EDAM
EXTENDED DAY-AHEAD MARKET

Technical Workshop

July 26, 2022

California ISO

Reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO permission.
- Calls are structured to stimulate open dialogue and engage different perspectives with the understanding that stakeholders have reviewed the material.
- In the interest of time, please refrain from repeating or reiterating what has already been said.
- If you need technical assistance during the meeting, please send a chat to the event producer.

Thank you for joining us, and we look forward to an engaging discussion.

Agenda – July 26, 2022

Time	Topic
8:00 - 9:00	Continental breakfast
9:00 - 9:05	Welcome and opening remarks
9:05 - 10:30	Confidence in EDAM transfers
10:30 -10:45	Break
10:45 - 12:00	Confidence in EDAM transfers
12:00 - 1:00	Lunch
1:00 - 2:30	GHG accounting stakeholder feedback and response
2:30 - 2:45	Break
2:45 - 4:00	Zonal GHG approach (PGP)
4:00 - 4:55	LADWP GHG approach
4:55 - 5:00	Next steps and closing remarks
5:00 - 7:00	Networking reception*

** Networking reception will be held at the Sheraton Salt Lake City Hotel*

Agenda – July 27, 2022

Time	Topic
8:00 - 9:00	Continental breakfast
9:00 - 9:05	Welcome and opening remarks
9:05 - 11:00	Modeling of GHG accounting approaches
11:00 - 11:15	Break
11:15 - 11:55	Settlement of GHG awards under different approaches
11:55 - 12:00	Next steps and closing remarks

EDAM

Welcome and opening remarks

Joanne Serina, California ISO
Mark Rothleder, California ISO
Milos Bosanac, California ISO

California ISO

EDAM milestones

Q2

- April 28 — EDAM straw proposal published
- May 25 – 26 — EDAM stakeholder meeting (in-person and virtual)
- June 16 — Straw proposal comments due

Q3

- July 11 – 27 — EDAM technical workshops
- August 11 — Publication of revised straw proposal
- August 29-30 — Stakeholder meeting (revised straw)
- September 13 — Stakeholder comments (revised straw)
- Week of Sept. 12 — Publish draft tariff framework

Q4

- October 19 — Publication of draft final proposal
- November 2-3 — Stakeholder meeting (draft final)
- November 3 — Publish draft tariff language
- November 18 — Stakeholder comments (draft final and draft tariff)
- December 7 — Publish final proposal (and separately draft BRS)
- December 14 — Briefing to ISO Board and WEIM GB

2023 FERC filing (Q2), Implementation Activities (Fall 2023)

2024 EDAM Go-Live

EDAM

Confidence in market transfers

Milos Bosanac, California ISO
Danny Johnson, California ISO

California ISO

Confidence in Transfers – Straw Proposal Overview

- Confidence in market transfers is a critical design component of the EDAM.
  - EDAM entities rely on market transfers to reliably serve load.

- In the EDAM, each participating balancing authority continues to be responsible for managing reliability in within its area.
  - Each balancing authority has different tools at its disposal to maintain grid reliability.

- In the straw proposal, the ISO introduced the concept of affording “equal priority” to market transfers and load during stressed system conditions.
  - Provides confidence that EDAM entities can mutually rely upon transfers even in stressed system conditions.

EDAM Design Features Enhancing Reliability

- *Day Ahead Resource Sufficiency Evaluation (RSE)*
  - Each EDAM entity brings supply to meet forecasted demand + uncertainty.
- *Market ensures feasible commitment and dispatch*
  - Market optimization will ensure demand can be met feasibly along with transfers out of the BAA.
- *Imbalance reserves product*
  - Procured efficiently across footprint, can be called upon in stressed conditions.
- These features help limit the risk of stressed system conditions becoming emergency conditions.

Stakeholder Comments Overview

- The majority of stakeholder comments support the concept of "equal priority" between transfers and load.
  - Importance of ensuring confidence in transfers.
  - However, requesting a clear articulation of how the market can effectuate this equal priority.
  - Request for clear articulation on roles and how priority is effectuated in operational horizon.
  - Importance of ensuring retention of operational discretion in maintaining grid reliability.

- Some stakeholders noted concerns with the concept of "equal priority" between transfers and load.
  - Concerns that the ISO may direct operational actions.
  - Concern with compatibility with individual balancing authority tools for managing reliability, OATT requirements (example, NITS redispatch and curtailment of firm PTP service).

EDAM

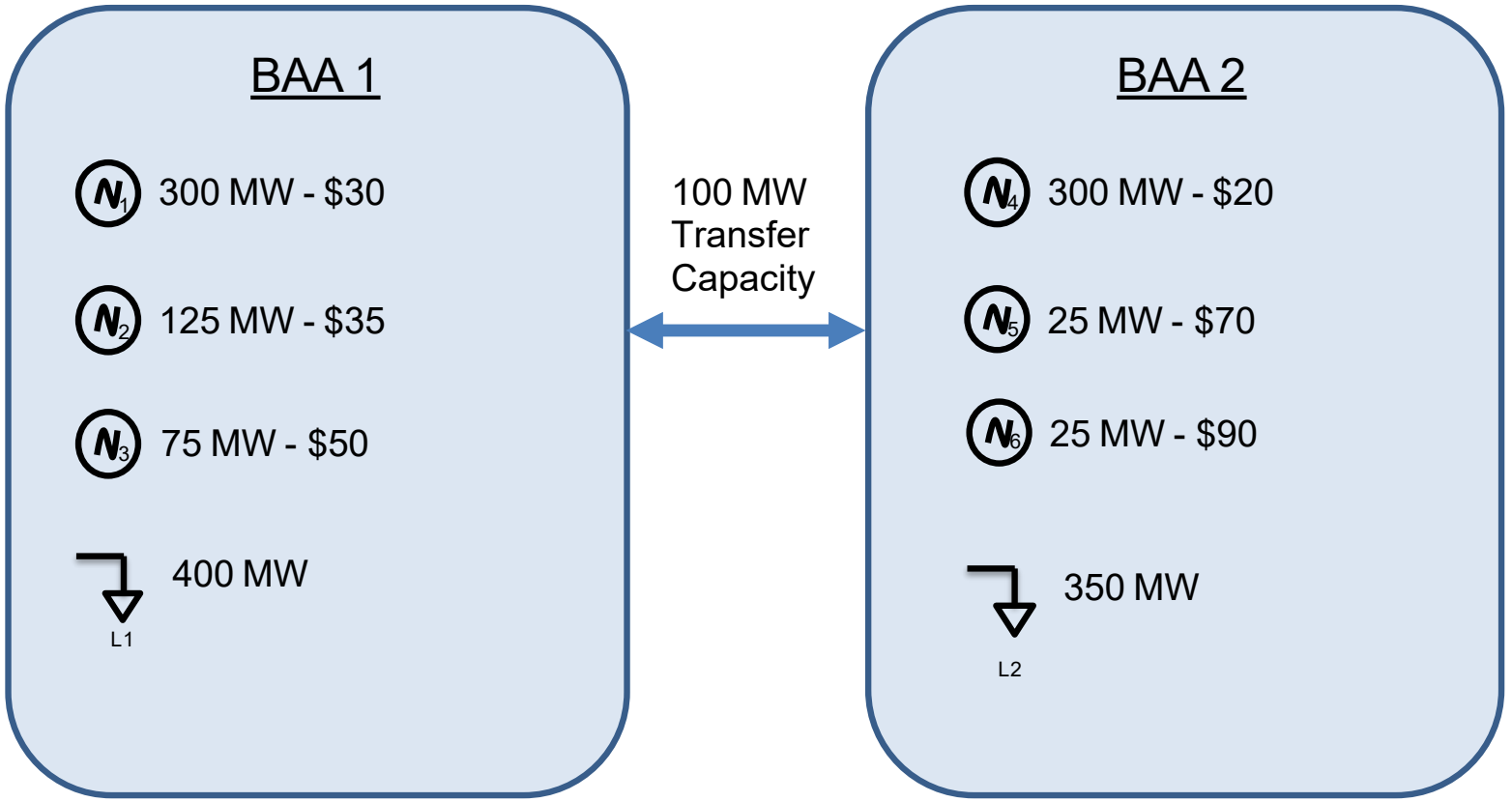
Effectuating confidence in market transfers

California ISO

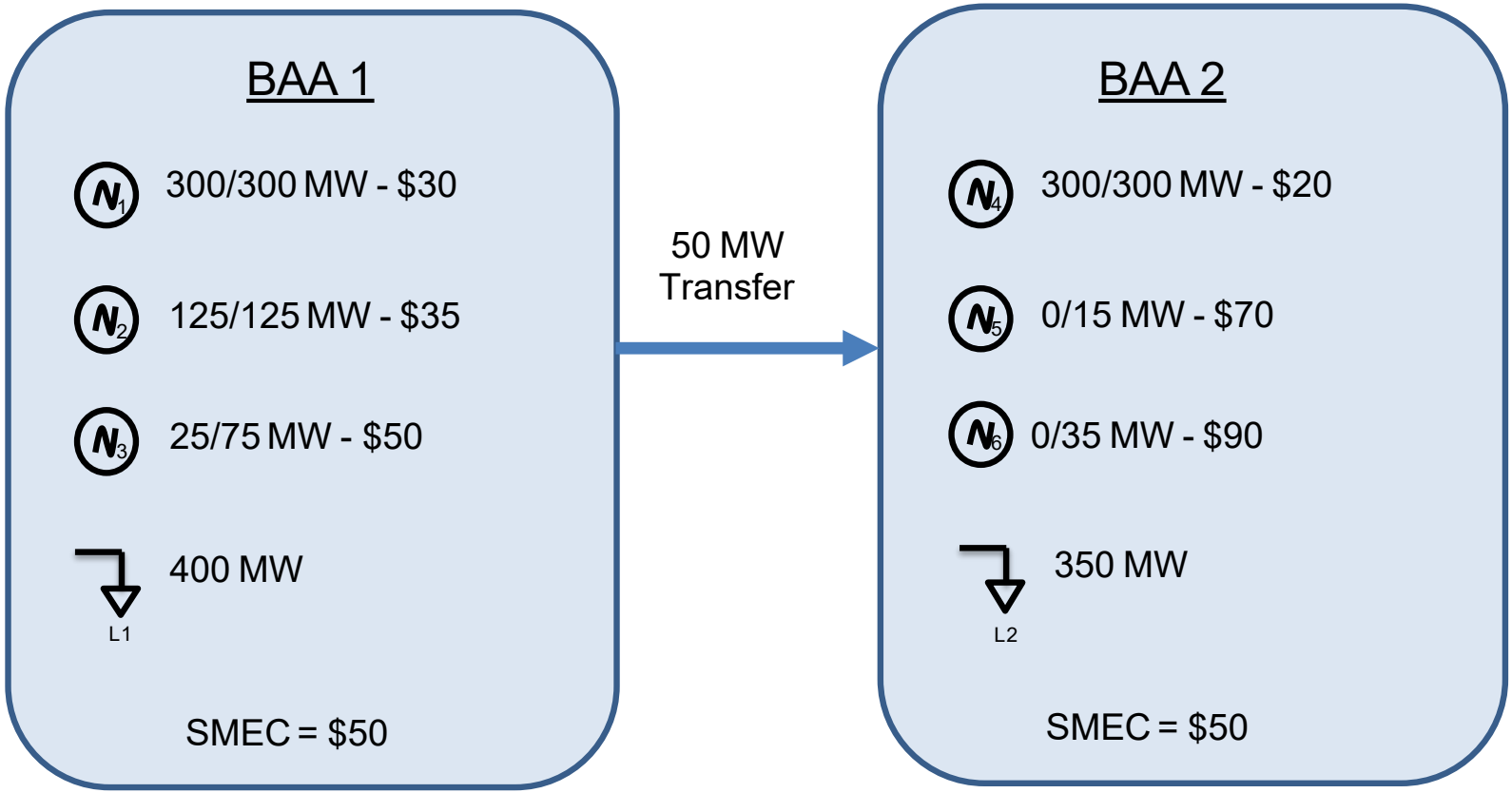
The following are examples showing how the WEIM can unwind a real-time supply deficiency, as well as what occurs when the shortfall cannot be resolved by the market

