

Decommissioning

Avoiding it by doing it efficiently

The Division of Spent Fuel Management (DSFM)
Regulatory Conference (REG CON)

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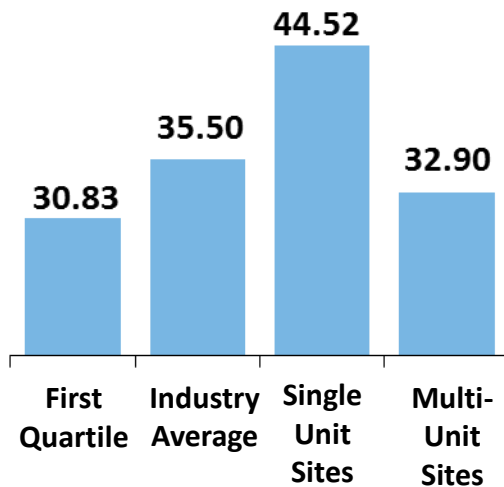


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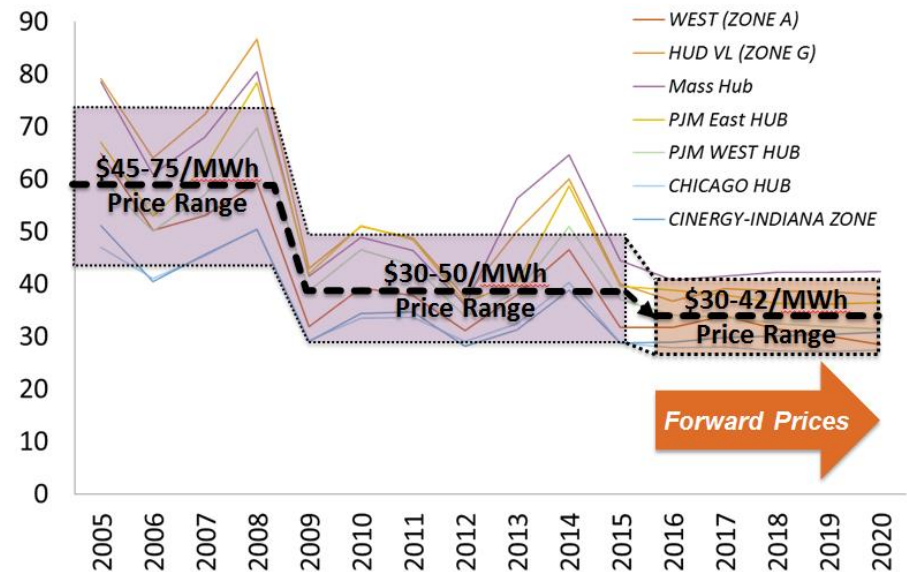
nuclear. clean air energy.

The Environment in Which We Decommission

2015 Average Nuclear
Generating Costs (\$/MWh)



Declining Wholesale Electricity Prices



Industry Response:

Delivering the Nuclear Promise Initiative

- Maintain Operational Focus
- Increase Nuclear Value (market reform)
- Improve Efficiency (30% cost reduction)

Decommissioning Landscape

- NRC has a proven regulatory framework for decommissioning activities
 - Regulations for Permanent Defueling, SAFSTOR, Radiological Decommissioning, & Spent Fuel Management are well established
- 10 plants have safely completed decommissioning
- 18 plants are in the process of decommissioning
- 6 plants* planning near term shutdown
- There currently is no regulatory framework to govern the transition from operations to decommissioning

Premature Nuclear Plant Shutdowns 2013-2020

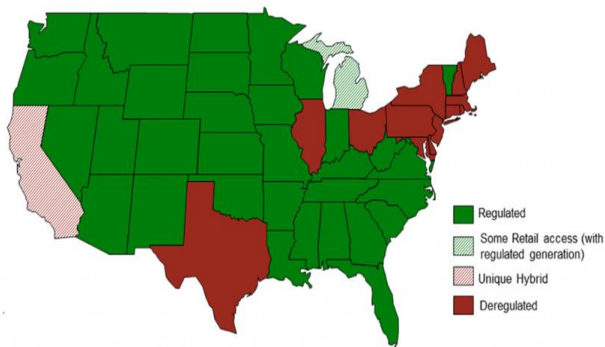
Plant	MWe	Reason	Closure Year	Latest Electricity Generated (billion kWh per year)	Latest CO2 Emissions Avoided (million tons/year)
Crystal River 3	860	Mechanical	2013	7.0	5.3
San Onofre 2 & 3	2,150	Mechanical	2013	18.1	8.8
Kewaunee	566	Market	2013	4.5	4.8
Vermont Yankee	620	Market	2014	5.1	2.7
Fort Calhoun	479	Market	2016	3.5	3.7
Clinton	1,065	Market	2017	8.7	9.2
Quad Cities 1 & 2	1,819	Market	2018	15.6	13.2
Pilgrim	678	Market	2019	5.0	2.6
Oyster Creek	610	Policy	2019	5.3	4.4

