



**Notice:** This meeting will be recorded

# Oregon RTO Advisory Committee: Meeting #2

October 6, 2021

For more information:

<https://www.oregon.gov/energy/energy-oregon/Pages/RTO.aspx>

# AGENDA

8:00 – 8:10	Welcome remarks: Objective, timeline, logistics
8:10 – 8:15	Introductions
8:15 – 8:30	Background: Evolving Regionalization
8:30 – 8:50	<i>Question #6: Transmission Planning &amp; Operations</i>
8:50 – 9:10	<i>Question #7: Renewables</i>
9:10 – 9:30	<i>Question #8: Environmental impacts</i>
9:30 – 9:50	<i>Question #9: Climate resilience</i>
9:50 – 10:00	<b>BREAK</b>
10:00 – 10:20	<i>Question #10: Governance</i>
10:20 – 10:40	<i>Question #11: Market design optionality</i>
10:40 – 11:30	Roundtable Discussion & Next Steps
11:30 – 12:00	Public Comment

# How this meeting will be facilitated:

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- **Panelists and Attendees**

- Panelists: RTO Advisory Committee Members and ODOE Staff
- Public: There will be time reserved at the end of the agenda for public comment

- **Community Agreements:** Designed to foster inclusive and respectful workshop today

- Be present and ready to learn
- Be respectful to others
- Learning happens outside of our comfort zones
- Listen to learn and not to respond
- Thank you for being flexible and patient around any technology needs or changes
- If you need something at this meeting, ask for it!
  - Technical issues or questions: Contact **Linda Ross** in the chat



# OREGON DEPARTMENT OF ENERGY

Leading Oregon to a safe, equitable, clean, and sustainable energy future.

## Our Mission

The Oregon Department of Energy helps Oregonians make informed decisions and maintain a resilient and affordable energy system. We advance solutions to shape an equitable clean energy transition, protect the environment and public health, and responsibly balance energy needs and impacts for current and future generations.

## What We Do

On behalf of Oregonians across the state, the Oregon Department of Energy achieves its mission by providing:

- A Central Repository of Energy Data, Information, and Analysis
- A Venue for Problem-Solving Oregon's Energy Challenges
- Energy Education and Technical Assistance
- Regulation and Oversight
- Energy Programs and Activities



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# Welcome Remarks

*John Day Dam, Columbia River*

# Welcome

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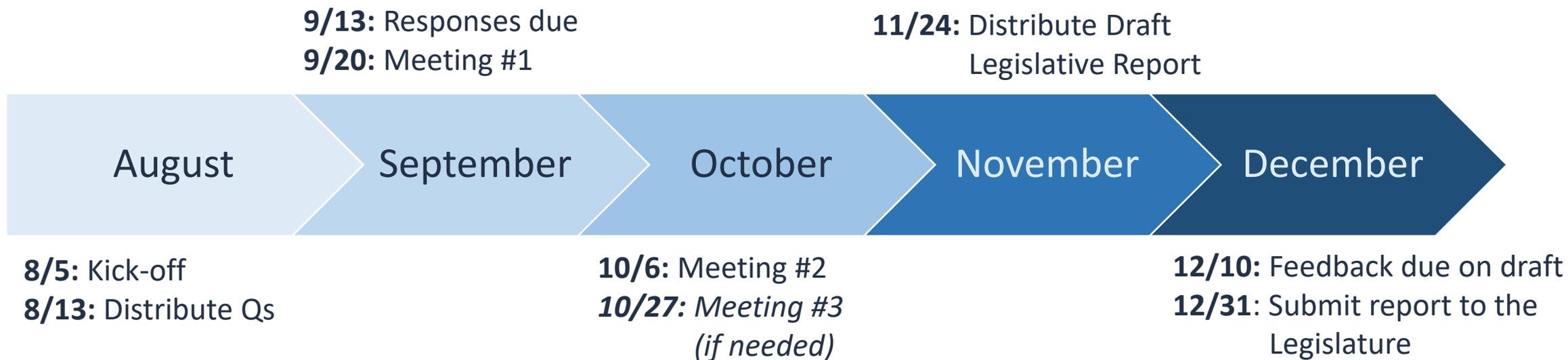
## Objective:

To gather and synthesize the range of perspectives on the benefits, costs, opportunities, challenges, and risks of RTO formation that exist among a diverse range of Oregon stakeholders to inform the State Legislature and other interested parties.

- **Logistics:**

- Today's agenda
- Note that we'll be recording this meeting and will post it online
- We will provide, at minimum, 2 weeks for committee review of the draft report later this fall
- Public comment towards end of meeting: 5 minutes per commenter

# Timeline for Implementation





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# Introductions



# Roll-call Introductions

## Oregon RTO Advisory Committee

Senator Kathleen Taylor  
Commissioner Letha Tawney, PUC  
Scott Coe, Emerald PUD  
Robert Echenrode, Umatilla Electric Coop  
Sarah Edmonds, Portland General Electric  
Travis Eri, IBEW Local 125  
Spencer Gray, NIPPC

Representative Pam Marsh  
Kristen Sheeran, Governor's Office  
Nicole Hughes, Renewable Northwest  
Frank Lawson, EWEB  
Oriana Magnera, Verde  
Lindsey Schlekeway, PacifiCorp

### **Ex Officio Members:**

Ravi Aggarwal, BPA  
Kathy Anderson, Idaho Power  
Mike Goetz, Oregon Citizens' Utility Board

Fred Heutte, Northwest Energy Coalition  
Ben Kujala, Northwest Power Council  
Mary Pleasant, Oregon DEQ



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# Background: Evolving Regionalization

*Haystack Rock, Cannon Beach*

# Three Major Functions

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## Buying & Selling Electricity

Buying and selling electricity (energy) to ensure customer demand is met in real-time as it occurs

## Resource Adequacy

Planning, evaluating, and procuring sufficient electric generation capacity to meet future customer demand

## Transmission Planning & Operation

Identifying needs to maintain system reliability and deliver generation to meet customer demand

# Three Major Functions

## Buying & Selling Electricity

- **Time horizons:**
  - Years
  - Month-ahead
  - Day-ahead
  - Real-time
- **Mechanisms:**
  - Bilateral agreements
  - Centralized markets

## Resource Adequacy

- **Time horizons:**
  - 3-5 Years
  - Months
- **Mechanisms:**
  - BA-specific
  - PUC role in planning
  - Bilateral agreements
  - Capacity markets

## Transmission Planning & Operation

- **Time horizons:**
  - 10+ years (planning)
  - Various (operations)
- **Mechanisms:**
  - BA-specific
  - Regional coordination
  - Regional optimization

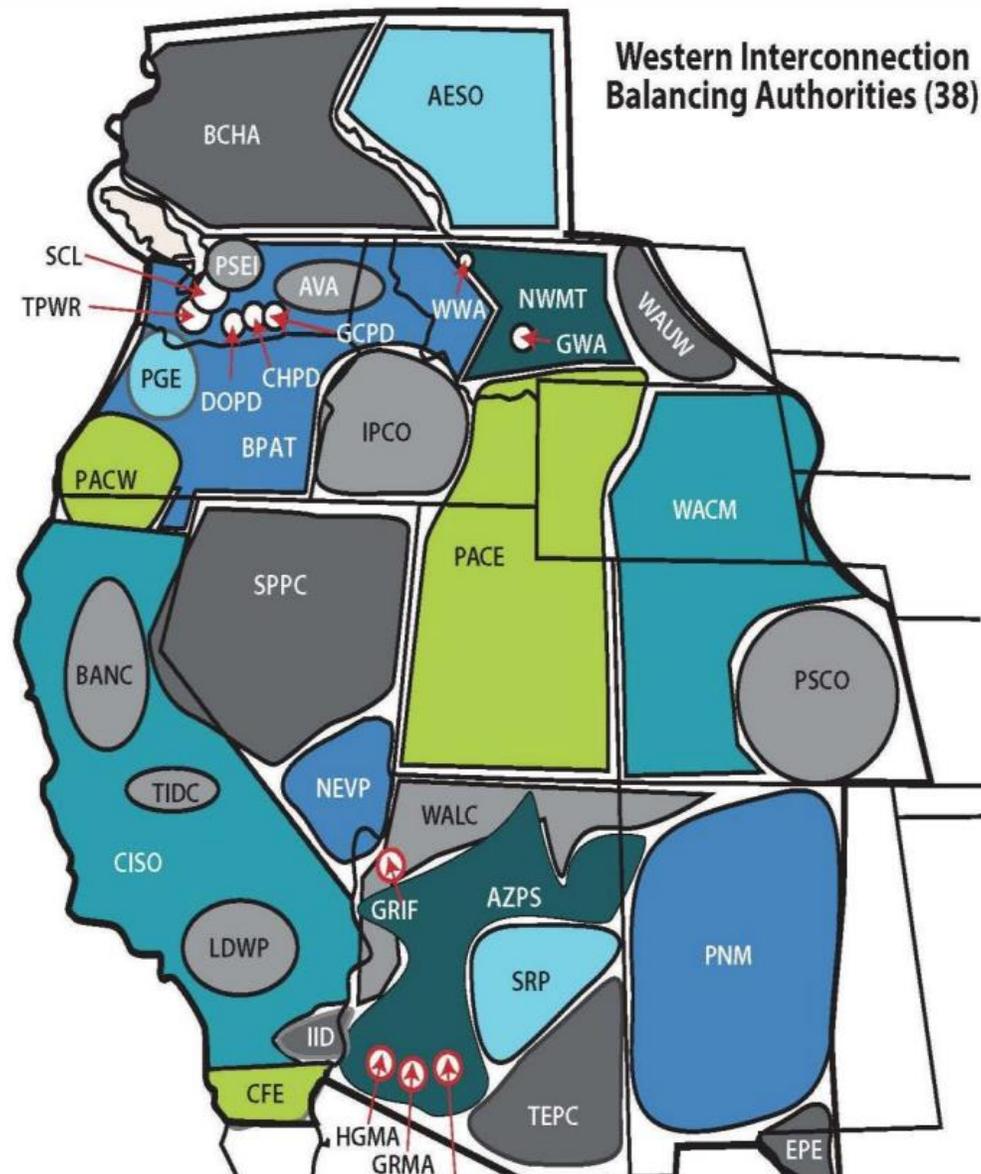
# Balancing Authorities in the West

## What does a Balancing Authority do?

- Reliably plan and operate the high-voltage electric grid
- Each BA balances in real-time: load, generation, net interchange with other BAs
- Several dozen BAs across the west

