real-time conditions.

Market Power Mitigation: Market power mitigation tools ensure that, when supply is limited, suppliers cannot exercise market power to influence prices at arbitrarily high levels. As a starting point for consideration, we propose to extend the WEIM market power mitigation methodology for EDAM, but seek stakeholder input on the need for potential enhancements to evaluate market power across groupings of BAAs, instead of individual BAAs to better account for dynamic constraints affecting the groupings. We also seek feedback on whether stakeholders are interested in pursuing the identified enhancements in the *Price Formation Enhancements* initiative, which will evaluate price formation related topics in parallel with EDAM.

Convergence Bidding: Convergence bidding (also known as virtual bidding) allows for submission of financial bids in the IFM that do not represent physical supply or demand. Convergence bidding is a common feature of forward electricity markets and is designed to improve price convergence between the day-ahead and real-time market. Although the ISO recognizes convergence bidding is an integral component of two-day markets, we propose that initially convergence bidding not be in effect for new BAAs entering in EDAM. This will provide a transition period for EDAM participants to gain familiarity and experience with the EDAM in their BAA before introducing convergence bidding. Other organized markets, including the ISO, have similarly transitioned to a full framework of convergence bidding based on experience.

External Resource Participation: Resources located outside of the EDAM footprint may desire to participate and offer their supply into the market. These resources may be pseudo-tied or dynamically scheduled into an EDAM BAA. We propose that economic bids and self-schedules continue to be supported in the EDAM. Some market participants may also seek to submit economic bids at the intertie of a BAA where the source of supply or quality of supply is unknown when the bid is submitted. We are inclined to propose to continue allowing economic bidding at the ISO interties as we have mechanisms to address uncertainty of source and delivery. The ISO is also inclined toward not permitting economic intertie bidding at the boundaries of the EDAM footprint and interties with non-ISO EDAM BAAs. The ISO would continue to support self-scheduling at the boundaries of the EDAM footprint because this

represents existing contractual arrangements and does not raise the same concerns surrounding economic intertie bidding. Given WEIM entity operational and other concerns, however, we are seeking additional stakeholder comments on (a) what the implications of economic intertie bidding in EDAM may be, and (b) whether there may be openness toward initiating EDAM without economic intertie bidding and re-evaluating this policy at a later stage.

3. Post-Day-Ahead Market Outputs

Transfer Revenue: Transfer revenue is the settlement difference between the revenue paid to the import transfers, and the cost charged to the export transfers. The ISO will distribute the transfer revenue to the EDAM entity that made the transmission available to the day-ahead market. The distribution of the transfer revenue between BAAs depends on the type of transmission used to facilitate the transfer at the transfer point. We are proposing a transmission settlement method to ensure each EDAM BAA is equitably compensated for releasing transmission capacity at each transfer point that is optimized in the day-ahead market.

Settlements: The ISO calculates settlement charges and payments based on market and transmission activities. The day-ahead market commits supply across the wider footprint and can settle based on the day-ahead market results. The EDAM will involve extending existing settlement practices and developing new settlement practices for participating BAAs and market participants.

Greenhouse Gas (GHG) Accounting and Reporting: The EDAM proposal introduces two options to account for GHG costs: (1) the resource-specific bidding and attribution approach, which is an extension of the WEIM framework for GHG accounting, and (2) the zonal approach. The zonal approach allows resources to be reflected as internal to a GHG regulation area or utilizes a hurdle rate for transfers. We are considering deploying the resource specific approach at the onset of EDAM because it is more developed and better aligned with the WEIM design.

C. EDAM Benefits

The economic benefits of a day-ahead market across the Western Interconnection are estimated to range between $95 and $400 million annually, incremental to the WEIM.[3] Further, such a market will provide opportunities to build upon the financial, environmental, and reliability benefits of the WEIM through increased coordination and collaboration across the footprint.

Further, through the optimized commitment of diverse supply that participating BAAs will bring to the EDAM, along with the associated optimization of transmission across BAAs, the EDAM will position the footprint to meet its demand needs cost-effectively. The EDAM will also enhance reliability across the footprint, and confidence in the market results through a robust resource sufficiency evaluation and an imbalance reserve product that accounts for a level of uncertainty that may materialize in between the day-ahead and real-time. Working in unison, these features will allow the market the flexibility to re-optimize the resource fleet to respond to changes in system conditions and limit the instances of stressed system conditions elevating to emergency conditions.

[3] *Extended Day Ahead Market: Feasibility Assessment Update from EIM Entities* (2019), Link; *The State-Led Market Study,* Energy Strategies, July 30, 2021. Link; *Economic Benefits of an Extended Day Ahead Market (2022),* conducted by Energy Strategies LLC.

II. EDAM Market Structure[4]

A. Threshold Issues

1. Voluntary Participation

Voluntary participation has been a key WEIM design feature. The ISO proposes a similar model apply to all participating EDAM entities, including the ISO. Transitional measures that ease entry have also served the WEIM well and will be included in EDAM. Key features are:

- Voluntary entry – a BAA that is also a WEIM participant can voluntarily join the EDAM.
- Voluntary exit – a minimum six month notice period, with no exit fees. Further, an entity can exit the EDAM without exiting the WEIM. As the initiative evolves, depending on the transmission cost recovery design, we may need to consider adjustments to this notice period.
- Transitional measures – measures that provide protection for individual EDAM entities if there are adverse reliability or market outcomes. These measures would apply to all participating EDAM entities and the ISO. The measures include:
    - Temporary suspension of EDAM participation within 60 days following the implementation date in response to market or system operational challenges.
    - Interruption of EDAM participation in the market on an ongoing basis when operational circumstances have caused or are likely to cause abnormal system conditions or require immediate action to maintain reliability.
    - Application of transitional pricing for 6-months following each entities EDAM implementation date.
    - Adoption of expedited market rules or procedures applicable in response to unintended consequences or urgent and critical enhancements.

- Resource participation – resources located in an EDAM BAA will participate in the market. Resources can choose to be optimized by the market by submitting economic bids, or they can submit self-schedules.

Each EDAM entity will retain its transmission planning, resource planning, and reliability obligations for its BAA, similar to WEIM participation. Each EDAM entity will also continue to provide transmission service through administration of its Open Access Transmission tariff (OATT), as in the WEIM.[5]

[4] The EDAM design is being developed in concert with the following key market policy enhancements:

- *Day Ahead Market Enhancements (DAME)* - considers a new product, the imbalance reserve product discussed in section II.C.1.c, to secure flexible capacity to address uncertainty that may materialize between day-ahead and real-time. *See DAME* initiative – Link
- *Price Formation Enhancements* - considers scarcity pricing enhancements and introduces fast-start pricing, among other issues. See the *Price Formation Enhancements* initiative – Link.
- *WEIM Resource Sufficiency Evaluation Enhancements (RSEE)* – considers further enhancements to improve the accuracy of the RSE evaluation in the WEIM and consequences to failure of sufficiency tests. *See WEIM RSEE* initiative – Link
- *Transmission Service and Market Scheduling Priorities (TSMSP)* – considers a durable framework for establishing scheduling priority across the ISO system. *See TSMSP* initiative – Link

[5] Necessary OATT changes should be considered after the EDAM design is more complete.

2. EDAM Fees

The ISO is committed to fiscal responsibility, which equates to fair and reasonable rates for its market participants. The ISO will develop EDAM fees using the rate design model and activity-based costing (ABC) system the ISO uses to determine existing rates for its other cost-based services, including its grid management charge (GMC) rates, WEIM administrative fees, the reliability coordinator (RC) rate, and planning coordinator fees. The ISO model is based on six guiding ratemaking principles: cost causation, focus on use of services, transparency, predictability and ability to forecast, flexibility, and simplicity.

The ISO will manage EDAM fees within the GMC revenue requirement. Using our existing rate design paradigm to establish the EDAM fees will ensure that EDAM customers and existing ISO customers benefit from the stability and disciplined growth of our annual GMC revenue requirement.

a) Implementation Fees

We propose to assess EDAM implementation costs to each EDAM entity based on the costs of its implementation. At this time the ISO does not have an estimate of the EDAM implementation costs, but it projects that the implementation cost to onboard existing WEIM market participants into EDAM will be less than the WEIM implementation costs. A deposit will be required to initiate EDAM implementation at an amount to be determined during policy development. The ISO will separately track and manage each EDAM entity's implementation deposits and actual costs incurred. The ISO will also separately track and segregate interest earnings. If an EDAM entity's actual implementation costs exceeds its deposit, the entity will be invoiced for an increase in their deposit.

b) Administrative Fees

We propose the EDAM administrative fees use the existing[6] Market Services charge and the WEIM System Operations charge, both volumetric charges. The Market Services charge represents fees for the Real-Time Market and the Day-Ahead Market services EDAM offers, and applies to awarded MWh of energy and MW of capacity. The WEIM Systems Operations charge represents the fees for Real-Time Dispatch services EDAM offers, and applies to real-time MWh of metered supply and demand in the ISO controlled grid. Existing ISO and WEIM market participants paying the Market Services Charge or its sub-charge, the WEIM Market Services Charge, will benefit from a lower rate once EDAM is effective because the ISO will calculate the charges based on additional Day-Ahead MWh volumes from EDAM.

3. Confidence in Market Transfers

An EDAM entity retains its responsibility to maintain and ensure the reliability of its BAA. Once in the EDAM, the entity will offer its BAA supply and load into the market, which will optimize generation commitments to meet the demand across the footprint, deriving the benefits of EDAM. Each EDAM entity will rely upon the market and the optimized transfers, from day-ahead and real-time, to serve its load reliably and efficiently. The EDAM design should build collective confidence in transfers emerging out of the market and enhance the capability of the EDAM entity and the market to respond to stressed system conditions. Confidence in transfers is important for all BAAs that participate in EDAM because BAAs rely on the EDAM market solution, which may forgo committing resources within a BAA when it is more economic to

[6]GMC Rates for 2004-2022 are available on the ISO website: Link

balance scheduled load with external supply delivered through inter-BAA transfers. Therefore, it is important to provide confidence that the transfers will materialize as expected.

Several important EDAM design features work together to build confidence in market transfers in the day-ahead timeframe:

- **Resource Sufficiency Evaluation (section II.B.2)** – each EDAM BAA brings to the market sufficient capacity and flexibility to meet expected demand and a level of uncertainty. This, in turn, is offered into the IFM and RUC for market optimization and commitment to serve demand across the EDAM footprint efficiently. The availability of supply across the wider footprint enables the market to respond effectively to changes in grid conditions, and is a shared benefit to EDAM participants.
- **Market optimization through IFM and RUC (section II.C.1)** – by respecting resource and network constraints, these functions produce feasible resource commitments and transfers coming out of the day-ahead market to meet the expected demand and uncertainty across the footprint. The day-ahead market optimization will ensure forecasted demand, including reasonable uncertainty, can be met by scheduled supply while also serving any market determined EDAM transfers out of a BAA. Transfers are only scheduled out of an EDAM BAA if the scheduled load and uncertainty can be feasibly met with scheduled supply and imbalance reserve awards.
- **Imbalance reserve product (section II.C.1)** – the IFM will efficiently commit and procure imbalance reserves across the EDAM footprint to cover uncertainty that may materialize in real-time. The procurement of the imbalance reserve product provides flexible capacity used to respond to changing conditions between day-ahead and real-time, while securing reliable capacity in stressed system conditions to mitigate the risk of emergency conditions.

a) Responding to Changes in Conditions between Day-Ahead and Real-Time

Optimal commitments of energy, reliability capacity, and imbalance reserves in the day-ahead timeframe will position BAAs in EDAM to respond adequately and confidently to changes in system conditions and mitigate reliability risk during stressed grid conditions. Changed conditions can be addressed in EDAM as follows:

- **Changes in demand and Variable Energy Resource (VER) forecast** – changes in demand and VER forecast between the day-ahead market and the real-time market are common. The real-time market will use the latest demand and VER forecast and will re-optimize the day-ahead unit commitments, energy schedules, and transfers as needed. The real-time market will also deploy reliability capacity awards to cover any physical supply shortfall to meet the demand forecast identified in RUC. Furthermore, the real-time market will deploy imbalance reserves to address uncertainty that may materialize across the market footprint.
- **Loss of generation** – the day-ahead resource and transfer schedules from IFM and RUC will balance the demand forecast and uncertainty that may materialize in real-time. It is the responsibility of each BAA, however, to deploy contingency reserves to substitute for any resource capacity lost due to an outage in the operational timeframe.[7]

[7] Each BAA is subsequently responsible for restoring their required contingency reserves within 60 minutes of an event requiring their deployment, consistent with applicable NERC/WECC requirements.

