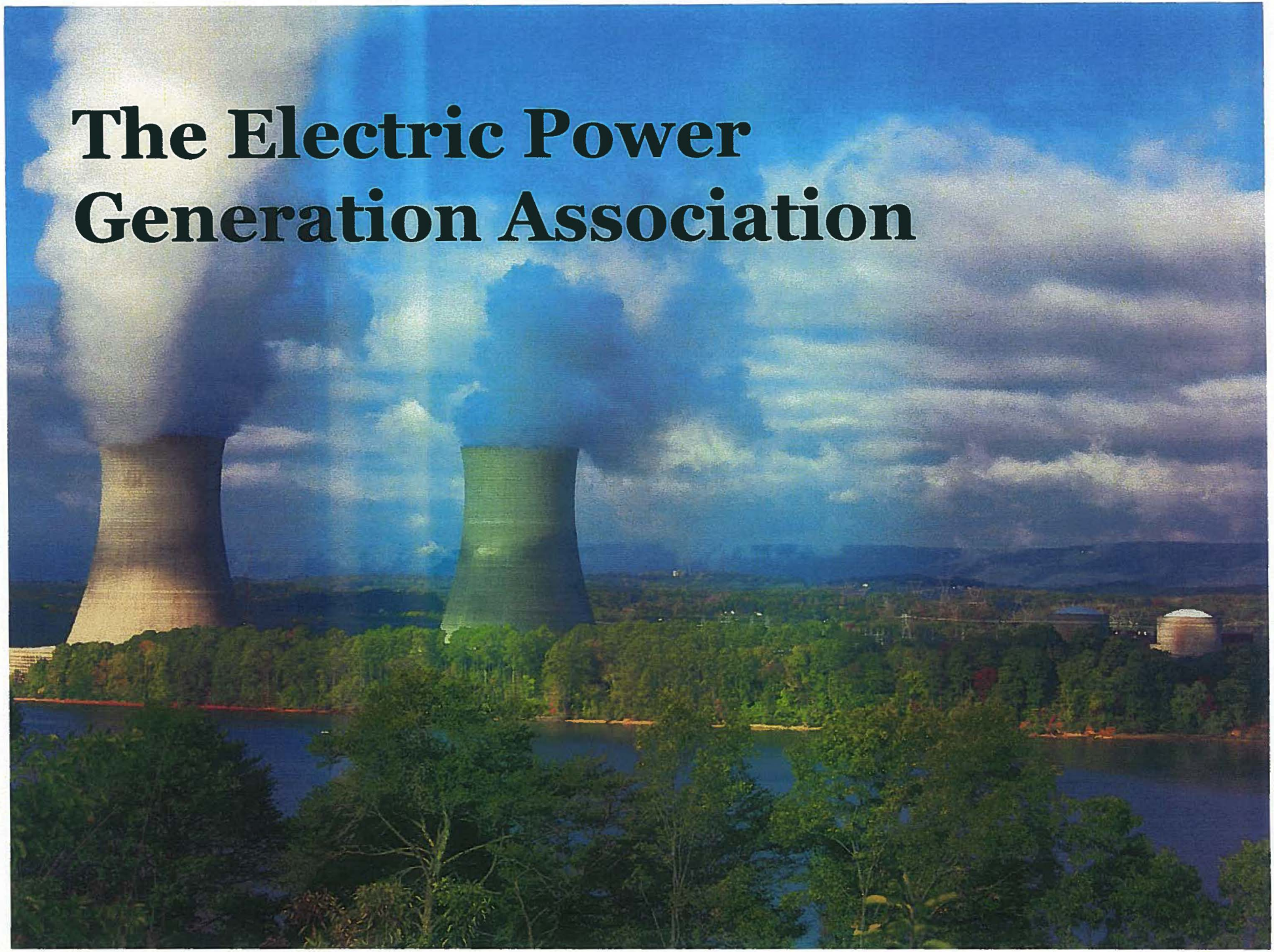
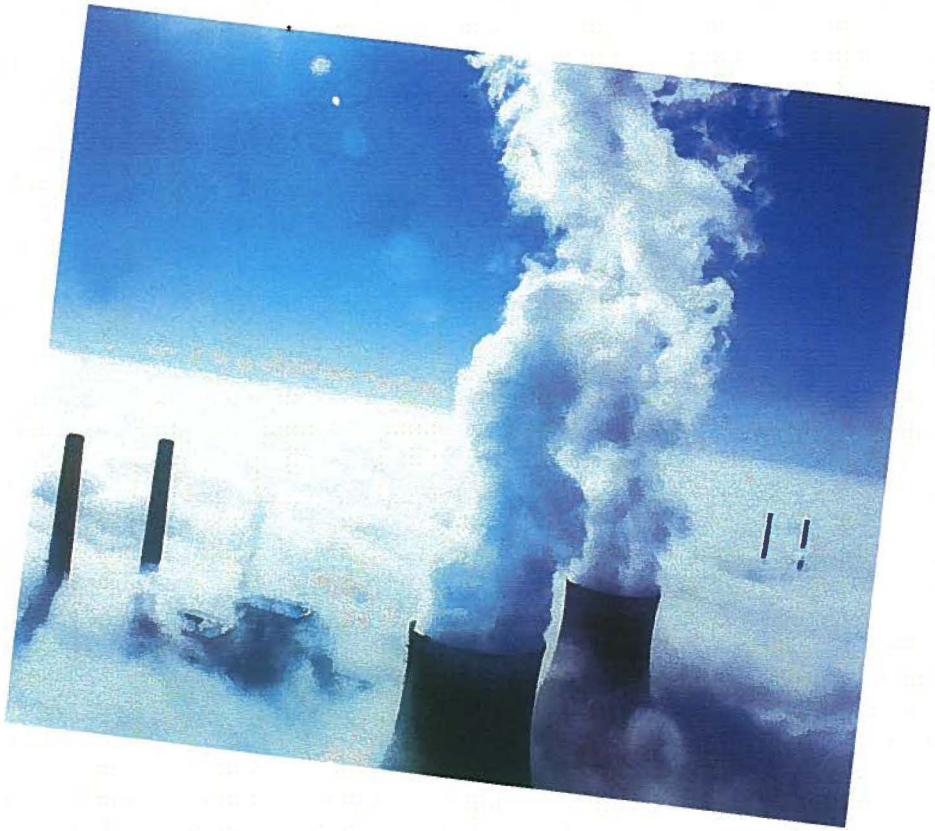
The Electric Power Generation Association



Electric Power Generation Association



EPGA is a regionally-focused, Pennsylvania-based trade association of electric generating companies.

Exelon Generation.

