

# Minding the Energy Gap

What's at Stake for U.S. Nuclear Plants

William A. Von Hoene, Jr.

Senior Executive Vice President and Chief Strategy Officer

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# Exelon Overview: Clean Energy in Restructured Markets

## Exelon Generation

### Power Generation



- One of the largest merchant fleets in the nation (~35 GW)
- One of the largest and best managed nuclear fleets in the world (~22 GW)
- Significant gas generation capacity (~10 GW)
- Renewable portfolio (~1.5 GW), mostly contracted

### Competitive Business

### Constellation



- Leading U.S. competitive energy provider
- Customer-facing business, with ~1.1 M competitive customers and large wholesale business
- Extensive suite of products including Load Response, RECs, Distributed Solar

## Exelon Utilities

### ComEd, PECO & BGE



- One of the largest U.S. electric and gas distribution companies (~6.6 M customers)
- Diversified across Illinois, Maryland and Pennsylvania
- Significant Smart Grid investments
- Transmission infrastructure improvement

### Regulated Business

**Exelon is one of the largest competitive integrated energy companies in the U.S.**

# Nuclear Reliability

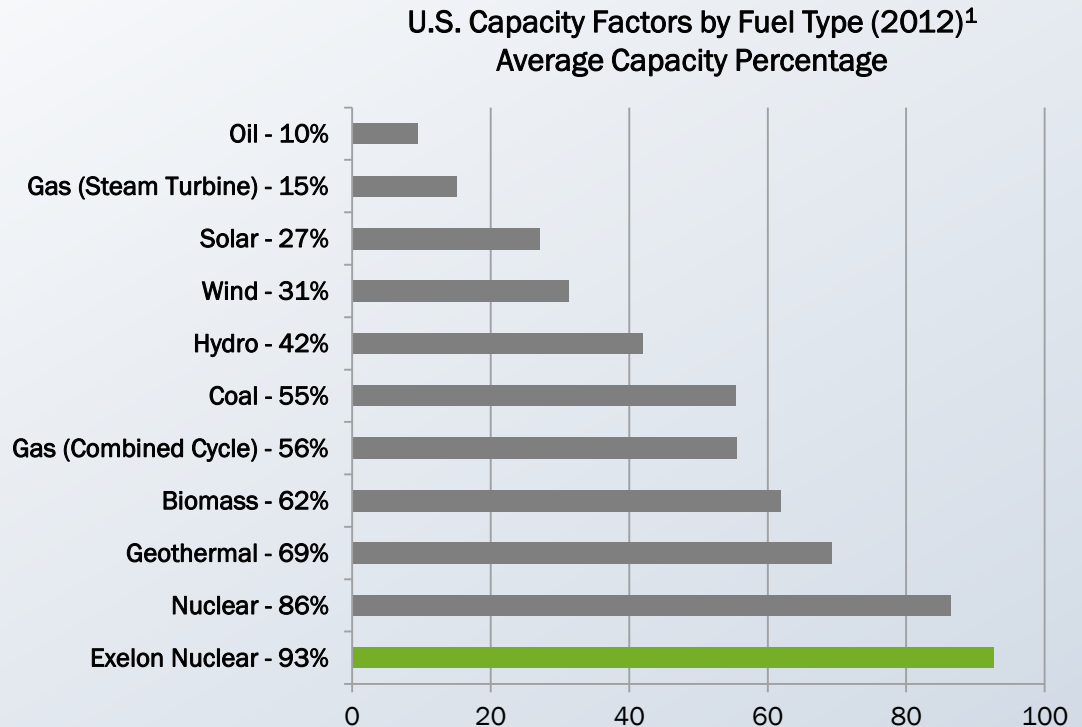
Nuclear provides 20% of the nation's power

- Highest capacity factor of any source
- No other always-on generation provides such reliable baseload output

**92% of people believe ...**

***“Nuclear energy is important to meeting our nation's energy needs”***

*2013 National Nuclear Plant Neighbor Survey of Exelon's Illinois nuclear fleet, Bisconti Research Inc.*



<sup>1</sup> Source: Ventyx Velocity Suite / Energy Information Administration Updated: 4/13

