

WESTERN ENERGY MARKETS

Regional Issues Forum

October 29, 2024

1:00 p.m. – 5:00 p.m. (Pacific Time)



Agenda

1:00 p.m. – 1:10 p.m.	Welcome, Opening Remarks & Announcements
1:10 p.m. – 1:20 p.m.	WEM and CAISO Leadership Remarks
1:20 p.m. – 2:50 p.m.	The CAISO Stakeholder Process: Where We've Been, What We've Learned, and Where We Could Go
2:50 p.m. – 3:00 p.m.	Update from CAISO – 2050 Catalog and Roadmap Process
3:00 p.m. – 3:15 p.m.	Break
3: 15 p.m. – 4:45 p.m.	CRR Reform and Application in Regional Markets
4:45 p.m. – 5:00 p.m.	Closing remarks and wrap up

WEM and CAISO Leadership Remarks

1:10 p.m. – 1:20 p.m.

Robert Kondziolka - WEM Governing Body Chair
Jan Schori – CAISO Board of Governors Chair

The CAISO Stakeholder Process: Where We've Been, What We've Learned, and Where We Could Go

1:20 p.m. – 2:50 p.m.

Lauren Tenney Denison – Consumer Owned Utility Sector Liaison (facilitator)

Anna McKenna – Vice President, Market Design and Analysis, CAISO

Mary Wiencke – Executive Director, Public Generating Pool

Kelsie Gomanie – Advocate, Sustainable FERC Project, NRDC

Tony Braun – Partner, Braun Blaising & Wynne



California ISO

The CAISO Stakeholder Process Enhancements and Evolution over the Past Few Years

Anna McKenna

VP, Market Design and Analysis

Regional Issues Forum

October 29, 2024

What will I cover today?

- Stakeholder process enhancements
- Catalog and roadmap enhancements
- Regional Issues Forum collaboration - focus group and survey

Where we've been

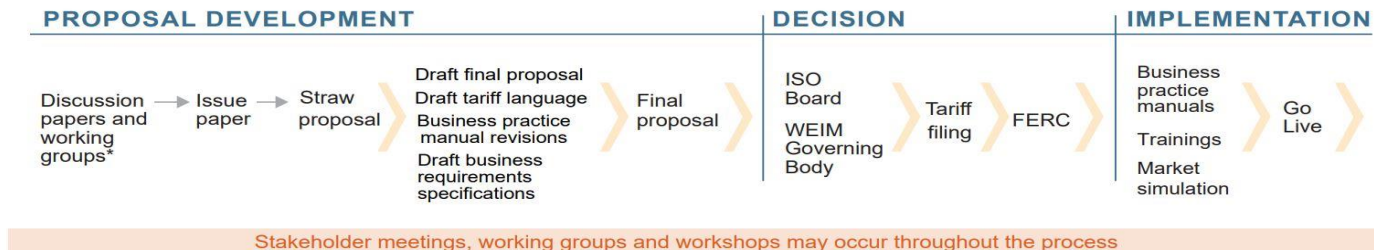
Improved ways for stakeholder's voice to be reflected

- Stakeholder commenting tool
- ISO staff dedicated to Stakeholder Engagement
 - Proactive outreach/consultation to ensure engagement
 - Curation of engagement opportunities (Account Manager weekly message)
 - Improved comment management

ISO Working Groups were piloted in EDAM design

- Resulted in stakeholder led definition of issue, potential solutions, and prioritization leading to proposal development

Policy initiative process



This represents the typical process, and often stages run in parallel.

**Discussion papers and working groups will be incorporated into the process as needed.*

Enhancements

- ☐ Working groups focused on scope, problem statements and analysis
- ☐ Design workshops and working groups
- ☐ Roadmap enhancements

Goals for the Policy Catalog and Roadmap

- **Meaningfully engage external stakeholders**
 - Stakeholders propose and advocate for their own initiatives
 - Final catalog includes stakeholder prioritization
- **Transparent**
 - Clear methods to identify and prioritize proposals
 - Open and transparent access to all stakeholders to influence policy enhancements roadmap
- **Allows stakeholder prioritization to be considered in the CAISO's internal planning processes, together with:**
 - Alignment with ISO strategic goals and already planned work
 - Project impact on market efficiency and system reliability
 - Implementation cost
 - Other ISO commitments
- **Incorporate urgent requests**

Collaboration with Regional Issues Forum on Improvements to Stakeholder process

- RIF direct participation
- CAISO facilitated a focus group in collaboration with the RIF Sector Liaisons
 - Survey was provided to entire body of RIF members
 - Each Sector Liaison (12) received a survey report from their sector
 - Liaisons led separate feedback sessions with their sector members
 - Liaisons represented sector feedback in virtual Focus Group

What did we learn?

Common Themes

- Process has improved compared to past practice, with room to fine tune/improve
- Knowing when to move into solution space (ex. FERC 831 PFECAP)
- Stakeholders express bandwidth challenges needed to support deeper engagement
- Stakeholders recognize ISO expertise in developing solutions
- Proposed solutions from stakeholders are considered equal
- Leveraging independent experts, outside perspectives, and RIF sector check-ins were highly valuable
- Working Group approach successful – leverage more beyond policy initiatives

Opportunities for Improvement

- More education upfront on subject matter
- Factor technological constraints earlier to enable feasible implementation
- Increased RIF engagement throughout Working Group/Policy initiatives
- Utilize informal/indicative voting through comments process

What are we doing about it?

- The focus on problem statements is valued, but desire for quick progression towards development
 - New initiatives are planning towards a streamlined 2-3 working group sessions
- Addressing stakeholder entity bandwidth constraints
 - “At a Glance” initiative document
 - Shorter more frequent meetings being planned
- Ensuring adequate information and collaboration in stakeholder process to continuously move the ball forward
 - GHG “evergreen trainings”
 - PFE timeline of discussion topics and milestones
- Provide greater opportunity for stakeholders to propose solutions
 - PFE and resource adequacy Policy Development Working Groups
- Providing clear definition on transition out of WG
 - Discussion Paper and Stakeholder Recommendations (PFE & RAMPD published, GRM forthcoming)
- Provide opportunities for indicative votes from stakeholders on key initiatives

Stakeholder Engagement Model Perspectives

Western Energy Markets
Regional Issues Forum



October 29, 2024

PGP Perspective on Purpose & Objective

- **Purpose: share our experiences participating in both SPP Markets+ and CAISO stakeholder processes**
 - Share PGP experience and articulate observations from both processes
 - Work to define value proposition associated with ‘participatory’ stakeholder processes
 - Pose questions for discussion and consideration by CAISO staff and stakeholders
 - Make suggestions based on PGP experience and observations for concepts to explore
- **Objective: increase ‘buy-in’ in the process, enhance collaboration, and encourage compromise among stakeholders with diverse interests to add confidence that rules and policy decisions are equitable and balanced**
 - We think this means consideration of models that enable stakeholder participation in issue development and resolution beyond an opportunity, or additional opportunities, to be heard

Overview

➤ CAISO stakeholder processes

- CAISO staff propose changes, receive feedback, and modify proposals based on feedback
- No formal member or stakeholder committees (exception: Governance Review Committee)
- CAISO Board of Governors / WEIM Governing Body approve proposals
- Includes Market Surveillance Committee & WEIM Independent Expert

➤ Markets+ stakeholder processes

- Executive Committee and working group/task force structure with participant voting rights
- Proposals developed in working group structure and must be approved through structure and by executive committee to advance
- Markets+ Independent Panel approves proposals

Objectives for an Updates to CAISO Process

- **Create more ‘buy-in’ in the process and outcomes by a greater diversity of stakeholders**
 - Recognize that some stakeholders support the current approach as efficient, agile and principled
 - Recognize some stakeholders argue the current approach is not representative and/or encourages ‘behind the scenes’ discussions and issue development
 - Can we enhance formal representation and participatory decision-making processes without compromising efficiency and consideration of principles/best practices?
- **Enable greater collaboration and encourage compromise among stakeholders**
 - Recognize value in decisions and outcomes that balance diverse interests through compromise and garner support from as many participants and stakeholders as possible
 - Recognize value in solutions that a diverse set of interests can support
 - Recognize that minority views must be considered and sometimes adopted based on principle
 - Can we create more formal ways for stakeholders to engage directly with one another and for minority views to be more clearly identified and addressed?

Process Concepts to Consider

➤ **Build on success of Governance Review Committee working group type model**

- Formalize commitments and roles of individuals participating in process, including CAISO staff
- Solicitation of volunteers without firm commitments and defined roles may not be sufficient to ensure constructive engagement and diversity of representation/expertise
- Recognize value of small working group and balance with transparency concerns
- Keep topical stakeholder initiatives and identify topics where more formal working group may be constructive, recognizing it may take more time and resources
- During transition to new process, consider additional use of third-party facilitation

➤ **Incorporate voting to determine individual stakeholder positions**

- Establish who will vote and effect of vote up front – once committed, voting is a requirement (may abstain)
- Solicitation of a position from whoever decides to weigh in is likely too informal
- Can help to move on from issues being raised multiple times
- More formal voting and impact of vote may drive greater participation/engagement/compromise but also could hinder decision-making or make process too resource-intensive and bureaucratic
- Start with less formal and informational voting structures and evaluate and increase formality if needed

Process Concepts to Consider, con't

➤ **Develop 'parking lot' and 'action item' process to document issues**

- Build on success of Regional Issues Forum to establish sectors and input to policy roadmap
- Enables ongoing prioritization, workload, and timeline management for stakeholders and staff
- Document issues that cannot be immediately addressed but may be revisited in future
- May encompass requests for analysis
- Could feed into discretionary roadmap process – to close issues or address them within a defined timeframe

➤ **Additional explanations and clarity regarding guiding principles and objectives guiding decision-making**

- As much as possible, articulate principles, objectives, and competing interests in language that is easy to understand
- May enable stakeholders to engage more effectively without sophisticated market expertise

RIF Stakeholder Process Panel: PIO Perspectives on Engagement Processes



Kelsie Gomanie, NRDC
October 29, 2024

About NRDC and Sustainable FERC



NRDC works to safeguard the earth—its people, its plants and animals, and the natural systems on which all life depends.

