Air Quality Technical Advisory Committee Meeting:

Nuclear Power & Generation Dispatch

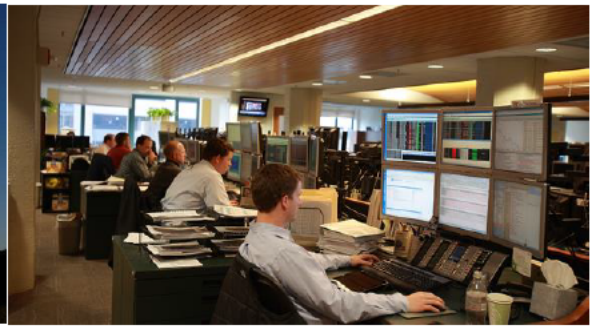
February 11, 2021

Jesse Rodriguez

Director, Exelon State Government Affairs

Exelon

About Exelon



Generation

Nation's largest producer of clean energy

More than 31,000 MW of owned capacity

Generates enough electricity to power 20 million homes and businesses

Competitive Energy Sales

Retail and wholesale sales through Constellation business unit

~2 million residential, public sector and business customers

Two-thirds of Fortune 100 companies

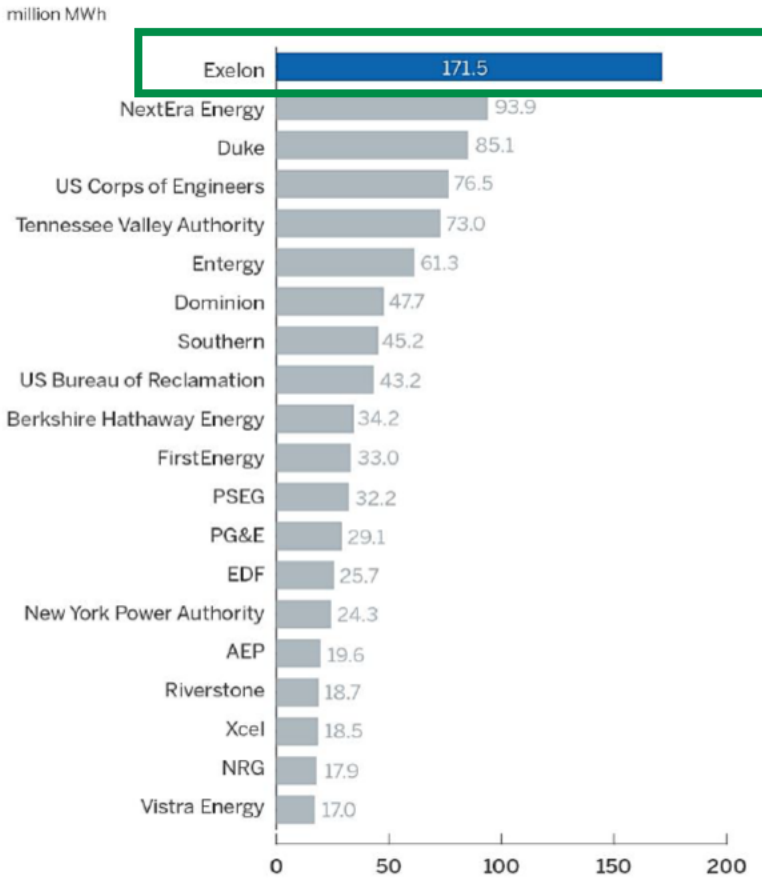
Transmission and Delivery

Six utilities delivering electricity and natural gas to more than 10 million customers: BGE (MD), ComEd (IL), Delmarva (DE and MD), PECO (PA), Pepco (D.C. and MD), Atlantic City Electric (NJ)

Committed to powering a cleaner and brighter future for our customers and communities

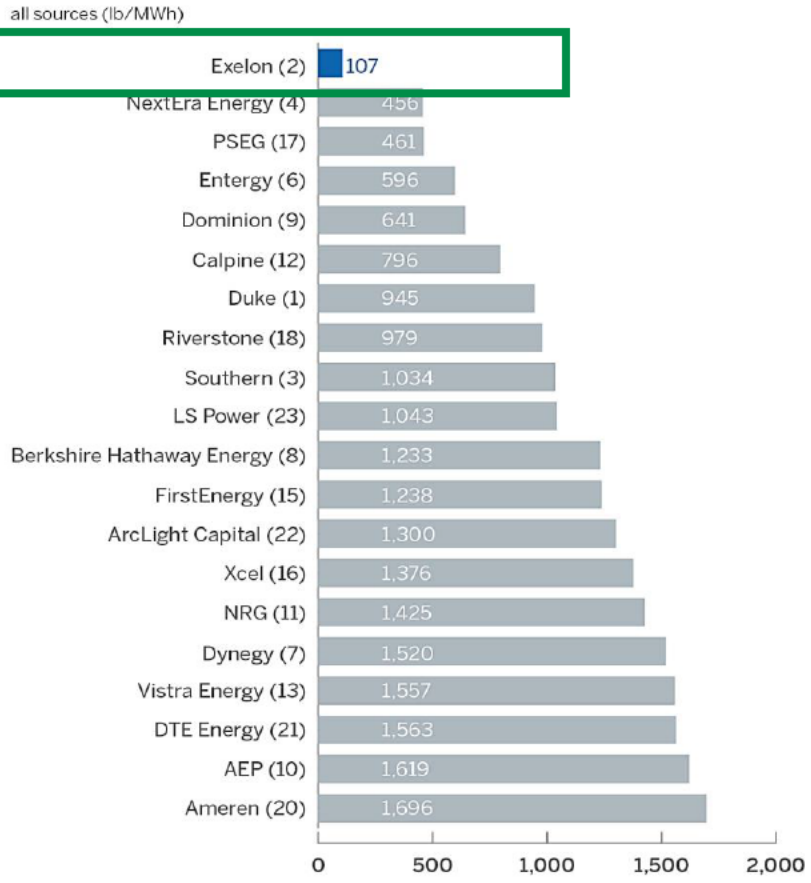
Exelon Generation: Leader in Zero-Carbon Electricity Production

TOP 20 LARGEST PRODUCERS OF ZERO-CARBON GENERATION



Source: Benchmarking Air Emissions of the 100 Largest Electric Power Producers in the United States, M.J. Bradley & Associates (June 2019). Data used in the benchmarking report was calendar year 2017.

CO_2 EMISSION RATES OF THE TOP 20 INVESTOR-OWNED POWER PRODUCERS



Source: Benchmarking Air Emissions of the 100 Largest Electric Power Producers in the United States, M.J. Bradley & Associates (June 2019). Data used in the benchmarking report was calendar year 2017. Number in parentheses is the company generation ranking in 2017. i.e., Exelon was the second largest generator in 2017.

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Exelon Generation Nuclear Fleet – Largest in the Nation

Exelon Nuclear owns and operates the largest fleet of nuclear plants in the nation. The fleet consists of 22 reactors at 13 locations in Pennsylvania, Illinois, Maryland, New Jersey and New York.

