# Keeping the Lights On: The Path Forward

## West Virginia University Law National Energy Conference 2014

**Charles Patton, President and COO**

Appalachian Power

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# Four Take-Aways

- **Economics make new coal highly unlikely.**
- **Existing coal plants can compete.**
- **The country must pursue a rational greenhouse gas mitigation strategy.**
- **Availability of future capacity is a major concern.**

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# The Appalachian Power Experience
## The Effect on Customers

- Low per capita income:
  - West Virginia - $22,482
    - 18 percent living below poverty level
  - Virginia - $22,818 (in our service area)
    - 24 percent living below poverty level
- Unemployment is improving but remains high:
  - West Virginia – 6.3 percent
  - Virginia – 5.2 percent ( in our service area).
- 54 percent of customers have electric heat.
- 25 percent of customers are behind on their bills.
- 400 percent increase in uncollectibles.

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# Coal Production

- 2013 coal production was 2 percent lower than 2012 (996 MMst).
- First time in 20 years production fell below 1 billion.
  - Identical percentage declines in App and West.
  - Illinois Basin slight upturn.
- 2014 coal production expected to increase 3.9 percent.
  - Inventory stabilizes
  - Consumption increases
- Coal production projected to fall 1.5 percent  in 2015.

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US Energy Information Administration Outlook, February 2014

# Coal Consumption

- 2013 coal consumption increased 3.5 percent (920 MMst).
  - Increased electricity demand.
  - higher natural gas prices.
- Projecting 4.1 percent increase 2014.
- Projecting a decline of 2.1 percent in 2015 (retirements).

US Energy Information Administration Outlook, February 2014

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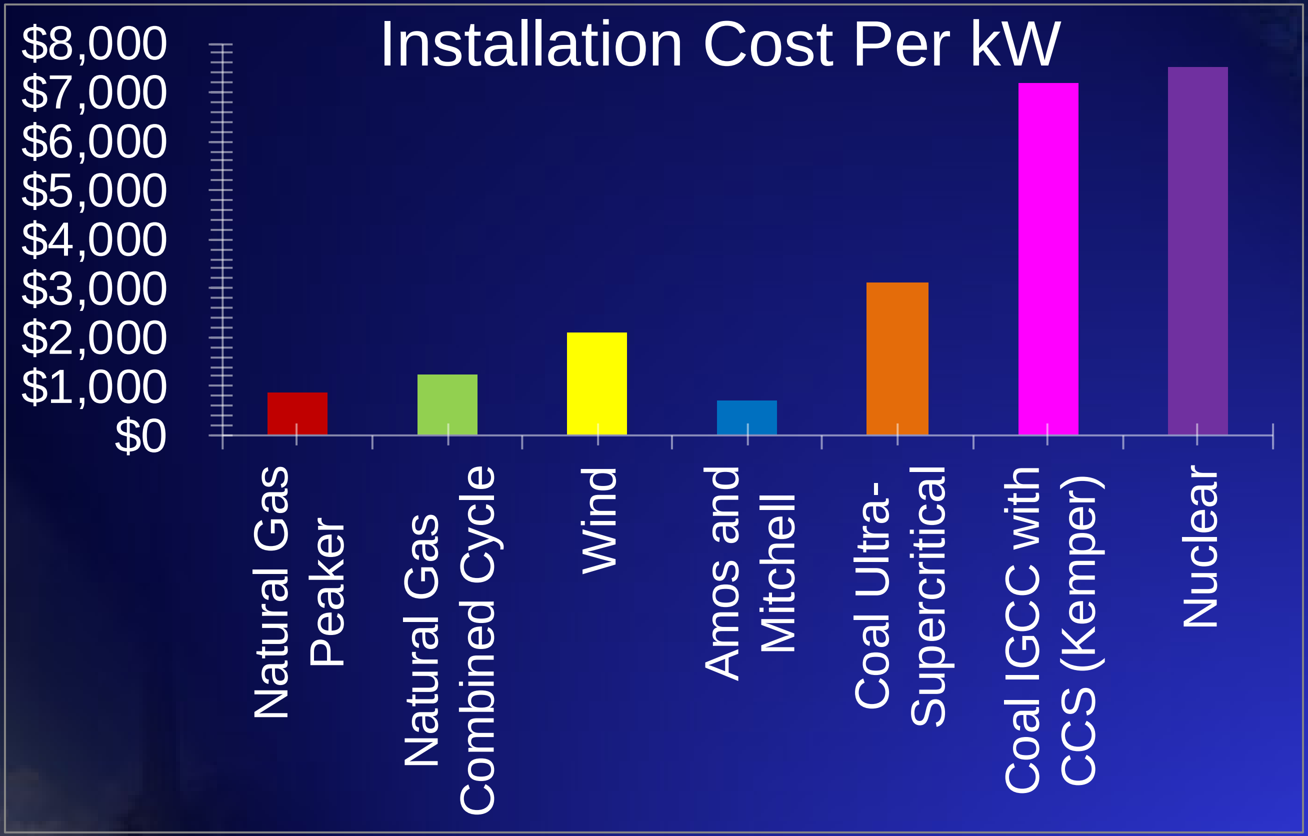
# Coal Exports

