THE BENEFITS OF NEW REGIONAL TRANSMISSION PLANNING ENTITIES IN THE U.S. WEST AND SOUTHEAST REGIONS

CEBI
Clean Energy Buyers Institute

Grid Strategies

TABLE OF CONTENTS

INTRODUCTION

The importance of a robust regional transmission network is now widely recognized. In areas outside the U.S. West and Southeast, independent regional transmission planning entities evaluate and plan grid upgrades that maximize system reliability and efficiency, assessing their generation resource mix, availability of transmission corridors, and various other factors. Each region is larger than any individual utility and has opportunities to efficiently move power across the entire region, if the regional planners have a large enough geographic scope.

When these planning entities are independent of any company, they can find solutions that work best for all customers in the area. This paper evaluates the opportunities and benefits of creating independent regional transmission planning entities for the West and Southeast.

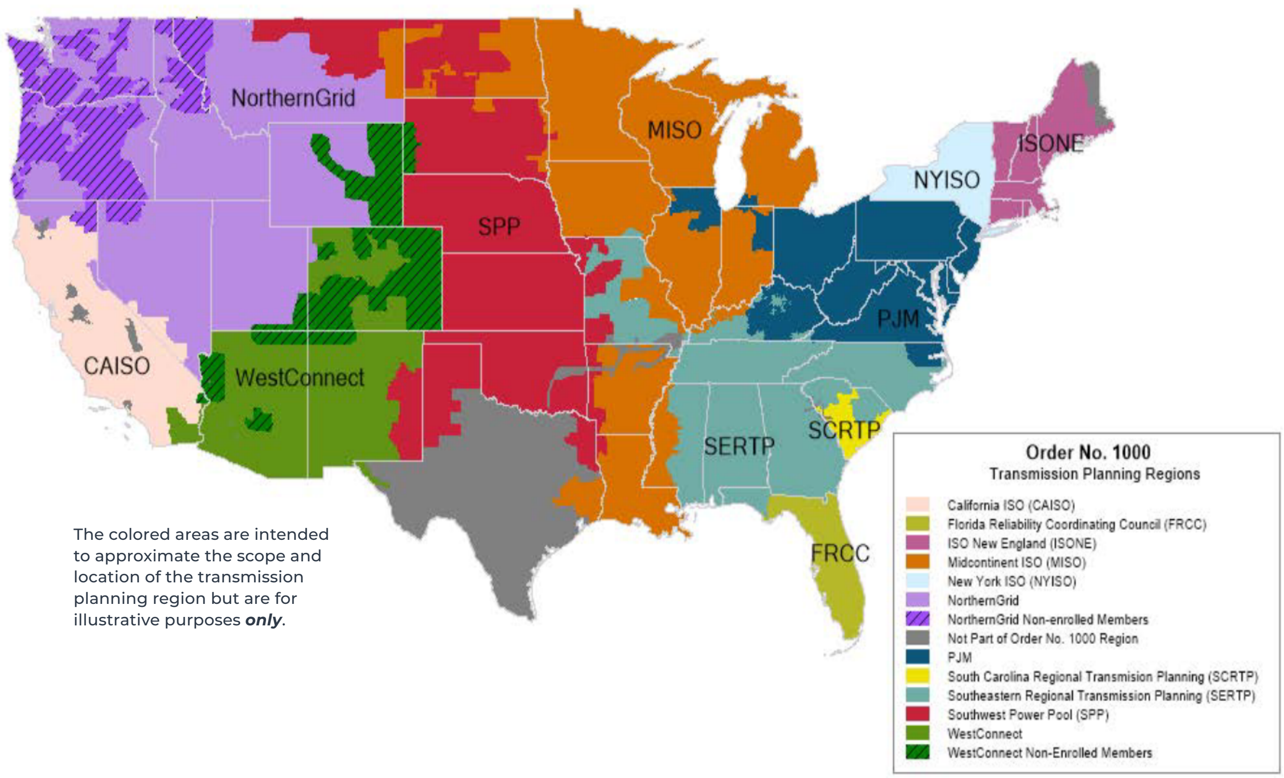
Large and small energy customers benefit from a robust transmission network driven by regional-level analysis. When the grid is congested, the local utility must dispatch higher cost generation and pass those costs on to customers. End-use customers have no control over this outcome, even when they have power arrangements directly with generators or indirectly through the utility.

Reliability requirements necessitate the dispatch of available generation where it is needed, regardless of the type of generation energy buyers have elected to use. In the Southeast and West, there is no independent regional process or institution to plan a robust regional grid that would prevent this expensive and potentially customer-unfriendly redispatch.

The U.S. Federal Energy Regulatory Commission (FERC) requires certain transmission planning actions. FERC issued Order No. 890 in 2007 requiring transmission planning by each utility. FERC issued Order No. 1000 in 2011, requiring coordination within a region. These requirements proved easy for utilities to meet, without doing any meaningful planning regionally or independently.

The Order 1000 Regional Planning Entities in the Southeast and West, shown in the map of the United States below, merely report their transmission upgrades, rather than attempting to plan optimal regional infrastructure investment.

Regional Planning Entities for the West and Southeast under FERC Order No. 1000[1]



However, the West and Southeast could develop real transmission planning processes to perform these functions, on a region-wide and independent basis. In the sections below, we evaluate the benefits of independent region-wide transmission planning, the current situation in the West and Southeast, and the additional benefits and functions beyond planning that an independent region-wide institution such as a regional transmission organization (RTO) could provide. We also examine how these efforts relate to FERC initiatives and next steps these regions could undertake.

1 FERC, "Regions Map Printable Version Order No. 1000," November 2021, https://www.ferc.gov/media/regions-map-printable-version-order-no-1000.

MEANINGFUL AND ROBUST REGIONAL TRANSMISSION PLANNING BENEFITS

Industry and academic consensus supports the proposition that the energy transition (driven by economics, demand, and public policy) will require significantly more transmission infrastructure in the next couple of decades. Transmission planning can benefit all sectors and stakeholders but in particular customers. Appendix A lists 32 customer and/or Southeastern or Western entities that expressed support, in a FERC proceeding, for proactive transmission planning.

