

Nuclear Energy's Vital Role in Pennsylvania

Jobs, Economy, Clean Air, Affordable and Reliable Energy

April 17, 2018



EXELON IN PENNSYLVANIA

Exelon Generation

Power Generation



- **Exelon Generation headquarters** are in Kennett Square, Pennsylvania
- **About 5,600 MW nuclear** generation in Pennsylvania at Limerick, Peach Bottom and Three Mile Island
- Almost **8,600 MW of in-state generation**

Constellation Energy



- A leading **competitive energy provider**
- Customer-facing business, with about **2.5 million competitive customers nationally** and large wholesale business
- **Extensive suite of products** including Load Response, RECs, Distributed Solar

Exelon Utilities

PECO Energy



- **PECO HQ** in Philadelphia
- **2,400 full-time employees**
- Provides **electric and natural gas distribution** services to a population of over four million people in southeastern Pennsylvania.
- **Approximately 1.6 million electric and 497,000 natural gas customer accounts**

Exelon employs over 6,000 Pennsylvanians in highly skilled positions. Exelon pays about \$250 million annually in Pennsylvania state and local taxes.



EXELON'S PENNSYLVANIA NUCLEAR UNITS

Limerick Generating Station	Peach Bottom Atomic Power Station	Three Mile Island Unit - 1
 <ul style="list-style-type: none"> • Limerick Twp., Montgomery County • Number of Units: 2 operating units • Began Providing Power: 1986, 1990 • Remaining Useful Life: 28/33 years • Net MW: 2,317 MW • Customers Served: More than 2 million homes • Total Employees: 890 • Annual Payroll: Approximately \$86M • Annual Contractor and Outage Contractor Spend: \$52M 	 <ul style="list-style-type: none"> • Delta Borough, York County • Number of Units: 2 operating units • Began Providing Power: 1974/1974 • Remaining Useful Life: 37/38 years (without SLR = 17/18 years) • Net MW: 2,599 MW • Customers Served: More than 2.25M homes • Total Employees: 860 • Annual Payroll: Approximately \$81M • Annual Contractor and Outage Contractor Spend: \$50M 	 <ul style="list-style-type: none"> • Londonderry Twp., Dauphin County • Number of Units: 1 operating unit • Began Providing Power: 1974 • Remaining Useful Life: 18 years • Net MW: 837 MW • Customers Served: More than 800,000 homes • Total Employees: 725 • Annual Payroll: Approximately \$60M • Annual Contractor and Outage Contractor Spend: \$44M
<p>Exelon Nuclear Headquarters – Kennett Square, Chester County ~650 employees</p>		

3



A QUARTER OF PENNSYLVANIA'S NUCLEAR FLEET IS RETIRING BY 2021

CHALLENGES

- Historically low power prices
 - Abundant natural gas
 - Subsidies for some zero emission resources
 - Low load growth
- Market design that doesn't value the around-the-clock reliability, on-site fuel resilience and environmental attributes
- No national or regional cost of carbon

PLANTS IN JEOPARDY

- May 30, 2017 - Exelon announces Three Mile Island Generating Station will retire in 2019
- March 28, 2018 - FirstEnergy Solutions files deactivation notice for three competitive nuclear generating plants in Ohio and Pennsylvania
- By 2021, 5,000 MW and 40 million MWhs of zero emission energy will be lost

CONSEQUENCES FOR PENNSYLVANIA

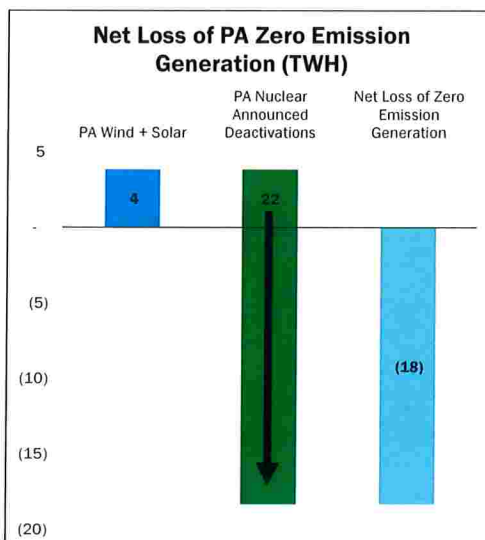
- ~1,700 JOBS AT THE PLANTS AND THOUSANDS OF INDIRECT JOBS LOST
- ~ \$285 MILLION ANNUALLY IN HIGHER ELECTRICITY BILLS
- THOUSANDS OF TONS OF HARMFUL AIR EMISSIONS (PM2.5, NOx, SO2) resulting in
 - More asthma attacks, lost days of work and increased acid rain
- MILLIONS OF TONS OF CARBON DIOXIDE (LIKE PUTTING 50% MORE CARS ON PA ROADS)
- VULNERABILITY TO OUTAGES – especially in cold snaps or pipeline disruptions