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Exelon Generation Pennsylvania Nuclear Units

Limerick Generating Station

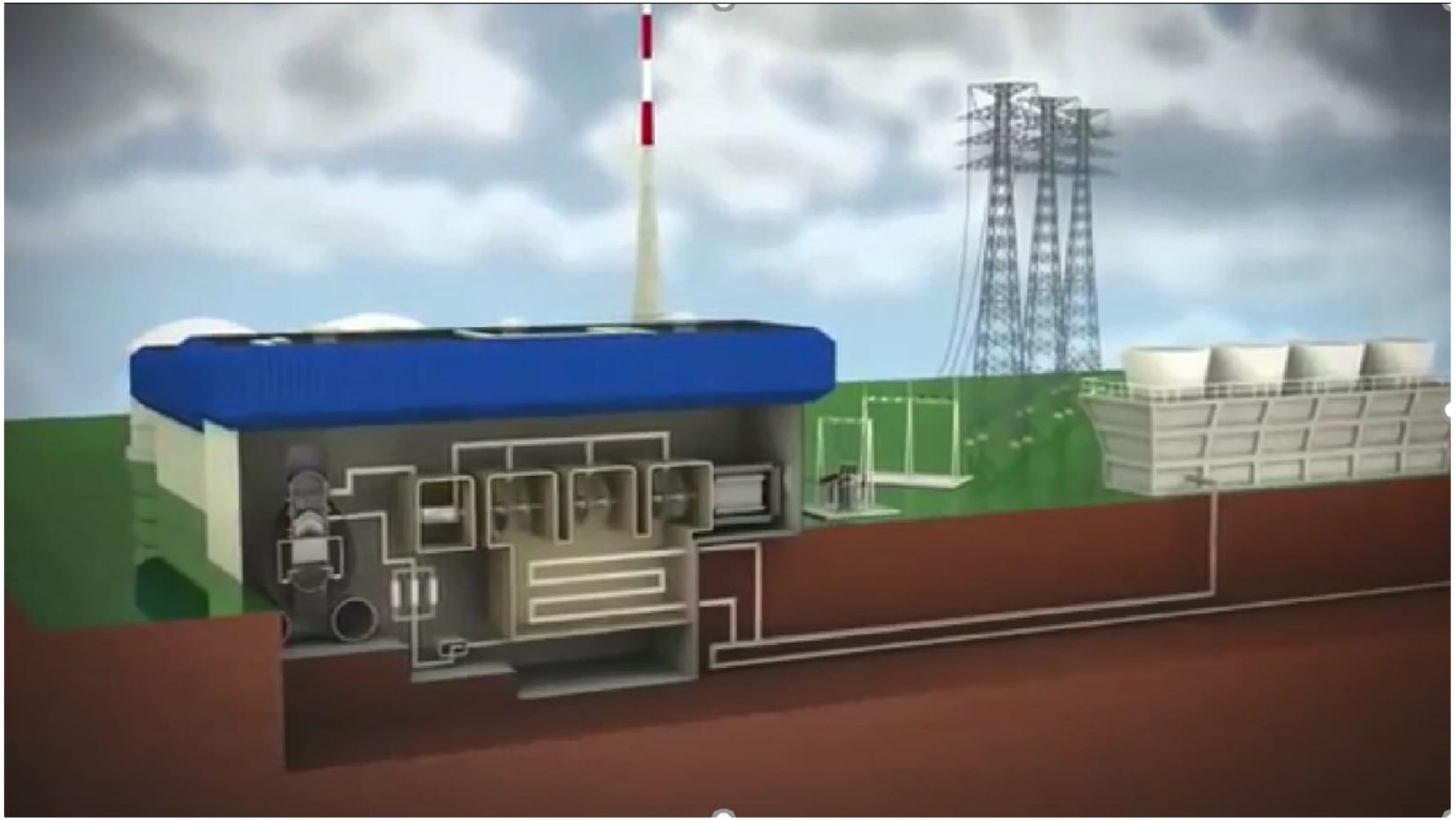
- Limerick Twp., Montgomery County
- Number of Units: 2 operating units
- Began Providing Power: 1986/1990
- Remaining Useful Life: 28/33 yrs
- Net MW: 2,317 MW
- Customers Served: More than 2 million homes
- Total Employees: 890
- Annual Payroll: Approximately $86M
- Annual Contractor and Outage Contractor Spend: $52M

Peach Bottom Atomic Power Station

- Delta Borough, York County
- Number of Units: 2 operating units
- Began Providing Power: 1974/1974
- Remaining Useful Life: License extension - 2054
- Net MW: 2,599 MW
- Customers Served: More than 2.25M homes
- Total Employees: 870
- Annual Payroll: Approximately $81M
- Annual Contractor & Outage Contractor Spend: $50M

Exelon Nuclear Headquarters – Kennett Square, Chester County, Pennsylvania - 650 employees

