



# Extended Day-Ahead Market Working Group 2: *Transmission Commitment and Congestion Rent Allocation*

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Scribe: Emily Hughes

March 15, 2022

Meeting Cadence: Tuesdays and Thursdays, 9 – 11 a.m.

## Reminders:

- These collaborative working groups are intended to foster open dialogue and sharing of ideas and perspectives
- Please raise your hand if you have a question or comment at any time during the meeting and the facilitator will call on you
  - Please start by stating your name and affiliation
- Meetings are recorded and video files posted on corresponding working group webpages
- Stakeholders are welcome to present perspectives at these meetings
  - Please submit a request to present using the link located on the EDAM Resources slide at the end of this presentation

# Agenda:

<b>Time:</b>	<b>Topic:</b>	<b>Presenter:</b>
9:00 - 9:05	Welcome/introductions	Elizandra Casillas
9:05 – 10:55	Continue Working Group 2 – Status Check	Deb Le Vine
10:55 - 11:00	Upcoming topics	Deb Le Vine



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## EDAM WG#2 – Transmission Commitment and Congestion Rent – Status Check

March 3, 2022

# Agenda - Reviewing Working Group Progress

- Internal transmission optimization in EDAM
- Transmission supporting EDAM Transfers
- Making transmission available to market
- Compensation framework
- CAISO transmission in EDAM
- Intertie Bidding

# Glossary

- ATC – Availability Transfer Capability
- BAA – Balancing Authority Area
- CRN – Contract Reference Number for existing contracts
- EDAM – Extended Day Ahead Market
- EDAM Entity – a BAA that has joined EDAM
- ETSR – Energy Transfer System Resource
- OATT – Open Access Transmission Tariff
- RSE – Resource Sufficiency Evaluation
- Transfer – transactions between two EDAM Entities
- WEIM – Western Energy Imbalance Market



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# 1. Existing contracts and optimization of transmission within an EDAM Balancing Authority Area

## Contract types EDAM needs to honor

- Buckets 1/2/3: – Transfers from BAA to BAA
  - Use ETSR to define transfer paths
- Internal transmission rights
  - Not part of the buckets
  - Included in Full Network Model – FNM
  - Use Contract Reference Numbers (CRNs) for source and sink pairs



# Transmission registration roles

- TSP or EDAM Entity will register the transmission contract
  - Have the knowledge of the terms and conditions
  - Know who transmission was sold to
  - Have the knowledge of any special terms
- Transmission customer or EDAM Entity will be provided an ETSR or CRN to ensure appropriate settlement
- Long-term contracts will use Master File
- If insufficient time to register in Master File, another mechanism will be made available (SIBR?)

# Transmission contract (TC) registration

- Master File registration
  - Contract Reference Number (CRN) and SC for financial right
  - Source (supply or import)/sink (load or export) resources, Scheduling Coordinator(s), and associated resource capacity
    - Requires specific load resources (custom LAP with custom LMP)
  - Contract path (schedule not physical flow)
    - Point-to-Point (nor necessarily the TC source/sinks) Transmission or a flowgate
    - May be shared by multiple transmission contracts
    - May include intertie(s); requires specific Bucket-1/2/3 Transfers
  - Type
    - Physical right (higher scheduling priority)
    - Financial right (congestion and/or transmission loss cost refund)
  - Entitlement (total capacity on contract path)
  - Expiration (DAM, HASP, or T-20)