Notable BAs at right:

<b>BPAT</b>	Bonneville Power Administration
<b>PACW</b>	PacifiCorp West
<b>PGE</b>	Portland General Electric
<b>CISO</b>	California Independent System Operator

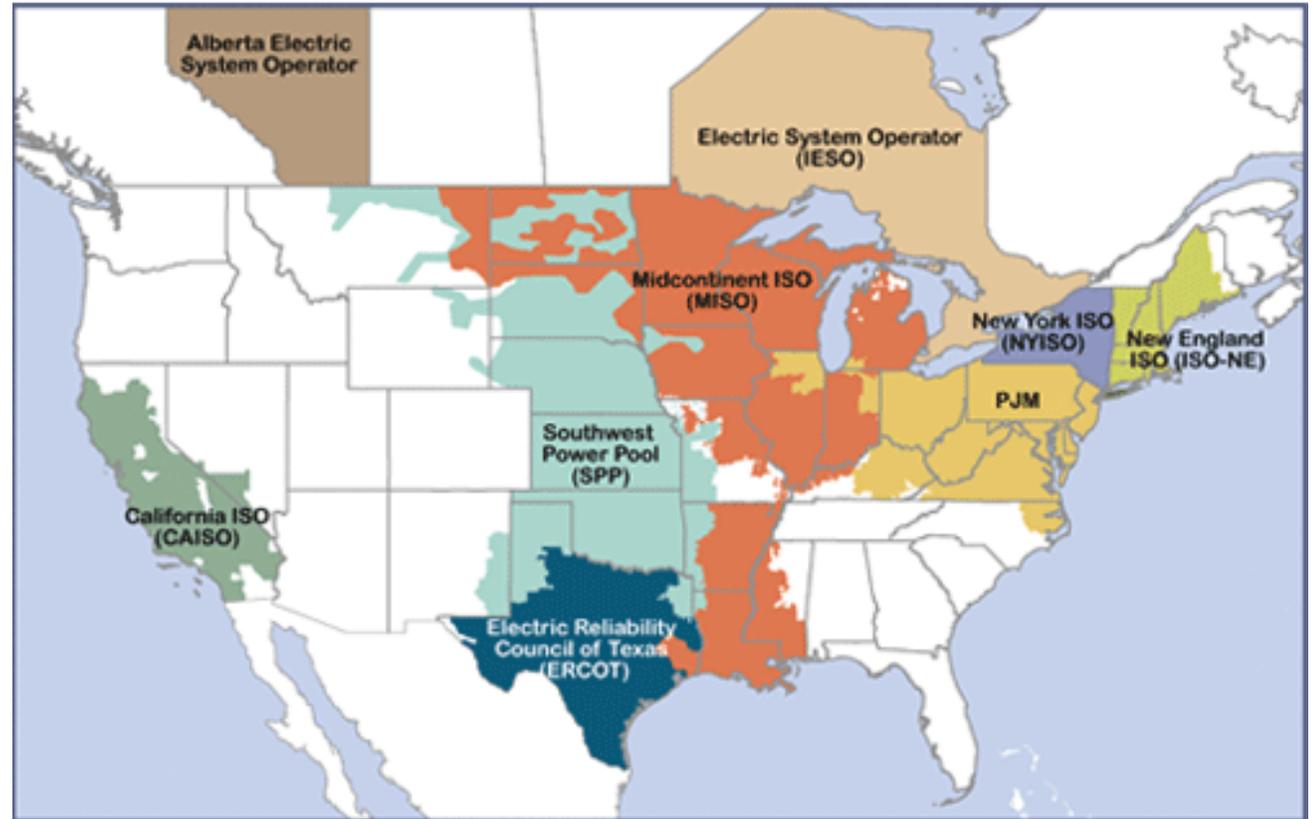


Source: [WECC](http://www.wecc.net)

# Where do RTOs currently operate?

## RTO Background:

- Seven RTOs/ISOs currently operating
- **Energy.** Each operates day-ahead and real-time energy markets
- **Capacity.** There are significant variations in the extent to which RTOs are involved in capacity planning and procurement and Resource Adequacy
- **Transmission.** Each centrally operates and optimizes transmission while ensuring open access



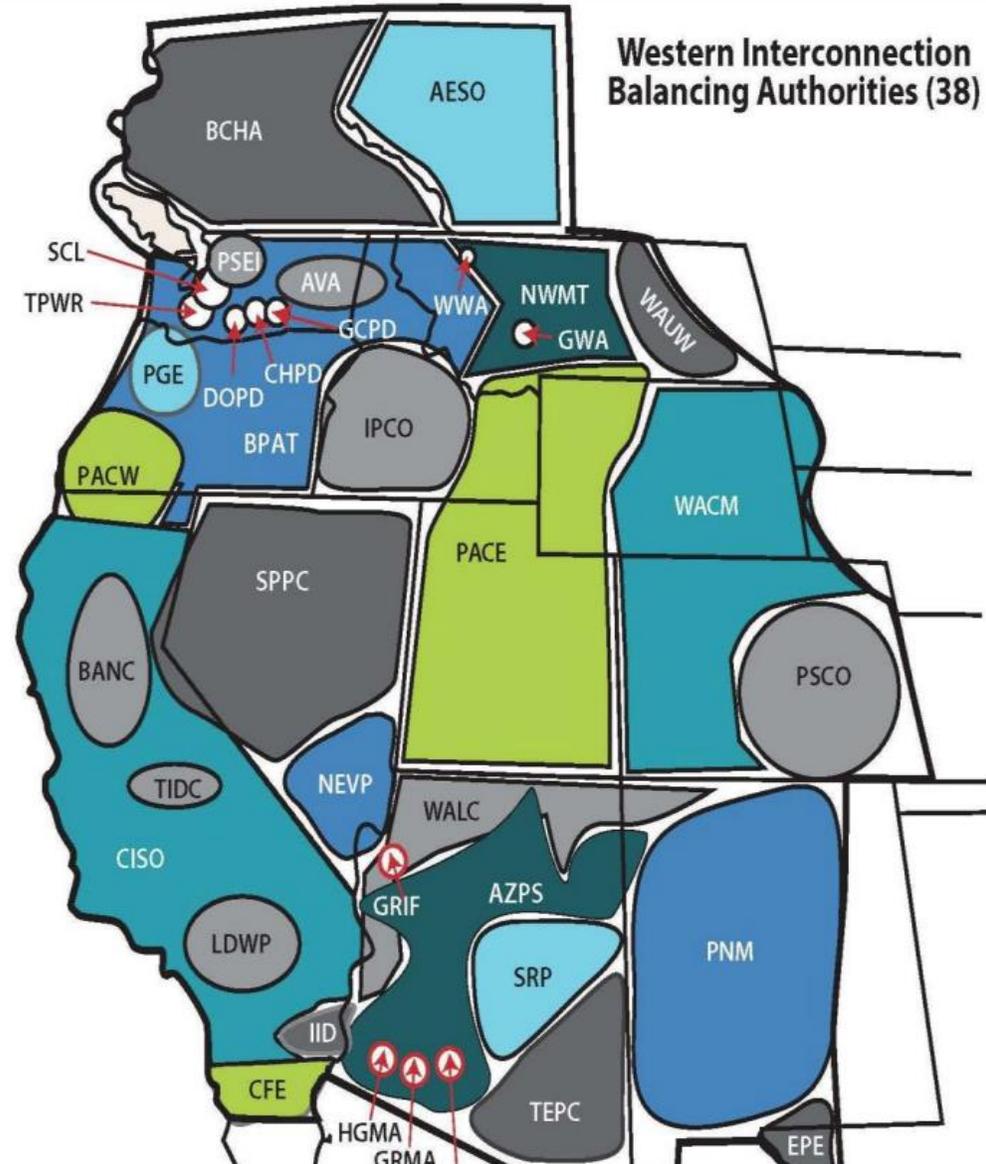
Source: [FERC](#)