We combine the power of more than 3 million members and online activists with the expertise of some 700 scientists, lawyers, and policy advocates across the globe to ensure the rights of all people to the air, the water, and the wild.

nrdc.org



The Sustainable FERC Project is a partnership of state, regional and national environmental and other public interest organizations working to expand the deployment of clean energy resources into America's electricity transmission grid and to reduce and eventually eliminate carbon pollution from the U.S. power sector.

sustainableferc.org

Key Principles

Key Principles guiding PIO comments today

1. Transparency
2. Healthy Balance of Interests / Equitable Participation
 - Includes balancing sector interests *as well as balancing staff and stakeholder interests*
3. Broad Participation
 - Not only support broad participation, *also encourage it*
 - Especially important for stakeholders with less resources

*For a more extensive understanding of governance principles supported by PIOs, WRA has developed *Good Governance Principles for Organized Wholesale Energy Markets: PIO Perspective* (available upon request).

Best Practices in Current RIF Stakeholder Process

Flat and more equitable structure with no participation hurdles

- No participation fees or contractual relationship required
- Less of a hierarchy of committees and working groups; more open, welcoming to all and easier to engage in all aspects of stakeholder participation (e.g., participating in sectors, voting if there is voting, etc.)
- Retaining general public meetings (which provides a public comment period with the opportunity to provide written comments at key stages), in addition to the sector stakeholder process

Best Practices in Current RIF Stakeholder Process

Combination of elements that support and encourage broad participation, especially important for entities with less resources, like PIOs*:

- Sufficient staff support:
 - Especially important with transition to more stakeholder guidance
- Options for alternates and proxies provided
- *Accessible* Information
 - Topically organized, easy to find important documents, and easy to identify the progress of initiatives and participation opportunities
 - Especially important for stakeholders who have a focus on specific issues, are unable attend all meetings or are newly engaged
 - CAISO's initiative-specific pages are excellent

*In addition to flat structure

Improvements

Would like to see:

- Additional Opportunities for stakeholder guidance in initiative development
- More light shed on minority positions

We support:

- The current evolution into *Working Groups* and *Liaison Roundtable*
 - ❖ Evolving so stakeholder culture can adapt
 - ❖ Prudently applied: working groups for complex or critical issues
- *Indicative Voting*

Improvements

***Indicative Voting* provides additional transparency and can flesh out minority positions**

- Votes captured and publicly reported by each individual entity
- Organize and publish votes in different ways (e.g., geography, sectors, etc.)
- Provides important information to staff, decision-makers and other stakeholders
- Sheds light on minority positions (public and documented)
- Allow independent Board to ultimately balance interests.

Do not support weighted voting

- Strategic coalition or block voting
- Constantly reevaluate to reflect changes in market participants and other stakeholders
- Favor independent Board balancing interests

Thank you

Contact: kgomanie@nrdc.org

Update from the CAISO – 2025 Catalog and Roadmap Process

2:50 p.m. – 3:00 p.m.

Amelia Blanke – Principal Economist and Director of Market
Strategy and Governance, CAISO



California ISO

Update on Policy Initiatives Catalog & Roadmap

Amelia Blanke

Principal Economist & Director, Market Strategy and Governance

Alyssa Krag-Arnold

Senior Policy Integration & Governance Specialist

October 29, 2024

Regional Issues Forum meeting

2024 Policy Roadmap Update

- Draft 2024 Policy Roadmap published – coming soon
 - 2025 policy initiatives work plan
 - Disposition of all 2024 submissions will be included in Final Roadmap
- New policy initiatives planned to begin in 2025:
 1. Energy Storage Enhancements
 2. Congestion Revenue Rights
 3. Demand Response, Distributed Energy Resources, Biddable Demand
- Feedback on 2024 process or suggestions for process improvements?
 - Reach out to the ISO or your sector liaison

2025 Policy Catalog & Roadmap

January	• Level-setting stakeholder workshop
February	• Stakeholders submit policy initiatives to Catalog
March-April	• Stakeholders prioritization workshops
May	• Stakeholders submit prioritization rankings
June	• ISO releases Policy Initiatives Catalog
July	• ISO begins Policy Initiatives Roadmap development
 November	• ISO releases Draft Policy Initiatives Roadmap
December	• ISO presents Final Policy Initiatives Roadmap to Board of Governors/WEM Governing Body

WESTERN ENERGY MARKETS

Regional Issues Forum

Break

3:00 p.m. – 3:15 p.m. (Pacific Time)



CRR Reform and Application in Regional Markets

3:15 p.m. – 4:45 p.m.

Scott Olson – IPP/Marketer Sector liaison (facilitator)

Rahul Kalaskar – IPP/Marketer Sector liaison (facilitator)

Kallie Wells, Senior Consultant, Gridwell Consulting

Kelsey Martinez, Director, Markets and Transmission, Public Service Company of New Mexico

Pam Spborg, Director, Transmission and Market Services, Portland General Electric

Dan Williams, Principal Advisor, Western Markets, The Energy Authority



California ISO

WESTERN ENERGY MARKETS

Regional Issues Forum

Congestion Revenue Rights (CRRs): Current Issues and Potential Reform

Kallie Wells
Gridwell Consulting
Western Power Trading Forum

About Gridwell Consulting

- Analysis and advocacy consulting firm located in Sacramento, California – www.gridwell.com
- Educate, model, advise, and advocate
- Legislative support and advocacy
- California regulatory agency support and advocacy
- Seminars on CAISO market, resource adequacy, interconnection, and hydrogen development
- Interconnection evaluation and contract negotiation services

About WPTF

The Western Power Trading Forum (WPTF) is a broad-based industry organization of companies that do business and advocate for transparent and competitive market rules throughout the Western Interconnection.

Outline

- Overview of CRRs and Recent Changes
- CRR Issues Raised by Stakeholders
- New CAISO CRR Initiative
- Final Thoughts

Overview of Congestion Revenue Rights (CRRs)

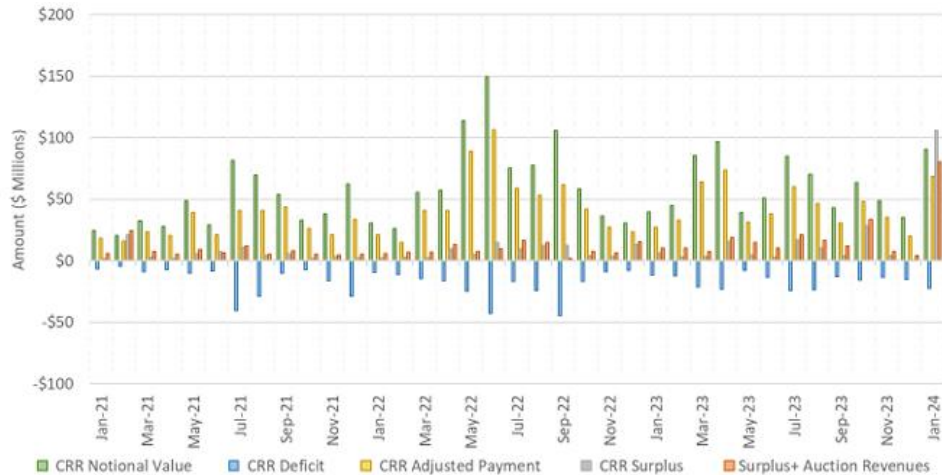
- Congestion occurs on the system when there is not enough transmission capacity to serve load with least cost resources and creates price separation between pricing locations
 - CRRs are a financial instrument offered to hedge the price differences
- Settled based on the difference of congestion between the source and sink pair in the day-ahead market
- CRRs play a fundamental role in organized wholesale energy markets
 - Serve as a congestion hedging tool for load/supply and could be considered the equivalent of firm transmission in an LMP system
 - In 2017 CAISO issued [report](#) on CRR Market Performance, highlighting two main areas of concern related to revenue adequacy and auction efficiency

Recap of CAISO CRR Reforms

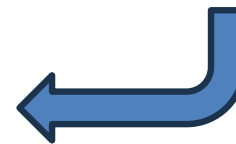
- CAISO implemented several changes to the CRR market to address revenue adequacy and auction efficiency concerns
 - Expectation that transmission outages and/or network topology changes between CRR and day-ahead market drive underfunding of CRRs
- 2019 changes included:
 - Process improvements to better align topology in CRR model and day-ahead market
 - Restricted the eligible source sink pairs to “delivery paths”
 - Pro-rata funding that allocates underfunding on a constraint-by-constraint basis
- 2023 reduced the shift factor threshold cut-off at Load Aggregation Points (DLAPs) and Trading Hubs (THs)

