# WHITE PAPER

# TRANSMISSION PLANNING REFORMS TO SUPPORT LARGE CUSTOMER CLEAN ENERGY DEMAND AND INVESTMENT

CEBI
Clean Energy Buyers Institute

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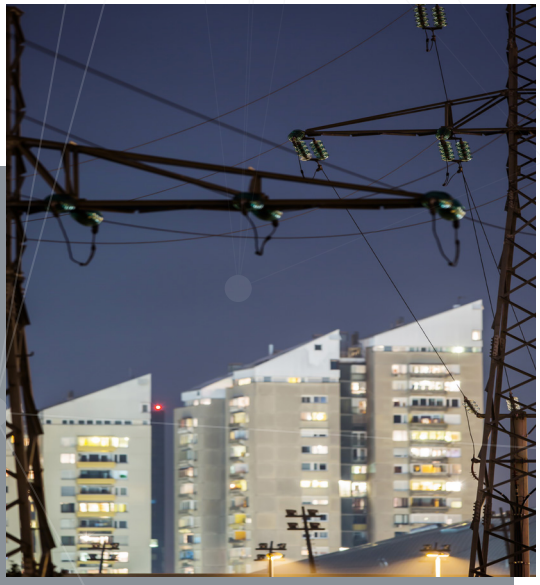


## KEY TAKEAWAYS

1. Expansion and optimization of transmission is a priority for clean energy customers to support efficient decarbonization of the power grid and to achieve company-specific clean energy goals.
2. Current transmission planning processes have proven ineffective at meeting grid needs, leading the Federal Energy Regulatory Commission (FERC) to initiate comprehensive transmission planning reforms that require holistic, forward-looking, pro-active, and multi-benefit planning.
3. Energy customer demand for clean energy is a known driver of transmission development, however, it is often not considered by grid planners and there are no clear channels for customers to communicate their demand.
4. FERC should adopt its proposed reforms requiring transmission planners to incorporate customer demand for and investment in clean energy and examine a broader set of benefits projects can provide
5. Transmission planners should be charged with ensuring that customers demand for clean energy is captured in load and generation forecasting as well as scenario analysis.
6. Transmission planners should improve and develop methods to collect this data and can also provide customers with data needed to co-optimize renewable energy and transmission.
7. Establishing regional transmission organizations/independent system operators (RTOs/ISOs / ISOs) in areas where they do not currently exist can support these reforms and help improve transmission planning overall.
8. Improvements to RTO/ISO stakeholder processes to ensure they are inclusive, efficient, and transparent are necessary to support transmission planning reforms.
9. Integration of customer input should not depend on customer initiative alone. Grid planners must ensure their stakeholder engagement processes do not exclude customer participation and demonstrate they have proactively considered customer demand.
10. FERC should consider reforms that enhance the independence and accountability of RTOs/ ISOs in addition to reforming transmission planning processes.

# EXECUTIVE SUMMARY

## Priorities for the 21st Century Electricity System

Modernized high-voltage transmission infrastructure is key to ensuring clean energy resources can connect to the power grid and support decarbonization. The Clean Energy Buyers Institute (CEBI) ***Designing the 21st Century Electricity System*** meta analysis identified transmission expansion as a priority issue for energy customers working to accelerate a decarbonized grid. Among other recommendations related to organized wholesale power markets, it concluded that transmission planning and cost allocation to expand regional and interregional capacity is needed in recognition of the future electricity portfolio and resilience value of transmission.

Clean energy customers are increasingly engaging in transmission expansion and modernization efforts to ensure cost-effective, reliable, and efficient decarbonization. Energy customers also have an interest in improving transmission planning and cost allocation to access renewable energy sources to meet their clean energy goals.[1] Transmission investments not only help achieve specific customer goals, but also provide broad energy market benefits by reducing congestion, connecting lower-cost and emissions-free resources to the system, and reinforcing the reliability of the grid. This white paper builds upon the recommendations within ***Designing the 21st Century Electricity System*** by outlining reforms needed to incorporate customer demand for clean energy into transmission planning.

## Current Transmission Planning Reforms

Efforts are underway to reform and facilitate improved transmission planning as current practices have proved insufficient to drive expansion and optimize existing transmission infrastructure. These efforts include the Federal Energy Regulatory Commission's (FERC's) Advance Notice of Proposed Rulemaking (ANOPR)[2] and Notice of Proposed Rulemaking (NOPR)[3] on planning, cost allocation and generator interconnection in Docket No. RM21-17-000 as well as the U.S. Department of Energy's (DOE) Building a Better Grid Initiative.[4]

Barriers to planning transmission have posed challenges to stakeholders attempting to develop or access cost-effective clean energy resources, which were detailed in the initial FERC ANOPR comments. For example, many commenters supported a shift to proactive planning on larger scales (which can include interconnection-wide and nationwide planning), optimizing portfolios of proposed projects across larger scales, and considering multiple needs and benefits together as a means of producing cost-effective solutions. FERC's April 2022 NOPR responded to these comments by proposing several reforms that could reduce these barriers, including the incorporation of corporate energy and climate goals into long term planning scenarios.

[1] "Initial Comments of the Renewable Energy Buyers Alliance," Docket No. RM21-17, October 12, 2021. Pg 4 and "Comments of Advanced Energy Economy," Docket No. RM21-17, October 12, 2021. Pg 11.

[2] Federal Energy Regulatory Commission (FERC). "Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection," 2021. https://www.federalregister.gov/documents/2021/07/27/2021-15512/building-for-the-future-through-electric-regional-transmission-planning-and-cost-allocation-and

[3] Federal Energy Regulatory Commission (FERC). "Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection," 2022. https://www.federalregister.gov/documents/2022/05/04/2022-08973/building-for-the-future-through-electric-regional-transmission-planning-and-cost-allocation-and

[4] Department of Energy (DOE). "DOE Launches New Initiative From President Biden's Bipartisan Infrastructure Law To Modernize National Grid", 2022. https://www.energy.gov/articles/doe-launches-new-initiative-president-bidens-bipartisan-infrastructure-

## Customer Engagement in Transmission Planning and Challenges

Regional and utility load forecasting and planning should appropriately reflect the renewable energy demand and investment driven by public clean energy commitments from energy customers and electrification needs. [6] The need for transmission planning to integrate customer demand has been well documented,[7] however, there is still no clear channel to timely and accurately convey it through the regional load forecasting and transmission planning process. FERC's NOPR reforms include the incorporation of corporate energy and climate goals into long term planning scenarios[8] based on best available data inputs.[9] The current Federal Energy Regulatory Commission's (FERC) Notice of proposed rulemaking (NOPR) represents an important opportunity to ensure transmission planners are required to incorporate customer demand meaningfully. This white paper outlines several ways in which transmission planners can incorporate customer demand as a transmission driver and improve their planning processes.

Energy customers providing their clean energy demand information to utilities want this information to be accurately reflected in utility reporting at the regional level, e.g. to Regional Transmission Organizations/Independent System Operators (RTOs/ISOs)[10], for regional load forecasting and transmission planning purposes. However, information provided to transmission planners and state commissions can be inconsistent, sometimes even with the utility's stated goals. In addition, non-RTO/ISO regions do not conduct regional load forecasts or top-down regional planning. Grid planners will need to meaningfully update their transmission planning in response to proposed FERC reforms.

Engagement at the utility and regional planning levels is important, however, most energy customers are not resourced to individually engage in regional transmission organizations (RTOs/ISOs ) as members and participating in non-RTO/ISO regional planning as it currently stands is unlikely to yield benefits. Collaboration amongst FERC, transmission planners[11], energy customers, and new transmission related entities is critical to addressing transmittion, forecasting, and planning challenges.

## About this White Paper

Considering potential reforms underway and the specific needs of energy customers, this white paper is designed to:

1. **Offer a common grounding for customers engaging with utilities and RTOs/ISOs ,**
2. **Communicate the large clean energy customer perspective on how their demand should be incorporated into transmission planning,**
3. **Support planning reform ideas most relevant to these buyers for consideration before FERC and RTOs/ISOs ,**
4. **Point to further actions needed to implement or complement FERC-driven reforms.**

[5] FERC NOPR, page 92.
[6] Customer renewable energy demand and investment can occur within their local grid system but can also be focused outside of their market if they do not have access locally.
[7] Please see: "Transmission Upgrades & Expansion: Keys to Meeting Large Customer Demand for Renewable Energy," Prepared by David Gardiner and Associates for the Wind Energy Foundation, January 2018 and "Corporate Renewable Procurement And Transmission Planning: Communicating Demand To RTOs/ISOs Necessary To Secure Future Procurement Options," Wind Solar Alliance, October 2018.
[8] FERC NOPR, page 92.
[9] FERC NOPR, page 117.
[10] For more information on who RTO/ISOs are and their roles, please see www.cebuyers.com
[11] Due to differences across regions, we often refer to transmission planners to capture both utilities and RTOs/ISOs performing planning functions.

We are focused on a subset of issues important to customers, specifically the near-term reforms needed to ensure their demand and investment is effectively considered as a transmission driver. Therefore, not all of the issues related to customer clean energy development or transmission planning reform are discussed here. The potential reforms could be led by FERC and/or transmission planners, and DOE intiatives will also have impacts on overcoming transmission expansion barriers as well. In addition to the reforms covered by this paper- improvements to cost allocation, interconnection, and siting will also help energy customers achieve their decarbonization goals. This resource was informed by interviews with a diverse representation of expert stakeholders and large energy customer companies whose viewpoints are reflected in aggregate without attribution. Not every expert will agree with every recommendation, however, trends across viewpoints and areas of agreement represent key opportunities for exploration.

## Recommendations and Conclusions

Ultimately this white paper describes steps both FERC and transmission planners can take to improve planning inputs and processes to better incorporate customer demand as a driver.