- This is a carefully constructed example that represents a true outlier condition, and is unlikely to materialize due to imbalance reserves, operating reserves, and real-time capacity offered into the WEIM only
  - This example assumes all collective residual imbalance reserves that were not needed to address uncertainty, have been dispatched to meet obligations
  - This example assumes all operating reserves have been deployed, where appropriate, in the under-supplied balancing authority and are unable to be replaced

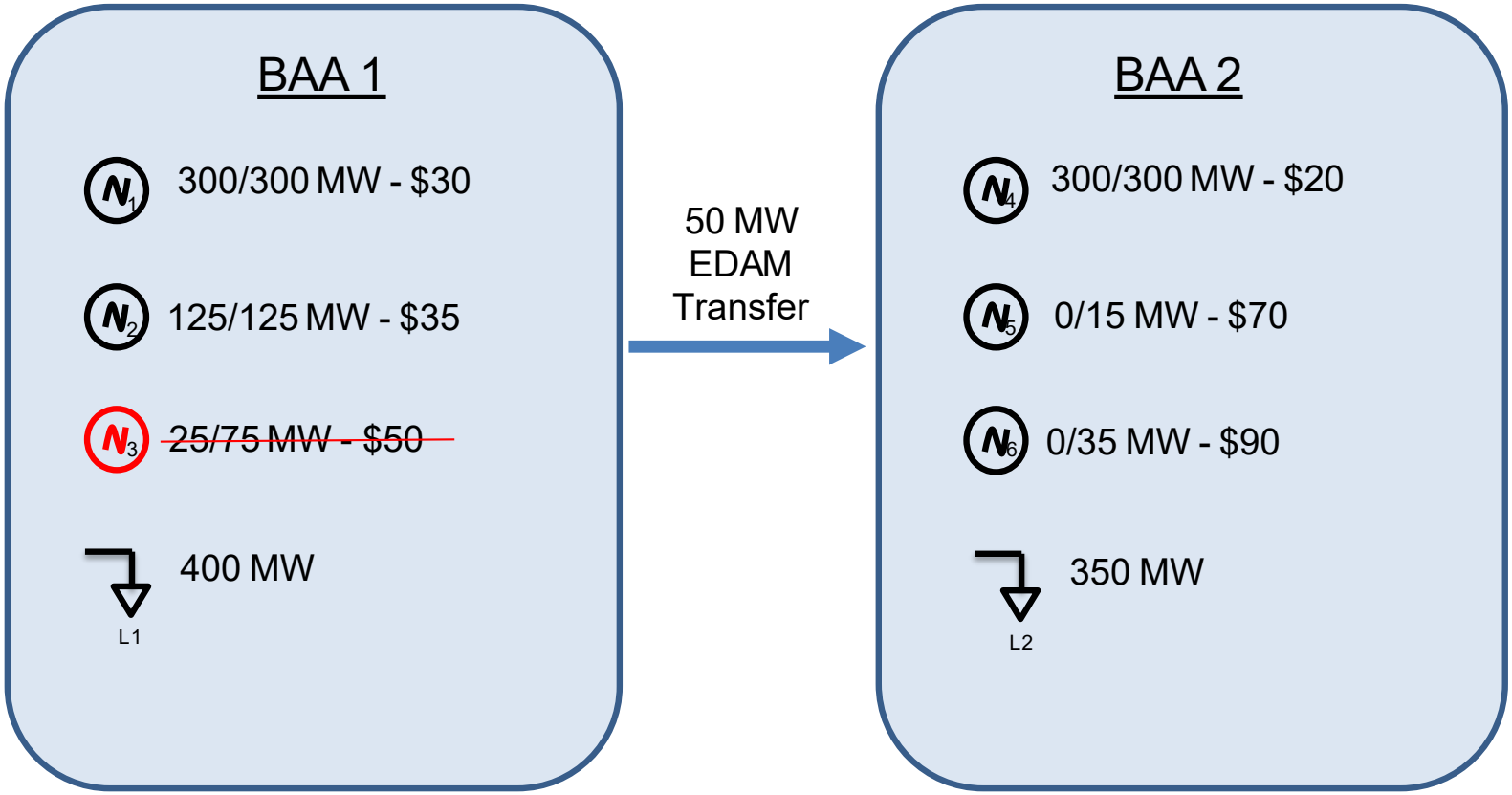
Example 1: Supply made available to the EDAM Market



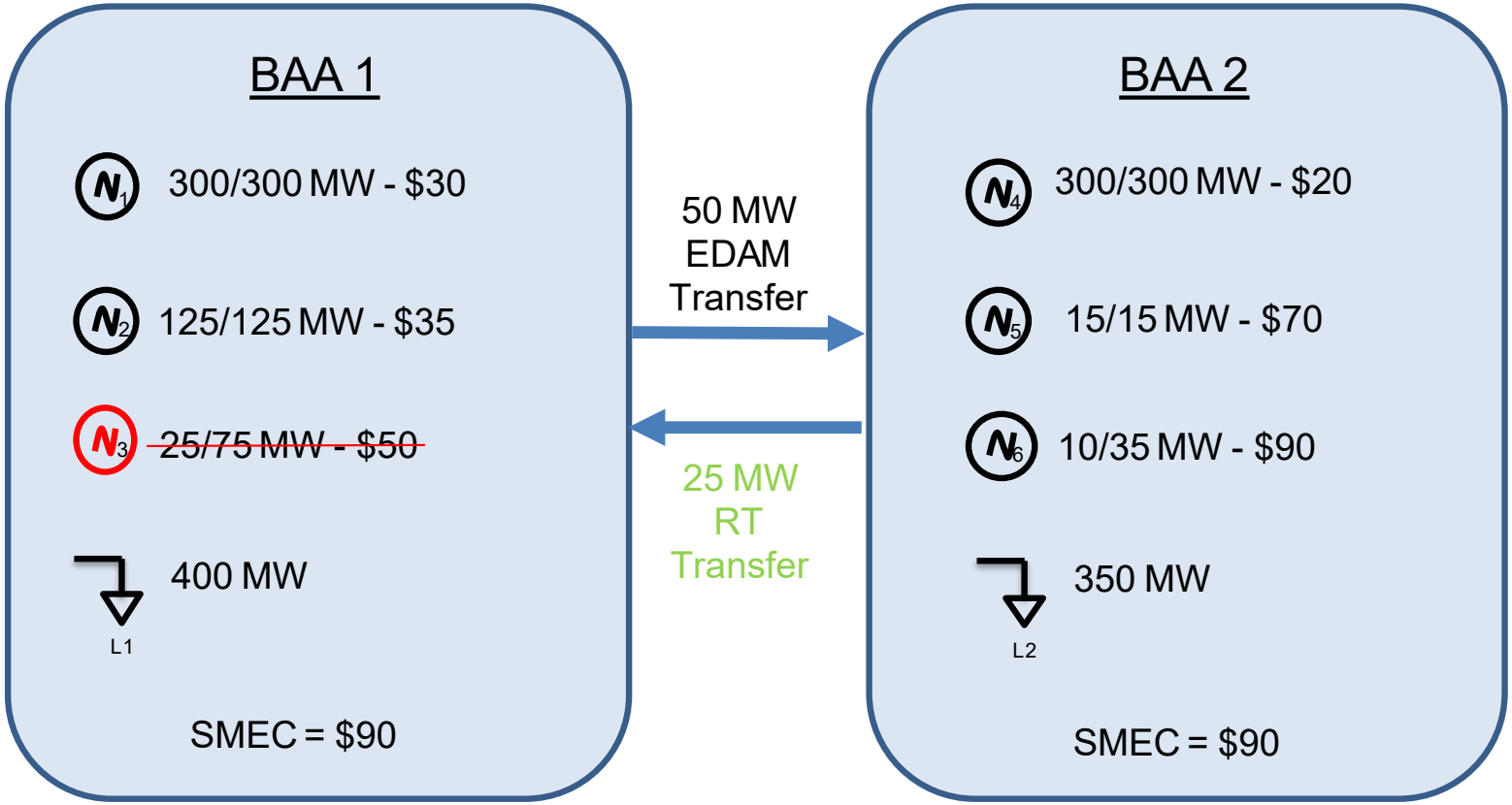
Example 1: The EDAM market results show a 50 MW transfer from BAA 1 – to – BAA 2



Example 1: A resources trips off-line in BAA 1 between the EDAM and the WEIM timeframe. The EDAM footprint will fail the WEIM RSE. What happens?



Example 1: The EDAM transfers will be viewed as a base ETSR in the WEIM. The market will re-optimize the to resolve shortfall, resulting in a 25MW transfer. BAA 2 reliability is not harmed

