

Nuclear Power

NUPIC Vendor Meeting

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Larry Coyle

Vice President Operations

- ✓ Exelon overview
- ✓ Exelon supplier expectations
- ✓ Impact of supplier performance
- ✓ Fukushima impact on nuclear industry
- ✓ Industry and supplier need for group interaction and cooperation



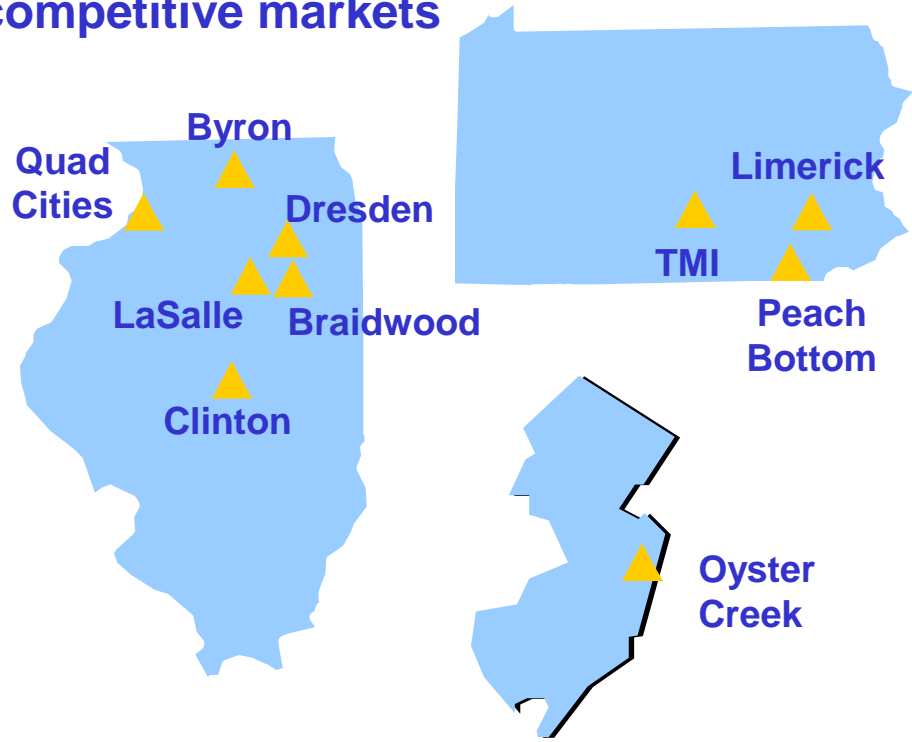
ExelonSM
Nuclear

Exelon's ten stations - with 17 reactors - represent approximately 20 percent of the U.S. nuclear industry's power capacity.

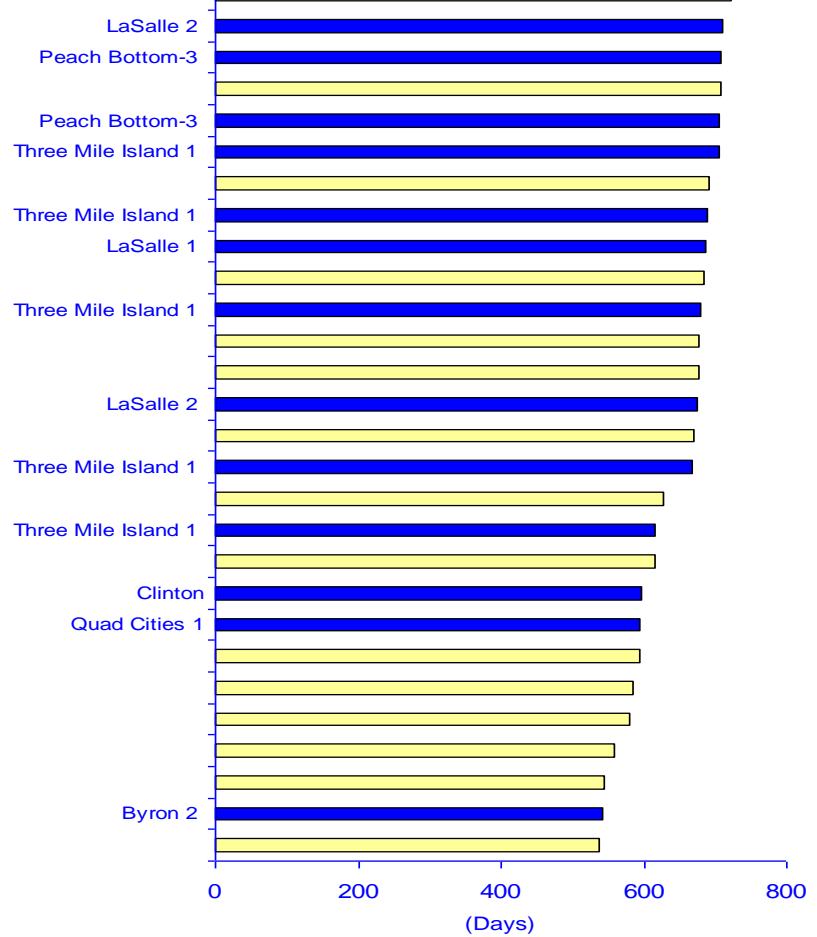
- ✓ Exelon Corporation is headquartered in Chicago and is one of the nation's largest electric companies with nearly \$18 billion in annual revenues
- ✓ Exelon's family of companies includes energy generation, power marketing, transmission and energy delivery
- ✓ Exelon is the largest owner/operator of nuclear plants in the United States
- ✓ Exelon delivers electricity to approximately 5.4 million customers in northern Illinois via ComEd and southeastern Pennsylvania via PECO, as well as natural gas to 490,000 customers in the Philadelphia area via PECO