- General support for FERC reforms that require customer demand to be included in long-term scenarios
- Inclusion of customer demand in load and generation forecasting and planning by transmission planners
- Planning for multi-value[12] projects
- Expansion of RTO/ISO technical assistance for energy customers
- Innovative collection of energy customer data

FERC's role in driving these reforms is critical but will require careful balancing of consistency through requirements and flexibility for individual planners to meet the needs of their regions.

Reforms to transmission planning inputs and processes alone, however, will not fully resolve the disconnect between customer demand and transmission planning outcomes. There are several improvements to RTO/ISO stakeholder processes and governance that are needed to make customer engagement more feasible and reduce conflicts of interest among stakeholders and planners. RTOs/ISOs and other transmission planners should play a leadership role in streamlining their stakeholder processes to be more inclusive and efficient. FERC can take steps to increase the independence and accountability of RTOs/ISOs. While transmission planning challenges exist in non-RTO/ISO areas and RTO/ISO areas, additional guidance in non-RTO/ISO areas is needed. The development of an independent entity or entities to serve as independent transmission monitor, here referred to as an Independent Transmission Monitor (ITM), is a helpful construct across all regions but could be especially impactful where RTOs/ISOs do not yet exist.

The following sections we will provide more detail on the current challenges, the experiences and perspectives of customers, and potential solutions. This white paper concludes with a focused set of recommendations supporting FERCs proposal that transmission planners incorporate customer demand as an impactful transmission planning driver but also provides more detail on how to implement reforms to planning inputs and processes, as well as complementary governance reforms.

[12] Current planning often silos projects into those that provide relaibility or economic value alone, rather than proactively looking for projects that meet multiple needs.

# ACCOUNTING FOR CUSTOMER RENEWABLE DEMAND AND INVESTMENT IN TRANSMISSION PLANNING

## Customer Clean Energy Goals as a Transmission Driver

A key goal for future transmission reforms is ensuring that planning captures a broader range of drivers that will shape the future electric grid. It is a priority for large scale energy customers seeking clean energy to have their voluntary renewable energy demand factored into planning processes. If transmission planning was more responsive to this demand, customer driven clean energy would face lower transmission-related barriers allowing voluntary projects, to connect to the grid more quickly and easily.

When considering how to better integrate customers' renewable projects into transmission planning, it is helpful to understand the current mismatch between planners and decision points. For example, utility planning is coordinated with, but not fully integrated into, regional transmission planning which can look out over 10-20 years. Utilities may perform Integrated Resource Planning which examines resource portfolios looking out 10-15 years. Utility planning also includes North American Electric Reliability Corporation (NERC) reliability planning managed by staff that focus strictly on NERC requirements and not economic or policy drivers. This includes utility long-term forecasting for capacity and transmission planning may be annual and extend 10 years out and shorter term reliability planning, which impacts transmission, may also be annual but only looks out over a 3-5 year horizon.

For project developers, transmission siting and development can take around 6-10 years while development of renewable projects and generation interconnection is closer to three years. Energy customers pursuing a power-purchase agreement (PPA) for renewable energy are often looking to have a project in place within a year, which does not align with the multiple timelines that impact future transmission development. The problem with these related, but not aligned, planning processes is that they do not plan for the integration of customer driven renewables nor provide the regional transmission capacity needed to support reliability with these projects coming online, causing new renewable projects to be stuck in interconnection queues and delayed for years.

FERC's recent NOPR proposed requirements state that each Long-Term Scenario incorporate utility and corporate goals and federal, state, and local goals that affect the future resource mix.[13] There are three ways to incorporate customer demand along different stages of transmission planning.

- First, as FERC proposes, RTO/ISO transmission planning that examines macrotrends and utilizes scenario-based modeling could also include customer demand.
- Second, customer demand could also be included in long-term load and generation forecasting. This could mean utilities consider customer driven clean energy trends when developing long-term forecasts for their load which feeds into broader transmission planning in RTO/ISO areas.

[13] FERC NOPR, pg 99.

- Third, RTOs/ISOs could take a leadership role in data sharing and resource optimization. This could include explicitly integrating energy customer demand into transmission studies that co-optimize generation, transmission, and renewable demand.

Where customers and transmission developers have flexibility, this could maximize the impact of projects and increase efficiency. [14]

Currently, there is no specific channel for providing input on renewable generation needs in the load forecasting or transmission planning process. Southwest Power Pool (SPP) and PJM Interconnection consider customer demand only when it is tied to a power purchase or interconnection agreement while MISO and Electric Reliability Council of Texas (ERCOT) consider customer demand only if their utilities decide to be proactive in addressing this factor.[15] These approaches are too short sighted and do not allow for transmission additions to be constructed in advance of the need. Regional processes, whether within a RTO or not, could consider demand if requested, which would require energy customers to engage in the stakeholder process. FERC has proposed requirements that "public utility transmission providers in each transmission planning region give stakeholders the opportunity to provide timely and meaningful input concerning which data inputs to use in Long-Term Scenarios." [16] Reforms regarding the role of stakeholders and governance structure improvements to overcome the current engagement barriers.

Even when energy customers have avenues to communicate their clean energy demand, confidentiality concerns can present an additional barrier. Companies may prefer to submit information in aggregate to protect trade secret data on the location and size of future facilities. Third-party aggregators that collect and anonymize sensitive information and advocate in regional transmission planning may be a potential solution. The third-party could provide a clear channel for customer demand data to flow through to ensure that the demand has been accounted for. While RTOs/ISOs could collect and anonymize data, they cannot advocate on behalf of any particular member classes. At a minimum, a dialogue is needed to help transmission planners understand this barrier and find solutions that will meet the needs of large energy customers.

## Voluntary Goals and Scenario Planning

There has been debate over the proper way to account for voluntary energy customer goals, sometimes considered to not be as "firm" as state set policy goals or even utility commitments. In forecasting and planning, uncertainty is an issue because transmission costs are ultimately passed on to ratepayers. Overbuild means higher rates attributed to transmission and underbuild means that transmission will not be available to provide reliability, economic efficiency, and renewable integration benefits. Public policy proposals that are not finalized receive little consideration even though the transmission build timeline is much longer than that of renewable project development (and in some cases policy finalization). Only considering existing state clean energy policies in long-term transmission planning has resulted in insufficient transmission to support the actual build out of clean energy resources aligned with commitments that states and utilities have established only continue to extend timelines. Similarly, demand from voluntary energy customer goals may not be considered as firmly if the cost to build transmission to achieve those goals are distributed to other ratepayers as well. FERC has suggested that it may be appropriate for public utility transmission providers to discount utility and corporate goals and federal, state, and local goals in scenario planning to account for uncertainty. [17]

[14] See, e.g., "smile" graph in MISO Planning Advisory Committee, Long Range Transmission Planning - Preparing for the Evolving Future Grid, August 12, 2020, pg. 7. On the distribution system, some utilities provide hosting capacity analysis maps showing where distributed energy resources could be sited. Further mapping tools can help identify risky siting areas and EJ communities.
[15] Wind Solar Alliance, "Corporate Renewable Procurement and Transmission Planning: Communicating Demand to RTOs/ISOs Necessary to Secure Future Procurement Options," 2020.
[16] FERC NOPR, pg 118.
[17] FERC NOPR, pg 100.

Despite existing challenges, ignoring or deeply discounting customer demand for clean energy would mean overlooking a steady and well documented driver of transmission needs. Energy customers have voluntarily deployed over 52 gigawatts (GW) of wind and solar capacity since 2008[18] driving the clean energy transition. Customers are projected to advance 85 GW through 2030.[19] Publicly announced Environmental Social Governance (ESG) goals that track clean energy commitments could provide some assurance and insight into energy market growth. For example, Bloomberg analyzed 187 different climate pledges meant to be fulfilled by 2020 or earlier and 138 of them were completed or on track to be completed by the end of 2020.[20] Despite this success, changing project economics can impact the ability of energy customers to follow through on specific planned projects. Thus, planners should look at trends and the record for large energy buyers meeting their goals.

Running scenarios and sensitivity studies can help address uncertainty in forecasting and planning for renewable demand as well as generation. Planners already have experience with such types of analyses. PJM, for example, generated 351 weather scenarios in its latest 2022 Load Forecast.[21] Scenarios for both load forecasting and future generation portfolios in transmission planning could take into account customers meeting all or some fraction of their clean energy goals as informed by historical performance. These scenarios could be refined as more information becomes available.

## Long-term Load and Generation Forecasting

Long-term load forecasting provides the basis for determining transmission as well as capacity procurement needs. Load forecasting differs across the regions, and FERC has not exercised its authority over this practice, which can have large impacts on customer rates. Generally, long-term forecasting aims to capture economic, weather, customer electricity usage trends for transmission planning as well as generation procurement needs. However, forecasts do not specify the types and location of resources energy customers want, and thus do not provide information needed to indicate where transmission would be helpful in connecting to these resources. Relying on insufficiently detailed load forecasting practices may underpredict renewable demand in favor of more general generation demand and underestimate the transmission needed.