- **Loss of transmission** – if there is a transmission outage on an intertie that affects EDAM transfers scheduled in the day-ahead market, the real-time market would reduce these transfers down to their new scheduling limit and re-optimize schedules and awards to balance the system needs. Furthermore, if the loss of an intertie constitutes a credible contingency for a BAA, it is that BAA's responsibility to deploy contingency reserves to substitute for any import transfer loss on that intertie. The re-optimization of schedules and awards in the market to adjust transfer schedules affected by transmission outages would avoid or reduce the need for BAAs in EDAM to take out-of-market actions.

b) Priority of Market Transfers in Emergency Conditions

In stressed system conditions the market will seek to resolve network constraints with the supply and transmission made available to the market. These market actions will, as noted earlier, position the BAAs in EDAM to respond adequately to these stressed conditions. In the scenario that there is insufficient supply in the market footprint to meet the changing system needs, the market will exhaust all available bids before prompting operators for out-of-market actions. In these instances, the market would do everything it can, and each BAA – depending upon the conditions on their own grid – may need to rely on out-of-market supply and operational tools to manage their system reliably. Each BAA may have different operational tools at its disposal. These generally include seeking emergency assistance from neighboring BAAs, deploying reserves, curtailing lower priority transactions, employing other out of market capacity or reliability programs (*e.g.*, demand response, backup generation), and arming load to shed in case of a contingency event. If operational actions taken by the BAA do not fully resolve the reliability conditions, the BAA may ultimately need to shed load to maintain grid reliability.

We propose that if there is a risk for load shed in a BAA, export EDAM transfers be afforded equal priority to load and thus may be curtailed or reduced on a pro-rata basis with load subject to operator coordination and application of good utility practice. This equal priority will instill confidence across the footprint that, in severe conditions, EDAM entities can reliably depend on market transfers, while establishing a balance between ensuring reliability on their own system and limiting the impact on other BAAs. Affording export transfers a lower priority than load (meaning that export transfers are curtailed ahead of load) would erode the confidence and dependability of the transfers, while affording market transfers higher priority than load that may unduly impact individual BAA system reliability.

We do not propose at this time to apply a different level of priority to transfers with a BAA that failed the day-ahead RSE, but we seek stakeholder feedback on this topic. A BAA failing the day-ahead RSE will be subject to consequences that will be developed through this initiative, and a decrease in priority of transfers with the failing BAA could unduly harm its dependence on transfers. The day-ahead RSE failure consequences, along with WEIM RSE consequences, should establish the incentives for sufficiency across the different market timeframes.

B. Pre-Market Processes

In the lead up to the day-ahead market, which starts at 10:00 a.m. the day prior to the operating day, EDAM entities will continue to perform the same critical tasks as they do today – organizing their supply portfolio to meet the expected needs of the grid on their system and ensuring that there is sufficient transmission to meet these needs. These activities, which are an essential part of each BAAs existing processes, will support the EDAM entity evaluation of resource

sufficiency in the day-ahead market. This section discusses the processes associated with the resource sufficiency evaluation and the steps of making transmission available in the EDAM to support transfers.

1. Transmission Commitment

Transmission availability in the EDAM, both internal to a participating BAA and on interties between BAAs, is a critical component to ensuring feasible day-ahead market commitment and optimizing efficient transfers of resources across the EDAM footprint. EDAM entities retain their transmission planning function and continue to offer transmission service under their Open Access Transmission Tariffs (OATT). Before the day-ahead market run, each EDAM entity will identify the transmission that may be available to the day-ahead market to support transfers between EDAM entities across the EDAM footprint. This section outlines a framework that reflects input provided during the extensive working group discussions on this topic.

This section describes (1) the proposed processes for making transmission available at transfer points between BAAs to support EDAM transfers, (2) how transmission internal to an EDAM BAA supports optimized resource commitment and how existing transmission rights are respected and exercised in EDAM, and (3) the transmission compensation and cost recovery framework.

a) Transmission Supporting Transfers between EDAM BAAs

Before the day-ahead market run, each EDAM entity will identify the transmission capacity that can be available to the day-ahead market at interties with other BAAs in EDAM to support transfers. The Transmission Commitment and Congestion Rent Allocation working group primarily focused on the concept of transmission "buckets" to define how entities can make transmission capacity available for transfers. The three transmission buckets are discussed below, including multiple potential options for the third bucket to address inefficiencies associated with potential rate pancaking.

(1) Bucket 1: Transmission to Support Resource Sufficiency

Bucket 1 transmission consists of transmission rights held by transmission customers of the EDAM entity or another transmission service provider within the EDAM BAA that have contractual agreements for energy or capacity transfers for RSE accounting purposes in the day-ahead timeframe. These transmission rights holders must make Bucket 1 transmission available to the market because it is needed to support resource sufficiency plans across an intertie with an adjoining EDAM BAA.[8] To ensure a reliable day-ahead commitment and to support confidence in transfers, bucket 1 transmission must be firm or conditional firm. We propose that bucket 1 transmission be offered to support the EDAM market transfers hurdle free (*i.e.*, with no usage fee) because the transmission service provider is already compensated for such capacity through transmission reservations and contracts, or transmission access charges as is the case for the ISO. Transfer revenue collected on bucket 1 transfers would be allocated to the EDAM entities. EDAM entities will then need to determine how to allocate these revenues among their transmission customers under their OATTs. The proposed design considers that there may be situations where transmission rights may support must-run or other unique supply arrangements, and if the associated transmission rights are bucket 1, they can support delivery through the submission of self-schedules.

[8] If the EDAM entity relies on an external resource delivered at an interface with an adjoining non-EDAM BAA, it need not make the transmission available as bucket 1 transmission because it is not at an interface between two EDAM BAAs that could support EDAM transfers.

(2) Bucket 2: Transmission Rights Not Associated With Bucket 1

Bucket 2 transmission consists of transmission rights held by transmission customers of the EDAM entity or another transmission service provider within the EDAM BAA that are not associated with contractual obligations used to demonstrate resource sufficiency. This transmission has already been sold similarly to bucket 1 transmission, but the transmission rights holder can voluntarily make it available to the EDAM in return for transfer revenue. To ensure reliable transfers, bucket 2 transmission must be firm or conditional firm. A transmission rights holder must coordinate with the EDAM entity before the day-ahead market run at 10 a.m. to offer its transmission rights in the EDAM as bucket 2 transmission with no usage fee. Once a transmission customer voluntarily makes its transmission rights available to the EDAM for optimization, it cannot recall them; they persist for re-optimization in the WEIM.

The ISO seeks stakeholder comment on a topic discussed extensively in the working groups, *i.e.*, whether the scope of bucket 2 transmission should be expanded to include unscheduled transmission rights. Under such an approach, EDAM entities would make firm or conditional firm transmission rights not exercised or otherwise scheduled by transmission customers by 10:00 a.m. available to the EDAM for optimization to support transfers. As discussed in the *Transmission Commitment* stakeholder working group,[9] under the OATT framework, firm point-to-point transmission schedules are submitted no later than 10:00 a.m. of the day prior to commencement of service, and transmission providers accommodate schedules submitted after 10:00 a.m. if practicable.[10] Transmission service providers can make these unscheduled firm transmission rights available to the EDAM at 10:00 a.m. to support transfers. The transmission customers could later exercise those unscheduled rights after the day-ahead market run, which could potentially require the real-time market re-optimize the use of the transmission, potentially resulting in higher congestion costs. To ensure a level playing field across the EDAM footprint, making unscheduled transmission available to the EDAM would be a common requirement of participation in the EDAM. The EDAM entity would determine how to allocate the costs of re-optimization though its own tariff. An EDAM entity could use the accrued transfer revenues from the day-ahead market to protect their customers and/or load from re-optimization costs.

(3) Bucket 3: Unsold Firm Transmission Offered by Transmission Service Provider

Bucket 3 transmission consists of unsold firm available transfer capability (ATC) offered by the EDAM entity, in its transmission service provider function, to support transfers at interfaces between EDAM BAAs. The EDAM entity would be expected to make available all remaining unsold firm ATC at an intertie with an adjoining EDAM BAA by 10:00 a.m. in the day-ahead market and to stop OATT sales of firm ATC at that intertie between 10:00 a.m. and 1:00 p.m. while the day-ahead market is running. Then, after the publication of the day-ahead market results at 1:00 p.m., it can resume firm ATC sales. Bucket 3 that remains unscheduled by the market would revert back to the EDAM entity for continued sales under the OATT.

In the *Transmission Commitment* working group, the ISO and stakeholders focused primarily on two approaches to framing bucket 3 transmission:

[9] *Transmission Commitment and Congestion Rent Allocation* EDAM stakeholder working group, March 8, 2022. *See* Link

[10] Section 13.8 of the pro-forma OATT. *See* Link

- **Approach 1:** EDAM entities would make bucket 3 transmission available to the market for optimization at a hurdle rate (*i.e.,* the published tariff rate). The hurdle rate allows the transmission provider to recover its costs of unsold transmission supporting EDAM transfers. However, including a hurdle rate in the optimization may cause pancaking of transmission hurdle rates, limiting efficient transfer and resource scheduling in the day-ahead market.
- **Approach 2:** EDAM entities would make bucket 3 transmission available to the market hurdle-free through a reciprocity framework, similar to the WEIM today, to derive mutual benefits of higher volumes of EDAM transfers. There would be no compensation for the transmission usage through the market. EDAM entities would forego transmission revenues for overall efficient use of the transmission and the associated EDAM benefits. The working group discussed a variation of this framework where only a limited amount of bucket 3 transmission is made available hurdle-free in the export direction to "match" the amount of hurdle-free transmission the adjoining EDAM BAA brings to the table. This may include making some amount of bucket 3 transmission available hurdle free to match the hurdle free transmission across an interface between two EDAM BAAs, while the rest of bucket 3 transmission (above the hurdle free amount) continues being subject to a hurdle rate. This approach raises some of the same challenges as explored in approach 1 above.

Both approaches 1 and 2, as framed, pose significant challenges and are essentially bookend approaches. Approach 1 imposes pancaked rate hurdles on a potentially sizeable volume of transfer capability within the optimization, limiting the benefits of transfers. Approach 2 may not allow for full revenue recovery of transmission costs, either shifting costs or decreasing the potential benefits of EDAM participation. The ISO is open to (1) exploring frameworks that allow for bucket 3 (unsold firm ATC) to be made available to the market hurdle-free, and (2) considering alternative methods for cost recovery outside of the market to support efficient optimization of transfers between BAAs while allowing for transmission cost recovery.

The ISO has identified three potential frameworks to make bucket 3 transmission available to the market hurdle-free that mitigate some of the challenges of approach 1 and 2 and improve the efficiency in scheduling transfers. The options explore different avenues for cost recovery, and there may be variations for stakeholders to consider.[11] These concepts were not discussed in detail in the stakeholder working groups, but the concept of an uplift charge to ensure revenue neutrality of EDAM entities was briefly raised in the last transmission working group meeting. The ISO briefly describes three options for reducing or eliminating inefficiencies associated with hurdle rates and seeks stakeholder feedback.

Approach 3A – Volumetric uplift charge on a per transaction basis.

Each EDAM BAA would calculate or forecast their expected lost transmission revenues on an annual basis (or over a shorter timeframe) to determine the total amount of revenue that can be recovered through an after-the-the fact uplift. The ISO would forecast the expected volume of wheel through transactions, or use another determinant, so it could calculate a volumetric charge that would apply on a per transaction basis to recover the total revenue requirement across the footprint. The ISO would allocate the revenues to each EDAM entity based on its respective load/ratio share of the volumes of transactions identified earlier. Any over-collection

[11] Examples of each of these approaches will be discussed in the upcoming stakeholder meeting.

of charges at the end of the year could decrease the uplift. If there is a revenue under-collection at the end of the year, a true-up mechanism would keep each EDAM entity whole and ensure they recover the portion of their attributable revenue requirement.