# Bilateral Transactions

## What are bilateral transactions?

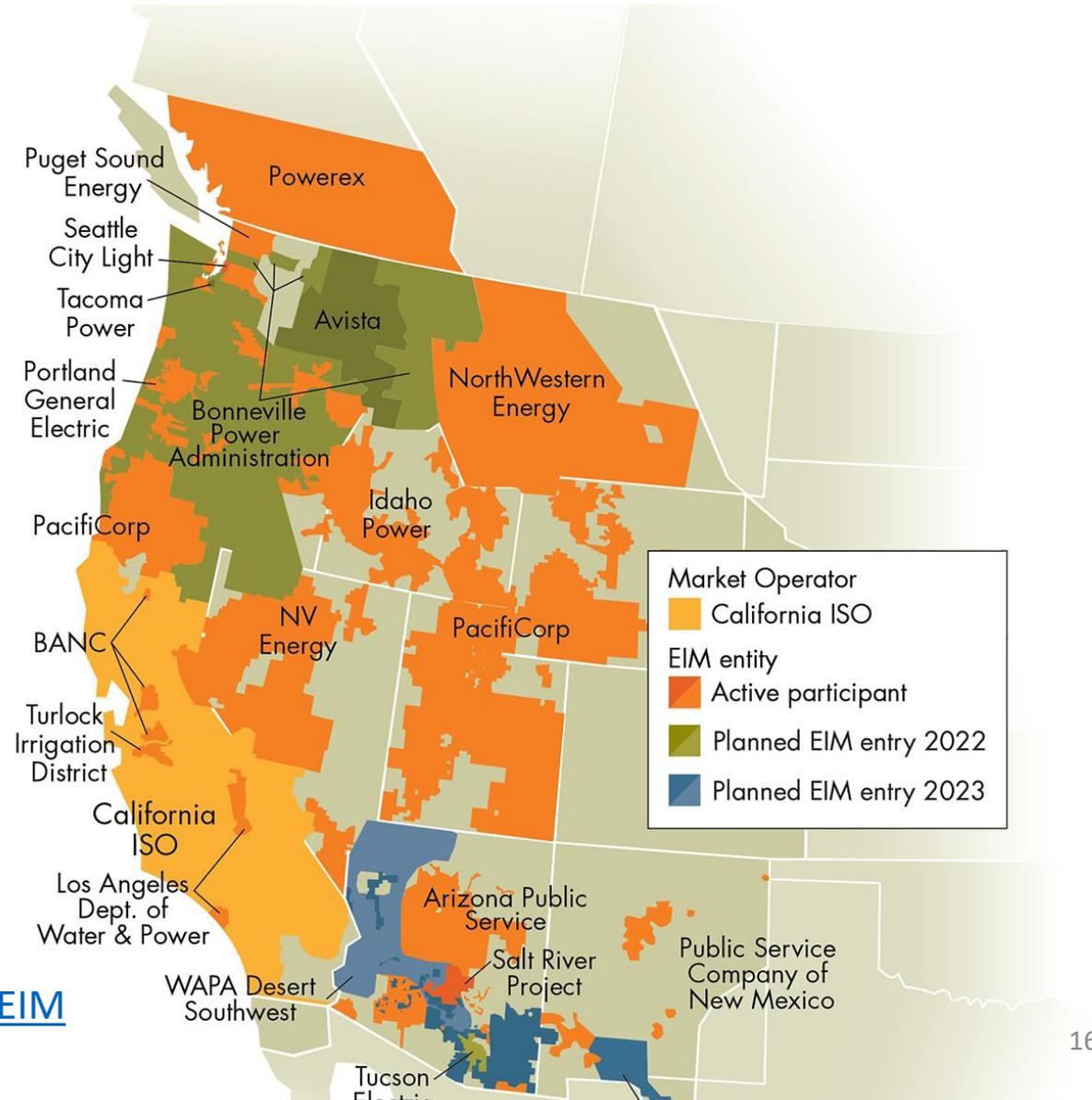
- An agreement between a willing buyer and seller to exchange electricity (energy), capacity, or grid services
- Dominate in vertically-integrated markets that lack RTO markets (like the PNW)

Source: [Synapse](#)



# Evolution of Markets in the West

- **CAISO:** The only RTO operating in the west
  - Operates real-time and day-ahead energy markets within its footprint
- **Western EIM:** Launched in 2014
  - Extension of CAISO's real-time market platform across the west
  - PAC, PGE, IDP members
  - BPA joining in 2022

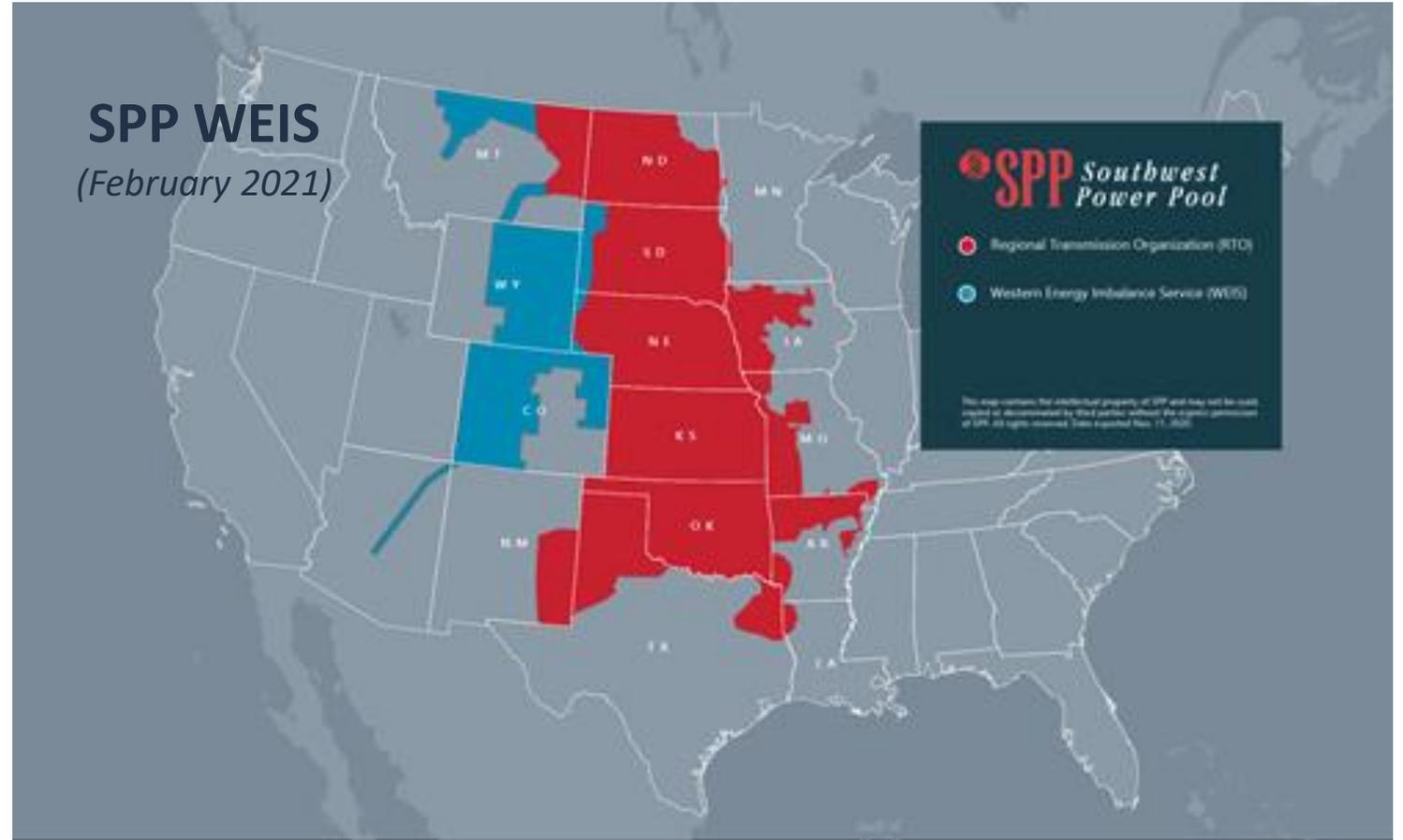


Source: [Western EIM](#)

# Southwest Power Pool (SPP) Expansion

- **Western Energy Imbalance Service (WEIS) Market:**
  - Expansion of SPP's real-time imbalance market
  - Launched in Feb. 2021
  - 8 utilities have joined
- **Southwest Power Pool:**

Recently approved terms for expanding its RTO footprint into the west by 2024



# Western Resource Adequacy Program

- **NWPP Western RA Program:**

- NWPP initiated this effort by convening a Steering Committee in 2019
- Focused on developing forward-showing and operational programs to maintain an adequate regional power supply
- Interim RA Program launched in 2020
- Detailed program design proposal released in July 2021
- Proposed full functionality by 2024



Figure ES-1. RA Program development project timeline.