[18] Clean Energy Buyers Association. "CEBA Deal Tracker," 2021. **https://cebuyers.org/deal-tracker/.**
[19] Wood Mackenzie. "Analysis of Commercial and Industrial Wind Energy Demand in the United States," 2019. **https://www.woodmac.com/our-expertise/focus/Power--Renewables/corporates-usher-in-new-wave-of-u.s.-wind-and-solar-growth/**
[20] Gillespie, T., Warren, H., and Randall, T. Bloomberg. "Time's Up on Corporate America's 2020 Climate Goals. Here's the Results", December 15, 2020. Bloomberg. **https://www.bloomberg.com/graphics/2020-company-emissions-pledges/**
[21] PJM. "PJM Load Forecast Report", January 2022. **https://pjm.com/-/media/library/reports-notices/load-forecast/2022-load-report.ashx**

### RTO/ISO LOAD FORECASTING EXAMPLE

**Insufficient load forecasting can contribute to additional fossil fuel capacity instead of access to renewables demanded by customers because it impacts capacity procurement and transmission build. PJM's evolving load forecasting practices represent progress as planners attempt to capture growth in energy efficiency, demand response, and rooftop solar and now has started projecting battery storage, electric vehicle (EV), and data center growth for each of its 22 utility zones.[22] While battery storage is anticipated to shave summer peak demand, PJM's 2022 forecast[23] projects significant growth from new data centers[24] in Dominion's territory[25] and EVs.[26] The EV growth is based in part on state EV targets in DC, IL, NJ, MD, and VA. The load forecast information will feed into PJM's next capacity market auction that will procure capacity resources in general, but it does not account for the fact overlap in states and energy customers behind the data centers may also have clean energy policies or targets. This is a problem because the capacity market tends to procure natural gas within the PJM footprint and has a limited capability to import renewables. Further, the interconnection queue has become so unwieldy (a problem across markets) that PJM is proposing a two-year pause on reviews, which will delay renewables attempting to interconnect in the region.[27]**

**While PJM is improving its forecast by studying new demand inputs, taking the additional step of earmarking certain demand that has special resource procurement needs could help ensure that the planning and capacity procurement produces the right resources and transmission infrastructure that could deliver those resources.**

## More Granular and Detailed Forecasts

As seen in the previous example, factoring in greater customer demand without specifying the types of resources demanded in load forecasting leads to greater procurement of generic, largely fossil fuel, capacity resources instead of planning transmission to access the renewable resources that customers want. Modifying load forecasting to account for more granular accounting of locations and types of load (e.g., whether they are flexible or mobile, like EVs) and including forecasts of specific generation types could help system planners and customers better understand how to optimize resource, transmission, and load siting to achieve desired outcomes cost-effectively. (See also the section on how regional planners could help customers, developers and transmission owners co-optimize siting and procurement.)

Transmission experts have emphasized that current planning ignores "knowable information" such as public policy, utility and customer goals that shape the future generation mix and could drive more proactive planning.[28] Similarly, the National Association of Regulatory Utility Commissioners (NARUC) and National Association of State Energy Officials (NASEO) task force on Comprehensive Electricity Planning recently outlined several pathways to better integrate generation, transmission and distribution planning, noting that greater alignment could improve reliability, optimize resources, reduce costs, support policy goals, and increase the transparency of grid related investments.[29]

[22] PJM. "Load Forecasting", n.d. https://learn.pjm.com/three-priorities/planning-for-the-future/load-forecasting.aspx
[23] PJM. "PJM Load Forecast Report." 2022.
[24] Howland, E. "Data centers, EVs drive PJM's long-term load growth forecast, but it expects some utilities to see declines", January 2, 2022. Utility Dive. https://www.utilitydive.com/news/data-centers-evs-drive-pjm-load-growth-forecast-capacity-market/616584/
[25] **https://www.pjm.com/-/media/planning/res-adeq/load-forecast/load-forecast-supplement.ashx** at pp. 30-31.
[26] **Data centers added about 0.25% to expected annual summer peak load growth and EVs accounted for 0.1% of the growth.** Please see: **https://economicdevelopment.dominionenergy.com/va/key-industries/data-centers/.**
[27] Sylvia, T. "PJM, flooded with interconnection requests, proposes two-year review pause", February 3, 2022. Pv magazine. https://pv-magazine-usa.com/2022/02/03/pjm-flooded-with-interconnection-requests-proposes-two-year-review-pause/

## Including Customer Demand in Utility Inputs

Customers often work with their utilities to procure clean energy, and it would be helpful and cost-effective if utilities shared, in a confidential and aggregated way, customer renewable demand information with regional transmission planners. This could start at the long-term forecasting stage.

Transmission planner approaches to considering utility data varies. For example, PJM performs a top-down independent forecast but encourages utilities to submit any information PJM has not captured. MISO and the Southeast (SERTP) both aggregate forecasts from their member utilities, but MISO also has a third party independently verify the resulting forecast. NYISO aggregates utility forecasts to determine capacity needs and conducts an independent forecast for transmission planning.

### UTILITY LOAD FORECASTING EXAMPLE

**Continuing with PJM as an example, its utilities are encouraged to provide information about large changes that may not be captured in its independent forecast process. For PJM's latest forecast, it received forecast adjustments from four utilities: APS, ATSI, Dominion and ComEd. Dominion adjusted load upwards for heavy industry and data centers and ComEd adjusted its forecast downwards for savings from voltage optimization. PJM reviews requests to see if they are significant or there is risk of double counting (per Attachment B of Manual 19). Utility information is not currently intended as a means of assisting customers with specific resource needs and who have communicated those needs with their utilities. For instance, despite data center load growth since 2014 in Dominion's northern Virginia footprint,[30] the latest available report for transmission projects in Virginia only reflect reliability, network, and local upgrade projects, and not projects designed to transport low cost renewables to northern Virginia data centers.[31] The utility information currently provided in load forecasts does not necessarily assist in transmission planning for renewables, but contributes to procuring additional generic capacity resources from the capacity market, which tends to be dominated by fossil fuel resources.**

[28] "Transmission Planning for the 21st Century: Proven Practices that Increase Value and Reduce Costs," The Brattle Group and Grid Strategies, October 2021.
[29] "Advances, Challenges, and Opportunities with Comprehensive Electricity Planning," NARUC Annual Meeting and Education Conference, November 20, 2019.
[30] https://www.pjm.com/-/media/planning/res-adeq/load-forecast/load-forecast-supplement.ashx at p. 31.
[31] PJM. "2020 Virginia Infrastructure Report", April 2021. https://www.pjm.com/-/media/library/reports-notices/state-specific-reports/2020/2020-virginia-state-infrastructure-report.ashx

Energy customers do engage directly with their utilities on a number of issues and want to maintain a good relationship. However, there have been instances where customers' good faith efforts have been in vain and terms of agreements have changed once they move their load into the utility's service territories.

There have also been concerns that utility resource forecast information shared with RTOs/ISOs is often limited and inconsistent with state renewable/emissions-reduction mandates or utility commitments to customers. In addition, where utilities are primarily responsible for load forecasting, they may subsequently make changes that impact an otherwise final regional transmission plan.

Given that utilities serve as direct points of contact for customer energy needs, they could improve communication around resource planning with regional transmission planners while maintaining confidentiality. Regional transmission planners could independently verify utility load forecasts and add complementary generation forecast information at the regional levels and use these to determine transmission needs that could help customers with renewable procurement.

## Transmission Planning Drivers

The load forecast currently feeds into the transmission planning process and could include generation preferences. Transmission planning can help bridge the supply and demand tug of war if customer generation preferences, location, and temporal profiles were properly reflected Transmission planning can help bridge the supply and demand tug of war if customer generation preferences, location, and temporal profiles were properly reflected in order to determine where resources were located to serve customer needs.

The FERC-compliant Order 1000 regional planning processes require each Order 1000 Planning Region to consider economic efficiency and public policy needs in addition to reliability when determining the need for transmission. Some RTOs/ISOs consider combinations of these drivers so that benefits are not siloed.[32] Planning for energy customer goals, sometimes more narrowly referred to as corporate goals, is not prohibited by Order 1000. However, there are no explicit Order 1000 drivers for transmission needs arising from goals set by energy customers that have historically and will continue to significantly increase renewables procurement.

The current transmission planning process should accommodate energy customer renewable demand in each region. Skilled stakeholder engagement at the regional level will be required. For example, PJM's Regional Transmission Planning Process: Planners factor the long-term load forecast into PJM's Regional Transmission Expansion Plan, which evaluates the need for enhancements to the high-voltage transmission system up to 15 years in the future. To begin this process, PJM begins with a study. Certain stakeholders (utilities, interconnecting customers, transmission customers, or any party that funds network upgrades) can also ask PJM to initiate a study process under PJM's FERC-approved Procedure for Development of the Regional Transmission Expansion Plan. This could potentially also include customer's generation preferences.[33] The rules require that the study process employ sensitivity studies, modeling assumption variations, and scenario analyses, and consider Public Policy Objectives and potential changes in expected future system conditions, including type of generation.

Given resources and staffing, energy customers could initiate such a process and ask PJM to perform studies with scenarios on how to meet their renewable procurement targets most efficiently and FERC could require other RTOs/ISOs to include similar study processes. These scenarios

[32] MISO has used a multi-value approach, where transmission benefits are combined and evaluated together. PJM also has used a PJM's Multi-Driver Process. LBL at 22. However, those efforts are not routinely performed, are not reflected in any recent board-approved plans, and are generally more the exception than the rule.

[33] PJM. "1.5 Procedure for Development of the Regional Transmission Expansion Plan", n.d. https://agreements.pjm.com/oa/4777

could include siting load or renewable generation in different places as well as investigating different transmission solutions. If there is uncertainty as to whether energy customers or developers will meet their goals, historic success rates and various factors could inform additional scenarios. This analysis could also provide a better sense of the total costs of meeting large energy customers goals at various levels of ambition.

Another way to more clearly draw out the need for transmission to serve energy customers clean energy targets is to establish an explicit new driver for renewable demand[34] and increase planning for multi-value projects. To avoid siloing projects by only considering a subset of their benefits, such as reliability, economic efficiency, or public policy driven projects separately, customer renewable demand could be considered in combination with these other transmission drivers. A benefit to such a driver compared to solely relying on more granular forecasting is that information would be provided closer in time to transmission planning and would thus likely be more accurate. In the planning phase, planners could also help study how transmission could be co-optimized with generation and load siting, to the extent these are flexible. Evaluating multi-value projects on a portfolio basis in all regions is considered a best practice by our interviewees and many ANOPR commenters.[35] Recent expert analysis points to multi-value planning (MVP) as one of five core principles for efficient transmission planning[36] and discusses how to account for a broader range of benefits by providing examples of MVP.

