

Why Immediate NP D&D is Being Preferred over Deferred Dismantling

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Scope of Presentation

- Funding issues
- Why DECON?
- Stakeholder concerns
- Transition to decommissioning
- Key personnel retention
- Elimination of long term liabilities
- Reasons for SAFSTOR
- Will there be more NPPs shut down?

Funding Issues

- Basic Issue - Is the DTF fully funded at shutdown?
- If not, place NPP in SAFSTOR
 - Place used fuel in dry storage
 - Wait until funding is complete
 - Maintain minimal staff for monitoring, surveillance and security
 - Currently the plans for Vermont Yankee, Kewaunee, Crystal River
- If fully funded, DECON - Immediate Dismantling
 - If a multiple unit site, wait until last unit is shutdown
 - Defuel to dry storage
 - Sequence activities to maximize resource utilization (labor, equipment, consumables)
 - Currently the plans for San Onofre 2,3

Why DECON?

- Joint OECD/NEA, IAEA and US DOE Workshop in Rome, Italy in 2004 concluded:
 - DECON cost-effective
 - Key knowledgeable staff/labor resources available
 - Critical equipment functional – main cranes, waste processing equipment, security
 - Regulations known and essentially stable
 - Removal of risk and long-term liability
 - Potential early re-use of site possible
 - Public perception of risk eliminated
 - If LLRW and ILW or HLW repository not available, store on site in best available containers under protective cover until repository is available

Stakeholder Concerns

- Increased heavy-equipment traffic on local roads
- Potential for dismantling accident and offsite release
- Allowable site-release criteria - Federal/State
- End-state condition – residual structural debris
- Socio-economic impact
 - Loss of jobs
 - Drop in real estate values from “fire sales,” abandonment
 - Reduction of municipal tax income
 - Secondary effects on local businesses, fire/police departments, schools, churches/synagogues, libraries, theaters, recreational facilities, etc.
 - Overall, a downward spiral to the local community
 - Currently being felt at Wiscasset, ME, Rowe, MA
 - Entergy VY contributed ~\$70 million to Vernon to offset spiral

Transition Planning

- Organizational realignment
- “Culture change” from operations to decommissioning
- Licensing & regulatory compliance
- Contractual/property taxes/industry fees
- Financing activities
- Procedure, program & process burden reduction
- System reclassification
- Fuel storage
- Decommissioning preparations
- Site characterization
- Facilities planning/modification
- Personnel/contractor training
- Asset recovery
- Governmental & community relations (stakeholders)

Key Personnel Retention

- Critical skills evaluation needed
 - Key personnel identified
- Key milestones to be identified
 - Specific activity completion
 - Specific target date identified
- Target incentives program created
 - Percent of salary per year of performance – prorated – held in escrow
 - “Gold Coins” program of earned value – held in escrow
- Redundant personnel offered:
 - Early retirement with benefits
 - Alternative skills training
 - “Job Fairs” participation for new employment