FirstEnergy

ppl

AES

UGI Power Generation

TENASKA

DYNEGY

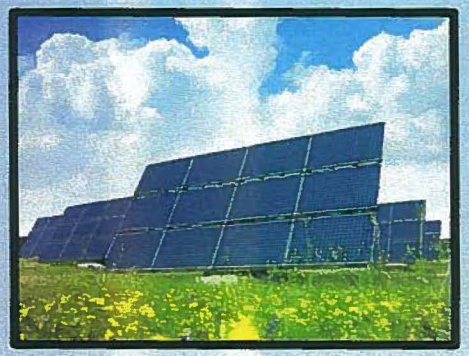
Pennsylvania:
The Keystone State of Electric Generation

Coal

Nuclear

Gas

Wind



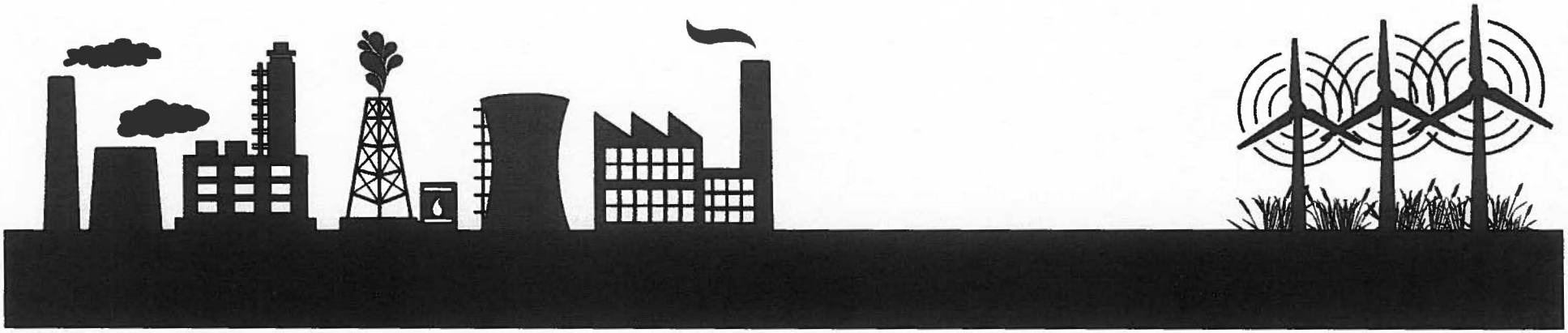
Solar

Hydro

Pumped Storage Hydro

Electric Power Generation a Key Industry In the Commonwealth

- PA is the 2nd largest electricity producing state in the nation.
- PA is the No. 1 net exporter of electricity.
- PA home to one of the nation's most diverse and reliable generation fleets.
- The generation industry injects billions of dollars into PA's economy each year.



Electric Power Industry Employment, Compensation and Economic Impact in PA

Direct Economic Impact	Jobs	Total Employee Wages	Average Wages per Employee	Economic Impact
Electric Power (generation, transmission and distribution)	**16,532**	**$1,702,659,720**	**$102,990**	**$15,322,298,250**

Supplier Economic Impact	Jobs	Total Employee Compensation	Economic Impact
Maintenance and repair construction	3,694	$201,366,100	$459,163,910
Food and beverage services	2,921	$53,079,690	$151,626,830
Mining coal	2,635	$239,625,180	$758,615,380
Rail transport	967	$90,205,740	$290,834,940
Legal services	918	$80,091,980	$147,609,650
Other	10,541	$654,841,550	$1,919,363,290
Total	**21,675**	**$1,319,210,250**	**$3,727,223,000**

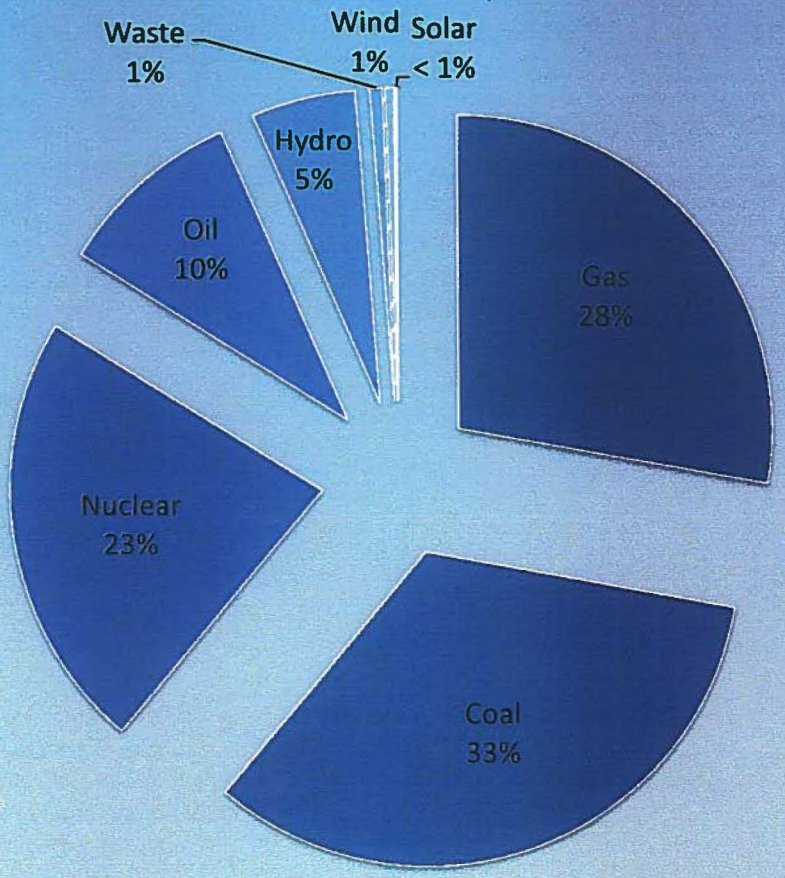
Induced Economic Impact	Jobs	Total Employee Compensation	Economic Impact
Food and beverage services	3,315	$60,227,220	$172,044,360
Hospitals	1,848	$120,045,700	$234,345,240
Health practitioners	1,710	$137,368,070	$213,331,160
Real estate, rental and housing services	1,418	$22,646,600	$185,189,720
Food and beverage retail	1,183	$31,762,920	$62,524,670
Other	22,236	$990,057,740	$3,058,085,070
Total	**31,709**	**$1,362,108,240**	**$3,925,520,230**

Total Employment, Compensation and Output	Jobs	Total Employee Compensation	Economic Impact
	69,917	**$4,383,978,210**	**$22,975,041,480**

Estimated Tax Impact	Direct Taxes	Supplier Taxes	Induced Taxes	Total Taxes
Federal Taxes	$459,782,160	$300,091,700	$330,795,560	$1,090,669,430
State and Local Taxes	$1,253,202,150	$218,686,540	$245,073,270	$1,716,961,950
Total Tax Revenue	**$1,712,984,310**	**$518,778,240**	**$575,868,830**	**$2,807,631,380**