However, developing a new driver has cost allocation implications for customers, which could either help or hinder these projects moving forward. Solely assigning project costs to renewable developers or buyers would be unfair because it ignores the benefits any project provides to other stakeholders. This method of cost assignment contributes to the fact that Order 1000 planning mechanisms for transmission needs driven by public policy are infrequently used—despite the benefits accruing to a broader range of stakeholders across the region, the costs are largely assigned to the states promulgating the policies and requesting the transmission. In PJM, for example, the State Agreement Approach allows states to request that PJM study a project to address public policy requirements.[37] If the states involved assume all cost responsibility for the project, it will be included in the regional transmission plan. One state that has navigated this approach noted that the State Agreement Approach does not allow for multi-driver solutions that encourage efficiency in transmission development and that multi-state agreements are hampered by cost allocation, allocation of rights, curtailment risk, and other difficult issues.[38]

On the other extreme, while broad cost allocation has been a good practice in most circumstances where benefits broadly accrue to customers in the entire region, it has created problems where stakeholders perceive inequities. For example, broad cost allocation has stalled projects in MISO,[39] leading the RTO/ISO to propose splitting its region in two cost allocation zones so that the Northern half can get projects approved.[40] It is

[34] Similar to the Order 1000 public policy driver.

[35] Please see: "Motion To Intervene And Comments Of The National Association Of Regulatory Utility Commissioners," RM21-17-000, October 12, 2012. Page 22; 'Comments of the American Council on Renewable Energy," RM21-17-000, October 12, 2012, Pages 55-60; "Comments of Public Interest Organizations on FERC's Transmission Reform Advance Notice of Proposed Rulemaking," Docket No. RM21-17, October 12, 2021. pg 51.

[36] "Transmission Planning for the 21st Century: Proven Practices that Increase Value and Reduce Costs," The Brattle Group and Grid Strategies, October 2021.

[37] PJM. "State Agreement Approach and New Jersey Offshore Wind", September 14, 2021. https://pjm.com/-/media/committees-groups/committees/pc/2021/20210914/20210914-nj-offshore-wind-saa-term-sheet.ashx

[38] See, e.g., NEW JERSEY BOARD OF PUBLIC UTILITIES Initial Comments in FERC Docket No. RM21-17-000 Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection at pp. 9-10, **https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20211012-5721**

[40] Separately, some non-RTO utilities are citing to broad regional cost allocation as a reason to not join RTO. Please see "2021 RTO Membership Analysis, LG&E and KU, October 2021. **https://psc.ky.gov/pscecf/2020-00349/rick.lovekamp%40lge-ku.com/10192021013538/2-2021_RTO_Membership_Analysis.pdf.**

therefore important that cost allocation is roughly commensurate to all of the benefits, many of which are broadly dispersed, and that these benefits are explained to stakeholders and decisionmakers.
A middle ground that comprehensively accounts for all benefits and allocates cost in a way that most parties consider commensurate with the benefits they accrue could be a means to overcoming opposition to projects. Energy customers could pay a share reflective of their specific need for the line, and the rest of the costs could be allocated more broadly to everyone who generally benefits. Alternatively, developers with PPAs could bear the cost associated with their need for a new line, and some of these costs could be passed along through the PPAs.

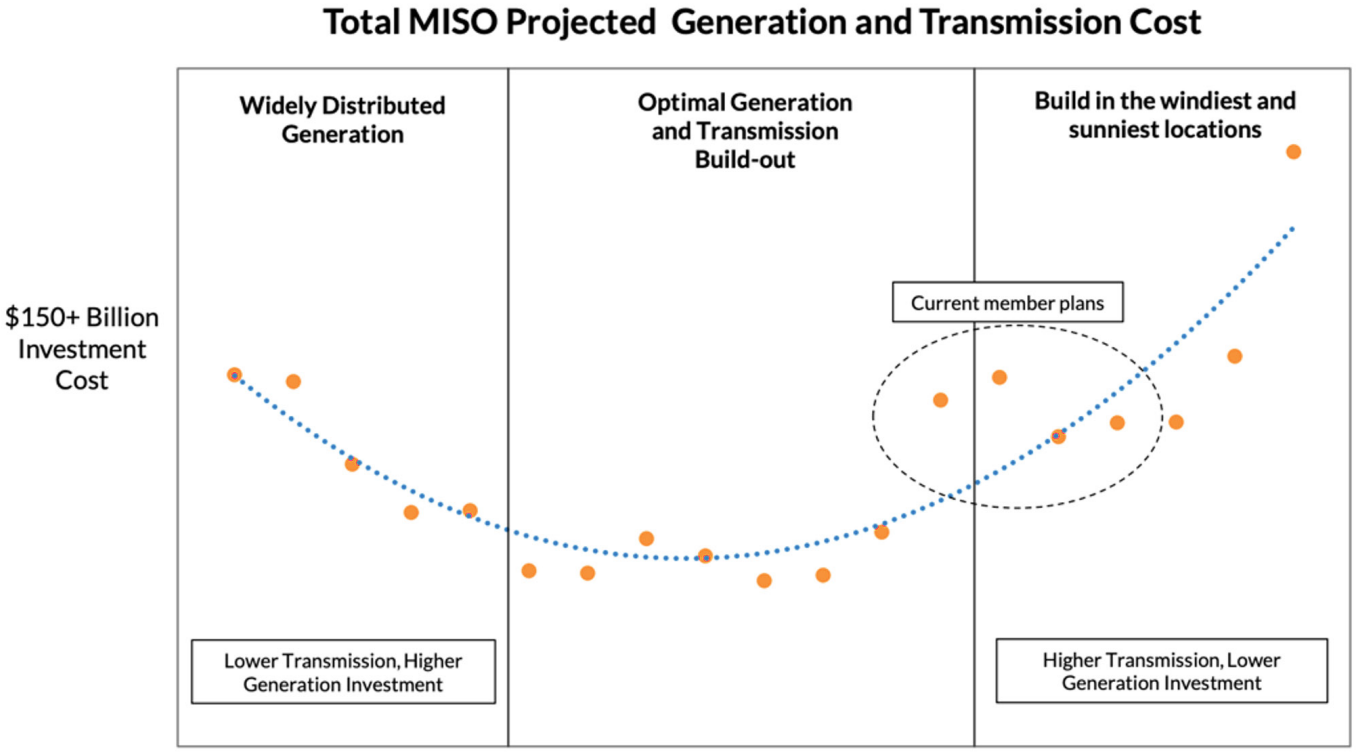
There are several other ideas on how costs and risks could be split. Harvard Electricity Law Initiative's ANOPR reply comments considered a hybrid merchant and cost-of-service model. Placing some of the investment risk on merchants could help alleviate the concern that proactively building transmission to renewable energy zones could result in transmission lines to nowhere if the market for renewables does not materialize.[41] It could also better integrate merchant lines into regional plans. Under this model, energy customers would bear some of the risk that would otherwise be spread among ratepayers. DOE's anchor-tenant model offers a similar concept, where the U.S. government serves as a large customer until a line reaches a certain subscription level. Another idea to help alleviate ratepayer opposition could be to adopt ex post cost allocation in some instances instead of defaulting to ex ante cost allocation. These ideas are beyond the scope of this white paper and could be further explored in a paper on cost allocation.

[41] "Comment of the Harvard Electricity Law Initiative," FERC Docket No. RM21-17, Page 6.

## Data Sharing and Resource Optimization

RTOs/ISOs could play a stronger role by ensuring data that drives transmission development flows both ways: shepherding energy customer data up to inform planning but also down to providing actionable data to customers. RTOs/ISOs could help co-optimize transmission buildout with renewable energy zones and energy customer demand by identifying network upgrades or project locations that support customer demand.[42] Information, data, and modeling can help customers and other stakeholders determine an efficient configuration of transmission and renewable generation. Many stakeholders support proactively planning to connect renewable energy to the system[43], and identifying renewable energy zones has historically been successful as an initial step.[44]

However, developing renewables where the solar and wind potential is strongest and building transmission to these regions does not necessarily result in the least cost solution. Indeed, studies show that the least cost solution is a middle ground to the two extremes of siting renewables in far-flung windy and sunny regions and building a lot of transmission and the opposite where less transmission is required, but local renewables potential is weak.[45]




**SOURCE:** (Same as cite 30) MISO Planning Advisory Committee, Long Range Transmission Planning - Preparing for the Evolving Future Grid, August 12, 2020, pg. 7.

[42] O'Shaughnessy, Eric, et al., "Corporate Acceleration of the Renewable Energy Transition and Implications for Electric Grids," Renewable and Sustainable Energy Reviews, Renewable and Sustainable Energy Reviews, 146 (2021).
[43] https://cleanenergygrid.org/174-entities-in-support-of-proactive-transmission-planning-for-the-future/
[44] "Texas as a National Model for Bringing Clean Energy to the Grid," ACORE Blog, October 13, 2017.
[45] MISO Planning Advisory Committee, Long Range Transmission Planning - Preparing for the Evolving Future Grid, August 12, 2020, pg. 7.