Source: [NWPP](#)

# NorthernGrid: Transmission Planning



## Association of Members

**AVISTA**

**BHE**  
U.S. TRANSMISSION

Grant  
**PUD**

NorthWestern  
Energy

**PGE**

Seattle City Light



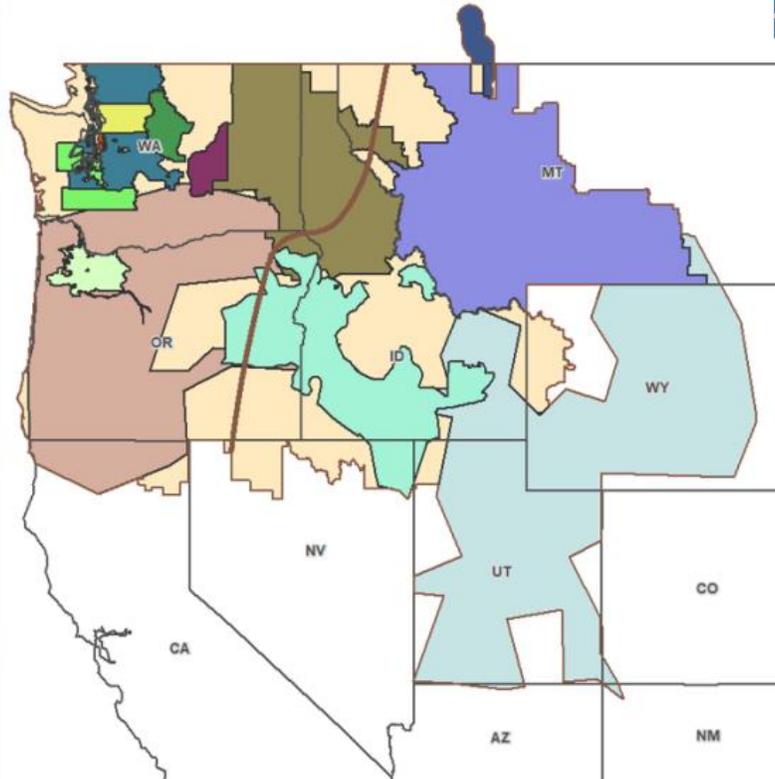
IDAHO  
POWER.  
An IDACORP Company

**PACIFICORP**  
A BERKSHIRE HATHAWAY COMPANY

**PSE**  
PUGET  
SOUND  
ENERGY

SNOHOMISH COUNTY  
**PUD**  
PUBLIC UTILITY DISTRICT NO. 1

**T**  
TACOMA POWER  
TACOMA PUBLIC UTILITIES



- Launched in January 2020
- Single association to facilitate regional transmission planning + facilitate FERC compliance
- One common set of data and assumptions
- Single stakeholder forum

Source: [NorthernGrid](#)

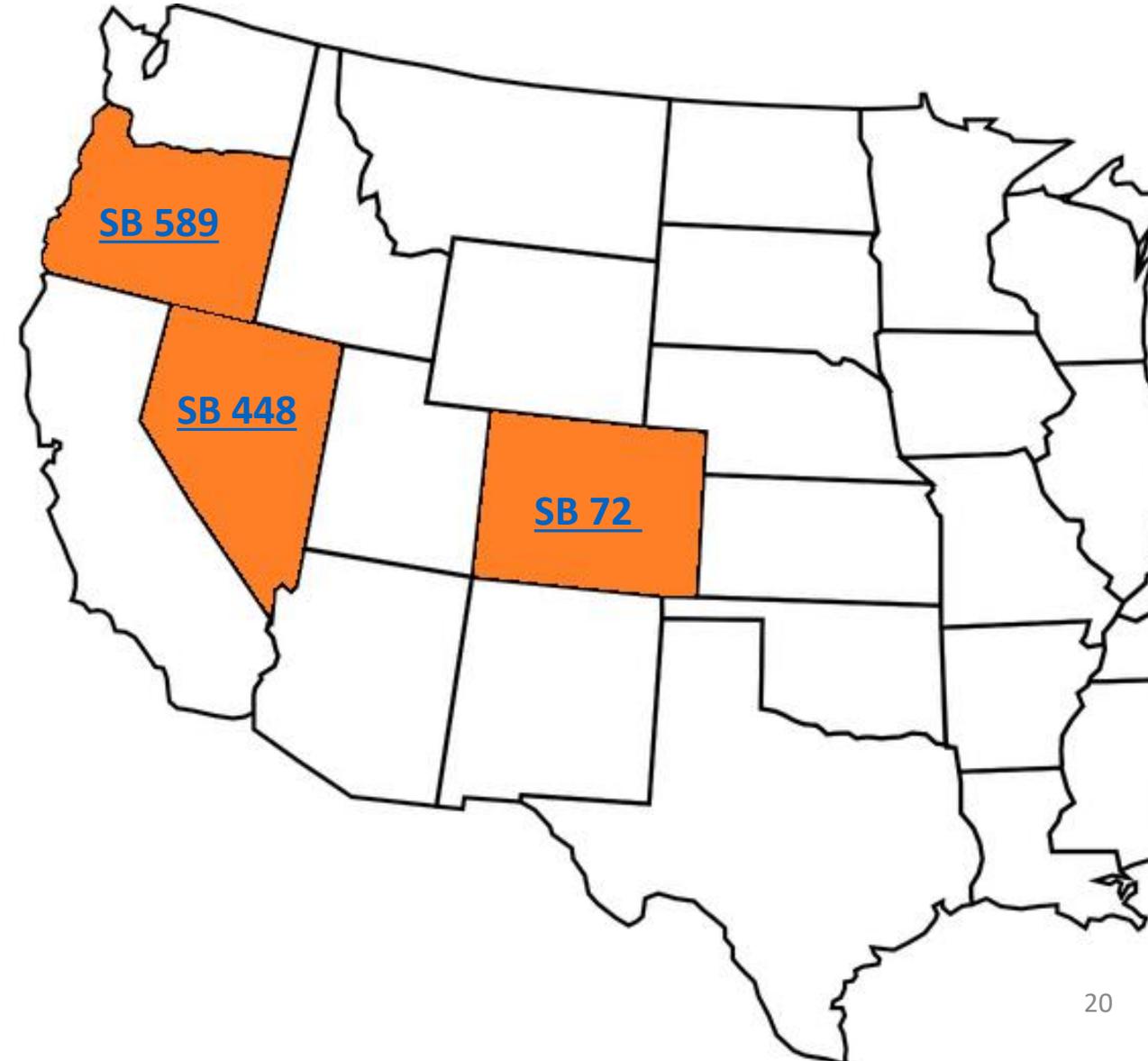
# RTO Legislation in 2021

## Nevada:

- Forms RTO Task force to identify steps to join an RTO
- Requires every transmission provider to **join an RTO by 2030**
- Accelerates completion of 600-mile 500-kV transmission line by 2029

## Colorado:

- Requires transmission utilities to **join an RTO by 2030**
- Creates new authority to establish transmission corridors + operate transmission and storage necessary for utilities to participate in RTO



# ODOE's Website as a Resource

## ODOE's [SB589 Website](#):

- Background on this process
- Stakeholder comments
- RTO 101 background information, including links to helpful reference material:
  - An overview of power markets
  - Recent decarbonization analysis
  - Technical studies and reports evaluating RTO formation
- Materials from these meetings

## 2020 Biennial Energy Report

**Policy Brief: Evaluating the Resource Adequacy of the Power System**

**Background**

The electric power system is unique, relative to other industry sectors, in that it has little to no capability to store electricity as an end-use fuel. As a result, the electric generation and transmission system must be built to satisfy the largest hourly requirements for electricity—called peak demands—even though consumers use less (oftentimes significantly less) during most hours of the year. This results in an electric generation and delivery system that is, by design, underutilized much of the time, especially when compared to the liquid fuels and natural gas sectors.<sup>1</sup> To evaluate the adequacy of the power system, grid planners must forecast customer demand for electricity and compare it to existing resources to meet that demand in real-time. If the capabilities of existing resources are insufficient, then new capacity resources will need to be developed—a process that can take years (or more) depending on the types of resources.

**Suggested reading:**

For more background on Resource Adequacy and why it's important for maintaining the long-term reliability of the power system, see the Energy Information Administration's [Resource Adequacy](#) page.

**Energy 101: Resource Adequacy**

We consume energy daily: when we charge our phones, flip a light switch, turn up the furnace to heat our homes, or fill up our car at the gas station. In terms of total end-use fuels consumed by Oregonians, 31 percent of the energy comes in the form of liquid transportation fuels (e.g., gasoline and diesel); 42 percent is electricity; and 26 percent is direct use of fuel oil or natural gas (e.g., for home heating or industrial processes).

**Storing End-Use Fuels: Gasoline, Natural Gas, and Electricity**

Electricity must be generated and delivered across a large transmission and distribution system, just in time to meet consumer demand. This differs significantly from other end-use fuels (and differs from virtually all other commodities and consumer products) that can be produced at an operationally or economically optimal time, and then stored for consumption at a later point in time.

This section refers to "end-use fuels" because of the important differences between primary energy sources and the end-use fuels that consumers actually consume to power their everyday lives. For example, crude oil is a natural resource extracted from the earth. This primary energy source must be refined into gasoline before it can be used in a vehicle. That gasoline, once refined from the original energy source, can be (and is) stored in large volumes as the end-use fuel that Oregonians consume. Similarly, natural gas, once captured and processed for injection into storage tanks or pipelines, is the end-use fuel that Oregonians consume in their homes and businesses.

Electricity is quite different. The primary energy sources used to generate electricity vary considerably—from the gravitational potential energy stored in volumes of water at altitude, to the nuclear potential energy contained within uranium isotopes, to the thermal kinetic energy of solar energy. A wall outlet cannot use that water, uranium, or solar energy until it has been converted into electricity—the end-use fuel.

Think about gasoline. What does it look like? Chances are you are imagining a physical volume of a brownish-colored liquid. You can literally fill a jar on the table in front of you with gasoline or diesel fuel, the two liquid fuels that predominantly power our transportation systems. Liquids are easily stored in large volumes. Think about natural gas or propane. What does it look like? This one is a bit more challenging, but you might imagine filling a balloon in front of you with some volume of natural gas, or a propane tank attached to your grill. Pipeline networks and large tanks can store vast quantities of these gaseous end-use fuels.