- 2013 coal exports 118 (MMst), 8 (MMst) less than 2012.
- 2014 exports projected 106 (MMst).
- 2015 exports projected 105 (MMst).

US Energy Information Administration Outlook, February 2014

# Cost to Build or Acquire

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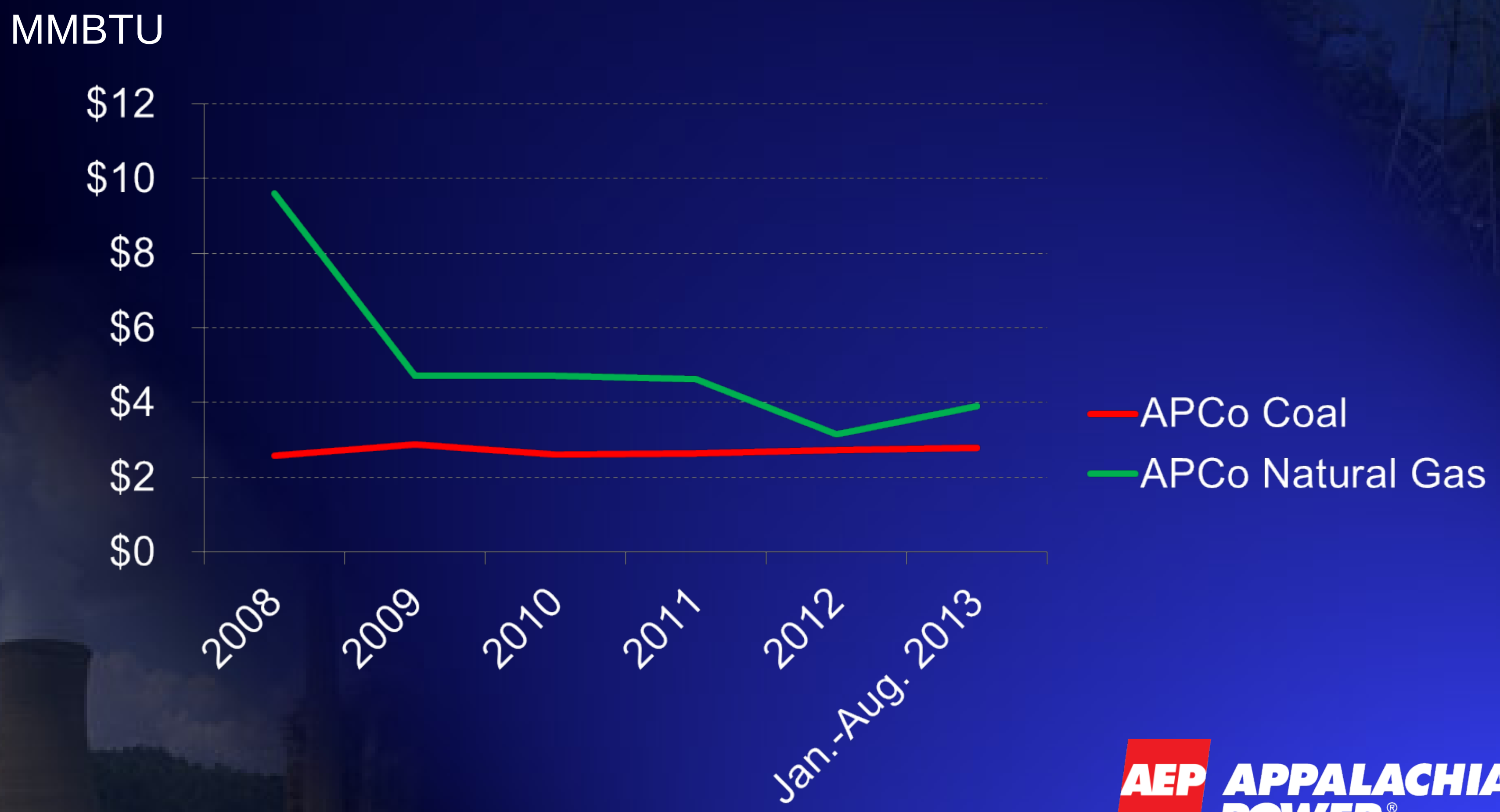
# Coal vs. Natural Gas