About Exelon Nuclear

- Ranked 1st or 2nd amongst U.S. Nuclear operators in capacity factor, production cost, and INPO index in each of the past 4 years
- Largest U.S. nuclear operator with 18% of nation's nuclear output
- Geographically well-situated in competitive markets



Nuclear Reliability
30 Longest Continuous U.S. Runs



Source: Platts News Flashes and Company Press Releases, 4/26/10

New Nuclear Build Revised Development Strategy

- ✓ Several factors influenced Exelon's decision to slow down new plant development activity:
 - Overall downturn of the economy
 - Projection of sustained, low natural gas prices
- ✓ Decision to pursue Early Site Permit (ESP) rather than Combined Construction and Operating License (COL) allows Exelon to keep open the option of additional nuclear generation
- ✓ Exelon is encouraged by the work being done by Southern Nuclear Company and South Carolina Electric and Gas to pursue new nuclear power plants at their respective sites

*Exelon is significantly slowing new build activities;
ESP preserves option for the future*

Upgrades	Overnight Cost ⁽¹⁾		Project Duration
		Megawatt Recovery and Component Upgrades	
237–266 MW	\$800M	<ul style="list-style-type: none"> Replacement of major components in the plant occur in the normal life cycle process – with newer technology, replacements result in increased efficiency Equipment includes generators, turbines, motors and transformers Megawatt Recovery and Component Upgrades must conform to NRC standards, but do not require additional NRC approval 	3-4 years
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		MUR (Measurement Uncertainty Recapture)	
187–234 MW	\$300M	<ul style="list-style-type: none"> Through the use of advanced techniques and more precise instrumentation, reactor power can be more accurately calculated Can achieve up to 1.7% additional output Requires NRC approval 	2 years
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		EPU (Extended Power Upgrade)	
899–1,016 MW	\$2,400M	<ul style="list-style-type: none"> Through a combination of more sophisticated analysis and upgrades to plant equipment, upgrades can increase output by as much as 20% of original licensed power level Requires NRC approval 	3 - 6 years
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~1,300–1,500 MW	\$3,500M		

Exelon will invest an incremental \$3.5B on power upgrade projects over the next 7 years



(1) In 2007 dollars. Overnight costs do not include financing costs or cost escalation.

✓ Exelon spends approximately \$1.1 billion annually on Nuclear services and materials

	<u>Exelon Annual Spend (\$M)</u>
Instrumentation & Controls	\$40.5
MRO	\$38.4
Chemicals	\$32.2
Valves	\$29.4
Pumps	\$21.4
T&S Materials	\$16.3
Motors	\$13.5
Pipes & Fittings	\$12.6
Filters	\$8.5
Sealing Devices	\$6.9
Mechanical & HVAC Material	\$5.9
Electrical Equipment	\$5.8
Bolting & Fasteners	\$3.6
Diesel Equipment	\$3.3
Structural Steel	\$2.7

Exelon's operational priorities are driven by an expectation that our alliance fosters improved safety performance, dose reduction, outage efficiency, equipment reliability, effective corrective actions, error-free performance and quality workmanship

- ✓ "Engaged, Thinking Organization"
- ✓ Industrial Safety and ALARA
- ✓ Outage Efficiency and Execution
- ✓ Collective Radiation Exposure
- ✓ Quality of Workmanship
- ✓ Fuel Reliability and Integrity
- ✓ Cost Management
- ✓ Learning Organization

Advantages of our alliance are demonstrated by our continued success in nuclear safety, industrial safety, capacity factor, and human performance