Now think about electricity. What does it look like exactly? Where might you store it? You might imagine a standard AA battery, which stores approximately 3 watt-hours (or 0.003 kWh) of energy.<sup>1</sup> The average residential customer in Oregon would need 9,000 AA batteries to power their house for a single day!<sup>1</sup> So while there are ways to store electricity, those storage systems have historically been limited in their ability to efficiently store energy over a long duration or in

**Table 1: Resource Adequacy Evaluation: Key Technical Questions**

Demand:	Key Technical Questions
How much power will customers require in the future?	<ul style="list-style-type: none"><li>○ <b>Energy efficiency:</b> How much in efficiency savings will accrue?</li><li>○ <b>Population:</b> Is the population expected to decline? And by how much?</li><li>○ <b>Economic growth:</b> Will the economic rate? Will it accelerate? Will it slow down?</li><li>○ <b>Electrification:</b> To what extent do you expect to see the adoption of electric vehicles or switch furnaces?</li></ul>

<sup>1</sup> Note that **Resource Adequacy** in this context focuses on long-term resource acquisition for future power supplies, whereas the similarly-named **Resource Sufficiency Tests** (applied in the short-term management of existing resources and must be met hourly in order to fully meet time markets. (See Wholesale Electricity Markets Policy Brief for more information).  
2020 Biennial Energy Report

<sup>1</sup> In 2018, the average residential customer of Oregon's investor-owned utilities consumed 10,151 kWh of electricity over the course of the entire year, or approximately 27.8 kWh per day. (EPA's Utility Statistics Book)  
2020 Biennial Energy Report

Energy 101 – Page 68

<https://energyinfo.oregon.gov/ber>



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# General Feedback



# Prompting Questions

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- Remaining slides focused on the comments we received from the Advisory Committee
- Our purpose in reviewing this is to help us crystallize our understanding of perspectives so that we can accurately represent those to the Legislature
- Our purpose is **not** to reconcile opposing perspectives to formulate recommendations
- **Prompting questions:**
  - Do you support or oppose a perspective represented on the screen?
  - Would you emphasize something differently?
  - Is there something missing?

## Objective:

To gather and synthesize the range of perspectives on the benefits, costs, opportunities, challenges, and risks of RTO formation that exist among a diverse range of Oregon stakeholders to inform the State Legislature and other interested parties.

# General Feedback

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- **Lack of Specific Design:** Several members identified the difficulty in answering these questions without a concrete framework for general market design, capacity requirements, rate structure, governance, and the allocation of costs and benefits—each element having potentially significant impacts on ultimate outcomes
  - One member suggested that this uncertainty of projected outcomes—until a time that an actual market design proposal has been established—is reason to forgo additional technical analysis
- **Context:** It is our hope, as some expressed in their comments, that the type of high-level feedback provided through this process will provide helpful context and baseline information to help the state and interested stakeholders better understand the issues implicated in RTO formation



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# Question #6: Transmission Planning & Operations



*Yaquina Head Lighthouse, Newport, Oregon*

# Question #6: Transmission Planning & Operations

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**Transmission Planning & Operation:** An RTO would be able to provide coordinated transmission planning functions and would centrally operate the transmission system across a wide geographic area, with revenues accrued from individual transmission assets flowing to the participating transmission owner.

**Please provide feedback on how these potential impacts to transmission planning and operation would or would not be preferable to the status quo. In responding, you might also consider the following issues:**

- Generation Interconnection
- Transmission planning and expansion
- Cost allocation
- Legacy transmission rights

# Question #6: Transmission Planning & Operations

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## General Feedback:

- **Agreement with Literature Review.** Multiple commenters offered general support for the findings identified in the literature that RTOs can deliver net benefits from coordinated transmission planning and operations.
  - Larger geographic footprint and more visibility can optimize transmission planning and operations
  - RTO could obligate generators to vary output to manage transmission congestion
  - Oregon’s recently adopted 100% clean energy standard makes this more important
  - Formation of an RTO is the next progression “to best achieve regional goals”
  - One commenter cautioned that “it will take considerable work to find the balance” to equitably allocate costs and convert legacy rights
- **Streamlining Current Processes.** One member commented that RTO formation could “bring about additional obstacles” to investment in transmission, and that state should instead focus on streamlining the approval of new transmission assets

# Question #6: Transmission Planning & Operations

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## Generator Interconnection:

- **Open Access.** Current generation interconnection process attempts to “equitably allocate the risk of cost recovery” but there may be improvements to this under an RTO
- **Efficiency.** RTO may more efficiently manage queue of projects regionally, particularly when project in one utility’s queue might impact a project in the queue in another utility
- **Interconnection Queues.** RTO formation would not “automatically resolve full generator interconnection queues”—utilities still obligated “to coordinate through affected system studies”
  - RTO design can ensure projects built on reasonable timelines and don’t hold up the queue
  - Including ‘cluster study’ approach to process requests could help to manage the queue
- **Standardization.** An RTO could standardize interconnection through its tariffs and business practices to ensure uniformity across a broad area and across BPA, IOUs, and COUs
  - One commenter believes this will likely help a greater diversity of resources interconnect
  - Multiple commenters believe this will reduce biases for utility-owned resources
  - Standardization can establish a “predictable, consistent process” across the region that improves upon the “inefficient and ineffective” status quo (which has long queues and high deposit costs for small projects)

# Question #6: Transmission Planning & Operations

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## Cost Allocation:

- **New Transmission.** Existing RTOs have also struggled to plan for and allocate costs for major new transmission lines—“but the problems in the RTOs are better problems to have” than Oregon’s status quo with separate “transmission fiefdoms”
  - **One View:** Status quo effectively has “no regional mechanism for cost allocation” which hampers the development of new “desperately needed” transmission projects
  - **Another view:** Cost allocation has not been the largest hurdle to new transmission development, and the costs of projects spanning multiple entities are handled through bilateral negotiations
- **Process.** RTO structure should be rooted in cost-causation principles and should include a collaborative process for accepting or disputing an RTO’s determination of transmission benefit
- **Permitting.** One commenter noted that there are often risks associated with the allocation of the costs of the time and effort associated with permitting transmission projects

# Question #6: Transmission Planning & Operations

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## Cost Allocation (continued):

- **Benefits.** FERC Order 1000 requires cost allocation to go to customers that receive the benefit from the transmission project, and RTO design can require transmission benefit analysis to reduce the potential for non-benefitting customers to bear costs
  - **But who benefits?** Some projects (such as segments designed to access new renewable resource zones) may arguably benefit all customers.
  - Experience from other RTOs shows more success in developing large transmission projects that benefit a broad base of customers that span multiple utility service territories
  - Identifying the indirect benefits of a transmission project (e.g. congestion relief) to particular customers may be easier within an RTO construct

# Question #6: Transmission Planning & Operations

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## Transmission Planning:

- **Status Quo.** NorthernGrid works with FERC-jurisdictional utilities to meet their transmission planning compliance obligations, provides common data, and a single stakeholder forum
  - One commenter described NorthernGrid’s planning process as a “long staple” that collates individual transmission plans rather than a “regional review and optimization of transmission”
  - Lack of transmission development since 2012—despite utilities identifying it as a reliability need—is evidence the “status quo for transmission planning is not working”
- **Optimization.** The optimization of existing resources in an RTO could “delay or avoid” the regional need to plan and build some transmission projects—but the impacts could vary significantly depending on the size of the region served by the RTO
- **Non-Wires.** An RTO transmission planning process should evaluate non-wires solutions
- **Congestion Charges.** Depending on how an RTO is designed, congestion price signals can be an important tool to identify the need to plan for additional transmission

# Question #6: Transmission Planning & Operations

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## Transmission Planning (continued):

- **Time Horizon.** Given significant barriers to transmission development (including siting and permitting), an RTO transmission planning effort likely requires a 20-year planning horizon
- **Path Capacity.** Transitioning from a contract- to a flow-based methodology for calculating available transmission capacity may identify more ATC in the transmission planning process
- **Expansion.** An RTO could be designed to attract investors to develop inter-regional projects identified by a regional planning process
- **Best Practices.** Regional transmission planning should evaluate transmission projects as multi-value projects with a broad range of benefits; incorporate a “least regrets” evaluation of risk when assessing new investments; and determine cost allocation on the basis of total benefits across the entire portfolio of transmission projects

# Question #6: Transmission Planning & Operations

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## Legacy Transmission Rights:

- **Voluntary Conversion.** As noted previously, the Energy Policy Act of 2005 prevents the forced conversion of existing physical transmission rights to financial rights
- **Comparison to Other RTOs.** While other RTOs have addressed legacy transmission rights, this could be more complicated in the Northwest due to the manner in which BPA markets the output of the FCRPS as a single system—and some transmission customers have designated the FCRPS as their network resource
  - One commenter noted, however, that this type of conversion is a “known process” that can “achieve beneficial results” even though there may be challenges in converting these rights
- **Mitigation Measure.** When WAPA joined SPP, it set aside transmission used to serve its preference customers to shield them from any transmission rate impacts from joining an RTO
- **Oregon Impacts.** Multiple commenters note that without knowing more specific details about an RTO design, it would be impossible to evaluate whether conversion of legacy transmission rights would be a net benefit to Oregonians

# Question #6: Transmission Planning & Operations

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## Discussion Questions:

- Do you support or oppose a particular perspective represented? Would you emphasize something differently? Is there something missing?
- **Coordinated Transmission Planning.** Incremental approaches to regionalization seem to focus more on energy markets and RA—how much urgency is there to further integrate regional transmission planning?
- **Legacy Transmission Rights.** Can you describe what it would take to consider voluntarily converting those rights to financial rights?



