POWER

Dominion Plans for Long-Term Virginia Data Center Power Demand, Connects with PJM on Transmission Lines

Dominion Energy Virginia this month has released a comprehensive, long-term regional plan to meet growing power demand, and jointly proposed several new large transmission projects with First Energy and American Electric Power (AEP) to strengthen electric reliability across the 13-state PJM region over the next decade.

Matt Vincent

On Oct. 15, Dominion Energy Virginia released a comprehensive, long-term regional plan to meet growing power demand, much of it driven by data centers, with reliable, affordable and increasingly clean electricity.

In its 2024 Integrated Resource Plan (IRP), as filed on Oct. 15 with the Virginia State Corporation Commission (SCC) and the North Carolina Utilities Commission (NCUC), Dominion laid out multiple portfolio options to meet rising power demand through "significant investments in new power generation from every source."

Dominion Energy said such means will include expansion and modernization of the power grid, deployment of energy storage technologies, and newly implemented energy efficiency programs to maintain grid reliability while meeting the unprecedented growth in power demand.

The utility primarily provides regulated electricity service to 3.6 million homes and businesses in Virginia, North Carolina, and South Carolina, and regulated natural gas service to 400,000 customers in South Carolina.

"We are experiencing the largest growth in power demand since the years following World War II," observed Ed Baine, President of Dominion Energy Virginia. "No single energy source, grid solution or energy efficiency program will reliably serve the growing needs of our customers. We need an 'all-of-the-above' approach, and we are developing innovative solutions to ensure we deliver for our customers."

Dominion noted that the IRP is not a request to build any specific project, but rather a long-term planning document based on a snapshot in time of current technology, market information and load projections. Nearly 80% of the plan's incremental power generation over the next 15 years is carbon-free, including more solar and offshore wind generation, more energy storage, and more nuclear resources.

"I am proud of the affordability we deliver, with residential rates 14% below the national average, and as shown in the plan we intend to continue that focus," added Dominion's Baine. "Our comprehensive plan ensures we can always deliver reliable, affordable and increasingly clean energy – day or night, rain or shine, winter or summer."

Dominion Energy Virginia says the new IRP demonstrates the company's commitment to reliable, affordable and increasingly clean electricity, with highlights including:

- ~3,400 megawatts (MW) of new offshore wind generation, in addition to the 2,600 MW Coastal Virginia Offshore Wind (CVOW) project, currently under development off the coast of Virginia Beach. The utility notes that CVOW is the largest offshore wind project under development in the U.S. "and remains on-time and on-budget."
- ~12,000 MW of new solar energy generation, an increase of more than 150% to the 4,750 MW of solar energy the company currently has in operation or under development.
- ~4,500 MW of new battery storage capabilities.
- Small modular nuclear reactors beginning in the mid-2030s.

Meanwhile, about 20% of the plan's incremental power generation will come from natural gas, Dominion Energy Virginia characterizes as "a critically important source

of reliable backup power to ensure the lights stay on" when the utility's expanding wind and solar fleet are not producing electricity.

The IRP is based on a forecast developed by PJM, a regional transmission organization (RTO) which coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia, and projects that power demand will continue growing at unprecedented levels in the coming decades.

PJM Joint Transmission Project Pact Binds Dominion, AEP, First Energy

In a related move also announced this month, Dominion Energy jointly proposed several new large transmission projects with First Energy and American Electric Power (AEP) to strengthen electric reliability across the 13-state PJM region over the next decade. These projects will also support further integration of the significant renewables included in the IRP.

Dominion, AEP and FirstEnergy have entered into a joint planning agreement to propose several new regional electric transmission projects across multiple states within the PJM footprint. The initiative aims serve the region's growing power demand through the RTO's competitive planning process, while promoting regional grid reliability.

The companies jointly proposed the new transmission projects through PJM's Regional Transmission Expansion Plan (RTEP) Open Window process in September. PJM is the regional transmission organization that coordinates the transportation of wholesale electricity across the 13-state region that includes Virginia. The proposed projects include several new 765-kV, 500-kV and 345-kV transmission lines in Virginia, Ohio and West Virginia.

As announced on Oct. 7, the partners note the innovative collaboration "comes at a time when efficient and cost-effective regional transmission development is essential and encouraged" by the Federal Energy Regulatory Commission (FERC), the independent federal agency that regulates the interstate transmission of electricity.

