What in the world is PJM?

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And what does it have to do with renewable energy in Pennsylvania?

CLEAN ENERGY

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While most Pennsylvanians have never heard of PJM Interconnection, often called just “PJM” for short, it affects all of our lives every single day. That’s because PJM (derived from “Pennsylvania-New Jersey-Maryland” – the three states that started PJM) is the organization in charge of coordinating, controlling and transmitting electricity

throughout Pennsylvania, and part or all of 12 other states and Washington, DC. All told, 65 million people rely on PJM to deliver them the electricity that we all use and rely on every day.

Given its reach across 13 states, PJM is the largest regional transmission organization in the United States. And yet, even with all that power and impact on our lives, most people have probably never heard of PJM.

PJM coordinates, controls and monitors the movement of electricity from energy generators, including coal- and gas-fired power plants and solar farms, then moving that electricity to local electric companies such as PECO and West Penn Power, who in turn supply electricity directly to all of us.

As part of this work, PJM decides and approves which large-scale energy projects, like solar and wind farms, gas plants, and nuclear reactors, get built across the 13-state region.

But lately there's been some bad news – PJM has been incredibly slow at approving new projects being proposed to create more electricity that's needed to meet the region's increasing energy demands and the changes in electricity production and use in the 21st century.

How bad is this problem? A solar project proposed in 2018 is still awaiting PJM's review and approval – three years after the project's originally proposed opening date.

Even if the project was approved today, with construction time, it will be **almost a decade** for this project to go from proposal to producing electricity. And incredibly, there are currently hundreds of proposed projects just like this one awaiting PJM's approval for construction.

An astonishing 95% of these projects are renewable energy projects like solar, wind and energy storage. These projects account for about 100,000 megawatts (MW) of electricity – enough to power 12 million homes – twice the number of households in Pennsylvania – each year with clean renewable energy.

The bottleneck created by PJM's snail pace of project approvals will likely mean that Pennsylvanians and the tens of millions of other rate payers across PJM's region will see more expensive energy bills this year.

Solar Array at Falling Water

Here's why:

Think of this like the basics of "supply and demand" that you learned in Economics class: when the demand for electricity increases – but the supply of energy remains the same – the price goes up. This supply-and-demand issue is compounded by the fact that the supply **isn't** remaining the same: many electricity companies are shutting down old, expensive, dirty power plants that no longer make power companies money – removing 5.7 GW, or about 4%, of the total electricity that PJM can generate.

Increasing Electricity Demand

A growing strain on the nation's electricity supply is the rapidly increasing demand from energy-guzzling data centers, crypto mining, and artificial intelligence. Data centers already make up roughly 2.5 percent of total U.S. electricity demand, but exploding demand for artificial intelligence (AI) could drive that to 7.5 percent by 2030.

Currently, Microsoft, Amazon, Powerhouse Data Centers, and TECfusions are working to open huge data center complexes across Pennsylvania. These large-scale facilities can use more than 100 MW of power – for perspective 1 MW is enough energy to power at least 500 Pennsylvania homes.

Decreasing Reliable Supply

To add to the strain of increasing electricity demands, PJM now recognizes that Pennsylvania's main source of electricity, fracked gas, is not as reliable as previously thought. For many years, PJM thought that power plants fueled with gas (which currently supply about 60% of Pennsylvania's electricity) were very reliable when it comes to supplying electricity.

But what the nation (and PJM) found out the hard way in recent winter storms is that gas plants are actually prone to failure during extreme weather events – especially when it gets very cold. We all remember the deep freeze winter power outages that hit Texas during the polar vortex and Winter Storm Uri in 2021, that left more than 3 million Texans without power and killed more than 200 residents. Or the near-miss in 2022 on the east coast when temperatures dropped as low as -5°F pushing power systems to the edge and nearly causing a major power outage that could have affected tens of millions of people up and down the east coast during that winter's worst cold snap.

As extreme weather events become more common and harsher due to climate change, there is an even greater risk of failure for our electric system that relies heavily on gas-fueled power plants that are prone to failure. In PJM's most recent assessment of the grid's supply of reliable power, they took into account the true reliability of gas plants. This caused the amount of electricity they expected to be reliably provided by gas plants to be drastically lower, even with the exact same infrastructure – lowering the supply of reliable power in the face of increasing demand.

The Impact to Us

This brings us back to the economics class example: there is less reliable energy available, but energy-guzzling industries demand more power than ever. These pieces came together in PJM's most recent capacity auction, in which PJM pays participating energy supplies, such as gas and coal plants and wind farms, to ensure there is enough power supply to meet predicted energy demands for the next three years. When there is less reliable energy available, PJM has to pay more for power plants to commit to being available during emergencies – so electricity prices increase and ratepayers will be footing the bill.

Normally, when prices go up, the market responds by increasing supply – more companies want a piece of the pie when there's an opportunity to make money. But, because of the bottleneck preventing the approval of new projects, the price increase isn't able to work properly. There is no new capacity or greater reliability coming down the pike, so we will be paying higher prices for no reason.

PJM needs to undo the bottleneck of new energy sources that often wait years for approval, to meet our current energy needs and trends. It's critical that PJM comes up with a plan to transition our electricity away from unreliable, dirty, and expensive sources like gas-powered plants. Rather than digging ourselves deeper into an unreliable and polluting energy system, PJM must modernize our grid and bring online new, clean electricity sources and storage that can handle spikes in demand, increasing extreme weather, and prevent blackouts. This will ensure we're not using energy sources created in the 19th century to try to power our 21st century society.

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