



Energy Roundtable

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Exelon Corporation

8 December, 2017



Exelon Corporation

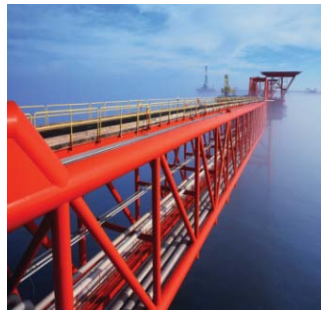
Exelon by the Number s



America's **#1 Zero-Carbon**
Nuclear energy provider and
A leading competitive
energy provider



More than
35,500 MW
of owned
capacity



Service Territory:
24,200 mi²
Electric
Transmission:
11,000 mi

Named to the
**Dow Jones
Sustainability
North
America
Index** for the
12th
**year in a
row** in 2017.

Headquarters:
Chicago, IL
Employees:
34,000

Operates in **48**
States, DC &
Canada

Fortune 100
Operating
Revenues:
\$31.4
Billion



Exelon Overview

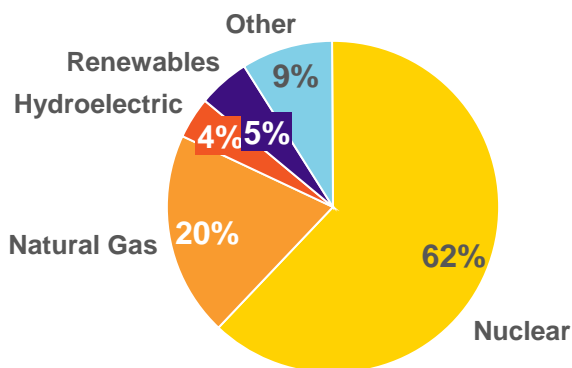


Generation

“Exelon Generation”

Generation Capacity:

- More than 35.5 GW of merchant nuclear, gas, wind, solar, and hydroelectric



Energy Sales & Services

“Constellation”

Competitive Energy Sales:

- Leading competitive energy and gas provider in the US
- Approximately 2.5 M customers
- Wholesale sales, dispatch and delivery from Exelon’s ~35.5 GW power generation portfolio
- Portfolio & risk management capabilities
- Extensive suite of products including Load Response, RECs and Distributed Solar



Transmission & Delivery

“Atlantic City Electric”, “BGE”, “ComEd”, “Delmarva Power”, “PECO”, and “Pepco”

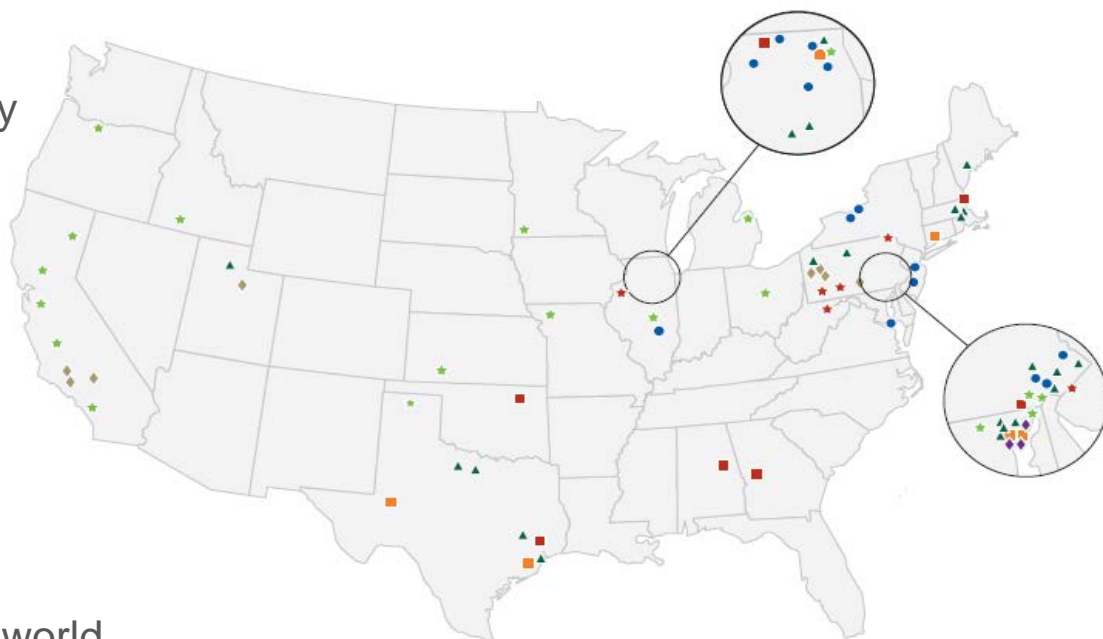
Service:

- 10 million electric and natural gas customers
- Service Territory: 24,200 mi²
- Electric Transmission: 11,000 mi
- Significant investments in Smart Grid technologies

Generation Mix

Exelon Generation

- 35.5 GW of generation capacity
 - Nuclear
 - Natural gas
 - Hydroelectric
 - Wind
 - Soil
 - Solar
 - Landfill gas



Exelon's nuclear fleet

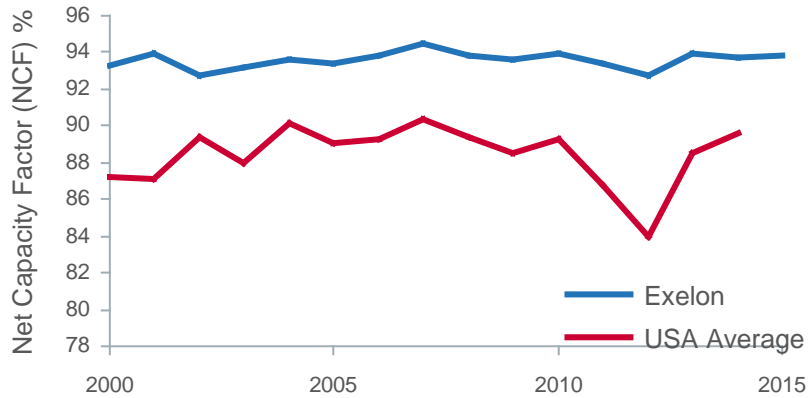
- One of the largest fleets in the world
 - 15 sites (1 under decommissioning)
 - 25 reactors (2 under decommissioning)
 - Generation capacity ~22 GW
- Safe and efficient operations
 - Nuclear safety culture
 - 94.6% capacity factor – Exelon outperforms all major nuclear plant operators worldwide
 - Shortest and most consistent refueling outage durations
 - Lowest production costs with low variability

Exelon Generation Assets (owned)

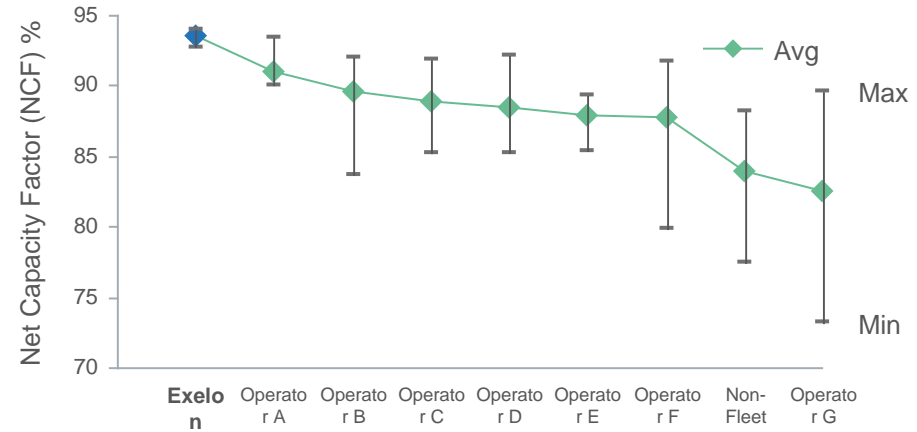
- Nuclear
- Gas/Oil intermediate
- ▲ Peakers
- ◆ Coal
- ★ Renewable (Hydro, Wind, Solar, Bio-mass)