Some energy customer demand could be flexibly sited (subject to water access requirements, local tax incentives, skilled labor, etc.). Regional planners could provide helpful information by identifying areas of lower congestion, knowing where transmission is planned and generation is queued. Regional planners could indicate where on the system could reliably accommodate large demand, or where flexible demand would be helpful. Locational marginal emissions[46] may also provide useful information to energy customers with emissions reduction targets.[47]

Large demand with some flexibility in siting could be co-optimized with generation and transmission. The information needed for this analysis may be sensitive, so an independent third-party could confidentially collect and aggregate information. RTOs/ISOs/planners could perform co-optimization studies and help customers and developers and other stakeholders better understand where renewables could be sited along with transmission, given their demand profile. DOE and its labs [48] could provide modeling and technical assistance, and the Infrastructure Investment and Jobs Act (IIJA) could provide funding for this work. DOE labs could assist in developing mapping tools to layer and visualize how generation, transmission and energy intensive customer demand centers could be co-optimized and include information about siting risks, environmental justice considerations,[49] as well as other information developers and customers may want.[50]

Even though RTOs/ISOs, DOE, or others performing these studies do not have authority over resource choice or siting, they can share results with states who have jurisdiction and utility planners. The co-optimization results could include forecast capacity needs, energy needs, as well as flexibility and ancillary service needs on a locational basis. Transmission planners could take this information into account to produce least-cost solutions. States and utilities can use this information in their IRP (Integrated Resource Plan) and Certificate of Public Convenience and Necessity (CPCN) processes and when assessing how to achieve emissions reduction goals at least cost. Regions looking to attract new business may be interested in providing this information for developers and companies. Developers and energy customers could benefit as well. Some of this data and modeling may help inform interconnection siting and study requests, and facilitate interconnection studies.

FERC could conduct a technical conference investigating how regions, including non-RTO utilities, perform long-term load forecasting and address future customer generation needs, particularly as it pertains to taking into account clean energy goals and electrification and how the process feeds into transmission planning. DOE and its labs can provide stakeholders with technical assistance as requested with alternative plans, tools and software for optimizing across generation, demand, and transmission siting and needs analysis, taking into account siting risks during the planning phase and assisting in identifying least cost solutions given the constraints.

[46] Luke Oates, D., Spees, K. "Locational Marginal Emissions", 2021. The Brattle Group. https://resurety.com/wp-content/uploads/2021/05/REsurety-Locational-Marginal-Emissions-A-Force-Multiplier-for-the-Carbon-Impact-of-Clean-Energy-Programs.pdf

[47] Regional planners could also provide emissions impacts of proposed projects. For example: PJM has started reporting the **carbon dioxide emissions impact** of proposed market efficiency lines, with the first set of results showing that three of the four proposed lines would reduce emissions, while one proposal would result in increased emissions.

[48] Energy Zones Mapping Tool. https://ezmt.anl.gov/

[49] EPA. "EJScreen: Environmental Justice Screening and Mapping Tool". https://www.epa.gov/ejscreen

[50] Uncertainty and timeliness can impact projects. Although some of the risks–siting and resistance from key players, taking these considerations into account during the planning phase could help mitigate risks of delay.

# NON-RTO/ISO TREATMENT OF CUSTOMER DEMAND

All utilities within FERC jurisdiction, whether or not they are in an RTO/ISO, are part of a FERC Order 1000 Planning Region and must participate in regional transmission planning. However, regional variations in planning practices have resulted in different outcomes and levels of transparency. Regional planning may be top down or bottom up or some combination of the two. With top-down planning, RTO/ISO planners determine the transmission needs and conduct open stakeholder processes to identify the most cost-effective solutions to the needs. There are some transmission solutions determined at the local utility level that are exempt from the regional competitive planning process. Bottom-up planning typical of non-RTO/ISO regions combines local utility-level transmission plans across the region and then compares stakeholder-proposed alternatives to the combined plan. Evaluations of alternatives to these rolled-up plans may not include basic benefits like production cost savings resulting from the alternative proposals, if any are considered at all. Some regions have not ever found that any alternatives are superior to the rolled-up utility plans.

RTOs/ISOs are better suited to regional planning (with some local utility planning for reliability upgrades and other exemptions) while non-RTO/ISO planning regions are likely to continue only planning around utility-specific needs.[51] Non-RTO/ISO regional bottom-up processes have not worked well for non-incumbent utility proposals while RTO/ISO regional planning (which could also be improved) has been relatively more open, transparent, and inclusive.

Energy customer renewable energy demand could be included in utility planning; however, utilities that insist on only developing renewable energy within their own footprints are likely not providing the least cost solution for consumers. Utilities in non-RTO/ISO regions are more likely to limit their resource choice to locations within their footprints. This may be a result of pancaked transmission rates across utility boundaries. The lack of focus on an optimized regional buildout of generation or a robust regional transmission planning process means an inefficient outcome is more likely because there is little ability for an independent entity to analyze and propose alternatives to the utility's plan. While customers can negotiate favorable terms with a utility before siting in its territory, once customers settle in, they have less leverage in developing new contractual arrangements with the monopoly utility. In RTO/ISO regions, customers have greater opportunity to work through their utilities or third parties in open, transparent and competitive planning processes or directly provide input as stakeholders in regional processes.

[51] Northern Tier Transmission Group (NTTG), SCRTP, and SERTP, for example, evaluate regional alternatives that might replace one or more local transmission projects within the combined local transmission plans. **Regional Transmission Planning** at 13. Western Order 1000 Planning Regions–ColumbiaGrid, Northern Tier Transmission Group (NTTG), and WestConnect–like the RTOs, conduct studies that lead to a formal finding regarding regional transmission needs driven by economic considerations. **Regional Transmission Planning** at 19.

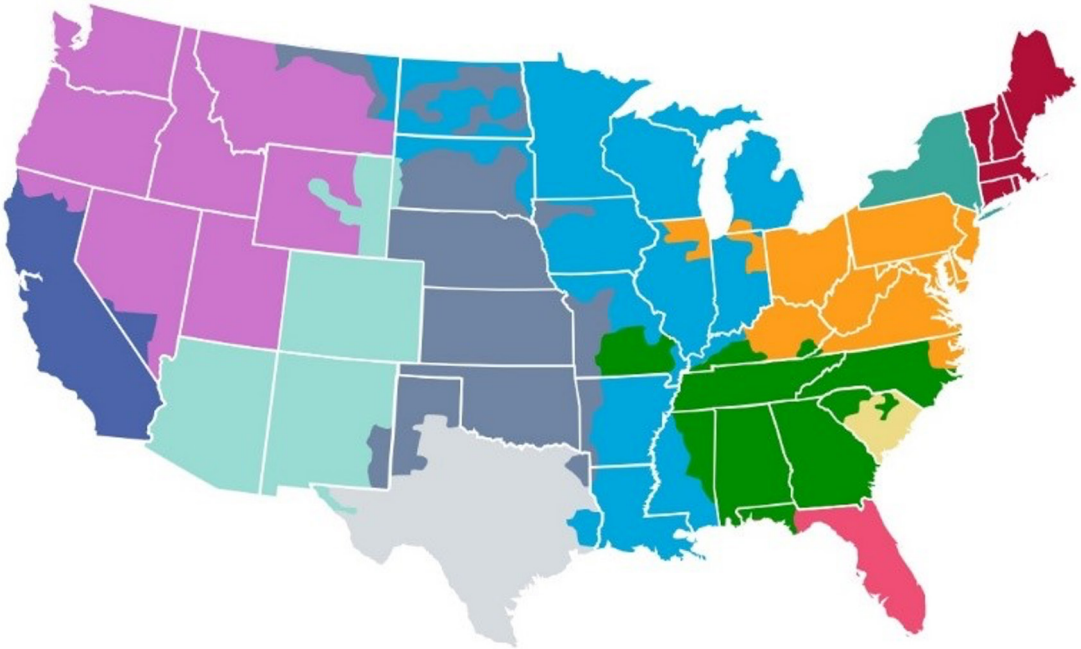
## Existing Regional Institutions

It's worth noting that there are a range of regional institutions that might impact transmission planning in non-RTO/ISO areas and their effectiveness in encouraging efficiency, transparency and inclusive discussions vary with their responsibilities and requirements. Overall, an organized wholesale market managed by a RTO/ISO that provides a forum for regional planning and the reforms discussed in this white paper could better support transmission planning that is responsive to customer needs.

Like RTO/ISO areas, non-RTO/ISO areas have NERC regional entities which recommend system planning criteria, aggregate information pertaining to planned generation and transmission facilities, assess reliability, and manage member committees. In the West, this entity is the Western Electricity Coordinating Council (WECC) and in the Southeast it is the SERC Reliability Corporation (SERC).

The non-RTO/ISO West has two FERC Order 1000 regional planning entities: Northern Grid (formed in 2020 when ColumbiaGrid and Northern Tier Transmission Group consolidated) and WestConnect. There are three FERC Order 1000 Transmission Planning Regions in the Southeast: the Southeastern Regional Transmission Planning (SERTP), the South Carolina Regional Transmission Planning (SCRTP), and the Florida Reliability Coordinating Council (FRCC). We describe the planning processes of these entities in the next sections.