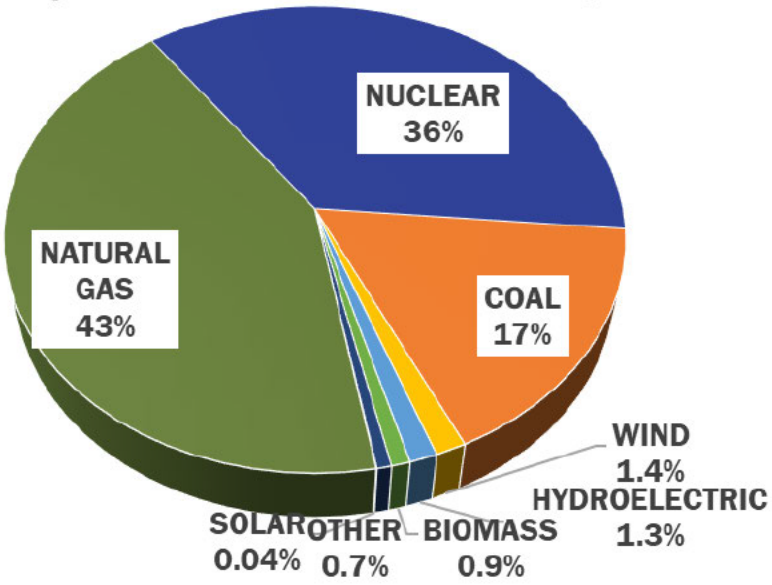
How a Boiling Water Reactor Works



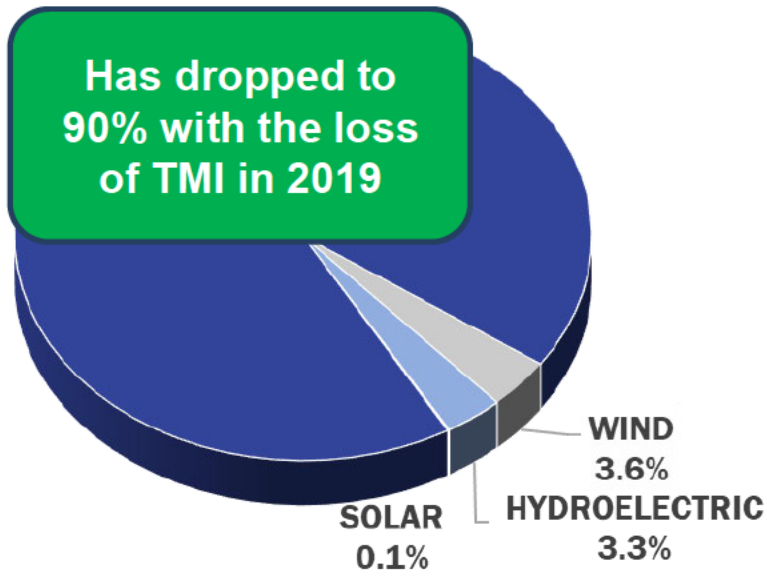
Pennsylvania Energy Overview

- Most Pennsylvania electricity generation is from nuclear, gas and coal
- In 2019 Nuclear provided 36% of Pennsylvania's electricity
  - Over twice as much as coal
  - 25 times as much as wind and solar combined
  - 13 times as much as all renewables when hydroelectric is included

Pennsylvania Generation Mix, 2019



Zero-Carbon Energy Mix, 2019



Source: Pennsylvania 2019 Generation from EIA State Generation Monthly (Dec. 2020)

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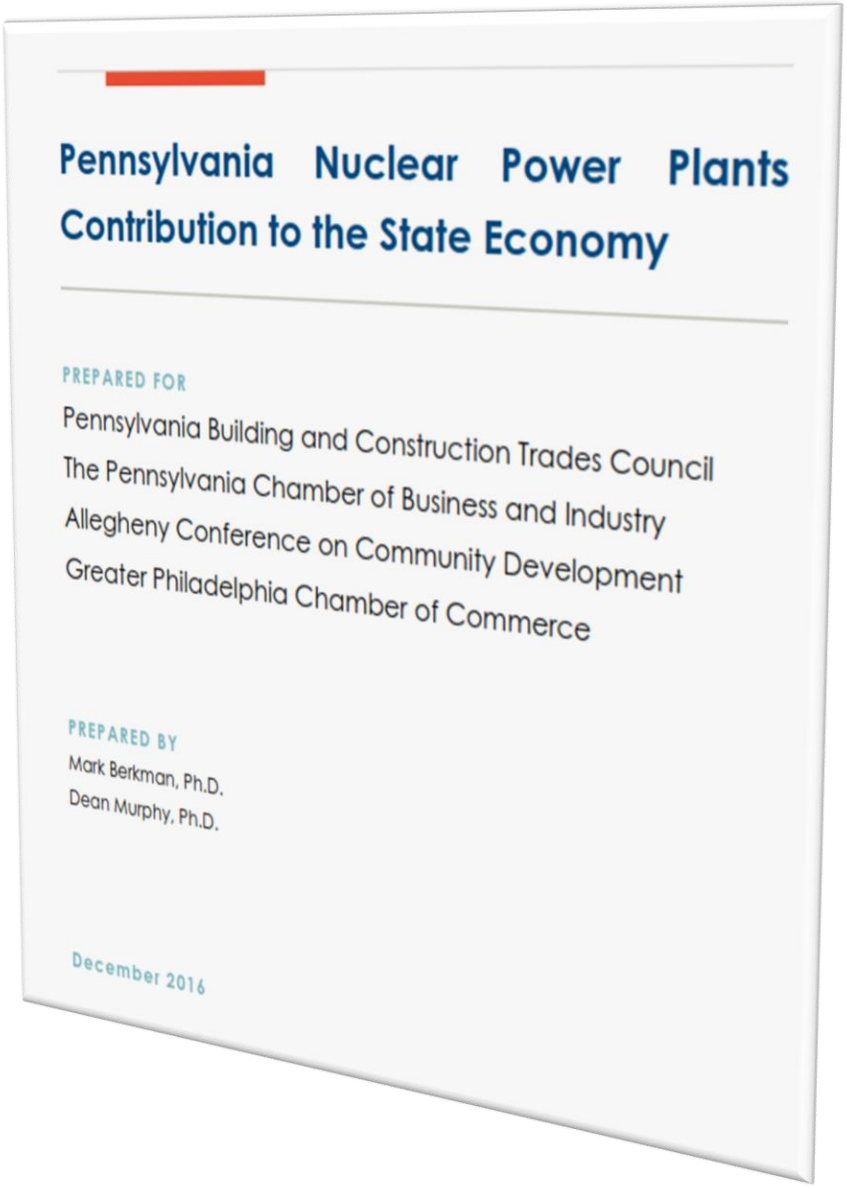
Pennsylvania Nuclear Plants Drive State Economic Activity

Nuclear plants in Pennsylvania drive the economy and provide good jobs

- Inject $3.1 billion annually into the Pennsylvania economy
- $2 billion in state gross domestic product (GDP) – Net impacts that would be permanently lost without the nuclear plants
- Directly employ 4,700 workers
- Create more than 11,200 additional jobs in other industries in Pennsylvania
- About 16,000 in-state jobs
- Are responsible for $69 million dollars of in-state tax revenues annually
- Support hundreds of vital community organizations



