PJM's Role in Regional Planning/2022 RTEP Window 3

Version: Nov. 20, 2023

What is PJM, and what is its role in regional transmission planning?

PJM Interconnection is what is known as a Regional Transmission Organization (RTO), charged by the Federal Energy Regulatory Commission (FERC) with coordinating the sale and movement of electricity in all or parts of 13 states and the District of Columbia. Our job is to ensure there is enough electricity for the 65 million people in our region, every second of the day, when and where it is needed. PJM is a member-based organization that does not make profits.

Planning for the future needs of the electric system is an integral part of PJM's role. PJM conducts a long-range Regional Transmission Expansion Plan (RTEP) process that regularly identifies what changes and additions to the grid are needed to ensure reliability – meaning the uninterrupted flow of electricity at all times.

When needs are identified, PJM opens competitive planning "windows" so that transmission owners and other developers can submit solutions they've designed. If a solution is selected and approved by the PJM Board of Managers, the developer will seek siting approval for, construct and maintain the substations and transmission lines included in its proposal.

PJM's competitive window planning process encourages submissions from a variety of sources and gives PJM the opportunity to assess creative and efficient regional transmission solutions – for example, by combining parts of different proposals. This is the basic competitive planning process that incents innovative solutions at the lowest reasonable costs.

How does PJM's planning role compare with local planning by transmission owners?

PJM's planning's objective is to prepare the high-voltage transmission system to meet the demand and supply changes coming in our future. This includes growth in electricity demand, power generator retirements and new generation resources interconnecting to the grid, such as renewable resources.

Transmission owners focus on local issues and benefits, like connecting new customers and meeting local regulations. Solutions to meet these needs usually have a very localized benefit and are called "supplemental" projects. The cost of these projects is allocated within a transmission zone.

PJM concentrates on regional needs and benefits. Its transmission analysis is guided by national and regional standards as well as criteria developed by PJM. Because the projects it solicits are regional in nature, their cost is allocated to the areas they will benefit.

Is PJM's planning process competitive?

Competition is central to PJM's process. The PJM planning process is a result of a process authorized by the Federal Energy Regulatory Commission (Under FERC Order No. 1000) that enables non-incumbent transmission developers (those who don't own transmission facilities) an opportunity to participate in the regional planning and expansion of the bulk electric system. By publishing a set of system needs and soliciting solutions from competing transmission developers, PJM and FERC aim to encourage innovative, cost-effective and timely solutions to the challenges of building and maintaining a highly reliable electric system.

How are new electricity users (known as "load") connected in PJM?

Retail customers work with their local electric distribution company, often a utility, to connect new load. The distribution companies will define the requirements and schedule for the customer to ensure the load is safely and reliably connected to the local system. Larger loads will be assessed by the transmission owner, which will work with PJM on identifying any associated regional needs.

What are PJM's obligations to serve the electricity demand of large customers and data centers?

Local electric utilities, which are members of PJM, have an obligation to serve all load customers in their footprint. New load connections are managed by these companies. Each utility has a process defined by its own local tariffs (the legal documents that lay out the utility's rules and rates), which outline cost, requirements, future obligations and timelines to connect new customers. PJM is not a part of these processes.

As a regional transmission organization, or RTO, PJM has the responsibility to meet the needs of the region under FERC and the North American Electric Reliability Corporation, or NERC.

Why can't PJM slow down the demand from new load – for example, tell data centers that they have to wait to come online?

PJM cannot refuse electricity service to any of the customers within its footprint. We can't simply say "no" to our utility members that have customers that want to hook up to the system and receive electricity – it is no different from the expectation that someone who builds a new home has, that electric service will be available. PJM can question when a large electricity consumer is coming onto the system and adjust our demand forecasts, but we need to plan to allow for those customers to connect and receive electricity. PJM and its member utilities have an obligation to serve.

What problems are you solving with planning 2022 RTEP Window 3?

The way power is produced and consumed is rapidly changing, putting new and different stresses on the bulk power grid. While planning for these near-term demands, PJM is looking holistically at the future needs of the entire grid as part of the Regional Transmission Expansion Plan (RTEP) process.

