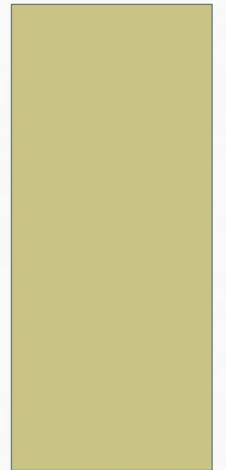


COST TRENDS IN DECOMMISSIONING

ABZ, INC.
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POST-SHUTDOWN COSTS

- All costs incurred by owner/licensee following permanent shutdown
- Includes three types of costs
 - NRC-defined decommissioning (radiological decommissioning)
 - Spent fuel storage
 - Site restoration (non-radiological decommissioning)
- No clear delineation between these types of costs

NRC-DEFINED DECOMMISSIONING

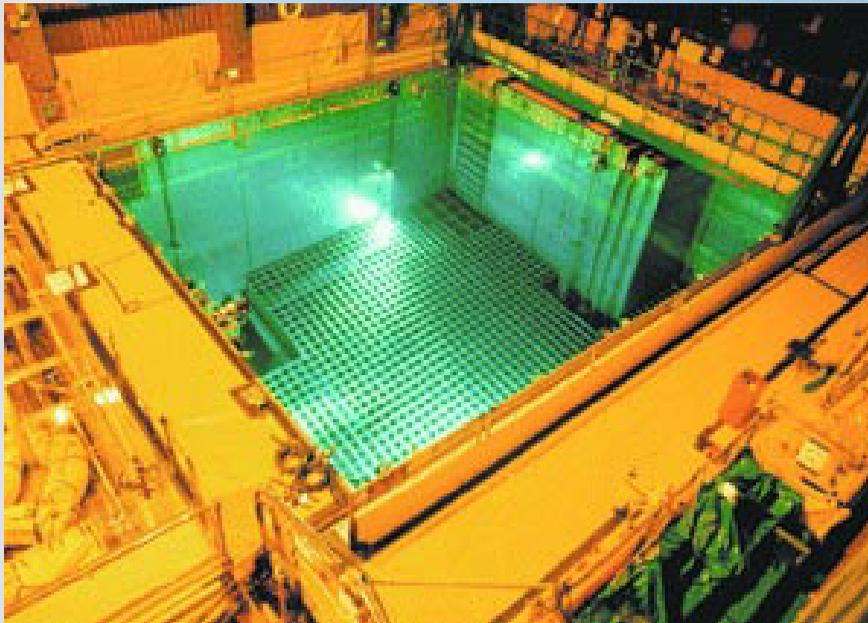
- All activities needed to terminate the 10 CFR Part 50 license (may be coupled with 10 CFR Part 72 license)
- Removal of radiologically activated or contaminated material
- Decontamination of structures
- Dismantlement of structures
- Off-site disposal of radioactive waste

SPENT FUEL STORAGE

- Fuel storage until accepted by DOE
- Initial storage in the spent fuel pool
- Long term storage can be either in pool or dry casks
- Typical owner decommissioning cost estimates include costs for both wet and dry fuel storage