**FIGURE 2:** Order 1000 Transmission Planning Regions



**FERC Order No. 1000 Transmission Planning Regions**

- California ISO
- Southwest Power Pool
- Midcontinent ISO
- NorthernGrid
- PJM
- New York ISO
- ISO New England
- WestConnect
- Southeastern Regional Transmission Planning
- South Carolina Regional Transmission Planning
- Florida Reliability Coordinating Council
- Not Part of an Order 1000 Region

**SOURCE:** Federal Energy Regulatory Commission. "Order No. 1000 Transmission Planning Regions," 2021. https://www.ferc.gov/media/regions-map-printable-version-order-no-1000

Other western regional institutions include an interstate compact called the Western Interstate Energy Board (WIEB),[52] and its Committee on Regional Electric Power Cooperation (CREPC). CREPC consists of public utility commissions, energy agencies, and consumer advocates in the western states and Canadian provinces, and works to improve the efficiency of the western electric power system. There is also the Western Interconnection Regional Advisory Body (WIRAB),[53] formed under the Federal Power Act (FPA) Section 215(j), and it has the authority to advise FERC, the North American Electric Reliability Corporation (NERC), and the Western Regional Entity (i.e., WECC) on matters pertaining to electric grid reliability in the Western Interconnection. CREPC and WIRAB host regular meetings where regulators and stakeholders discuss important regional issues, such as transmission planning and siting in the West, the benefits and costs of RTO/ISO formation in the region. [54]

The southeast does not have any similar institutions to the WIEB or CREPC, apart from the regional association of public utility commissioners that all regions have. However, these forums are not solely focused on electricity. The southeast does have regional power pools with some reserve sharing and energy trading capability, but these do not directly influence transmission planning.[55]

## Transmission Planning in The Non-RTO/ISO West

NorthernGrid and WestConnect currently provide some of the regional transmission planning functions that an RTO/ISO might- such as harmonizing data and planning assumptions, providing a stakeholder forum, and opportunities to identify regional projects.[56] Both entities develop base cases for regional transmission that look at rolled up utility plans covering 10 years and consider proposed alternatives. Neither of these groups, however, provide the regional optimization of transmission plans across their footprint or cost allocation requirements that a full RTO/ISO would. Public Interest Organizations (PIO's) have noted that these planning entities have not been receptive to scenario assessment or conceptual transmission projects as proposed by outside stakeholders, and in some cases have not conducted studies in a transparent way.[57] They also note that interregional planning has been non-existent and that transmission development in the West is lagging compared to growing clean energy goals.[58]

## Transmission Planning in the Non-RTO/ISO Southeast

SCRTP and SERTP perform economic planning studies that are intended mainly to inform market participants who might propose and/or sponsor alternatives. This involves assembling an initial baseline regional transmission plan from the local transmission plans of participating incumbent transmission owners and then evaluating alternatives proposed by stakeholders and non-incumbent developers. Unlike in RTO/ISO regions, these studies do not include basic production cost savings from utilities being able to buy power from a wider range of resources, much less other benefits. Limiting the benefits considered makes it less likely alternatives are selected. In contrast, for example, SPP has at times

[52]Western Interstate Energy Board. https://www.westernenergyboard.org/western-interstate-energy-board/
[53]Western Interconnection Regional Advisory Body. https://www.westernenergyboard.org/western-interconnection-regional-advisory-body/
[54]Western Interstate Energy Board. "CREPC Meetings". https://www.westernenergyboard.org/committee-on-regional-electric-power-cooperation/crepc-meetings/
[55]Chen, J. "Evaluating Options for Enhancing Wholesale Competition and Implications for Southeastern United States", March 2020. Nicholas Institute for Environmental Policy Solutions. https://nicholasinstitute.duke.edu/sites/default/files/publications/Evaluating%20Options%20for%20Enhancing-Wholesale-Competition-and-Implications-for-the-Southeastern-United-States-Final_0.pdf
[56]"Regional Transmission Organization Study: Oregon Perspective," Oregon Department of Energy, December 2021.
[57]"Comments of Public Interest Organizations on FERC's Transmission Reform Advance Notice of Proposed Rulemaking," Docket No. RM21-17, October 12, 2021. pg 43.
[58]"Comments of Public Interest Organizations on FERC's Transmission Reform Advance Notice of Proposed Rulemaking," Docket No. RM21-17, October 12, 2021. pg 30, 32, 38, and 40.

considered a number of economic impacts in addition to changes in production costs, including emissions rate reductions, ancillary service cost reductions, public-policy benefits, and mitigation of transmission outage costs.[59]

SERTP is the only multi-state Order 1000 planning region in the southeast. According to participants in the process, regional planning is dominated by utilities.[60] Utilities mostly plan within their own balancing authorities, and include their own power plants in their plans but do not account for independent power producers. They also assert that public policy and non-transmission alternative considerations are baked into their plans, but how that is done is not described in any detail.[61] In the latest meeting, SERTP apparently considered but rejected three alternatives that connect different balancing authorities.[62] Further, SERTP is a neighboring region of MISO, but its interregional coordination process does not have public stakeholder meetings.

## Future Market Development and Transmission Reform

RTOs/ISOs are better set up to conduct transparent, regional transmission planning, taking into account information available from their organized markets, which take into account and price transmission congestion. These functions are not cohesively available in non-RTO/ISO regions. However, there is currently considerable interest from customers, [63] public interest organizations,[64] utilities,[65] states,[66] and others to expand organized wholesale markets, which could include regional transmission planning authority across the West. Currently, Colorado and Nevada have both enacted state legislation mandating their utilities join an RTO/ISO by 2030 and additional states have begun to examine future market design pathways.[67] There have been incremental steps to provide individual elements of an organized wholesale market, such as the development of a Western Energy Imbalance Market (EIM) allowing CAISO to share a real time "balancing market" with nearby utilities. CAISO is currently working on expanding this further to include an Extended Day Ahead Market (EDAM) to allow day-ahead trading for participating entities as well. SPP plans to expand its western operations beyond a real-time and day ahead market through the creation of its Markets + program and the launch of RTO/ISOWest by 2024.[68] Finally, the Western Power Pool (formerly NorthWest Power Pool), which has played a role in managing coordination reserve sharing arrangements and other services, is working on developing a resource adequacy program to launch in 2024 as well.[69]

As discussed in the sections above, regional transmission planning coordination in the west and south has been ineffective in planning for transmission expansion that will support regional markets. While transmission expansion has been a challenge in RTO/ISO areas as well, the expansion of the full RTO/ISO model that includes transmission planning, a strong governance program, and stakeholder processes that incorporate customer input could be critical for overcoming transmission expansion barriers and implementing FERC's reforms in non-RTO/ISO areas.

[59]Joseph H. Eto and Giulia Gallo, "**Regional Transmission Planning**: A review of practices following FERC Order Nos. 890 and 1000," November 2017, pg. 20.
[60]"Comments of Public Interest Organizations on FERC's Transmission Reform Advance Notice of Proposed Rulemaking," Docket No. RM21-17, October 12, 2021 pg. 41
[61]"Comments of Public Interest Organizations on FERC's Transmission Reform Advance Notice of Proposed Rulemaking," Docket No. RM21-17, October 12, 2021. pg 43.
[62]**2021 SERTP 4th Qtr Presentation** pp 177-179. This appears to be a **general trend: to consider but not accept alternatives** to build transmission between unaffiliated utilities.
[63]"Comments of the Renewable Energy Buyers Alliance on FERC's Technical Conference on Resource Adequacy in the West," Docket No. AD 21-14-000, July 26, 2020.
[64]"**Business, Clean Energy, And Conservation Groups: Western RTO/ISO Would Bring Big Benefits**," Cebuyers.org, October 19, 2021.
[65]"**Several Western Power Providers Announce Plans to Explore Market Options**," Business Wire, October 5, 2012.
[66]The State-Led Market Study, Energy Strategies, July 30, 2021.
[67]"**Regional Transmission Organization Study: Oregon Perspectives**," Oregon Department of Energy, December 2021.
[68]"Markets+ Information Session," SPP Webinar, November 17, 2021. https://www.spp.org/documents/66073/11172021%20markets%20plus%20information%20session%20presentation.pdf
[69]NWPP Resource Adequacy Program Detailed Design, Northwest Power Pool, July 2021, Pg 8.

RTOs/ISOs also have a region-wide transmission tariff enabling them to operate the system of utility-owned transmission as a whole and assign and recover costs accordingly. In non-RTO/ISO regions, regional transmission that spans multiple utilities will have a separate tariff for each utility, and customers wishing to use the systems will often have to pay to use each utility's system but also pay to traverse different utility systems.

RTOs/ISOs have the authority to operate transmission assets across member utilities and are thus able to maximize use of that transmission through efficient dispatch of a large pool of resources and taking into account constraints. RTOs/ISOs have been able to increase available transmission capacity[70] through more efficient operations. RTOs/ISOs also eliminate rate pancaking of transmission charges within their footprints, which also encourages more efficient use of the system. Finally, a regional planning organization with the authority to plan for regional transmission and assign costs is critical to eliminating conflicting utility perspectives on needs and cost/benefit allocation.

A full RTO/ISO model is important to achieving transmission reforms because of the associated development timelines of transmission. Non-RTOs/ISOs planning focuses on local utility plans, while RTO/ISO planning can better address regional needs. Considering the long timelines for transmission development, delaying development of an RTO/ISO to facilitate transmission planning risks the optimization of non-RTO/ISO area transmission and could result in over-investment and inefficient lines, or worse — limit the ability of these regions to achieve the clean energy goals set by their states, utilities, and energy customers. Reforming planning in non-RTO/ISO regions, and encouraging RTO/ISO formation or at least requiring independently conducted planning in non-RTO/ISO regions is important in the near term.

## Balancing Consistency and Flexibility

This white paper has discussed how upcoming FERC reforms could require that planning in all regions incorporate customer demand as part of a more comprehensive planning process and drive more consistency in planning approaches. Some entities have filed initial comments in the ANOPR highlighting the need for sufficient flexibility to implement reforms based on their unique needs,[71] that there is no one size fits all approach,[72] and emphasizing the ability to determine which mix of generation and transmission best meet their unique state needs.[73] FERC requirements for customers demand to be incorporated can balance consistency and flexibility by establishing processes and allowing regional inputs to determine outcomes.

Consistency in processes across regions is helpful to generation developers and customers, so they do not have to navigate different processes and requirements and adjust their business models across regions. Flexibility can be maintained as each region utilizes regionally specific data as inputs into these processes, resulting in outcomes that meet their specific needs. The default should be consistent, effective and firm requirements across the regions but flexibility should be allowed for identified region-specific needs with good rationale.