CAISO Routinely Reports on CRR Performance Metrics

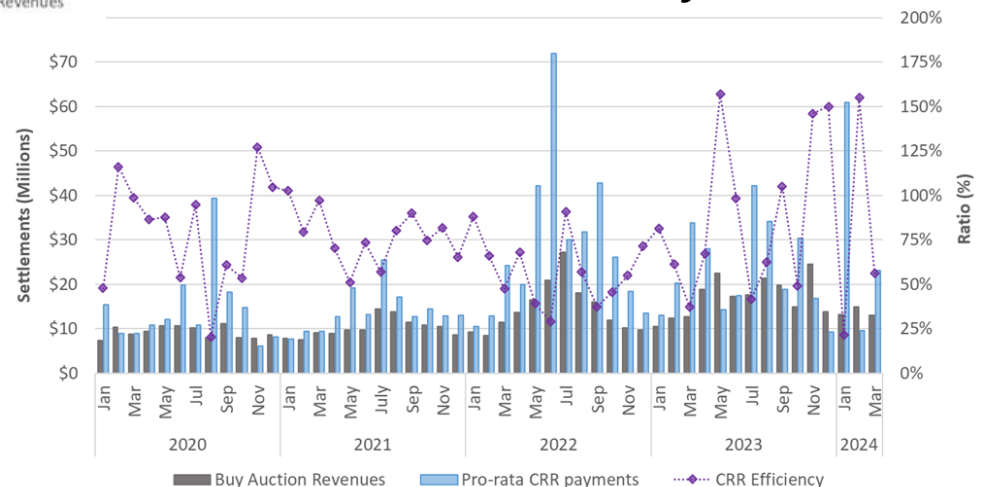
Revenue Adequacy



- Difference in green and yellow bars shows underfunding allocated to CRR holders
- Pro-rata funding creates surplus revenue allocated to load (orange bar)



Auction Efficiency



- Auction efficiency improving, but varies based on congestion
- Purple dot is the ratio of auction revenues received by load (gray bars) to CRR payouts (blue bars)

Key Observations of CRR Market Performance Post-2019 and 2023 Changes

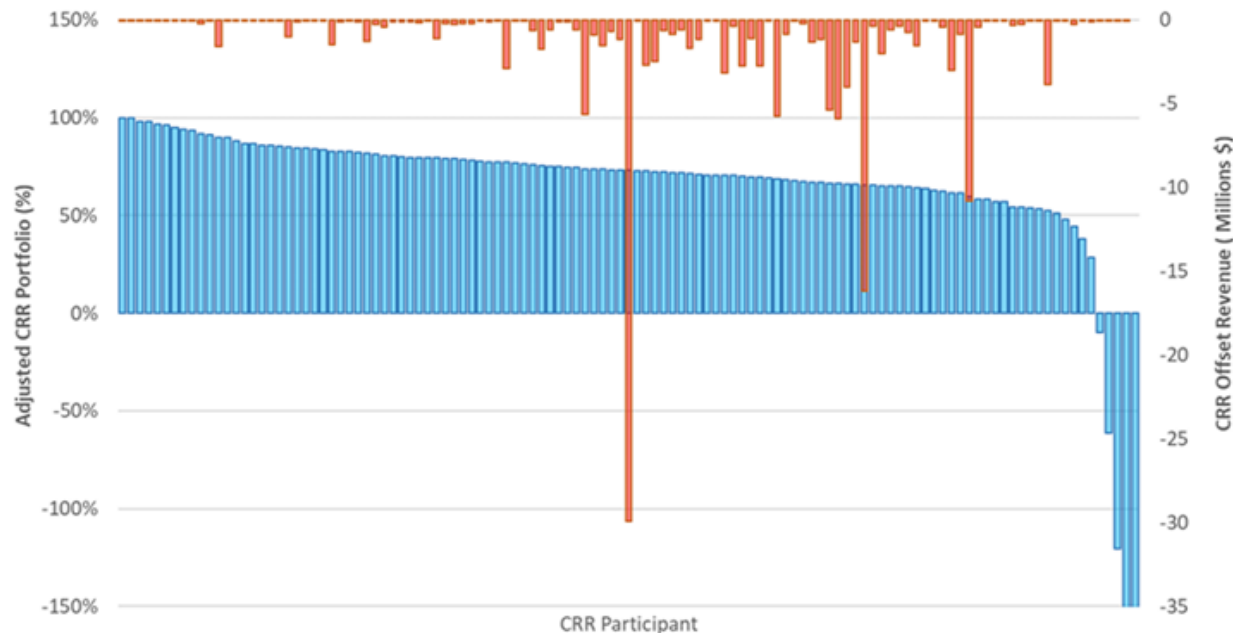
- Allocation of CRR underfunding can cause CRRs to be a liability rather than a hedge, increasing volatility and risk
- CRR revenue adequacy is improving but still seeing significant underfunding (~40% Jan – Aug 2024)
 - Does not seem to be related to just transmission differences between the CRR model and day-ahead market
 - Are there external entities using the transmission and not having to pay congestion, loop flows, etc?
- CRR auction efficiency is improving (from 49% to 65%) but still varies depending on level of congestion
 - Significant decrease in volume of CRRs procured through the auction
 - Are auction bids and/or participation lower due to higher risk or are there other drivers limiting participation?

Overview of Issues Raised by Stakeholders in CAISO's 2024 Policy Roadmap Process

- Ensuring CRRs can continue to be used as an effective hedging mechanism
 - CRRs have become riskier to hold and more volatile
 - CRR products do not align with demand curve, diminishing the value of on-peak CRRs and potentially contributing to auction inefficiency
 - Consider changes in the allocation process to improve ability for LSEs to acquire CRRs needed for hedging
- CAISO's current CRR auction creates a loss for ratepayers as they are forced to sell CRRs for “pennies on the dollar”

CRRs are Riskier to Hold and can be a Liability

- Allocation of underfunding on a constraint-by-constraint basis has increased the risk and volatility of CRRs
 - Notional value is positive but after underfunding allocation, value is negative
 - May also be negatively impacting auction participation and efficiency



Potential Ways to Address Increased Risk

- Should reform be considered regarding constraint-based allocation to help preserve function of CRRs and ensure allocation is still aligned with cost causation?
 - Only allocate underfunding on a constraint basis that can be attributed to transmission topology differences between day-ahead and CRR model
 - Cap the underfunding to prevent a CRR from becoming a liability
 - Allow overfunding to help offset underfunding more broadly
- Are external entities using transmission and not having to pay for congestion?
 - Should there be a way to collect congestion from those entities?

CRR Product Definitions do not Reflect Net Demand Curve

- With renewable integration, demand curve now has two peaks
- Challenging to value CRRs as a hedge when congestion patterns fluctuate within CRR defined peak hours (HE7 – HE22)
 - Potentially contributing to auction inefficiency as the fluctuation in value may be reflected in auction prices
 - May also make it challenging to use as a hedge if operational need does not align with peak hour definition
- Consider creating a super-peak CRR to improve stability and value of CRRs
 - HE 7- HE16 and HE 21-22 (Peak)
 - HE17- HE20 (Super-peak)

Improve Ability for LSEs to Acquire Needed CRRs

- During allocation process an LSE may receive counter-flow CRRs when they request direct flow CRRs sourced at Trading Hubs
 - Methodology was implemented to maximize the amount of Direct Flow CRRs allocated
 - Can contribute to revenue imbalance and thus should explore ways to revise the counter-flow methodology used in the allocation process
- Global Derate Factor (GDF) reduces the amount of capacity available for monthly allocation process (currently 17.5%)
 - Restricts ability for LSEs to be allocated sufficient CRRs
 - Consider eliminating the GDF in the monthly allocation process
 - Would result in monthly auction having a different GDF than allocation process

Replace CRR Auction Design with Market Between Willing Buyers and Sellers

- Perspective that congestion rent belongs to ratepayers and current auction forces LSEs to sell CRRs at \$0/MW
 - Auction inefficiencies mean that LSEs are selling the rights to the CRRs for a discount, resulting in a loss to ratepayers
- Only have CRRs traded in auction if (1) LSEs offer to sell and (2) Non-LSE willing to pay price requested by LSE
- Does it fundamentally change the role of CRRs and will it prevent load and suppliers from being able to effectively hedge congestion risk?
 - Discussions raised some liquidity concerns and price discovery issues

CAISO CRR Initiative to Launch November 2024

- CRR initiative will start with Working Groups to discuss issues raised in the Policy Roadmap Process and others brought forth by stakeholders
 - When issues have been determined ready, they will move to policy development phase
 - Can also serve as an opportunity to initiate discussions around how CRRs could benefit non-CAISO EDAM BAAs
- Working Group phase will also include analysis of CRR Market Performance post-2019 changes
 - Focusing on drivers of continued underfunding
 - Evaluation of auction revenues and participation
- First meeting scheduled for Nov 14, 2024

Final Thoughts

- CAISO has provided a pathway to continue these discussions
- CRRs are a fundamental element of a nodal market and can be an effective hedging tool for all market participants
 - Can also serve as a consistent congestion cost allocation mechanism
- Ensuring a useful product now is even more important as we look towards a broader footprint and have more entities needing the ability to hedge within and between EDAM-BAAs and other market seams
- LSEs outside of CAISO BAA may see CRRs as more useful because they are not limited on participation, which can naturally improve market efficiencies
- New initiative can provide an opportunity for EDAM entities to start thinking through potential framework of a CRR like product



California ISO

WESTERN ENERGY MARKETS

Regional Issues Forum

Congestion Revenue Rights (CRRs): Current Issues and Potential Reform

Kelsey Martinez

Director of Regional Markets and Transmission Strategy

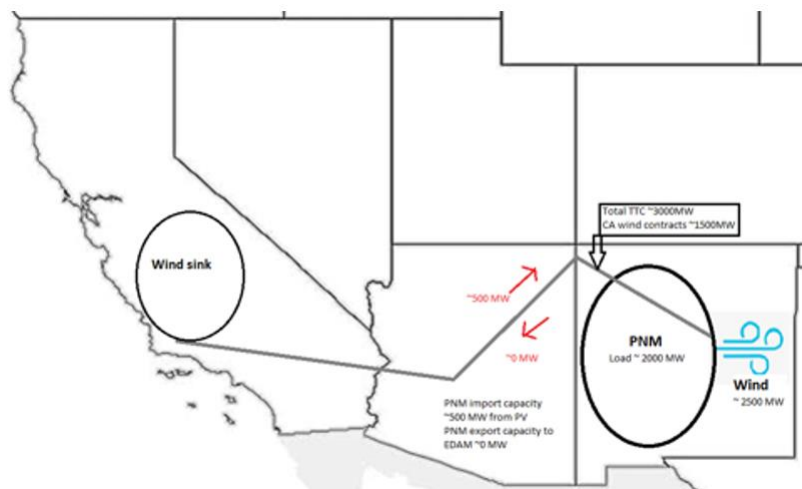
Public Service Company of New Mexico

Outline

- About PNM
- Congestion management with WEIM tools
- Congestion and seams in Day Ahead Markets
- Final Thoughts