Approach 3B – Make-whole uplift assigned based on total transaction volumes.

Similar to Approach 3A, each EDAM BAA's transmission service provider function would calculate its transmission revenue requirement with the intent of keeping it financially neutral by recovering its costs across a pre-determined timeframe. As EDAM entities continue to make transmission sales under their respective OATTs, the revenue requirement they would need to recover through EDAM would decrease. At the start of each year, the expected gap in recovered revenues for the prior year could be pooled and allocated based on total exports/imports or across all load in the EDAM footprint. This approach differs from Approach 3A because there is no volumetric per transaction uplift. Instead, there is a year-end true up to keep the EDAM entity whole financially from a transmission revenue perspective.

Approach 3C – Make-whole uplift assigned based on historical pre-EDAM volumes of transactions between specific EDAM entities.

Similar to Approaches 3A and 3B, this approach considers that before joining EDAM, each EDAM entity in coordination with the ISO and other participants will (1) identify the revenues it has historically derived from transmission transactions across its system that sourced from or sank in a current EDAM BAA, and (2) assign those costs to such EDAM entities to remain revenue neutral. The expectation would be that the EDAM entity would expect to derive similar historical revenues from each existing EDAM entity. Approach 3C would have similar structure to the reciprocity structure of Approach 2 because it would employ volumetric uplift costs that could affect EDAM bidding incentives. If certain entities end up losing more revenues than others (and certain entities benefit from the hurdle free transmission more than others), the ISO would determine, in coordination with EDAM participants whether and how each EDAM entity should be made whole from lost revenues and who benefits from removing the transmission charge.

b) Existing Transmission Contracts and Internal Transmission

The ISO recognizes the need to ensure transmission customers holding existing transmission rights, whether held under the OATT or under legacy pre-OATT agreements, can exercise them independent of EDAM. We propose two different methods to reflect these existing rights in the market. First, existing rights associated with transfers from one EDAM BAA to another EDAM BAA would use the "Energy Transfer System Resource" (ETSR) process to specify transfer paths and the amount of transmission available to market in the ISO's network model. Second, for intra-BAA contracts, the EDAM entity would include the contract reference numbers in the ISO's network model and set aside that amount of transmission capacity, which would not be optimized in EDAM.

Once registered, the transmission customer will receive an ETSR or reference number to ensure appropriate settlements. Existing rights holders would register their transmission rights in the ISO Master File. A transmission customer choosing to exercise its existing transmission rights to deliver generation without the benefit of EDAM optimization could submit a self-schedule into the market associated with the registered transmission.

Each EDAM entity will determine its transmission limits for the day-ahead market. EDAM can optimize transmission not set aside via the aforementioned processes for existing rights.

Transmission customers can exercise the use of their internal transmission rights by self-scheduling generation associated with the use of the transmission.

c) Transmission Commitment Timelines in EDAM

We propose that bucket 1 transmission be offered by 9:00 a.m. to support advisory resource sufficiency evaluations; bucket 2 and 3 transmission should be offered by 10:00 a.m. Bucket 3 transmission may require the transmission provider to stop any restricted sales over its OASIS, especially for firm ATC between the EDAM BAAs. The ISO anticipates this would occur between 10:00 a.m. and 1:00 p.m. Following the market run, any firm ATC from bucket 3 not used in EDAM would go back to the transmission provider and be made available under its OATT.

2. Day-Ahead Resource Sufficiency Evaluation

The EDAM resource sufficiency evaluation (EDAM RSE) ensures the ISO and EDAM entities can meet their BAA obligations prior to participating in the EDAM through a test that determines whether each participating BAA has sufficient supply and reserves to meet forecasted demand, ancillary services requirements, and uncertainty. The EDAM RSE is necessary to demonstrate that each BAA has sufficient capacity and flexibility prior to EDAM participation. Otherwise, a BAA could be short of capacity or flexibility and not contribute enough to EDAM for all to benefit from the diversity that could be available. The ISO also proposes a framework for imposing consequences on EDAM BAAs that fail the RSE. The framework and structure of the RSE described in this section is intended to apply to all EDAM BAAs, including the ISO.

a) Conducting the EDAM RSE

At 10:00 a.m. of the day before the trading day, the ISO would conduct a binding EDAM RSE prior to running the day-ahead market. The ISO would conduct advisory RSE runs at 6:00 a.m. and 9:00 a.m., prior to the binding EDAM RSE run. Further, subject to certain limitations to ensure acceptable performance, each EDAM entity would be able to run an advisory RSE, on demand, for its BAA after 6:00 a.m. and before 10:00 a.m. EDAM entities retain the ability to revise their day-ahead plans prior to the final 10:00 a.m. binding RSE run. Results of the binding and advisory RSE runs will be available to each EDAM entity.

The demand forecast and variable energy supply forecast used in advisory runs will be from the last valid forecast either created by the ISO's forecasting system, or independently submitted to the ISO by the EDAM entity. We propose to lock all forecasts used in the EDAM RSE at 9:00 a.m. on the day before the trading day. This will provide EDAM BAAs a fixed obligation they can schedule towards prior to the final binding RSE at 10:00 a.m.

We propose to calculate hourly imbalance reserve requirements[12] using a modified version of the balancing area ramp requirement (BARR) application, which will run at 6:00 a.m. and 9:00 a.m. The results obtained in the 6:00 a.m. advisory run can be used in all on-demand advisory runs by an EDAM entity prior to 9:00 a.m. The results at 9:00 a.m. will provide an updated uncertainty requirement that the ISO will use in the 9:00 a.m. advisory run and the final binding EDAM RSE run at 10:00 a.m. and the subsequent IFM run.

The application will optimally determine if a participating BAA is able to achieve a feasible operating schedule for all its resources using submitted self-schedules and bids to meet its reliability obligations. The application will not reflect a full security constrained economic

[12] This proposal is being considered in the Day Ahead Market Enhancements (DAME) initiative. *See* Link

dispatch because it will not enforce transmission constraints to achieve an acceptable performance. The objective function of the RSE would be to minimize the overall cost of energy schedules and capacity awards to meet the demand forecast and uncertainty across the day-ahead time horizon. If the RSE cannot calculate a feasible solution, it will identify hourly capacity shortfalls when the RSE requirements cannot be met. Consequently, the BAA will fail the test in these hours.

b) EDAM RSE Requirements

The EDAM RSE test ensures each participating BAA is separately able to meet its obligation, as defined below, prior to participating in the EDAM. The EDAM RSE will test the EDAM entity's ability to meet its BAA requirements in each of the 24 hours of the day-ahead market time horizon subject to all applicable resource constraints that are enforced in the IFM. The following summarizes the elements of the EDAM RSE:

(1) **Forecast Demand:** Each participating EDAM BAA's ability to meet its forecasted demand requirement ensures sufficient supply is available to prevent leaning on the capacity or flexibility of other participating BAAs. The ISO will offer a demand forecast for each EDAM BAA. If an EDAM entity chooses not to utilize the ISO forecast, it can submit its own independent forecast. We propose that the forecast contain the average loss factors as defined by each participating BAA in its OATT. We request stakeholder feedback on whether there is need for a mechanism to incentivize accurate forecasting.

(2) **Imbalance Reserves:** We propose that each participant BAA possess sufficient supply and flexibility necessary to meet imbalance reserve obligations. Procuring sufficient imbalance reserves will increase the reliability of EDAM transfers, thus maximizing the chances each EDAM BAA will have sufficient reserves to cover the upward and downward uncertainty requirements to a 95% level of confidence. The imbalance reserve product is discussed in section II.C.1.c.

(3) **Flexibility Requirement:** The EDAM will create an optimal schedule across 24 hours. An EDAM BAA's ability to meet forecasted ramping requirements across the 24-hour period is an integral component of being resource sufficient. The EDAM RSE application indirectly will assess the sufficiency of this ramping capability by testing whether an EDAM BAA has a feasible schedule across this same time period.

(4) **Ancillary Service Requirements:** Each BAA will define its ancillary service requirements consistent with its reliability requirements. The EDAM RSE will then test and validate whether an EDAM BAA has self-provided sufficient capacity to meet its requirements.
The EDAM design will accommodate ancillary service requirements that are satisfied through participation in a reserve sharing group. If multiple EDAM BAAs participate in a reserve sharing group, we propose to require them to make transmission available to ensure the delivery of the shown reserve capacity.

(5) **Reliability Capacity Bidding:** Reliability capacity bids are not used in the RSE. However, we propose that all entities submitting a day-ahead energy bid into the Integrated Forward Market (IFM) also submit a bid for a matching quantity of reliability capacity in the Residual Unit Commitment (RUC) process of the day-ahead market. This will ensure RUC has sufficient capacity to clear against its forecasted obligations. RUC is further discussed in section II.C.2.

c) EDAM RSE Inputs

The EDAM RSE application will utilize submitted energy and imbalance reserve bids to determine feasible operating schedules. This can have implications for different resource types. The RSE application will utilize resources with unique characteristics as follows:

(1) Resource specific energy bids – Gas Optimization

Typically, gas nominations for the following day occur prior to 11:30 a.m., but the results of the day-ahead market post at 1:00 p.m. This can result in market participants having to make decisions regarding day-ahead gas nominations without the benefit of resource schedules for the next day, and it could require them to engage in intra-day gas trading. Notwithstanding this complication, the ISO expects an entity to produce in real-time consistent with its day-ahead schedule. Entities currently participating in the ISO's day-ahead market have successfully navigated similar challenges caused by these different timelines. The ISO allows entities to reflect changes in fuel cost through the reference level change request process.[13]

(2) Resource specific energy bids – Hydro Operation

Hydro resources often face limits on their production due to constraints imposed by water delivery requirements, environmental requirements and other factors that can affect the available energy of hydro resources. The ISO will allow EDAM BAAs to manage their hydro resources through daily energy limits, which set a lower and upper bound on the total scheduled energy of individual resources over the trading day, which in combination with hourly energy bids reflect water management constraints. Participants can use these constraints in combination to meet a hydro project's underlying requirements and efficiently schedule their resource through the day-ahead market process. In addition, the ISO will facilitate hydro resource modeling that allows multiple resources comprising an aggregated resource to function as a single resource in the market.[14]

(3) Variable Energy Resource (VER) Supply Bids

In developing its day-ahead supply plan, a BAA may rely on the forecasted output of VERs. The financial nature of a day-ahead market, however, does not always incentivize VER scheduling coordinators to bid up to the full quantity of the VER forecast due to the inherent uncertainty in that day-ahead forecast. This decision results from the uncertainty inherent to day-ahead forecast; confidence can decrease for the upper and lower bounds of the forecast. The RSE will model energy and imbalance reserve bids for all VERs up to their variable energy forecast, even if there are no submitted bids for them. To ensure there are sufficient bids to clear RUC, we propose to require all participating VERs to submit RUC availability bids up to their variable energy forecast.[15] This will reasonably ensure the day-ahead results can reliably meet forecasted real-time conditions.

[13] ISO BPM – Market Instruments (see Attachment O)

[14] Under this paradigm, the scheduling coordinator must preserve the security of the underlying transmission by its operation of the hydro project.

[15] In the Day-Ahead Market Enhancements stakeholder initiative, the ISO proposes to create an additional market power mitigation run within the RUC to test for market power with the reliability capacity product. Accurately representing forecasted VER production in RUC is necessary to ensure the accuracy and effectiveness of that market run.

(4) Storage resources

The RSE application will optimally use storage resources whose available energy profile is dictated by the market optimization.

(5) Non-resource specific resources

The ISO recognizes that EDAM BAA day-ahead supply plans are comprised of resources or load modification programs that cannot explicitly be modeled in in the EDAM because the source or transmission is unknown in the day-ahead timeframe, or the load modification program does not conform to existing demand response models developed by the ISO. We propose to account for these resources in the EDAM RSE as described below.