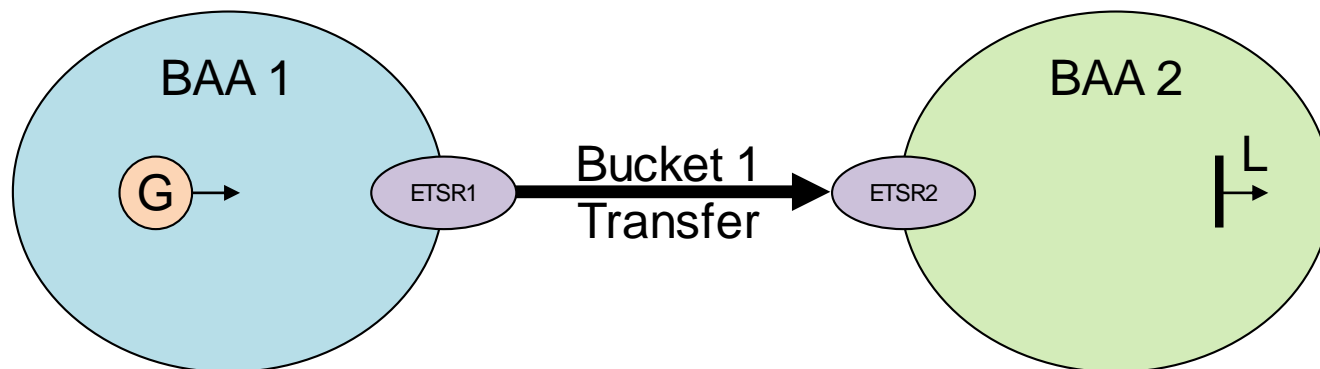
# Transmission contract validation in the market

- Exercise a transmission contract submitting self-schedules associated with that transmission contract
- Transmission contract (TC) self-schedule validation
  - Resource (source or sink) is registered under the CRN of TC
  - TC self-schedule does not exceed the registered resource TC capacity
  - TC is balanced (total source equals total sink)
    - Load meters are used for load sinks in RTM
  - TC is within its entitlement (total source does not exceed TC entitlement)
  - TC has not expired (RTM)

# Options for transmission contracts

- Exercise the TC by self-scheduling on it
  - If the contract path includes a transfer, release the associated Bucket-1 Transfer capacity (submit a scheduling limit to accommodate the TC use)
  - Transfer revenue offsets schedule cost
- Not exercise the TC by submitting economic bids
  - If the contract path includes a transfer, release the associated Bucket-2/3 Transfer capacity (submit a scheduling limit to accommodate the bid)
- Not exercise the TC and not submitting bids or self-schedules
  - If the contract path includes a transfer, release Bucket-2/3 Transfer capacity or reserve for release/use in EIM
  - Internal BAA transmission cannot currently be reserved, but TC is still honored in EIM while other resources are dispatched to accommodate its use

# EDAM Transmission Contract Definition



## ■ EDAM Entity for BAA 1 or BAA 2

### ◆ Registers in Master File or declares in SIBR the TC by 9am

- CRN
- TC Source: G; TC capacity: 100MW
- TC Sink: L; TC capacity: 100MW
- Bucket 1 Transfer (ETSR1/ETSR2) from BAA 1 to BAA2; scheduling limit: 100MW

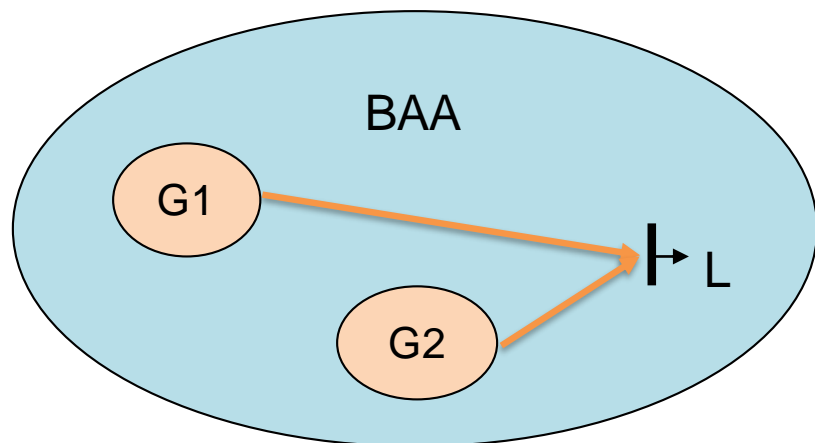
## EDAM Transmission Contract Scheduling

- SC1 self-schedules G for 100MW under the CRN
  - SC1 may self-schedule or bid additional capacity not tied to the CRN
- SC2 self-schedules L for 100MW under the CRN
  - SC2 may self-schedule or bid additional capacity not tied to the CRN
- SC3 self-schedules ETSR1 (export) and ETSR2 (import) for 100MW under the CRN
  - SC3 may be the same as SC1 and/or SC2
- The bucket 1 transfer is used in RSE to transfer 100MW of demand forecast from BAA 2 to BAA 1