About PNM

- Largest energy provider in NM
- More than 550,000 customers
- WEIM Participants since 2021
- ~2000 MW Retail Load
- Vertically integrated
- 65% carbon free today - 75% carbon free by 2026
- More wind exports than load



Congestion Management with WEIM tools

- Frequent congestion arises on NM transmission system
 - Some resources in NM participate in CAISO's DAM
 - Large amount of congestion is seen in real-time because exports are VRS
 - PNM's ETSR capacity must be dynamic because of large amount of VRS
- PNM historically managed congestion with manual curtailment of resources
 - Phone calls, AGC setting changes, OASIS
 - “static”, inefficient, difficult to manage
 - Issues with contracts

Congestion Management with WEIM tools (cont)

- Using WEIM tools, PNM has changed the way congestion is managed
 - Activate specific “flowgates” in BAAOP
 - Allows consideration of very specific equipment ratings
 - “Congestion conformance” allows further refinement
- The effect of WEIM tool usage on congestion settlements must be transparent and easy to access
- More understanding/education on the interaction of congestion between DAM and WEIM is needed

Curtailment management with market footprint seams

- Management of congestion with market tools will be complicated with the introduction of market seams
 - Will flowgate activation in one market trigger appropriate dispatch signals in other market?
 - Will exports wheeling through one market conflict with local dispatch signals from another?
 - Market dispatches are already naturally “behind” the VER changes contributing to congestion---this will only get worse with seams
- Need to prioritize “Market to Market” seam coordination quickly
- West should also expand the unscheduled flow curtailment efforts to look more like the Eastern interconnection
 - Reliability effort

Final Thoughts

- PNM operations has unique experience as large VER exporter with small load and sparse transmission system
 - May be preview of future challenges for other western market participants
- The use of WEIM tools has improved the efficiency and management of curtailments in NM
- More understanding of the effects of congestion between day-ahead markets and real-time markets is needed
- If seams are introduced into current CAISO market footprints, congestion will become more difficult to manage without operating agreements/market design changes
- What tools/products/operational agreements will help?



California ISO

WESTERN ENERGY MARKETS

Regional Issues Forum

Congestion Revenue Allocation in EDAM

Pam Sporborg
Director, Transmission & Markets
Portland General Electric

About Portland General Electric

Quick facts

- PGE serves approximately 930,000 customers in 51 incorporated cities across Oregon.
- We have approximately 2,840 employees.
- Continued position as #1 ranked renewable power program in the U.S. for 14 years according to the National Renewable Energy Laboratory (2023).⁽¹⁾
- PGE was recognized in 2023 by the Bloomberg Gender-Equality Index for the company's commitment to creating a more equal, inclusive workplace.
- In 2023, PGE employees, retirees and the PGE Foundation donated nearly \$4.6 million and volunteered over 23,000 volunteer hours to more than 400 nonprofit organizations.

Leading the way to a clean energy future for Oregon

- Our goals align with the state's 100% clean energy by 2040 framework. The targets to reduce baseline greenhouse gas emissions from power served to Oregon retail customers are:
 - 80% reduction in greenhouse gas emissions by 2030
 - 90% reduction in greenhouse gas emissions by 2035
 - 100% reduction in greenhouse gas emissions by 2040

3,500+ MWs of Generation



WEIM Benefits far exceed initial estimation

Table 8. Annual Benefits to PGE by Scenario, CAISO EIM (2015\$ million)

Scenario	Dispatch cost savings to PGE	Additional Cost savings from Flex Reserve Pooling	Total savings including dispatch and reserves
Base	\$2.7	\$0.8	\$3.5
Sensitivity Scenarios			
High Gas Price	\$5.8		
PAC Transmission Update	\$3.0		
High RPS	\$6.1		

Portland General Electric System Cost by Case (\$ Millions)

Market Membership	Metric	BAU	WEIM Transition	Bookend EDAM	EDAM Split
		EIM Only	EDAM	EDAM	EDAM
Adjusted Production Cost	Cost	\$332.3	\$327.0	\$328.7	\$340.0
Wheeling Revenues	Revenue	\$1.7	\$0.1	\$0.0	\$0.1
Trading Revenues:					
Bilateral	Revenue	\$2.41	\$5.33	\$0.79	\$4.49
WEIM	Revenue	\$15.71	\$8.57	\$11.31	\$5.41
Mkt+ RT/WEIS	Revenue	-	-	-	-
EDAM	Revenue	-	\$11.06	\$21.66	\$23.55
Markets	Revenue	-	-	-	-
Total System Cost		\$312.5	\$301.9	\$295.0	\$306.4
Benefit to BAU			\$10.6	\$17.5	\$6.1

Q3 2024 Gross Benefits by Participant (entry year)

	(\$ millions)
Arizona Public Service (2016)	\$14.68
AVANGRID (2023)	\$10.02
Avista (2022)	\$3.16
Balancing Authority of Northern California (2019)	\$48.78
Bonneville Power Administration (2022)	\$8.90
California ISO (2014)	\$10.65
El Paso Electric (2023)	\$5.48
Idaho Power Company (2018)	\$7.89
Los Angeles Dept. of Water & Power (2021)	\$29.25
NV Energy (2015)	\$67.57
NorthWestern Energy (2021)	\$18.51
PacificCorp (2014)	\$44.66
Portland General Electric (2017)	\$10.14
Public Service Company New Mexico (2021)	\$14.97
Puget Sound Energy (2016)	\$15.14
Powerex (2018)	\$5.97
Seattle City Light (2020)	\$16.32
Salt River Project (2020)	\$13.25
Tacoma Power (2022)	\$10.33
Tucson Electric Power (2022)	\$9.46
Turlock Irrigation District (2021)	\$1.93
WAPA Desert Southwest Region (2023)	\$27.82
Total	\$394.88

*A
M
C

EDAM Congestion Revenue Forecasting

FIGURE 1: EDAM BENEFIT METRICS (\$MILLIONS)

Benefit Metric	Study Participants	CAISO	Total EDAM
EDAM Benefits			
Adjusted Production Cost Savings	\$99	\$36	\$134
EDAM Congestion Revenues	\$186	\$83	\$269
EDAM Transfer Revenues	\$324	\$85	\$409
Total EDAM Benefits	\$609	\$204	\$813
Other EDAM Related Impacts			
Impact on Wheeling Revenues [1]	\$14	-\$117	-\$103
Impact on WEIM Congestion Revenues	-\$31	\$15	-\$16
Reduced Bilateral Trading Profits [2]	-\$207	-\$49	-\$256
Net EDAM Benefits	\$385	\$53	\$438

Electricity must be brought to Portland

Majority is generated outside of PGE territory

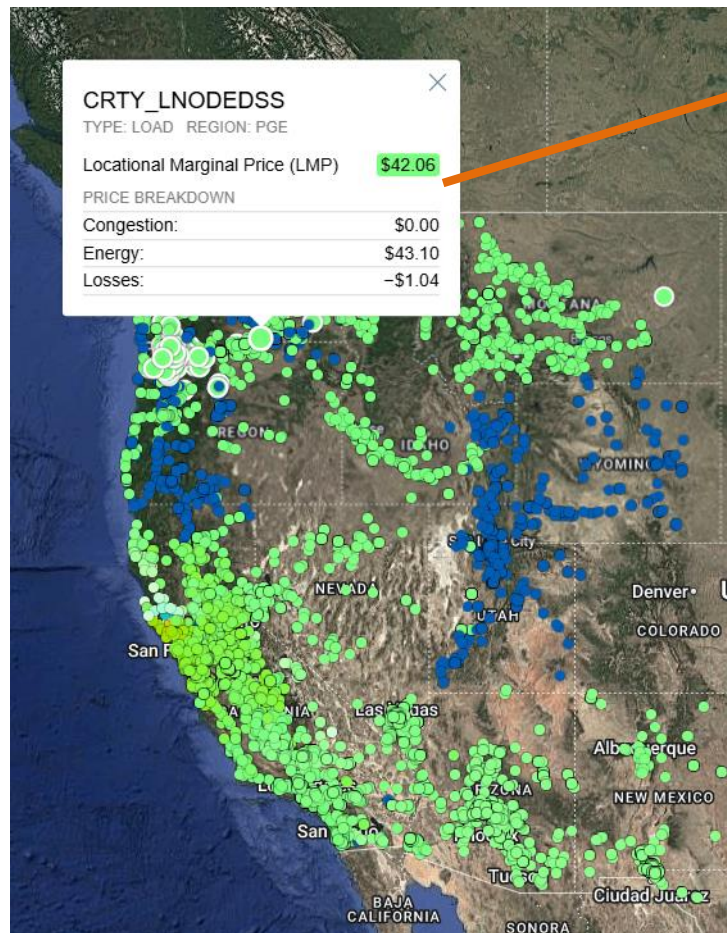
“South of Allston” path from the North is constrained.