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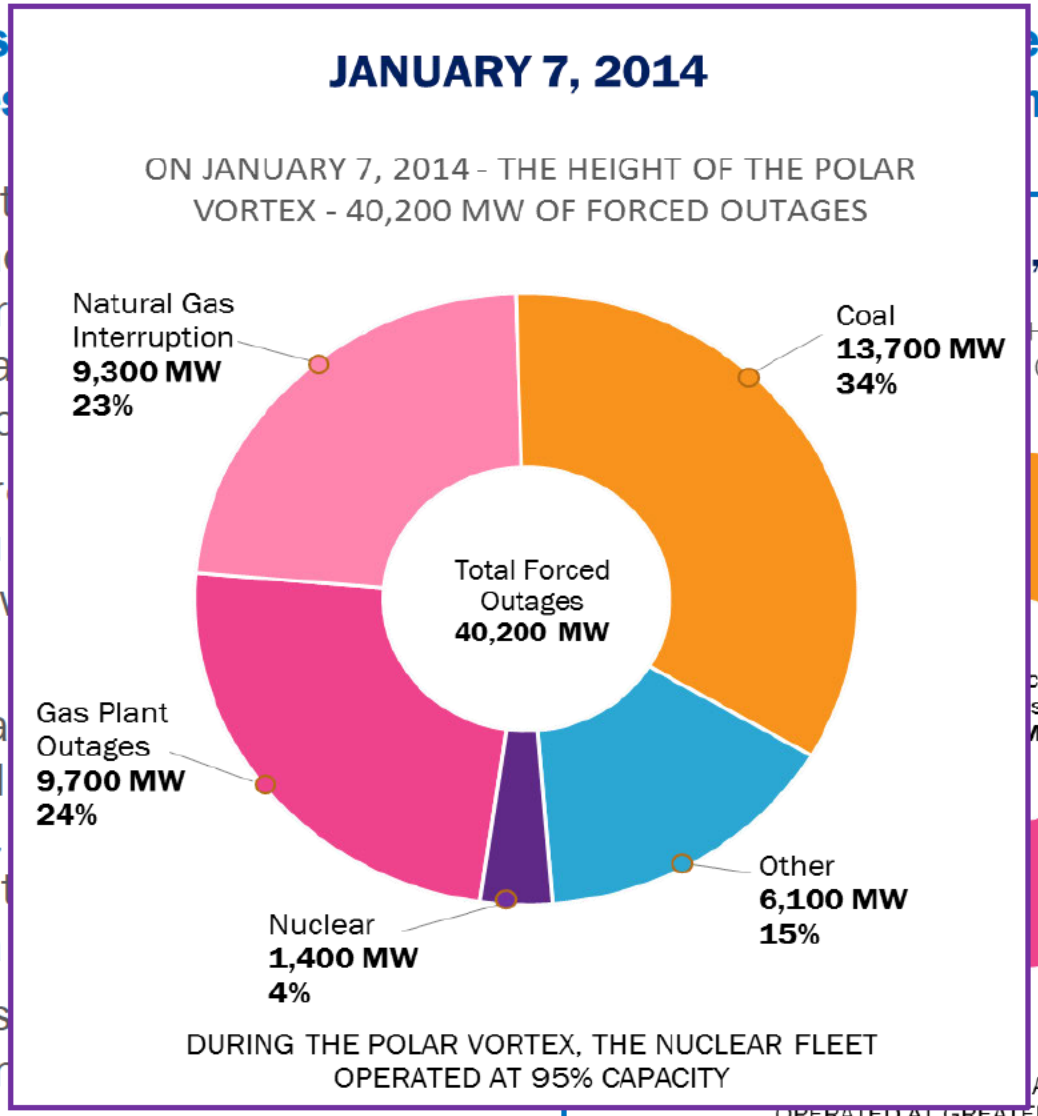
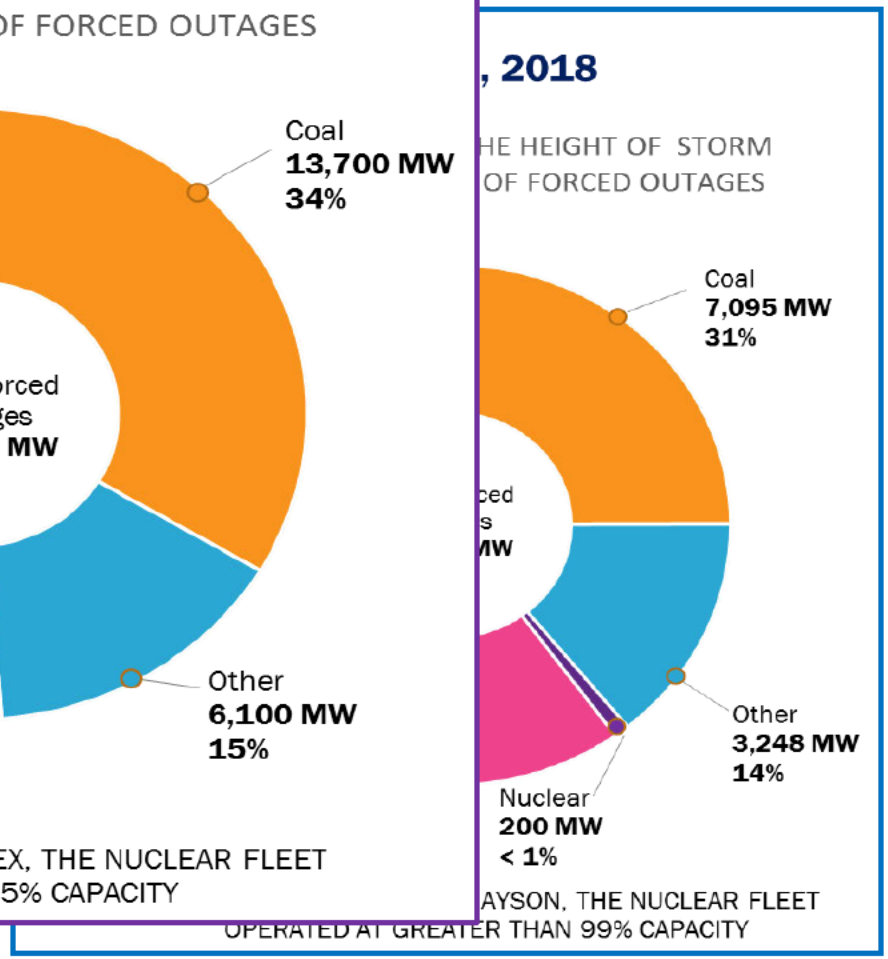
Nuclear Energy Has Unparalleled Reliability

Pennsylvania's … reliable and re… …end on the …nts

- Nuclear plant… highest capa… source, regar… time of day, a… months witho…
- This kind of r… base-load ou… any other "al… source.
- During the Ja… – like the Pol… earlier - coal, … generator out… lack of fuel a…
- Nuclear units… availability ar… supply.





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

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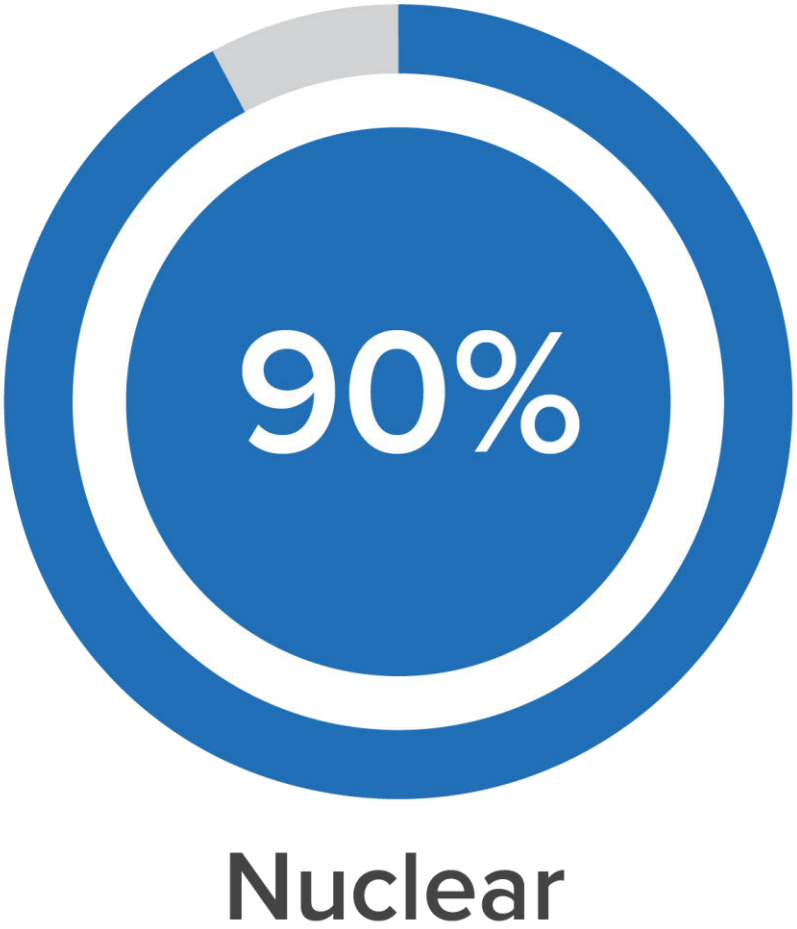
Nuclear Generation - Pennsylvania's Carbon-Free Leader