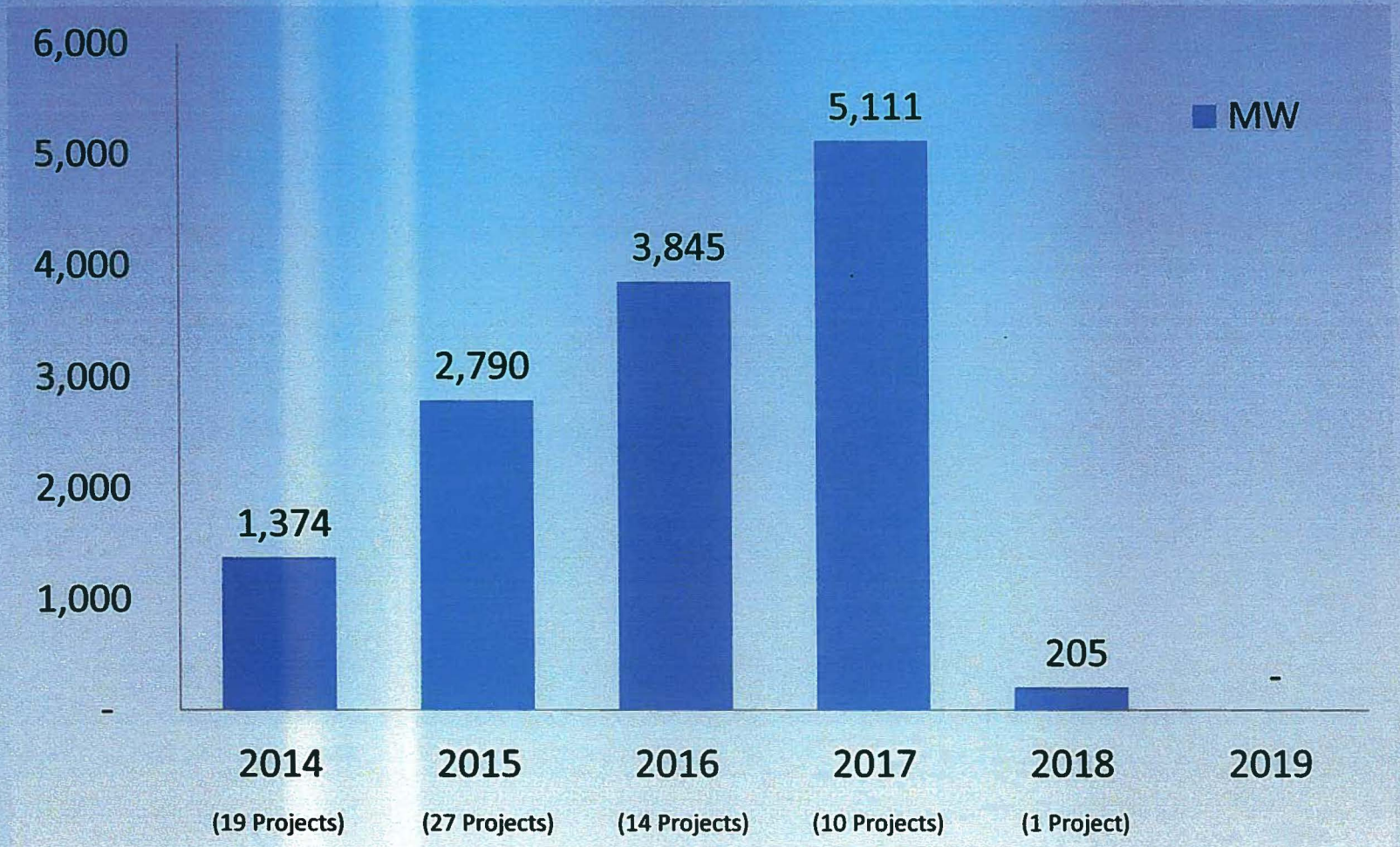
Current Installed Capacity in Pennsylvania

Fuel Type	Capacity
Coal	14,772
Gas	12,293
Nuclear	10,005
Oil	4,250
Hydro	2,238
Waste	288
Wind	201
Solar	39
Total	**44,086**



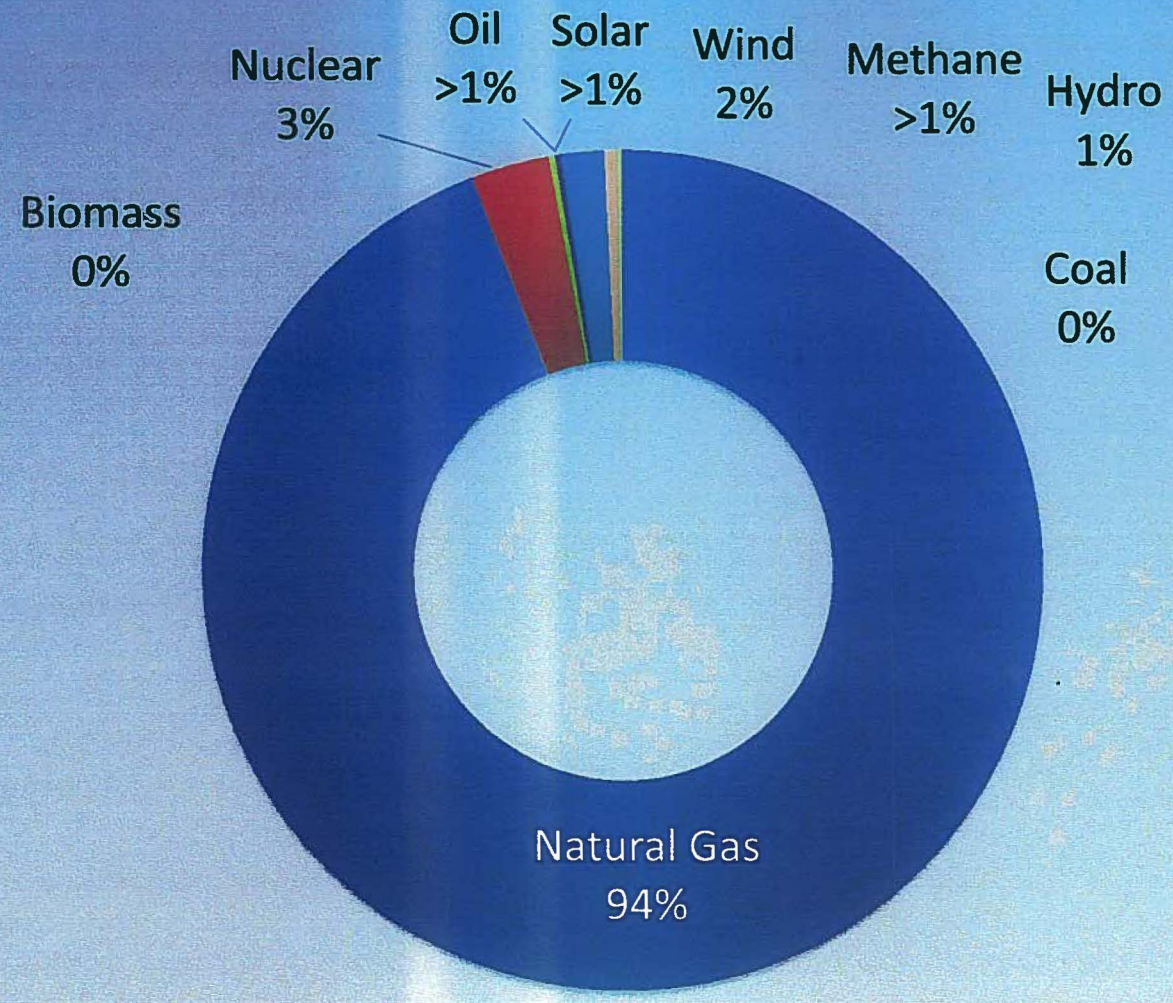
Source: PJM 2013 RTEP and SNL

Anticipated New Generation in PA



** Includes all types of generation as of Dec. 31, 2013*

Queued PA Capacity Additions



Fuel Type	MWs
Natural Gas	11,609
Nuclear	369
Coal	0
Hydro	59
Wind	207*
Solar	25**
Biomass	0
Methane	23
Oil	32
Total	12,324