# EDAM Transmission Contract Settlement

- The self-schedules from G, ETSR1, ETSR2, and L under the CRN clear IFM with a high scheduling priority
- LMPs
  - BAA 1 MEC: \$20; BAA 2 MEC: \$30; transfer revenue: \$1000
  - G LMP: \$15/MWh; L LMP: \$35/MWh
- Settlement
  - SC1 is paid \$1500 for G; SC3 is charged \$2000 for ETSR1; BAA1 collects \$500
  - SC3 is paid \$3000 for ETSR2; SC2 is charged \$3500 for L; BAA2 collects \$500
  - SC1 receives financial right of \$500 under the CRN from BAA 1
  - SC2 receives financial right of \$500 under the CRN from BAA 2
  - SC3 receives the transfer revenue of \$1000
  - BAA1 and BAA2 are neutral
  - the SCs are neutral in aggregate (perfect hedge)

# EDAM Internal BAA Contract Definition



## ■ EDAM Entity for BAA 1 or BAA 2

- ◆ Registers in Master File or declares in SIBR the TC by 9am
  - CRN and SC2 for the financial right
  - TC Source: G1; TC capacity: 100MW and G2 TC Capacity 50MW
  - TC Sink: L; TC capacity: 100MW



# EDAM Internal BAA Contract Scheduling

- SC1 self-schedules G1 for 75MW under the CRN
  - SC1 may self-schedule or bid additional capacity not tied to the CRN
- SC2 self-schedules G2 for 25MW under the CRN
  - SC2 may self-schedule or bid additional capacity not tied to the CRN
- SC3 self-schedules L for 100MW under the CRN
  - SC3 may self-schedule or bid additional capacity not tied to the CRN

# EDAM Internal BAA Contract Settlement

- The self-schedules from G1, G2, and L under the CRN clear IFM with a high scheduling priority
- LMPs
  - BAA 1 MEC: \$20;
  - G1 LMP: \$15/MWh; G2 LMP: \$15/MWh, and L LMP: \$25/MWh
- Settlement
  - SC1 is paid \$1,125 for G1; Collect \$375 Congestion
  - SC2 is paid \$375 for G2; Collect \$125 Congestion
  - SC3 is charged \$2,500 for L; Collect \$500 Congestion
  - The SCs in aggregate receive financial rights under the CRN
    - CRN will receive the perfect hedge for \$1,000;
  - BAA1 is neutral



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## 2. Transmission supporting transfers between EDAM Balancing Authority Areas (Transmission Buckets)

# Transmission “Buckets” Framework – EDAM Transfers

## Bucket 1

- Supports delivery of resource sufficiency capacity across EDAM BAA interfaces
- Eligible for congestion rents
- Firm, Conditional Firm (PTP and NITS)

## Bucket 2

- Voluntarily made available to market by transmission right holders
- Eligible for congestion rents
- Firm, Conditional Firm (PTP)

Note: introduced consideration of “unscheduled PTP” availability in Bucket 2.

