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

Facilitator: Deb Le Vine

Scribe: Emily Hughes

March 17, 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:

Time:	Topic:	Presenter:
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

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

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)

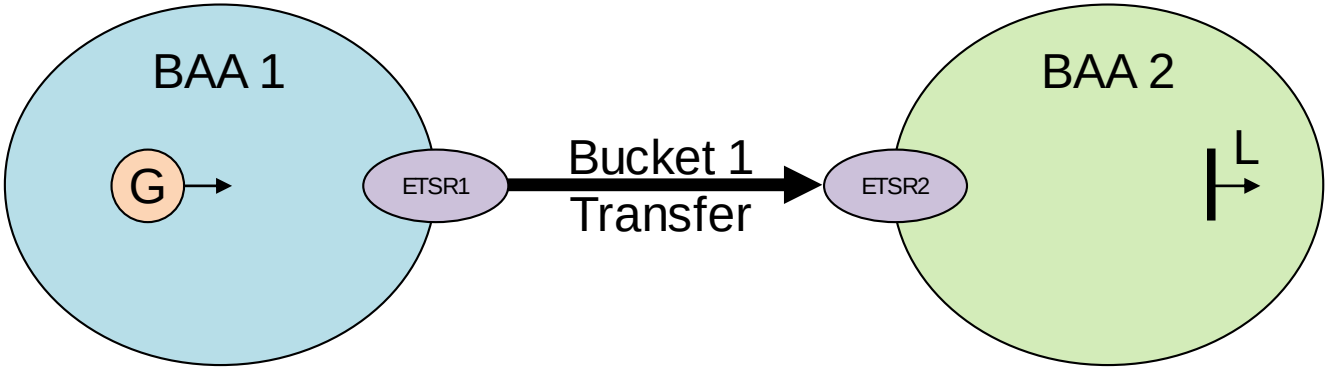
Options for transmission contracts

- 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 BAA 2; scheduling limit: 100MW

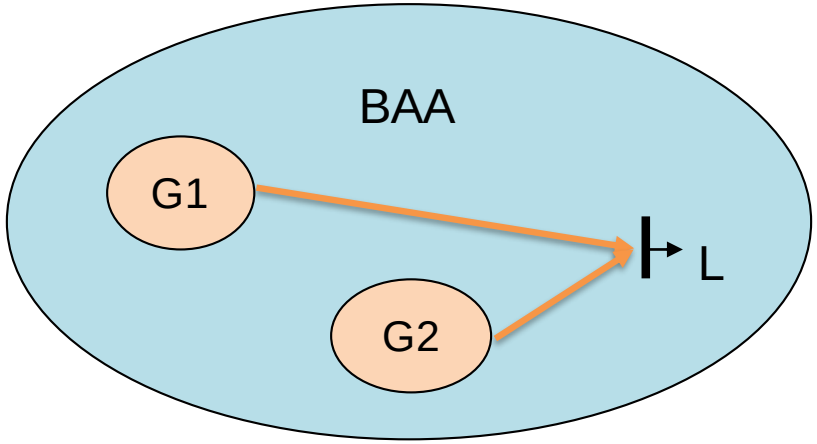
EDAM Transmission Contract Scheduling

- 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

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.

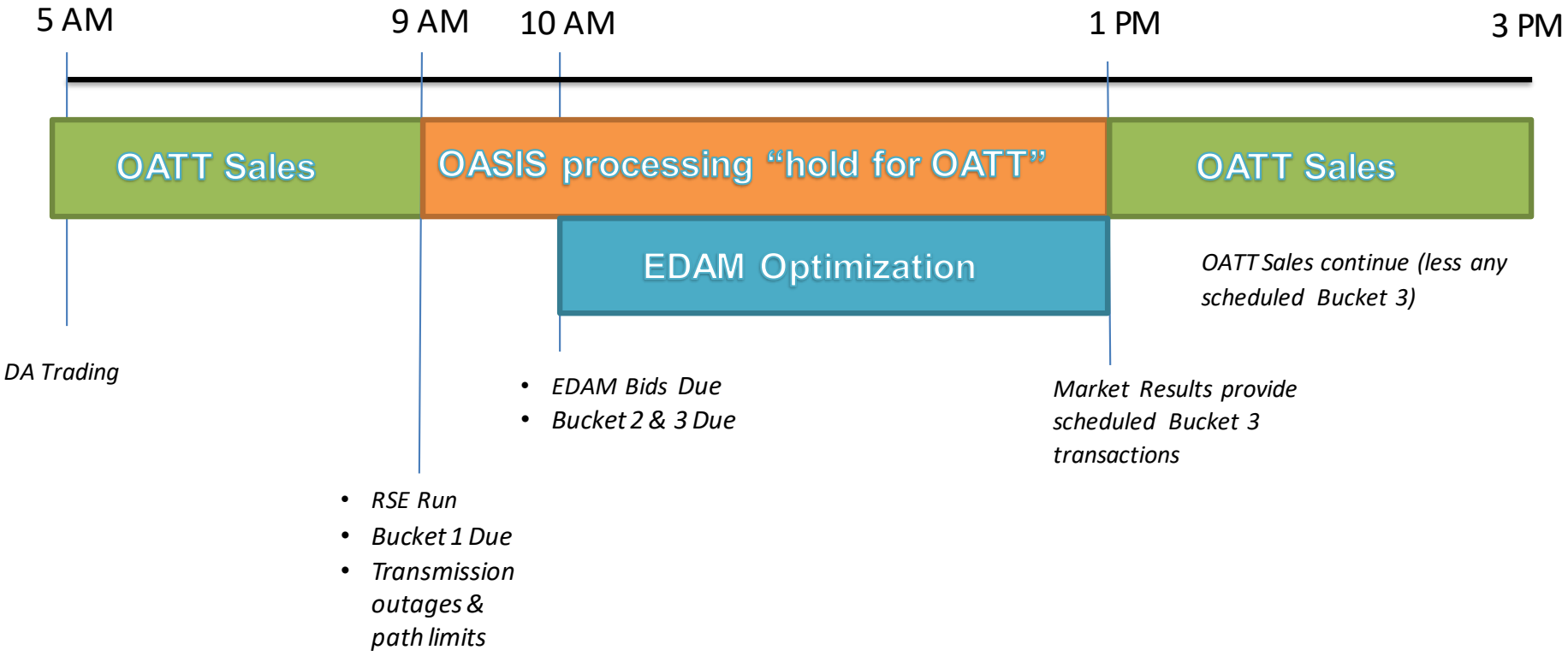
Bucket 3

- 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 provides 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

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*

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.

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