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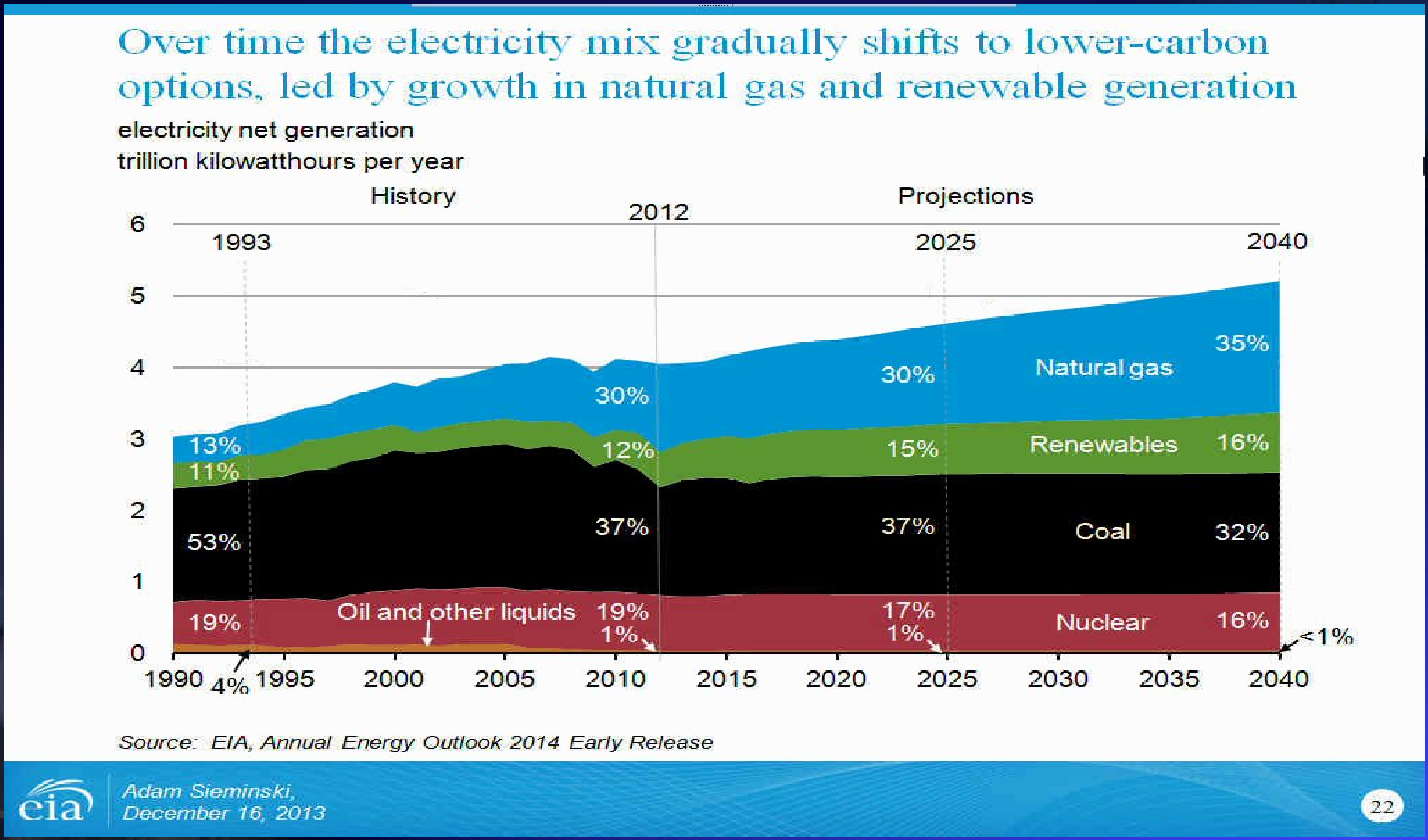
# U.S. EIA Natural Gas Forecast