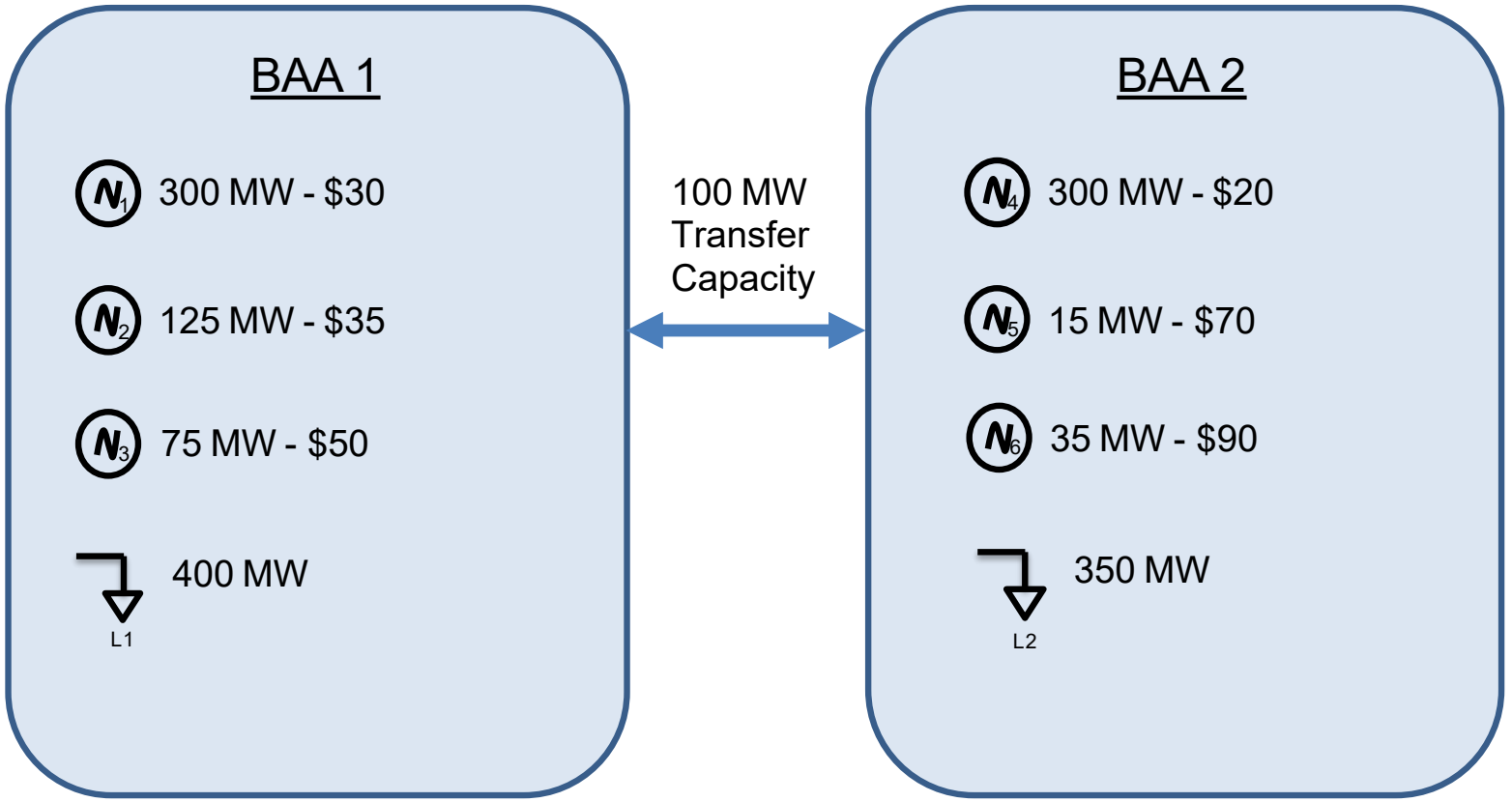


What occurs if the market is unable to resolve the supply deficiency?

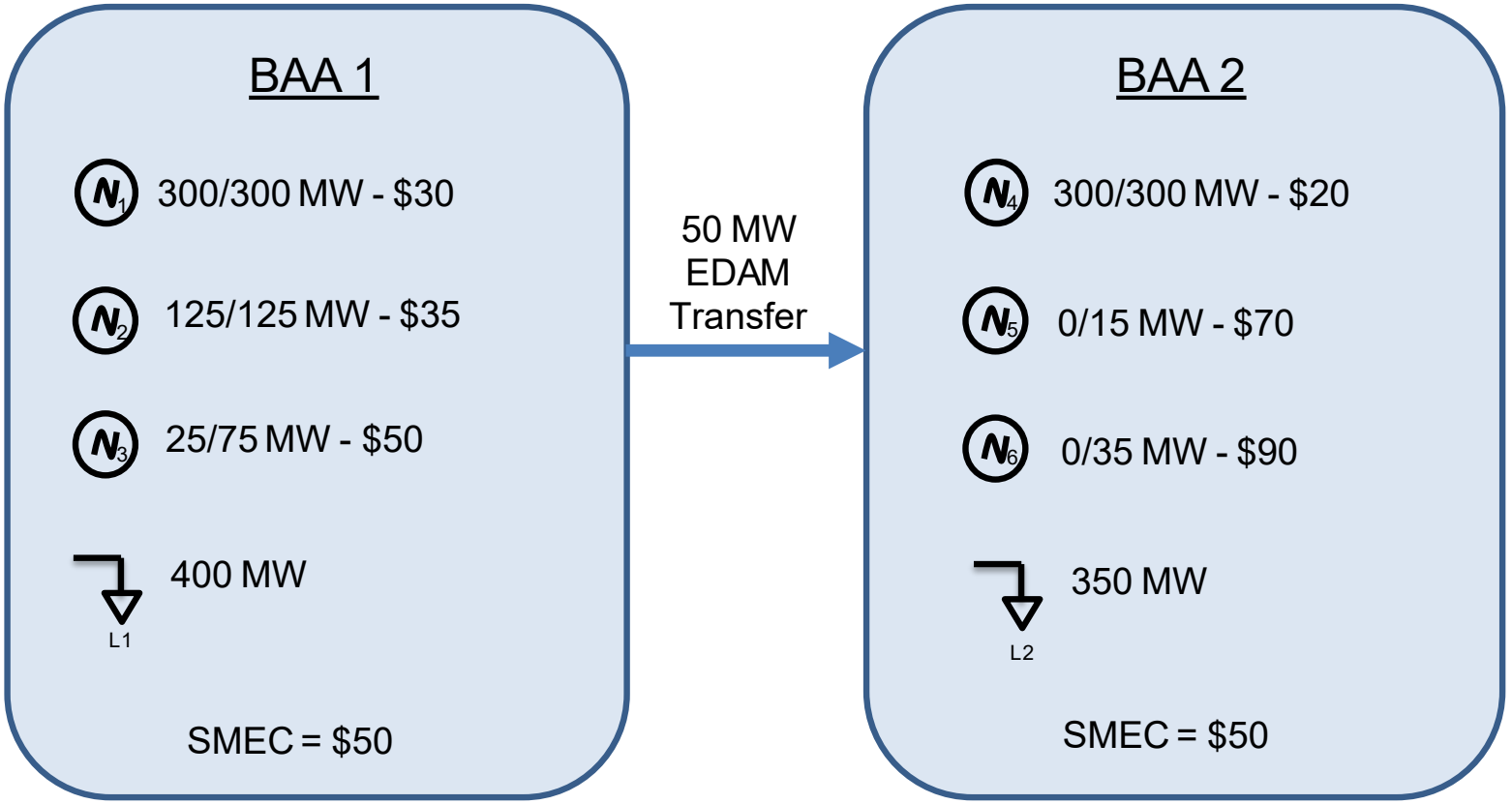
- For example, G6 is a long start resource that was not started in the day-ahead timeframe and all collective imbalance reserves, and real-time only supply offers have been utilized.

- To the extent that the market is unable to resolve supply deficiency, additional outside of the market actions would be expected following market, with objective of minimizing impacts to all.

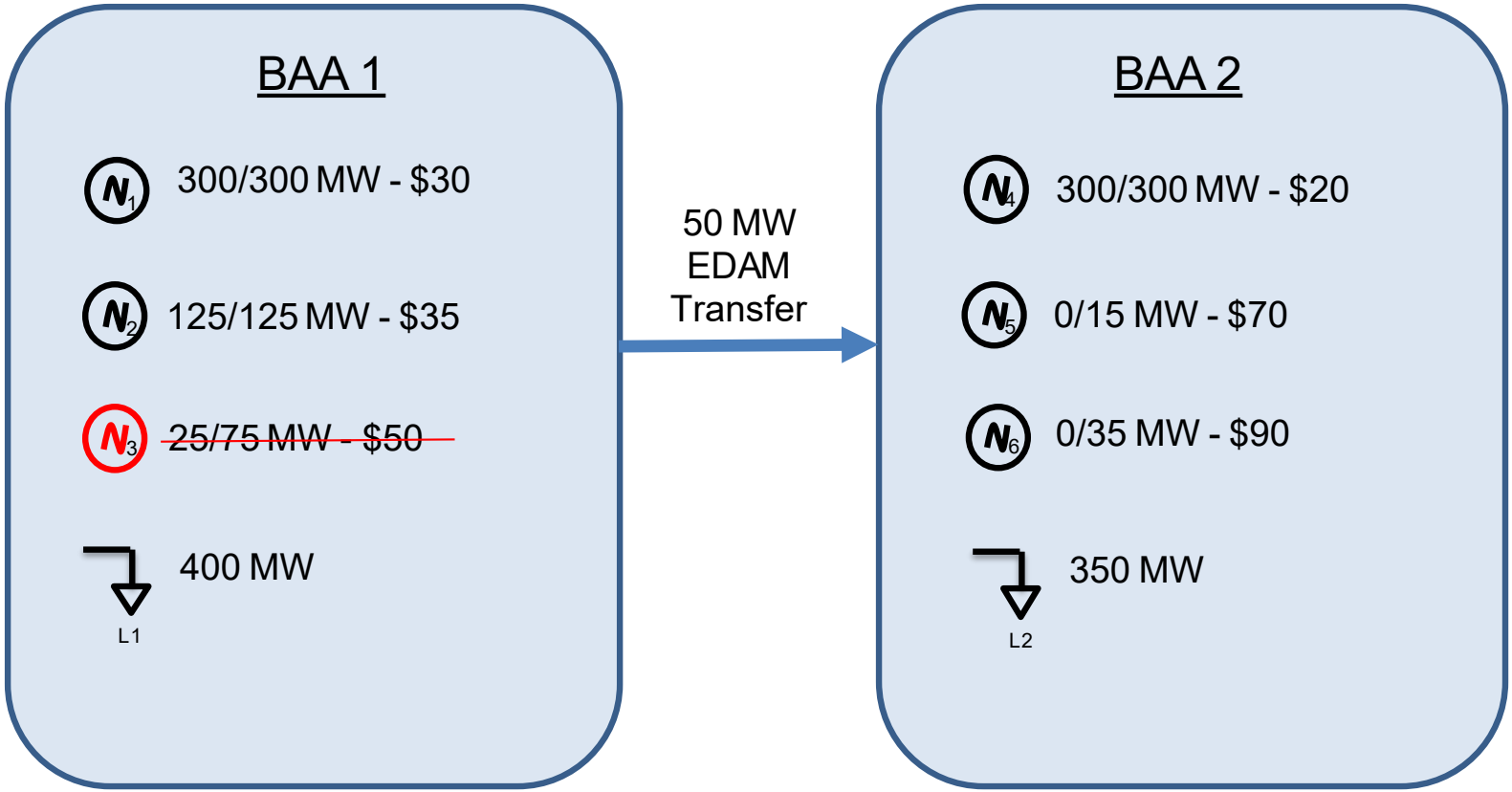
Example 2: Supply made available to the EDAM Market