(a) WSPP-C and ISO RA Imports (Firm Energy Contracts)

Firm energy contracts involve deliveries of firm energy to a contractually specified intertie. The supplier takes on the obligation to deliver the generation and make the necessary transmission arrangements to the contractually specified delivery point. The RSE working group discussions established that these types of arrangements, commonly executed through WSPP Schedule C contracts, are reliable, dependable, and generally include liquidated damages provisions or other performance incentives. WEIM entities depend upon these arrangements to different extents in their resource portfolios, and this dependence may vary seasonally. Similarly, California load serving entities (LSE) rely upon WSPP Schedule C arrangements to secure imports as part of meeting their resource adequacy program obligations.

Although these types of contracts provide firm energy supply delivered to the interface of the sinking BAA, neither the source of the generation (or source BAA) nor the transmission path is known by the time of the day-ahead market (10:00 a.m.) when bids into the market are due, but the information becomes known later. In a day-ahead market context, the lack of source specificity and transmission path pose a challenge in modeling the expected flows across the system. Nevertheless, the ISO recognizes these arrangements are an important source of supply in the West today.

We propose to count these firm energy contracts in the EDAM RSE, including WSPP Schedule C and ISO RA imports, whose source and transmission is unknown at the time of the EDAM RSE. We propose that these firm energy contracts be self-scheduled at the intertie of EDAM BAA where the energy is expected to be delivered under the contract. The volume of these self-scheduled transactions will reduce the EDAM RSE obligation of the sink BAA by an equal amount.

To facilitate modeling of these transfers in the EDAM, the ISO will require, at a minimum, that EDAM entities identify the point of delivery of this energy into their BAA. The point of delivery establishes a day-ahead position that the real-time market will re-settle. We also propose to extend the existing HASP reversal rule[16] to these transactions, ensuring market participants cannot systemically utilize this functionality to profit from congestion differences in the day-ahead and real-time market. For these self-schedules, the ISO plans to model the injection into the sink BAA from the neighboring BAA, with the generation distributed to that BAA's default generation aggregation point (DGAP), as a reasonable approximation of their impact on network power flows for congestion management. However, the associated energy will not be included in that BAA's power balance constraint in the IFM and RUC.

[16] CAISO Tariff – Section 11.32 Measures to Address Intertie Scheduling Practices

We request comment on (1) the proposed framework for using these firm energy contracts arrangements to demonstrate resource sufficiency and how they would be offered into the market, (2) whether the ISO should include these injections within the EDAM's congestion management, (3) the potential pricing impacts to the source BAA, and (4) whether there are other approaches to consider. The ISO is open to appropriate alternative means to model these injections. Additionally, we request comment on whether there are opportunities for these contracts to identify, by the time of the day-ahead market run (10:00 a.m.), whether the source will be in the EDAM footprint.

(b) Day-Ahead Intertie Bids at ISO Interties

The EDAM proposal seeks to continue to allow economic supply offers at ISO interties with non-EDAM balancing authority areas (*i.e.*, "intertie bidding"). ISO would thus count these supply offers as available supply for purposes of passing the EDAM RSE. However, the contribution of these economic intertie bids will be limited to the relevant intertie scheduling limit (ISL/ITC). The RSE will count pseudo-tied resources and dynamically scheduled resources for the EDAM BAA to which the resources are pseudo-tied or dynamically scheduled. Economic bidding at EDAM interties is further discussed as part of external resource participation in section II.C.5.

(c) Load Modification/Demand Response Programs

The ISO currently offers two demand response models that allow load modification programs to participate in the market as load curtailment. These models allow supply side demand response to offer supply bids into the market as either price responsive or reliability triggered load curtailment, and include metering and telemetry requirements. The ISO recognizes EDAM entities may have their own demand response programs that may not align with the existing market models.

Because these load modification programs may be part of an EDAM BAA's day-ahead plans, we propose to allow EDAM BAAs to represent them through a demand forecast adjustment similar to the WEIM. The demand forecast adjustment represents an expectation the EDAM BAA will utilize these programs in real-time. We also propose to limit the volume of load that can be bid into the EDAM to the load forecast minus the demand response adjustments. This will help prevent an entity from manipulating the EDAM RSE requirements for purposes of passing the test while procuring excess supply in the EDAM to avoid using the demand response programs.

We seek comment on the described framework including whether the load modifications mentioned earlier should be limited to a percentage of load, and how demand response that can be offered into the market, but not be dispatched until emergency conditions, could be considered in the RSE.

(d) Consequences of EDAM RSE Failures

The RSE stakeholder working group discussed several EDAM RSE failure consequence options. These options included limiting transfers, pricing transfers to cure the RSE insufficiency at either a static or dynamic hurdle rate, or charging such curing transfers an administratively set penalty.[17] Stakeholders expressed concerns with limiting transfers because it would effectively limit the ISO BAA's ability to procure next day supply through the day-ahead market. Some stakeholders expressed concern that using a hurdle rate can affect price formation, and that administrative after-the-fact penalties would not force the insufficient BAA to

[17] EDAM Supply Commitment and Resource Sufficiency Evaluation Working Group, presentation on February 16, 2022. Link

exhaust all of its supply prior to accessing capacity in neighboring BAAs. Although there was no consensus regarding a particular approach, stakeholders generally preferred some form of financial consequence for failure rather than a complete freezing of transfers in the day-ahead timeframe, which could be detrimental to reliability.

If a BAA fails the EDAM RSE, the BAA is expected to seek to address its insufficiency prior to the real-time WEIM market submissions. Any effective EDAM financial consequences must recognize that the day-ahead bilateral markets in the Western Interconnection are a viable alternative for curing resource insufficiencies prior to the WEIM. To the extent EDAM transfers are used to cure resource insufficiency, the ISO would implement a constraint that prevents net EDAM exports from a BAA when power balance constraint relaxation occurs to ensure these transfers do not propagate reliability issues. The following section discusses other possible RSE failure consequences for consideration.

(6) Normal Conditions

During normal system conditions, the ISO is inclined not to limit transfers into an EDAM BAA for the hours an EDAM BAA fails the RSE. There are two questions regarding this approach. First, will the costs of bilateral transactions align with the EDAM market clearing prices during non-stressed system conditions? Second, to the extent an EDAM BAA persistently fails the RSE, should an after-the-fact administrative charge apply to the failing BAA to avoid degradation of reliable service to the rest of the market? We request feedback on these questions and the viability of this option.

(7) Stressed System Condition

During stressed system conditions, the ISO proposes to provide the BAA these options: (1) be subject to transfer limitations; or (2) be subject to a hurdle rate in the market clearing process. In addition, if persistent failures occur, the BAA may also be subject to an after-the-fact administrative penalty. We request feedback on these elements of this proposal.

The hurdle rate would be endogenous to the market clearing process during intervals when an EDAM entity fails the RSE. We recommend that the hurdle rate[18] be set at the bid cap for additional transfers into the BAA that failed the RSE. EDAM BAAs can opt to allow additional transfers into their BAA at this hurdle rate or to rely upon bilateral supply procurement to meet demand.

For most hours of the year, it is unlikely the value of energy to the resource-insufficient BAA will be close to the ISO bid cap, either $1000/MWh or $2000/MWh. Therefore, enforcing this hurdle rate during all hours is not a reasonable alternative to curing insufficiency through the intra-day bilateral markets. Therefore, we propose to implement this hurdle rate only during periods that are expected to experience stressed system conditions, when the value of energy will more closely correlate to the bid cap. Because the majority of the load in the Western Interconnection experiences summer peaking conditions, we propose the hurdle rate would be active during hours ending 16-22 from June-September. We request stakeholder comment on this proposal and whether the hurdle rate should be in effect for winter peaking hours.

(8) EDAM balancing authority options for curing

The ISO recognizes many participating EDAM BAAs are comprised of multiple LSEs. Nonetheless, we propose to test for resource sufficiency at the BAA level, not the LSE level,

[18] A hurdle rate is the minimum return for a feasible investment. Hurdle rates can represent required costs savings, reimbursement to the owner, or a minimum price without which the transaction fails.

which creates additional responsibility for coordination. BAAs and LSEs within BAAs participating in EDAM can trade day-ahead resource sufficiency obligations including capacity and flexibility obligations. Trading "bid range" will change each BAA's obligation in the EDAM RSE. Trading a resource's capacity obligations will increase the capacity requirement of the source BAA and reduce the capacity requirement of the sink BAA. Similarly, trading a resource's flexibility obligations will increase the imbalance reserve obligation (either imbalance reserve up or imbalance reserve down) of the source BAA and reduce the obligation of the sink BAA. We request comment regarding further development of this functionality.

The ISO will seek to develop a formal framework for its BAA to enhance its ability to cure resource insufficiency prior to the final binding run in concert with its LSEs and local regulatory authorities. We request stakeholder comments on preferences to accomplish this.

d) Diversity Benefit and Linkages to WEIM RSE

Calculating a pro-rata diversity benefit[19] for the imbalance reserve requirements can reduce each participating BAA's EDAM RSE showing obligation as the uncertainty in the overall EDAM footprint will be less than the sum of individual BAA's uncertainty. Transmission must be available to support any WEIM transfers necessary to resolve the uncertainty that arises between the EDAM and WEIM timeframe. Allocating a diversity benefit results in deliverable imbalance reserve awards being procured for the footprint as a whole. Although the requirement in each BAA is lower, the effective confidence level for each BAA remains the same as full deliverability of the award is ensured.

Under this same principle, procuring the full imbalance reserve requirement within each BAA (or imbalance reserves only accounting for some portion of agreed upon diversity benefit) may offer greater reliability than the 95%[20] confidence level within the EDAM footprint. This can be accomplished either by (1) allocating a percentage of the diversity benefit pro-rata to each BAA, or (2) allocating a diversity benefit minus an agreed upon imbalance reserve margin pro-rata to each BAA. The ISO requests comment on the desire for a hybrid approach that allocates some diversity benefit in the EDAM, while also enhancing the ability to address uncertainty between the day-ahead and real-time markets.

e) EDAM Entities pooled WEIM RSE

The ISO proposes to test the EDAM footprint for WEIM resource sufficiency considering all day-ahead energy, imbalance reserves, and reliability capacity awards. Testing the EDAM footprint increases each BAA's ability to pass the WEIM RSE because a BAA can benefit from the residual imbalance capacity derived from the difference between the imbalance reserves procured throughout the EDAM footprint and the uncertainty that materializes in real-time. Should the EDAM footprint fail the WEIM RSE, the incremental transfers into and out of the footprint would be limited, and the EDAM footprint would be responsible for resolving the insufficiency. The geographic diversity upon which imbalance reserves are procured can increase the confidence in EDAM transfers and an EDAM BAA's ability to pass the WEIM RSE. We request comment on the viability of, and interest in, such an approach.

Imbalance reserves account for uncertainty inherent to demand and variable energy resources and are not intended to explicitly account for resource outages. To the extent the availability of a resource with an EDAM award changes between the day-ahead and real-time timeframe, the

[19] *See* Section II.C.1.c.

[20] A 95% confidence interval results in imbalance reserves being procured to meet a 97.5% upward uncertainty and a 2.5% downward reserves

BAA for that resource would remain responsible for replacing the capacity. Should the capacity not be replaced and the EDAM footprint fail the WEIM RSE, the BAA in question would be tested in isolation, with credit for their pro-rata share of imbalance reserve awards, in the WEIM RSE according to the existing WEIM design. The remaining EDAM footprint would then be re-tested for resource sufficiency. We request comment on this concept.

C. Extended Day-Ahead Market Processes

The day-ahead market processes primarily include the integrated forward market (IFM), residual unit commitment (RUC) and market power mitigation (MPM) processes. The day-ahead market runs from 10:00 a.m. to 1:00 p.m. and will optimize resource commitments across the EDAM footprint. This section also covers convergence bidding and external resource participation as additional important day-ahead market considerations.