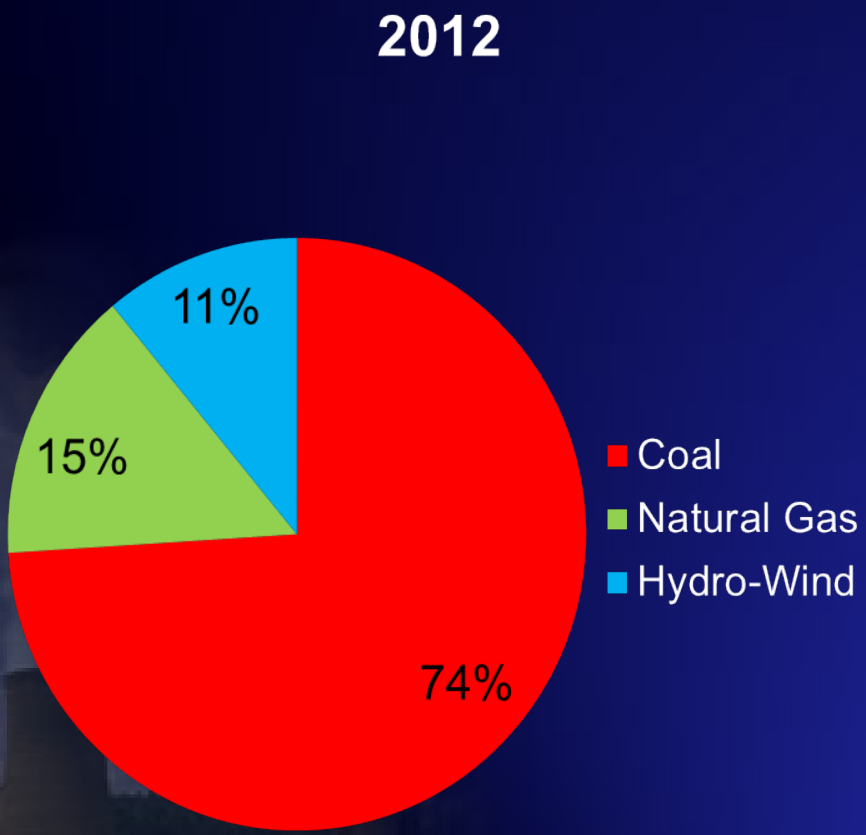
- Projected natural gas prices:
  - 2014: $4.29
  - 2015: $4.23