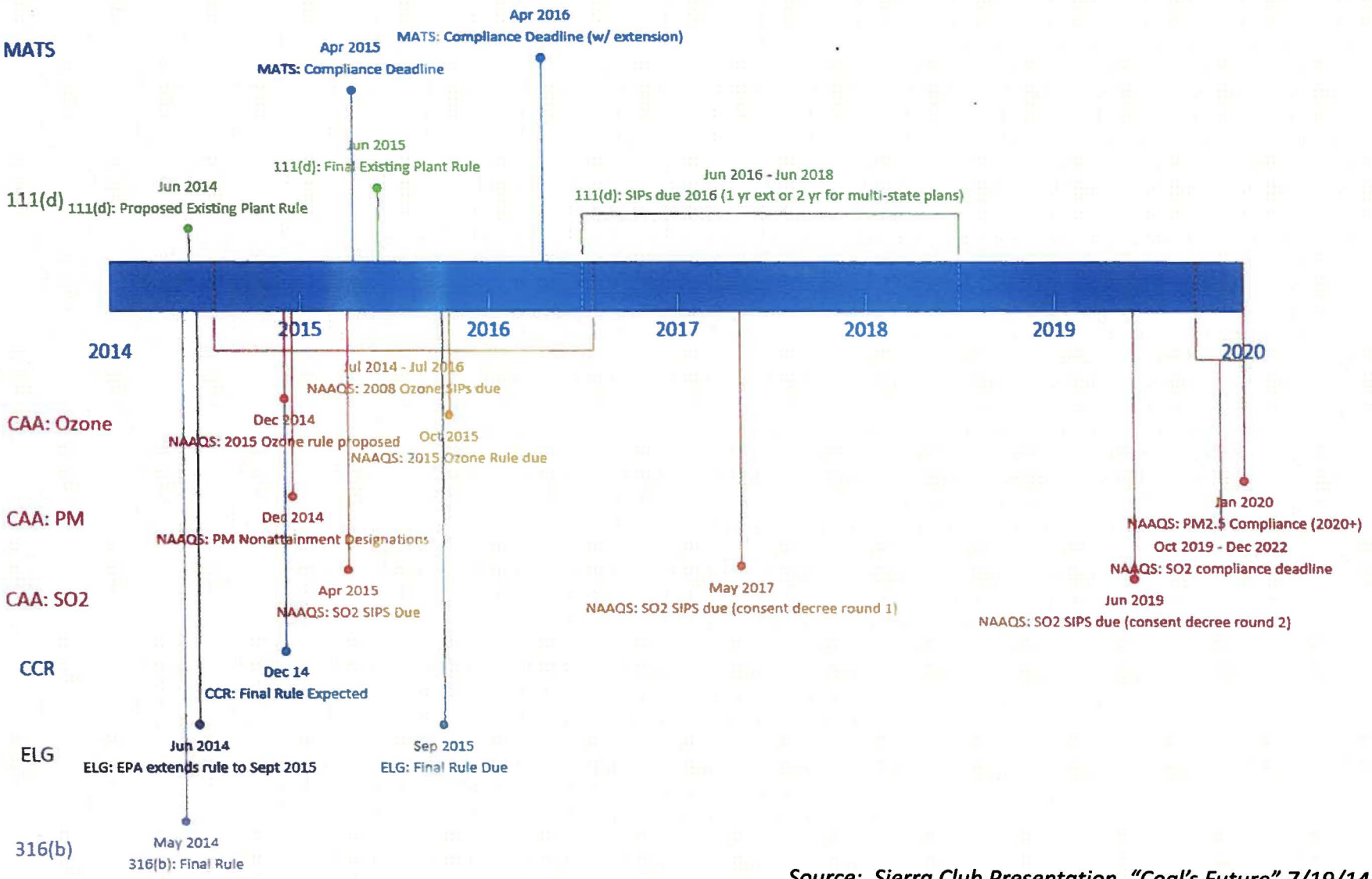
*Nameplate energy = 1,439 MW
**Nameplate energy = 66 MW

NOTE: Not all queued capacity will be built

Major Environmental Rules Have Been Changing the Generation Landscape

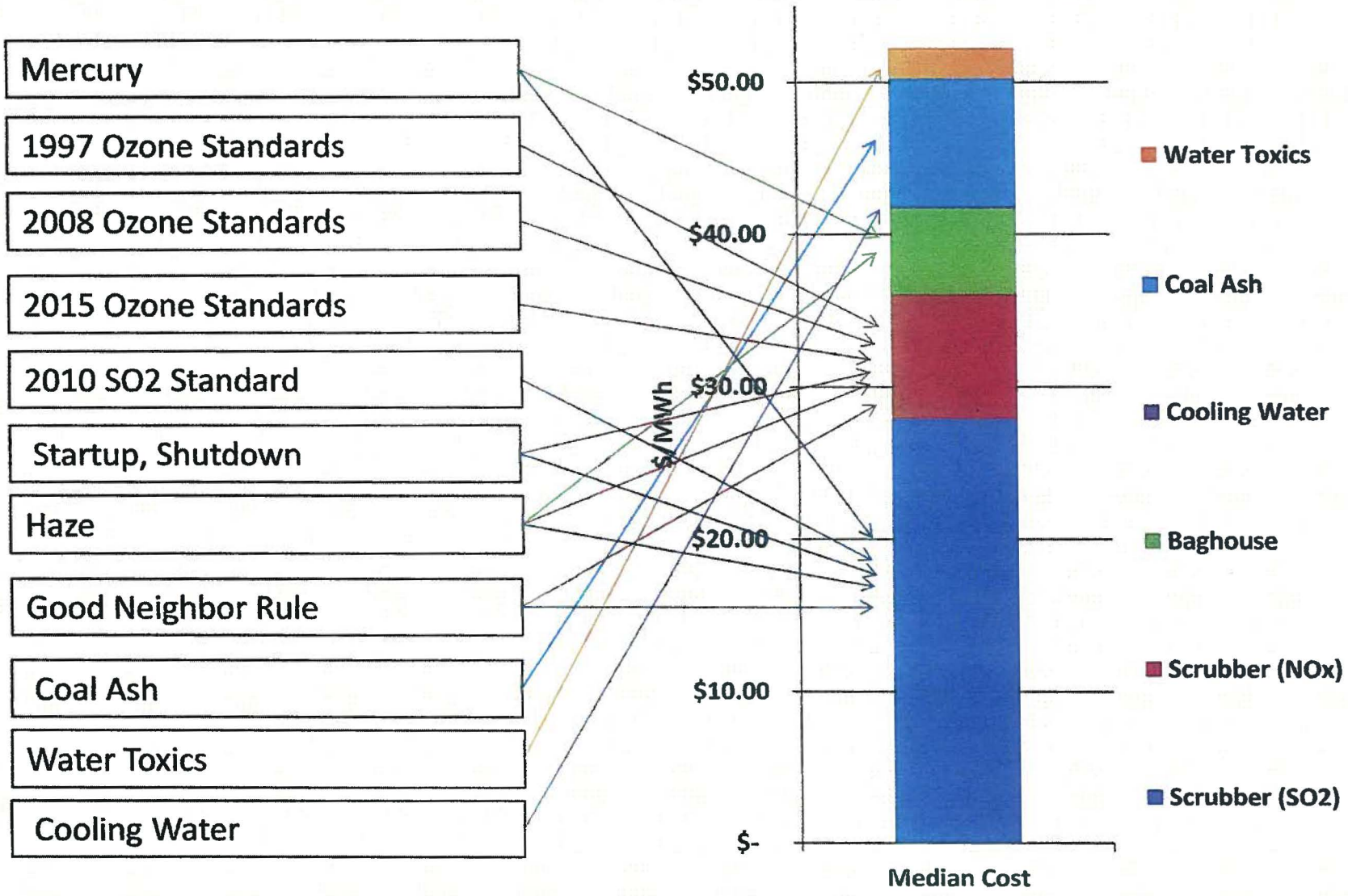
- Mercury and Air Toxics Rule (MATS).
- Cross States Air Pollution Rule (CSAPR).
- 316(b) Water Intake Rule.
- Regulation of coal combustion residuals (CCRs) still being considered.
- New Effluent Limitation Guidelines (ELGs).
- PA Regional Haze.
- PA NOx RACT out for public comment.
- HB 1699 designed to address dirty diesel behind-the-meter generators being used in DR programs.
- Greenhouse Gas (GHG) Rule for new power plants.