With the transmission projects solicited in 2022 RTEP Window 3, PJM is preparing for increased electricity demand, combined with the retirement of fossil-fuel generators. Factors being considered include up to 7,500 MW of new data centers to be sited in Virginia and Maryland, as well as widespread effects from the recent deactivation of more than 11,000 MW of generation across the PJM footprint of 13 states and Washington, D.C. (For context, 1 MW is roughly enough to power about 800 homes.)

The RTEP proposal to be considered by the Board will be able to scale to serve the future needs of all 65 million customers in the PJM footprint, as well as all of the new generation seeking to connect to the grid.

Walk me through the 2022 RTEP Window 3 planning process.

PJM is handling 2022 RTEP Window 3 as it does all projects, through its Regional Transmission Expansion Plan (RTEP) process. Throughout the year, PJM facilitates planning updates and seeks to resolve issues through open, transparent engagement with Members, stakeholders, regulatory agencies, states and other parties. The Transmission Expansion Advisory Committee (TEAC) is the main public forum for stakeholders and PJM staff to exchange ideas, discuss study assumptions and review results. Following the stakeholder review process, PJM staff

recommends projects to the PJM Board of Managers for consideration, approval and inclusion in the RTEP. The current schedule for Window 3 is for PJM to present a second read of the proposal at the Dec. 5 TEAC meeting, and for the Board to consider it on Dec. 11.

What types of projects were proposed to PJM for consideration in 2022 RTEP Window 3?

In all, 72 proposals were received from 10 entities, six of which are incumbent transmission owners. Twenty-two of the proposals were upgrades to existing infrastructure. The remaining 50 represented greenfield, or new-build, projects. The proposals included a variety of solutions, including 230 kV, 500 kV and 765 kV developments; 500 kV substations; underground 500 kV cable; double-circuit 500 kV lines; and high-voltage direct-current (HVDC) lines.

What is the recommended proposal?

The recommended solution includes components of proposals submitted by Dominion, FirstEnergy, Exelon, PPL, NextEra, Transource and PSEG.

The recommended proposal includes new 500 kV and 230 kV lines and upgrades to existing transmission lines designed to increase regional transmission paths to ensure reliable delivery of generation to the load. In addition, static synchronous compensators (STATCOMs) and capacitors will be added to provide voltage support for the backbone transmission system.

How much is all this expected to cost?

The cost of the proposal selected for the needs of Window 3 to be considered by the Board of Managers is estimated at around $5 billion. This collection of work adds to the $627 million of projects approved in October 2022 to support the Dominion Data Center Alley project and $786 million approved in July 2023 to support the retirement of Brandon Shores generating facility.

What is the cost allocation for this? Do ratepayers in other states have to pay for transmission to serve these data centers?

Regional transmission solutions benefit all customers in the PJM footprint. The costs associated with the solutions to address the needs of Window 3 will be allocated pursuant to a cost allocation methodology that has been approved by the Federal Energy Regulatory Commission. PJM publishes a searchable database of project status and cost allocation for projects on its Project Cost & Allocation page on PJM.com.

On what criteria are projects studied and selected?

PJM's driving approach is to determine the more efficient, cost-effective, constructible and scalable set of projects to serve electricity demand in a timely fashion. PJM employs a variety of expertise, including independent outside consultants, to analyze submittals – including any cost-capping provisions voluntarily submitted by the developer. PJM is aware of environmental and social impacts and takes them into consideration when evaluating all submitted proposals. We also want to be sensitive to future needs. For example, PJM planning studies may favor a new substation that will have space for additional electrical equipment needed in the future without having to procure additional land from neighboring landowners.

Solutions are judged on several criteria, including:

- **Performance**: the ability to meet the identified system needs and being flexible to address near-future needs
- **Scalability**: robust design able to scale up and meet future needs
- **Impact**: utilizing existing rights of way where possible
- **Cost**: validated by third-party benchmarking metrics, including consideration of cost-capping provisions voluntarily submitted by developers
- **Risks**: factors that might trigger additional costs, difficulty securing the number or type of permits required, inability to meet in-service date
- **Efficiencies**: avoidance of redundant capital investment, including recognizing synergies with retiring facilities and overlaps with previously approved or imminent upgrades

Some of these projects/routes have been considered and dismissed before. Why are they being revisited?