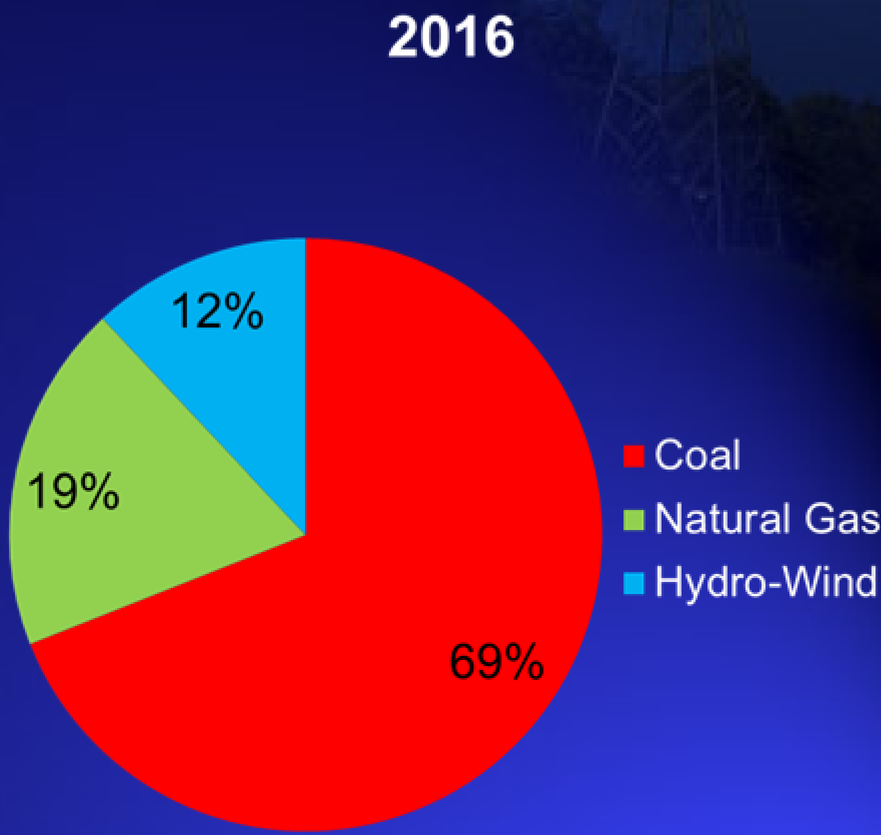
US Energy Information Administration's Short-term Energy Outlook, Feb. 11, 2014

# Future Generation Mix



# Appalachian's Generation Mix



# U.S. Greenhouse Emissions

- 2012 data show power plant carbon emissions decreased 10 percent since 2010.
- Largely due to a switch from coal to natural gas for electricity generation.
- Fossil-fuel fired power plants account for about 40 percent of total U.S. carbon pollution and 67percent of direct emissions.