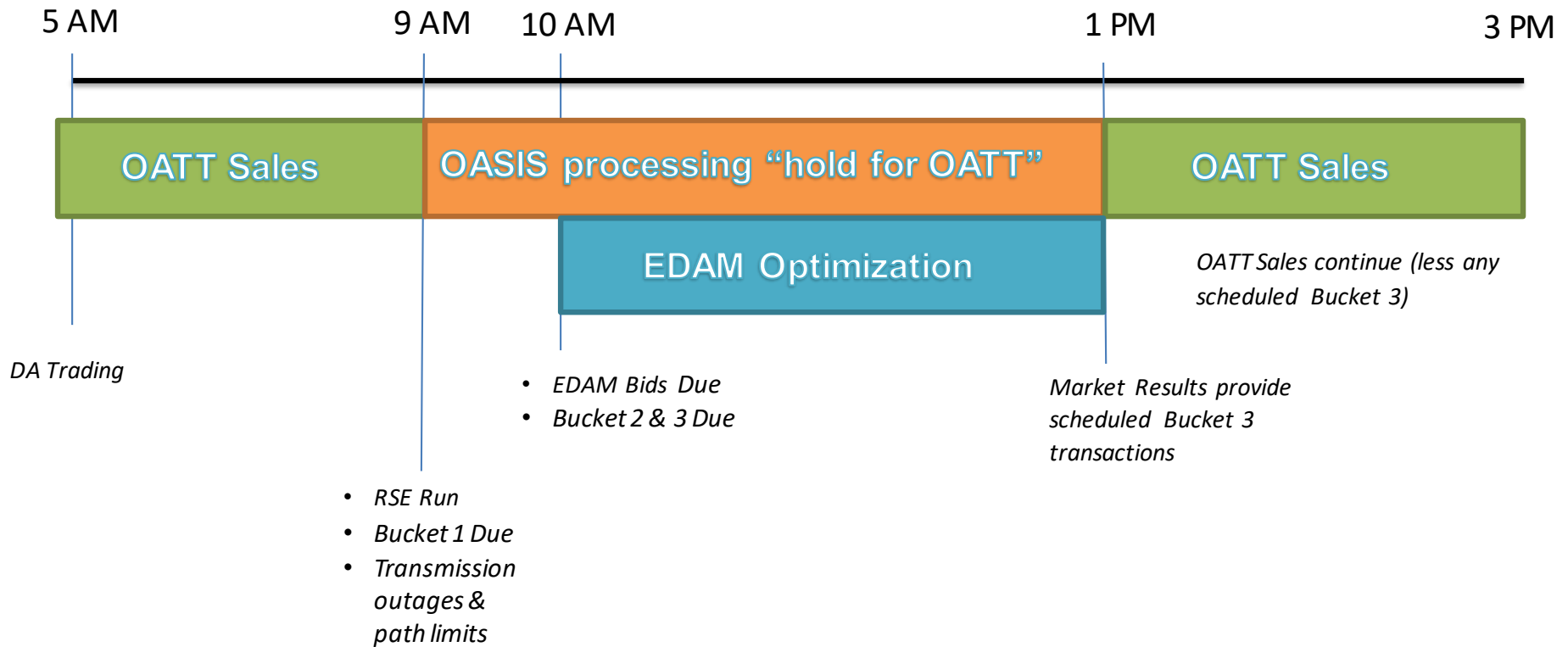
## Bucket 3

- Unsold, unreserved, Firm, Conditional Firm, or “otherwise highly reliable” ATC
- Made available by Transmission Provider
- Subject to OATT usage rate.

Note: introduced consideration of potentially non-firm ATC.

High quality transmission supporting transfers supports reliability and dependability of transfers.

# EDAM Timeline for Transmission



# EDAM Process

- First saves transmission for existing contracts that are self-scheduled
- Optimizes remaining transmission that is made available
- Cost of transmission becomes a component of the LMP, Custom Load Aggregation Point or Default Load Aggregation Point
- Results are published by 1 PM
- EDAM schedules roll over to EIM base schedules
- Use of Capacity Benefit Margin (“CBM”) or Transmission Reserve Margin (“TRM”) will be up to each EDAM BAA

## Bucket 1 transmission

- Network and point-to-point energy transfer
- Resource external to BAA and used to serve load and RSE, therefore mandatory for EDAM
- No usage fee since transmission already contracted
- Receives transfer revenue for binding scheduling limit
- OATT customers able to continue to self-schedule their own resources and loads
- Ability for market to recognize that some Bucket 1 transmission may not be optimized
- Quantity reflects contract limits
- Customer receives transfer revenue

## Bucket 2 transmission

- Point-to-point interchange transmission
- Not otherwise used for Bucket 1
- Voluntarily made available to EDAM and receives transfer revenue for binding scheduling limit
  - Elect in advance to make it available to EDAM, and cannot recall transmission once optimized in EDAM.
  - Transmission made available to EDAM can not be separately sold between the close of EDAM and the release of transmission not used in EDAM
- Quantity reflects contract limits
- Transmission not used is returned to transmission provider for sale
  - ISO will design a report that defines what transmission is used and what is still available



# Unscheduled Firm PTP Transmission – Pro Forma OATT

- The concept considers that unscheduled Firm PTP transmission can be made available to EDAM to support EDAM transfers.
- Pro Forma tariff provision:

**13.8 Scheduling of Firm Point-To-Point Transmission Service:**

Schedules for the Transmission Customer's Firm Point-To-Point Transmission Service must be submitted to the Transmission Provider *no later than 10:00 a.m.* [or a reasonable time that is generally accepted in the region and is consistently adhered to by the Transmission Provider] of the day prior to commencement of such service. *Schedules submitted after 10:00 a.m. will be accommodated, if practicable.*

- Some transmission providers may have modified their OATTs away from the 10am deadline.