“North of Pearl” path into Portland is constrained

- ➔ Path of Energy
- ⦿ Generation from the North
- ⦿ Generation from the East
- ⦿ Generation from the South
- ⚠ Area of Constraint



Overview of Congestion Settlement in the WEIM



Generation:

64600	FMM Instructed Imbalance Energy EIM Settlement
64700	Real Time Instructed Imbalance Energy EIM Settlement
64750	Real Time Uninstructed Imbalance Energy EIM Settlement

Load:

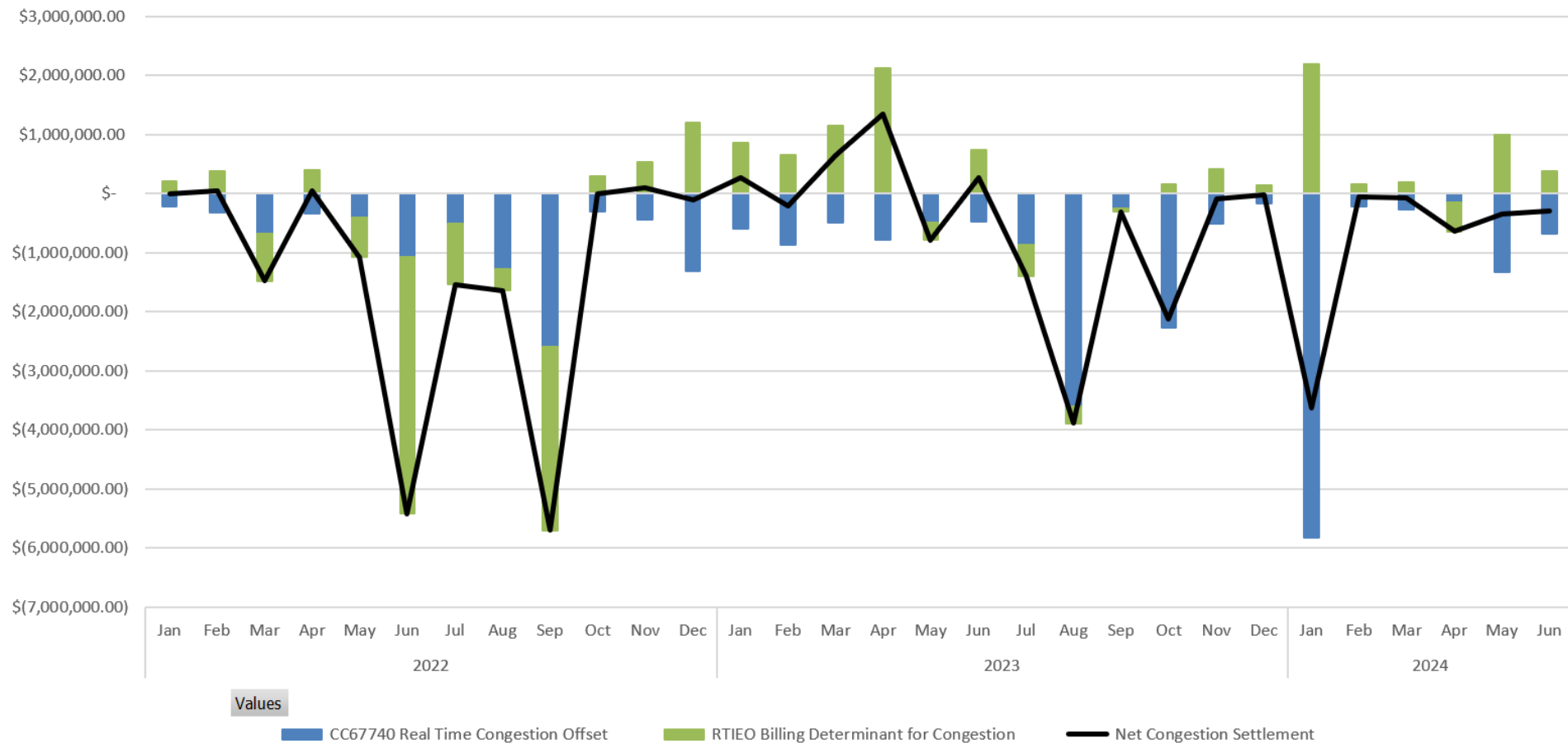
64600	FMM Instructed Imbalance Energy EIM Settlement
64700	Real Time Instructed Imbalance Energy EIM Settlement
64750	Real Time Uninstructed Imbalance Energy EIM Settlement
67740	Real Time Congestion Offset EIM
64770	Real Time Imbalance Energy Offset EIM (RTIEO)

Settlement of Congestion Revenue in WEIM

- Total MCC Price
 - Positive Net Total MCC price:
 - Supply – Paying the supply additional net congestion
 - Demand – Charging the demand additional net congestion
 - Negative Net Total MCC price
 - Supply – Charging the supply additional net congestion
 - Demand – Paying the demand additional net congestion
- MCC Breakdown Price
 - Supply
 - Positive – Paying the supply for relieving congestion in the specific BAA
 - Negative – Charging the supply for contributing to the congestion in the specific BAA
 - Demand
 - Charging or paying the demand for additional MW consumed to cause/relieve congestion.

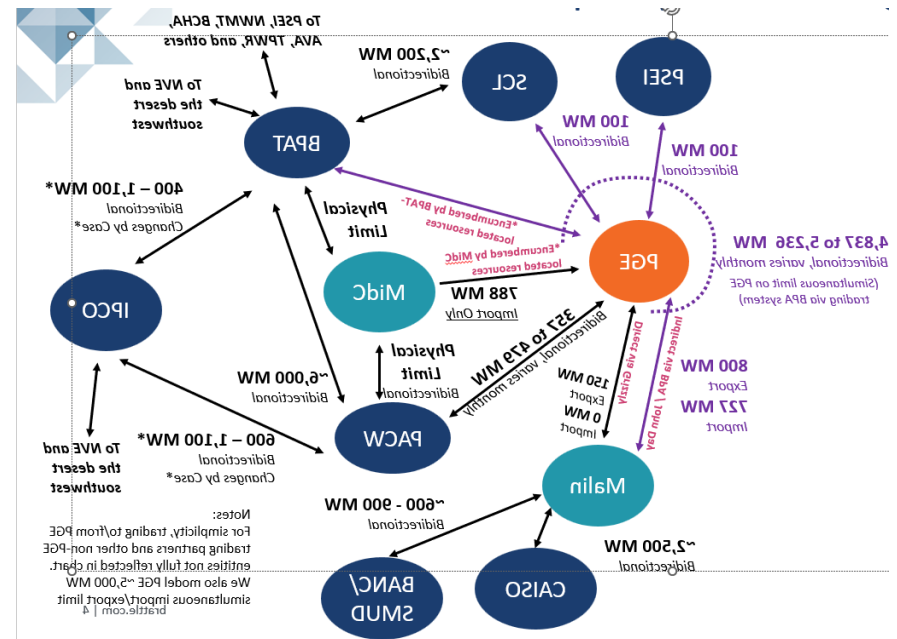
Net Congestion Settlement in EIM

Net Congestion Settlement



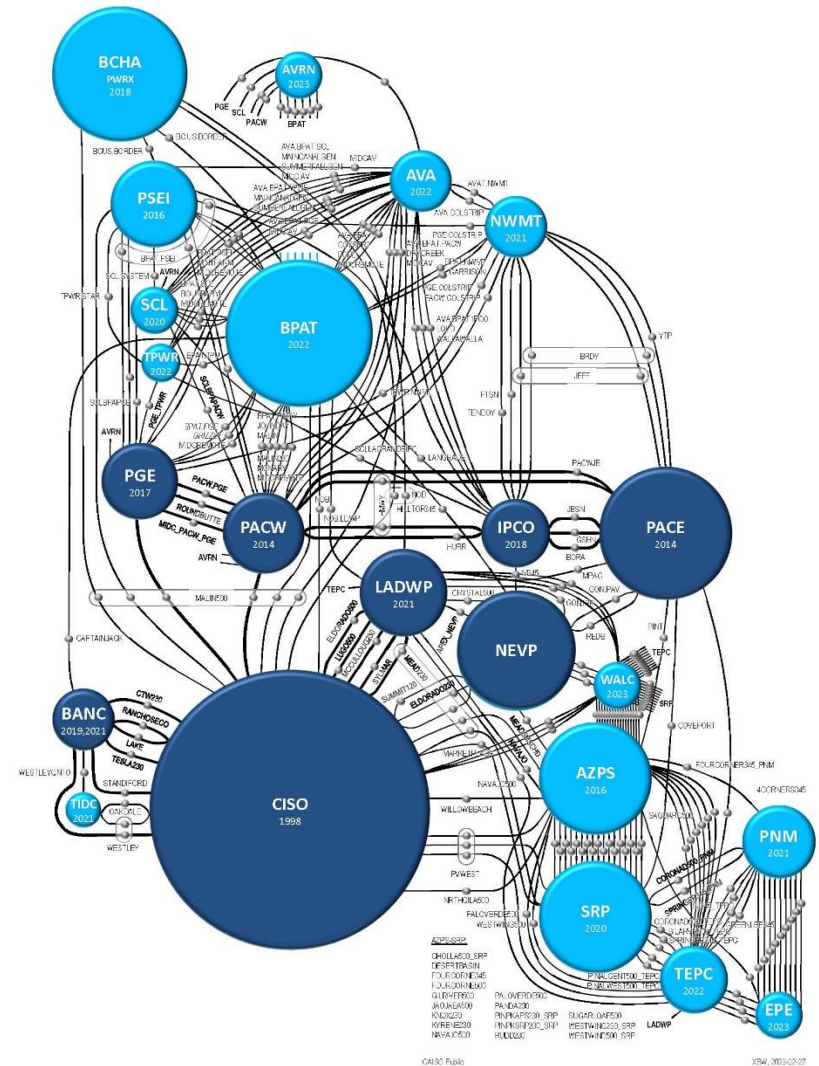
EDAM Congestion Allocation

- EIM Entity BAA Real-Time Congestion Offset:
- Any charges to the PGE EIM Entity pursuant to Section 29.11(e)(2) of the MO Tariff for the EIM real-time congestion offset shall be allocated to Transmission Customers on the basis of Measured Demand.
 - Measured Demand is Network Load plus e-Tagged export volumes from the PGE BAA (excluding EDAM Transfers or EIM Transfers).



