

Pennsylvania's Nuclear Industry

Pennsylvania has an important decision to make. Exelon – one of the largest energy companies in the country – has announced that, barring some state action by June 2019, its Three Mile Island nuclear power plant will be permanently decommissioned this September. Additionally, FirstEnergy has suggested it will close its Beaver Valley nuclear plant, although not until 2021. Both companies are asking for financial assistance to keep the plants open and operational despite market pressures that have hurt that financial viability.

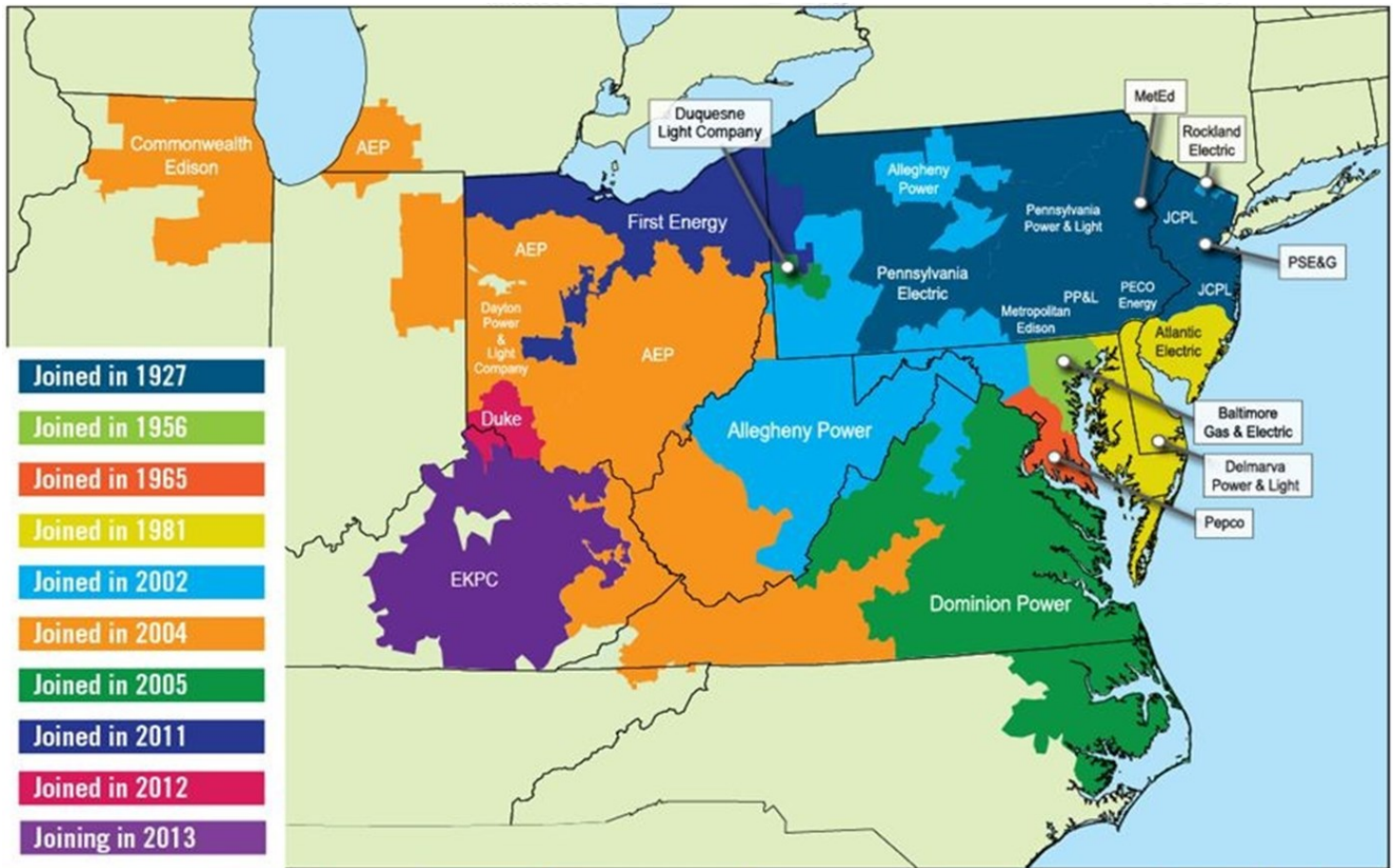
There are a number of policy questions implicated in this discussion. Nuclear power provides the vast majority of Pennsylvania's carbon-free energy and the loss of these plants will lead to an increase in the state's emissions. Nuclear power plants provide large numbers of high-wage jobs and are important to the economies of the communities in which they are located. And, importantly, the decision to shutter a nuclear plant is final – there is no "turning them back on" after they have been decommissioned. Over the coming months, the General Assembly will have to evaluate proposals for assistance to the nuclear industry.