USA Performance Indicators

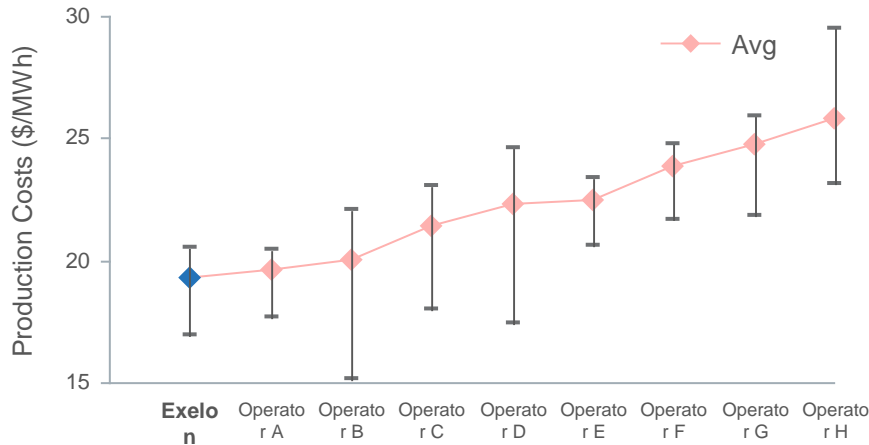
Consistently high, US-leading NCF



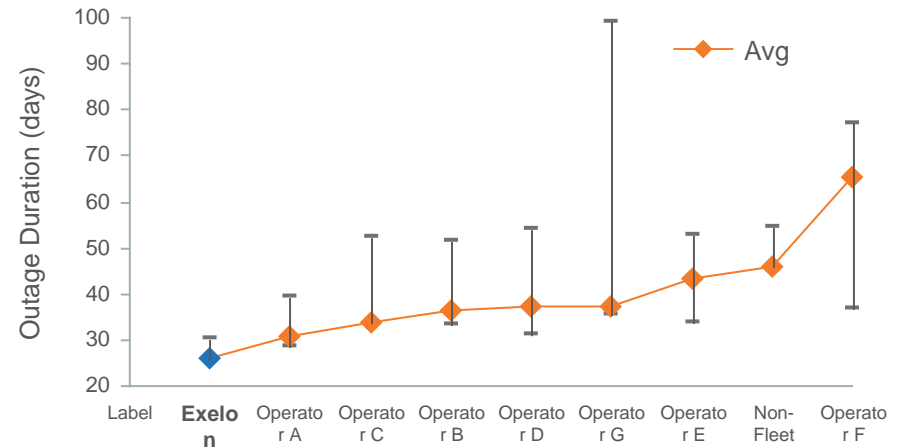
Highest average NCF and most consistent performance