- 8,851 MWe of baseload capacity
- 53.3 million short tons of CO₂ avoided
- 13% of Clean Power Plan's 2030 414-million-ton target
- Approximately 7,500 direct jobs

Transition from Operations to Decommissioning

- For plants shutting down prior to the turn of the century, transition was straightforward
- Then these things happened

Regulatory Models



Source: EIA, State Filings, State Commissions



Trouble in Transit

- The process of transitioning from operations to decommissioning is highly inefficient
 - 5 plants* most recently shutdown face a regulatory environment that has evolved significantly since 2000
 - Recently shutdown plants have higher dependence on licensing actions (amendments/exemptions) during transition
- Licensing actions/exemptions take 12-18 months to complete (>\$1.5M effort) while unnecessary compliance costs of >\$1M/month are incurred
- NRC rulemaking is needed to address these inefficiencies as decommissioning becomes an increasingly important part of the nuclear value chain

Industry Recommendation

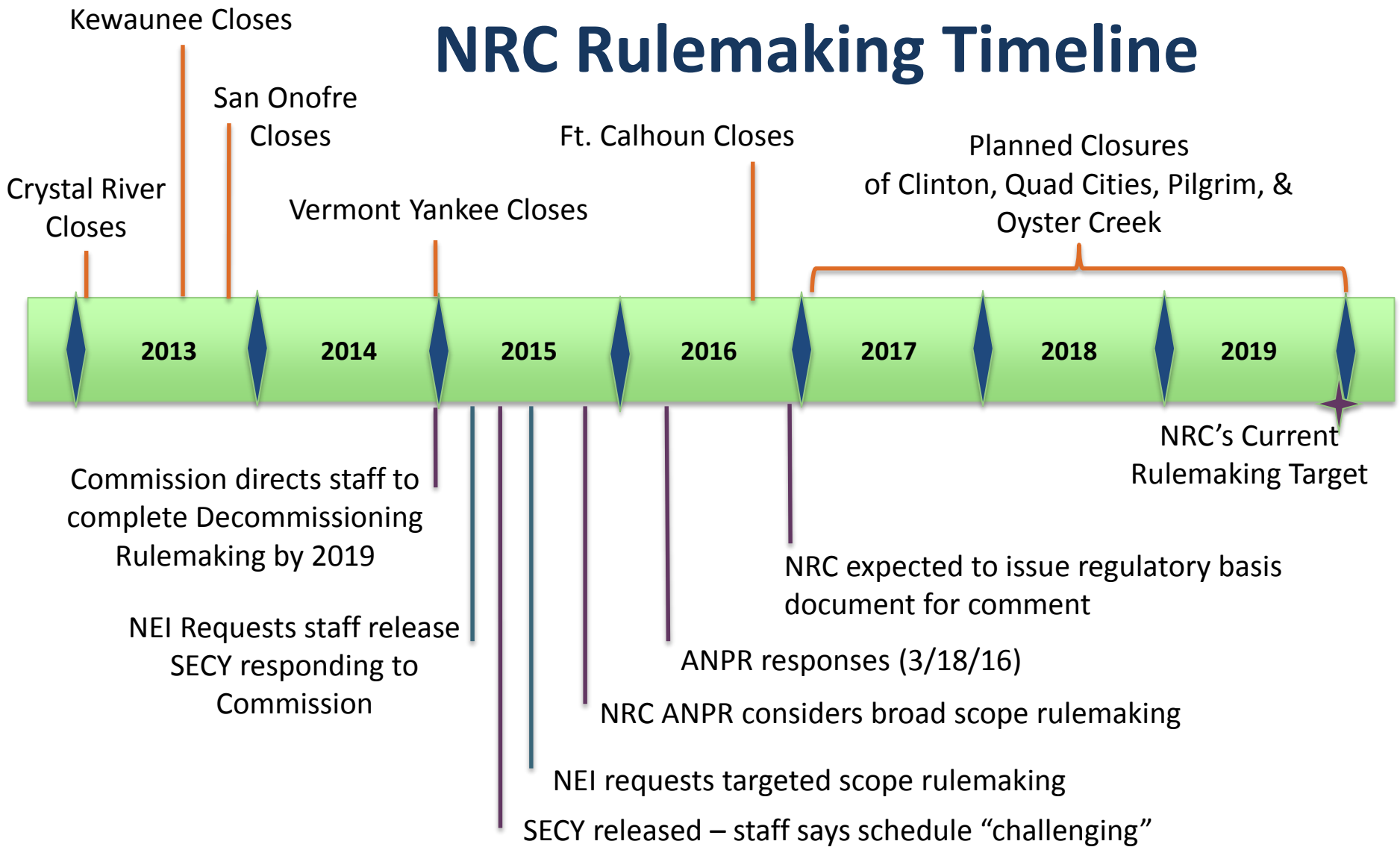
- Industry recommends that NRC pursue a limited scope rulemaking to address the current transition inefficiencies
- Industry believes that NRC already has a regulatory basis for a limited scope rule
- NRC should be able to complete a limited scope rulemaking in a more timely manner
- Industry submitted a detailed rulemaking proposal
 - In response to NRC ANPR 3/17/2016