Requirements for Transmission Service

- FERC Order 888:
- *We find that the recovery of redispatch cost requires that:*
 - *(1) a formal redispatch protocol must be developed and made available to all customers; and*
 - *(2) all information necessary to calculate redispatch costs should be made available to the customer for audit.*



Concluding Thoughts

- Measured demand allocation of congestion revenue balances Network and Point to Point customer compensation
- Key market design feature for market start up while congestion revenue sufficiency is unknown.
- Lack of available firm transmission means no opportunity to acquire additional hedge.
- Allocation to firm and conditional firm risks over allocation to PTP

BPA AVAILABLE TRANSFER CAPABILITY

BPA's current available transfer capability is fully subscribed in key paths for PGE: South of Allston, Cross Cascades South, and Raver-Paul.

In their September 20, 2022 TSEP update, BPA noted increased resource diversity and an increasing need to rely on conditional firm service.

PATH NAME	TTC MW	LONG-TERM FIRM AVAILABLE TRANSFER CAPABILITY (ATC)									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
South of Allston N>S	2115	1787	223	212	200	193	185	178	170	162	154
Cross Cascades North E>W	10250	224	219	271	352	436	519	601	683	764	844
West of Lomo E>W	4200	648	304	306	306	302	305	307	309	182	184
Cross Cascades South E>W	7500	418	189	142	122	103	89	76	50	37	24
North of Hanford N>S	4450	3594	912	935	1038	1057	1075	1098	1119	1138	1156
Raver-Paul N>S	1450	602	49	47	44	36	33	30	27	24	20
West of McNary E>W	5230	1837	1790	1798	1809	1824	1817	1806	1765	1754	1743
West of Slatt E>W	4670	1615	990	1006	1008	1008	994	982	970	941	929
West of John Day E>W	4530	454	241	135	121	96	73	50	11	0	0
South of Custer N>S	900	908	0	0	0	0	0	0	0	0	0
West of Hatwai E>W	3650	2092	84	93	101	109	117	125	133	0	0
North of Echo Lake S>N	2800	0	0	0	0	6	45	85	125	165	204
PATH NAME	TTC MW	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Intertie N>S	2150	65	65	65	65	65	65	65	65	65	65
Northern Intertie S>N	1120	0	0	0	0	0	0	0	0	0	0
Montana Intertie E>W	1930	112	112	112	144	144	144	144	144	144	144
John Day Wind Gen	1255	224	224	224	174	174	174	174	174	174	174
Rock Creek Wind Gen	1200	301	301	301	301	301	302	302	302	302	389
West of Garrison E>W	1618	0	0	0	0	0	0	0	0	0	0
West of Garrison W>E	931	120	279	278	276	275	275	275	275	275	275

Pending queue per BPA data accessed 8/25/2022

IRP Roundtable 9/28/2022



BPA ATC MINUS PENDING QUEUE

When pending queue is considered against available ATC, the transmission capacity deficit across the BPA system is evident.

PATH NAME	TTC MW	LONG-TERM FIRM AVAILABLE TRANSFER CAPABILITY (ATC) LESS PENDING QUEUE									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
South of Allston N>S	2115	-1162	-379	-576	-986	-1250	-1456	-1572	-1668	-1880	-1993
Cross Cascades North E>W	10250	-2419	-2146	-4060	-5025	-5711	-5899	-6463	-6523	-6501	-6501
West of Lomo E>W	4200	445	-96	-94	-323	-519	-516	-514	-512	-639	-637
Cross Cascades South E>W	7500	-1220	-2266	-3946	-5270	-5884	-6813	-7823	-7885	-8133	-8133
North of Harford N>S	4450	-194	548	587	219	215	233	256	277	296	314
Raver-Paul N>S	1450	48	-166	-268	-557	-700	-753	-825	-931	-986	-1074
West of McNary E>W	5230	985	547	-382	-1532	-1739	-1980	-1991	-2032	-2043	-2043
West of Slatt E>W	4670	663	523	176	-505	-932	-1055	-1067	-1079	-1108	-1120
West of John Day E>W	4530	-231	-858	-1592	-2523	-3157	-3612	-4375	-4456	-4787	-4787
South of Custer N>S	900	-1728	-1057	-1058	-970	-972	-973	-974	-975	-976	-977
West of Hatwai E>W	3650	-265	-416	-420	-1022	-1026	-1018	-1010	-1002	-1238	-1230
North of Echo Lake S>N	2800	-500	-58	-621	-912	-1154	-1114	-1114	-1074	-1034	-995
PATH NAME	TTC MW	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Northern Intertie N>S	2150	65	-385	-385	-385	-385	-385	-385	-385	-385	-385
Northern Intertie S>N	1120	0	-50	-50	-50	-50	-50	-50	-50	-50	-50
Montana Intertie E>W	1930	112	112	112	144	144	144	144	144	144	144
John Day Wind Gen	1255	149	149	99	99	99	99	99	99	99	99
Rock Creek Wind Gen	1200	201	176	176	176	176	177	177	177	264	264
West of Garrison E>W	1618	-764	-764	-1459	-1459	-1490	-1490	-1490	-1490	-1490	-1490
West of Garrison W>E	931	-573	-410	-315	-24	-25	-25	-25	-25	-25	-25

Pending queue per BPA data accessed 8/25/2022

IRP Roundtable 9/28/2022





California ISO

WESTERN ENERGY MARKETS

Regional Issues Forum

Congestion Revenue Allocation in Day-Ahead Markets without Consolidated Transmission Tariffs

The Markets+ Approach

October 29, 2024

Dan Williams, Principal Advisor - Western Markets
The Energy Authority

About The Energy Authority

TEA Mission:
Maximize the
value of our
clients' assets in
the wholesale
energy markets.



AGENDA

- Background
 - Valuing Congestion in Bilateral and Energy-Only Imbalance Markets
 - Allocating Congestion Rents in RTO/ISO Markets
- Problem Statement
 - Equitably Allocating Congestion Revenue in Day-Ahead Markets without Consolidated Transmission Tariffs
- The Markets+ Approach
 - Markets+ Overview and Update
 - Markets+ Congestion Revenue Allocation Design
- Opportunities

Valuing Congestion in Bilateral and Energy-Only Imbalance Markets

- Western bilateral markets have indirectly incorporated congestion management risk and the value of holding delivery rights in energy transactions from the beginning.
 - When procuring point-to-point and/or network transmission.
 - When pricing forward contracts.
 - When transacting in short-term markets.
- Western real-time, energy-only markets have partially incorporated congestion-related price risk and congestion revenue allocation expectations.
 - Market participants self-determine whether to use rights in forward bilateral markets or use them (leave available) for real-time optimization.
 - TSPs make unused rights available in real-time (no direct charge).

Pricing Congestion and Allocating Rents in RTO/ISO Markets

- RTO/ISO markets convert most physical rights to financial rights when transitioning from an OATT-based paradigm to a full day-ahead market.
 - Tariff consolidation under a single Transmission Service Provider supports access-charge based recovery of transmission revenue requirements.
 - Physical rights become financial protections or tradeable options to confer value for the investment.
- RTO/ISO markets facilitate liquid markets for managing rights and risk.
 - Well-structured allocation, acquisition and transacting of rights.
 - Allocation of revenues/charges follows transparent, equitable model.
- Adjacent RTO/ISO markets coordinate across seams in day-ahead and real-time (congestion management, market-to-market transfers) and attempt to harmonize congestion rent frameworks to promote efficient, equitable interregional transactions.

Equitably Allocating Congestion Revenue in DAMs without Consolidated Transmission Tariffs

- Neither EDAM (for non-CAISO BAs) nor Markets+ are “fully-organized” markets.
 - No tariff consolidation and no in-market transmission products.
 - Maintain individual BA, TSP, and TOP roles, including transmission revenue recovery requirements and policies.
- Both markets rely on available physical transmission to effect capacity and energy optimization through the SCED engine, with some differences in incorporation in the market model.
 - Combination of held NT and Point-to-Point rights, plus unreserved or unscheduled physical capability, minus some reliability margin.
- Both Market Operators must remain revenue neutral.

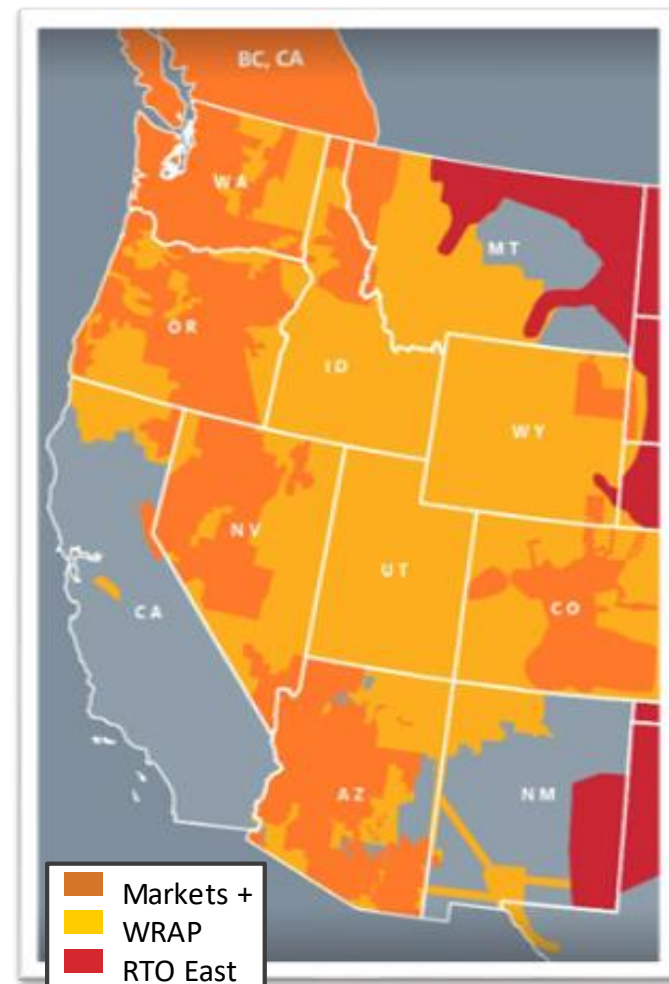
Equitably Allocating Congestion Revenue in DAMs without Consolidated Transmission Tariffs

- Both markets' Security-Constrained Economic Dispatch (SCED) engines produce Locational Marginal Prices (LMP) that include energy, losses, and congestion components.
- Key question both markets have had to answer:
 - What is the most appropriate, equitable, and efficient way to (1) capture the right pool of transmission for use in the market and (2) compensate entities for their transmission investments, which the market relies on to produce generation and load-based benefits?