New EPA Rules Timeline



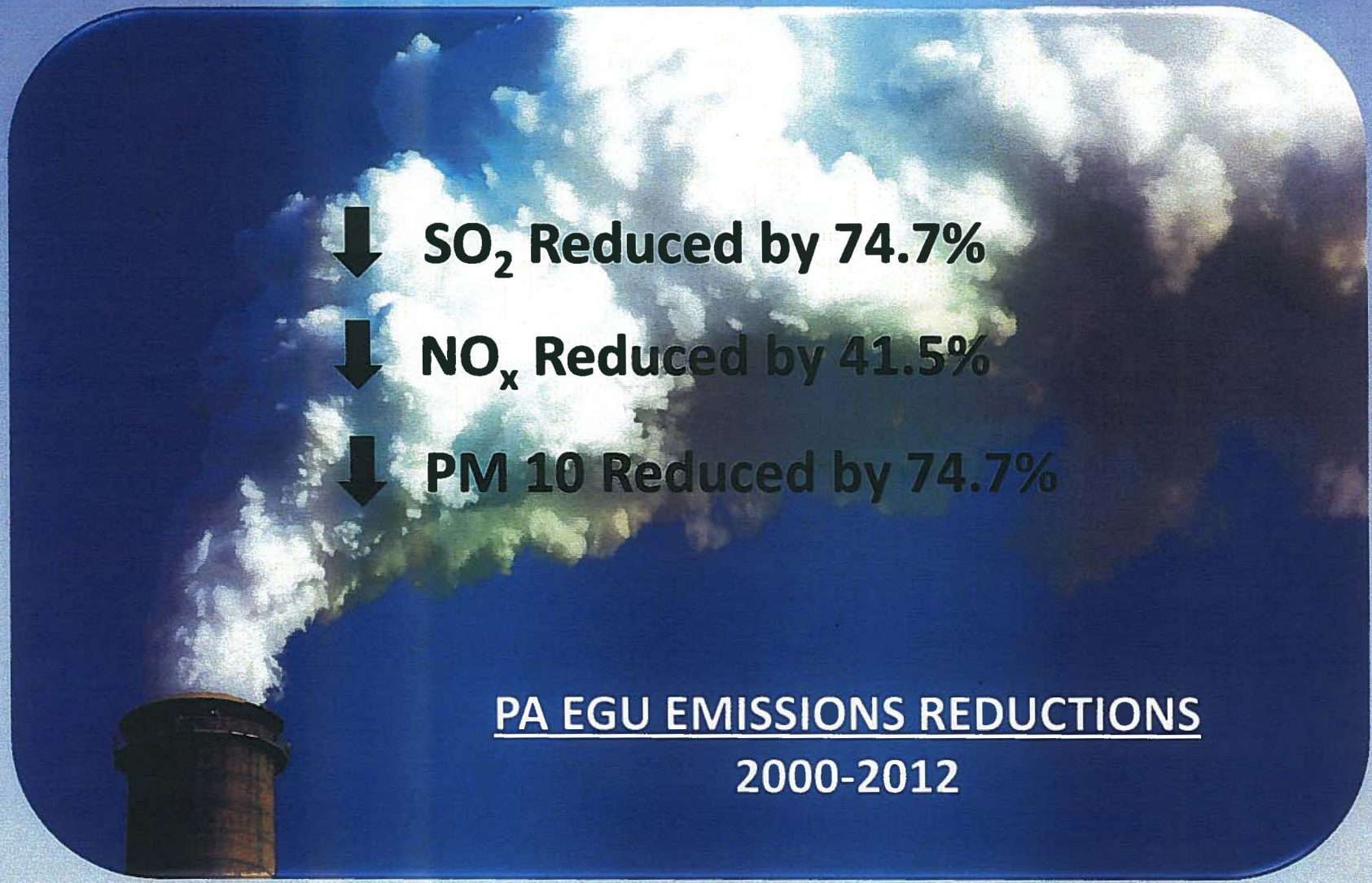
Source: Sierra Club Presentation, "Coal's Future" 7/19/14

New and Existing Rules Drive Costs



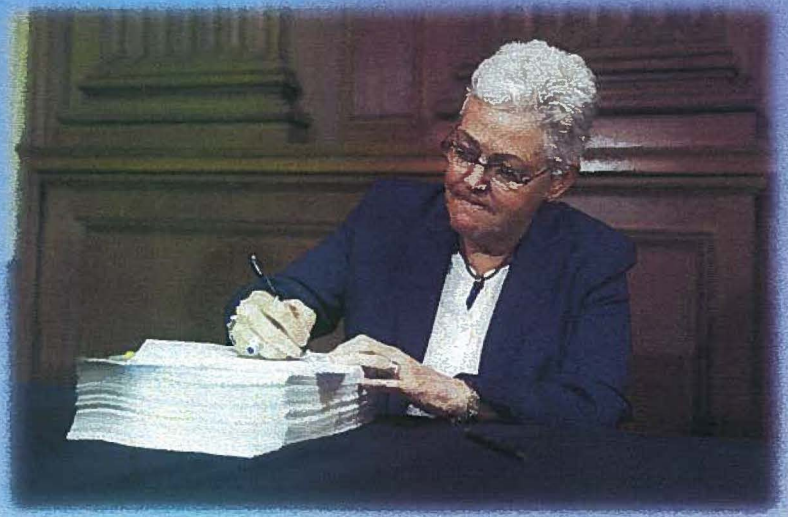
Source: Sierra Club Presentation, "Coal's Future" 7/19/14