Large-scale regional and interregional transmission is not new; it was a significant factor for much of the electric industry's development to connect remote hydropower, coal, and nuclear plants. The Pacific DC intertie completed in 1970 between the Pacific Northwest and Southern California took advantage of the fact that loads peaked at different times, and the areas had surpluses to share back and forth daily and seasonally.

For the last 30 years, generation development in most of the United States has been dominated by natural gas plants, which could be placed closer to demand and connected with pipelines to gas resource areas. In response, large scale transmission investment and planning waned. Utilities have used transmission in a limited way to connect with each other as a reliability measure and to cut the costs of local backup generation.

All types of generation experience mechanical failure and reasons to shut down, such as maintenance and fuel replacement. To always ensure adequate supplies, sharing generation via transmission connections is useful to all utilities. Utility-only planning, often through Integrated Resource Planning, rarely considers regional transmission opportunities. To achieve resource adequacy with sufficient resources on a long-term basis to meet demand, customers can often save money when transmission taps into geographically diverse sources of electric supply and demand in neighboring areas that have opposite or minimally correlated patterns.[2]

In today's evolving power sector, these factors driving the use of regional and interregional transmission capacity are gaining momentum. An increasing amount of energy is found in remote areas where land is less expensive and wind and solar productivity is high. Individual states rarely have a full diversity of power sources within state borders.

In response to questions about regional planning benefits from FERC, Washington and Oregon state agencies noted:

> Washington's 2021 State Energy Strategy recognizes that it will be necessary to increase the capacity of existing transmission and build new transmission to serve the needs of Washington State, the Northwest region, and states throughout the Western Interconnection to achieve these important statutory and policy goals, and to ensure coordination and efficient use of the diversity of resources across the West.[3]

Also, in response to FERC, the Arizona Corporation Commission stated:

> The ACC supports requiring utilities to participate in interregional transmission coordination procedures. Currently, Arizona does not have an Independent System Operator and the region lacks a Regional Transmission Organization. The Commission should ensure its proposed reforms respect state and utility decisions whether to join or establish an RTO or ISO. In the absence of an RTO or ISO, the ACC believes requiring public utility transmission providers to revise their existing interregional transmission coordination procedures to reflect the reforms proposed by the Commission, could lead to improved reliability, reduced costs for customers, and additional opportunities for the integration of intermittent, renewable resources.[4]

Reliability benefits of regional connections are increasing. Localized threats such as extreme weather can affect supply sources while also causing demand to spike.[5] In just a short period of time, the costs of limited transmission can be so extreme that the savings from capacity expansion can cover the costs of the investment. During winter storm Uri, which lasted from February 12 to 20, 2021, every additional gigawatt of interregional transmission capacity would have saved ratepayers as much as $1 billion over those days.[6]

---

2 Stenclik and Deyoe, "Multi-Value Transmission Planning for a Clean Energy Future," Energy Systems Integration Group, June 2022, https://www.esig.energy/wp-content/uploads/2022/07/ESIG-Multi-Value-Transmission-Planning-report-2022a.pdf

3 *See* Washington Utilities and Transportation Commission, Oregon Public Utility Commission, Washington State Department of Commerce, and Oregon Department of Energy Comments on Building for the Future Through Electric Transmission Planning and Cost Allocation and Generator Interconnection Regional, Docket No. RM21-17-000, 179 FERC ¶ 61,028 (2022) at 3.

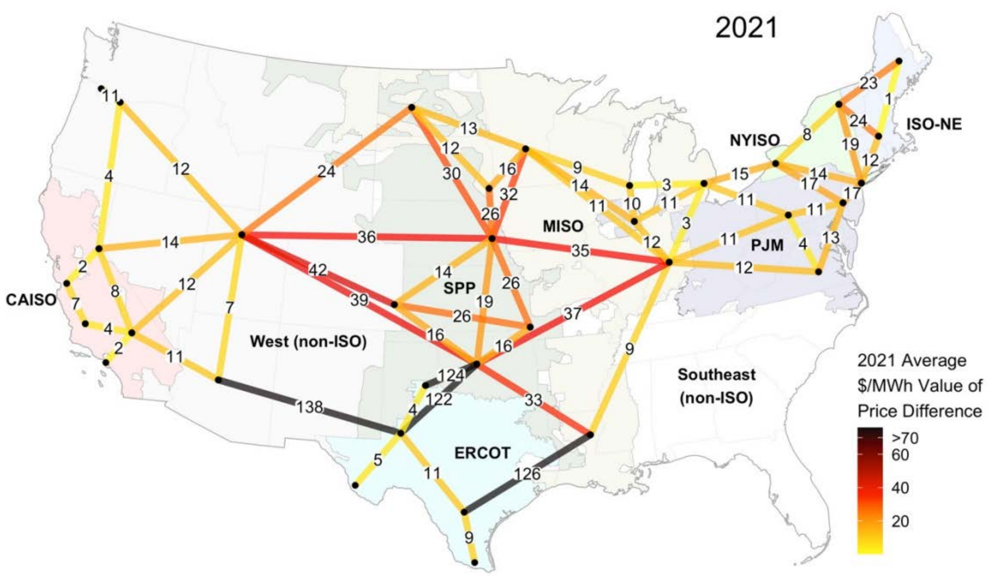
4 *See* Arizona Corporation Commission Comments on Building for the Future Through Electric Transmission Planning and Cost Allocation and Generator Interconnection Regional, Docket No. RM21-17-000, 179 FERC ¶ 61,028 (2022) at 10.

5 Murphy, Apt, Moura, and Sowell, Resource Adequacy Risks to the Bulk Power System in North America, Carnegie Mellon Electricity Industry Center Working Paper, (n.d.); Murphy and Sinnot, Correlated Generator Failures and Power System Reliability, Carnegie Mellon University, 2019. Gramlich, Goggin, Caspary, Schneider, "Fleetwide Failures," https://gridprogress.files.wordpress.com/2021/11/fleetwide-failures-how-interregional-transmission-tends-to-keep-the-lights-on-when-there-is-a-loss-of-generation.pdf.

6 Michael Goggin, "Transmission Makes the Power System Resilient to Extreme Weather," July 2021, https://acore.org/wp-content/uploads/2021/07/GS_Resilient-Transmission_proof.pdf

These benefits can be difficult to model. The Lawrence Berkeley National Laboratory has found that 50% of transmission's congestion value comes from 5% of hours.[7] Many models will underweight the value of transmission's economic and reliability contributions because the value is concentrated in few hours and abnormal conditions.