Decommissioning Transition

- Industry's proposal would make the transition in requirements operable by rule – eliminating the need for exemptions and license amendments – at the following points:

Transition Points	What is Transitioning
Permanently Defueled	Emergency Preparedness (EP), Security, Work Hours, Staffing/Training, Use of Trust Fund for Spent Fuel Expenses
Permanently Defueled – with qualifying SFP analysis	EP, Insurance
All Fuel in Dry Storage	EP, Security, Staffing/Training, Foreign Ownership
All Fuel Removed from Site	EP, Security

NRC Rulemaking Timeline



Decommissioning Rulemaking Raison d'être

*NRC's Advanced Notice of Proposed Rulemaking**

- “the need for a power reactor decommissioning rulemaking is not based on any identified safety-driven or security driven concerns.”
- “the primary objective of the decommissioning rulemaking is to implement appropriate regulatory changes that reduce the number of licensing actions needed during decommissioning”

Other Rulemaking Perspectives

From NRC presentation 5/4/2016 (the same views were echoed in a 9/16/2016 letter from 14 members of Congress to the NRC Chairman)

Representative Comments



Against relaxation of requirements with fuel still in the pool / transfer fuel to ISFSI ASAP

- Increase involvement of State and local governments and public groups / require CAP
- Against SAFSTOR / 60 years too long
- NRC should approve PSDAR / reinstate DP
- Increase decommissioning funding oversight
- Supportive with specific suggestions

Relaxation of requirements

- It is not a “relaxation” to eliminate requirements intended to protect against a reactor accident/event/hazard once there is no longer a reactor present
- There is no safety or security reason to leave operating plant requirements in place during decommissioning

Involvement of State and Local Groups

- State and local involvement is fundamental to the success of any decommissioning project
- Industry supports the establishment of citizens/community panels and actively participates in them
- These panels take shape in a manner that is specific to the circumstances of each site – one size does not fit all
- Prescribing state and local involvement via NRC regulation would actually be an obstacle to effective engagement
 - Would constrain organic development
 - And would have no safety or security benefit

60 Year SAFSTOR Period

- There is a sound technical basis for 60 years
- Plant owners need the flexibility provided by this period
- There is no safety or security reason for a shorter period
- SAFSTOR and DECON are not mutually exclusive
- Even immediate DECON takes time
 - 8 large power reactors* that have completed decommissioning took between 5 and 20 years (and 7 still have fuel on site)
 - 3 large power reactors** that have recently entered DECON estimate between 10 and 19 years to completion
- The objective of more timely decommissioning is best served by earlier DOE removal of used fuel from the site

NRC approval of PSDAR

- Requiring NRC approval would slow down decommissioning and add costs
- ...but would not facilitate enhanced public participation in the decommissioning process
- ...and there is no safety or security reason for such a requirement
 - Everything described in the PSDAR must be conducted in accordance with existing NRC regulations