# Nuclear Performance During Polar Vortex



***“Frigid Winter Reduces Natural Gas Supplies to 11-Year Low”***



***“Polar Vortex – Nuclear Saves The Day”***

**Energy  
Insider**

***“ERCOT Sets New Winter Peak Demand- Real Time Prices Hit \$5,000/MWh Cap on January 6, 2014”***



***“Cold Drives Electricity Demand to New Winter High; PJM Interconnection Reports Record Winter Megawatt Use”***

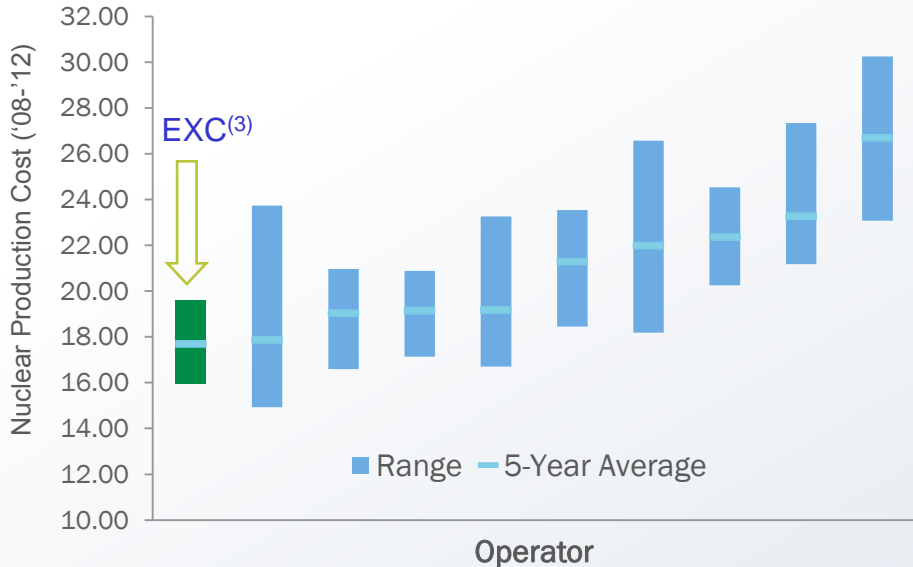


***“Frigid Temperatures from Polar Vortex Drive Record Winter Demand”***

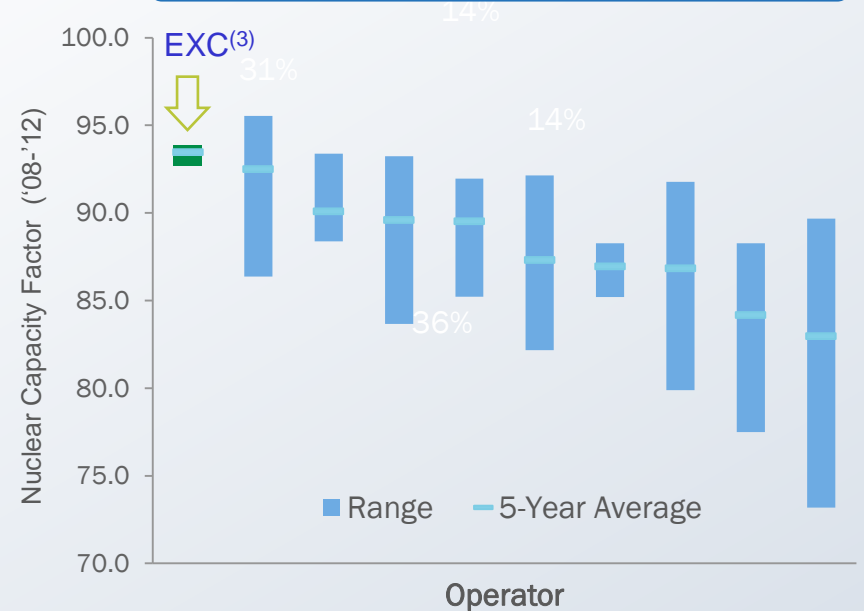


# Efficient, Productive Operations

## Nuclear Production Cost (\$/MWh)<sup>(1)</sup>



## Capacity Factor (%)<sup>(2)</sup>



**Among major nuclear plant fleet operators, Exelon is consistently one of the lowest-cost and most efficient producers of electricity in the nation**

(1) Source: 2012 Electric Utility Cost Group (EUCG) survey. Includes Fuel Cost plus Direct O&M divided by net generation.

(2) Source: Platts Nuclear News, Nuclear Energy Institute and Energy Information Administration (Department of Energy).

(3) Exelon fleet averages exclude Salem and CENG

# Perfect Storm of Economic and Policy Challenges

- Key factors contributing to the dramatic deterioration of nuclear plant profitability since 2008:
  - Natural gas prices (which fuels marginal generators in many regions) have dropped by more than 50%
  - Load growth is down due to both the economy and increased energy efficiency programs
  - Subsidized generation uneconomically suppresses market prices
  - Wholesale market rules do not support the nation's carbon goals and under-compensate existing resources critical to reducing GHG emissions

# What Experts Are Saying



“It is increasingly likely that the United States could see a significant percentage of its nuclear power plants close, thanks to **low natural gas prices and ongoing subsidies for renewable energy** ... [I]f you care about climate change this is very bad news.”  
*Shutting Down U.S. Nuclear Plants is Still Bad News for Environmentalists (3/2014)*



“We see the combination of **state-by-state renewables mandates and energy efficiency initiatives** as inevitably leading to a supply/demand imbalance that will put further pressure on baseload coal and nuclear retirements...” (11/15/2013)



“Quite frankly, **subsidized wind** is one of the things that is putting pressure on those prices, particularly in some areas of our footprint where we’re seeing these nuclear units really starting to struggle ... It concerns us when nuclear starts to prematurely retire, only because we’re not going to get them back once they go.” Michael Kormos, PJM, FERC Technical conference (4/1/2014)



“Complex **market policy factors and the abundance of natural gas** have made operating nuclear power plants uneconomical in some parts of the country, resulting in shutdowns of four nuclear reactors, with another planned for next year.” Peter Lyons, Assistant Sec. for Nuclear Energy, House Appropriations Hearing (3/25/2014)