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# Question #7: Renewables

*Vista House, Columbia River Gorge*

# Question #7: Renewables

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**Renewables:** An RTO can be designed to support and accelerate the deployment of renewable energy projects, but these design choices could also create new challenges in some cases.

**Please provide feedback on how the implications on renewables development from RTO formation would or would not be preferable to the status quo. In responding, you might also consider the following issues:**

- Types of renewables
- Location of renewables
- PURPA
- Distributed Energy Resources
- Manufacturing potential
- Oregon jobs

# Question #7: Renewables

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## General Feedback:

- **State Policy.** State policy will likely drive significant development of new clean energy resources with or without an RTO
- **Transmission Access.** One commenter described transmission access as a significant barrier to the development of some renewables, and an RTO could help by sharing the cost of new transmission necessary to bring renewables to load
- **Resource Agnostic.** A well-run RTO market should be resource agnostic and should objectively value the energy and non-energy attributes that a resource can deliver
- **Reduced Curtailments.** An RTO would ensure that fewer renewable resources are curtailed
- **Geographic Diversity.** A regional RTO should allow Oregon customers to benefit more from high-quality renewable resource areas (e.g., wind in the intermountain states)
- **Adverse Impacts.** One commenter identified a potential cost burden on Oregon customers that could accrue from “many small renewable facilities” adversely impacting system operations

# Question #7: Renewables

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## Types and Location of Renewables:

- **Offshore Wind.** Multiple commenters believe that an RTO would benefit the development of Oregon’s offshore wind resource—which would require significant investment in generation and transmission—and identified at least one recent technical study finding the same
- **Solar.** RTO formation may impact solar development, but different views were shared:
  - **One view:** Oregon has vast solar resources in parts of the state currently “underserved by IOU transmission systems” that could benefit from increased access enabled by an RTO
  - **Another view:** Another commenter suggested that RTO formation would likely result in less solar being developed in Oregon
- **No Impact.** Other commenters suggested that RTO formation would be unlikely to impact the types of renewables developed in Oregon
- **Location.** The location of renewable development can be significantly impacted by transmission access (or lack thereof) and the costs of that transmission on customers is an important consideration—an RTO may identify the most efficient upgrades to deliver renewables

# Question #7: Renewables

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## PURPA:

- **Non-Discriminatory Access.** Multiple commenters flagged FERC Order 872 that lowered the mandatory purchase obligation on utilities for renewable QFs from 20 MW to 5 MW, but also noted that the basis for this change was the non-discriminatory market access afforded by RTO energy markets—something which is a critical consideration during RTO design
- **Existing QFs.** Utilities that have existing legally enforceable obligations to purchase power from QFs would continue to honor those agreements for their duration
- **Retail Rates.** One utility commenter asserted that it currently pays “far more” for generation from PURPA projects than for average market purchases, such that the limitations on utility QF obligations from joining an RTO would be “advantageous for Oregon customer rates”

# Question #7: Renewables

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## PURPA (continued):

- **Disaggregated QF Projects.** One utility commenter cautions that RTO formation “would incentivize QFs to disaggregate” to avoid the limitations on utility purchase obligations for renewable QFs sized greater than 5 MW
- **GHG Tracking.** HB 2021 excludes PURPA QFs from “determining a retail electricity provider’s overall emissions” for compliance with clean energy targets—as a result, RTO formation would not likely have a significant impact in this regard
- **Streamlined Development.** The QF purchase limitation on renewables sized more than 5 MW would streamline the development process, increase competition, and ease the administrative burden on utilities and stakeholders

# Question #7: Renewables

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## Distributed Energy Resources:

- **General.** NY and CA each operate RTOs and are widely viewed as the states with most successful DER programs—pairing RTOs with supportive legislation and mandates
- **Resource Agnostic.** RTO markets should be agnostic toward specific resources, and as such should fairly compensate DERs for the value of energy, capacity, and grid services provided
- **FERC Order 2222.** Requires RTOs to adopt market rules that allow for aggregated DERs to bid into energy markets as a single resource
  - One commenter suggests that a Northwest RTO could identify best practices in CAISO and PJM, and consult with PNNL, to “proactively facilitate the integration of DERs”
- **System Impacts.** One utility commenter notes the potential for DERs to impact the grid in “unanticipated ways” due to decentralized location, and proposes centralized control of DERs that are responsive to prices set by market principles to mitigate these impacts
- **No Impact.** One commenter suggests that few DERs would rise to the level of RTO impacts

# Question #7: Renewables

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## Manufacturing / Jobs Benefits:

- **General.** Multiple commenters expect that an RTO would result in a net benefit to Oregon jobs.
  - Increased opportunity for construction jobs to build new in-state renewables
  - RTOs facilitate corporate renewable purchases, which further supports additional renewable development jobs + may help encourage more corporations to locate in Oregon
- **Uncertainty.** Without evaluating a specific market design, it is not certain whether RTO formation would result in a net increase or decrease to manufacturing and/or jobs in Oregon
- **In-State Requirements.** Multiple commenters voiced opposition to state-specific job requirements on the basis that utility ratepayers should not subsidize economic development and that any effort by Oregon to do this would likely prompt other states to do the same

# Question #7: Renewables

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## Discussion Questions:

- Do you support or oppose a particular perspective represented? Would you emphasize something differently? Is there something missing?
- **DERs.** Multiple commenters offered support for resource agnostic energy markets. Are there any particular concerns about how other RTO are designed that would disadvantage certain resources, like DERs? Or, does FERC Order 2222 sufficiently address this?
- **Manufacturing.** Commenters generally don't expect significant impacts to in-state manufacturing from RTO formation, and several suggested that an RTO shouldn't be viewed as a tool to support in-state manufacturing. That said, multiple commenters also pointed to RTO formation making offshore wind development more likely. Given the nature of offshore wind projects, to what extent might RTO formation indirectly support in-state manufacturing?



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# 10-Minute Break (Return at 10:20)

*Sunset on the Columbia River in Boardman*



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# Question #8: Environmental Impacts

*Crater Lake National Park*

# Question #8: Environmental Impacts

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**Environmental Impacts**: Aggressive carbon policies already in place in the West, including Oregon, make it unlikely that RTO formation would significantly accelerate a reduction in carbon emissions. There are, however, other potential environmental considerations resulting from RTO formation.

**Please provide feedback on how the environmental impacts resulting from RTO formation would or would not be preferable to the status quo. In responding, you might also consider the following issues:**

- Thermal dispatch
- Geographic footprint of renewables development
- Environmental justice
- Greenhouse gas accounting

# Question #8: Environmental Impacts

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## General Feedback:

- **Overall.** Multiple commenters **disagreed** with the statement derived from the literature that it is “unlikely that RTO formation would significantly accelerate a reduction in carbon emissions” compared to the status quo on account of existing state policies (e.g., HB 2021 in Oregon)
  - Multiple commenters cited reduced curtailment of renewables, more efficient dispatch of thermal generation, and the ability to share better share resources across a wide region
  - One commenter noted that states generally have not identified how state clean energy policies would actually interact or be implemented with RTO markets
- **Meeting State Goals.** Multiple recent studies have identified that achieving state clean energy targets is “predicated upon the existence of a fully integrated regional grid”
- **No Impact.** One commenter offered that it is probably unlikely that RTO formation would have much influence on environmental aspects
- **Cost Optimization.** One commenter emphasized that RTO markets are focused on “finding the most economic and reliable solution to serve load” and are not the best vehicle for promoting one particular state’s policies over another

# Question #8: Environmental Impacts

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## Thermal Dispatch:

- **State Mandates.** RTO formation would not pre-empt or otherwise undermine existing state laws (such as the coal phase-out adopted by Oregon's SB 1547)
- **Inefficient Thermal.** Operation of an RTO would reduce the dispatch of the most inefficient, costly, and GHG emitting thermal units
- **Remaining Gas Capacity.** One commenter noted that a recent technical study identifies a continued need for gas as a capacity resource through 2045, but that having an RTO will ultimately help to facilitate the replacement of that capacity at least cost
- **RTO Design.** Sound RTO design could minimize the dispatch of thermal units and ensure that RTO markets avoid an outcome of diminishing the targeted environmental outcomes of existing policies
- **Long-term Benefits.** Any short-term increased dispatch of thermal units should be evaluated against the long-term benefits of RTO formation

# Question #8: Environmental Impacts

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## Land Use Impacts:

- **Overall.** Multiple technical studies have identified that RTO formation would allow for a smaller land use footprint for renewables development to meet state clean energy targets
- **It's Complicated...** While an RTO might result in less land use impact overall, it could shift the locations of land use development for renewables—perhaps more appropriate to consider this through state and local land use planning instead of RTO design
- **Existing Processes.** RTO formation would not eliminate or otherwise impact existing federal and state siting and permitting requirements for generation and transmission

# Question #8: Environmental Impacts

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## Environmental Justice:

- **General Impacts.** One commenter suggested that it would not be possible to evaluate this issue absent a specific RTO market design, while others suggested:
  - RTO could more effectively facilitate DER deployments which states could leverage to support projects in environmental justice communities
  - Optimizing the efficient use of generation and transmission would lower costs for all, which would have a disproportionate positive impact in communities with higher energy burdens
- **RTO Development.** One commenter contends that environmental justice and equity considerations “should absolutely be considered in the planning for an RTO” and that states should assert their authority over companies with a financial interest in RTO formation to ensure these considerations are appropriately addressed in RTO design
- **An Alternative View.** A multi-state RTO cannot drive a single state’s policies, particularly with regard to environmental justice, and these issues may be best addressed by PUCs

# Question #8: Environmental Impacts

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## GHG Accounting:

- **Lack of Consistency.** Most commenters are in agreement that states with GHG policies have inconsistent ways of tracking emissions and attributing emissions to sources
  - **One view:** Multiple commenters suggest that this lack of consistency should be addressed in RTO design to develop a consistent regional mechanism in parallel with market design and that developing such a mechanism is “one of the central promises of a new western RTO”
  - **Another view:** One commenter argued that RTO formation in the Northwest would not need to “create a new policy construct” to accommodate state GHG objectives, as CAISO and NE-ISO have established “robust solutions” that accommodate disparate state GHG policies
  - **A third view.** While improved regional GHG accounting could be a “beneficial outcome” of RTO design, it is “not a fundamental pre-requisite”
- **Cost of Compliance.** The cost of compliance with a particular state’s GHG policy should be allocated to the customers of that state and not passed on to members in other states

# Question #8: Environmental Impacts

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## GHG Accounting (continued):

- **General.** One commenter contends that an RTO should have policies that require:
  - **Record retention:** Retention policies for documents related to accounting and verifying GHGs
  - **Transparency:** Transparency in accounting including reporting data and sharing verification
  - **Scheduling:** Allow scheduling coordinators to incorporate GHGs in energy sourcing and dispatch
  - **Tracking:** GHG tracking for all power transactions, including the source of power bought/sold
  - **Unspecified Power:** Clear guidelines for how to treat GHG tracking for unspecified power
  - **Reporting:** Development of GHG tracking report, including accounting for state purposes

# Question #8: Environmental Impacts

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## Discussion Questions:

- Do you support or oppose a particular perspective represented? Would you emphasize something differently? Is there something missing?
- **GHG Impacts.** Would RTO formation actually *accelerate* GHG reductions? Or would it help states like Oregon to meet its existing GHG reduction policies more cost effectively?
- **Equity and Environmental Justice.** While RTOs shouldn't be evaluated as a tool to solve all of the industry's problems—to what extent should equity and environmental justice concerns be fundamental considerations when evaluating potential RTO formation? (e.g., ensuring that historic injustices aren't exacerbated by RTO formation.)



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# Question #9: Climate Resilience

*St. John's Bridge, Portland*

# Question #9: Climate Resilience

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**Climate Resilience**: For the most part, the studies reviewed did not consider the impacts of RTO formation on energy resilience in the context of our rapidly changing climate. For example, just in the last year, catastrophic wildfires have necessitated the need to shut off power to Oregon communities; historic winter ice storms resulted in widespread outages in the Willamette Valley; and dense smoke from a wildfire earlier this summer forced an outage of major transmission lines connecting Oregon to California.

**Please provide feedback on how climate resilience implications resulting from RTO formation would or would not be preferable to the status quo. In responding, you might also consider the following issues:**

- Geographic diversity of resources
- Wildfire nexus

# Question #9: Climate Resilience

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## General:

- **Uncertainty.** Without knowing the specific design of an RTO, it is not knowable whether RTO formation would be preferable to the status quo when it comes to climate resilience
- **Sharing Resources.** Neighboring utilities and regions sharing resources with one another is “simply easier in an RTO” and making it easier to respond to climate-driven extreme weather
- **Transmission Paths.** An RTO may reduce barriers to transmission development allowing for additional routes for energy to flow in the event a path goes down (e.g., Bootleg fire impacted the COI)
- **Situational Awareness.** An RTO may provide superior operational visibility and control of generators and transmission to better respond to severe events
- **Complications.** Stakeholders need to be working on resiliency within the current model, and RTO formation may introduce complications to those efforts at the local level

# Question #9: Climate Resilience

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## Diversity of Resources:

- **Geographic Diversity.** Assuming an RTO drives additional transmission development, it could help to support the development of a diversity of least-cost resources over a wide area—this geographic diversity will help the region to ensure the resilience and reliability of the system
- **Resource Procurement.** States will retain purview over decisions about resource procurement, while an RTO will dispatch the resources made available according to least-cost
- **Least Cost Solutions.** Development of resilience solutions closer to load could be at odds with the development and operation of least-cost regional transmission solutions
- **FERC Order 2222.** Order 2222 allows for microgrid projects to aggregate and bid into wholesale energy markets, potentially providing a new pathway to develop these resilience solutions
  - One commenter, however, believes that it is “unlikely that an RTO would be a forum that would promote microgrids”

# Question #9: Climate Resilience

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## Wildfire Nexus:

- **Mitigation vs. Impacts.** Unlikely that an RTO could be designed to do much to mitigate wildfire risks, but it must be designed to take into consideration how wildfire could impact operations/services
- **Diversification.** The diversification of resources, geography, and alternate paths that an RTO may make viable can help to address the risks posed by wildfire to the power system
- **Common Standards and Practices.** An RTO can improve situational awareness and support the development of common standards and practices, such as for operational measures like Public Safety Power Shutoff (PSPS) during high wildfire risk scenarios
- **Transmission Development.** While an RTO is unlikely to mitigate wildfire risks, to the extent an it supports additional transmission development, an RTO could alleviate constraints that would otherwise occur due to paths being impacted by wildfire

# Question #9: Climate Resilience

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## Discussion Questions:

- Do you support or oppose a particular perspective represented? Would you emphasize something differently? Is there something missing?
- **RTO Formation.** Again—while RTOs aren't a tool to solve all of the industry's problem, to what extent should considerations of climate resilience be essential to evaluation of RTO formation?
- **Community Resilience.** Given our rapidly changing climate, how important is it that future energy markets, like those operated by an RTO, provide a pathway to the development of DERs that can improve community resilience?



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# Question #10: Governance

*Trillium Lake, Mt. Hood*

# Question #10: Governance

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**Governance**: Many of the issues identified here help to illuminate the need for effective governance of an RTO that would ensure Oregon's perspectives are adequately represented.

**Please provide feedback on the priorities or principles that should be incorporated in the development of governance mechanisms for an RTO. In responding, you might also consider the following issues:**

- Best Practices
- New Practices
- State Interests
- Governance Principles

# Question #10: Governance

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## Best Practices:

- **Western RA Program.** Multiple commenters suggested that the governance proposals being considered for the NWPP’s Western RA Program are a good reference for best practices that would be applicable to an RTO
- **State Involvement.** Meaningful state involvement in RTO governance was identified as “key to a well-functioning RTO,” and SPP’s Regional States Committee and the EIM’s Body of State Regulators were cited as examples
- **Member Involvement.** One commenter noted that SPP has a “strong member participation model” of governance which encourages member engagement to develop rules and policies
- **Diverse Perspectives.** One commenter suggested that RTO Governance should incorporate committees or other modes of participation that incorporate diverse perspectives—involving stakeholders in a Nominating Committee to select board members identified as one mechanism
- **Need for Balance.** It will be “important to balance the need for public stakeholder input with the needs of participating entities” when designing RTO governance structures

# Question #10: Governance

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## Best Practices (continued):

- **SPP vs. EIM.** One commenter identified some unique strengths of two competing RTO governance models—SPP and EIM:
  - **SPP.** Model has been “effective in allowing for growth and expansion. . . to encompass multiple states and regions.” The independence and flexibility of its governance structure “should be replicated” especially with regards to its transparent decision-making.
  - **EIM.** The use of a Nominating Committee representing diverse stakeholders to select EIM Board Members “may be worthy of replicating.”
- **Western EIM.** The reservation of “ultimate decision making” with the CAISO Board of Governors—appointed by the California Governor with a fiduciary responsibility for California ratepayers—is a fundamental element of EIM governance which makes it “unworkable for an RTO”
- **SPP.** One commenter suggests that the RTO should have “prioritized representation” for ratepayers and customers who “ultimately pay for the RTO product” and that SPP’s model in this regard “should be unacceptable”

# Question #10: Governance

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## Protecting State Interests:

- **Market Design.** RTO market design should not occur without significant support from participants and the state, as appropriate design can help to mitigate an RTO from “overriding state policies”
  - Similarly, one commenter suggests that RTO design should include protections designed to retain and/or not pre-empt state and local decision-making to the extent possible
- **GHG Accounting.** RTO formation should require “compliance with current and future state agency policies regarding” GHG accounting requirements
  - One commenter noted that different state carbon and renewables rules can “significantly impact the efficiency and effectiveness” of an RTO and that aligning state policies could mitigate this
- **State Involvement in Governance.** Meaningful state involvement in RTO governance was identified as “key to a well-functioning RTO,” and SPP’s Regional States Committee and the EIM’s Body of State Regulators were cited as examples
- **FERC Engagement.** States should intervene in FERC proceedings “related to development of markets where the proposed governance structure does not meet the needs of the state” — including obtaining Section 205 filing rights
- **State Obligations.** State regulatory and legislative requirements, if properly designed, should not result in conflict between RTO operation and utility compliance with state requirements

# Question #10: Governance

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## Governance Principles:

- **Independence.** Governing board members should not be affiliated with the interests of a particulate subset of stakeholders
- **Transparency.** Stakeholder and board processes should be fully transparent
- **Technical Competence.** Board members should understand “organized markets and the unique qualities” of participating utilities.
- **Equitable Allocation.** Board should maintain a fair and equitable market that ensures an equitable allocation of costs and benefits
- **Require Balanced Decisions.** Governance structure should prevent an RTO from “making significant policy changes without significant support” from states and market participants
- **Fiduciary Duty.** Governing policy should clearly define the public service role of the RTO and the related fiduciary duty of its Board

# Question #10: Governance

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## Governance Principles (continued):

- **Protection.** Governing decisions should protect the market from market power and manipulation
- **Compliance.** Board should ensure that all RTO policies comply with federal and state regulations
- **Stakeholder Confidence.** Board should maintain confidence of stakeholders that they are fairly balancing the range of interests and priorities of diverse stakeholders
- **Diverse Board Representation.** Board make-up should represent the sectoral and geographic diversity of the territory covered by the RTO—and this should be periodically revisited
- **Diverse Input.** Governance structure should allow for “meaningful input” from public power, state policymakers, retail customer and public interest advocates, in addition to market participants
  - One commenter suggests that the RTO should have “prioritized representation” for ratepayers and customers who “ultimately pay for the RTO product” and that SPP’s model in this regard “should be unacceptable”
  - One commenter suggests that public power have prioritized and separate representation

# Question #10: Governance

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## Discussion Questions:

- Do you support or oppose a particular perspective represented? Would you emphasize something differently? Is there something missing?
- **SPP vs. EIM.** Notwithstanding entanglement of CAISO's governance with the California Governor and Legislature, multiple commenters identified various elements of SPP's and EIM's governance that they support or oppose. Can you articulate any particular elements of either of those governance structures that should not (or must not) be replicated as part of any future RTO governance structure?
- **State Involvement.** Many commenters indicate that it should be a requirement for states to have strong involvement the design of an RTO and in having meaningful input during the ongoing governance of an RTO. Can you identify specific elements or define what that state involvement must look like from your perspective?



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# Question #11: Market Design Optionality

*Harney County, Oregon*

# Question #11: Market Design Optionality

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**Governance**: There are numerous ways that energy markets could be designed. The studies we reviewed considered multiple different constructs, from the bilateral status quo, to an expansion of real-time (EIM) and day-ahead markets (EDAM), to multiple full RTOs across the West or a single West-wide RTO.

**Please provide feedback on the priorities or principles that should be considered when designing specific energy markets like those that would be administered by an RTO. In responding, you might also consider the following issues:**

- Retail Customer Benefits
- Optionality
- Marginal Cost Dispatch

# Question #11: Market Design Optionality

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## General:

- **Bigger is Better.** A bigger, more geographically diverse footprint “would be desired” to spread out an increasing amount of variable renewable output across the map—but size also adds complexity
- **Minimum Size.** There is a minimum size geographic footprint needed to “justify the cost of developing and transitioning” to an RTO
  - One commenter suggested: the minimum size for an RTO is probably “the Northwest region” and that any RTO footprint that “fragments the Pacific Northwest” could create friction and inefficiencies
- **CAISO Expansion.** Before CAISO could expand into a Regional RTO, it would “have to adapt its governance structure to become independent from the government of California”
- **Incrementalism.** A full RTO solution “may not necessarily be the right solution” for the West at this time—should be expected that grid integration evolution and incremental market expansion (e.g., EIM and EDAM) will continue
- **Status Quo.** Partial regionalization—as represented by more utilities (and soon BPA) participating in EIM, and the development of a potential EDAM—is preferable to RTO formation for the Northwest

# Question #11: Market Design Optionality

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## Retail Benefits:

- **Bigger is Better.** Multiple commenters suggested that, generally, a bigger geographic footprint will increase net benefits to retail customers
  - **Another view.** Some preliminary analysis by one commenter suggests that an RTO market footprint “with and without CAISO may result in only a nominal difference in net benefits”
  - **A third view.** To see real retail benefits, the RTO’s geographic footprint needs to be “large enough” to generate diversity in load and generation.
- **Governance > Benefits.** Focus and emphasis should be placed on developing effective, independent governance rather than trying to identify the maximum potential benefit achievable.
- **Transmission.** Evaluation of the impact on retail benefits of expanding the geographic footprint of an RTO must also consider the increased cost for transmission as the footprint grows
- **Scale of Benefits.** One commenter pointed to a recent technical study that found 3x the gross benefits would accrue from a fully functional Regional RTO (including: imbalance and day-ahead markets, RA, and transmission planning) compared to the status quo with existing (EIM) and planned (EDAM) market enhancements

# Question #11: Market Design Optionality

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## Optionality:

- **Negotiated Outcomes.** An RTO can be organized many ways, but will be the result of a larger negotiation with stakeholders—focus should be building on best achievements of existing efforts
- **Single Entity RTO.** Would be “preferable to establish a single entity responsible for all the traditional functions of an RTO” but that single entity “should not be” the CAISO as currently constituted
- **Separating Functions.** A multi-jurisdictional regional system that separates out traditional RTO functions is possible, but a fully functional single RTO would provide the greatest benefits
  - **One view:** One commenter contends that separated RA and transmission functions must be correlated and in sync across the same geography in order to “realize the full benefits” that an RTO could deliver
  - **Another view:** A multiple construct path could be viable as long as the important functions (transmission planning, RA, reserve sharing, and real-time marketing) are provided effectively—this may allow for “many of the benefits to be realized sooner with less execution risk”
  - **A third view:** Market alternatives that include “hybrid constructs” (i.e., EIM, NWPP RA, SPP Day-Ahead) should be “considered, if not prioritized”
- **EIM Model.** The existing Western EIM “balances these interests well,” providing diversity benefits to Oregon customers while preserving state influence

# Question #11: Market Design Optionality

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## Marginal Cost Dispatch:

- **Great Problem to Have.** Markets may need to grapple with this “mostly academic issue” — ultimately it’s a “great problem to be faced with” for customers
- **With or Without RTO.** One commenter suggests that this is going to be an issue with or without an RTO as more renewable generation is developed, and the NWPP RA effort will begin to address it
- **Capacity Value.** To mitigate these concerns, the market should account for capacity value, not just the marginal cost of dispatch
- **Flexibility.** The flexibility of resources should also be compensated by energy markets to address the value of these resources to integrate the uncertain and variable output of renewables
- **Hydropower.** The Northwest’s hydropower resources are unique compared to other regions of the country, and this unique resource must be taken into account when designing an RTO
- **Missing Money Problem.** Low marginal cost prices in energy markets may not adequately reflect the value of the investment needed in dispatchable resources to maintain reliability—this issue is addressed differently by different RTOs: separate capacity market payments (PJM), energy-only markets (ERCOT), and hybrid administratively determined capacity procurements (SPP and MISO)

# Question #11: Market Design Optionality

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## Discussion Questions:

- Do you support or oppose a particular perspective represented? Would you emphasize something differently? Is there something missing?
- **Missing Money.** As identified previously—we shouldn't look to potential RTO formation as a solution to all of the industry's challenges. To what extent do you believe that potential RTO markets must be designed explicitly to address the so-called “missing money” problem? Or would it be acceptable for out-of-market actions to continue to drive capacity procurement?
- **Flexibility.** With respect to potential RTO formation, should the sector's needs for flexible capacity be evaluated separately from the challenges identified by the “missing money” problem? Would potential RTO markets need to be designed to value flexible capacity explicitly, or would it be acceptable for out-of-market actions to address the need for flexibility?



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# Roundtable Discussion & Next Steps



# Roundtable Discussion

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**(1) Problem Statement:** Can we clearly articulate or define what problem(s) the electricity sector is attempting to address by evaluating RTO formation? And what, if anything, has changed that makes this answer different in 2021 than in previous decades?

# Roundtable Discussion

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**(2) Incrementalism:** Incremental approaches to regionalization have been discussed as an alternative to RTO formation, and some have suggested there may be potentially different definitions for what might constitute sufficient vs. insufficient incrementalism.

- **Steps.** What incremental steps have been taken? Are under consideration? Could be considered?
- **Sufficient Incrementalism.** Can members define how much incremental regionalization is sufficient for their organization?

# Roundtable Discussion

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**(3) What's missing?** We covered a lot of issues, but we know we didn't cover everything. Are there other questions or issues (whether substantive or process-oriented) that you think would be important for this committee to discuss as a group to provide maximum value to the Legislature?

# Next Steps for this Advisory Committee

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- **SB 589 Requirements:** ODOE is required to convene this committee a minimum of two times.
  - Do we need to meet for a third time? A date has been held for Wed. 10/27.
- **Draft Report:** ODOE will be consulting with the PUC to develop the report to the Legislature over the next month.
  - We will provide a minimum of 2-weeks for review
  - Anticipate releasing a draft no later than Wed. 11/24
- **Thank you again!**



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# Public Comment



# Public Comment

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**(1) Please state your name and any affiliation/organization**

**(2) Identify which agenda item you're responding to:**

- Primary issue that you'd like to surface
- Issues we missed in the questions
- *Question #6:* Transmission planning and operations
- *Question #7:* Renewables
- *Question #8:* Environmental impacts
- *Question #9:* Climate resilience
- *Question #10:* Governance
- *Question #11:* Market design optionality

**Each commenter will be limited to 5 minutes. Thank you!**

# 2021 Bill Implementation at ODOE: **Studies**

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# Thank you!

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