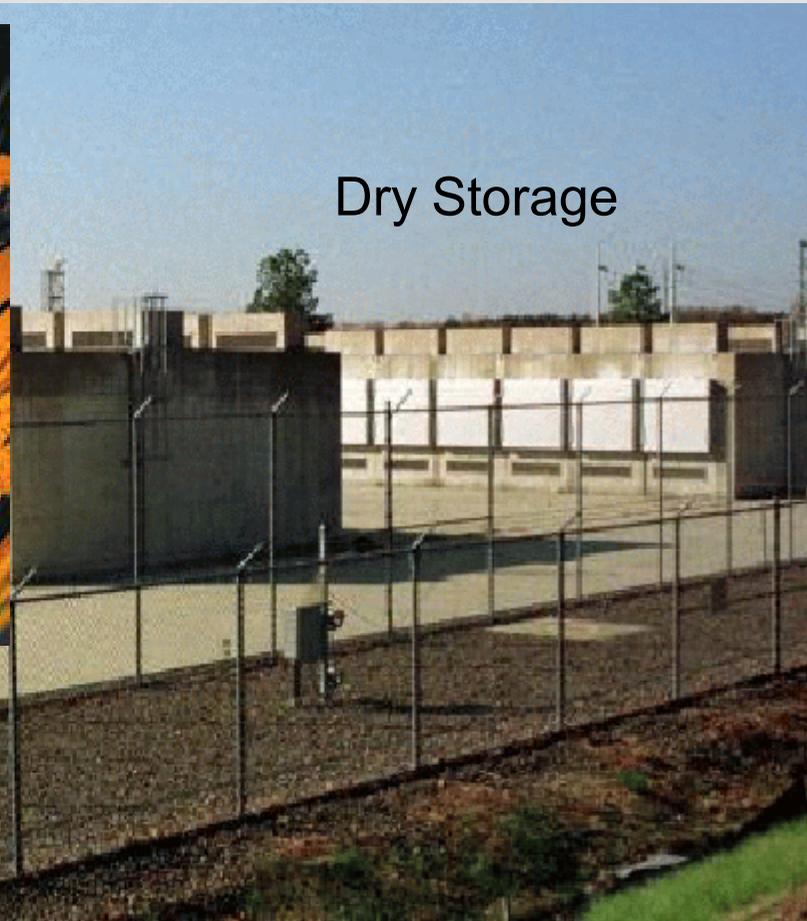


SPENT FUEL STORAGE



Wet Storage

Dry Storage



SITE RESTORATION

- Environmental restoration and non-radiological hazards
 - Lead
 - Asbestos
 - PCBs
 - Mercury
- Remaining building and foundation demolition
- Remaining site grading



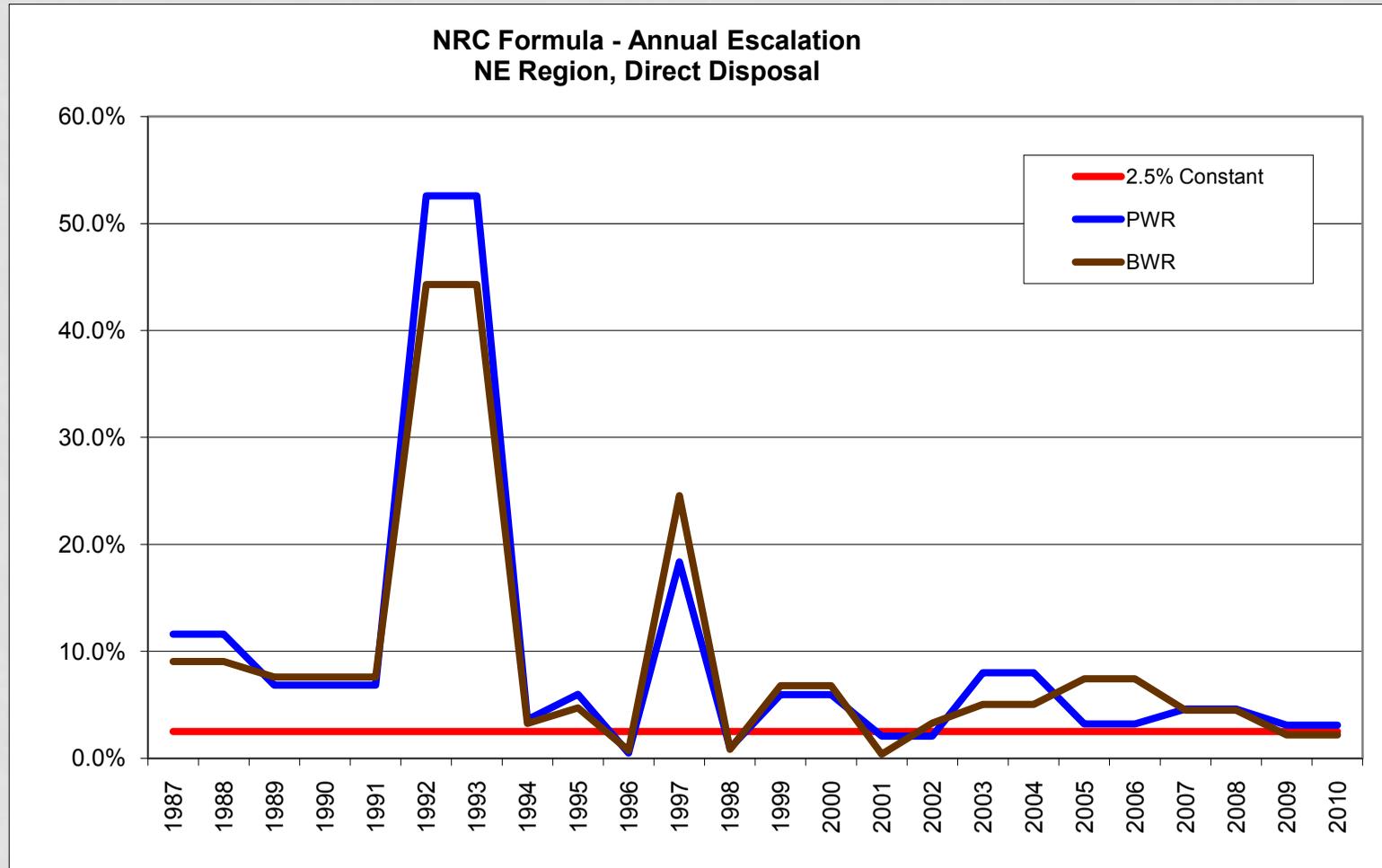
NRC-DEFINED DECOMMISSIONING

- Formulas provided in 10 CFR 50.75
- Scope does not include spent fuel storage or site restoration
- Not intended by NRC to be a representation of all costs incurred by owner
- PWR cost ranges from about \$85 million to \$105 million (1986 \$) based on reactor size
- BWR cost ranges from about \$115 million to \$135 million (1986 \$) based on reactor size