Grid congestion is increasing, revealing the need for regional transmission expansion. Transmission congestion means that limited transmission capacity requires more expensive generation to be dispatched locally, and customers must pay for these higher costs. Average locational marginal price differences over the course of 2021 for many of the transmission paths in the Western region in the figure below were over $10 per megawatt hour (MWh),[8] a difference that can be attributed to a lack of transmission capacity.



LBNL Estimate of Economic Value of Transmission Links[9]

Another factor that increases the benefits of regional transmission capacity today compared to the last few decades is that many aging transmission facilities need to be replaced. American Electric Power (AEP) estimates that 30% of their lines will need to be replaced in the next decade.[10] Other utilities are likely to be in a similar position, which could mean 200,000 miles of lines reaching end-of-life in the near term.[11]

When assets are replaced, there is usually an opportunity to address the same need with an alternative investment that can solve other regional needs. This opportunity for greater efficiency through regional solutions requires a regional analysis and plan to implement the best solutions.

Another driver of transmission capacity needs is power demand growth as electric heating and transportation increases. Heat pumps and battery powered cars and trucks have become cost-competitive

7 Millstein et al., "Empirical Estimates of Transmission Value using Locational Marginal Prices," Lawrence Berkeley National Lab, August 2022, https://eta-publications.lbl.gov/sites/default/files/lbnl-empirical_transmission_value_study-august_2022.pdf

8 Ibid., page 2.

9 Ibid.

10 AEP, "UBS Winter Conference," at 46, January 10, 2022, https://www.aep.com/Assets/docs/investors/eventspresentationsandwebcasts/UBSWinterConference01-10-22.pdf

11 Caspary and Schneider, "Advanced Conductors on Existing Transmission Corridors to Accelerate Low Cost Decarbonization," March 2022, https://acore.org/wp-content/uploads/2022/03/Advanced_Conductors_to_Accelerate_Grid_Decarbonization.pdf

and are supported by federal incentives. When regions take electrification estimates into account, power demand and transmission needs tend to increase significantly. For instance, CAISO predicts peak load of 82,364 MW in 2040,[12] compared to its 2022 peak of 52,061 MW.[13] Electric heating will further tie electricity demand to the weather, particularly during winter peak periods, further increasing the value of transmission for making the power grid larger than localized weather phenomena.

For these reliability and economic reasons, the current and expected future resource mix calls for a reinvigoration of large-scale regional and interregional transmission. What might not have been needed much over the last few decades is needed now, in each region.

Meaningful and robust regional transmission planning, as opposed to the status quo of simply reporting utility plans, would include:

- Estimating future generator additions and retirements across the region;
- Estimating future power demand and shape across the region;
- Modeling the power system to meet energy and resource adequacy requirements on a least-cost basis, incorporating economic trade-offs between generation and transmission;
- Evaluating and identifying optimal configuration and technology options;
- Engaging states, utilities, customers, and other stakeholders for review, comment, and development of consensus plans and fair allocation of costs; and
- Implementing the transmission and cost allocation plan through utility actions and tariffs.

12 20 Year Transmission Outlook, California Independent System Operator, May 2022, http://www.caiso.com/InitiativeDocuments/20-YearTransmissionOutlook-May2022.pdf

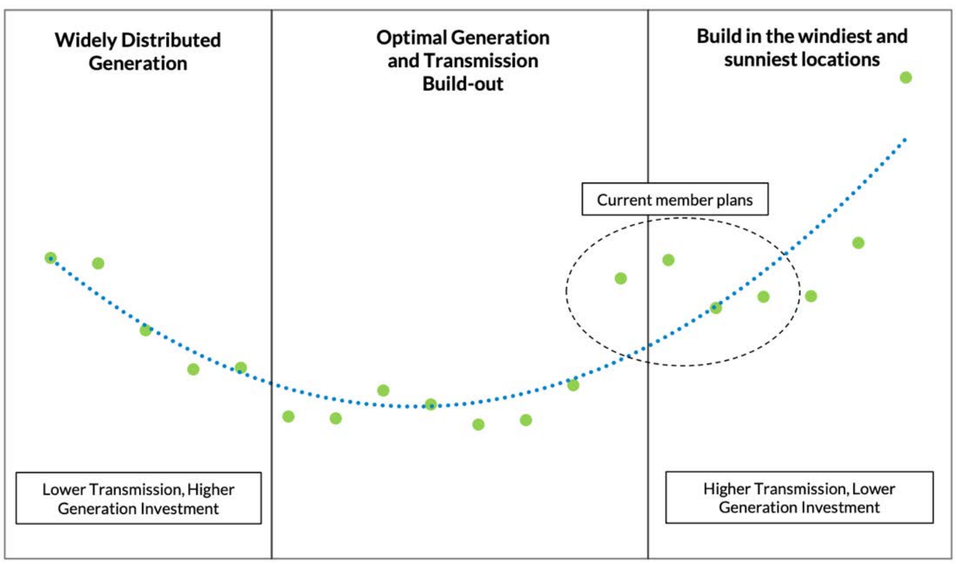
13 California ISO Peak Load History 1998 through 2022, California Independent System Operator, https://www.caiso.com/documents/californiaisopeakloadhistory.pdf

OPEN AND TRANSPARENT REGIONAL PLANNING PROCESSES BENEFIT CUSTOMERS

Given the need for significant and necessary transmission investments, it will be important to have broad support and trust in the level and type of this investment. Customers, consumer advocates, and state and federal economic regulators charged with achieving just and reasonable electricity rates will need assurance about the investment costs and rate impacts. Transmission will not be cheap, but neither is generation, which still makes up the largest part of customers' bills.

An open planning process can provide assurance that the right combination of transmission and generation is pursued. There is a tradeoff between the two; the "delivered cost" (generation plus transmission cost) is lower using an optimal combination of generation and transmission. The figure below shows that delivered cost is high with too little transmission (on the left side) and high with too much transmission connecting very remote generation (on the right side), but a sweet spot in the middle, with an optimal combination, leads to the lowest delivered cost for customers.

All successful regional transmission initiatives so far in this century have resulted from open and transparent regional planning efforts.