Many of the needs identified in Window 3, particularly those related to regional east-west or west-east transfers, as well as into the Dominion zone and Baltimore Gas and Electric system, are not new. Some of these historical needs already have been addressed through prior backbone projects. Some other previously identified needs were economic-based, not to support system and load reliability, and were never realized. For this current need, given the proven load growth in the APS and Dominion zones, developers proposed transmission projects that similarly address these historical regional transfer needs. When the same solution is proposed multiple times, it indicates that these solutions represent a preferable option to address the specific need, compared with all other options considered.

Why not confine the transmission development to within the areas/zones driving the need?

The size and scope of some projects trigger the need for both local and regional transmission enhancements. That is the case here: The load growth in the APS and Dominion zones drives local transmission developments, but also the need to reinforce imports from the rest of the PJM system. Similarly, due to the retirement of a large amount of generation in the Baltimore Gas and Electric (BGE) zone in Maryland, electricity will need to be imported into the area to maintain reliability.

Why not rely on generation closer to where the load is growing to avoid building more transmission?

There is currently very little additional proposed generation in the areas of interest that would obviate the need for transmission upgrades. In addition, PJM cannot count on proposed generation to come online. Even generation with signed agreements might not connect due to siting, financing, supply-chain or other issues outside of PJM's control. As of August, 47,000 MW of projects cleared to connect had not begun construction.

In addition, PJM does not direct the building of generation. Generation developers propose their own developments. In all cases, PJM relies on existing generation and new committed generation to maintain reliability in compliance with its planning criteria and rules.

How does PJM select the routes that are displayed in the maps at the TEAC?

Transmission owners and the project developers assess the transmission needs identified in the competitive window and propose solutions. The maps reflect their proposed locations and routes. PJM does not have the authority or ability to assess the local impacts of these routes. However, PJM would not oppose an updated route if the selected transmission owner or developer is required to make modifications to balance the needs of local communities.

Who will evaluate the impact to local communities?

The project developers designated by PJM are obligated to follow all local and state permitting processes to develop their projects. Those processes will weigh those impacts, such as local environmental impacts and preserved open spaces.

PJM may provide supporting evidence on the need for a project from the perspective of grid reliability to help local officials better understand the project and its impacts.

What happens if the solutions are not completed before the system needs them, or if they are rejected by local officials?

Our analysis shows without doubt that there are going to be real reliability impacts without further transmission reinforcements. These solutions are required to maintain the reliability of the system. If the transmission is delayed, load has to be dropped. We currently don't have anything in the new services queue planning to come online in time. We are working with Talen Energy, the owner of Brandon Shores, on keeping those units in service past their proposed deactivation date of June 1, 2025, in order to ensure reliability.

Are there operating restrictions on the proposed data centers – on-site generation, energy efficiency, etc.?

Local utilities are responsible for the connection of new customers bringing new electricity demand, or load. Those entities will document the requirements based on the local retail tariffs.

How do I ask questions or submit comments about projects?

The TEAC is the main public forum for stakeholders and PJM staff to exchange ideas, discuss study assumptions and review results. Members of the public may register for and attend – either in person or by Webex or phone – and participate in these meetings. PJM also welcomes written feedback, which is subject to the rules of PJM's stakeholder process. PJM has the responsibility to compile and post comments from TEAC participants to PJM.com and to the Board, with a PJM staff summary of what the issues are, to whom the issues have been assigned, and why the issues are important to Board consideration of RTEP projects.

Will the PJM Board of Managers see my comments?

Comments sent to PJM Customer Service (custsvc@pjm.com) will be forwarded to the Planning Department and also compiled for Board consideration. Any stakeholder may also provide written communication directly with the 10-member PJM Board on issues regarding PJM markets, operations or planning. This communication will be made public, consistent with rules related to "ex parte" communications as outlined in the PJM Code of Conduct. All such communications should be sent to the PJM Members Committee Secretary (Dave.Anders@pjm.com), who will ensure delivery to the Board of Managers. Notice of Board communications and documents are posted and available on the Board Communications page of PJM.com.

###