PJM emphasizes that power demand in its region is growing at an unprecedented pace due to rapid expansion of such energy-intensive industries such as data centers,

as well as the electrification of transportation and heating, and increased manufacturing onshoring. At the same time, PJM notes the region's power generation mix is changing as legacy generation is retired and more renewables are added to the grid.

Headquartered in Columbus, Ohio, AEP owns and operates more than 40,000 miles of transmission lines, comprising the nation's largest electric transmission system, with more than 225,000 miles of distribution lines delivering power to 5.6 million customers in 11 states. AEP also is one of the nation's largest electricity producers with approximately 29,000 megawatts of diverse generating capacity. AEP notes is investing $43 billion over the next five years to make the electric grid cleaner and more reliable. AEP participates in the competitive transmission space through Transource, a jointly owned transmission company with Evergy, headquartered in Kansas City, Missouri.

"AEP operates the largest transmission network in the nation and has more experience building 765 kV infrastructure than any other company in the U.S.," contends Bob Bradish, senior vice president, Regulated Infrastructure Investment Planning for AEP. "The solutions we have proposed to address the rapidly evolving energy demand we are seeing across the region will enable us to continue providing reliable service and drive economic growth."

For its part, the electric distribution companies of FirstEnergy Corp. (NYSE: FE) form one of the nation's largest investor-owned electric systems, serving more than six million customers in Ohio, Pennsylvania, New Jersey, West Virginia, Maryland and New York. The company's transmission subsidiaries operate approximately 24,000 miles of transmission lines that connect the Midwest and Mid-Atlantic regions.

"Energy-intensive industries, electrification and the energy transition all rely on a robust power grid," said Mark Mroczynski, President, FirstEnergy Transmission. "By drawing upon the combined experience of three leading transmission developers, we can take the proactive steps needed to build new infrastructure that will ensure our communities have the power they need for sustained health and economic growth in the future."

Meanwhile, power demand within Dominion Energy's delivery zone is forecasted to grow 5.5% annually for the next decade, and to double by 2039. At the same time, the company is also ramping investments to expand the transmission grid. During the first half of 2024, Dominion reports it completed 123 new transmission projects, including nearly 90 miles of new and rebuilt transmission lines and 13 new substations.

"This dynamic environment requires more regional collaboration to develop large-scale 'backbone' transmission infrastructure that spans across the areas served by our three companies," said Dominion's President Baine. "By leveraging the expertise and resources of three industry leaders whose transmission zones border one another, we're better able to develop superior and more cost-effective solutions required to effectively resolve reliability issues across the PJM region. These projects are more comprehensive and will be more effective than what each of our companies would be able to develop individually."

The projects under the joint plan remain in the early stages of development. If selected by PJM, the companies would then undertake an extensive, multi-year process to select routes, perform environmental studies, engage with communities, obtain state and local permitting and build the projects.

In addition to the joint proposals, each of the three companies have also submitted individual proposals for other transmission projects consistent with how each company has participated in past PJM open windows.

Virginia Hyperscaler Energy Demand Raises Call for Data Center Reforms

Underscoring the company's commitment to providing increasingly clean energy, in a separate filing this month with Virginia's State Corporation Commission (SCC), Dominion Energy proposed more than 1,000 MW of new solar projects in that state, which is of course the world's data center capital.

If the proposed projects are approved, the company's solar fleet in operation or under development – which is currently the second largest among utilities in the U.S. – will

surpass 5,750 MW in Virginia (enough to power more than 1.4 million homes at peak output).

Meanwhile, as the state's utility regulator, the Virginia SCC has scheduled a technical conference for Dec. 16 to discuss current and future challenges presented by the growth of hyperscale data centers.

"Large power users such as data centers could bring an 'unprecedented' amount of new load for electric utilities, creating complications and risks the utilities have not previously encountered," the SCC said in a press release.

The utility commission added that the technical conference is "intended to identify potential frameworks that facilitate service; address risks and issues of the increased usage; are just and reasonable to current and future customers; and meet current Virginia statutes."

The conference will also explore issues associated with on-site power at data center campuses.

The SCC noted three questions in particular that it hopes for the event to address. To wit:

- Should the Commission establish a tariff framework and terms of service for these large-scale customers?
- Should certain transmission costs be directly assigned to a new large-use customer class
- Should certain generation costs be directly assigned to a new large-use customer class?

While not mentioned, a matter certainly of interest to the data center community is whether some form of cost-sharing might improve timeline predictability for power delivery.

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