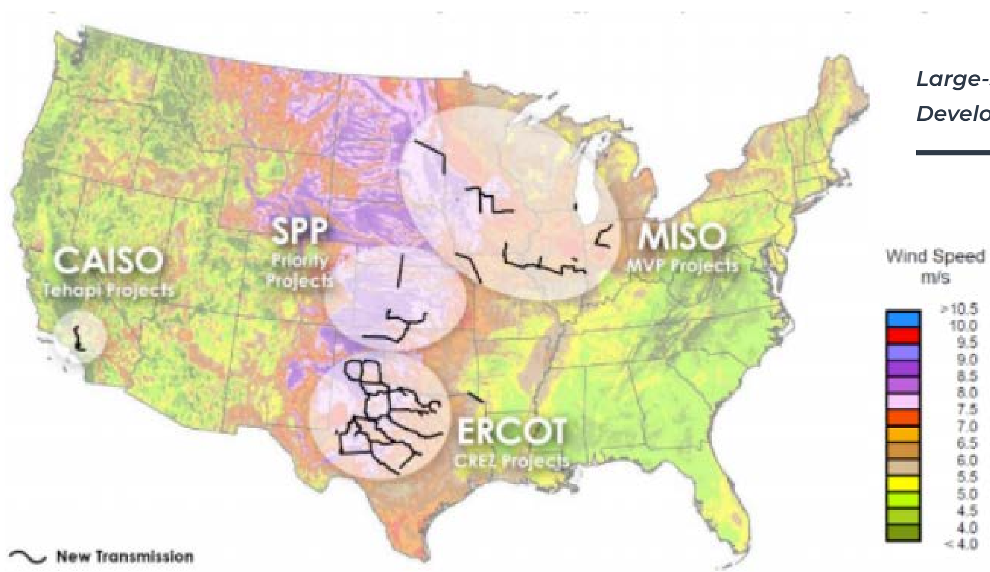
Midcontinent ISO's Model of Optimal Transmission and Generation Buildout[14]

Consumer representatives and siting authorities must have trust in transmission plans. Before plans become reality, they undergo review through cost allocation and siting decisions. Cost allocation can be through regional agreements, FERC proceedings, and state PUC decisions. Siting can be evaluated in local, state, and FERC decisions that review the benefits and needs. When all participants have had access to the analysis, methods, data, and assumptions used in regional planning, they can have more confidence in the validity of transmission plans, increasing the chance of cost allocation and siting approvals. Recently, MISO

14 MISO Planning Advisory Committee, *Long Range Transmission Planning — Preparing for the Evolving Future Grid*, August 12, 2020, pg. 7. https://cdn.misoenergy.org/20200812%20PAC%20Item%2003c%20Long%20Range%20Transmission%20Planning%20Presentation465531.pdf

assembled a plan that cost $10.4 billion, yet it is expected to save customers $23 billion to $52 billion and led to widespread support across the region.[15] "Black box" plans where the utility alone knows why a transmission line has been planned tend not to engender support or trust.

All successful regional transmission initiatives so far in this century have resulted from open and transparent regional planning efforts. The Midcontinent Independent System Operator (MISO) developed a set of lines called Multi-Value Projects (MVP) through an open process and active involvement of state regulators through the Organization of MISO States, resulting in a portfolio of lines that provided a benefit-to-cost ratio of between 2:2 and 3:4.[16] The Southwest Power Pool, California ISO, and Electric Reliability Council of Texas all developed similar plans through similar processes about a decade ago. These lines are shown on the map below.



Large-scale Transmission Development in 2010s

It is doubtful that these portfolios of lines could have been built any other way. No individual developer could have identified the points on the grid where these expansions would best integrate with the existing network. No federal agency could have integrated all the regional factors or developed all the regional agreements that were needed. No individual utility spans the geographic footprint covered by these regional plans. With their regional scope and independence, the regional planners identified high-value options, engaged with stakeholders, and produced strong consensus to enable support for the plans, cost, allocation, and permits.

15 https://cdn.misoenergy.org/MTEP21%20Addendum-LRTP%20Tranche%201%20Report%20with%20Executive%20Summary625790.pdf

16 MTEP17 MVP Triennial Review: A 2017 review of the public policy, economic, and qualitative benefits of the Multi-Value Project Portfolio, Midcontinent Independent System Operator, September 2017, page 4. https://cdn.misoenergy.org/MTEP17%20MVP%20Triennial%20Review%20Report117065.pdf

An open planning process includes some important steps and functions that benefit customers and build trust in the outcomes:

- Vetting of input assumptions: results depend on input data such as utility resource plans, economics of different resources, transmission usage, and generation retirements and expansions.
- Vetting of methodologies such as capacity planning and production cost modeling.
- Determination of scenarios to study: since most of the value of transmission is in stressed conditions, these scenarios must be evaluated carefully.
- Alternative configuration review: existing rights of way often can be utilized, and that must be considered in addition to new rights of way, along with different capacity levels (rated voltage), and combination of Alternating Current (AC) vs Direct Current (DC) lines.

Regional planning is the only way to produce an efficient grid configuration plan that gains support from customers and policymakers. It must cover a wide geographic area in order to capture the efficiencies of exchange and economies of scale, while incorporating "loop flow" (electricity on AC networks flows across neighboring utilities and lines regardless of ownership). Plans must account for the fact that grid expansion on one path changes flows on other paths.

Planning must be run by an independent entity to be objective and trustworthy. Every stakeholder, generation and transmission owner, and other entity has an economic interest in transmission outcomes. If any single one of those stakeholders disproportionately influences the plans, they might steer the outcome toward their economic self-interest.

Independent entities can also share data about the system that are very relevant to determinations of transmission needs.