Decommissioning Funding Oversight

- NRC's existing financial assurance requirements are adequate
- Licensees have always provided sufficient funds and always will
- Placing new restrictions on trust fund usage would make timely decommissioning harder to achieve
- NRC's requirements should recognize the necessity of comingling funds (especially for spent fuel management)
- Additional guidance in this area is necessary

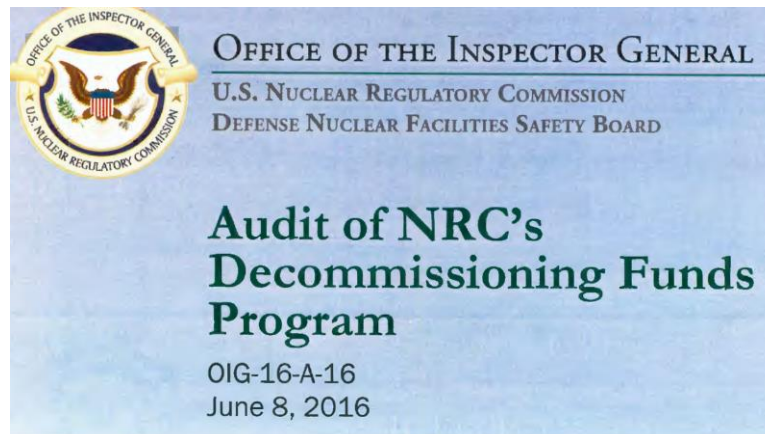
Potential Impact on the Operating Fleet

§ 50.75 Reporting and recordkeeping for decommissioning planning.

(a) This section establishes requirements for indicating to NRC how a licensee will provide reasonable assurance that funds will be available for the decommissioning process. For power reactor licensees (except a holder of a manufacturing license under part 52 of this chapter), reasonable assurance consists of a series of steps as provided in paragraphs (b), (c), (e), and (f) of this section. Funding for the decommissioning of power reactors may also be subject to the regulation of Federal or State Government agencies (e.g., Federal Energy Regulatory Commission (FERC) and State Public Utility Commissions) that have jurisdiction over rate regulation. The requirements of this section, in particular paragraph (c) of this section, are in addition to, and not substitution for, other requirements, and are not intended to be used by themselves or by other agencies to establish rates.

(b) Each power reactor applicant for or holder of an operating license, and each applicant for a combined license under subpart C of 10 CFR part 52 for a production or utilization facility of the type and power level specified in paragraph (c) of this section shall submit a decommissioning report, as required by § 50.33(k).

(1) For an applicant for or holder of an operating license under part 50, the report must contain a certification that financial assurance for decommissioning will be (for a license applicant), or has been (for a license holder), provided in an amount which may be more, but not less, than the amount stated in the table in paragraph (c)(1) of this section adjusted using a rate at least equal to that stated in paragraph (c)(2) of this section. For an applicant for a combined license under subpart C of 10 CFR part 52, the report must contain a certification that financial assurance for decommissioning will be provided no later than 30 days after the Commission publishes notice in the **Federal Register** under § 52.103(a) in an amount which may be more, but not less, than the amount stated in the table in paragraph (c)(1) of this section, adjusted using a rate at least equal to that stated in paragraph (c)(2) of this section.



regional news

Vermont to NRC: Limit use of nuclear decommissioning fund

by The Associated Press



Nov 09, 2015 – MONTPELIER, Vt. [AP] The state of Vermont and its largest power company are asking the federal Nuclear Regulatory Commission for a comprehensive review of Entergy Corp.'s plans for use of the Vermont Yankee decommissioning fund.

The state and Green Mountain Power Corp., which owns the company that sold Vermont Yankee to Entergy in 2002, both have been raising concerns about the company's plan to use money from the fund to store radioactive spent fuel on the plant site.



Nuclear fuel pellets. Photo: Nuclear Regulatory Commission, Creative Commons.

Industry Priorities

- Focus resources on resolving issues for plants currently in or about to enter transition
- Share decommissioning transition operating experience
- Obtain a stable and predictable regulatory framework
 - Any decommissioning rule must be carefully evaluated in the overall context in which today's nuclear industry exists
 - NRC rulemaking scope should be target to address transition inefficiencies only
- Seek non-regulatory opportunities to improve efficiency
- Assure plants can be safely decommissioned with available decommissioning trust funds

Questions?

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