

# FAQ: PJM's Role in Regional Planning and RTEP Windows

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## 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 reliable electricity for more than 65 million people in our region, every second of the day, when and where it is needed. PJM is a member-based organization and 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 over the next 15 years to maintain 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, as appropriate, 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 the more efficient or cost-effective solutions.

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

PJM's planning 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, such as renewable resources connecting to the grid. The process by which transmission infrastructure is developed is outlined in this [illustration](#) (PDF).

Transmission owners focus on local issues and benefits, like connecting new customers and meeting local laws and policies. Solutions to meet these needs usually have a localized benefit and are called “supplemental” projects. The costs of these projects are allocated within the respective, local 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 and its members. Because the projects it solicits are regional in nature, their costs are allocated to the areas they will benefit.

## Is PJM's planning process competitive?

Competition is central to PJM's planning process and is required by FERC under Order 1000, enabling nonincumbent 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 aims 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 connected in PJM?**

Retail customers work with their local electric distribution company, often a utility, to connect new sources of electricity demand, or load. The distribution companies will define the requirements and schedule for the customer to ensure that the load is safely and reliably connected to the local system. Larger load consumers, such as data centers, will also 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 involved in these processes.

As a regional transmission organization, PJM has the responsibility to meet the needs of the region under requirements set forth by 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 who want to hook up to the system and receive electricity – it is no different from the expectation that when someone builds a new home, 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 recent planning windows, such as 2024 RTEP Window 1 and 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 RTEP process.

#### ***2024 RTEP Window 1***

This window calls for proposals that address regional transfer capability enhancement needs and other more local needs driving regional projects to meet accelerated load growth in various areas of the PJM footprint, changes in the mix of generation resources, and the resulting shifts to regional power flows. The forecasted load growth is driven in part by data center load additions and the electrification of vehicles and building heating systems. If left unaddressed, these transmission needs will result in multiple instances of overloaded transmission lines and voltage performance issues, heightening the risk of power outages in the region.

#### ***2022 RTEP Window 3***

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 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 recently announced 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 [2022 RTEP Window 3 proposal](#) (PDF), approved by the Board in December 2023, will be able to scale to serve future needs of all 65 million customers in the PJM footprint through 2027, as well as the new generation seeking to connect to the grid.

### **What is the planning process for these windows?**

Like all of PJM's competitive windows, 2022 RTEP Window 3 and 2024 RTEP Window 1 were and are being conducted pursuant to PJM's RTEP process. Throughout the year, PJM facilitates planning updates and seeks to address reliability needs 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, and subsequently files the related cost allocation assignments for the projects with FERC.

### **What types of projects were proposed to PJM for consideration in each window?**

#### ***2024 RTEP Window 1***

PJM received 94 proposals from 16 entities. Submissions include 48 upgrades to existing facilities and 40 mostly greenfield developments, meaning they involve siting transmission infrastructure where it previously did not exist. Six additional proposals were submitted as joint portfolios, grouping a number of the individual proposals mentioned above. Proposals ranged from simple upgrades to existing facilities to new extra-high-voltage transmission lines and facilities.

#### ***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 are the selected solutions?**

#### ***2024 RTEP Window 1***

The regional transfer reinforcement projects that PJM seeks to move forward were proposed through a collaborative planning initiative among transmission owners Dominion, FirstEnergy and Transource. PJM further optimized and staged the projects to allow for an orderly development of assets as the electricity demand materializes, while advancing longer-lead transmission development components. The projects address critical west-east regional transfer reinforcement needs by introducing robust and reliable 765 kV transmission lines connecting the AEP system in the west with the rest of the network in central and southern PJM.

PJM also selected other more regional solutions to address specific reliability needs that are more local to a number of transmission regions, including MAAC, ATSI, AEP and ComEd.

### **2022 RTEP Window 3**

The solutions approved by the Board include components of proposals submitted by Dominion, FirstEnergy, Exelon, PPL, NextEra, Transource and PSEG. The proposal includes new 500 kV and 230 kV lines and upgrades to existing transmission lines designed to increase regional transmission capability to ensure reliable delivery of generation to the load. In addition, static 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 estimated cost of the 2024 RTEP Window 1 projects is \$5.9 billion to \$6.3 billion. The cost of the proposals selected for the needs of 2022 RTEP Window 3 was estimated at approximately \$5 billion.

#### **How are costs for these projects allocated? 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 both windows will be allocated pursuant to a cost allocation methodology that has been approved by FERC. 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 efficient, cost-effective, constructible and scalable projects to serve electricity demand in a timely fashion. PJM employs a variety of expertise, including independent outside consultants, to analyze submittals. PJM also considers 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
- **Experience:** prior experience with the design, procurement and operating challenges with 765 kV facilities

- **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 either window, 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 the current needs, given the proven load growth in the APS and Dominion zones, as well as generation retirements in eastern PJM, 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 likely represent a more effective option to address the specific need, compared with all other options considered.

### **Why not confine the transmission development to 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 for the windows discussed here: The load growth in the APS and Dominion zones as well as other zones within the footprint drives local transmission developments, but also the need to reinforce imports from the rest of the PJM system. Similarly, due to the announced 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?**

PJM's RTEP process considers new generation that is being developed within the region. There is currently very little additional proposed generation in the areas of interest that would obviate the need for transmission upgrades. In the 2024 RTEP Window 1, PJM accounted for more than 2,000 MW of future generation developments in the Dominion zone that are well-advanced through the connection process and will locally serve part of the Dominion's load growth. In addition, PJM cannot count on all proposed generation to come online. Even generation with signed agreements might not connect due to siting, permitting, supply chain or other issues outside of PJM's control. As of late 2024, approximately 34,000 MW of projects cleared to connect had not yet moved into operation.

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?**

The routes shown in PJM's materials are conceptual and illustrate system needs.

The transmission owners and project developers assess the needs identified in the competitive window presented by PJM and propose solutions. The maps reflect their proposed preliminary locations and routes. Entities selected to

build the facilities are responsible for conducting detailed siting studies and public consultations and seeking necessary approvals to build a line.

PJM does not have the authority or ability to assess the local impacts of these routes for siting purposes. 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 on local environments and preserved open spaces.

PJM may provide supporting evidence on the need for a project from the perspective of grid reliability to help state and 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 definitively shows 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, operational procedures will need to be put in place that may direct load to be shed – in other words, power outages – under certain conditions on the grid. We currently don't have anything in the New Services Queue planning to come online in time to address the needs solved by the transmission solutions in 2022 Window 3 or 2024 Window 1.

### **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](mailto: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 ([David.Anders@pjm.com](mailto:David.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.