## Bucket 2 – Unscheduled Firm PTP Transmission

- By 10am, ahead of the day ahead market, EDAM Entity may make available the unscheduled Firm PTP transmission to the EDAM to support transfers.
  - Applicable to OATT contracts/transmission rights.
  - May not be applicable to legacy agreements, executed prior to OATT framework.
- Transmission customers could exercise their firm PTP contracts between DA and RT.
- Exercise of those unscheduled Firm PTP rights may lead to re-optimization in the market and potential allocation to cost to EDAM Entity.
  - Market may re-optimize for different kinds of conditions (changes in forecast, outages, etc...).

## Bucket 2 – Unscheduled Firm PTP Transmission

- Potential approach to address uplift costs by exercise of unscheduled transmission rights between DA and RT:
  - Congestion rents (Bucket 2) paid to transmission provider could offset created congestion uplifts.
  - If there is a surplus, can be allocated back to measured demand or otherwise appropriate customers.
  - If shortfall, either:
    - Allocate it to measured demand; or
    - Allocate it to the customers with intra-day schedule changes of transmission rights.
- CAISO settles congestion rents with the EDAM Entity, who has the discretion on how to allocate these among customers.

## Bucket 3 transmission

- Unsold, unreserved, firm ATC made available by the transmission provider.
- Not otherwise used for Bucket 1 or Bucket 2
- Transmission previously unsold
- Compensated at OATT rate
- Transmission not optimized by EDAM would be released back to the transmission provider
- Open question –
  - Could non-firm ATC be optimized in Bucket 3? If so, what are the implications of inserting non-firm transmission, lower quality, into the mix.

# How transfers can be used in EDAM

- Bucket-1 Transfer is used to transfer RSE requirement from target BAA to source BAA
  - Energy Transfer transfers demand forecast
  - IRU/IRD Transfer transfers IRU/IRD requirement (assuming DAME as base)
  - RU/RD/CR Transfer transfers RU/RD/CR requirement
- Bucket-1 and Bucket-2 Transfers are optimized in IFM at no cost
  - Excluding Bucket-1 RU/RD/CR Transfers in Phase-1 (AS co-optimization in Phase-2)
- Bucket-3 Transfers are optimized in IFM at the transmission fee
- Transfer revenue from Bucket-3 use or binding scheduling limits
- Left-over transfer capacity can be used in RUC

# EDAM resource and transfer schedules in WEIM

- Resource EDAM schedules roll over to WEIM as self-schedules or bids
  - Automatic for EDAM BAAs; no need to submit in WEIM
- EDAM transfers roll over to WEIM as day-ahead transfers
  - They are treated like base transfers
  - Additional transfer capacity can be released in WEIM for dynamic transfers
    - Possibly in the counter flow direction of day-ahead transfers
    - Using existing rights-holder or ATC method
    - Single existing transmission product in WEIM (akin to Bucket-2)
- EIM settlement for imbalance energy deviations from day ahead schedules, day-ahead transfers (EDAM BAAs), and base transfers (WEIM BAAs)
  - Adopt EDAM transfer settlement in WEIM



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## 3. Transmission Compensation

# Transfer revenue framework recap

- Congestion Rents associated with internal transmission shall be allocated to EDAM Entity
- Transfer Revenue, which includes congestion rents, shall be calculated at each transfer location
  - Distribution will be dependent on the type of transmission provide to facilitate the transfer
- Transfers without a hurdle rate will receive Transfer revenue at the Marginal Energy Cost (MEC) differential between the import BAA and the export BAA
- Transfers with a hurdle rate shall receive the hurdle rate for the use (schedule) plus additional revenue up to the MEC difference between the import BAA and the export BAA