SPP Markets+ Phase 1 Overview

- Markets+ design leverages SPP's RTO with specific design choices driven by stakeholder priorities and best practices:
 - Fully independent multi-state governance model.
 - Full integration of common RA program with day-ahead and real-time must-offer requirements.
 - Seamless congestion management and direct allocation of congestion revenues to rights holders.
 - Real-time only flexibility reserves with reliability capacity backstop program.
 - Adapted price formation and market power mitigation frameworks.
- Markets+ will have market-to-market opportunities with RTO East but is a fully separate market in operations and Tariff.



Markets+ Timeline and Next Steps

	2024				2025				2026				2027			
Activity	Q1 24	Q2 24	Q3 24	Q4 24	Q1 25	Q2 25	Q3 25	Q4 25	Q1 26	Q2 26	Q3 26	Q4 26	Q1 27	Q2 27	Q3 27	Q4 27
Phase 1 - Tariff and Protocols	Phase 1															
FERC Filing of M+ Tariff	29-Mar															
Protocol Development																
Parking Lot Prioritization																
Filing Support																
Anticipated Order																
Phase 2 Contract Discussions																
Phase 2 Commitments																
Phase 2 - Implementation					Phase 2											
Continued Parking Lot Work																
SPP Development/Testing																
Participant Activities																
Trials and Parallel Ops																
Go-live																

- Filed the [Markets+ Tariff](#) with FERC on March 28, 2024.
- Responded to deficiency letter and requested Order by November 20, 2024.
- Working on Phase 2 funding commitments with December 16, 2024, signing deadline for interested parties.
- Ongoing Protocol (aka, BPMs) drafting and working group meetings.

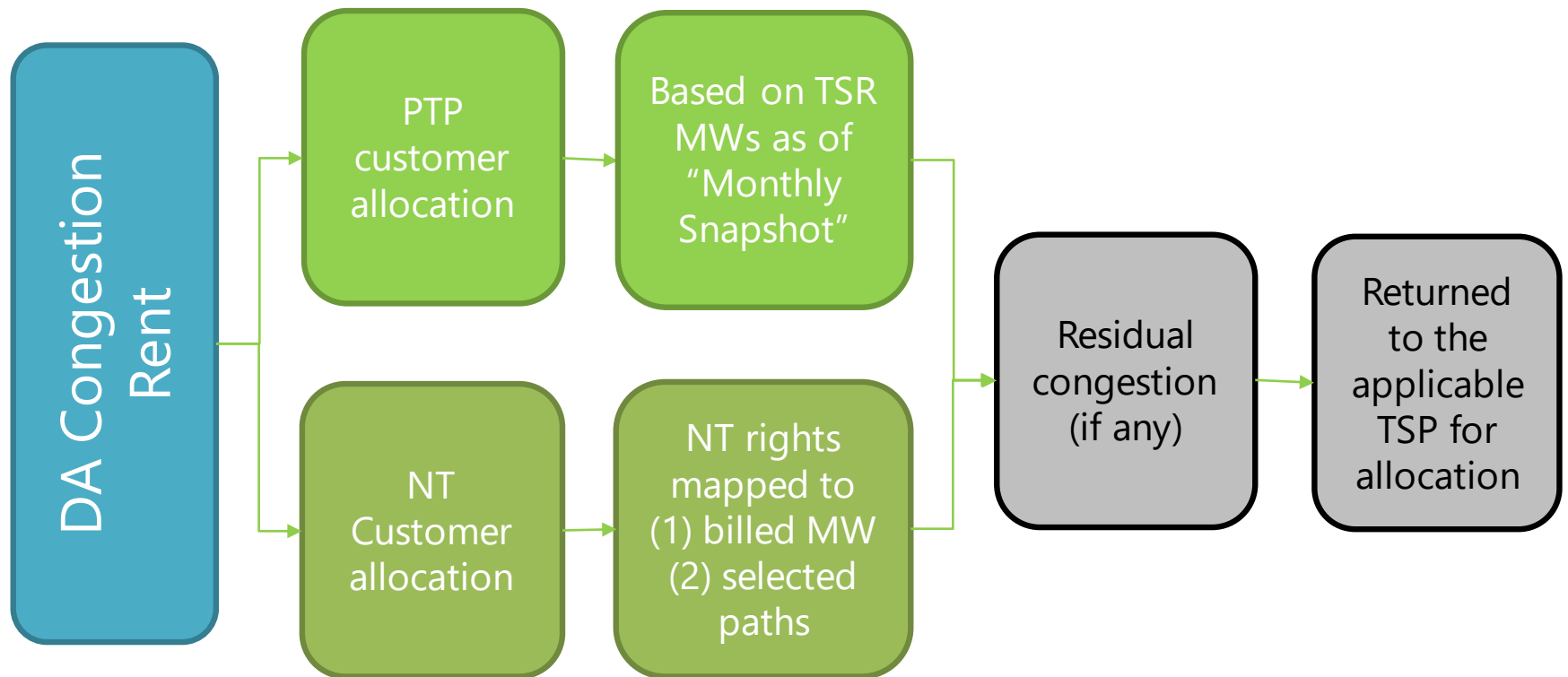
SPP Markets+ Congestion Revenue Allocation

Phase 1 starting point from Markets+ Service Offering:

- Markets+ TSP transmission systems and flow-based capacity are “all-in unless opted-out”.
 - Opt-outs must meet timing requirements and are generally subject to status-quo OATT conventions.
- DA congestion rent allocation based on OATT transmission service reservations (TSRs), not schedules.
- Allocation to long-term firm network and PTP rights.
- Congestion rent allocation based on prevailing flows only, no uplift.
- Congestion rent allocated must be equal to congestion rent collected (SPP must be revenue neutral).

SPP Markets+ Congestion Revenue Allocation

Conceptual framework



SPP Markets+ Congestion Revenue Allocation

General Eligibility for Congestion Rents

- Congestion Rent Eligible Transmission Service Reservation (CRETSR):
 - Must cover the full month.
 - Monthly, yearly or longer in duration.
 - Firm and Conditional Firm.
 - Available for use by Markets+ (i.e., not opted-out).

SPP Markets+ Congestion Revenue Allocation

Verification of Eligible Rights (Tariff Section 7.16)

- Congestion rent allocation for each month based on a monthly snapshot of confirmed transmission reservations.
 - Taken between 5- and 15-days prior to operating month.
 - For rights redirected/resold for a partial month, congestion will be allocated using last valid path/customer that covered the full month.
 - Approach allows time for SPP to compile required data.
 - Data retrieved from OASIS, supplemented by TSP as needed.
 - Market participants, TSPs confirm accuracy of submitted data.

SPP Markets+ Congestion Revenue Allocation

Mapping of Network Rights (Tariff Section 7.16(7))

- NT customers receive congestion rent consistent with the rights they pay for.
 - Quantity based on billed MWs (i.e., coincident peak use).
 - Reflects each TSP's specific billing approach (e.g., monthly, 4CP, etc.).
- NT customers may receive congestion rent on multiple paths.
 - As of monthly snapshot, SPP maintains record of all potential paths each NT customer may use to meet load from their designated network resources.
 - SPP will perform an automated hourly path selection to identify the delivery path(s) from lowest-cost network resources to load.

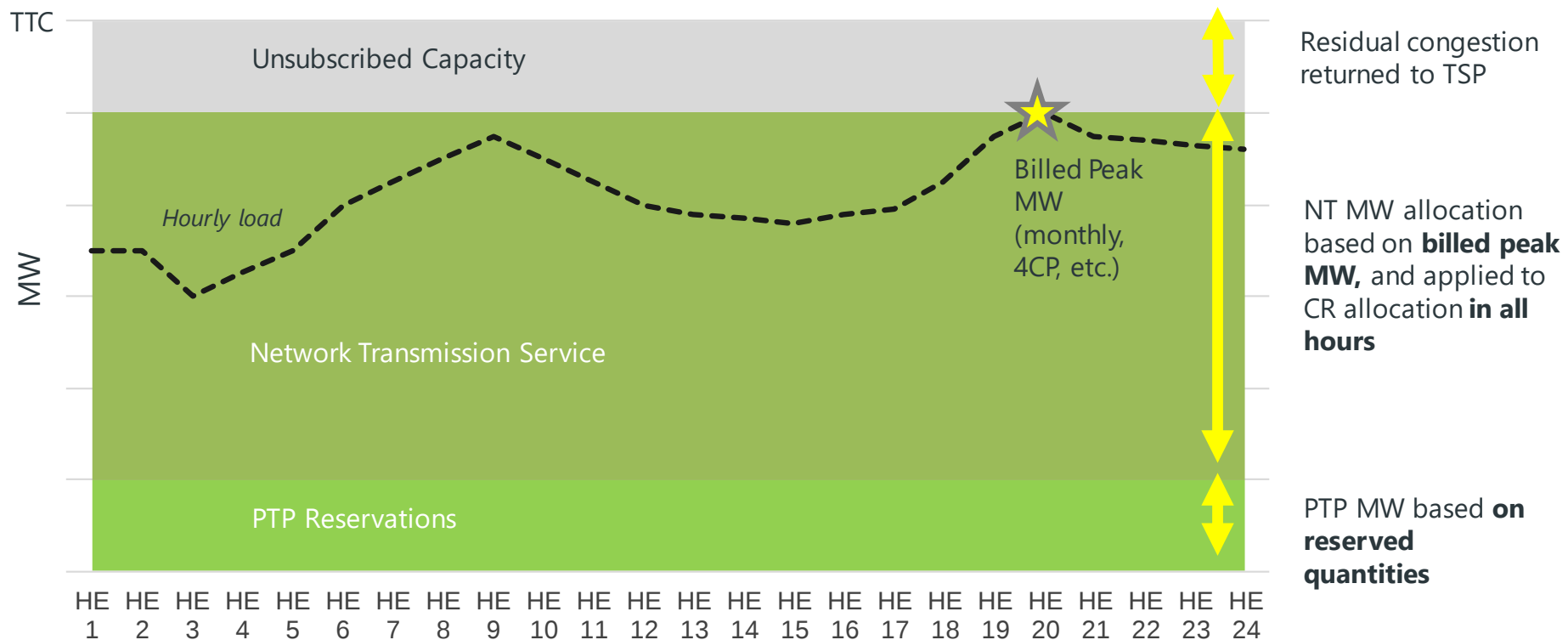
SPP Markets+ Congestion Revenue Allocation