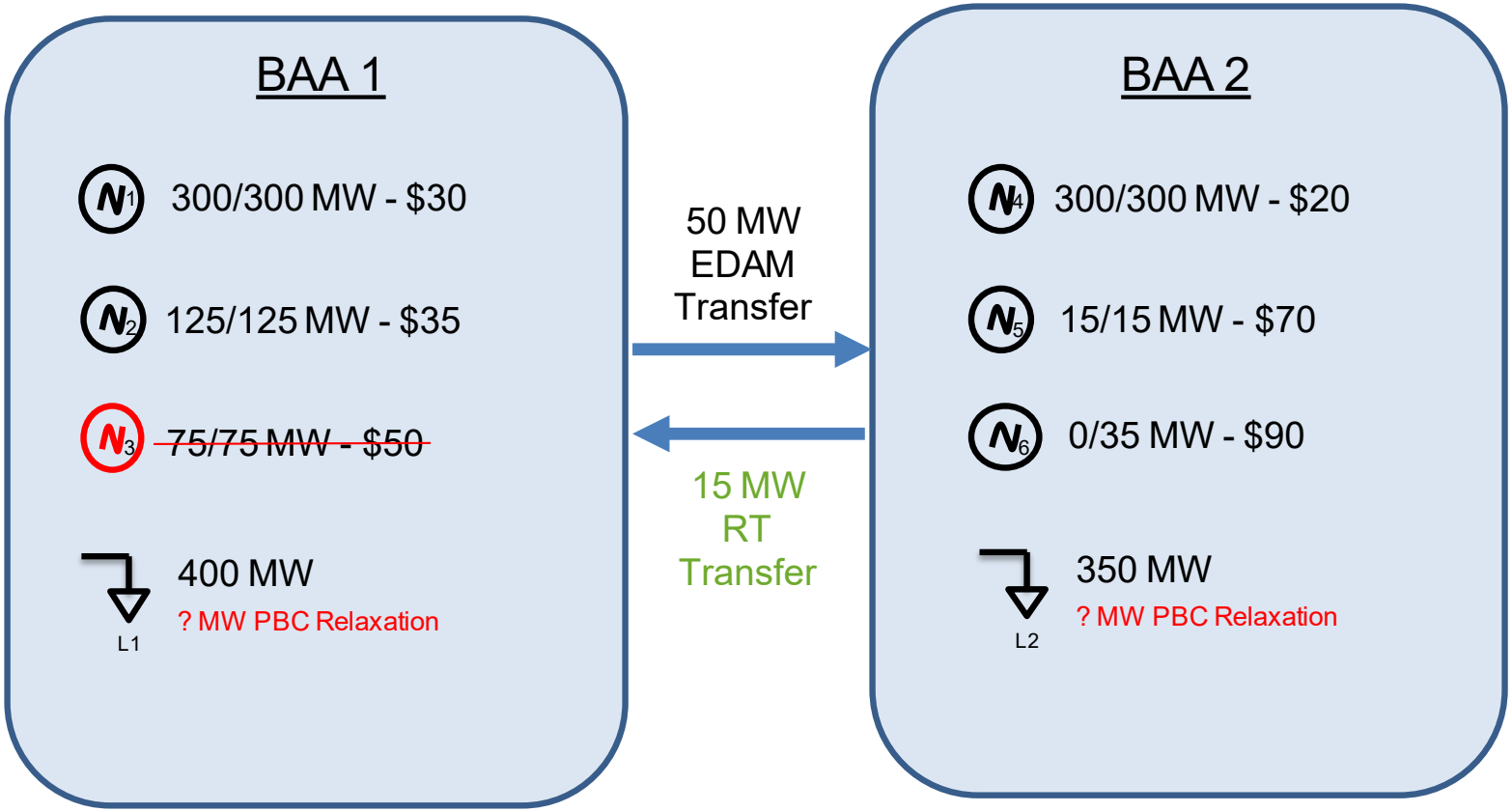
Example 2: The EDAM market results show a 50 MW transfer from BAA 1 – to – BAA 2. G5 is not able to start in the real-time



Example 2: A resources trips off-line in BAA 1 (G3) between the EDAM and the WEIM timeframe. The EDAM footprint will fail the WEIM RSE. What happens?



Example 2: The EDAM transfers will be viewed as a base ETSR in the WEIM and re-optimized the to resolve shortfall to extent possible; not harming BAA2



What actions should the market take? The assumption is to isolate the shortfall in the BAA that causes the shortfall

- Passes the EDAM schedule into the real-time market to counterflow against and be used in the infeasibility constraint.
  - $s_j^{(+)} \left(T_j - \bar{T}_j\right) \leq 0$
    - Those schedules will receive priority to ensure the market does not propagate the shortfall into neighboring balancing authority areas
- Absent isolation of the supply deficiency, partial power balance constraint relaxations are possible in both BAAs.
  - No equitable reference point to make manual adjustments

Mathematical Formulation

BAA Power balance constraint:

$$\sum_{i \epsilon BAA_j} G_j - D_j - T_j + s_j^{(+)} - s_j^{(-)} = 0$$

BAA infeasibility constraint:

$$s_j^{(+)} \left(T_j - \bar{T}_j\right) \leq 0$$

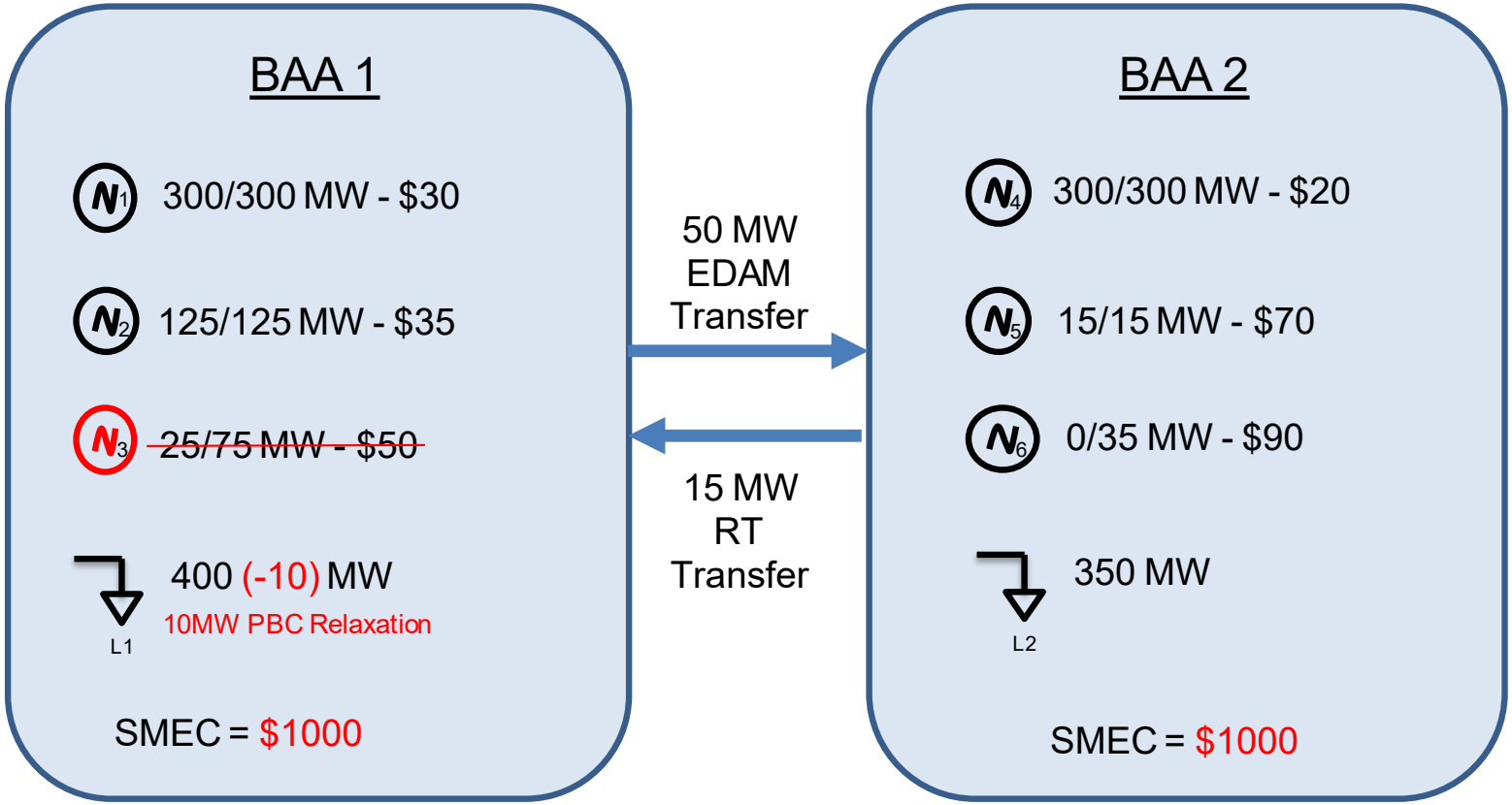
$$s_j^{(-)} \left(T_j - \bar{T}_j\right) \geq 0$$

Notation

i	node index
j	BAA index
G	supply
D	demand
T	net transfer
$\bar{T}$	**base net transfer (EDAM transfers)**
$s^{(+)}$	under-generation surplus
$s^{(-)}$	over-generation surplus

- T represents the net EDAM transfers into and out of a BAA
- $T=\left(T_j - \bar{T}_j\right)$
  - The penalty price associated $s_j^{(+)}$will control the net transfer T_j
- This ensures the base transfers can't be relaxed as a means to achieve power balance if it means the under-generation slack variable takes a positive value
- Use da-tag to inform $\bar{T}_j$?
  - Could be enforced just using the market schedules

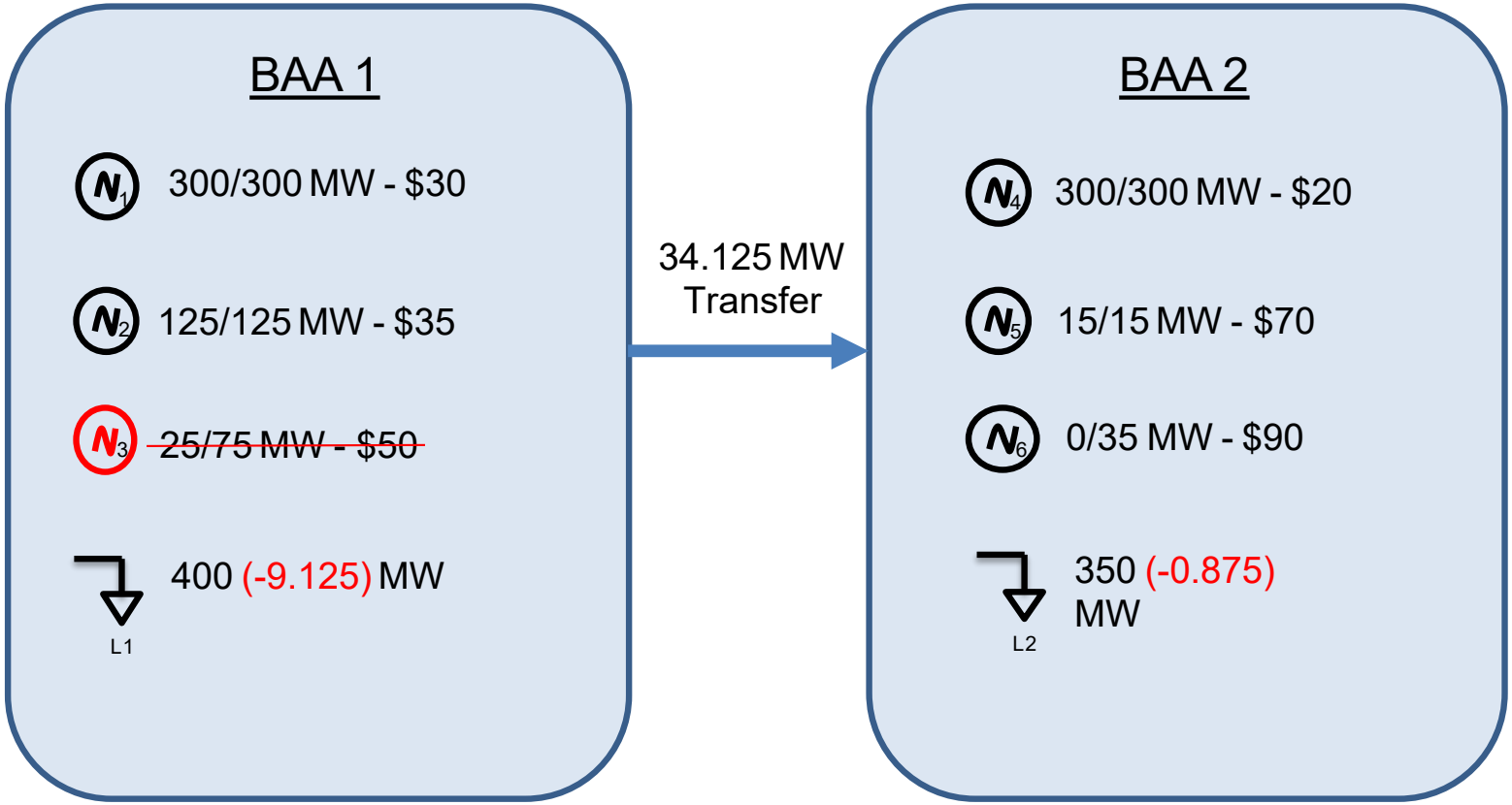
Example 2: The EDAM transfers will be viewed as a base ETSR in the WEIM and re-optimized the to resolve shortfall to extent possible; not harming BAA2



The WEIM market will isolate the market infeasibility within BAA where shortfall starts, which allows the BAA opportunity to coordinate resolution.