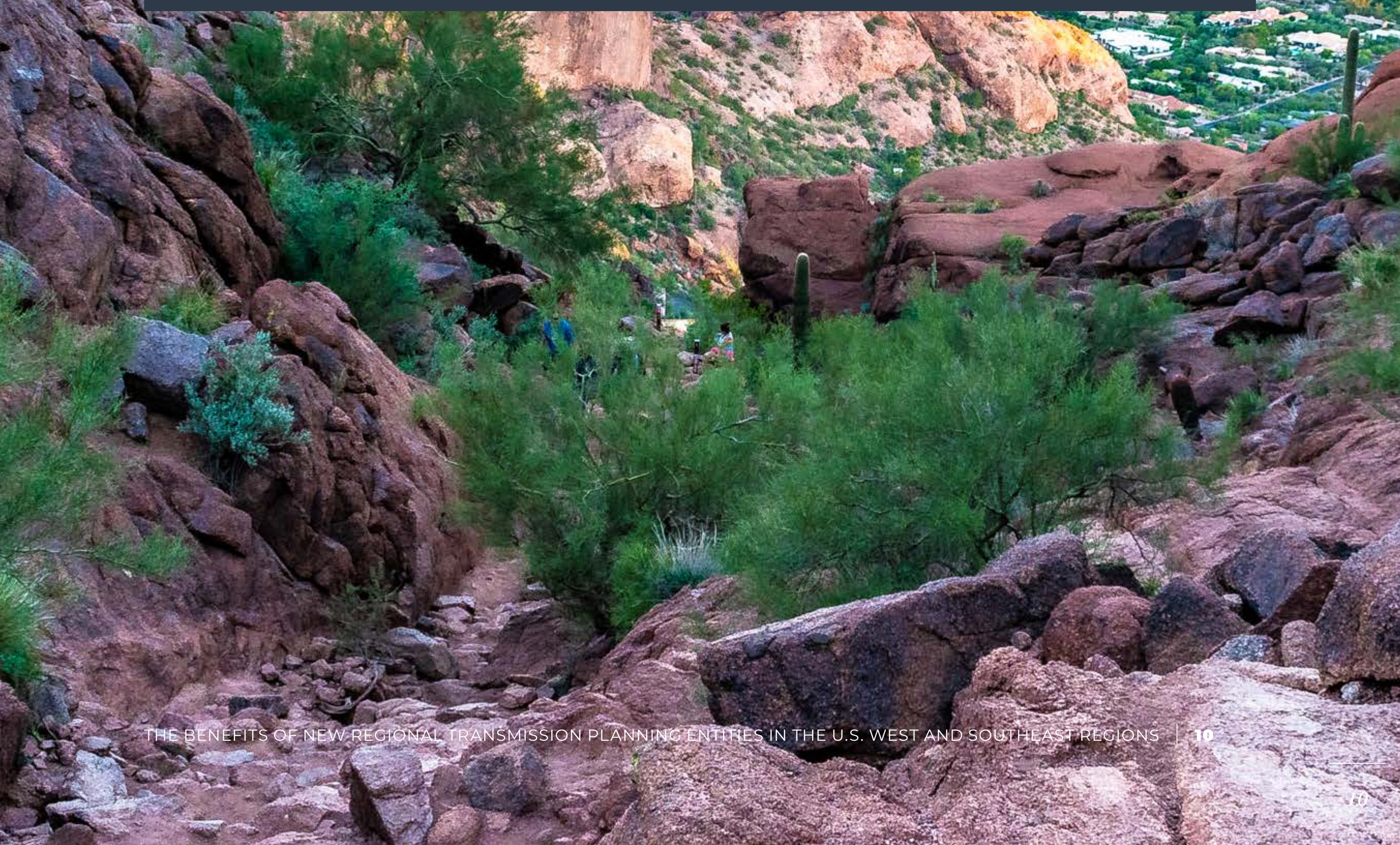
While individual states may make progress on cost allocation issues, true independence increases trust in cost allocation. For any transmission plan to be successful, it will need to have broad support for its cost allocation approach that is best established by an independent regional transmission planning entity. Following the Federal Power Act's requirement that costs should be assigned to beneficiaries, cost allocation will require a benefits assessment that is trusted and credible. A neutral expert party must perform the assessment fairly, with active stakeholder involvement and scrutiny. Vertically integrated utilities are not well-positioned to provide that assessment, as they have interests that do not align with regional efficiency. The independent planner can assist state regulators in their oversight of utility costs.

State of Transmission Planning in the West

The Western grid currently experiences flows back and forth between the Southwest and Northwest, and between interior and coastal states, based on generation, load, and weather patterns. Trading takes place largely on a bilateral basis between utilities and marketers, though the Western Energy Imbalance Market now enables market-based transactions using spare transmission capacity. Each utility tends to serve a state or large city, with large spaces between these denser areas. The Western grid and its constraints are different from the Eastern grid because of these longer distances between load centers and between generation and load.

Beyond the California Independent System Operator (CAISO), little regional planning takes place in the West. The FERC 1000 Regional Planning Entities are Northern Grid, WestConnect, and CAISO. Northern Grid and WestConnect tend to simply roll up the plans submitted by each utility. Berkshire Hathaway's utilities in the West (Pacific Power, Rocky Mountain Power, and NV Energy) provide a limited exception, because they plan across a larger area by virtue of their unique seven-state footprint. However, this planning is not open or geographically broad enough to incorporate loop flow, nor is the planning run by an independent entity.

Currently, the Western Electric Coordinating Council (WECC) does not manage transmission planning, but it is well positioned to play a greater role. The entity covers the whole Western region, plus western Canadian provinces and a small part of Mexico, and has some independence from the utilities. WECC or another regional planning entity could begin performing technical studies of transmission needs and options that would be valuable for stakeholders.



State of Transmission Planning in the Southeast

The Southeast has three regional planning entities: Southeast Regional Transmission Planning (SERTP), South Carolina Regional Transmission Planning (SCRTP), and Florida Reliability Coordinating Council (FRCC). Like the West, these entities simply aggregate the utilities' individual plans and periodically brief stakeholders without seeking input or sharing sufficient data, methods, or assumptions to enable an assessment of the projects.

Regional planning entities in the Southeast are able to withhold access to critical information, such as estimated facilities costs and underlying reliability needs, severely limiting the effectiveness of stakeholder engagement.[17] Stakeholders are only able to theoretically participate in the planning process through alternative proposals to transmission projects in the regional plan. However, proposing alternatives is complicated because of SERTP information sharing policies. To access the regional power flow models, SERTP requires stakeholders to pass a background check and receive pre-clearance for Critical Energy Infrastructure Information. Additionally, stakeholders must sign a restrictive non-disclosure agreement, pay a $180 fee for an application, and a $100 fee for a background investigation. After a stakeholder has completed these steps, it only allows them access to the information needed to replicate power flow studies. This also assumes the stakeholder has the required software and knowledge to replicate the studies. The stakeholder does not get access to any information on cost estimates for identified projects or an explanation of the reliability needs that led to the project identification.[18] Given the information asymmetry, it is very difficult for stakeholder to propose alternatives.

