

# Market Challenges to Nuclear Power

## CORDEL Workshop on Technical and Regulatory Issues Facing Nuclear Power Plants - Leveraging Global Experience

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# The View on Wall Street

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FitchRatings

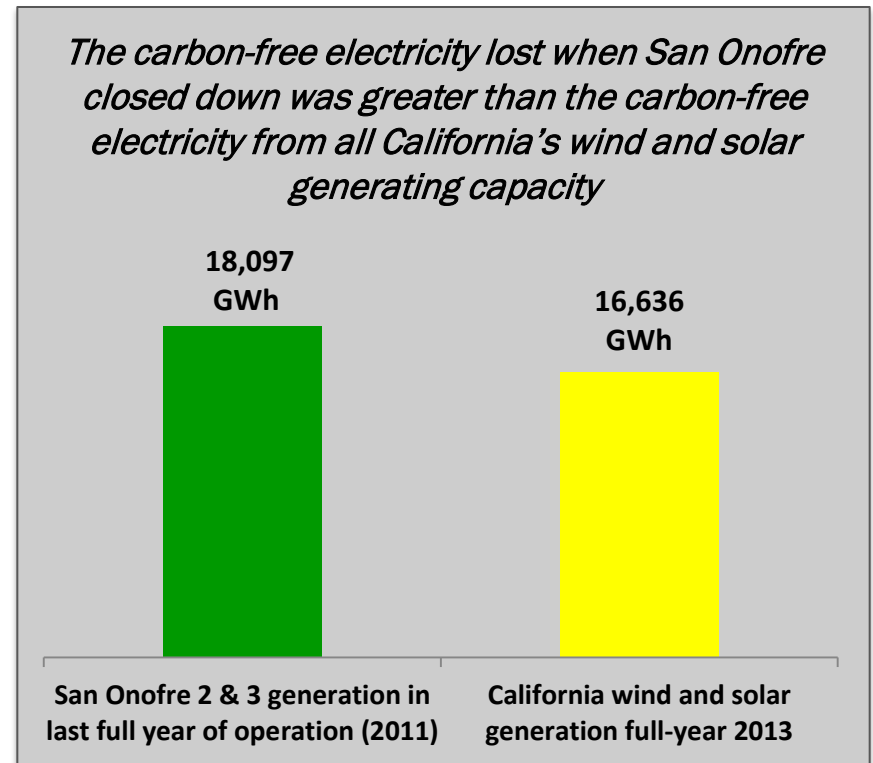
- “Absent reforms to address constraints in the current market structure, Fitch Ratings considers at least eight additional merchant nuclear units with an aggregate capacity of approximately 8,000 MW to be at risk of early retirement . . . The Illinois situation is exacerbated by the vulnerability of the Clinton Station, which is located in the Midwest Regional Organization region where prices in the nascent capacity markets are extremely low.”  
*Fitch Ratings (1/7/2015)*

 UBS

- “The Illinois Nuclear retirement report paints a bleak picture of the state if Exelon’s plants follow the path of Vermont Yankee into economically induced retirement . . . On the job front the retirement of the three IL nukes is estimated to eliminate 6,900 jobs and \$1.8Bn annual economic activity . . . **Of the five options presented we see a low-carbon portfolio standard (LCPS) as the most palatable solution (effectively making nuclear eligible for RECs under IL’s current RPS). There is precedent for similar legislation (Ohio) and the challenges facing the IL nukes are more severe given regional wind but are not unique.** “In the event that the PJM auction fails to meet expectations of a material increase YoY and/or Exelon’s plants do not clear again, we see asset retirements as being a distinct possibility.”  
*UBS (1/8/2015 & 2/17/2015)*

# Status of U.S. Nuclear Plant Shutdowns

- Four reactor shutdowns in 2013, one at the end of 2014
- Crystal River 3, San Onofre 2 and 3 were unique events (failed steam generator replacements)
- Kewaunee, Vermont Yankee shut down because of adverse market conditions
- Pilgrim, Fitzpatrick, and Oyster Creek have announced intentions to shut down in the next few years
- Clinton, Quad Cities, and Fort Calhoun have announced the potential for premature shutdown



# The Challenge

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While performing at exceptional efficiency, many U.S. nuclear facilities do not receive fair and adequate consideration for producing both clean and reliable electricity. As a result, the nuclear fleet is at risk of early retirement, jeopardizing the U.S.'s ability to reduce carbon emissions, and increasing the likelihood of greater price volatility and costly power outages.

- Federal policies and mandates subsidizing other clean electricity, primarily wind and solar, severely distort energy markets causing other clean generators to operate at a loss.
- We must correct flaws in wholesale energy and capacity market rules to ensure that baseload clean energy is properly valued and remains in service.



# Other Market Stresses

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- Low growth in electricity demand
- Continuing surge in supply of low-cost shale gas
- Fuel/technology diversity is undervalued
- Transmission constraints
- Market design issues
- Failure of markets to recognize valuable attributes
- Price suppression in energy markets

“the markets are broken; they don’t work and don’t do what they are supposed to do. ... When you have a situation in many markets where the only things that can be built are things that are subsidized, then we have a serious problem.”

-NEA Director General Magwood, May 2016

# Solutions Are Emerging In Some States

- New York:
  - Clean Energy Standard implements carbon reduction goal by calling on utilities to purchase power from nuclear facilities
  - Reliability Support Services Agreement for Ginna
- Illinois considering the Next Generation Energy Plan



Closing nuclear facilities “would eviscerate the emission reductions achieved through the state’s renewable energy programs, diminish fuel diversity, increase price volatility, and financially harm host communities.”

– New York Gov. Andrew Cuomo  
Dec. 2, 2015

“The closure of the upstate New York nuclear plants due to the current natural gas market prices, and concomitant electric prices, would have a large negative impact on the state's ability to meet its carbon reduction goal.”

–New York PSC Staff White Paper  
Jan. 25, 2016



# Zero-Emission Credits Program

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Zero-emission credits (ZEC) program facilitates market recognition of the value of nuclear plants that produce zero-emission electricity

ZECs provide qualifying nuclear plants with support payments reflective of their operating costs

Nuclear plants are “qualifying resources” that can sell ZECs to load-serving entities

Load serving entities can directly purchase ZECs from qualified resources, or through a ZEC marketplace

ZEC payments are made to qualifying resources based on MWhs produced

# The Path Forward

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- Nuclear's superior reliability and 100% carbon-free attributes are undervalued by power markets
- Continued failure to recognize these attributes puts critical nuclear assets at risk
- U.S. energy policies must ensure that existing nuclear plants are preserved, though different solutions may be called for in different parts of the country

**Solutions are needed to ensure energy policies and market design work together to preserve, and do not diminish, nuclear resources needed for a reliable and low carbon future.**