- BAA1 would be responsible for undertaking manual operational actions to cure insufficiency
  - Each BAA relies on its own operational tools to continue to manage the grid reliably, which may include:
    - Access to excess supply that may have been held back from market or secured for stressed system conditions (i.e. emergency energy, demand response)
    - Emergency assistance from neighboring BAAs
    - Curtailment of lower priority transactions
    - Deployment of operating reserves and arming firm load

Example 2: Following the market results BAA 1 would issue a pro-rata curtailment to BAA 2, resulting in each BAA being responsible for out of the market actions to serve demand as well



The WEIM market will isolate the market infeasibility within BAA where shortfall starts, which allows the BAA opportunity to coordinate resolution.

- If the BAA 1 is unable to cure the deficiency they would then have ability to curtail the transfer, pro-rata as compared to their load, into BAA 2
  - BAA 2 would then have ability to use outside of the market actions to resolve supply deficiency (emergency assistance, arming load to release reserves, curtailing LPT exports)
  - What is the reasonable expectation for BAA 2 to help BAA1 using outside of the market actions?
- Following exhaustion of all other manual options, shedding of firm load is available to BAA 1 and/or BAA 2 to resolve undersupply situation.
  - Such actions will be executed by respective BAA not market operator.

Effectuating Equal Priority Between Transfers and Load – Operational Discretion and Coordination

- In the corner case scenario where the market has exhausted options, and the BAA has exhausted all its tools and load is still at risk, the BAA continues to retain operational discretion in coordinated curtailment of transfers.

- BAA 1 supporting an export transfer to BAA 2 has the operational discretion to curtail the EDAM transfer ahead of load to the extent doing so is coordinated and would not jeopardize BAA 2 reliability.
  - Operators continue to coordinate with neighboring BAAs as is common industry practice including emergency assistance.

- If curtailment of EDAM transfer from BAA 1 to BAA 2 would place BAA 2 into an emergency condition or otherwise cause a cascading reliability event, BAA 1 would be expected to afford equal priority to the transfer with load.
  - Curtailment of transfer on pro-rata basis with load.
  - Provides confidence and mutual dependability and minimizing impacts to all.

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Greenhouse gas (GHG) accounting stakeholder feedback and response

Anja Gilbert, California ISO

California ISO

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Resource Specific Proposal

California ISO

Resource-Specific Proposal: Stakeholder Feedback

- Stakeholders advocating for the inclusion of transmission constraints as a part of the RSE highlighted the benefits of a more accurate GHG counterfactual
- Stakeholders that raised concerns regarding the optimization's attribution sought greater transparency
- Stakeholders advocated for data reporting to support compliance and clean energy programs
- Clarification questions were raised on the GHG-pseudo tie design, the geographic boundaries, whether the Resource Specific proposal complies with state regulations, as well as the scalability and adaptability of the Resource Specific proposal.

The CAISO's EDAM RSE working group is evaluating the design and feasibility of including transmission constraints in the RSE for the GHG counterfactual

- As discussed on July 14, RSE working group is discussing updates that might include transmission constraints to create the GHG counterfactual.
  - Timing: propose to run this version of the RSE with transmission constraints prior to running the DAM
  - Geographic granularity: propose to run on a BAA-by-BAA basis

What is the appropriate consideration of network impedance, contingency, and flows in the counterfactual determination?

Is a DC powerflow with static loss factors acceptable?

For the CAISO BAA, what is the appropriate treatment of intertie bids in determining the counterfactual?

GHG Attribution

- CAISO's market is a least cost security constrained optimization
- CAISO reflects the GHG costs of compliance through a bid adder submitted by participating resources. When dispatching resources:
  - To serve energy outside a GHG Regulation Area the optimization only considers resources' energy bids
  - To serve energy inside a GHG Regulation Area (coming from outside the GHG regulation area) the optimization considers resources' energy bids + GHG bid adders.
  - To serve energy inside a GHG Regulation Area (coming from inside the GHG regulation area) the optimization considers resources' energy bids which already include the cost of GHG compliance

GHG Attribution and Secondary Dispatch

The optimization takes the total imports for a GHG regulation area and then attributes resources lowest to highest. The marginal resource sets GHG price.

This process results in the market attributing transfers to resources based on their composite energy bid and GHG bid adder which may result in higher-emitting (*i.e.* more expensive) resources backfilling this attribution to serve load in other BAAs (secondary dispatch).

Calculating secondary dispatch allows states to quantify and take responsibility for their atmospheric impact if they choose to do so.

CAISO's efforts to limit secondary dispatch over time

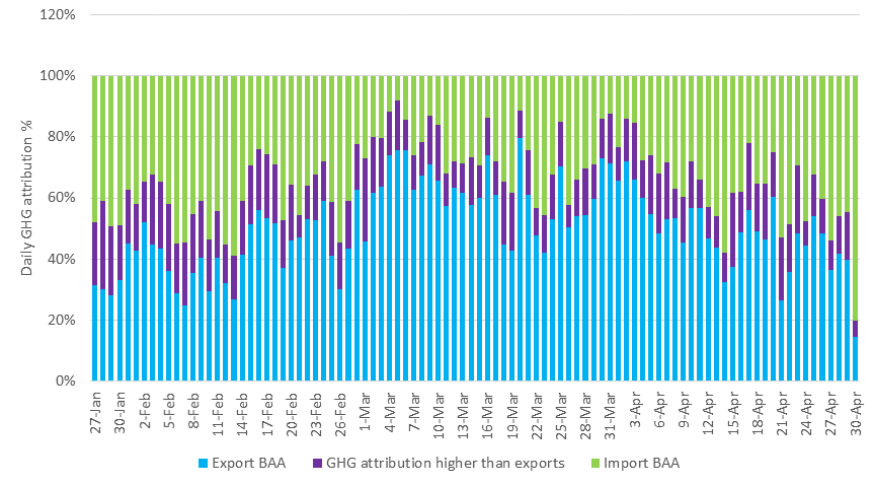
Limiting the GHG attribution reduces the potential for secondary dispatch but also limits transfers

<table>
<tr><th></th><th>GHG Bid Quantity</th><th>GHG Bid Price</th><th>Other</th></tr>
<tr><td>EIM Go Live</td><td rowspan="2">0 to Pmax</td><td><=$1,000 minus the energy bid</td><td></td></tr>
<tr><td>One Year enhancements</td><td rowspan="2"><= Participating Resource's daily GHG cost</td><td></td></tr>
<tr><td>2018 Update</td><td>0 to (Upper Economic Limit – Base Schedule)</td><td></td></tr>
<tr><td>EDAM Proposal</td><td rowspan="2">0 to (Upper Economic Limit – RSE solution)</td><td rowspan="2"></td><td><= Export capability of the BAA</td></tr>
<tr><td>EDAM Proposal</td><td>=0 if net importer</td></tr>
</table>

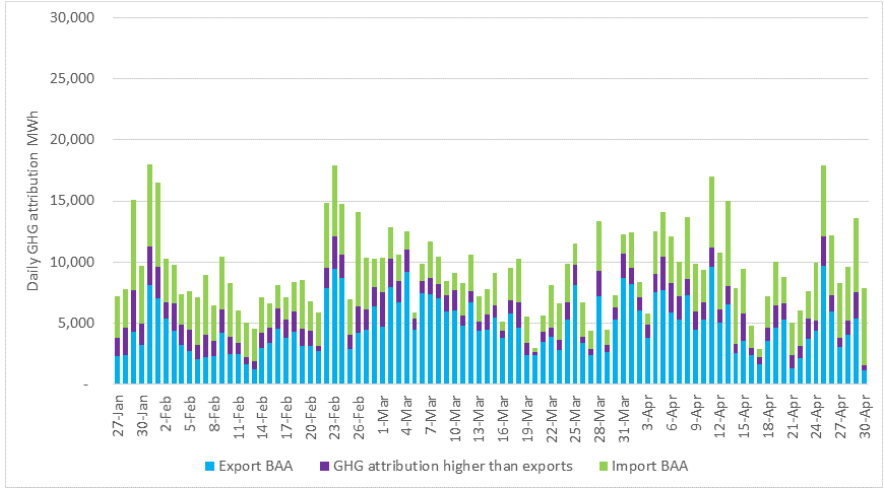
Impact of applying the EDAM net export constraints to WEIM data from 1/27/22 - 4/30/22

Sources of GHG Attribution from a BAA	WEIM Today	EDAM
Exporting below transfer limits	Included	Included
Exporting above transfer limits	Included	Excluded
Importing	Included	Excluded

EDAM Secondary Dispatch Constraints Applied to WEIM Percentage



EDAM Secondary Dispatch Constraints Applied to WEIM Volume



Attributions and Transparency

Attribution data available today at the scheduling coordinator level:

- Resource level attributions are available in CMRI as well as through settlement statements

Attribution data that could be made available in the future:

- EDAM Entity RSE solution

What data would be helpful to promote transparency and over what period of time?

Reporting to support states and market participants

State reported data:

- Today CAISO reports total and EIM-entity level MWh GHG attributions to CARB. Through OATI, CARB collects total MWh of tagged imports (outside the EIM) which is used to quality assure imports reported to CARB under the Mandatory Reporting Regulation (MRR)
- The CAISO is willing to provide total WEIM and EDAM transfers to states with GHG pricing programs

Market participant reported data:

- Currently, WEIM market participants receive
  - Settlement statements which include GHG attribution
  - GHG attributions through CMRI
- In EDAM, the CAISO will provide settlement statements which include GHG attribution DA and RT (deviation from DA)

Reporting to Support Clean Energy Programs

CAISO observes three forms of clean energy programs:

1. Renewable Portfolio Standards and Renewable Energy Credit (REC) Compliance. Many states require deliverability to the service territory of the purchasing utility

- The CAISO markets do not create a claim on the REC
- Currently, the CAISO provides meter data to WREGIS for renewable resources when CAISO has been selected as the Qualified Reporting Entity (QRE). If WREGIS moves to all generation tracking, the CAISO could support data sharing
- As a long term recommendation, buyers and sellers should update applicable contracts to unbundle RECs from energy deliveries to the service territory of the purchasing utility. Contracts with unbundled RECs could allow for market participation and still allow the purchasing utility to receive credit for the REC

Reporting to Support Clean Energy Programs cont.