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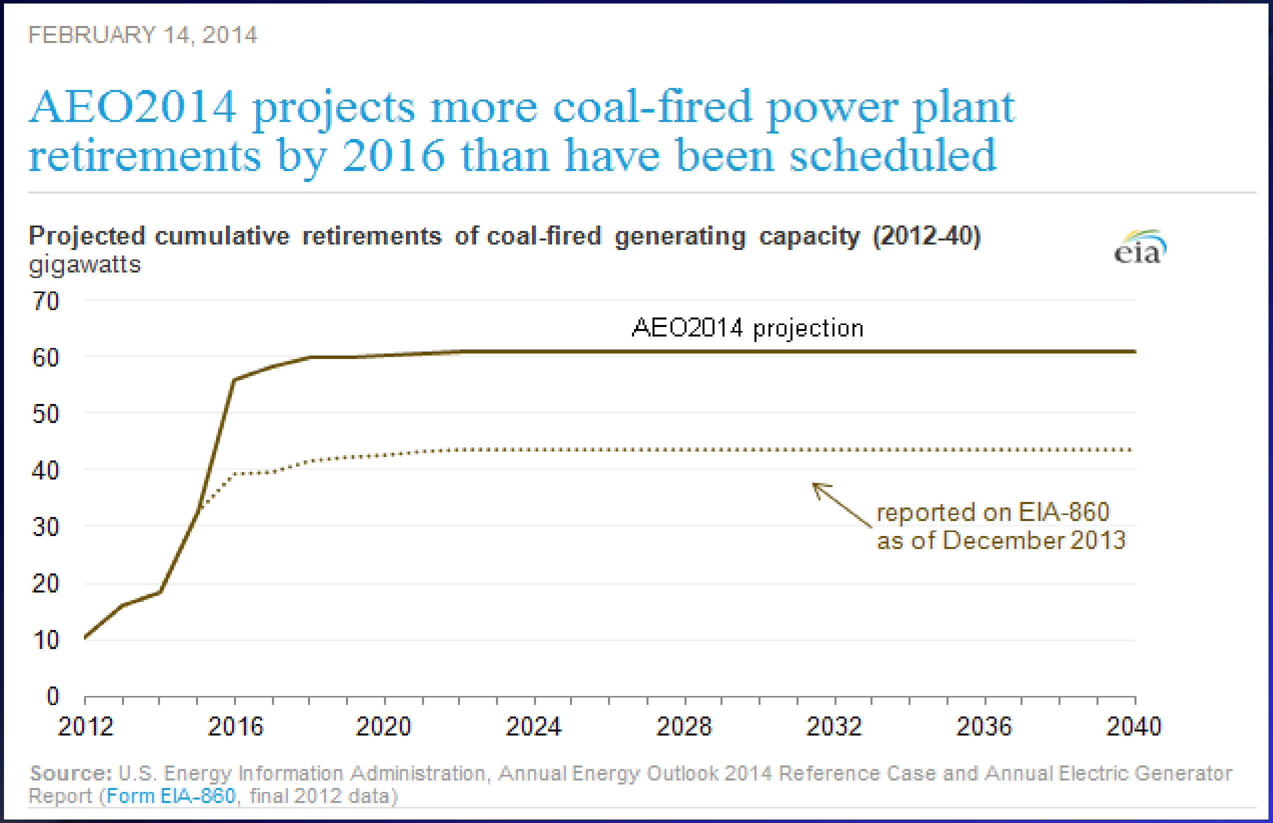
# Coal-fired Power Plant Closures

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# Generation Reduction Forecast

- Appalachian Power
  - Closures totaling 1,735 megawatts by 2015
- AEP
  - Closures totaling 7,200 megawatts by 2016
- PJM
  - Closures totaling
    - 15,000 megawatts by 2015
    - 18,000 megawatts by 2018

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# Market

## Considerations for 2016-2017 PJM Auction

- Potential Reliability Effects
  - 14 percent or 24,200 MWs of total capacity market is planned capacity resources

    (not steel on ground)
  - Planned resources may
    - Buy out their commitment
    - Cut by external balancing authority
    - Not show up in an emergency

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# Lessons of the Polar Vortex

- Extreme weather highlighted electricity system vulnerabilities.
- The PJM power pool saw 20 percent of plants (36,600 MW) idled because of weather failures.
- In 2015, we will close 1,735 megawatts (MW) of coal-fired generation.
- Yet we had to use all of these facilities to generate electricity during the polar vortex.

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# Conclusion

- Economics make new coal highly unlikely.
- Existing coal plants can compete.
- The country must pursue a rational greenhouse gas mitigation strategy.
- Availability of future capacity is a major concern.

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# Questions?

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