8 operating reactors in Pennsylvania, 2nd highest number of all U.S. states

In Pennsylvania, nuclear energy generates 1/3 of in-state electricity and 90% of carbon-free electricity

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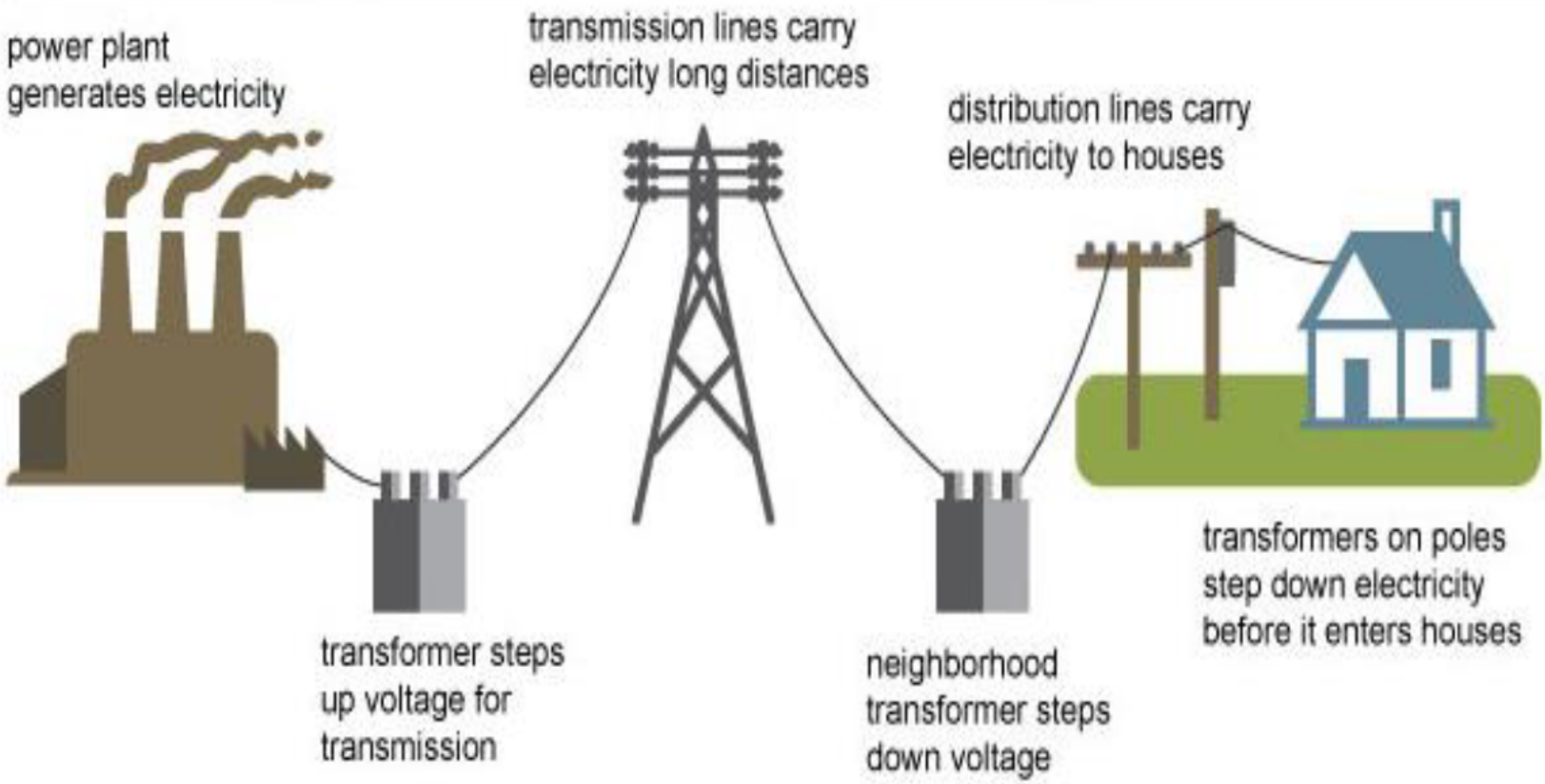
Nuclear Dispatch

Bulk Electric Power System



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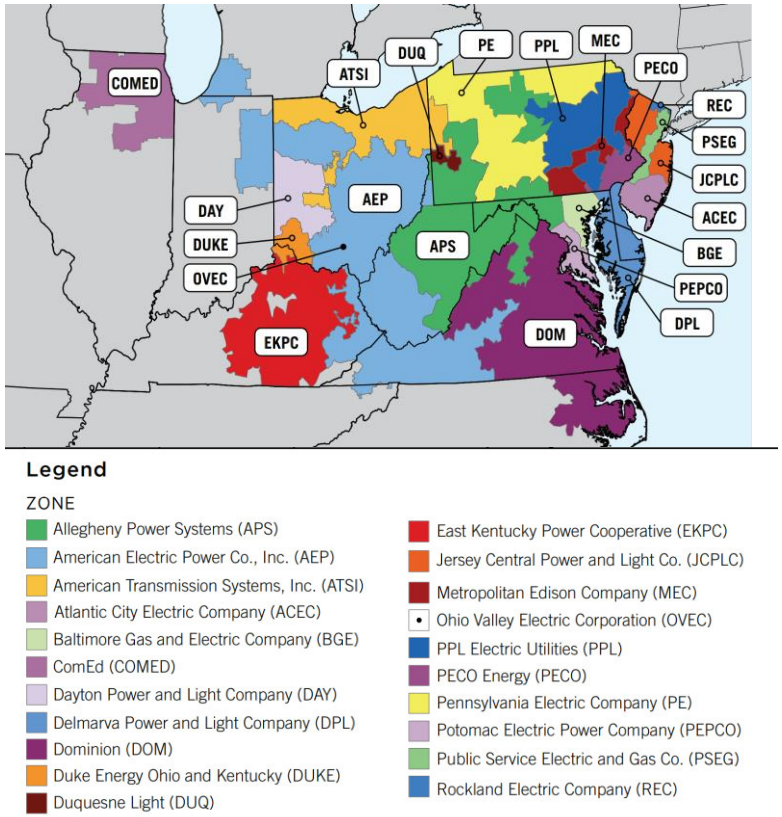
PJM - Overview

PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, **Pennsylvania**, Tennessee, Virginia, West Virginia and the District of Columbia.