[70]Some states acknowledge that an RTO would help improve transmission efficiency. **https://www.oregon.gov/energy/Data-and-Reports/Documents/2021-Regional-Transmission-Organization-Study.pdf** at p 15.
[71]"Comments of the California Independent System Operator under RM21-17," Docket No. RM21-17, October 12, 2021, page 40.
[72]"Comments of Duke Energy Corporation under RM21-17, October 12, 2021.
[73]"Comments of the Louisiana Public Service Commission," Docket No. RM21-17, October 12, 2021, page 9.

# GOVERNANCE REFORMS

Regional governance needs improvement in both RTO/ISO and non-RTO/ISO regions and will support proposed transmission planning reforms.[74] Utilities can block competitive transmission plans that would boost the efficiency of the system, but make it more difficult for them to justify building and rate-basing their own power plants. As a large stakeholder group with voting influence, they tend to exercise disproportionate influence in the RTO/ISO decision-making process. Utilities are essentially the gatekeepers of transmission planning and in non-RTO/ISO regions and RTO/ISO regions. For these reasons, transmission planning reforms must be accompanied by governance reforms. FERC has made progress in the past on improving transparency, responsiveness to stakeholders and independent decision making in Orders 890, 719, and 2000, Furthering this progress and ensuring that these reforms neutralize information asymmetry, allow inclusive planning and outsized influence from utilities is key.

**GOVERNANCE REFORM IS NEEDED TO NEUTRALIZE INFORMATION ASYMMETRY AND OUTSIZED INFLUENCE FROM UTILITIES**

Entergy New Orleans, a member of MISO, provides a prime example of how its efforts to block regional transmission in favor of building local power plants resulted in prolonged outages during Hurricane Ida. Entergy has obstructed plans to build high-voltage transmission lines that could bring in more power from other parts of the country.[75] Prior to Ida, it gave its regulators one option to ensure reliability in the region: a fossil fuel plant it asserted would be important for providing "black start" services after an outage.[76] Entergy did not analyze transmission lines as alternatives, stating they would be too expensive. Later, it was discovered that public stakeholder meetings involved "grass roots" support who were compensated to appear.[77] During Ida, all eight of New Orleans' transmission lines failed and the black start on the power plant took days to come back online.

Ensuring that utilities like Entergy participate in a good faith regional planning processes that enables others to propose alternatives, ensures regulators are well informed on the options under multiple scenarios, and holds the utility accountable would be a step in the right direction to ensure that an event like this does not become a regular occurrence.

[74]For more background on RTO/ISO governance structures, please see: Camorah King and Heidi Ratz, "Primer U.S. Organized Wholesale Electricity Market Governance Primer," Clean Energy Buyers Institute, September 2021.
[75]Schuppe, J. "Hurricane Ida power grid failure forces a reckoning over Entergy's monopoly in the South", September 24, 2021. NBC News. https://www.nbcnews.com/news/us-news/hurricane-ida-power-grid-failure-forces-reckoning-over-entergy-s-n1279971
[76]Blau, M., Waldman, A., and Wendland, T. "Entergy Resisted Upgrading New Orleans' Power Grid. Residents Paid The Price", September 22, 2021. NPR. https://www.npr.org/2021/09/22/1039110522/entergy-resisted-upgrading-new-orleans-power-grid-residents-paid-the-price
[77]"Entergy Confirms Actors Were Paid to Support New Orleans Power Plant, Says It Was Unaware," Nola.com, July 12, 2019. https://www.nola.com/news/politics/article_b754788f-8a94-5659-aa8a-5495474bf027.html

## Inclusive, Efficient, and Transparent Planning

Inclusive planning is integral to the consideration of customer demand. Recent explorations of the connection between demand for renewable energy and transmission planning have encouraged corporate energy customers to participate in regional and inter-regional transmission planning conversations, become voting members within RTOs/ISOs , and work with advocacy groups.[78] Increased customer participation can facilitate information sharing but reforms that result in truly inclusive planning processes are needed.

In order to facilitate inclusive planning processes, the entities in charge of planning should ensure that non-incumbent stakeholders have the necessary information and technical assistance to effectively participate in the planning process early enough to influence outcomes. Planners should also clarify when and where customer demand is integrated. This approach helps put the onus on planners to demonstrate how they have proactively assessed customer demand in addition to customer initiative.

While energy customers may see value in providing transmission planning input, many are thinly staffed compared to the volume of transmission planning processes and other resource planning processes that impact their clean energy goals. RTO/ISO transmission planning staff can also help gather relevant customer information to include in the planning process to help relieve some of the burden on customers. Where customers lack bandwidth to engage in stakeholder processes directly, a third-party that can aggregate their confidential information and advocate for their needs may also be needed.[79]

Finally, stakeholder processes also need to be more efficient and transparent to help customers be heard equally among utilities who have teams dedicated to stakeholder meetings. Stakeholder processes that address transmission planning can be separate from the processes that address market rules, however all RTO/ISO stakeholder processes are in need of improvement. RTOs/ISOs should streamline their stakeholder processes to reduce delays, inconsistencies and uncertainty that slow down planning. Customer engagement is likely to be higher when processes are clear and can be navigated efficiently. Transparency in stakeholder processes is also key so that customers can track how their input ultimately influences transmission planning and avoid processes that serve only to check the box. An ITM can also enhance transparency.

## Independence and Accountability of RTOs/ISOs

FERC should focus on increasing the independence and accountability of RTOs/ISOs to support transmission planning reforms and remove any incentives for planners to inadequately account for customer demand data. For example, if RTO/ISO member utilities do not stand to benefit from renewable development outside of their territories, and RTO/ISO grid planners do not capture customer demand preferences, RTOs/ISOs will likely miss opportunities to reach new clean resources. To ensure that regional planners are independent of their members, the first best solution would be to reform the independent planning authorities so that they actually act independently of member transmission owners. This includes improving the independence and transparency of existing RTOs/ISOs , as well as the planning process outside of RTOs/ISOs which are run by utilities. However, if there is a structural barrier preventing the planning authority from achieving independence, e.g., if member transmission owners can threaten to leave, then a third-party that could better ensure independence in transmission planning would be appropriate.

[78]Please see: "Transmission Upgrades & Expansion: Keys to Meeting Large Customer Demand for Renewable Energy," Prepared by David Gardiner and Associates for the Wind Energy Foundation, January 2018 and "Corporate Renewable Procurement And Transmission Planning: Communicating Demand To RTOs Necessary To Secure Future Procurement Options," Wind Solar Alliance, October 2018.

[79]To some extent, developers selling to renewable buyers may advocate for least-cost transmission access to renewable energy zones in order to be competitive in deals with customers. But they may not have all of the information that customers have about their energy needs.

FERC can also remove incentives for inefficient planning by revisiting exemptions that incentivize incumbent utilities to channel capital from the competitive regional planning process to focus on local projects that are not subject to bids from competitors. These reforms are important for energy customers to ensure transmission investment is efficiently spent.

As a point of comparison, every RTO/ISO has independent market monitors (IMM), who have been helpful even though RTOs/ISOs independently operate markets. The experience with independent market monitors generally has been positive for customers. In their advisory role, the IMM offers an independent evaluation of various issues, recommendations for improvements and alternative proposals. The IMM impartially implements mitigation and monitors market participants' activities to ensure discriminatory or irregularities practices are not occurring. IMMs also have the right to file complaints at FERC to address concerns related to market power mitigation and market design.[80]

On transmission-related issues, IMM roles differ across the regions, though many monitor transmission congestion and the financial transmission rights auctions. Monitoring transmission operations and infrastructure requires transmission system modeling expertise and a team of economists, engineers, and statisticians.