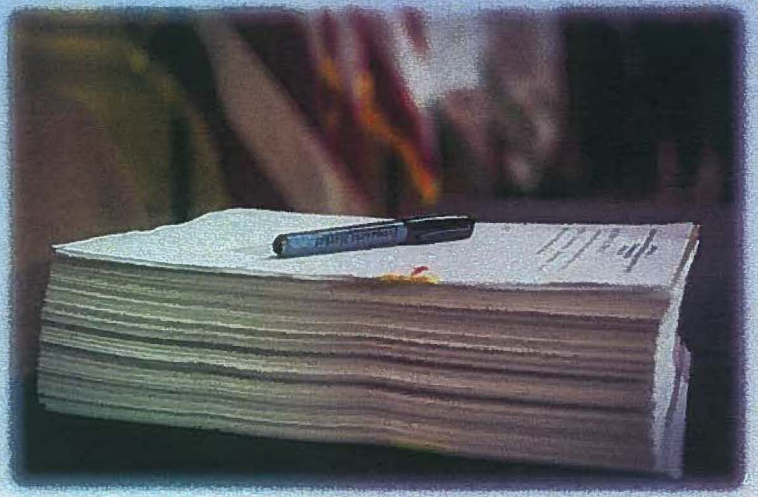
PA Electric Generator Emissions



EPA's Latest Rule
Regulation of CO_2 from Existing Power Plants

- Began through Executive Action by President Obama.
- Signed by EPA on June 2, 2014, published in Federal Register on June 18, 2014.
- Requires nationwide reduction of GHG emissions, with each state given interim and final reduction goals.
- Significant reductions to begin no later than 2020.
- States may develop their own plan and submit it to EPA for approval.
- States may work collaboratively with other states in regional efforts.