# What is Transfer Revenue

- Transfer Revenue: The difference between the settlement amount of export transfer resource and import transfer resource at each side of the transfer
  - It is the Marginal Cost of Energy (power balance shadow price) difference between receiving and sending BAA
    - It includes the transmission fee for bucket 3
  - Transfer revenue from Buckets 1 and 2 is distributed between the BAAs across that transfer
  - Transfer revenue from bucket 3 is first distributed up to the respective transmission fee to the Transmission Customer/Provider and the rest as above between the BAAs across that transfer

## Compensation and allocation

- Objective is to hold transmission customers harmless without creating uplifts.
- Transfer revenue between EDAM BAAs where both BAAs provide transmission to the transfer location to facilitate transfer
  - Typically split 50/50
- Transfer revenue between EDAM BAAs where one BAA provides the transmission through the transfer location
  - 100% to EDAM BAA providing the transfer capability
  - Internal ITC congestion shall retain allocation to CAISO BAA
  - CAISO will maintain existing congestion revenue right rules

# Compensation for bucket transfers

- Bucket 2 open question
  - Should there be a hurdle rate in addition to congestion rent?
- Bucket 3 transmission is compensated at
  - *OATT rate?*
  - Each BAA/Transmission Provider retains autonomy over its OATT rate and charges for transmission used;
    - *Results in pancaked rate*
  - *Only OATT rate of sending BAA charged to transaction; or*
  - *Only OATT rate of receiving BAA charged to transaction*



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## 4. CAISO Transmission in EDAM

# Concept of Reciprocal Hurdle-Free Transmission

- The CAISO could look to make available a reciprocal amount of hurdle-free bucket 2 transmission in the export direction, at interfaces with EDAM BAAs, to optimize transfers.
- Hurdle free transmission bucket 2 in the export direction is based upon the amount of hurdle free bucket 1 transmission in the import direction the adjoining EDAM BAA makes available to EDAM RSE.
- The CAISO can support hurdle-free bucket 1 transmission in the export direction at interfaces with EDAM BAAs for RSE if it is sourced from non-RA capacity
- Remaining amount of transfer capability in export direction from CAISO is Bucket 3 transmission.

# Concept of Reciprocal Hurdle-Free Transmission

- Open Questions:
  - How is the reciprocal amount of hurdle free transmission in export direction determined?
    - Are there variations to the approach for deriving reciprocal amount of transmission.
  - Are reciprocal amounts of transmission in export direction made available on an hourly basis, across 24 hour period?
    - Starting point – yes, could vary hourly based on reciprocal matching of hurdle free transmission.



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## 5. Intertie Bidding (External Resource Participation)

## Intertie Bidding in EDAM

- Intertie bidding – self scheduling and economic bids – remains a feature at the border of CAISO BAA.
- Intertie bidding on the interties with the EDAM footprint:
  - Self scheduling continues to be supported.
    - Reflects existing contracts that have paid for transmission.
  - Economic bidding not supported.
    - Reliability concerns of non-source specific energy bid at the tie points of EDAM BAAs.
    - Free-rider concerns with lack of transmission compensation.



## Intertie Bidding – Open Questions

- Exports from the EDAM footprint:
  - Is there a transmission fee/rate to export from the EDAM footprint or wheeling through the EDAM footprint?
- If there is such a fee or rate:
  - Is there a single fee/rate for the for the EDAM footprint?
  - Is there a rate at the individual EDAM entity level?
- CAISO scheduling point *will/will not* remain



# EDAM Resources

- List of [\*Common EDAM design principles and concepts\*](#)
- Initiative and working webpages:
  - EDAM initiative webpage: <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Extended-day-ahead-market>
  - Working Group 2 webpage: <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Extended-Day-Ahead-Market-Working-Group-2-Transmission-Commitment-Congestion-Revenue-Allocation>
    - The working group webpages include meeting materials, initial scope items, and weekly summary reports
- Please submit EDAM WG inquiries and/or requests to present at <https://www.surveymonkey.com/r/EDAMWG-Inquiries>
  - Presentations due 5 business days prior to the meeting where they are scheduled to present, if time allows
- [Register](#) for working groups to help the ISO gauge interest and facilitate communication throughout process.
- Nov 30, 2021 Day-Ahead Market Overview Training: <https://youtu.be/lbXRsfDVbCg>