Additionally, for their planning processes, SERTP uses member utilities' own 10-year generation and addition plans. However, for these plans, utilities do not have to include realistic forecasts or scenarios.[19] Furthermore, SERTP does not require participants to standardize the time horizons, evaluation of benefits, or even evaluation of costs in their planning processes.[20]

SERTP does not currently conduct interregional transmission planning, at least not publicly.[21]

SCRTP, one of the other Southeastern planning regions, has a very similar planning process to SERTP. However, SCRTP operates on a smaller geographic scale. The regional planning entity only has two utilities instead of the 12 in SERTP. Additionally, Southern Company and Duke are the two largest transmission systems and are missing from the planning process. Therefore, the regional transmission options are limited and unlikely to produce efficiencies for the two participants that could be created by planning on a larger scale, such as through a Southeastern RTO.[22]

---

17 *See* Southern Environmental Law Center Pre-Technical Comments on Transmission Planning and Cost Management, Docket No. AD22-8-000, at 2.
18 Ibid., page 5.
19 Ibid., page 28.
20 Ibid., page 28-29.
21 Ibid., page 36-38.
22 Ibid., page 8.

MULTIPLE INSTITUTIONAL PATHS CAN ESTABLISH REGIONAL TRANSMISSION PLANNING ENTITIES

Independent regional transmission planning can be performed in different ways. FERC rules allow a variety of alternative structures. FERC has encouraged one institutional model: a full regional transmission organization like those in the Northeast, MISO in the Midwest, SPP in the upper and lower Great Plains, ERCOT in Texas, or CAISO in California. However, none of the relevant FERC orders (2000, 890, and 1000) require that planning functions be performed by an RTO. Recent FERC initiatives do not propose changing the institutional options or requiring any particular structure. Wholesale-level regional planning is also separate from “de-regulation” and “retail competition” that some states have chosen to pursue and others have not.

The regional planning entities listed in the West and Southeast to comply with FERC Order No. 1000 were chosen by the utilities and can remain in place as the vehicle through which utilities comply with FERC requirements. These existing regional planning entities can begin to perform planning functions in the near term. They could also begin performing joint planning with other regional planning entities in order to cover a broader footprint. For example, MISO and SPP perform coordination studies that identify market efficiency solutions on both a broad and targeted basis.

However, differences in benefit-cost analysis, stakeholder governance, and cost allocation responsibilities undermine effective planning and transmission projects across regional seams. States, customers, and others should encourage alignment of these methods and processes to achieve effective planning.

Another option is to have interconnection-wide entities perform more planning activities. The Eastern Interconnect Planning Collaborative (EIPC) covers the entire Eastern Interconnect and can evaluate interregional as well as regional opportunities. This process is broad and inclusive and strives to plan backbone transmission facilities that enable interconnection-wide energy outlet and bulk transfers of power. In the West, the Western Electricity Coordinating Council (WECC) could perform independent, region-wide planning.

Even if a regional planning entity for transmission had limits on its power to actually implement plans, it could add significant value in the near term by providing information to stakeholders and studying options.

Another option for Southeastern and Western interests is for individual utilities to join existing RTOs. In the West, utilities have the option of joining the energy imbalance markets of CAISO and SPP, and both markets are working on different service offerings that could include RTO membership. In the Southeast, utilities can join PJM or MISO. Another option would be to create new and innovative full regional transmission organizations in the West and Southeast.

Differences in benefit-cost analysis, stakeholder governance, and cost allocation responsibilities undermine effective planning and transmission projects across regional seams. States, customers, and others should encourage alignment of these methods and processes to achieve effective planning.

FULL RTOS CAN PROVIDE BENEFITS BEYOND THOSE OF OTHER REGIONAL ENTITIES

A full RTO, as defined in the box below, provides an institutional vehicle that can perform independent regional transmission planning. An RTO is typically a not-for-profit organization, overseen by a board unaffiliated with market participants, that performs functions outlined by FERC in Order No. 2000 in 1999. These functions generally include providing transmission and interconnection service, planning transmission, and operating energy and ancillary services markets under a single tariff. In approximately two-thirds of the United States, planning is performed by an RTO or by an independent system operator (ISO), which is functionally the same as an RTO.

An advantage of a full RTO is that synergies between transmission service, interconnection, energy markets, resource adequacy, and transmission planning can be internalized by the same entity. Another benefit of RTOs is robust stakeholder engagement. RTOs have a track record of establishing permanent stakeholder forums for planning processes that address reliability, market, and policy drivers, in addition to local planning.

Robust stakeholder engagement supports multi-value planning, which has proven to be particularly effective in addressing long-term system needs. For example, in MISO, the combination of engaged stakeholder and staff planners, including member states, has allowed the development of large transmission portfolios to address near- and long-term system expansion needs. MISO's stakeholder process also tackled difficult issues of cost allocation, a necessary step in the creation of large-scale transmission plans.

FERC Order 1000 identifies seven functions for RTOs:

(1) "Administer tariff." An RTO schedules transmission, processes requests, and determines available transfer capability. This function includes administering the transmission rights used in the region. Some use traditional physical rights, and others use financial transmission rights.

(2) "Create market mechanisms to manage transmission congestion." An RTO determines physical transmission constraints and provides market-based solutions to efficiently dispatch the system.

(3) "Develop and implement procedures to address parallel path flow issues." An RTO manages power flows that spill between regions, which is inevitable in interconnected power systems.

(4) "Serve as a supplier of last resort for all ancillary services required in Order No. 888 and subsequent orders." This role ensures services needed for a reliable power system are provided, and by a disinterested entity without bias toward a utility's own generation sources.

(5) "Operate a single OASIS site for all transmission facilities under its control with responsibility for independently calculating [Total Transfer Capability] TTC and [Available Transfer Capability] ATC." OASIS is the electronic public posting system that provides information to market participants about transmission capacity availability.

(6) "Monitor markets to identify design flaws and market power." FERC required that energy markets be monitored to ensure they are competitive and lead to just and reasonable rates.

(7) "Plan and coordinate necessary transmission additions and upgrades." This is the transmission planning function.