Constraint-level Allocation Approach

- DA congestion rents are collected by SPP for each constraint separately (Tariff Section 9.2.13).
- DA congestion rents are allocated to rightsholders with entitlements on each constraint (Tariff Section 9.2.14).
 - TSRs mapped to the constraints they impact based on injection at POR/Source and withdrawal at POD/Sink.
- Excess congestion not associated eligible TSR holders is returned to the applicable TSP (Tariff Section 9.2.15).

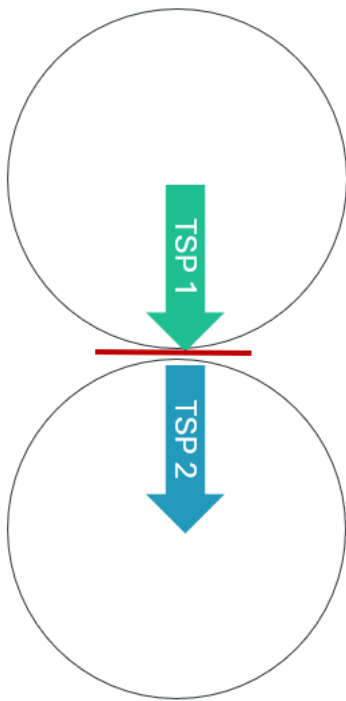
SPP Markets+ Congestion Revenue Allocation

Visual Representation



SPP Markets+ Congestion Revenue Allocation

Coordinated Interchange Scheduling Limits (Tariff Section 7.16.1)



- SPP may have to apply a coordinated scheduling limit between two BAAs in some specific cases.
- May result in 2 (or more) TSPs providing segments that enable a transfer of energy across a single coordinated constraint:
 - One TSP enables export capability.
 - A different TSP provides import capability.
 - Congestion occurs at “hand-off” point.
- SPP will separate congestion revenue into an Export Share and Import Share:
 - Default 50/50 allocation between export and import shares.
 - Flexibility for TSPs to mutually agree on a different sharing ratio.

SPP Markets+ Congestion revenue allocation

Ongoing Review and Transparency

- Expectations captured in Markets+ Protocols.
- Ongoing review includes:
 - Private data/results available to Market Participants in granular format.
 - Monthly reports summarizing congestion revenue allocation outcomes to the Markets+ Market Design Working Group.
- A comprehensive report of congestion revenue allocation performance one year after go-live.
 - Assess overall performance of congestion revenue allocation approach.
 - Level of funding on key constraints relative to rightsholders.
 - Evaluate impact of key congestion revenue allocation design decisions:
 - Timing of monthly snapshot.
 - NT vs PTP outcomes.
 - Treatment of conditional firm.

Opportunities



Questions

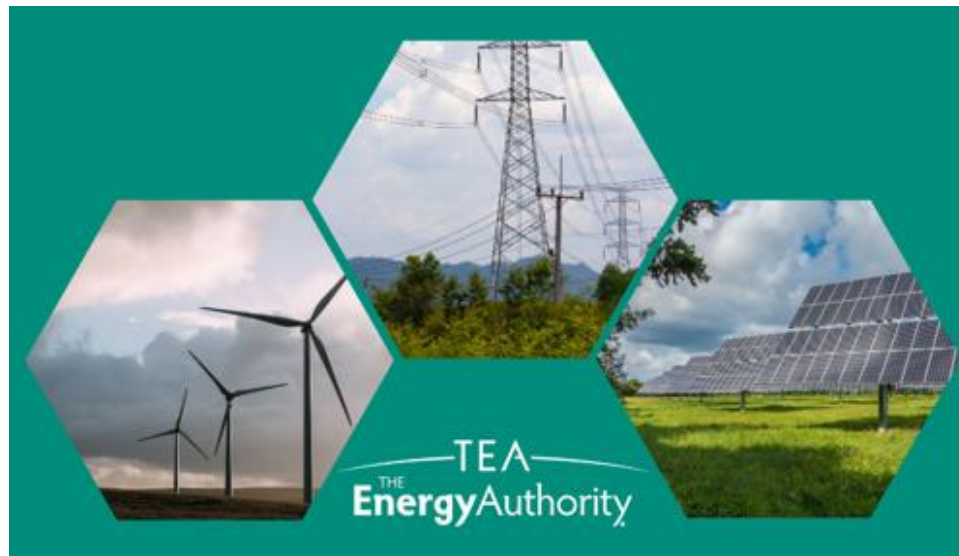
Dan Williams

Principal Advisor - Western Markets

Bellevue, WA

Phone: (425) 449-9731

Email: dwilliams2@teainc.org





California ISO

WESTERN ENERGY MARKETS

2025 Western Energy Markets (WEM) Nominating Committee process

Randy Howard, Chair, WEM Nominating Committee

October 29, 2024

2025 Nominating Committee Timeline

JAN

- Initial NC meeting
- Review Governing Body Member incumbent letters of interest & conduct interviews

FEB

- Engage Executive Search Firm to identify qualified candidates
- Identify candidate qualities to best complement remaining Governing Body Members

MAR-
MAY

- Identify preferred candidates & conduct interviews
- Gather & provide sector feedback to NC
- Strive to reach NC consensus decision before May 30

JUN

- Jun. 18 WEIM Governing Body general session: NC presentation & Governing Body decision

Considerations for the 2025 Nominating Committee

- With the West-wide Pathway's Initiative proposal to form a Regional Organization (RO) that would govern the western market, the scope and duration of a 2025 WEM Candidate's term and the opportunity to be considered for the RO Board has not been finalized. This could impact some Candidate's interest.
- The West-wide Pathway's Initiative has held several workshops to discuss and take comments on RO Stakeholder groups and Nominating processes for the RO Governing Body. With the significant participation and interest in the process, should the Nominating Committee Sectors be expanded in 2025/2026 to reflect some of the thoughts from the RO proposal?

2025 WEM Nominating Committee Members

Name	Sector
<i>Voting Members</i>	
Agnes Lut, Salt River Project	WEIM Entities
Chris Summers, <i>San Diego Gas & Electric</i>	Participating Transmission Owners
Ian White, Shell North America	Energy Suppliers and Marketers of Generation, ESPs
Randy Howard, <i>Northern California Power Agency</i>	Publicly-Owned Utilities
<i>TBD</i>	Public Interest and Consumer Advocate Groups
Gabriel Aguilera, New Mexico Public Regulation Commission	Body of State Regulators
<i>Non-Voting Members</i>	
John Prescott, WEM Governing Body	WEM Governing Body
Joe Eto, ISO Board of Governors	ISO Board of Governors

Subscribe to the RIF email list for CAISO/WEIM/EDAM updates

[Calendar](#) | [News & Notices](#) | [Contact Us](#) | [caiso.com](#)

WESTERN ENERGY MARKETS

[About](#) ▾

[Join WEIM](#)

[EDAM](#) ▾

[Governance](#) ▾

[Initiatives](#)

[Resources](#)

[Search](#)



The Regional Issues Forum is a stakeholder-lead venue for discussion of issues and topics related to the Western Energy Imbalance Market.

Regional Issues Forum

This forum is organized by 11 sector selected liaisons that facilitate input and participation from their respective sectors on relevant topics. The forums, held approximately three times a year, allow stakeholders to discuss broad issues related to the Western Energy Markets including the Western Energy Imbalance Market (WEIM) and the Extended Day-Ahead Market (EDAM). The forums are open to the public, and those interested are encouraged to attend and participate. The forums may produce documents or opinions for the benefit of the WEM Governing Body, California ISO Board of Governors, and the ISO.

[WEM Regional Issues Forum - Sector Liaisons](#) 8/15/2024 12:58

Public session participation information

Date & Location	In person registration	Web and audio participation information
-----------------	------------------------	---

For information on or assistance with the Regional Issues Forum please contact:

Holly Taylor
htaylor@caiso.com

Sienna Levine
slevine@caiso.com

[Subscribe to the Regional Issues Forum email list](#) to receive updates on the Western Energy Imbalance Market (WEIM), the Extended Day-Ahead Market (EDAM), and California ISO.

WESTERN ENERGY MARKETS

Regional Issues Forum

Adjourned

October 29, 2024

1:00 p.m. – 5:00 p.m. (Pacific Time)