- ✓ Parts Quality Initiative Process Implemented in 2006 at Exelon Nuclear
 - Independent 3rd Party Testing of Critical Safety and Non-safety related parts prior to receipt
- ✓ Corrective Actions to reduce impact of manufacturing defects Include:
 - Enhanced Receipt Inspection
 - More specific procurement specifications
 - Feedback to Suppliers on inadequate performance
- ✓ Program has become an effective barrier to reduce impact of substandard and potentially fraudulent/counterfeit parts supplied to Exelon, however:
 - Program costs Exelon \$1M - \$2M annually
 - 6500 PQI tests performed since turn on (about 1400 per year)
 - 13.5 percent failure rate for all parts tested since PQI turn on
 - 4 percent failure rate of all Safety Related Parts tested since PQI turn on
- ✓ Failure rate of parts is actually increasing
 - Better selection of parts to be tested
 - More effective use of Operating Experience when testing parts
 - Decline in the quality of parts provided to suppliers by sub-suppliers

Expected Outcomes of Supplier Performance

- ✓ Improved Planning / Preparation
- ✓ Improved Safety / Performance
- ✓ Increased Fuel Reliability / Integrity
- ✓ Reduced Costs / Dose / Outage Duration
- ✓ Increased Equipment Reliability / Capacity Factor
- ✓ Improved Tooling Performance / Reliability
- ✓ Mutually develop and implement new technologies for first-of-a-kind advances in equipment design and process

- ✓ 2007 / early 2008
 - Strong electricity demand / shrinking reserve margins
 - Surging natural gas and energy prices
 - Concern about national energy supply and security
 - Growing concern about global warming; push for climate legislation

- ✓ Momentum for Nuclear new builds due to:
 - Competitive and stable energy costs
 - High capacity factors / reliability
 - Zero greenhouse gas emissions

✓ Ouch!

- Decline / slow recovery in electricity demand
- Earthquake and Tsunami in Japan
- Low natural gas prices (weak demand; shale reserves)
- Lower spot and forward energy prices
- Uncertainty about future environmental restrictions
 - National climate / energy legislation?
 - EPA regulation?
 - State renewable portfolio standards?

✓ Impact on World Nuclear new build plans:

- WANO can and will play a leading role in industry safety review and analysis work and application of lessons learned
- Except for a political panic attack in Germany, most other nations have the "full steam ahead" sign out for their new reactor projects

- ✓ **India** continuing commitment to build 20 Gwe new nuclear powered electricity generation capacity over the next decade
- ✓ **Russia** has two reactors nearing completion and four more that underway
 - as many as 18 Russian 1,000 MW and 1,200 MW VVER reactors may be built over the next 20 years
- ✓ **China** will build at least 40 GWe of new reactors by 2020
- ✓ **Turkey** has one 4.8 Gwe multi-reactor site under construction on its Mediterranean coast, is negotiating for a vendor for a similar project on the Black Sea, and has announced plans for a third site near the Bulgarian border
- ✓ **The United Arab Emirates** is proceeding with construction of four 1,400 MW reactors supplied by South Korea
- ✓ **Sweden** has stuck by its reversal of its prior moratorium on new reactors and will now replace the units supplying 9 GWe of power to the country as needed

- ✓ Despite the current economic environment, many longer-term fundamentals support new Nuclear
 - Plant retirements will constrain energy supply (particularly older coal units impacted by environmental restrictions)
 - Global energy and electricity demand growth will require new generation and pressure coal and natural gas prices
 - US Energy Information Administration estimates 49% and 87% growth in energy and electricity demand by 2035
 - Some form of escalating carbon restrictions / prices will incent low / no emission plants

- ✓ Billions of dollars are spent annually on materials and services to maintain and operate the nation's existing nuclear plants
- ✓ Many plants are investing in capital improvements to support plant license extensions, power uprates, digital upgrades, obsolescence of original systems, etc.
- ✓ Suppliers with global interests and capabilities have an opportunity to support a new wave of nuclear construction beginning overseas

INPO Industry Event Reports

- Industry responded to first INPO IER, “Fukushima Daiichi Nuclear Station Fuel Damage Caused by Earthquake and Tsunami”
- INPO issued second IER, “Fukushima Daiichi Nuclear Station Spent Pool Loss of Cooling and Makeup,” on April 25
 - Recommends various actions pertaining to spent fuel pool cooling and monitoring
 - Licensee final reports due no later than September 23

NEI Continues to Coordinate Industry Response

- Scheduling additional Congressional/Administration drop ins
- Exelon responded to follow up questions from April 12 Senate Committee on Environment and Public Works

Joint Leadership Model

- Collaboration of EPRI, INPO, NEI, Owners Groups, and senior utility experts
- Integrate and coordinate U.S. nuclear industry response to Fukushima Daiichi events
 - Comprehensively identify and understand lessons learned
 - Coordinate and implement response actions
- Initial actions will be taken based on preliminary information; updated based on new information

- ✓ Utilities have high expectations for suppliers
- ✓ We depend on your performance to support the safe, reliable operation of our plants
- ✓ Need to ensure group interaction and cooperation to address industry issues
- ✓ Despite recent Japan event, long term growth will demand your support

Questions?