- A neutral, independent party.
- PJM operates a competitive wholesale electricity market and manages the high-voltage electricity grid to ensure reliability for more than 65 million people.
- PJM's long-term regional planning process provides a broad, interstate perspective that identifies the most effective and cost-efficient improvements to the grid to ensure reliability and economic benefits on a system-wide basis.
- An independent Board oversees PJM's activities.



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PJM - Differences Between Energy and Capacity Markets

PJM Energy Market Function:

- Secures electricity to meet consumer demand in real time and near-term
  - Includes: Real-Time and Day-Ahead markets
  - Portion of wholesale electricity cost: 63 percent (2018)

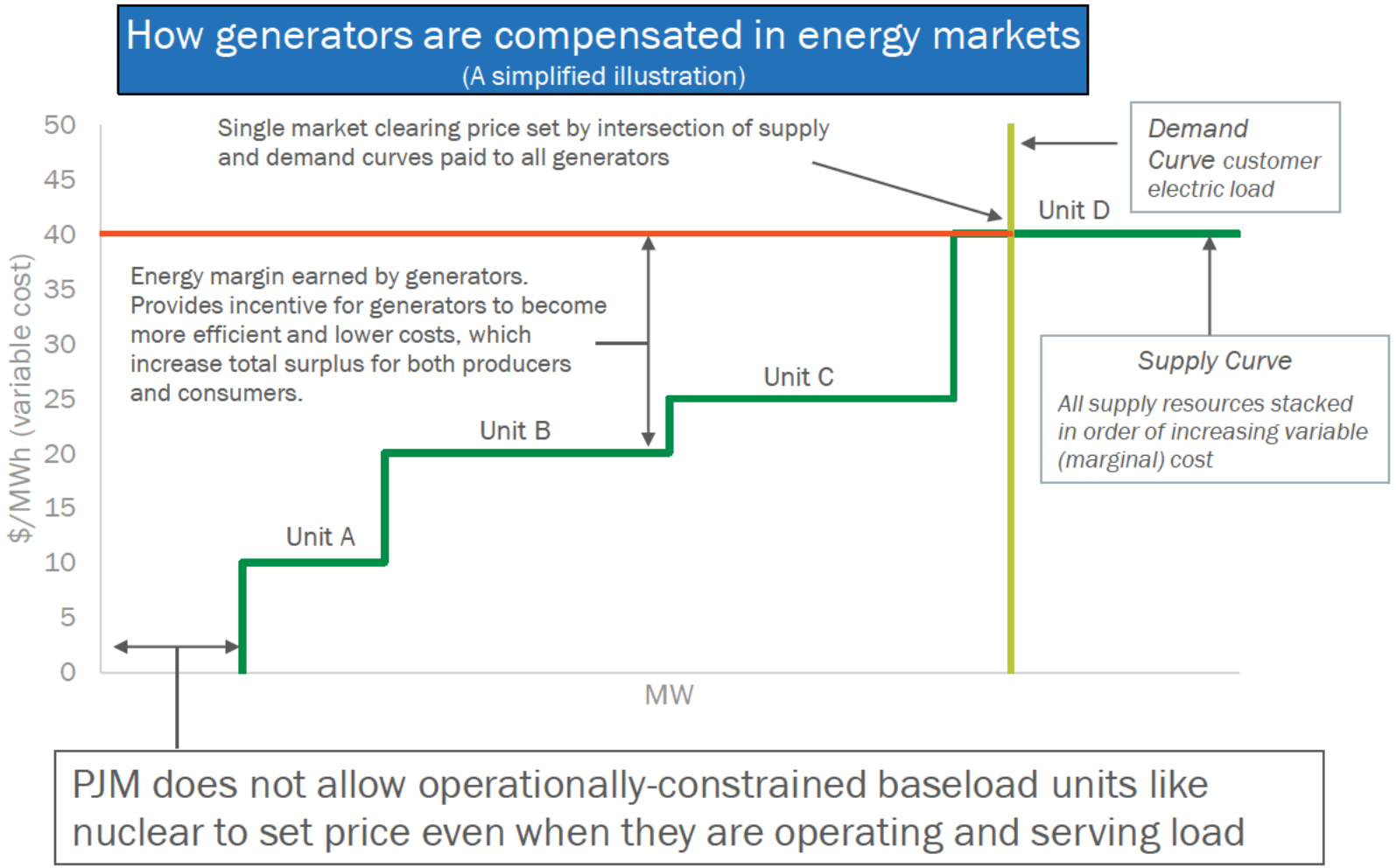
PJM Capacity Market Function:

- Ensures the future availability of power supplies three years in advance
  - Portion of wholesale electricity cost: 20 percent (2018)

PJM Ancillary Services Markets Function:

- Helps balance the system as it moves electricity from generating resources to consumers
  - Includes: Regulation, Reserve Markets
  - Portion of wholesale electricity price: Less than 1 percent (2018)