1. Integrated Forward Market (IFM)

The IFM balances supply and demand, produces hourly unit commitment and energy schedules and procures hourly ancillary services for entities within the ISO BAA. Thus, it is an integral part of the EDAM. Under EDAM, scheduling coordinators can participate in the IFM by submitting hourly bids (self-schedules or economic bids) for supply and demand resources and for imports and exports at interties between external BAAs and EDAM BAAs or the ISO. All participating resources within the EDAM footprint and at the ISO interties may submit energy bids. To simplify initial EDAM implementation, we propose that the IFM will not co-optimize ancillary services with energy across the EDAM footprint.[21] Rather, we propose to procure imbalance reserves based on economic bids throughout all BAAs participating in EDAM. In contrast to WEIM, EDAM BAAs will not have base schedules. An EDAM resource's entire day-ahead energy schedule will be subject to the day-ahead energy settlement and will serve as the reference for measuring and settling imbalance energy in the WEIM.

a) IFM Unit Commitment

As part of EDAM, generating resources may have startup and minimum load bids, and registered unit commitment constraints such as minimum up and down times, and maximum number of daily startups. The IFM will calculate an hourly optimal unit commitment status (on/off) for these resources considering their initial commitment status before the start of the trading day, their startup and minimum load bids, and their inter-temporal unit commitment constraints. Additionally, the IFM will enforce all applicable resource constraints and limitations.

The EDAM will include functionality currently in the ISO day-ahead and real-time markets to support optimal unit commitment and dispatch for various types of resources based on their particular operating characteristics. For example, the existing markets have special functionality for pumped-hydro resources and resources with multiple operating configurations, such as combined cycle generators. If revenues from providing energy and capacity do not cover costs associated with unit commitment, the resource is eligible for a "make whole" payment known as bid cost recovery (BCR).

b) Energy Schedules

In EDAM, the IFM will produce hourly day-ahead energy schedules for all resources with energy bids and self-schedules, including load resources, as well as virtual supply and demand.

[21] This element may be considered at a later phase, as an enhancement to the EDAM, for the economic procurement of ancillary services across the EDAM footprint.

Generating resources that are not committed in the IFM will have 0 MW energy schedules in the relevant hour. The IFM uses energy bids screened by the EDAM market power mitigation (MPM) process. The ISO will settle energy schedules at the applicable locational marginal price (LMP).

Scheduling coordinators for physical resources with day-ahead energy schedules must bid the awarded MW quantity into the real-time market. If the scheduling coordinator does not submit an energy bid for these quantities, the ISO will insert a commensurate self-schedule. Scheduling coordinators may also submit an energy bid with a range above and/or below the day-ahead energy schedule. The difference between the fifteen minute market (FMM) dispatch and the day-ahead energy schedule constitutes an energy imbalance deviation that the ISO will settle at the applicable FMM LMP for energy. Virtual supply and demand resources cannot bid in the WEIM; however, the ISO will liquidate the day-ahead financial position of virtual supply and virtual demand in the FMM. Load, other than demand response resources, cannot bid in the WEIM.

Resources can also submit self-schedules for a given hour. The energy schedule will reflect the self-schedule or a higher range if the scheduling coordinator for the resource submits an economic energy bid above the self-schedule and the bid clears the IFM. Scheduling coordinators may not submit an energy bid in an operating range below a self-schedule.

c) Imbalance Reserves

The ISO is considering how best to develop an imbalance reserve product as part of the Day Ahead Market Enhancements (DAME) initiative,[22] and it proposes to procure it also in EDAM BAAs. Imbalance reserves will provide upward and downward ramp capacity in the day-ahead market to meet uncertainty in the net load forecast (load minus wind/solar) between the day-ahead and real-time markets.[23] The ISO will procure imbalance reserves in the IFM and co-optimize them with energy and ancillary services. Imbalance reserves will be a biddable product in both the upward and downward direction. Resources can provide imbalance reserves if they are dispatchable on a 15-minute basis. An imbalance reserve award comes with a must-offer obligation to provide economic energy bids in the 15-minute market for the amount of the award. The ISO will procure imbalance reserves respecting transmission constraints to ensure the capacity is deliverable, and there will be locational marginal prices for imbalance reserves.

To take advantage of the diversity over the EDAM footprint and realizing that the highest level of uncertainty is unlikely to materialize simultaneously in all BAAs in EDAM, the ISO will reduce the uncertainty requirement in any BAA by a pro rata allocation of the EDAM diversity benefit. The ISO will calculate the latter as the positive difference between the sum of the uncertainty requirements of all individual BAAs in EDAM and the uncertainty requirement for the entire EDAM footprint where the diversity is realized. The pro rata allocation of the EDAM diversity

[22] For more discussion regarding the imbalance reserve product *See* the *Day Ahead Market Enhancements (DAME)* initiative (Link)

[23] We propose to calculate upward and downward uncertainty requirements for each BAA in EDAM for each hour of the trading day based on historical forecast errors between the day-ahead timeframe and FMM, and the day-ahead demand, solar, and wind forecast for that hour. The imbalance reserve requirement comprises the upward and downward uncertainty portion of the EDAM RSE.

benefit to the BAAs in EDAM will be in proportion to their original unreduced uncertainty requirement.

Procuring imbalance reserves while recognizing deliverability will enhance EDAM reliability because of the diversity benefit that occurs from "pooling" multiple BAAs, *i.e.*, it reduces the overall amount of capacity needed to meet net load in real-time.[24] Access to resources across the larger EDAM footprint will enable procurement of more efficient, lower cost capacity. Additionally, it will provide revenue opportunities to BAAs with more efficient and flexible resources.

d) IFM Transfers

Transfers constitute energy or capacity exchange between BAAs in the EDAM footprint. Transfers between BAAs are defined differently depending on their direction at a particular intertie. There are also different transfers for different commodities. Transfers are also classified by the type of underlying intertie transmission capacity released by EDAM BAAs and the ISO for use in the market.

Transmission capacity released for transfers in EDAM must be highly reliable and remain available for re-optimization in the WEIM. The net transfer of a BAA in the EDAM footprint for a given commodity and the associated transmission bucket is the sum of export transfers minus import transfers over all interties of that BAA.

In EDAM, the IFM will support various transactions between participating BAAs, including transferring demand obligations, imbalance reserve up/down, and ancillary services requirements. The IFM will optimize energy associated with transmission made available to the market, and it will respect energy transfers associated with physical and/or financial rights. In the IFM, we propose to enforce the scheduling limit for each transfer.

Optimizing the transfer of either energy or imbalance reserves in the IFM is the primary mechanism for producing EDAM benefits. Benefits are realized when higher energy or imbalance reserve bids in a BAA are economically displaced by lower energy or imbalance reserve bids from another BAA.

2. Residual Unit Commitment (RUC)

The residual unit commitment process (RUC) runs after the IFM produces energy schedules and ancillary service awards. The RUC process will procure incremental or decremental capacity (called reliability capacity up and reliability capacity down, respectively) based on the amount of physical energy that clears the IFM in relation the BAA's load forecast.

We propose to extend the RUC process to the EDAM. The RUC process is an integral component of the day-ahead market. RUC is a backstop to the IFM to ensure there is sufficient physical supply available to serve load in real-time. RUC transfers will facilitate the procurement of reliability capacity in the EDAM footprint at least cost. RUC will use transfer capacity that remains unscheduled after the IFM or counter-flow on energy transfers that clear the IFM.

RUC is critical even if all BAAs in EDAM pass the RSE because the RSE does not test for sufficiency in RUC, *i.e.*, whether there are sufficient reliability capacity bids to meet the reliability capacity requirements. These requirements become known only after the IFM. Without these

[24] *See* Section II.B.2.e and II.B.2.f.

reliability capacity awards, there may be a shortfall in meeting the net demand forecast in the WEIM.

Resources participate in the RUC process by providing reliability capacity bids. We propose that all resources offering energy bids in the IFM must submit bids for reliability capacity in the RUC at the same quantity as their energy bid plus ancillary service self-provision. This ensures all resources shown in the EDAM resource sufficiency evaluation are fully available for use in RUC, including excess supply that may have been offered above the RSE. A reliability capacity up or down award obligates the resource to provide economic energy bids to the real-time market. This ensures the ISO can re-dispatch these resources in the real-time market based upon any changed conditions.

The RUC optimization will consider transmission constraints when scheduling reliability capacity. This results in locational prices for reliability capacity. The ISO will pay all resources receiving a reliability capacity up or down award the locational marginal price for reliability capacity, up or down, respectively. A resource may receive a reliability capacity award for an hour in only in one direction, up or down. The net of all reliability capacity awards in an EDAM BAA will be in the direction of the total RUC requirement. Based on network constraints and different RUC requirements across the BAAs in EDAM, however, there can be both reliability capacity up and down awards within a participating BAA.

The RUC process awards reliability capacity either as an incremental dispatch on a resource already committed in the day-ahead market or by committing additional resources. RUC issues binding start-up instructions for resources with a startup time longer than six hours and advisory start-up instructions for all other resources. In addition, the RUC may adjust the commitment of multi-stage generators (MSGs) by transitioning them to a different configuration, either higher or lower, than the configuration that cleared the IFM. Any commitment costs due to binding commitment decisions in RUC are eligible for Bid Cost Recovery (BCR) subject to certain eligibility requirements.

Another important feature of RUC is its ability to look out multiple days. The RUC optimization horizon is up to 72 hours. The 72-hour horizon allows RUC to calculate advisory energy schedules to meet the demand forecast beyond the trade date and to commit extra-long-start resources that have a startup time longer than 18 hours. In addition, RUC provides information for future days that is useful for reliability studies and outage coordination efforts.

Imports from non-EDAM BAAs can provide reliability capacity up and down at ISO interties. The corresponding intertie schedule must be tagged after RUC with a transmission profile equal to the sum of the day-ahead energy schedule, plus the reliability capacity award, if any. Exports to non-EDAM BAAs can also provide reliability capacity up at ISO interties, with the obligation to provide a decremental energy bid to dispatch down the export schedule in the FMM if needed.

3. Market Power Mitigation

The ISO market has automated processes to mitigate the potential exercise of market power resulting from transmission constraints that create isolated load pockets. When only a few resources can serve load in those constrained areas, those resources can exercise their market power and raise their market offers above a competitive level. The ISO's market power mitigation process addresses that concern by substituting suppliers' offers with cost-based bids when market conditions otherwise would allow resources to exercise local market power. Market power mitigation is a standard element of energy market design.

In its existing day-ahead market, the ISO performs a dynamic competitive path assessment (DCPA) to determine if resources can exercise market power. The DCPA tests if three or fewer scheduling coordinator affiliates can provide pivotal supply (counter flow) to a binding transmission constraint and arbitrarily affect prices. The binding constraint is considered uncompetitive if supply counter flow from the three largest pivotal suppliers is required to satisfy it. In this case, energy bids for resources that provide counter flow are subject to mitigation. The ISO mitigates energy bids for these resources above the competitive locational marginal price (LMP) to the lower of their submitted bid or the respective ISO generated default energy bid (DEB).[25] In the day-ahead, the ISO runs two market passes. The first, is the MPM pass that uses unadjusted bids, and the second is the IFM pass that uses mitigated bids.

In the context of the WEIM, the ISO performs a DCPA to test if the supply in an individual WEIM BAA can meet the demand competitively or provide counter flow on congested transmission constraints within the BAA. When the binding constraint is the BAA power balance constraint then all supply resources provide supply counter flow. The ISO only performs the test when there are binding transfer limits in the import direction to that BAA, which restrict external resources from meeting internal demand. This method assumes that the ISO BAA is competitive. When this test fails, the energy bids of all supply resources in the respective WEIM BAA are mitigated.[26] The competitive LMP that is used in this mitigation is the power balance constraint shadow price of the ISO BAA.

As a starting point for a market power mitigation framework in EDAM, the ISO proposes to extend and apply the WEIM market power mitigation framework. We seek feedback, however, on whether there is a need in EDAM to account for dynamic constraints that may bind groups of areas that have a pivotal supplier in that grouping. Below, we describe a potential EDAM market power mitigation framework that builds upon the current WEIM framework and tests for market power among groups of EDAM BAAs as opposed to an individual and independent BAA evaluation. We request stakeholder feedback on whether we should enhance or build upon the WEIM market power mitigation framework in the EDAM to perform DCPA tests to groups of EDAM BAAs, instead of individual BAAs.