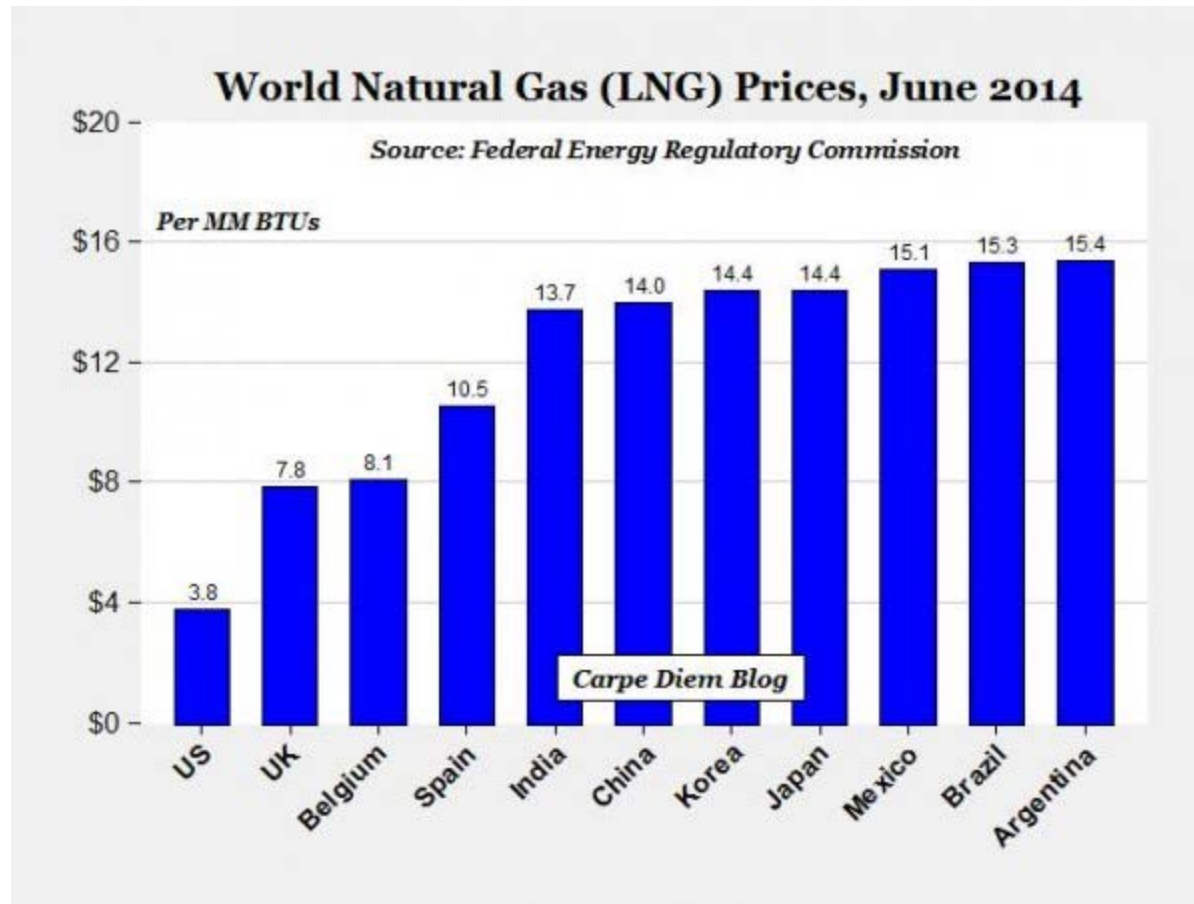
Reasons for SAFSTOR

- Insufficient funding – allows time for fund growth
- Other on-site units still operating
- Radioactive decay reduces LLRW volume
- Radioactive decay reduces occupational exposure
- Waste disposal repositories for LLW, ILW and HLW not currently available
- Improvements for technological advancements

Will There Be More NPPs Shutdown?

- Recent shutdowns were for technological and economic reasons:
 - Crystal River & San Onofre – technological problems
 - Kewaunee and Vermont Yankee – economic issues
- Economic reasons tied to the current low price of natural gas
 - Following chart shows US price ~ \$4/MM BTU
 - But Western Europe is at \$7 to \$10/MM BTU, and Asia at \$13 to \$15/MM BTU
 - The US has large quantities of natural gas, and Canada is an anxious trading partner
- Russia just negotiated a 30 yr contract with china to provide gas at about \$10/MM BTU instead of \$14/MM BTU. Contract volume equals what Russia provides to Western Europe, and 30% of Europe depends on Russian gas. 80% of Russia's gas income comes from Western Europe. Russia is hedging its bets on relying on Ukraine pipelines. Western Europe may become a US customer for gas.

World Natural Gas Prices



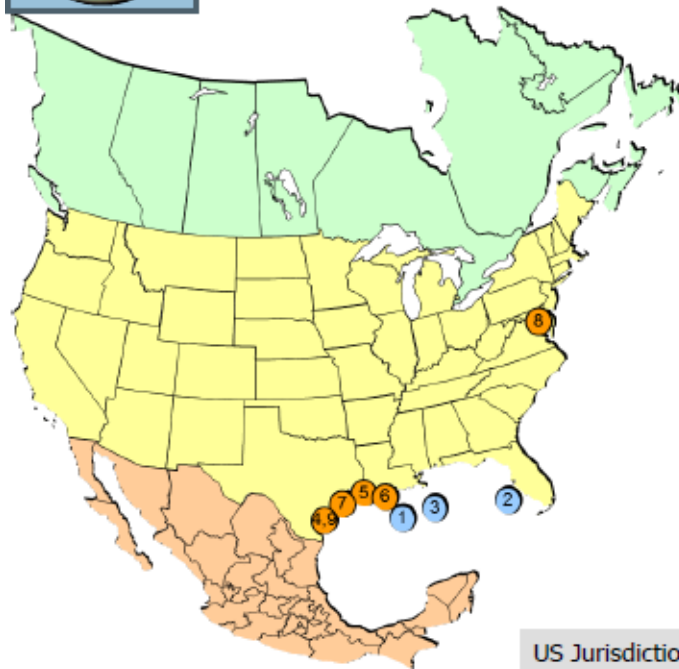
Will There Be More NPPs Shutdown? (cont.)

- These attractive international markets are driving gas companies to build LNG Export facilities in the Gulf of Mexico, and new LNG carriers (ships) to handle the markets. The new widened Panama Canal will be able to handle these larger ships this year.
- There are 49 applications submitted to US DOE to build LNG Export facilities – more than double current capacity
- Five are Approved and under construction (map)
- There are 380 LNG carriers in service worldwide, and 91 new carriers on order
- US gas companies will be the new OPEC for gas
- This market will drive up the price of gas, drive up the cost of wind and solar, and make nuclear competitive again.
- Nuclear utilities need rate relief now, and be patient for the market to return

LNG Import/Export Terminals



North American LNG Import /Export Terminals *Approved*



As of February 5, 2015

US Jurisdiction
● FERC
● MARAD/USCG

Import Terminal

APPROVED - NOT UNDER CONSTRUCTION

U.S. - MARAD/Coast Guard

1. Gulf of Mexico: 1.0 Bcfd (Main Pass McMoRan Exp.)
2. Offshore Florida: 1.2 Bcfd (Hoëgh LNG - Port Dolphin Energy)
3. Gulf of Mexico: 1.4 Bcfd (TORP Technology-Bienville LNG)
4. Corpus Christi, TX: 0.4 Bcfd (Chenièrè – Corpus Christi LNG) (CP12-507)

Export Terminal

APPROVED - UNDER CONSTRUCTION

U.S. - FERC

5. Sabine, LA: 2.76 Bcfd (Chenièrè/Sabine Pass LNG) (CP11-72 & CP14-12)
6. Hackberry, LA: 1.7 Bcfd (Sempra – Cameron LNG) (CP13-25)
7. Freeport, TX: 1.8 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction) (CP12-509)
8. Cove Point, MD: 0.82 Bcfd (Dominion – Cove Point LNG) (CP13-113)
9. Corpus Christi, TX: 2.14 Bcfd (Chenièrè - Corpus Christi LNG) (CP12-507)

Office of Energy Projects