“We are **concerned about the economic viability of the existing nuclear fleet in our region** due to pricing pressure from all of these exogenous events.” Letter from PJM President and CEO to EPA Administrator Regina McCarthy (1/30/2014)



# Clean Generation Growth Projects

## Solar

- Antelope Valley Solar Ranch
  - Large-scale solar project totaling 230 MW when fully operational
    - 153 MW added in 2013
    - Expected completion in first half of 2014
  - 25-year PPA with Pacific Gas & Electric



## Wind

- Six projects totaling 404 MW integrated into commercial operation in 2013
  - All have long-term PPAs with ~10-year anticipated payback
- 45.6 MW Michigan wind farm to be built in 2014



## Nuclear Upgrades

- Peach Bottom Extended Power Uprate
  - Adding 130 MW: 65 MW in Q1 2015 and 65 MW in Q1 2016

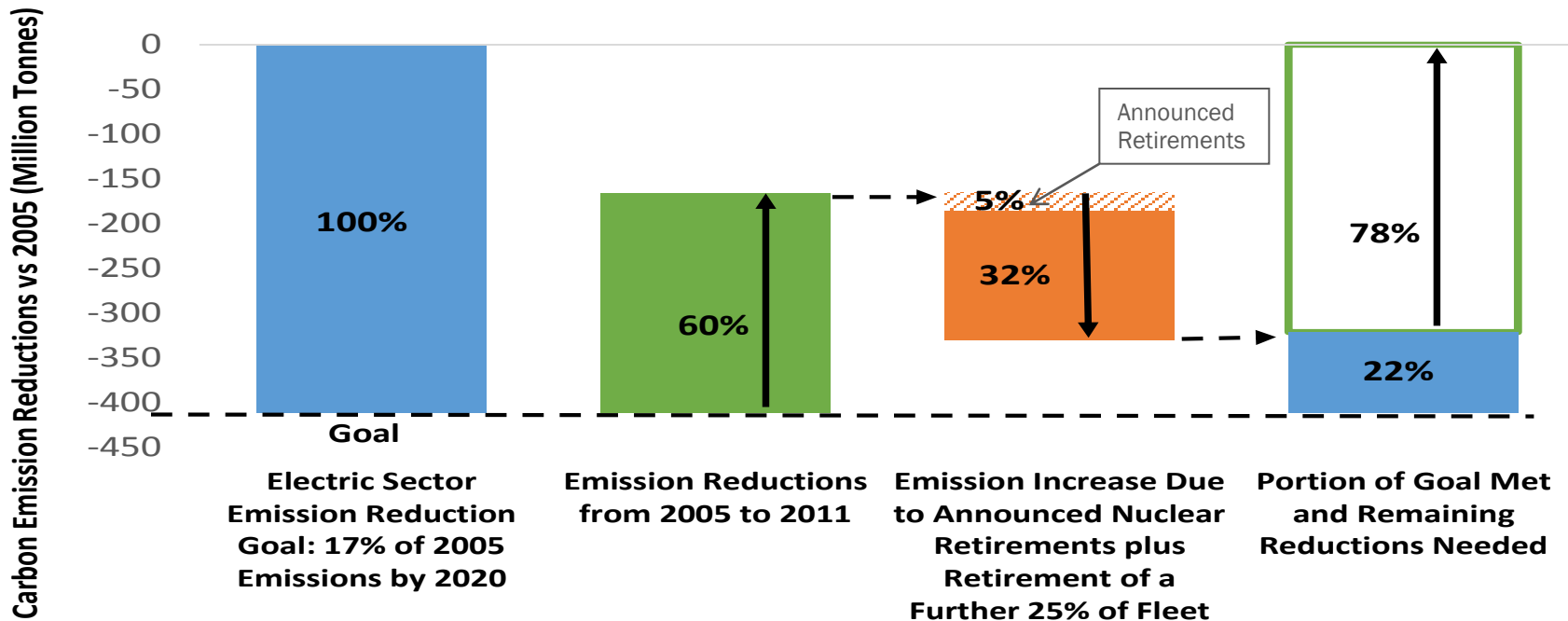


**Expanding contracted wind and solar portfolio while adding megawatts to existing nuclear fleet**



# Nuclear Closures' Impact on Carbon Goals

Retirement of 25% of nuclear fleet would give back over half the progress to date towards meeting 2020 emission reduction goal



Nuclear retirement increase assumes retirement of SONGS, Crystal River, Kewaunee, Vermont Yankee, and Oyster Creek plus 24.6 GW of additional “generic” capacity (29.4 GW total, including the announced retirements). Nuclear output is assumed to displace carbon at a rate of 0.67 tonnes per MWh of lost output. Exelon’s nuclear fleet contribution is measured at the overall plant level, rather than at ownership.

“Nuclear power has an important role to play in the climate action plan as a low-carbon source of energy.” - Energy Secretary Ernest Moniz at the American Nuclear Society 2013 Winter Meeting

Source: EIA; Exelon Estimates



# Questions

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