Under a potential enhanced MPM approach, the ISO would revise the MPM methodology to group together all resources (across multiple EDAM BAAs) that contribute to congestion relief. Thus, a single DCPA could include resources in multiple BAAs. When performing any DCPA, we would consider groups of resources in BAAs where there is no transmission congestion between BAAs.[27] This potential methodology would dynamically rank groups of BAAs in order of price, and begin checking for competitiveness for the groups with the highest prices. Specifically, the ISO would rank all BAAs in descending order of their power balance constraint shadow price, then group BAAs hierarchically by decreasing price. At each level, the ISO would test if the supply in the current BAA group can meet the scheduled load in that BAA group competitively. If the BAA group is not competitive, all resources within that BAA group would be subject to local market power mitigation measures. Then the ISO would expand the BAA grouping to include the next tier of BAA(s), and the process repeats until a competitive BAA

[25] DEBs represent an approximation of the resource's nominal marginal cost, and they can include fuel costs, opportunity costs, and other costs. The competitive LMP is the LMP at the resource location as calculated in the MPM run, excluding marginal congestion contributions from uncompetitive constraints.
[26] The competitive LMP used in this mitigation is the power balance constraint shadow price of the ISO BAA.
[27] The ISO will not consider bucket 2 congestion when grouping BAAs within the DCPA.

group is found or the list is exhausted. Only the resource bids of pivotal suppliers in the uncompetitive BAA groups are mitigated.[28] In the DCPA for the BAA groups, only supply in excess of scheduled load for an affiliate of a scheduling coordinator is considered as supply counter flow.

This potential methodology would more effectively account for the supply available to meet demand across all potential BAAs. It likely would be a more accurate check for pivotal supply because the existing WEIM market power mitigation method can underestimate the competitiveness of BAAs because it assesses the competiveness of each BAA individually and independently, even though counter flow for a specific constraint may be abundantly available from other BAAs.

The ISO seeks feedback on the need for a potential enhanced market power mitigation methodology in EDAM, as described above. We also recognize the interplay of an enhanced market power mitigation framework with the *Price Formation Enhancements* initiative.[29] That initiative will examine broader price formation issues, including scarcity pricing and fast-start pricing, in the context of the day-ahead market. Although the enhanced framework is focused on a market power mitigation design for the EDAM, it does have broader implications for market power mitigation in the ISO BAA, and thus it may be appropriate to migrate the policy discussion to that initiative, where the interplay with EDAM would be necessarily considered. We are inclined to move the policy design regarding market power mitigation to the *Price Formation Enhancements* initiative due to the interdependency among topics, but request stakeholder feedback on this approach.

4. Convergence Bidding

Convergence bids are purely financial bids that do not represent physical supply or demand. Cleared virtual supply in the day-ahead market creates a financial obligation to sell the same quantity in the real-time market, thereby relieving the need for physical energy schedules in the day-ahead market. The ISO pays virtual supply the day-ahead LMP. In the real-time market, the ISO then charges the virtual supply at the 15-minute LMP. The trader thus profits or loses depending on the difference between the day-ahead price and the real-time price.

The most critical function of convergence bidding is protection from the exercise of market power by physical resources. Buyers and sellers with market power can price discriminate between the forward and spot markets for electricity, resulting in the forward price being different from the expected spot price. Allowing virtual supply and demand bidding reduces this opportunity and avoids having participants using physical schedules to hedge financial expectations. A second critical function is virtual supply filling the gap for variable energy resources (VERs) that under-schedule their forecasted output in the day-ahead market. Virtual bids converge the cleared VER energy schedules to both the day-ahead VERs forecast and real-time dispatches.

The potential for financial reward incentivizes virtual bidding activity that minimizes systemic differences between day-ahead and real-time locational energy prices. This in turn reduces the incentive for under- or over-scheduling demand in the day-ahead market. Convergence bidding also increases market liquidity, spreading risk and decreasing credit requirements.

[28] The competitive LMP is the power balance constraint shadow price of the first competitive BAA group, or zero if there is no competitive group.
[29] *Price Formation Enhancements* initiative. Link

Although we believe that convergence bidding is an important component of the day-ahead market, we recognize that convergence bidding offered at the BAA level may introduce additional risks for EDAM entities starting participation in the day-ahead market. As the EDAM is implemented, primarily in the first year, there may be modeling and other implementation issues that arise that could create arbitrage opportunities, but also the lack of familiarity with convergence bidding could lead to unintended financial impacts. We propose to continue to enable convergence bidding in the ISO BAA, but propose a transition period to convergence bidding in the EDAM footprint. A transition period would allow time for the EDAM entities to develop familiarity with the market and allow for additional education to become familiar with convergence bidding in the context of their individual participation, strategies, and their BAA. The ISO does not propose a specific transition period at this time, but rather a commitment to re-evaluate and discuss the proper timing of introducing convergence bidding after one year of EDAM operations. With this approach, the ISO would need to consider interim bidding requirements in EDAM BAAs without convergence bidding to maintain appropriate market incentives.

5. External Resource Participation

In the WEIM, pseudo-tied and dynamically scheduled resources associated with a WEIM BAA can self-schedule or economically offer into that BAA in the real-time market. Although the ISO permits bids at the intertie scheduling points with the ISO BAA in both the day-ahead and real-time markets, participating WEIM entities only support self-scheduling and not economic bids at the intertie of the WEIM BAA. This section discusses external resource participation in the day-ahead market timeframe under EDAM, including how EDAM will consider exports out of the EDAM footprint.

a) External Resource Participation at the ISO Interties in EDAM

The ISO will retain in EDAM the current practice of permitting pseudo-tied and dynamically scheduled resources to self-schedule and submit economic bids into the ISO BAA. We also propose to continue allowing non-pseudo-tied and dynamically scheduled external resources to self-schedule and submit economic bids in the day-ahead market at ISO interties with BAAs not participating in EDAM. This longstanding feature of the market allows participants to offer excess supply and serve ISO demand. Through the EDAM stakeholder working group discussions, stakeholders supported continued economic bidding at ISO intertie points.

b) External Resource Participation at Non-ISO EDAM Entity Interties

External resources pseudo-tied to or dynamically scheduled into to a non-ISO EDAM BAA should be able to self-schedule or economically offer their capacity into the day-ahead market as they can in the WEIM today. These known resources have explicit requirements under the various tariffs and contracts to perform. The ISO also expects external resources can continue to submit self-schedules at the interties of non-ISO EDAM BAAs. Such self-schedules represent a contractual commitment to deliver the supply.

We acknowledge the concerns some WEIM entities have expressed in the working groups regarding the submission of economic bids at their interties. Because such supply is not under contract and the source and deliverability is unknown, WEIM entities are concerned economic bidding by external resources at their interties may affect their ability to manage reliability. Some of the concerns expressed include:

- **Operational implications** – unspecified supply economically offered at the EDAM BAA intertie may displace internal generation, particularly long-start units, in the day-ahead

timeframe and, thus, these internal resources may be unavailable in real-time to mitigate any reliability conditions if the intertie supply does not materialize. Also, there may be unknown or unplanned flows across the EDAM entity's system depending upon where the supply is injected. Further, there may be implications regarding the deployment of reserves and risks associated with securing sufficient ancillary services to manage the risk of unknown supply in the day-ahead timeframe. At the outset of EDAM, the market will not be optimizing ancillary services procurement across the footprint, but each EDAM BAA will be responsible for securing its requisite ancillary services.

- **Transmission implications** – because economic intertie bids, supported by unknown external supply, do not have a contractual relationship with the EDAM BAA for the supply or the transmission, they may potentially avoid payment for using the transmission system.
- **Undermining EDAM Model** – unfettered economic bidding at EDAM entity interties could undermine the incentives for BAAs to consider adopting EDAM.

Although the ISO does not offer a specific proposal at this time regarding economic bidding at the non-ISO EDAM BAA interties, the ISO is leaning toward not permitting such bidding subject to re-evaluation once EDAM entities have developed experience in the market and can better evaluate and mitigate any potential reliability risks associated with economic intertie bidding. The ISO seeks stakeholder comments and perspectives on this topic in light of the concerns expressed during the working groups. In particular, we seek comments on whether economic intertie bidding should be a day one EDAM feature or whether there is an opportunity to consider implementing it after entities gain experience participating in the EDAM.

c) Exports from the EDAM Footprint

Under the WEIM framework today, the WEIM entity facilitates exports from their BAA through the submission of base schedules, and that process ensures the exports are securing, and paying for, the necessary transmission rights under the EDAM entity's OATT.

We propose to extend to the EDAM the WEIM framework for supporting exports out of the EDAM footprint. Under this framework, an export out of the footprint must secure transmission under the respective EDAM entity's OATT or utilize existing transmission rights to support the export. This approach will provide compensation for using the transmission system, and it will require working through the appropriate EDAM entity to submit an export self-schedule out of the EDAM footprint. The working groups discussed (1) creating a potential EDAM-wide transmission export charge to recover the cost of transmission, and (2) developing an allocation mechanism across the EDAM footprint. Extending the WEIM framework to the EDAM, however, provides a more elegant and less complex solution, and it acknowledges EDAM BAAs will continue administering their OATTs and selling transmission.

D. Post-Day-Ahead Market Processes

Revenue allocation and settlement are essential post-day-ahead market processes. This section discusses these processes as they apply in EDAM.

1. Transfer Revenue and Congestion Rent Allocation

Each EDAM entity will identify the transmission available to the day-ahead market at transfer points with adjoining EDAM BAAs, *i.e.,* interties that are internal to the EDAM footprint, to support the transfer of energy, imbalance reserve, and reliability capacity between EDAM BAAs. The IFM will optimize each transfer point based upon available transmission and, based upon

the market optimization, the IFM will produce paired day-ahead import/export transfer schedules that support the expected transfer of energy between two EDAM BAAs.[30] The IFM will also produce paired day-ahead transfer awards to support the transfer of imbalance reserve between two EDAM BAAs. RUC will also optimize each transfer point and produce reliability capacity awards to support the transfer of reliability capacity between two EDAM BAAs. At each transfer point, the ISO will settle the awarded energy schedules, imbalance reserve awards, and reliability capacity awards.

a) Transfer Revenue

When referring to transfer revenue, this is the revenue collected when a transfer constraint binds and creates energy, imbalance reserve, or reliability capacity price differences between two participating BAAs at an EDAM internal intertie. Specifically, transfer revenue is the settlement difference between the cost charged to the export transfer schedule/awards and the revenue paid to the import transfer schedules/awards. The ISO proposes to distribute the transfer revenues to the EDAM entities who made the transmission available to the day-ahead market. A transmission rights holder may also be allocated transfer revenue, but only to the extent it is associated with the exercise of transmission rights through self-schedules. The distribution of the transfer revenue between BAAs depends on the transmission bucket and the type of transmission used to facilitate the transfer at the transfer point.

b) Transfer Revenue Distribution:

During the working group discussions, participants and the ISO discussed three methodologies for distributing transfer revenues to EDAM entities or transmission rights holders that provide the hurdle free transmission at each transfer point.[31] Introducing a hurdle rate for using bucket 3 transmission can create complications. Because the proposal explores alternative compensation mechanisms for bucket 3 transmission that are outside the market optimization, the proposed approach for allocating transfer revenue assumes no hurdle rates. We request comment on the following approaches.

(1) Transmission Contribution Distribution:

The transmission contribution methodology is an extension of the current WEIM congestion rent allocation methodology. In the WEIM, there are transfers that provide transmission "to" an intertie and transfers that provide transmission "through" an intertie. Transmission "to" an internal intertie involves transactions using transmission that must compete at the transfer location with imports/exports from/to non-EDAM BAAs. Transmission "through" an internal intertie involves transactions using transmission that does not compete at the location imports/exports from/to non-EDAM BAAs. Under this methodology, transfer revenue associated with transmission "through" a transfer point would be distributed to the EDAM BAAs in proportion to each EDAM BAAs transmission contribution to the transfer limit. Transfer revenue associated with transmission "to" a transfer point would be distributed to the EDAM BAA that provided the transmission through the transfer point to the adjoining EDAM BAA. The default proration value associated with transmission "through" a transfer point is 50:50. However, the two EDAM BAAs can establish a different ratio based upon the commercial rights or

[30] An EDAM transfer is not a considered an Interchange Export Schedule or an Interchange Import Schedule.