Lowest production costs with low variability

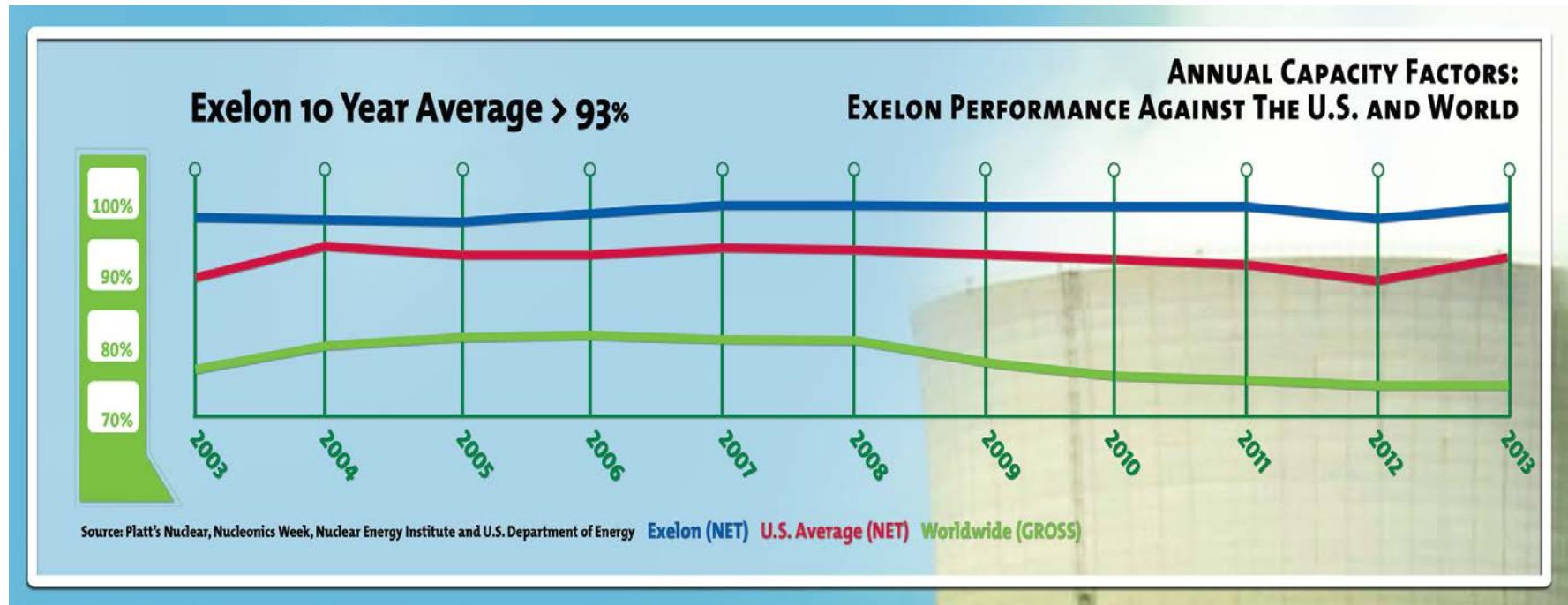


Shortest and most consistent refuel outage duration



Exelon has achieved sustained excellence across key performance metrics over 16+ consecutive years