Additional, more specific functions that RTOs can and do provide include:

- **Security coordination,** as the NERC-certified entity to perform this real time reliability function.
- **Balancing authority consolidation.** Historically, each RTO was its own balancing authority, dispatching generation to meet load. An RTO can perform that function on a geographically broader and independent basis.
- **De-pancaked rates.** This is not a separate function per se, but when transmission service is provided across a geographically broad area, there is no need to pay multiple transmission charges to move power across utility systems, significantly reducing friction and barriers to economic dispatch.
- **Flow-based regional dispatch, as opposed to contract path scheduling.** In the West and Southeast, contract-path reservations are used and do not always accurately reflect physical flows on the transmission system. It would be more efficient to move to flow-based regional transmission service.
- **Regional resource adequacy coordination.** Order No. 1000 did not require this, but the Northeastern RTOs oversee resource adequacy. MISO and SPP provide more limited coordination functions. In those cases, they achieve cost reductions because the generation reserve margin for the wider footprint is less than it otherwise would be.
- **Generator interconnection service.** The ISOs and RTOs all administer generator interconnection processes to allow independent review of both utility-affiliated and unaffiliated generation trying to connect to the system.

A full RTO also includes four characteristics provided in FERC Order No. 2000:

- Independence
- Scope and regional configuration
- Operational authority
- Short-term reliability

All of these functions and characteristics would be valuable to customers in the Southeast and West. Numerous studies have shown the benefits of RTOs in these regions.[23]

These regions may wish to have all the functions performed by one entity, the RTO, in order to gain efficiency of a one-stop shop and single governance structure.

---

23 Energy Strategies and Peterson and Associates, "Western RTO Economic Impact Study," Advanced Energy Economy, July 2022, https://www.aee.net/aee-reports/western-rto-economic-impact-study-region-wide-analysis. Energy Strategies, "The State-Led Market Study," U.S. Department of Energy, July 2021, https://static1.squarespace.com/static/59b97b188fd4d2645224448b/t/6148a012aa210300cbc4b863/1632149526416/Final+Roadmap+-+Technical+Report+210730.pdf, Bentham Paulos, A Regional Power Market for the West: Risks and Benefits, July 2018, https://www.next10.org/sites/default/files/2019-06/regional-power-market-west-web.pdf;

See the CAISO *ACR 188 Final List of Studies – November 9, 2022*, for list compiled by NREL of recent relevant studies on the impacts of expanded regional cooperation and engagement between Western states on regional transmission organizations in the West. http://www.caiso.com/Documents/ACR188-Final-List-of-Studies-11-9-22.pdf.

For benefits of an RTO in the Southeast, see Jennifer Chen and Michael Bardee, "How Voluntary Electricity Trading Can Help Efficiency in the Southeast," R Street Institute, August 2020, https://www.rstreet.org/wp-content/uploads/2020/08/No.-201-Energy-Trade-in-the-Southeast.pdf; Chang, et al., "Potential Benefits of a Regional Wholesale Power Market to North Carolina's Electricity Customers," Brattle Group, April 2019, https://www.brattle.com/wp-content/uploads/2021/05/16092_nc_wholesale_power_market_whitepaper_april_2019_final.pdf; Gimon, et al., A Southeastern United States Regional Transmission Organization (SE-RTO), Vibrant Clean Energy and Energy Innovations, August 2020, https://www.vibrantcleanenergy.com/media/reports/se-rto/.

NEW REGIONAL ENTITIES ARE COMPATIBLE WITH CURRENT FERC REFORMS

FERC has recently issued a Notice of Proposed Rulemaking (NOPR) on transmission planning (Docket RM 21-17) and one on generator interconnection (Docket RM 22-14). FERC also has inquiries on incentives (Docket RM 20-10) and interregional transfer capacity (Docket AD 23-3).

Developing an independent regional planning entity in the West and Southeast would be fully compatible with these initiatives and enable compliance with them. At this point, the proposed rules provide significant flexibility for each region to organize institutions as they wish.

One idea that has come up in these FERC proceedings is an Independent Transmission Monitor (ITM). Many consumer interest stakeholders have recommended that FERC require such an entity. It is an additional step that could be taken now as a regional initiative, even without a federal requirement. The ITM has not been formally proposed by FERC at this point, and there are different versions of what it would do. At a minimum, an ITM could provide information to market participants about transmission needs and opportunities, while complying with Critical Energy Infrastructure Information (CEII) requirements.

NEXT STEPS AND CONCLUSION

Western and Southeastern stakeholders need not wait for federal action or for long-term large-scale initiatives like full RTOs to form in their regions. Several options offer paths toward more independent and wider regional transmission planning in these regions. FERC 1000 regional planning entities could improve their joint planning to cover a wider region with more robust planning. An interconnection-wide entity could establish robust planning across the West in order to overcome differences in cost-benefit analysis, stakeholder governance, and cost allocation responsibilities. And individual utilities could join existing RTOs, encourage day-ahead market options to scale into full RTO models, or work to establish new, innovative RTOs.

A regional transmission planning entity could provide many benefits in non-RTO areas, with more robust planning developed through open and transparent processes. Utilizing an RTO model, however, maximizes important benefits such as greater coordination with other planning functions and reduced costs.

Beneficial Planning Elements a Regional Transmission Planning Entity Could Provide		
Robust Regional Planning Should:	**Open and Transparent Planning Should Include:**	**Additional Transmission Benefits of Pursuing an RTO Model**
• Estimate future generator additions and retirements across a region; • Estimate future power demand and shape across a region; • Model the power system to meet energy and resource adequacy requirements on a least cost basis, incorporating economic trade-offs between generation and transmission; • Evaluate and identify optimal configuration and technology options; and • Implement the transmission and cost allocation plan through utility actions and tariffs, as well as de-pancake transmission rates to increase efficiency.	• Engagement: state policymakers, utilities, customers, and other stakeholders should review, provide comment, and develop consensus plans and fair allocation of costs; • Vetting of input assumptions: such as utility resource plans, economics of different resources, transmission usage, and generation retirements and expansions; • Vetting of methodologies: capacity planning and production cost modeling; • Determination of scenarios to study: scenarios for stressed conditions when the value of transmission is highest; and • Alternative configuration review: existing rights of way can be utilized, new rights of way, different capacity levels (rated voltage), and combination of AC vs DC lines.	• Security coordination, as the NERC-certified entity to perform real-time reliability function; • Balancing authority consolidation, as RTOs are their own balancing authority, dispatching generation and meeting load on a geographically broad and independent basis; • De-pancaked transmission rates, as there is no need to pay multiple transmission charges to move power across utility systems with one balancing authority, significantly reducing friction and barriers to economic dispatch; • Flow-based regional dispatch, as opposed to contract path scheduling that does not always accurately reflect physical flows on the transmission system; • Regional resource adequacy coordination, because even with vertically integrated utilities in place, RTOs can provide limited coordination functions and achieve cost reductions; and • Improved generator interconnection service, because breakthroughs that improve interconnection could be scaled across the West via an RTO.