2. GHG percentage reduction programs require utilities to reduce their portfolio average GHG emissions by a certain percentage by a certain date as compared with a base year.

3. GHG absolute reduction programs require the annual average emissions to be at or below an absolute value emissions, which declines over time.

With market enhancements, the CAISO could:

- Provide emissions intensity information for in-state generation
- Provide the total MW of BAA-level transfers, and states could apply their own unspecified emissions factor

- *Does this level of reporting support clean energy programs?*

GHG Pseudo-Tie

The CAISO does not view the GHG pseudo-tie as necessary for the Resource Specific approach. The GHG pseudo-tie is required for the Zonal approach.

Comparison of the pseudo-tie and GHG pseudo-tie concepts:

	Pseudo Tie	GHG Pseudo–Tie
Definition	A resource located outside of a BAA that the CAISO treats as if it were internal to that BAA	A resource located outside of a BAA that the CAISO treats as if it were internal for GHG accounting purposes.
Reqs.	1. Register using the a Pseudo-Tie PGA and follow all of the requirements in Appendix N of CAISO's tariff. 2. Agreement with their host BAA. Agreement between the host BAA and the CAISO.	What requirements should be developed if using the GHG pseudo-tie?
RSE	Included	Excluded
e-Tag Req.	All transfers must be e-Tagged	Should e-Tags be required?
Settlement	Special considerations to avoid double counting energy since the modeling and physical flows are not the same.	No settlement impacts

Geographic Boundary

- The updates to the geographic boundary define GHG regulation areas based on state geographical boundaries as opposed to BAA boundaries.
- The CAISO will reflect boundary areas in the Master File with a new GHG regulation area field (i.e., CA, WA, non-GHG) and associated nodes (Pnodes, Apnodes, and scheduling points) and resources.
- This will allow CAISO 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.

Are there other modeling approaches stakeholders recommend?

Regulatory Alignment

The CAISO's market design effort is not seeking to reshape GHG accounting or reduction laws or regulations at the state or federal level. Any proposal will need to align with federal and state laws and regulations ahead of 2024 EDAM implementation, recognizing some changes to laws and/or regulations could take years. This includes:

- Federal Laws: Statutory law and Judicial doctrines
- State Regulations:
  - CARB's Cap-and-Trade program, Mandatory Reporting Rules, and the First Jurisdictional Deliverer (FJD) construct.
  - Washington Department of Ecology's Cap-and-Invest program, Mandatory Reporting Rules, and the FJD construct.

Scalability and Adaptability

- The CAISO's resource-specific design is scalable if and when additional GHG pricing programs emerge in the west
  - Any formally "linked" program could simply reflect GHG costs as a part of their energy bid rather than through a GHG bid adder
  - When programs are unlinked multiple GHG bid adders will be necessary
- EDAM GHG design will continue to evolve
  - The resource-specific model implementation is foundational and allows for evolution to a zonal or hybrid (LADWP) approach should state regulators move in that direction.
  - The resource-specific model is flexible enough to employ additional constraints at a GHG Regulation Area level (i.e., not to allow resources with x emissions factor or to exclude certain resource types)

EDAM

Zonal Proposal

Anja Gilbert, California ISO
Mary Wiencke, Public Generating Pool

California ISO

Zonal Proposal: Stakeholder Feedback

- Stakeholders requested additional information on the proposal design, hurdle rate (now referred to as a “toll”) design, as well as mechanics of reporting and compliance to inform their decision
- Stakeholders supporting the design frequently cited design elements such as the lack of reporting obligations for non-GHG regulation areas
- Stakeholders that raised concerns frequently cited the potential for emissions leakage and lack of comparable treatment of resources
- Some stakeholders requested feedback from state air regulators on whether the zonal proposal complies with existing regulations

Open design questions for the zonal proposal

- Who is the first jurisdictional deliverer (FJD) under the zonal proposal?
  - Who holds the compliance obligation? The reporting obligation?
  - Can there be an FJD for specified sources and a non-FJD for unspecified sources of power?
- GHG revenue allocation:
  - To what entity will the GHG revenue collected be allocated to (impacts settlement design)?
- Is transmission / eTag required when a resource is viewed as internal to the GHG regulation area (i.e., under the GHG pseudo tie option/Path 1 or Path 2)?
- Will the proposal provide the ability for an EDAM entity to elect not to serve the GHG regulation area?
- What data will be available for reporting?

PGP Presentation, Mary Wiencke

EDAM

LADWP Proposal

Anja Gilbert, California ISO
Anu Sahni, Los Angeles Department of Water and Power
Stuart Kelly, Los Angeles Department of Water and Power

California ISO

LADWP Proposal: Stakeholder Feedback

- Five stakeholders recommended a further exploration of LADWP's proposal

- Stakeholders highlighted design attributes that they supported which included the lack of GHG attribution and the ease of reporting

LADWP Presentation, Anu Sahni / Stuart Kelly

EDAM

Next Steps

Joanne Serina, California ISO

California ISO

July 2022 EDAM Workshop Schedule

Date/Time	Format	Focus
July 27, 2022 (9 a.m. – 12 p.m. Mountain Time)	In-person and virtual Salt Lake City, UT	GHG accounting

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EDAM

Welcome and opening remarks

Joanne Serina, California ISO

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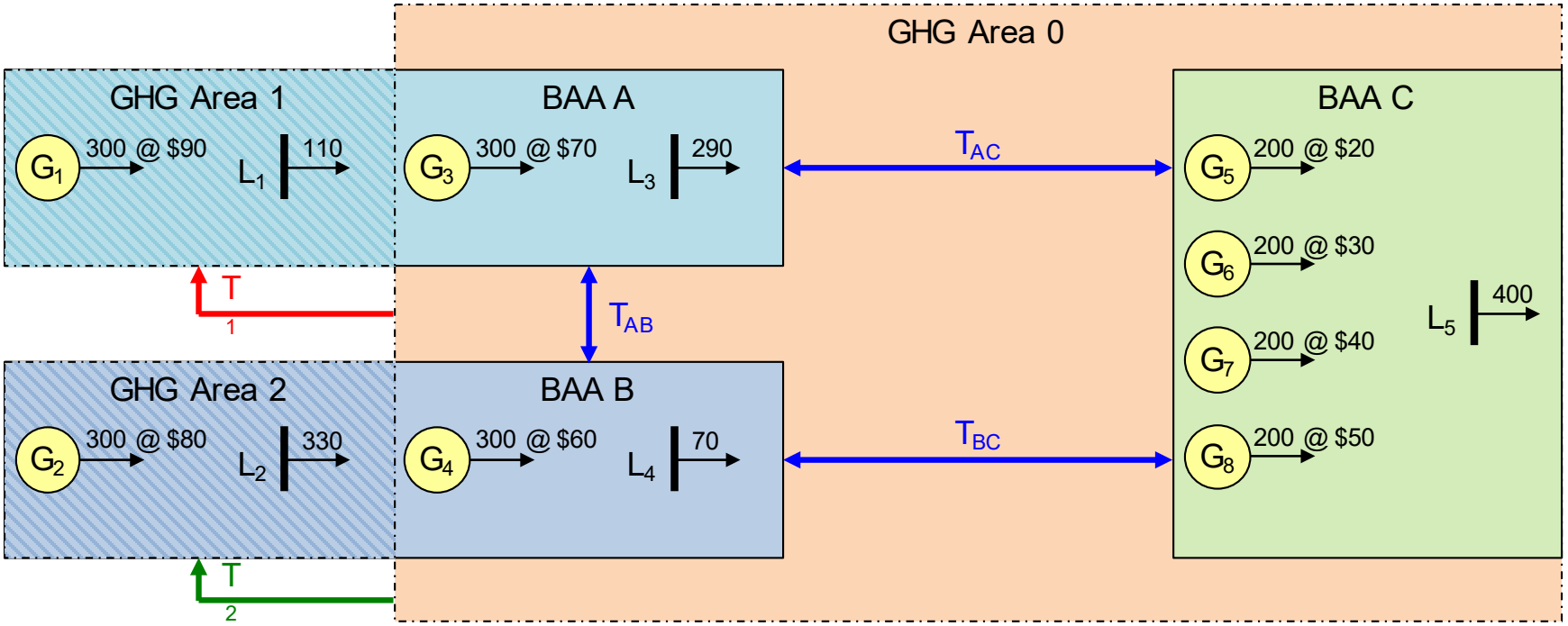
EDAM