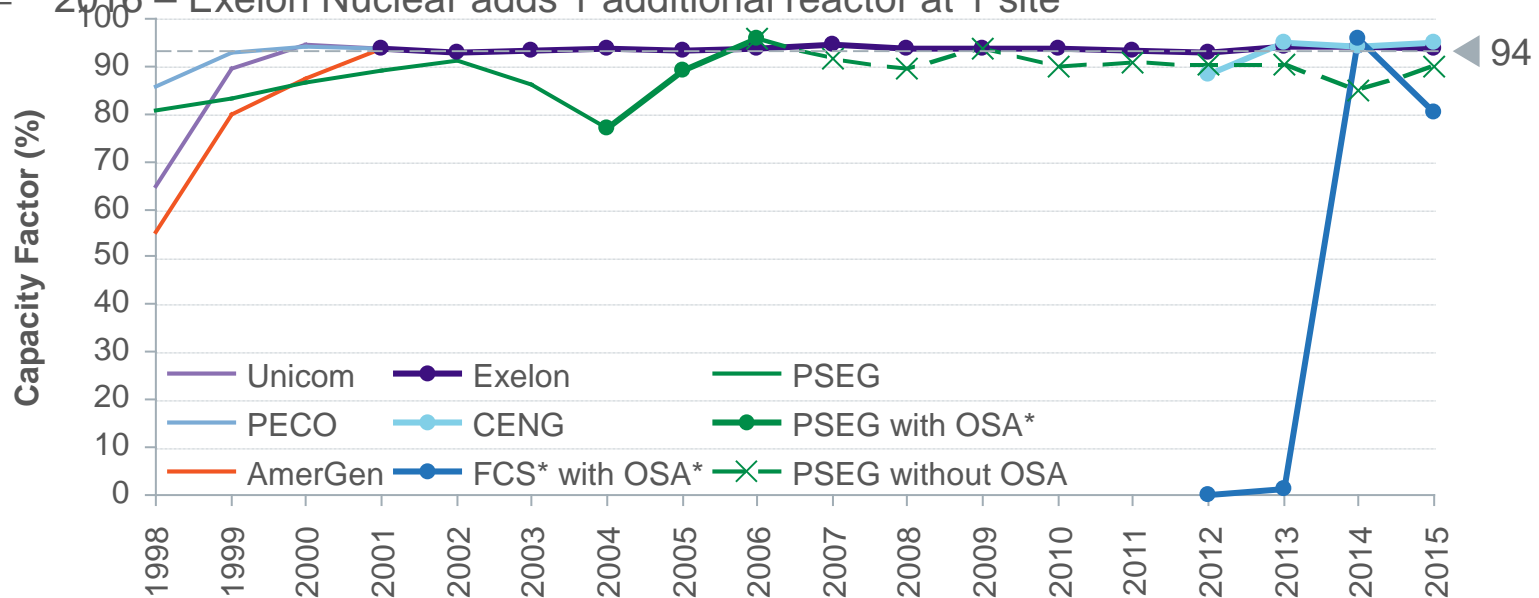
Exelon Performance vs. Global Operators



Nuclear Expertise

Exelon Nuclear history

- Formation of Exelon Nuclear
 - 1950s – ComEd began construction of the first privately financed nuclear plant in the USA
 - 1988 – ComEd built and was operating 12 reactors at 6 sites
 - 1990 – PECO built and was operating 4 reactors at 2 sites
 - 1997 – ComEd develops safety-focused, accountability-driven management model
 - 2000 – Merger between ComEd and PECO creates Exelon Nuclear; performance among best
 - 2003 – Exelon Nuclear adds 3 additional reactors at 3 sites
 - 2012 – Exelon Nuclear adds 5 additional reactors at 4 sites
 - 2016 – Exelon Nuclear adds 1 additional reactor at 1 site



Exelon Nuclear Management Model

Top performance and improvement are not self-sustaining, they must be proactively managed on a continuous basis

Exelon Nuclear Management Model (ENMM)

- Unrelenting focus on continuous improvement
 - Focus on Nuclear Safety
 - Vision & Values
 - Core Functions, including: Operational Excellence, Our People, Financial Discipline
 - Accountability, Continuous Improvement
 - Oversight

The ENMM is a behavior-based model that controls all aspects of how Exelon Nuclear conducts business – comprises all the policies, programs, processes, procedures, and training & reference materials, including the business tools and IT platforms

- Nuclear safety culture is paramount
- Recruitment, selection and development of our people
- Set priorities, develop and execute plans
- Define and implement core functions
- Monitor and assess performance
- Management controls, accountabilities, internal and independent oversight
- Identification of best practices, implement lessons learned and continuous learning

Exelon Nuclear Management Model Overview

VISION The Best Operator of Nuclear Plants Worldwide

VALUES We are dedicated to safety. We actively pursue excellence. We innovate to better serve our customers. We act with integrity and are accountable to our communities and the environment. We succeed as an inclusive and diverse team.

STAKEHOLDERS

Employees · Exelon Shareholders · Exelon Generation · Constellation · Energy Delivery · Co-owners · Communities · Customers · Regulators · Industry Peers

STRATEGIC PLANNING

GOAL SETTING

Benchmarking
Business Analysis
Validates Vision, Expectations & Strategy
Leadership Establishes Tier 1 & 2 Goals

COMMUNICATION

Communicate Goals & Initiatives
Develop Planning Guidelines
Conduct Dept Planning Meetings
Develop Site Business Planning Schedule

PLAN DEVELOPMENT

Prioritize Project
Establish Cost Targets
Align Initiatives
Set Tier 3 Goals
Develop Dept Plans

PLAN REVIEW & COMPLETION

Senior VP Review for Consistency & Alignment
CNO Review & Approval
Deliver Plan to Corporate

PLAN EXECUTION

Initiate Action Tracking
Track Actions to Completion
Periodically Review Progress

CORE FUNCTIONS

OPERATIONAL EXCELLENCE

Safety
Protect the Environment
Conduct of Operations
Operations Configuration Control
Reactivity Management
Oversight of Plant Operations
Spent Fuel Management
Conduct of Maintenance
Online Work Control
Conduct of Engineering
Engineering Configuration Control
Risk Management
Radiation Protection
Radioactive Waste Control

Performance Improvement
Human Performance
Technical Human Performance
Project Management
Emergency Preparedness
Chemistry Control
Nuclear Security
Regulatory Compliance
Issue Management
Document Control & Hierarchy
Testing, Calibration & Failure Analysis (PowerLabs)
Industry Leadership

ACCOUNTABILITY

RELIABLE GENERATION

Equipment Reliability
Outage Management
Outage Services
Fuel Management
Asset Management
Generation Optimization
NERC Reliability Standards Implementation

OUR PEOPLE

Attract & Select the Best
Train for Excellence
Realize Human Potential
Diversity & Inclusion
Build & Develop Leaders
Communications & Feedback
Professional Advancement
Effective Teamwork
Employee Relations
Employee & Community Goodwill
Organizational Effectiveness
Integrated Business Support Services

FINANCIAL DISCIPLINE

Generation Planning & Forecasting
Tactical Fuel Acquisition
Optimized Financial Planning & Execution
Approval & Authority Levels
Supply Chain Management
Contractor Strategies & Alliances
Project Review & Controls
Decommissioning Responsibilities

