

State Policies and Wholesale Markets: A Case Study on Nuclear Power

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Economic Challenges of Nuclear Units in Organized Markets

- Bloomberg New Energy Finance analysis concludes that more than half of America's nuclear reactors are bleeding cash, racking up losses totaling about \$2.9 billion a year:
 - Nuclear power plants are getting paid \$20 - \$30/MWh
 - Nuclear power costs an average of \$35/MWh to run
- Five nuclear stations (Crystal River, Kewaunee, San Onofre, Vermont Yankee, and Fort Calhoun ~5,000 MW) have retired since 2013, prior to that no plant had retired since 1998.
 - Six nuclear power plants are expected to close in the next nine years, several of which have plans to shut down more than a decade prior to their operating licenses expiring.
- With the nuclear retirement, loss of fuel diversity, economic benefits, low cost power, jobs, etc.
 - Bloomberg: shutting all uneconomic reactors in the U.S. would easily vanquish all emissions reductions the sector has made since 2012.
- German experience shows the consequence of supporting new renewables and ignoring the value of existing nuclear
 - Between 2010 and 2015, Germany achieved a 10 MMtCO₂ (3%) annual reduction in power sector emissions at a cost of roughly \$18 billion per year in increased subsidies
- As a result, some states are taking action to preserve some of these benefits, particularly environmental benefits, through compensation for the zero-emissions attribute.

New York Zero Emission Credit (ZEC) Program Key Features

Purpose: “The intent of the ZEC program is to preserve the zero-emissions attribute benefits of the [nuclear] facilities to prevent backsliding in the State's carbon reduction performance that likely could not be avoided in any other way.”

Administration: ZECs will be sold by eligible generators to NY State Energy Research & Development Authority (NYSERDA), and all Load Serving Entities (LSEs) will be required to purchase ZECs from NYSERDA annually in proportion to their load ratio share. Began April 1, 2017.

What is being procured: A ZEC reflects “the zero-emissions attributes of one megawatt-hour of electricity production”

Eligibility Requirements: Finding of “Public Necessity”

- Verifiable historic contribution of facility to NY clean energy resource mix.
- Wholesale revenues inadequate to preserve the zero-emission attributes.
- Costs and benefits relevant to other alternatives.
- Ratepayer impact and public interest.
- Ginna, Nine Mile Point, and FitzPatrick found eligible for first tranche; other nuclear potentially eligible for future tranches.

Procurement Cap (Assuming all Eligible Plants are Operating): 27,618,000 ZECs Annually

Consumer Protection: ZEC Price Will be Adjusted (downward only, so it can never exceed the Social Cost of Carbon) by the amount that independently published forecasts of combined energy and capacity prices are predicted to exceed \$39/MWh

Contract length: 12 years, made up of six two-year tranches.

NY ZECs are capped at the federal SCC and can only be adjusted downward.

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