Recent nuclear retirement announcements are further proof that the industry has reached an inflection point in the debate over market reforms to recognize the value of the nation's largest and most resilient source of emissions-free energy

4



LOSING THE NUCLEAR PLANTS WILL WIPE OUT ALL THE ENVIRONMENTAL PROGRESS MADE ON PA'S INVESTMENT IN RENEWABLES, 5 TIMES OVER



Data Sources and Notes: EIA 923 Electric Power Monthly, Feb. 2015; PJM SOM 2017

5



- Over \$3.5B has been spent developing PA's 1,300 MW of wind and 325 MW of solar resources
- This includes over \$1B in state REC and Federal tax credits paid for by consumers and taxpayers to secure zero-emission wind and solar resources
- Brattle estimates it would take over 15 years to replace the combined lost zero emission production from Three Mile Island, Beaver Valley, Davis-Besse and Perry even if wind and solar development were doubled
- As the Keystone State seeks to reduce carbon emissions and invest in more renewable energy, it is imperative that nuclear plants are preserved as a bridge to Pennsylvania's clean energy future

NUCLEAR POWER IS THE BRIDGE TO A CLEAN ENERGY FUTURE

Recent Reports Recognize Nuclear Closures as Major Environmental Setbacks

- Third Way - *"Nuclear Closures Undo Years' Worth of Climate Progress"*
 - Nuclear closures lead to 'wasted' renewables.
 - As nuclear plants get shut down, new renewables will have to pay-off that zero-carbon debt before they actually start increasing our totals again.
 - Undoing our climate progress with each nuclear retirement.
 - Today's nuclear and tomorrow's renewables: it's not an either/or.
- ScottMadden - *"While You Were Sleeping: The Unnoticed Loss of Carbon-free Generation in the United States"*
 - The output of zero emission energy from all US nuclear plants is almost three times that of the output of all wind and solar generation in the US.
 - Unbeknownst to many who care about climate change, most of the progress made to date through renewables is at significant risk due to the loss of nuclear carbon-free generation.
 - Early retirement of nuclear diminishes renewable gains.
- Brattle - *"Impacts of Announced Nuclear Closures in Ohio and Pennsylvania"*
 - The total zero-emission generation of four nuclear plants is considerably greater than all solar and wind generation in PJM.
 - Retiring four nuclear plants would more than reverse the emissions benefits of all the renewable generation in PJM installed over the past 25 years, and the billions of dollars of historical investments that have supported it.

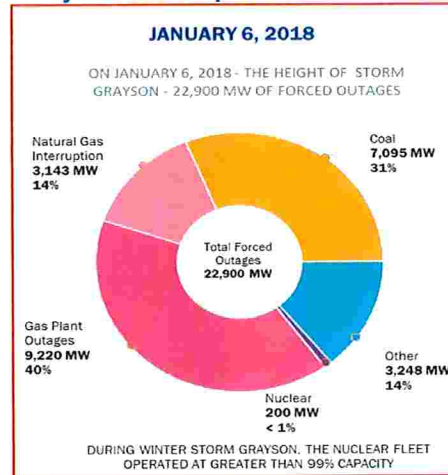
6



NUCLEAR ENERGY HAS UNPARALLELED RELIABILITY

Pennsylvania's families, communities and businesses depend on the reliable and resilient electricity provided by its nuclear plants

- Nuclear plants operate at the highest capacity factor of any source, regardless of weather or time of day, and can go 18-24 months without refueling.
- This kind of reliable and resilient base-load output is not provided by any other "always on" generation source.
- During the January 2018 cold snap – like the Polar Vortex four years earlier – coal, natural gas and oil generator outages were high due to lack of fuel and other issues.
- Nuclear units have consistent availability and a secure on-site fuel supply.



Source: PJM Cold Weather Summary (1/9/18)