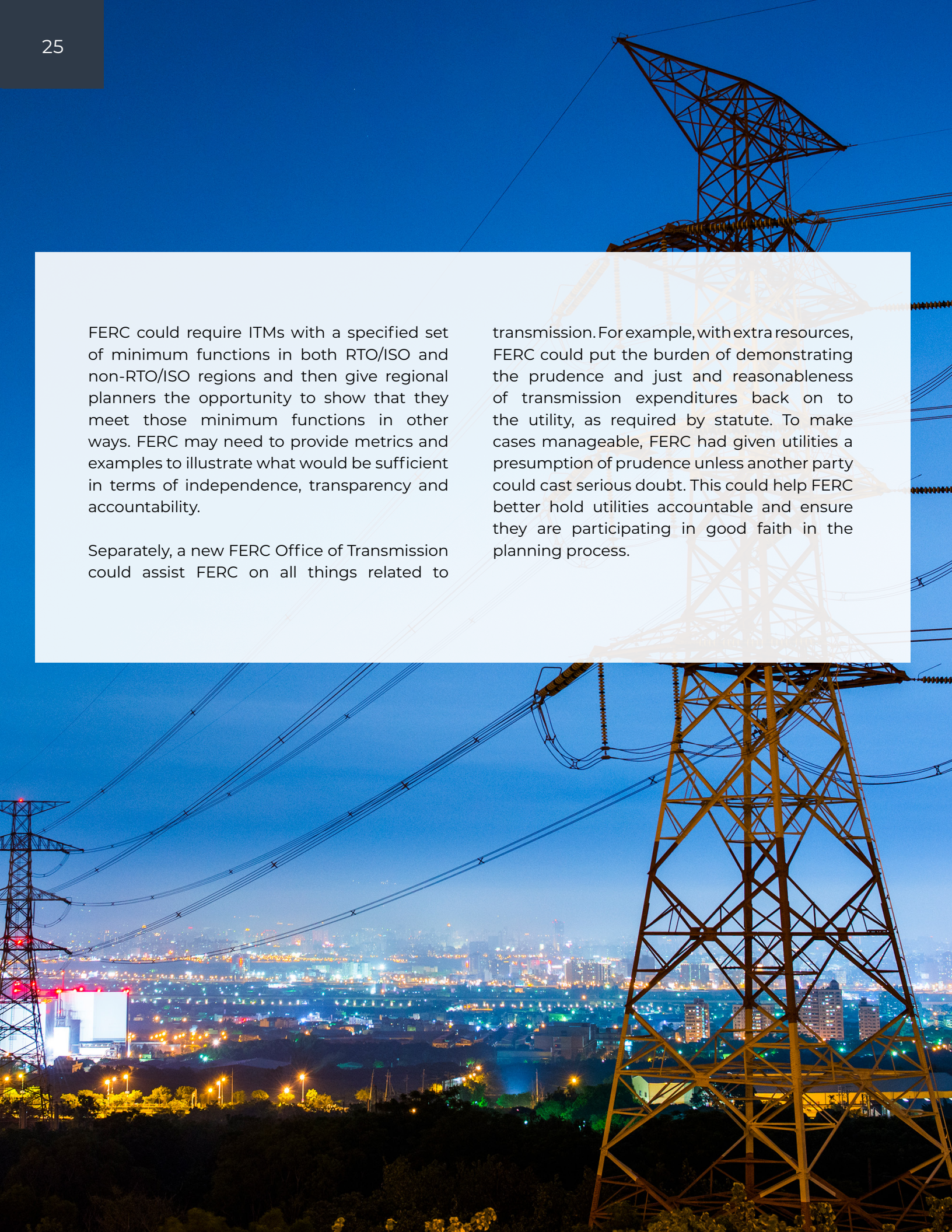
An independent transmission monitor (ITM), with an appropriately defined role, could help promote independence, transparency and accountability in the planning process in a coordinated manner that presently does not exist. ITMs could identify opportunities for more efficient grid operations and infrastructure, which can feed into planning processes that could ensure costs are prudent, and evaluate the buildout of transmission based on the region's capacity needs in order to ensure planning accounts for all customers' demand. The ITM is also serving as a check to the buildout of transmission, which will be a huge undertaking and to do so in a coordinated manner that provides all customers some protection is important.

**POTENTIAL INDEPENDENT TRANSMISSION MONITOR FUNCTIONS**

**Many of the issues with transparency and ensuring independent decision making could be mitigated with the ITM, a concept suggested by FERC in its ANOPR. An ITM would not act as a separate layer of approval for transmission planning, but rather enhance the existing process and add safeguards as customers demand more capacity to serve their loads.**

**ITM functions could broadly include identifying more efficient operations and infrastructure options, assisting stakeholders in evaluating plans, running alternative scenarios, proactively finding ways to optimize the existing systems including investigating alternative solutions, such as grid enhancing technologies (GETs), non-wires alternatives (NWAs), advanced conductors, and evaluating supplemental and local upgrades. An ITM could help evaluate whether projects planned on a broader scale–regionally, interregionally or beyond–could provide greater net benefits or eliminate the need for proposed local projects. An ITM could also potentially help ensure that customer data is accurately taken into account in the planning process. An ITM could develop independent benchmark transmission project cost estimates, monitor costs, assess prudence of expenditures compared to alternatives, and monitor and report on the cost and efficacy of transmission incentives.**

[80] "FERC Denies PJM's Effort to Limit Authority of its Independent Market Monitor," Davis Wright Tremaine Blog, May 9, 2019.



FERC could require ITMs with a specified set of minimum functions in both RTO/ISO and non-RTO/ISO regions and then give regional planners the opportunity to show that they meet those minimum functions in other ways. FERC may need to provide metrics and examples to illustrate what would be sufficient in terms of independence, transparency and accountability.

Separately, a new FERC Office of Transmission could assist FERC on all things related to transmission. For example, with extra resources, FERC could put the burden of demonstrating the prudence and just and reasonableness of transmission expenditures back on to the utility, as required by statute. To make cases manageable, FERC had given utilities a presumption of prudence unless another party could cast serious doubt. This could help FERC better hold utilities accountable and ensure they are participating in good faith in the planning process.

# SUMMARY AND RECOMMENDATIONS

In light of current efforts to reform and facilitate transmission planning, this paper has focused on potential FERC and RTO/ISO reforms that could improve how current transmission planning intersects with customer demand for clean energy. FERC refor should include substantive and procedural reforms. FERC should address both RTOs/ISOs processes for incorporating customer demand as an input into transmission planning and consider improving RTO/ISO governance to support those reforms. RTOs/ISOs and other transmission planners should also play a role in leading improvements to their own processes.

While this paper is focused narrowly on customer demand as a transmission driver, FERC should also proactively address potential cost allocation and siting challenges. Inclusive, transparent planning should support cost allocation and siting as well as result in better plans.

**Below we summarize our two sets of related recommendations:**

## Recommendations To Improve Customer Demand and Investment as Inputs into Forecasting and Transmission Planning:

To ensure transmission plans are holistic and cost effective, FERC should move forward with requirements that customer demand is incorporated into long term scenario planning. In addition, RTOs/ISOs /utilities can also include customer demand in forecasting, play a strong role in optimizing investment, and need to improve how customer information is collected. States in non RTO/ISO areas should consider independent transmission planning.

01

**Customer Demand Should be Included in Transmission Planning in Both Forecasting and Scenario Analysis:**

- RTO/ISO and utility transmission planning for future needs are insufficient.
- Utility and RTO/ISO forecasting needs to be more granular and account for customer demand for specific generation types and where these resources and loads may be sited for planning purposes.
- Voluntary customer goals have been considered uncertain and “non-firm” which underestimates their impact on planning.
- Transmission planning should consider customer demand and resource preferences as both an input into load and generation forecasts and, at a minimum, include customer demand in a reasonable range of scenarios that guide long-term planning.

- The business as usual case should incorporate firm commitments to decarbonize, ramp up renewables, and electrify end-uses.
- Multiple future scenarios should be used to capture different levels of demand and shifts towards clean energy resources as well as where demand, generation and transmission could be co-optimally sited.

02

**Planning Should Account for Multiple Benefits and Drivers:**

- Planning should include a multi-value portfolio approach to avoid artificially siloing benefits and beneficiaries.
- Lines that benefit energy customers will also benefit other stakeholders, and accounting for all benefits to all beneficiaries will help ensure that transmission is efficiently planned and fairly cost allocated.
- A minimum set of benefits should be considered when comparing different transmission solutions, such as (adjusted) production cost savings, consistent with best practice. FERC, perhaps through an Office of Transmission, could publish and centralize different metrics and benefits evaluated across the regions and recommend best practices for all to adopt.

03

**Proactive and Holistic RTO/ISO Modeling and Technical Assistance Could Inform Customer Solutions:**

- RTOs/ISOs  can collect and share information that can help customers meet goals.
- RTOs/ISOs , alone or in conjunction with DOE, can develop transmission studies designed to co-optimize transmission, load, and generation. This assistance will drive improved renewable integration that meets customer demand.

04

**Transmission Planners Need to Improve How Customer Information Is Collected**

- Participation barriers in RTO/ISO and non-RTO/ISO regional planning processes can limit input and information on customer demand.
- Confidentiality concerns for customer data must be addressed and may require creative solutions such as a third-party aggregator.
- Transmission planners should proactively find solutions.

05

**Non-RTO/ISO Regions Need Additional Guidance/Oversight/Scrutiny**

- An RTO/ISO itself would be the first best answer to improve transmission planning in the West and Southeast but an Independent Transmission Monitor (ITM) would also provide improvements. For RTO/ISO and non-RTO/ISO regions, requiring planning by an independent entity in all regions could help improve transmission planning.
- States can provide leadership in developing an independent planning entity or moving towards an RTO/ISO.

# Recommendations to Reform RTO/ISO Governance to Support Process Reform:

To support reforms on transmission planning processes, governance needs to be improved. RTOs/ISOs should focus on making sure their stakeholder processes do not exclude customer participation and FERC should seek reforms that enhance the independence and accountability of RTOs/ISOs .

01

**RTOs/ISOs Should Streamline Their Stakeholder Processes to be Inclusive, Efficient, and Transparent**

- New RTO/ISO-led solutions for making customer engagement feasible and impactful are needed.
- Regional planners or a third party could collect confidential customer data and aggregate it for planning purposes.
- Process reform should remove the delays, inconsistencies, and uncertainty that can hamper planning.
- Customers need transparency in planning so that they can confirm that their data and input actually have the intended impact.

02

**FERC Should Increase the Independence and Accountability of RTOs/ISOs**

- Independence and accountability will make all of these reforms more effective, particularly if incentives for customer demand to be ignored or manipulated are eliminated.
- FERC can increase planning oversight in RTOs/ISOs by taking measures to ensure RTOs/ISOs are acting independently. Ensure that stakeholders have sufficient and timely information and resources to propose alternatives. Putting in place a third-party to evaluate the proposals and the ultimate outcome could help.
- FERC could also adhere to the statutory requirement that the burden is always on the utility to demonstrate prudence, rather than granting them a presumption of prudence, and require that transmission planners show that alternatives were considered and justify that the chosen alternative is the least cost, as required by Order 1000.
- In non-RTOs/ISOs and RTO/ISO areas, FERC should establish an ITM with well-defined roles to ensure transparency, independence and accountability. This can include proposing alternatives, critiquing current practices, ensuring all benefits are accounted for, assisting non-incumbent stakeholders with modeling, alerting FERC to issues and practices that should be investigated.
- A FERC Office of Transmission could compare how planning is being conducted across regions, summarize ITM complaints, assist in prudence reviews, and investigate complaints against planning practices.

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# Thank You!


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