Energy Price Formation In Competitive Markets



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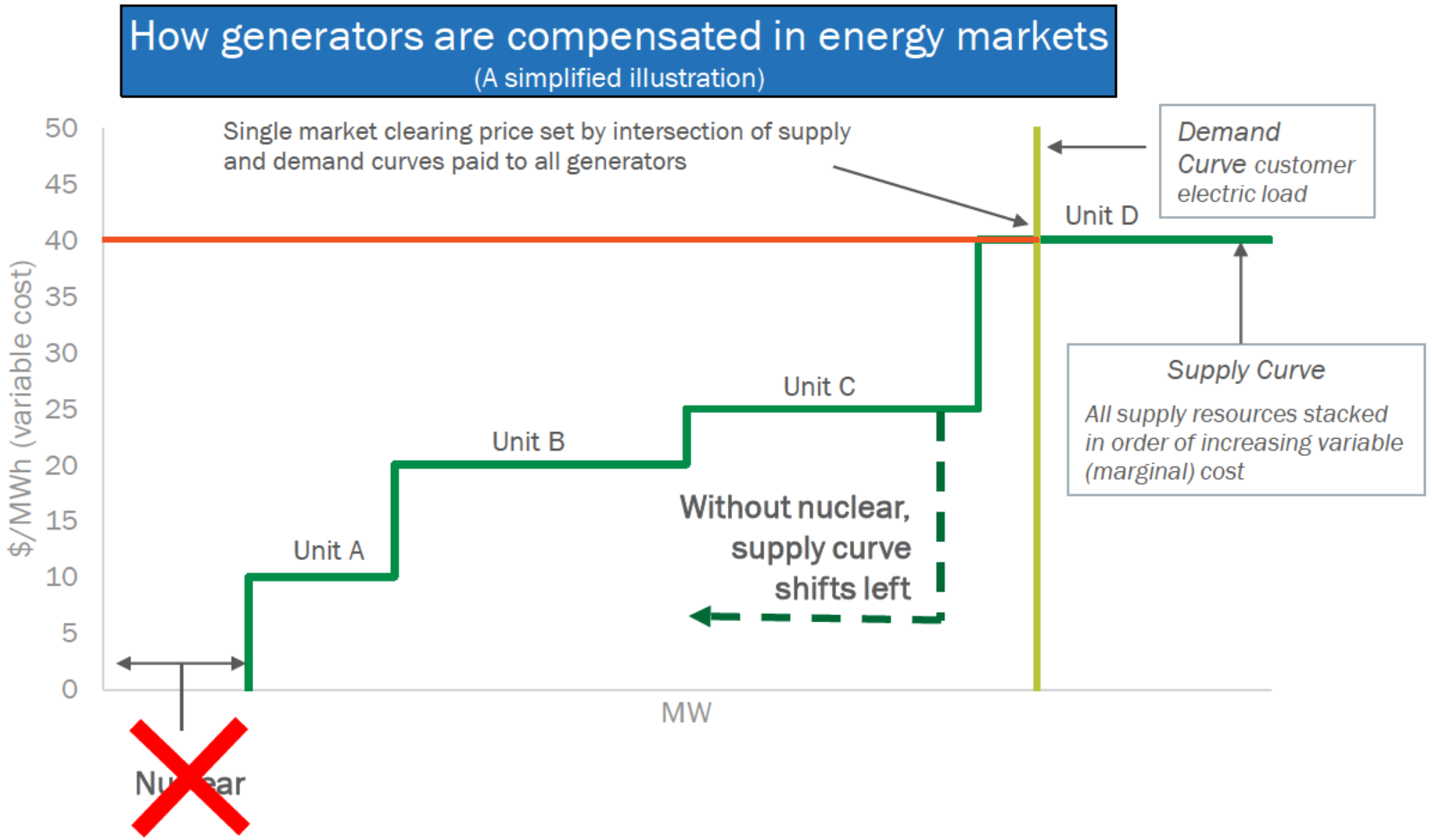
Energy Price Formation In Competitive Markets



Higher variable cost units always set the price, but without nuclear the last unit to clear is even higher variable cost resulting in higher energy prices

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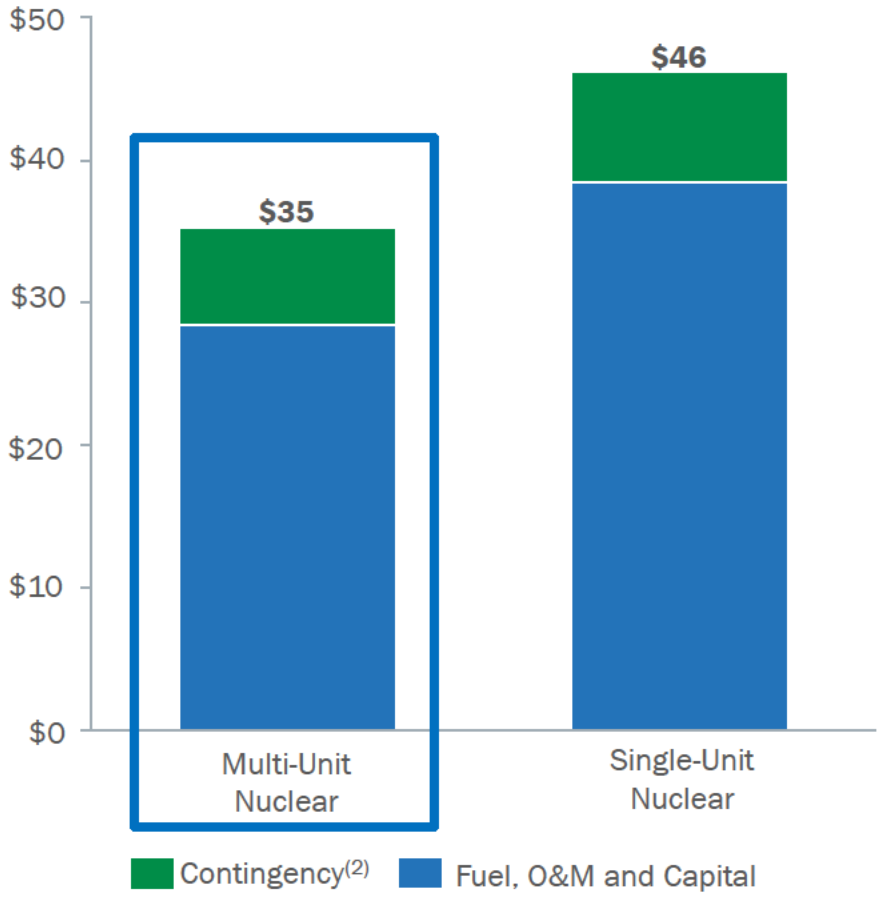
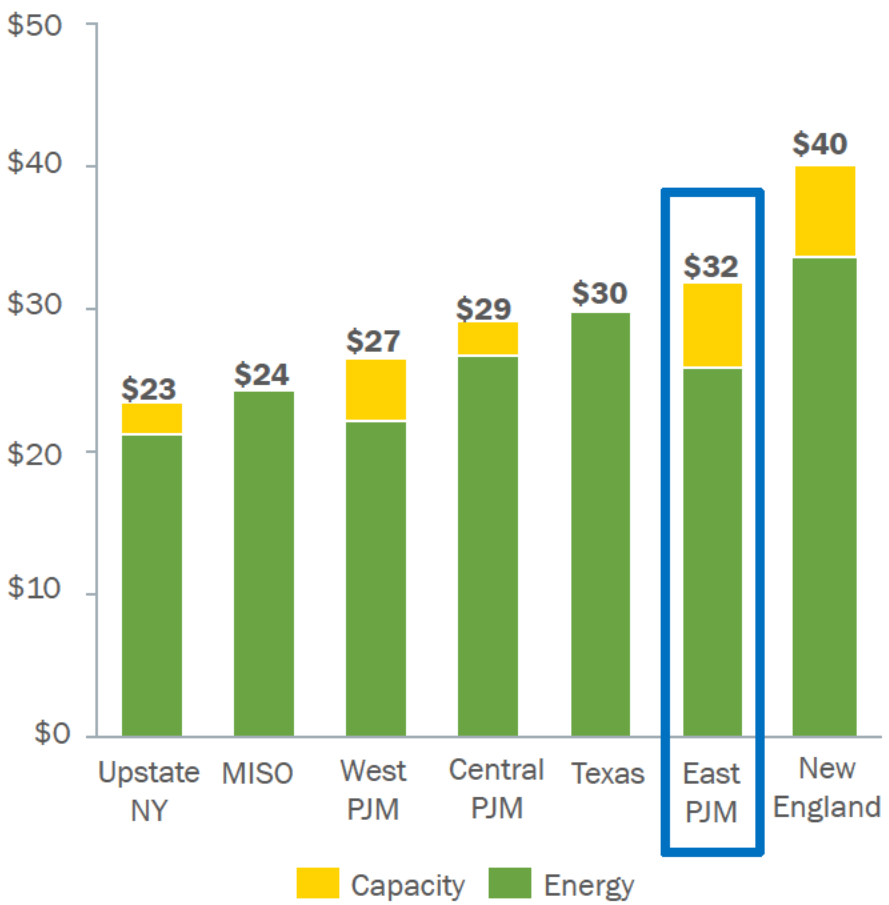
Merchant nuclear plants in all regions of the country face a shortfall of market revenues relative to costs