States can play a key role in the improvement of regional transmission planning, especially by shaping utility participation in these regional markets but also by supporting the development of an independent transmission market monitor. Stakeholders should engage with state commissions, utilities, FERC, and other entities to improve independent regional planning in their regions, either with existing institutions or new ones.

The U.S. Department of Energy can financially support institution development or evolution with some of the new funding sources in the Bipartisan Infrastructure Law. Stakeholders should pursue opportunities for support for these initiatives and work together to develop reforms that benefit customers in the West and Southeast through independent regional transmission planning.

This report was written by Grid Strategies in coordination with CEBI. CEBI's 21st Century Electricity System Program provides engagement, research, and education related to the recommendations found in our 2021 report *Designing the 21st Century Electricity System: How Electricity Buyers Can Accelerate Change*.

Among other recommendations related to wholesale power markets, the 2021 report identified transmission expansion as a key focus area for large energy customers seeking to decarbonize the grid. Our new report here expands upon our prior recommendations, with more details on how to establish robust and transparent regional planning.

APPENDIX A | Organizations representing customers and/or Southeastern or Western entities supporting proactive regional transmission planning

350 New Orleans[24]
Amazon Energy LLC[25]
American Public Power Association[26]
Arizona Corporation Commission[27]
Arizona Public Service Company[28]
Arkansas Public Service Commission[29]
Association of Fish & Wildlife Agencies[30]
Berkshire Hathaway Energy[31]
Center for Rural Affairs[32]
Conservative Energy Network[33]
Defenders of Wildlife[34]
Duke Energy Corporation[35,36]
Electricity Consumers Resource Council[37]
Entergy Operating Companies[38]
Jay Inslee — State of Washington Governor[39]
Louisiana Public Service Commission[40]
National Association of Regulatory Commissioners[41]
National Association of State Utility Consumer Advocates[42]
New Mexico Public Regulation Commission[43]
North Carolina Utilities Commission Public Staff[44]
Northwest Energy Coalition[45]
Northwest & Intermountain Power Producers Coalition[46,47]
Oregon Attorney General[48]
Oregon Public Utility Commission[49]
Public Utility Commission of Texas[50]
Southeastern Regional Transmission Planning Process[51]
Southern Environmental Law Center[52]
Southern Renewable Energy Association[53]
Southface Institute[54]
Union of Concerned Scientists[55,56]
Western Resource Advocates[57]
Xcel Energy Services[58]

24 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=60F22F6B-C401-C6BC-B293-7C76AE400001 at 60.
25 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=67725643-E727-C204-9D82-7C7A48E00000 at 3.
26 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9664C50B-F0B1-C5B0-9EC9-7C7604600000 at 7.
27 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=C685E81E-FF9D-CA69-866C-7C7668A00000 at 2.
28 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=A0154772-C04F-C973-870B-7C795FE00000 at 3.
29 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9599062A-70AF-C8AF-9EAF-7C79F1E00000 at 2-3.
30 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=B143E96E-AEC3-C3DF-9CB2-7C7A66C00000 at 2.
31 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00FEF6E9-0DC2-C797-8BDC-7C7996300000 at 1.
32 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00FEF6E9-0DC2-C797-8BDC-7C7996300000 at 1.
33 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00FEF6E9-0DC2-C797-8BDC-7C7996300000 at 1.
34 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=329DA6C6-1570-C435-BB5C-7C7A50100000 at 1.
35 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9DB6E862-BFEF-CFB1-9E7B-7C794B600000 at 5-6.
36 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=BB24668D-4526-C2BC-AD8F-7C79C3200000 at 2-3.
37 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=96340958-E66D-C956-922B-7C7972B00000 at 6.
38 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=2398A45F-118E-CC97-86C2-7C7A44A00000 at 2.
39 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=7A3FAF07-2EF3-C0F3-9F84-7C7621000000 at 2.
40 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9599062A-70AF-C8AF-9EAF-7C79F1E00000 at 2-3
41 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=525BF1AE-E619-CA0B-9E78-7C76BFA00000 at 6.
42 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=FB6CE194-40BB-C837-9EFF-7C7A4A800000 at 4.
43 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9599062A-70AF-C8AF-9EAF-7C79F1E00000 at 2-3
44 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9105E69F-D96E-CD41-9A96-7C79C4C00000 at 25.
45 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=60F22F6B-C401-C6BC-B293-7C76AE400001 at 60.
46 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=2BD8D9B6-8347-CE44-8624-7C7A31500000 at 5-8.
47 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00FEF6E9-0DC2-C797-8BDC-7C7996300000 at 1.
48 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=A0CA6B13-1EFB-C87E-A4A6-7C797D500000 at 2-3.
49 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=4E73B693-3280-CE27-9F42-7C795DC00000 at 1.
50 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=9599062A-70AF-C8AF-9EAF-7C79F1E00000 at 2-3.
51 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=38AAC8FE-7803-CD7D-9910-7C76D2F00001 at 14.
52 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=60F22F6B-C401-C6BC-B293-7C76AE400001 at 60.
53 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00FEF6E9-0DC2-C797-8BDC-7C7996300000 at 1.
54 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=60F22F6B-C401-C6BC-B293-7C76AE400001 at 60.
55 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=FE1C795D-7812-C47D-9C5C-7C768E900000 at 42.
56 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00FEF6E9-0DC2-C797-8BDC-7C7996300000 at 1.
57 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=60F22F6B-C401-C6BC-B293-7C76AE400001 at 60.
58 https://elibrary.ferc.gov/eLibrary/filedownload?fileid=2A16D6F5-8784-CA0D-9FC4-7C7696E00000 at 11.