Electric Market Background

Pennsylvania's electric system is a restructured, or deregulated, system, meaning that while the electric distribution companies (EDCs) remain under economic regulation by the Pennsylvania Public Utility Commission (PUC), the market for electric generation operates on a competitive basis. All EDCs and electric generation suppliers (EGSs) purchase electricity for their customers on the wholesale market – with a requirement to do so at the most reasonable cost in the case of regulated EDCs. Wholesale electricity is a competitive interstate market and, in Pennsylvania and its neighboring states, that market is operated by PJM Interconnection (PJM) under the oversight of the Federal Energy Regulatory Commission (FERC).

In the PJM wholesale market, electric generators bid to provide power to the various EDCs and EGSs that serve customers at the price they deem reasonable based on their production costs and market demand. Additionally, electric generators bid into the PJM capacity market, which represents a commitment to be available to provide a set amount of generation at a point in the future. For most generators, revenue streams from both the capacity and energy markets are vital to their fiscal health.

In recent years, the drastic increase in natural gas production has revolutionized the electric industry. For the PJM system – and other systems in the Northeast and Midwest – this has translated to years of lower prices in energy and capacity markets. While beneficial to consumers, these lower prices have left many less efficient or more expensive generators in financial distress. At first, these market dynamics often resulted in the closure of economically inefficient and environmentally unsound coal plants in favor of newer, cheaper, and cleaner natural gas plants. However, they have also eroded the financial health of some nuclear power plants, which provide approximately one-third of the total energy for the PJM market and nearly all of its carbon free electricity.



Source: PJM Interconnection

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Pennsylvania has five nuclear power plants with nine operational reactors. Of these, two are experiencing financial pressure due to low capacity prices and their expected failure, in one or more years, to “clear” the capacity market. A failure to clear the market means the capacity prices bid by these plants were above the final market price and they were, therefore, ineligible for any capacity payments.

The most troubled plant is Three Mile Island (TMI), which is in a unique position as it has only one operational reactor but was designed for two. The other is Beaver Valley, which is believed to have intermittently (rather than consistently) failed to clear in the capacity market (this information is technically confidential, although TMI has voluntarily reported its failure to clear the market), but has the added difficulty of operating under a company currently filing for bankruptcy protection.

Plant	Capacity (MW)	County	Owner
Beaver Valley	1,872	Beaver	FirstEnergy
Limerick	2,386	Montgomery	Exelon
Peach Bottom	2,627	York	Exelon/Public Service Enterprise Group (50/50)
Susquehanna	2,620	Luzerne	Talen/Allegheny Electric Cooperative (90/10)
Three Mile Island	829	Dauphin	Exelon

Source: Electric Power Outlook for Pennsylvania 2017-2022
August 2018, Public Utility Commission

The operators of TMI and Beaver Valley (Exelon and FirstEnergy, respectively) have announced their intention to shutter the two plants (TMI in September 2019 and Beaver Valley by October 2021) unless they receive some financial assistance to maintain operations. Several states (Conn., Ill., N.J., N.Y.) have created special credits to monetize the environmental benefits of carbon-free energy from nuclear power. These credits, often referred to as zero emissions credits (ZECs) are treated much like alternative or renewable energy credits in many states.

Possible Solutions - House Bill 11

In March, Rep. Tom Mehaffie introduced HB 11, which would expand Pennsylvania’s existing Alternative Energy Portfolio Standards program to include a new tier of credits (Tier III) that function like the ZECs created in other states. It would also provide a revenue stream for commonwealth nuclear plants to ensure their continued operation.

This legislation would require EDCs and EGSs to acquire 50 percent of their electricity from Tier III resources, which would almost exclusively mean from Pennsylvania’s five nuclear power plants. The cost of purchasing these credits would be entirely passed through to utility ratepayers, as is the case with the current AEPS program. Total AEPS compliance targets from all Tier I, Tier II and Tier III resources would increase from 18 percent to 68 percent. While AEPS compliance would still represent a relatively small portion of total electricity costs for Pennsylvania’s homeowners and businesses, the increase in percentage terms would be significant.

The Alternative Energy Portfolio Standards Act

Passed in 2004, the Alternative Energy Portfolio Standards Act (AEPS) requires Pennsylvania’s EDCs and EGSs to purchase a set percentage of their energy from qualified alternative sources and further established an escalating schedule to ramp up those percentages over time. AEPS divided qualified alternative energy sources into two tiers: Tier I includes traditional renewable energy sources such as wind and solar, and Tier II includes a number of non-renewable resources including energy efficiency and waste coal. AEPS also created a special carve out within Tier I strictly for solar photovoltaic (solar PV) energy. For each megawatt of power generated by a designated alternative source, the generator receives one alternative energy credit (AEC) of the appropriate tier. Generators then sell these AECs to an EDC or EGS, which subsequently retires the credit from existence in order to meet its AEPS compliance targets. The current AEPS standards will peak in the 2020-21 compliance year with a total of 18 percent of electricity covered, with 0.5 percent coming from solar PV, 7.5 percent from other Tier I resources, and 10 percent from Tier II resources.

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