[31] The *Transmission Commitment and Congestion Rent Allocation* working group discussed transfer revenue/congestion rent allocation and considered different allocation scenarios and examples during those discussions. See discussions on February 3rd and February 10th, 2022. Link

arrangements at that location. For transmission "to" a transfer point, the default proration value is 100:0. In addition, congestion revenue attributable to external EDAM interties or scheduling points would be distributed to the BAA that manages the transmission made available at that intertie.[32]

(2) Shared Transfer Revenue Distribution:

In the shared transfer revenue distribution approach, transfer revenue would be distributed between two EDAM BAAs or between the ISO BAA and an EDAM BAA in proportion to the available transmission capacity they provide to the day-ahead market. The default proration value is 50:50. However, the two EDMA BAAs can establish a different ratio based upon the commercial rights or arrangements at that location. In addition, congestion revenue attributable to external interties or scheduling points would be distributed to the EDAM BAA that manages the transmission made available at that intertie.

(3) Shared Transfer Revenue and Congestion Rents Distribution

In the shared transfer revenue and congestion revenue distribution approach, transfer revenue at a transfer point would be distributed between two EDAM BAAs or between ISO BAA and an EDAM BAA in proportion to available transmission capacity they provide to the day-ahead market. The default proration value is 50:50, however, the two EDMA BAAs can establish a different ratio based upon the commercial rights or arrangements at that location. In addition, congestion revenue attributable to external interties or scheduling points would be distributed between the ISO BAA and EDAM BAA or two EDAM BAAs in proration to available transmission capacity provided to the day-ahead market.

c) ISO Proposal

Without considering a hurdle rate for bucket 3 transmission, the ISO is leaning toward approach 1, the transmission contribution method for distributing transfer revenue to the appropriate ISO and EDAM BAAs. This approach is consistent with how congestion rents or transfer revenue is allocated today in the WEIM. The transmission contribution method would distribute transfer revenue to EDAM BAA(s) or the ISO BAA based upon the transmission provided to the market to facilitate the EDAM transfers at a specified transfer location.

Because the transfer distribution methodology considers the type of transmission released at each transfer location as well as mutually agreed upon allocations, the ISO believes the distribution method provides equitable compensation to each BAA for the market optimized transfer transmission. In addition, because this methodology considers internal versus external interties and the external intertie congestion management is a reliability function within a BAA, the ISO believes it is appropriate for the BAA that manages the external intertie to retain the associated congestion rents. The ISO will provide detailed examples to explain the distribution method further.

2. Settlement

The ISO calculates settlement charges and payments based on market and transmission activities. EDAM will involve extending existing settlement practices and developing new

[32] An EDAM internal intertie is an intertie between two EDAM BAAs, or between an EDAM BAA and the ISO BAA. An EDAM external intertie is an intertie between an EDAM BAA or ISO BAA and a BAA outside the EDAM footprint. A scheduling point is an ISO intertie where economic bidding is available.

settlement practices for participating BAAs and market participants. Some of the key settlement process changes for supply resources and transmission are described below.

a) IFM Energy Settlement

Scheduling coordinators for resources that receive a day-ahead energy schedule will receive an energy settlement charge and/or payment at the relevant pricing node, aggregated pricing node, and scheduling point-intertie price. In addition, scheduling coordinators for IFM EDAM system energy transfer resources will receive a payment or charge at the relevant scheduling point-intertie price.

b) Greenhouse Gas (GHG) Settlement

Under a resource specific approach, resources that receive a day-ahead GHG attribution to support demand in a GHG region will receive a payment at the IFM marginal GHG price. In the real-time market, GHG attributions will receive a deviation settlement from the resource day-ahead attribution quantity. Deviation payments or charges will apply to the difference between day-ahead and real-time GHG attributions based on the relevant real-time market marginal GHG price.

Under a zonal approach, the GHG compliance cost will create price separations between GHG regulation area(s) and the non-GHG regulation area. This would necessitate a different settlement of GHG compliance costs compared to the resource-specific approach. In addition, state regulators would need to determine the appropriate point of regulation for reporting and assessing emissions obligations on these transfers into the GHG zone. The ISO could calculate an IFM GHG neutrality amount across the EDAM footprint that reflects revenues from these price separations. This IFM GHG neutrality amount would equal the product of the IFM GHG transfer quantity (MWhs) and the hurdle rate associated with the GHG regulation area. Depending on the requirements of state regulators, one option could be to allocate GHG neutrality amounts to scheduling coordinators with an IFM GHG compliance obligation. Similar to an IFM GHG neutrality amount, the ISO would also calculate a real-time market GHG neutrality amount based on real-time market price separations between the GHG regulation area and non-GHG regulation area. The ISO could then reallocate these costs in the real-time market to scheduling coordinators with a GHG compliance obligation.

c) Day-Ahead Energy Balancing Authority Area and EDAM Area Neutrality

The ISO will ensure energy settlements within each EDAM BAA balance based upon various LMP components. This process involves creating offset accounts to ensure payments and charges balance. These offset accounts include a marginal energy cost offset, congestion offset, and marginal losses offset. We propose to allocate these offset accounts to scheduling coordinators in proportion to each EDAM BAA's measured demand, which is a measurement of an entity's metered load and exports. We also propose to calculate offsets to ensure payments and charges across the combined EDAM footprint balance. We propose to allocate these EDAM footprint offset amounts to scheduling coordinators based on their measured demand in proportion to the EDAM area measured demand.

d) Transfer Revenue

We propose to calculate transfer revenues for energy transfers, imbalance reserve transfers, and reliability capacity transfers among all participating BAAs. The ISO will distribute these revenues to the relevant EDAM BAA or ISO BAA for redistribution according to their respective OATT or the ISO Tariff.

e) Imbalance Reserve Settlement

Scheduling coordinators for resources with an imbalance reserve up award will receive the locational marginal imbalance reserve up price. Any portion of the imbalance reserve awards not bid into the real-time market will be subject to a non-compliance charge. The ISO will allocate to market participants the sum of the imbalance reserve up payment, the imbalance reserve non-compliance charge, and imbalance reserve up transfer revenue allocation. We propose to apply similar settlement calculations and cost allocation for imbalance reserve down awards.

f) Ancillary Service Settlement

For the initial implementation of EDAM, EDAM BAAs will self-provide their entire ancillary service requirements. Based on load forecasts and resource schedules, the ISO will inform EDAM BAAs if they have sufficient ancillary service capacity to meet reliability requirements. Once the ISO begins to accept bids for ancillary services from resources in EDAM BAAs, scheduling coordinators for resources that receive a day-ahead ancillary service award will receive a payment at the relevant day-ahead ancillary service marginal price. Real-time ancillary service awards will receive a payment at the relevant real-time ancillary service marginal price. Each ancillary service award is subject to potential payment rescission if the resource cannot make its capacity award available in real-time. The ISO will allocate the ancillary service cost less the payment rescission to scheduling coordinators based upon ancillary service obligations netted against ancillary service self-provision.

g) Bid Cost Recovery

The ISO will calculate bid cost recovery for each eligible resource. If the total day-ahead market revenues of over a trading day do not exceed the resource's cost of energy plus ancillary service and imbalance reserve, the resource may recover its daily shortfall through bid cost recovery.

The ISO will calculate the total IFM bid cost recovery amounts by participating BAAs. If the BAA has day-ahead net energy transfer out, the ISO will transfer a portion of bid cost recovery costs to BAAs receiving net import energy transfers

h) Convergence Bidding

If applicable, scheduling coordinators that receive a convergence bid award receive a settlement charge and payments at the locational marginal price difference between the relevant day-ahead and fifteen minute locational marginal price.

i) Residual Unit Commitment Settlement

Scheduling coordinators for resources receiving a reliability capacity up award will receive the relevant reliability capacity up locational marginal price. Scheduling coordinators for resources receiving a reliability capacity up award will also be subject to a non-compliance charge if the resource becomes unavailable to the real-time market. We propose a similar approach for reliability capacity down awards. Resources that receive reliability capacity up awards and reliability capacity down awards will be eligible for bid cost recovery if the resource has a daily revenue shortfall after netting against real-time market revenue surpluses and shortfalls.

j) Real-Time Market Settlement

For WEIM BAAs that join EDAM, the real-time market imbalance energy settlement will be based on the difference between the real-time market awards (FMM or RTD), meter, and the

resource's day-ahead energy schedules and not base schedules. Intertie resource will be subject to HASP reversal settlement and the intertie deviation penalty. Flexible ramp uncertainty award will have a deviation settlement with imbalance reserve awards. Flexible ramp forecasted movement will have deviation settlement from embedded day-ahead forecasted movement.

E. Greenhouse Gas (GHG) Accounting and Reporting

The EDAM design intends to account for the costs and reporting requirements arising from state GHG pricing policies. This includes factoring in GHG emission costs incurred by sellers of power, reflecting those costs in the ISO's security constrained least cost dispatch, and to the extent possible facilitating any required GHG reporting by market participants. Each GHG design option presented herein strives towards meeting the GHG design principles discussed and refined in the working group.[33]

1. Background

Western states have numerous clean energy and climate change policies (*e.g.*, cap-and-trade programs, clean energy standards, renewable portfolio standards). California[34] has regulations that place GHG compliance requirements on the electric sector. Washington will soon place into effect similar measures. [35]

Because California has the only active program, today's WEIM design focuses on reflecting the cost of compliance with California's Cap-and-Trade Program. Currently, when offering output to serve California demand, WEIM scheduling coordinators submit bid adders consisting of a GHG bid capacity (MW) quantity and a price ($/MWh) that reflects the participating resource's GHG costs to comply with California's GHG regulations.[36] The ISO utilizes these bid adders to allocate transfers serving California demand in a least cost manner to participating resources. If a resource does not submit a GHG bid adder or the GHG bid capacity is zero MW, the ISO will not dispatch the resource to serve California demand.

Least-cost dispatch tends to designate lower-GHG emitting WEIM resources as supporting transfers into California BAAs because they typically bid the least expensive GHG compliance cost. This least-cost dispatch of lower-emitting resources can also result in a "secondary dispatch" of different higher-emitting resources that backfill to serve load outside of California. To ensure the environmental integrity of its programs, CARB's regulations account for all of the

[33] The working group discussed these principles and design objectives at the January 6 and January 11, 2022 working group meetings. The working group also discussed other important concerns and topics, which are outside of the ISO's purview or will be addressed at a later stage of EDAM: (1) the market design should not seek to reshape state or federal GHG accounting or GHG reduction policy objectives or change state or federal laws; (2) ISO's support of data reporting with a possible future expansion of the Western Renewable Energy Generation Information System to track all generation, not just renewables; (3) bilateral contracting changes that could help facilitate efficient markets and renewable integration by enabling economic bidding into a wholesale market rather than relying on bundled RECs; and (4) allowing multiple parties to own a single resource or divide their output between GHG regulation areas, which the initial EDAM design cannot support. The ISO's Joint Owned Unit pilot model could inform the modeling of resources seeking to divide their output.

[34] For information on CARB's Mandatory Reporting Regulation, *See*: Link
For information on CARB's Cap-and-Trade Program, *See*: Link

[35] For information on the Washington Department of Ecology's reporting and cap and invest rulemakings, *See*: Link1 and Link2

[36] *See generally* ISO Tariff section 29.32.

atmospheric emissions associated with California's electricity imports from the WEIM, including emissions related to secondary dispatch.[37] The ISO provides scheduling coordinators with summary reports listing the energy deemed to California as determined by the market optimization, which is the basis of their compliance obligation under the California Air Resources Board's (CARB) Program.