STRATEGIC PLANNING

ACCOUNTABILITY

FUNDAMENTALS STRATEGY

Set Clear Expectations
Build Strong Leaders
Performance Management
Senior Management Engagement

STRUCTURE

Organizational Alignment
Reporting Relationships
Governance
Oversight
Support
Perform

CONTINUOUS IMPROVEMENT

Learning Programs
Performance Improvement Process
Change Management
Innovative Technologies

OVERSIGHT

Performance Monitoring
Management Oversight
Corporate Governance, Oversight and Support Functions
Corporate Functional Area Managers and Peer Groups
Independent Nuclear Oversight
External Nuclear Safety Review Board
Exelon Board of Directors Oversight

International Business – JExel

Background

- The Company is a 50/50 joint venture (JV); Exelon and The Japan Atomic Power Company (JAPC)
- The Company was formed as a Japanese 'kabushiki kaisha' (KK) in April 2017
- The Company's is "JExel Nuclear 株式会社" in Japanese and "JExel Nuclear company" in English

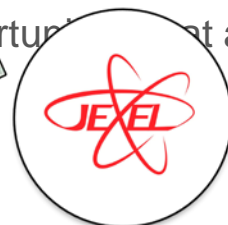
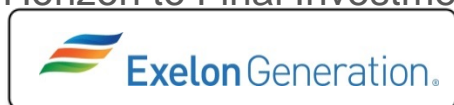
Purpose of the Joint Venture

- The threefold purpose of JExel is to
 - Market, develop, and pursue international licensing and deployment of the ENMM
 - Assist its customers in customizing the ENMM relevant to their jurisdictions
 - Provide advisory services and operation and maintenance (O&M) management services

Objectives

JExel is a platform for international business development, initial focus is on Horizon Nuclear Power Ltd.

- Enter into an Advisory Services Agreement to provide advisory and assistance to Horizon
- Support Horizon to Final Investment Decision (FID) with the goal of a long term partnership
- Develop relationships with stakeholders, including government and industry leaders in the UK
- Identify and analyze international market opportunities that align with the purpose & strategy of JExel



Energy Market Reform

US vs Japanese Energy Market

US

- Over 2,000 utilities
- Government not aggressively supporting energy in achieving fair and balanced competition
- Evolution of market system is market driven
- Exelon has taken a leadership role in helping the industry, especially the nuclear sector

Japan

- 10 large utilities
- METI committed to and working towards improving the market competitiveness
- Government led changes

Achieving Market Competitiveness for Nuclear Power

Electricity is no longer a solely cost-based commodity

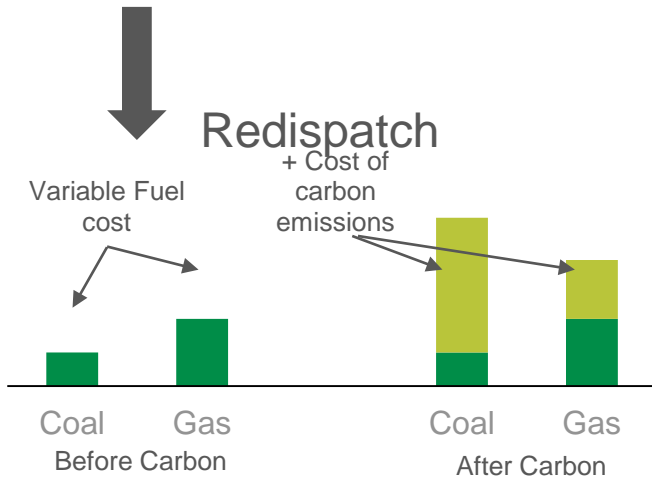
- Depending on technology and fuel, it has specific attributes that can and should be priced in the market

Two possible approaches to reflect that value for nuclear power in competitive markets