Modeling of GHG accounting approaches

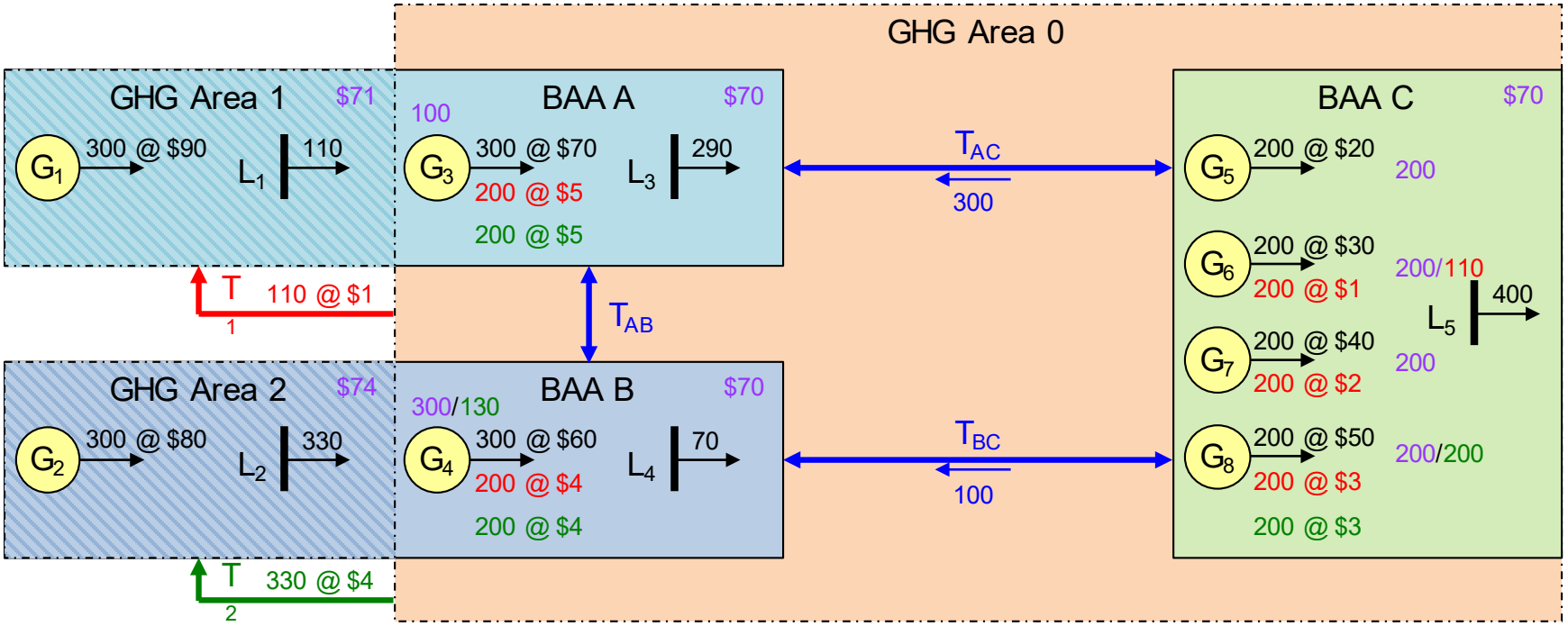
George Angelidis, California ISO

California ISO

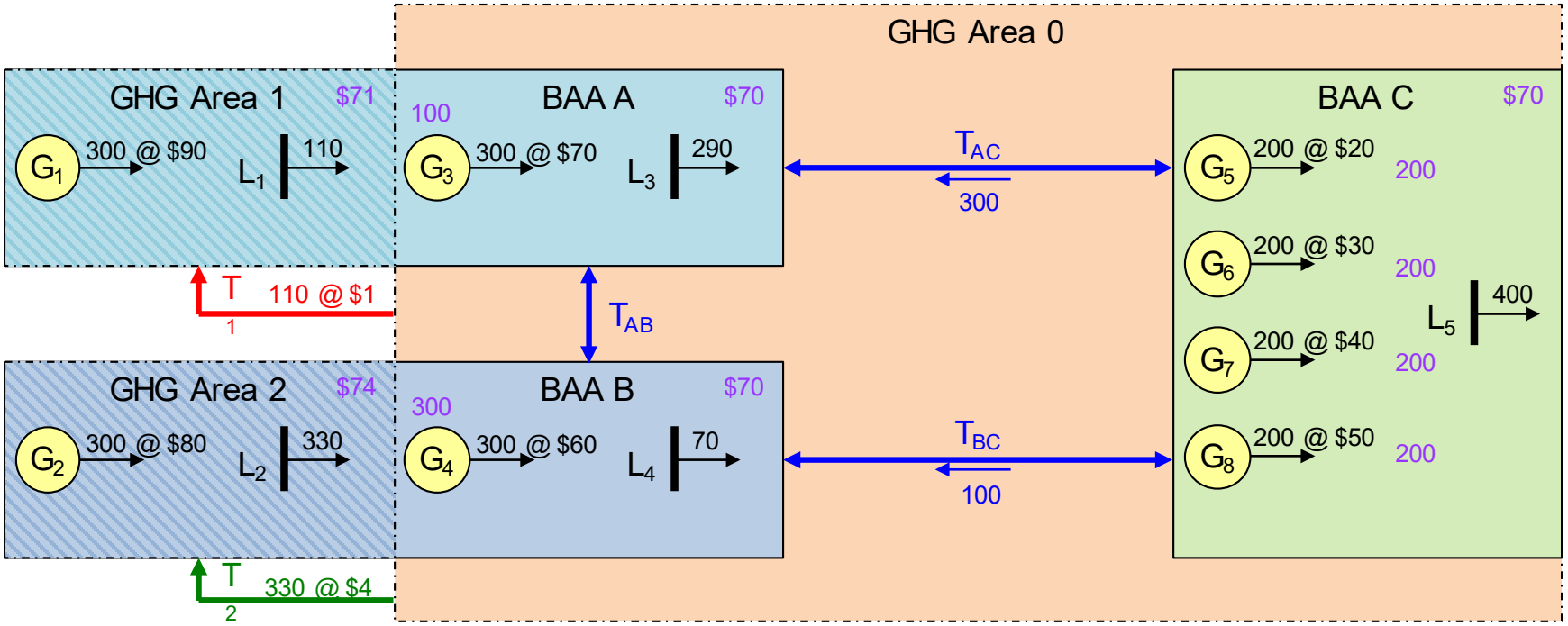
Example Setup



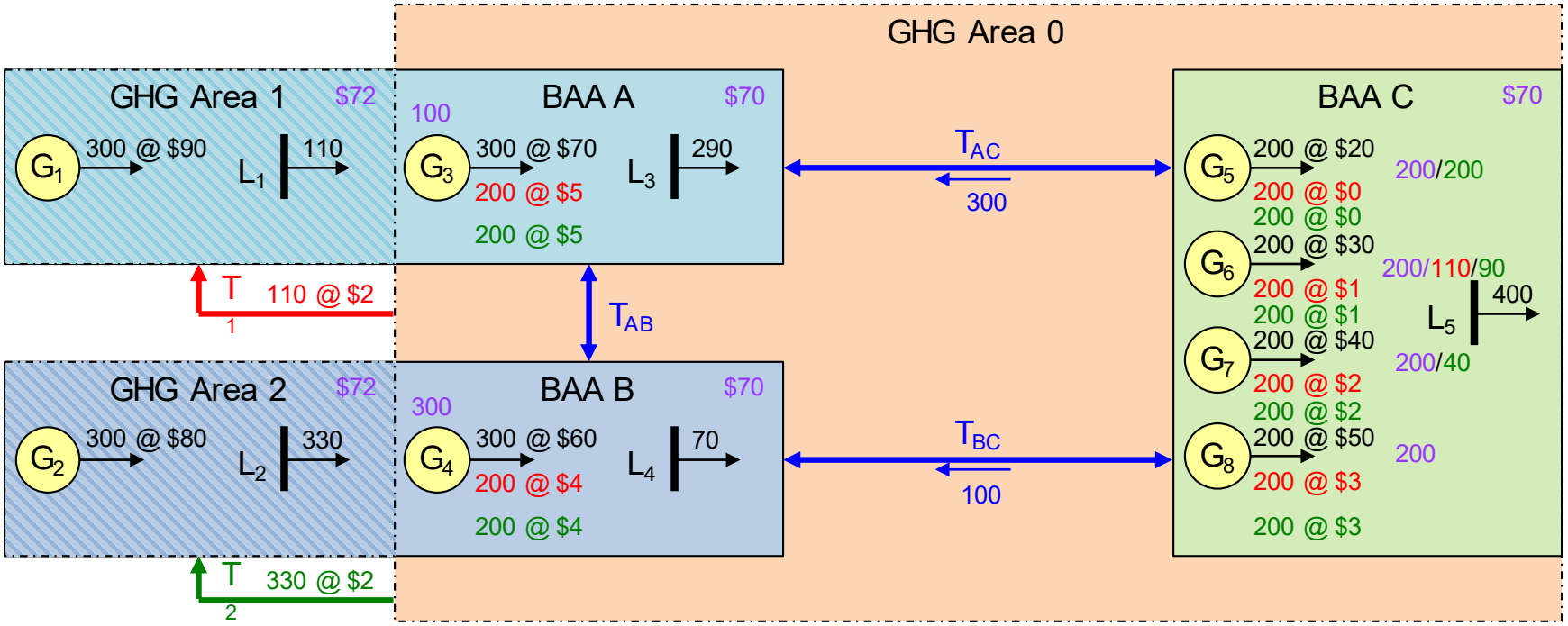
Resource-Specific Approach



Zonal Approach



Hybrid Approach



EDAM

Settlement of GHG awards under different approaches

James Lynn, California ISO

California ISO

Greenhouse Gas Settlement Overview

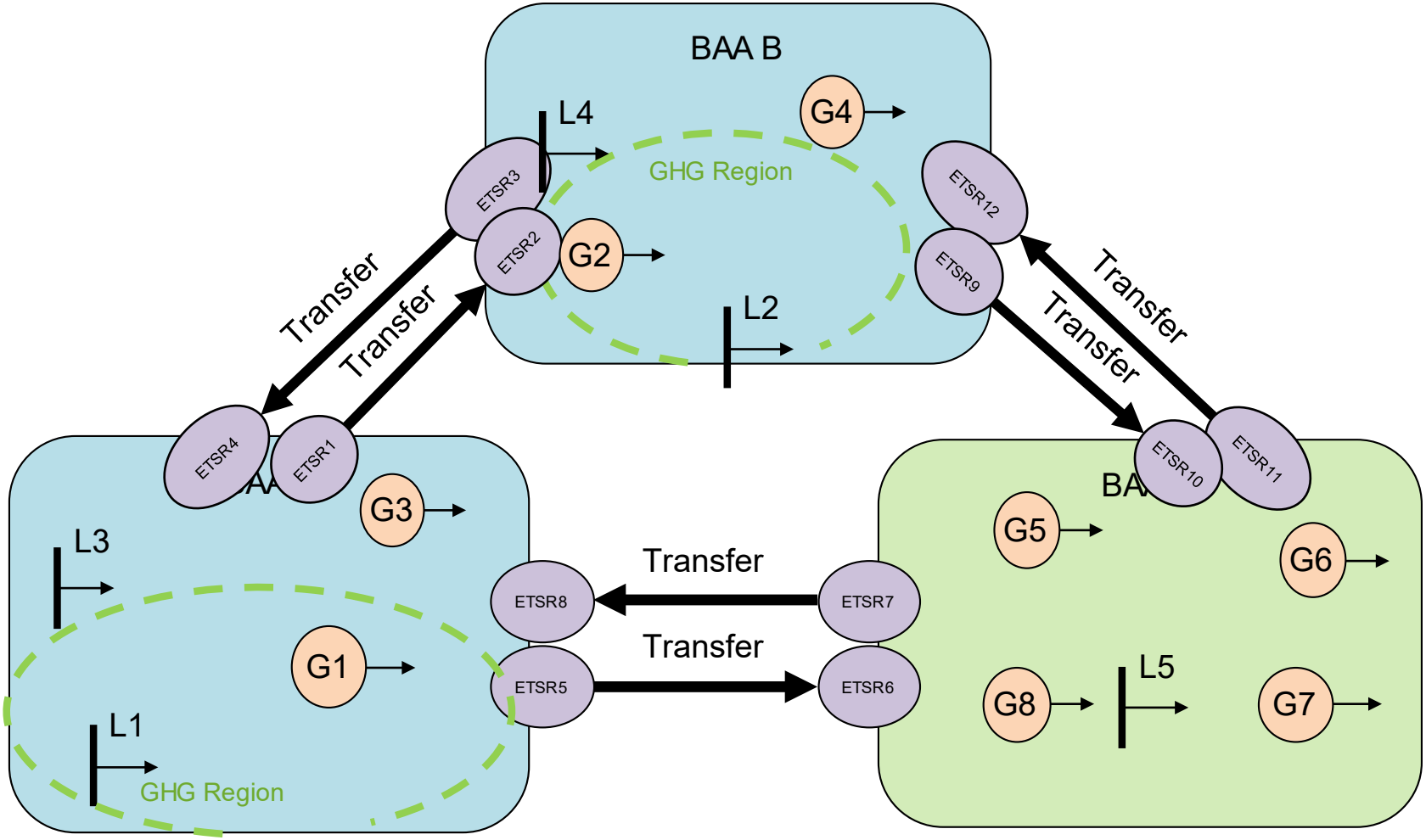
Resource Specific Approach	Zonal Approach
Resource with a Day Ahead GHG Obligation will settle at relevant marginal cost of GHG price	Day Ahead GHG Transfer Obligation will settle at relevant GHG hurdle price and allocated based upon State regulator requirements (GHG Zonal metered demand?)
EDAM Area Marginal GHG Neutrality allocated to EDAM Entity or measured demand	
Resource with a real time GHG obligation will settle as a deviation settlement for day ahead position at relevant marginal cost of GHG price	RTM GHG Transfer Obligation will settle as a deviation settlement from Day Ahead GHG transfer position at relevant GHG RTM hurdle price and allocated upon State regulator requirements (GHG Zonal metered demand?)
EIM Area RTM Marginal GHG Neutrality allocated to EDAM Entity or measured demand	