2. Market Design Options

Two GHG market design options surfaced during the working group discussions -- a resource-specific approach and a zonal approach -- and the ISO requests stakeholder feedback on both.[38] The ISO is inclined to propose using the resource-specific option because it leverages the existing WEIM GHG design and is therefore a more well-defined option.

a) Resource Specific Approach

The resource-specific approach mirrors the WEIM approach and enhances it to allow for multiple GHG regulation areas and to address secondary dispatch. There are four key elements of the resource specific approach:

(1) Resource Specific Bidding and Attribution

- **Non-GHG Regulation Area to GHG Regulation Area**: This approach relies on bid adders for each GHG regulation area to (1) inform market clearing and attribute which EDAM participating resources support EDAM transfers to serve demand in a GHG regulation area, and (2) compensate EDAM participating resources for their cost of GHG compliance. This design enables the ISO to identify a price difference for transactions serving demand in a GHG or non-GHG regulation area. When dispatching resources to serve load outside of a GHG regulation area, the market optimization considers only the energy bid, but when dispatching the resource to serve load inside a GHG regulation area, the market optimization considers the energy bid plus the bid adder. Submitting a bid adder would be voluntary and reflect the willingness of EDAM scheduling coordinators to serve demand in a GHG regulation area. A GHG bid of zero would indicate the resource is unavailable for dispatch to serve load in a GHG regulation area. Additionally, any scheduling coordinator that submits an import bid or self-schedule to a GHG regulation area is responsible for the GHG compliance costs stemming from imports that are ultimately delivered in real-time.
- **Internal Treatment**: Internal to the GHG regulation area or for linked GHG regulation areas, the energy bid includes the cost of GHG compliance. This cost reflects prevailing secondary market GHG index prices and the resource specific characteristics (*e.g.*, emissions rate, heat rate, etc.). For each new GHG regulation area that joins EDAM, the ISO will need to update its systems and business

[37] CARB calculates outstanding emissions from the WEIM by multiplying the MWh deemed delivered to California at the unspecified source emissions rate less any resource-specific emissions attributed to WEIM participating resources by the ISO's market optimization. CARB then assigns the WEIM outstanding emissions to Electrical Distribution Utility Companies based on a pro-rata share of retail sales, by reducing their freely allocated allowances.
[38] GHG settlements for both the resource specific and zonal approaches are discussed in the Settlements section of this Straw Proposal.

processes to integrate the new indices used to reflect secondary market costs of GHG compliance.

- **GHG Regulation Area to GHG Regulation Area:** Currently, there is no linkage between Washington's Cap-and-Invest program and California's Cap-and-Trade Program.[39] The ISO does not anticipate these states will share a common GHG price at the outset of EDAM. This poses a challenge in determining how to treat transfers between jurisdictions with GHG compliance regulations because one GHG regulation area will not recognize the compliance instruments in another GHG regulation area. This may result in some electricity facing GHG compliance costs from both jurisdictions, which is an issue for state regulators to address. At this time, the ISO recommends including a resource-specific bid adder in order for resources in one GHG regulation area to serve another GHG regulation area. This approach would allow for resource-specific attribution for resources in a GHG Regulation Area for serving load in another GHG Regulation Area.

This design also is scalable, in that it allows the ISO to consider areas that allow for GHG linkage and those that do not, as additional entities with GHG regulations join EDAM. This will ultimately depend on how a GHG regulation area develops its Mandatory Reporting Rule.

(2) Limiting Secondary Dispatch[40]

- **RSE Solution as Counterfactual:** The ISO is considering using the EDAM RSE solution as a counterfactual to quantify and limit secondary dispatch. Today in the WEIM, the baseline for determining secondary dispatch is the submitted base schedule.[41] In EDAM, participating BAAs will not have base schedules in the day-ahead timeframe. Instead, the RSE optimization model will run prior to the IFM to assess if there is sufficient supply in an EDAM BAA to meet the respective demand forecast and uncertainty requirements. In the IFM, we propose to limit resource-specific attributions for serving demand in a GHG regulation area to the difference between a resource's upper economic limit and its RSE schedule, as is currently done with WEIM base schedules.
- **Limiting GHG Attribution to Hourly Net Export Transfers or to Zero if there is a Net Import Transfer:** First, the ISO will limit GHG attribution to hourly net BAA export transfers, or on a pro-rata allocation of the net export transfer to the non-GHG regulation area of the BAA. This means the ISO will no longer allow attributions greater than the net export transfer MW quantity from a BAA. For example, if a net export transfer schedule from a BAA is 100 MW, GHG attributions to resources in that area could not

[39] Information on CARB's linkage requirements are available at: https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-linkage Washington also has a series of requirements and analytical steps that would need to be met before linkage could be approved.
[40] The ISO's least-cost dispatch can attribute transfers to serve ISO load to lower-emitting participating resources because these resources face fewer or no costs to comply with state GHG regulations. In some instances, higher-emitting resources will need "to backfill" this dispatch to serve load outside of the ISO. The ISO refers to this phenomenon as secondary dispatch.
[41] In WEIM, scheduling coordinators submit base schedules for each hour that demonstrate how their respective BAAs can meet certain resource sufficiency tests by independently serving the BAA's load. These base schedules also serve as the reference point from which to measure and settle imbalance energy.

exceed 100 MW. Second, the ISO will limit attribution to zero when the BAA is a net importer to recognize that when native BAA demand exceeds supply the BAA will not have available surplus supply to serve load in a GHG regulation area.

In the GHG working group, stakeholders presented an alternative to using the RSE solution to determine the baseline that differs in two key respects from the RSE-based approach the ISO is considering. First, the alternative would dynamically limit the attribution of transfers to serve a GHG regulation area to incremental dispatch above an optimized baseline schedule. This may result in the market clearing at a price that is below the generator's bid.[42] The RSE-based approach allows the attribution to dip potentially into the baseline schedule under certain conditions, whereas the alternative does not. Second, the alternative includes internal transmission constraints in the baseline. The ISO is concerned the alternative approach raises price formation issues that would increase costs, thus reducing the benefits of EDAM. The ISO seeks stakeholder feedback on the viability of the alternative approach, as well as on the ISO's RSE-based approach.

(3) Geographic Boundary

The resource-specific approach allows GHG regulation areas to be defined based on state geographical boundaries as opposed to BAA boundaries. This will allow ISO to reflect the costs associated with GHG pricing program compliance, but not reflect these costs in the dispatch of resources not subject to these programs.

(4) GHG Pseudo Tie

The GHG pseudo tie enhancement allows a resource that is external to a GHG regulation area to be modeled as internal to the GHG regulation area, for GHG purposes only.

b) Zonal Approach

The zonal approach combines resource-specific treatment and a hurdle rate. There is no GHG attribution in the zonal approach. There are four key elements of the zonal approach:

(1) Hurdle Rate

The hurdle rate is the price ($/MWh) a transfer from a non-GHG regulation area to a GHG regulation area must overcome for an EDAM transfer to occur. The hurdle rate would be subject to approval by the state air regulator, and may reflect an allowance price ($) multiplied by an emissions rate. The proposal considered in the working groups is to have a pre-defined hurdle rate that is static over the course of the day.[43]

(2) Participation Options

Participating resources may elect to serve demand in a GHG regulation area in which they are offering to serve. In making this election, the scheduling coordinator is effectively affirming that the resource meets the regulatory requirements for resource-specific treatment set by the

[42] This can happen when the market determines it is optimal to have economic transfers below a resource's baseline schedule, but the market dispatches capacity out-of-economic-merit-order to access capacity incremental to the baseline schedule so it can serve demand in a GHG regulation area. In these cases, the market sacrifices efficiency in serving demand outside a GHG regulation area to reduce the cost of serving demand in a GHG regulation area.

[43] Alternatives could include a pre-defined hurdle rate that varies over a period of time (*e.g.*, day, month, year), a dynamically determined hurdle rate based on the baseline run, or a marginal hurdle rate based on resources serving demand over the course of a given interval.

relevant state regulatory body. Once the scheduling coordinator makes the election, the optimization treats the participating resource as internal to the GHG regulation area. There are two options available for scheduling coordinators to make this election for a resource:

- Path 1: Used when the scheduling coordinator has a longer-term commitment to serve the GHG regulation area at a resource- or entity-specific GHG emission rate. This could be modeled using the ISO's GHG pseudo tie proposal and reflected through a Master File flag. The ISO could develop a process to collect documentation submitted by scheduling coordinators demonstrating their state air regulator's approval of a resource-specific rate.
- Path 2: Used when the scheduling coordinator has a *shorter-term* commitment to serve the GHG regulation area at a resource- or entity-specific GHG emission rate. Scheduling coordinators may elect this path on an hourly basis with the resource's bid (*i.e.,* a SIBR flag). Under this path, the ISO will be unable to validate dynamically that the resource meets state air regulator requirements for resource-specific treatment.
- Any other transfers into the GHG regulation areas are subject to the hurdle rate. If a transfer occurs subject to the hurdle rate, the ISO would not allocate that transfer to a participating resource as it does today in the WEIM.

For GHG regulation area to GHG regulation area transfers, modeling would differ depending on whether there is linkage between the programs. To accommodate non-linked programs, the ISO would have to model eligible resources as part of the GHG regulation areas using the Path 1 or Path 2 approach. For all other resources inside the GHG regulation area, the ISO would have to model a transfer using a hurdle rate. If GHG regulation areas are linked in the future, or if state air regulators recognized another GHG regulation area's GHG cost of compliance, there could be an opportunity for transfers to occur without a hurdle rate.

(3) Geography

The zonal approach reflects multiple GHG regulation areas and a non-GHG regulation areas. The boundary of a GHG regulation area includes the loads and resources associated with an area subject to a GHG pricing policy. The non-GHG regulation area includes loads and resources in EDAM not associated with the GHG regulation area. The described resource specific approach for the geographic boundary at the GHG regulation area accommodates the zonal approach's framework for GHG regulation areas. The zonal approach can include transfers from the non-GHG regulation area to multiple GHG regulation areas.

(4) Secondary Dispatch

With the zonal approach there is no secondary dispatch when the resource is internal to a GHG regulation area, and with a sufficiently high hurdle rate, emissions leakage concerns are diminished. The hurdle rate is a generic representation of the emission cost of all resources in the non-GHG regulation area as if they were all identical; in that respect, it does not provide benefits to non-emitting resources or to resources with emission cost below the hurdle rate. As the hurdle-rate pathway uses the default emissions rate, it does not assume secondary dispatch as it is unknown if a backfilling resource is lower emitting or higher emitting than the default emissions rate used.

The ISO seeks stakeholder feedback on the current design of the zonal approach and, in particular, whether it is aligned with existing or emerging regulatory structures.

III. Stakeholder Process and Board Approval

A. Stakeholder Engagement

1. Process to Date

Leading up to the launch of the EDAM initiative and stakeholder process, the ISO published *the EDAM Common Design Principles and Concept* document[44] which was developed in collaboration with a subset of WEIM entities and California transmission owners. The document represents general, initial, design principles on a number of EDAM design elements. These principles formed the basis for initial discussions and vetting through the forthcoming stakeholder process.

In November 2021, the ISO launched the EDAM stakeholder process through a stakeholder workshop to re-introduce the region to the concept of an extended day-ahead market and describe the stakeholder working group process that would leverage stakeholder input and perspectives on key items. On January 3rd, the ISO launched a rigorous stakeholder working group process focused on three key EDAM design areas: (1) supply commitment and resource sufficiency evaluation, (2) transmission commitment and congestion rent allocation, and (3) GHG accounting and costs. Over an eleven week period, concluding on March 17th, each of the three working groups met twice a week through an inclusive and transparent process to solicit stakeholder ideas and perspectives on the different design elements. For each working group, the ISO published a final summary report describing the different concepts, perspectives and ideas discussed.[45] The working group concepts and ideas helped inform and shape different elements of this straw proposal.

2. Comments Due

Written comments on the straw proposal are due June 16, 2022. The ISO will host a stakeholder meeting on May 25th and 26th to discuss this EDAM straw proposal. Stakeholder comments and the stakeholder meeting will inform the next iteration of the EDAM proposal.

EDAM STRAW PROPOSAL
STAKEHOLDER MEETING
MAY 25 & 26

WRITTEN COMMENTS DUE
JUNE 16, 2022

[44] *Extended Day Ahead Market (EDAM) Common Design Principles and Concepts*, October 18, 2021. Link

[45] The final summary reports for each working group can be found on the EDAM initiative webpage by selecting the relevant working group. Link