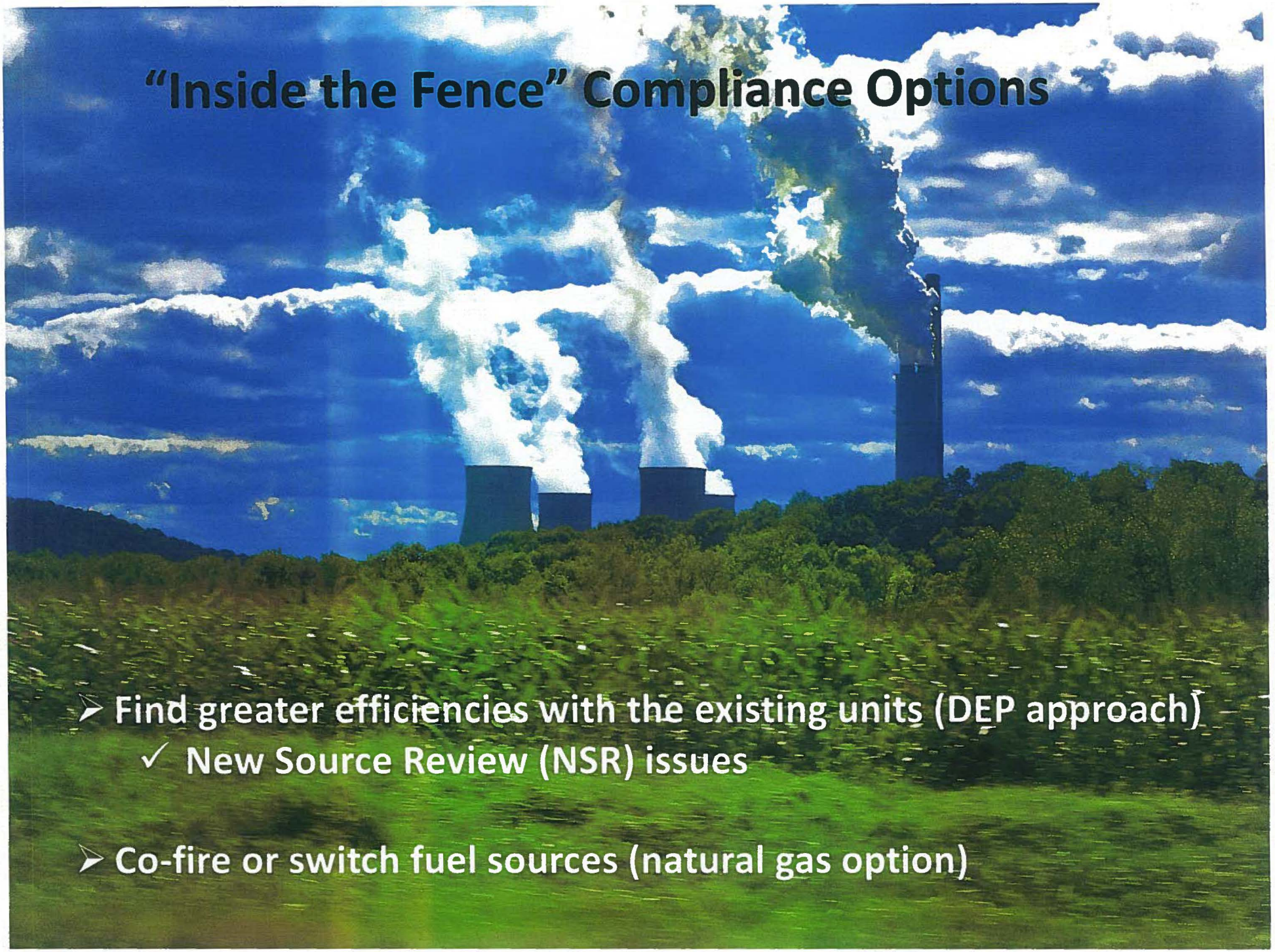


Initial Reaction:
Some Good News, Some Difficult News

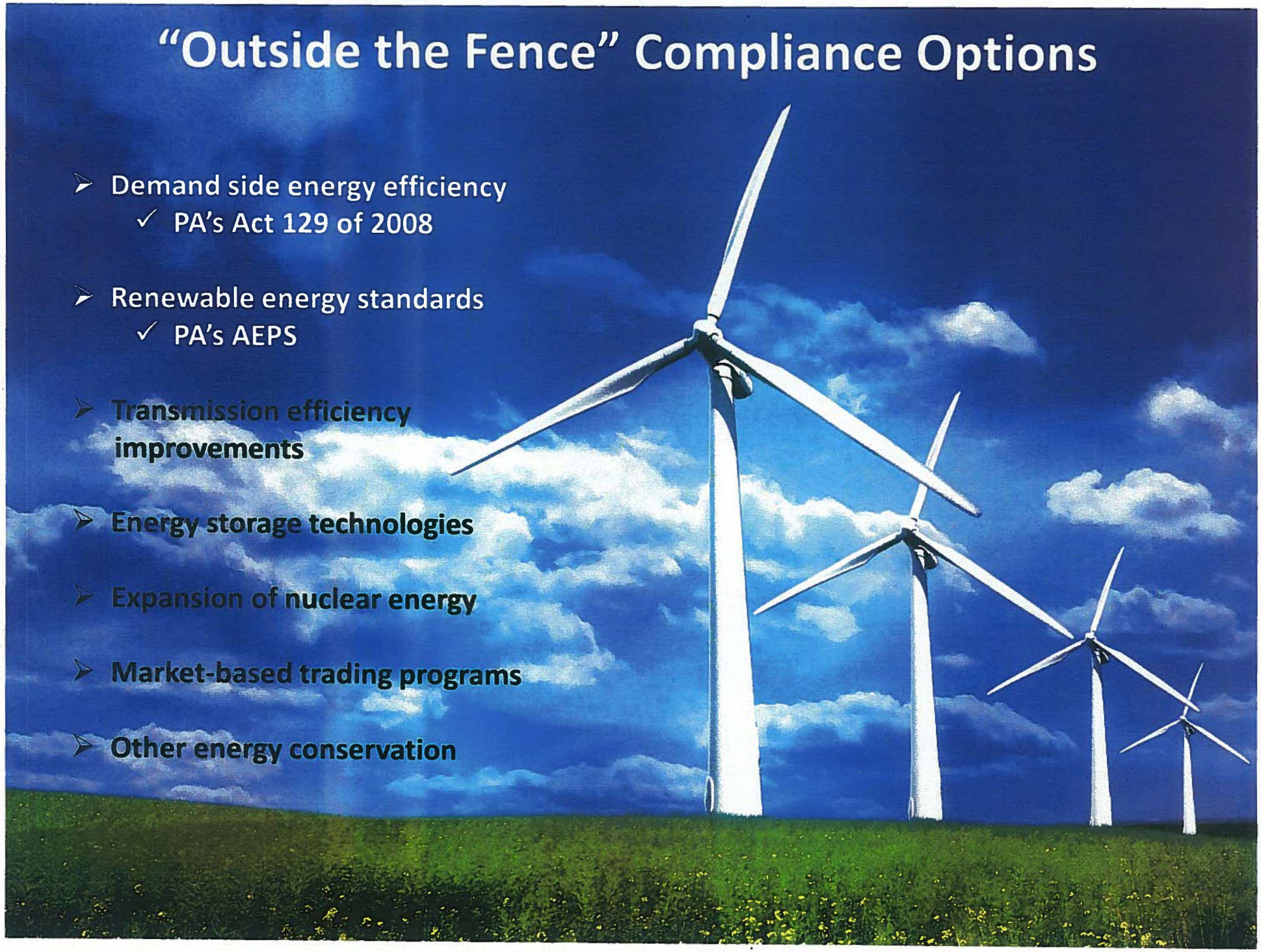
- EPA did outreach and attempted to incorporate some broad suggestions offered by the electric power industry:
  - ✓ Provide for more than one compliance path.
  - ✓ Allow the states to implement compliance under federal guidance.
- EPA's emission reduction goals appear to be very aggressive, may be unachievable, and could result in unintended consequences with the bulk power system, which is already in a significant state of transition.
- The "flexibility" under the rule is actually very limited. PA's goals would require each "building block" to be used, giving the State very little discretion in meeting the federal requirements.
- Use of 2012 baseline problematic given number of deactivations and retirements that have occurred since 2005.
- Specific heat-rate requirements are problematic for many power plants, which have already made efficiency improvements and have little opportunity to do additional upgrades.
- Overall GHG reductions in United States will still be minor compared to growth of emissions in developing countries and emerging markets.

State Specific Approach to Compliance With New GHG Rule

- PA can write its own compliance plan based on "building blocks" identified by EPA.
  - ✓ Make fossil fuel power plants more efficient.
    - Improve equipment and processes to get as much electricity as possible from each unit of fuel.
    - Using less fossil fuel to create the same amount electricity.
  - ✓ Use low-emitting power sources more.
    - Using lower-emitting power plants more frequently to meet demand.
  - ✓ Use more zero and low emitting power sources.
    - Expand renewable generating capacity.
  - ✓ Use electricity more efficiently.
    - Reduce demand through energy efficiency and demand response.
- PA could also work collaboratively with other states or, if it wanted, enter into a regional compliance plan.


"Inside the Fence" Compliance Options
➢ Find greater efficiencies with the existing units (DEP approach)
✓ New Source Review (NSR) issues
➢ Co-fire or switch fuel sources (natural gas option)