EDAM

Zonal Settlement

California ISO

Zonal Approach



EDAM Input Data

BAA	Resource	Pmax	Energy MW	Energy $	GHG Zone	Zonal Rate
A	G1	300	300	$90	1	$1
	G3	300	300	$70		
	L1	110	110	PT	1	$1
	L3	290	290	PT		
B	G2	300	300	$80	2	$4
	G4	300	300	$60		
	L2	330	330	PT	2	$4
	L4	70	70	PT		
C	G5	200	200	$20		
	G6	200	200	$30		
	G7	200	200	$40		
	G8	200	200	$50		
	L5	400	400	PT		
TAB	ETSR1-2	999				
TBA	ETSR3-4	999				
TAC	ETSR5-6	999				
TCA	ETSR7-8	999				
TBC	ETSR9-10	999				
TCB	ETSR11-12	999				

Integrated Forward Market Solution

BAA	Resource	Energy MW	Energy $	GHG Transfer	Zonal Rate
A	G1	0	$71	110	$1
	G3	100	$70		
	L1	110	71		
	L3	290	$70		
B	G2	0	$74	330	$4
	G4	300	$70		
	L2	330	$74		
	L4	70	$70		
C	G5	200	$70		
	G6	200	$70		
	G7	200	$70		
	G8	200	$70		
	L5	400	$70		
TAB	ETSR1-2				
TBA	ETSR3-4				
TAC	ETSR5-6				
TCA	ETSR7-8	300			
TBC	ETSR9-10				
TCB	ETSR11-12	100			

Zonal GHG Settlement

BAA	Resource	Energy MW	Energy $	Settlement ($)
A	G1	0	$71	$0
	G3	100	$70	($7,000)
	L1	110	71	$7,810
	L3	290	$70	$20,300
B	G2	0	$74	($0)
	G4	300	$70	($21,000)
	L2	330	$74	$24,420
	L4	70	$70	$4,900
C	G5	200	$70	($14,000)
	G6	200	$70	($14,000)
	G7	200	$70	($14,000)
	G8	200	$70	($14,000)
	L5	400	$70	$28,000

BAA	MWs	GHG Zonal Rate	GHG Settlement
GHG T1	110	$1	$110
GHG T2	330	$4	$1,320

BAA	Resource	BAA A	BAA B	BAA C
TAB	ETSR1-2			
TBA	ETSR3-4			
TAC	ETSR5-6			
TCA	ETSR7-8	($21,000)		$21,000
TBC	ETSR9-10			
TCB	ETSR11-12	($7,000)		$7,000

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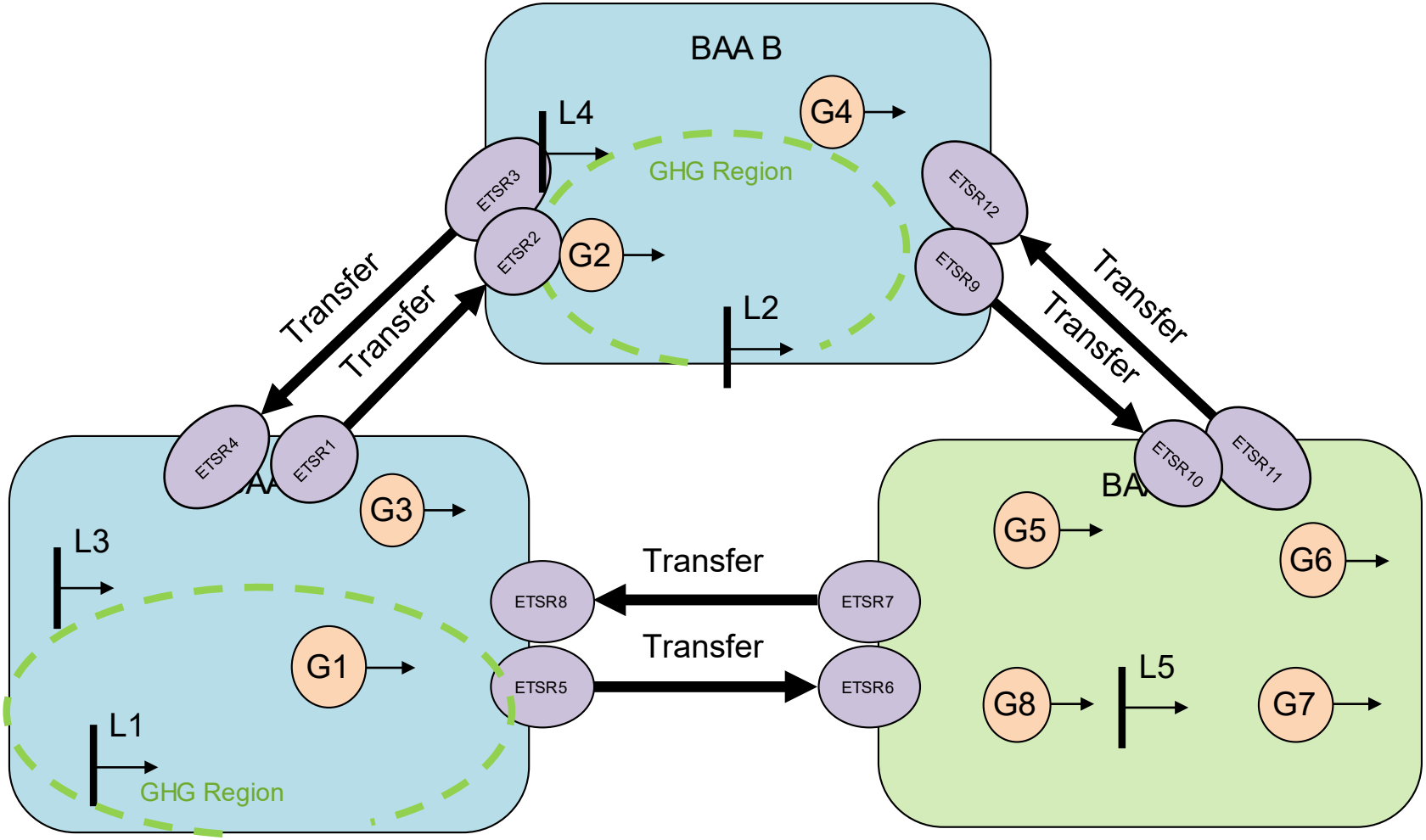
Resource Specific Settlement

California ISO

Resource Specific GHG Settlement



EDAM Input Data

BAA	Resource	Pmax	Energy MW	Energy $	GHG MW Zone 1	GHG Bid Zone 1	GHG MW Zone 2	GHG Bid Zone 2
A	G1	300	300	$90				
	G3	300	300	$70	300	$5	300	$5
	L1	110	110	PT				
	L3	290	290	PT				
B	G2	300	300	$80				
	G4	300	300	$60	300	$4	300	$4
	L2	330	330	PT				
	L4	70	70	PT				
C	G5	200	200	$20	0		0	
	G6	200	200	$30	200	$1	0	
	G7	200	200	$40	200	$2	0	
	G8	200	200	$50	200	$3	200	$3
	L5	400	400	PT				
TAB	ETSR1-2	999						
TBA	ETSR3-4	999						
TAC	ETSR5-6	999						
TCA	ETSR7-8	999						
TBC	ETSR9-10	999						
TCB	ETSR11-12	999						

Integrated Forward Market Solution

BAA	Resource	Energy MW	Energy $	GHG Award Zone 1	MCG Zone 1	GHG Award Zone 2	MCG Zone 2
A	G1	0	$71				
	G3	100	$70				
	L1	110	71				
	L3	290	$70				
B	G2	0	$74				
	G4	300	$70			130	$4
	L2	330	$74				
	L4	70	$70				
C	G5	200	$70				
	G6	200	$70	110	$`1		
	G7	200	$70				
	G8	200	$70			200	$4
	L5	400	$70				
TAB	ETSR1-2						
TBA	ETSR3-4						
TAC	ETSR5-6						
TCA	ETSR7-8	300					
TBC	ETSR9-10						
TCB	ETSR11-12	100					

Resource Specific GHG Settlement

BAA	Resource	Energy MW	Energy $	Settlement ($)	GHG Award Zone 1	MCG Zone 1	GHG Award Zone 2	MCG Zone 2	GHG Payment
A	G1	0	$71	$0					
	G3	100	$70	($7,000)					
	L1	110	71	$7,810					
	L3	290	$70	$20,300					
B	G2	0	$74	($0)					
	G4	300	$70	($21,000)			130	$4	($520)
	L2	330	$74	$24,420					
	L4	70	$70	$4,900					
C	G5	200	$70	($14,000)					
	G6	200	$70	($14,000)	110	$`1			($110)
	G7	200	$70	($14,000)					
	G8	200	$70	($14,000)			200	$4	($800)
	L5	400	$70	$28,000					

BAA	Resource	BAA A	BAA B	BAA C
TAB	ETSR1-2			
TBA	ETSR3-4			
TAC	ETSR5-6			
TCA	ETSR7-8	($21,000)		$21,000
TBC	ETSR9-10			
TCB	ETSR11-12	($7,000)		$7,000

Greenhouse Gas Settlement Overview

Resource Specific Approach	Zonal Approach
Resource with a GHG Obligation will settle at relevant marginal cost of GHG price	GHG Transfer Obligation will settle at relevant GHG hurdle price and allocated to ? • State regulator requirements • GHG Zonal metered demand
EDAM Area Marginal GHG Neutrality allocated to EDAM/WEIM Entity or measured demand	

EDAM

Next steps and closing remarks

Joanne Serina, California ISO

California ISO

EDAM milestones

Q2

- April 28 — EDAM straw proposal published
- May 25 – 26 — EDAM stakeholder meeting (in-person and virtual)
- June 16 — Straw proposal comments due

Q3

- July 11 – 27 — EDAM technical workshops
- August 11 — Publication of revised straw proposal
- August 29-30 — Stakeholder meeting (revised straw)
- September 13 — Stakeholder comments (revised straw)
- Week of Sept. 12 — Publish draft tariff framework

Q4

- October 19 — Publication of draft final proposal
- November 2-3 — Stakeholder meeting (draft final)
- November 3 — Publish draft tariff language
- November 18 — Stakeholder comments (draft final and draft tariff)
- December 7 — Publish final proposal (and separately draft BRS)
- December 14 — Briefing to ISO Board and WEIM GB

2023 FERC filing (Q2), Implementation Activities (Fall 2023)

2024 EDAM Go-Live

- The ISO is pleased to be hosting the Stakeholder Symposium in-person at the Safe Credit Union Convention Center in downtown Sacramento on Nov. 9 – 10, 2022

- Register on the Stakeholder Symposium page at: https://californiaiso.swoogo.com/2022StakeholderSymposium

- Please direct questions to symposiumreg@caiso.com