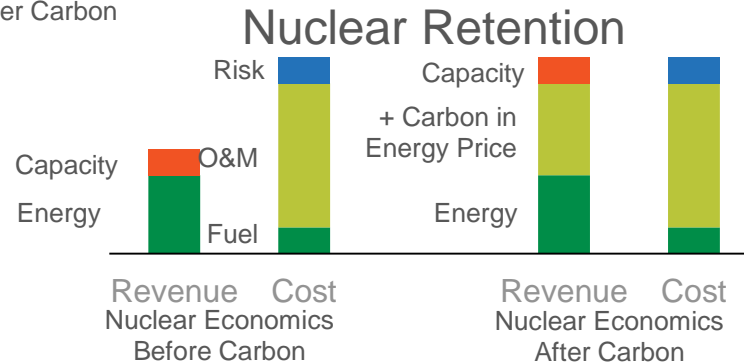
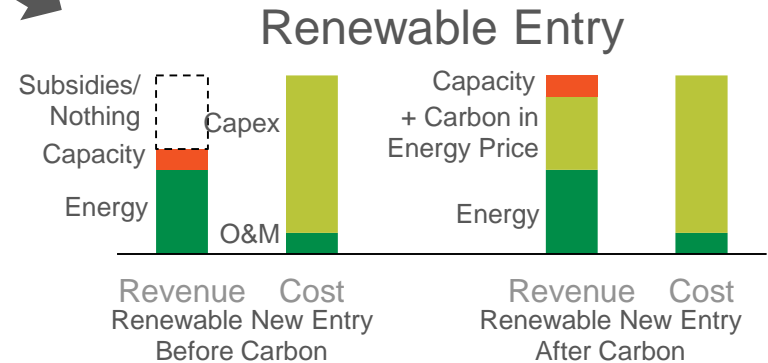
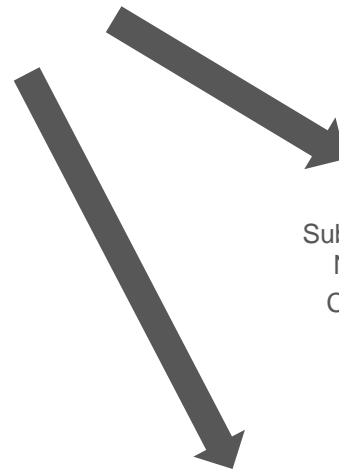
- Carbon pricing: recognizes the zero-emissions quality of nuclear and renewables in a competitive market
- Proper price formation can assign monetary value to fuel-neutral, but identifiable attributes, including
 - Reliability
 - Resilience
 - Environmental impacts

Carbon Price: Carbon Reduction in a Technology-Neutral Way

Carbon price drives multiple carbon-reducing processes, via the same market-based price signal



Energy Efficiency and other Demand-Side Management



Illustrative

Price Formation

Despite widespread recognition of the specific attributes of electricity fuel sources, effective market reforms are still required to enable those attributes to be properly valued and priced

Key attributes that offer variable value

- **Reliability:** ability of generation resources to serve load at all times throughout a wide range of operating conditions, with operational security to withstand a variety of predictable disruptions
- **Resilience:** ability to prepare for, operate through, and rapidly recover from high impact/low frequency events
- **Environmental:** the emissions-free qualities of generation sources, technologies and fuels can be reflected in pricing either as a penalty (carbon tax) or an incentive (clean energy credit)

Each attribute reflects the value of nuclear generation, not currently priced into the product

Energy Markets Design Basis Threat

Governments must create aspirations, definitions and metrics for the “energy market design basis threat” – the circumstances for which the national energy grid will plan and prepare

- Generation developers and operators have no economic incentive to consider systemic consequences of their investment decisions

Assess system vulnerabilities, and potential impacts from those vulnerabilities

- Adverse weather/natural disasters
- Infrastructure failure: grid or pipeline interruption; consequence of aging plant, etc.
- Fuel supply chain interruption
- Sabotage, terrorism, cyber threats
- Environmental consequences

Establish consensus Energy Markets Design Basis Threat from which to design and implement reforms – important energy attributes will thereby be recognized and valued

Delivering the Nuclear Promise: Improving Cost Performance

The U.S. nuclear power industry, under the leadership of the Nuclear Energy Institute, has recognized the threat of increasing costs, and has identified \$650 million in potential savings

- 46 efficiency bulletins targeting safety, reliability and economic improvement in all aspects of operations
- 95% of the bulletins are currently being implemented

Other options to improve economics

- Fleet standardization: large investor-owned and national fleets can capture productivity and efficiency through standardization and leverage of scale
- SMR's: likely the best option for new nuclear, given more manageable levels of investment
- License extension: U.S. pilot projects to extend licensed life to 80 years

And always ... continued safe and excellent operations