Average 2019 Nuclear Costs ($/MWh)[1]



2021 Energy Year Forward All-In Nuclear Market Prices ($/MWh)[3]



(1) Source: Nuclear Energy Institute, "Nuclear by the Numbers," April 2020 – costs in $2019
(2) Contingency (or risk) is calculated as 10% of total costs plus $4/MWh
(3) Based on 4/23/20 ICE forward energy prices from 6/2021 through 5/2022 for relevant hub less 2017-2019 average basis differential to nuclear plants. Capacity price component weighted by % cleared nuclear MW in region where appropriate.

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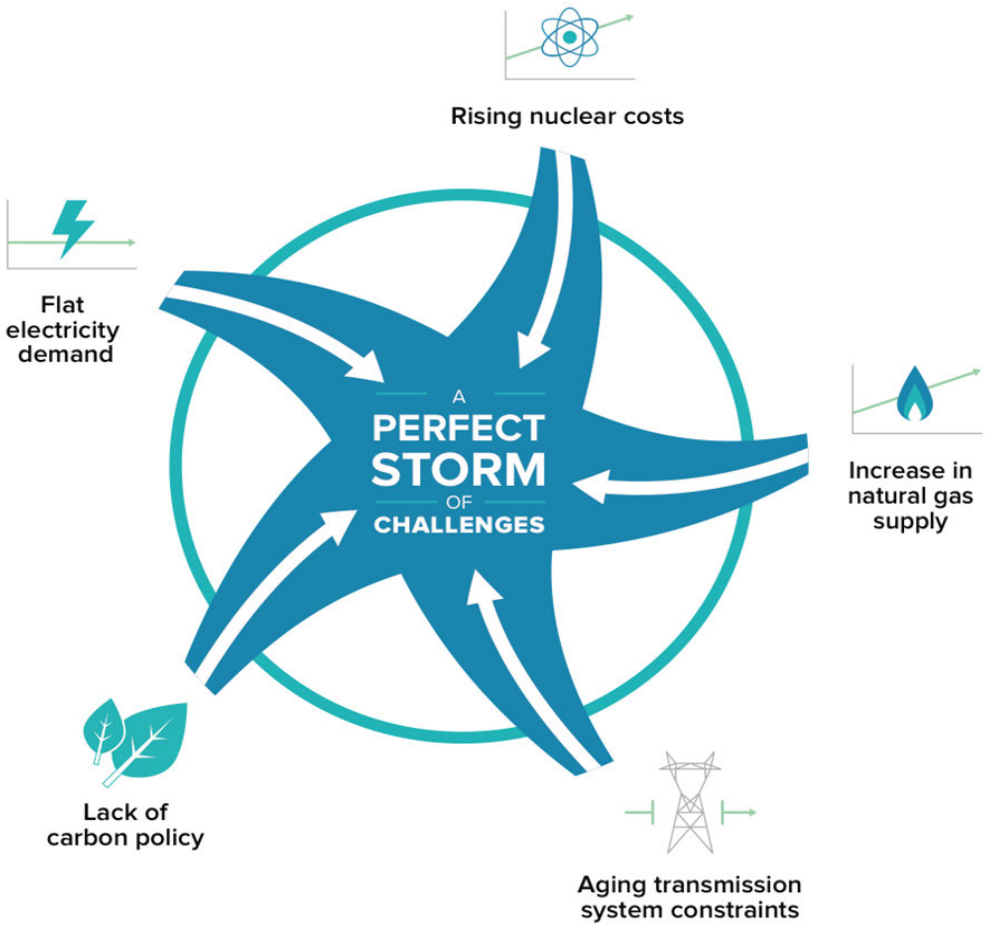
Nuclear Challenge

Nuclear Plant Challenges – A Perfect Storm

CHALLENGES

- Historically low power prices
  - ✓ Abundant natural gas
  - ✓ Subsidies for some zero emission resources
  - ✓ Low load growth
- Market doesn't value the 24/7 reliability, on-site fuel resilience & environmental attributes
- No national or regional cost of carbon



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

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Prematurely Retired Nuclear Plants & Announced Retirements

PLANT/SITE	STATE	SUMMER CAPACITY	CLOSURE YEAR	FINAL YEAR ELECTRICITY	FINAL YEAR CARBON

PLANT/SITE	STATE	SUMMER CAPACITY (MWe)	PLANNED CLOSURE YEAR	ELECTRICITY GENERATED IN 2019 (billion kilowatt-hours/year)	CARBON EMISSIONS AVOIDED IN 2019 (million metric tons/year)
Indian Point 3	NY	1,038	2021	8.3	3.9
Byron 1 & 2	IL	2,300	2021	20.1	12.8
Dresden 2 & 3	IL	1,797	2021	15.1	9.6
Palisades	MI	772	2022	6.9	5.4
Diablo Canyon 1 & 2	CA	2,240	2024	16.2	6.7
TOTAL		**8,147**		**66.6**	**38.5**

TOTAL		8,343		69.0	42.7

Source: Emissions avoided are calculated using regional and national fossil fuel emissions rates from the U.S. Environmental Protection Agency and latest plant generation and average household electricity usage data from the U.S. Energy Information Administration.

Updated: August 2020

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Pennsylvania's Nuclear Fleet – What's at Stake

ECONOMIC IMPACT

- Contribute $2.01B to state GDP
- $69 million annually in net state tax revenues
- PA consumers electricity costs increase ~$788M without PA nuclear fleet

JOBS

- 16,000 direct and indirect jobs within Pennsylvania
- Provided 7 million labor hours to building and construction trades (2014-2016)

ENVIRONMENTAL

- Avoid over 37 million tons of CO2 annually
- Equivalent to adding 8M cars to the Pennsylvania roads
- Announced retirements in PJM reverses 25 years of progress with renewables

RELIABILITY/SECURITY

- Most reliable electricity production in PA (93% Capacity Factor)
- Represents 42% of Pennsylvania's generation production portfolio

*Market policies do not compensate nuclear units for unique attributes (clean energy, fuel security, fuel diversity)

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QUESTIONS?

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