"Outside the Fence" Compliance Options

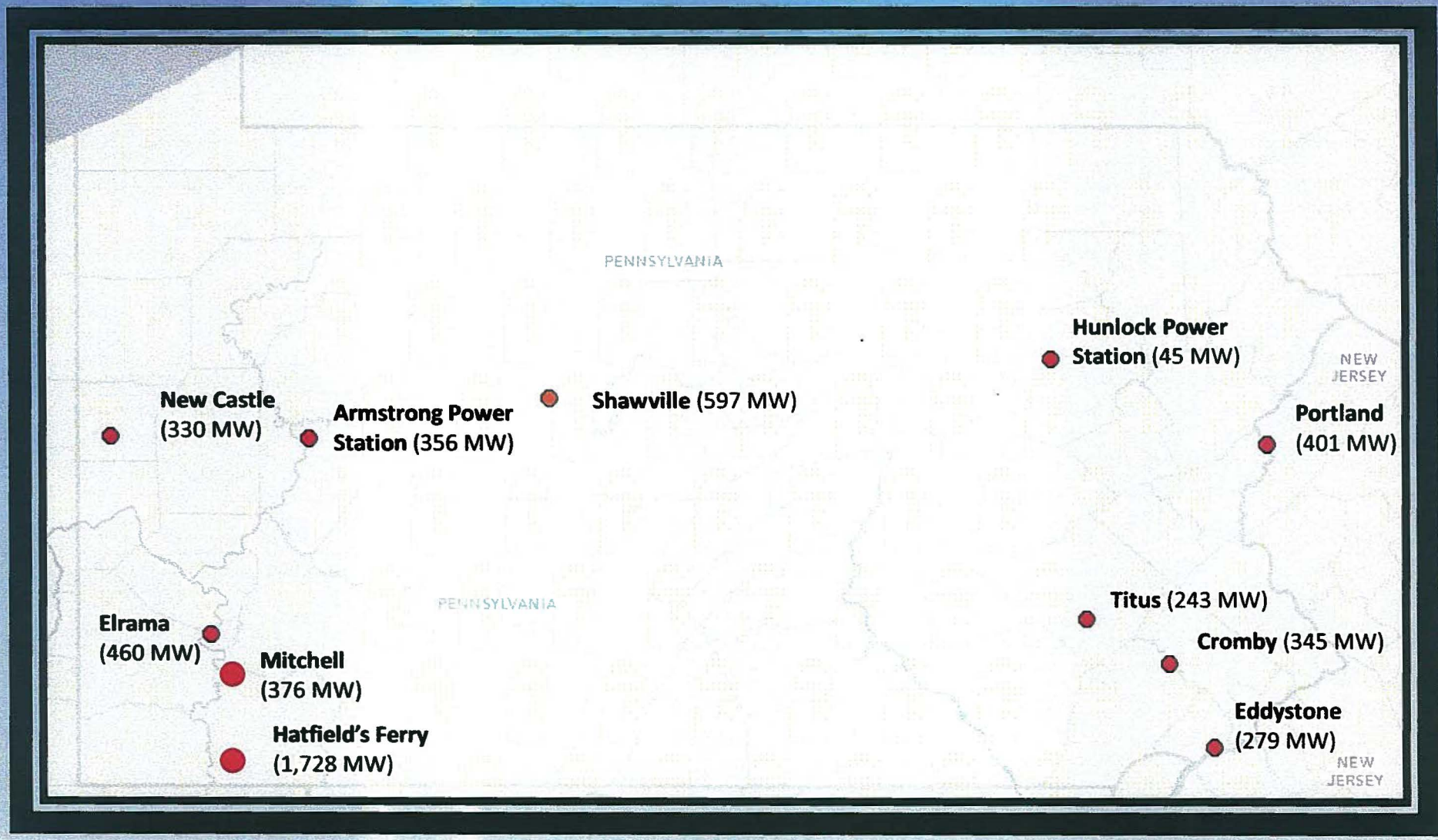


- Demand side energy efficiency
  - ✓ PA's Act 129 of 2008
- Renewable energy standards
  - ✓ PA's AEPS
- **Transmission efficiency improvements**
- **Energy storage technologies**
- **Expansion of nuclear energy**
- **Market-based trading programs**
- **Other energy conservation**

Bulk Power System Already in Significant State of Transition

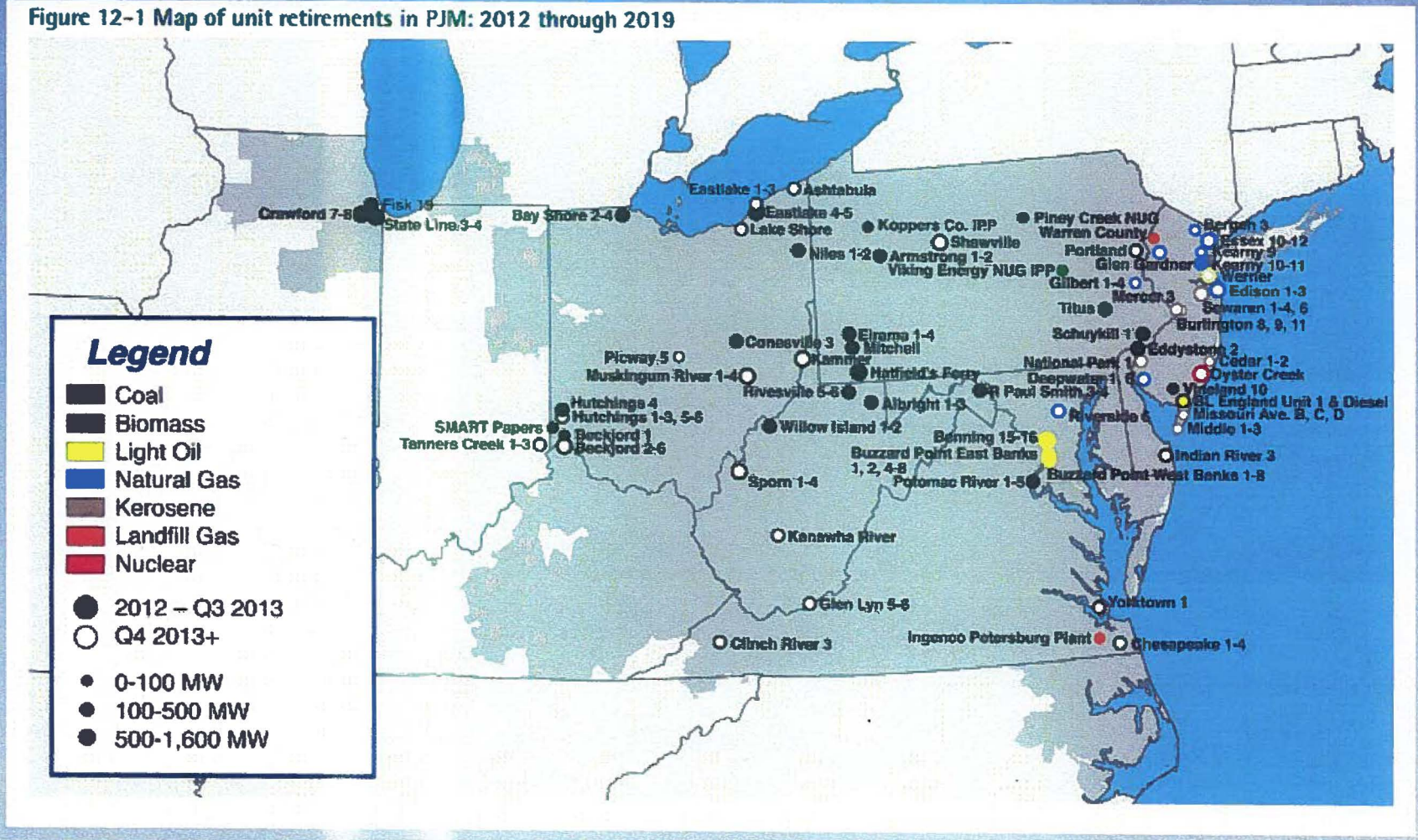
- Natural gas has been game changer.
- Coal dominance continues to decline due to increased environmental regulation and market conditions.
- Nuclear Renaissance slowed by Fukushima and market conditions – baseload nuclear under very real threat.
- Demand response and energy efficiency have dominated growth in system due to state incentives and overcompensation in wholesale markets.
- Wholesale markets continue to be skewed by RPS mandates and other subsidized forms of energy.
- Events in January, 2014 demonstrate just how real different resources in the system are and how management of those resources can be difficult.

Announced Pennsylvania Deactivations and Retirements



PJM Generator Retirements

Figure 12-1 Map of unit retirements in PJM: 2012 through 2019



2012 – 2019

Next Steps

- EPA Preliminary GHG Rule out for public comment
- EPA holding several public hearings, including one in PA
- Final Rule expected by June, 2015
- States to submit State Implementation Plans beginning June, 2016 – 2018
- If a State does not submit a SIP, EPA will write a Federal Implementation Plan for the State
- Significant reductions to begin no later than 2020
- EPA's full GHG reduction goals must be met by 2030

Lots of Questions Remain

- What should/will Pennsylvania do in implementation?
- How will the generation and coal extraction industries be affected?
- Will electricity prices rise?
- Will electric reliability be impacted?
- Can coal-fired generators absorb another significant regulation and maintain operations in a competitive market?
- What other economic impacts will result?
- What will our bulk power system look like?
- What electric generating resources are we going to be more dependent on?
- Is this regulation going to produce a meaningful result and the benefits EPA promises?
- When will other CO_2 emitters be subject to regulation?

One Undeniable Conclusion:
New GHG Rule Will Be Subject of Much Debate

According to EPA, the new GHG Rule will, by 2030, result in:

- **$93 billion in public health and climate benefits.**
- **150,000 fewer asthma attacks each year.**
- **6,600 fewer premature deaths each year.**

According to the U.S. Chamber of Commerce, the new GHG Rule will:

- **Cost as many as 442,000 jobs in 2022 and put 224,000 Americans out of work, on average, annually.**
- **Cost $51 billion in GDP loss annually.**
- **Lower disposable household income by $586 billion.**
- **Increase electricity costs by more than $289 billion.**

Thank you!

The Electric Power Generation Association