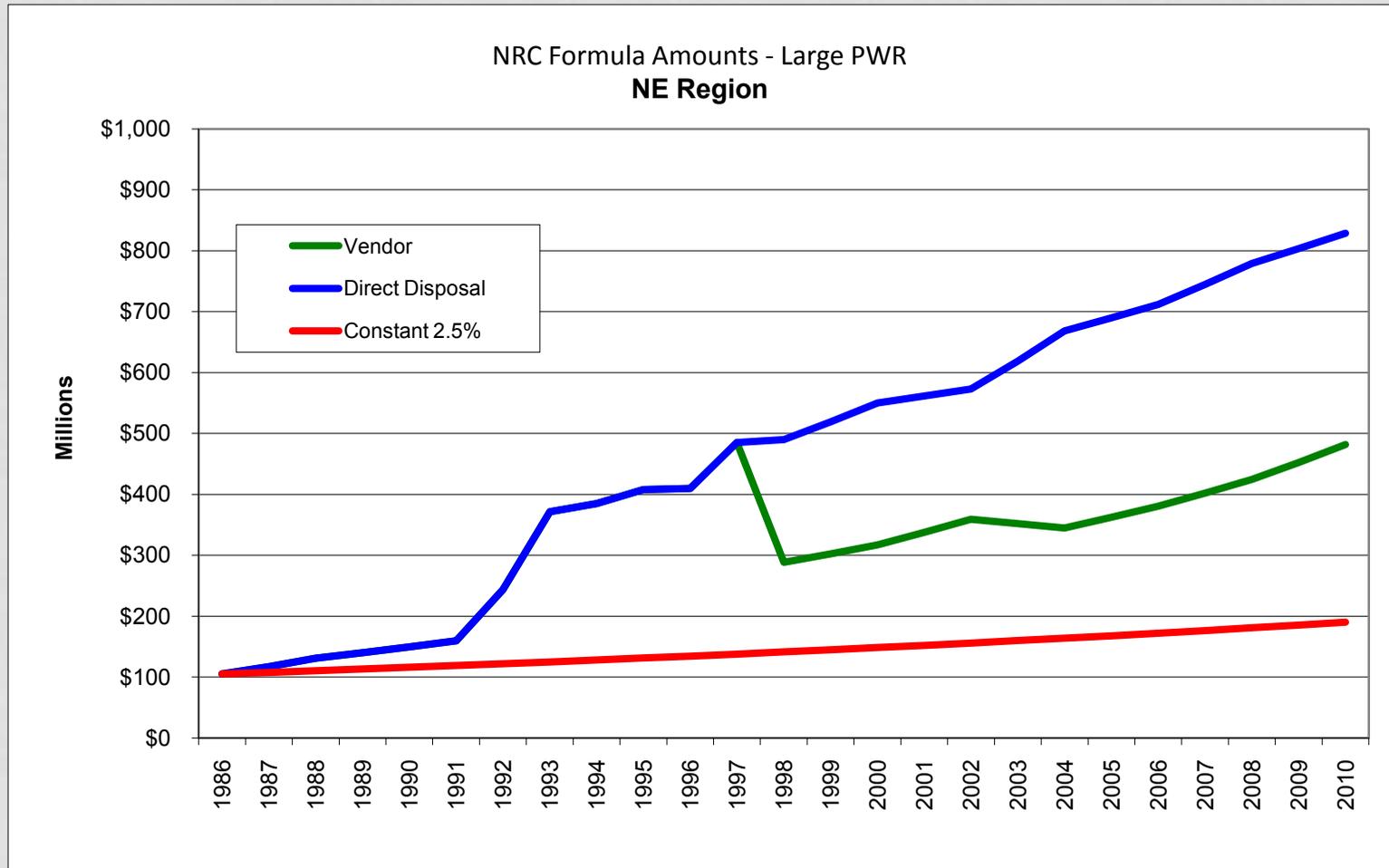
NRC-DEFINED DECOMMISSIONING

- Escalation factors for Labor, Energy, and Burial Costs
 - Labor escalation (L) applied to 65% of total formula costs
 - Value dependent on Region
 - Energy escalation (E) applied to 13% of total formula costs
 - Calculated differently for PWR and BWR
 - Burial escalation (B) applied to 22% of total formula costs
 - Direct disposal or waste processor
 - Different burial sites
- Burial escalation provided in NUREG 1307
- Labor and Energy escalation provided in US Department of Labor publications

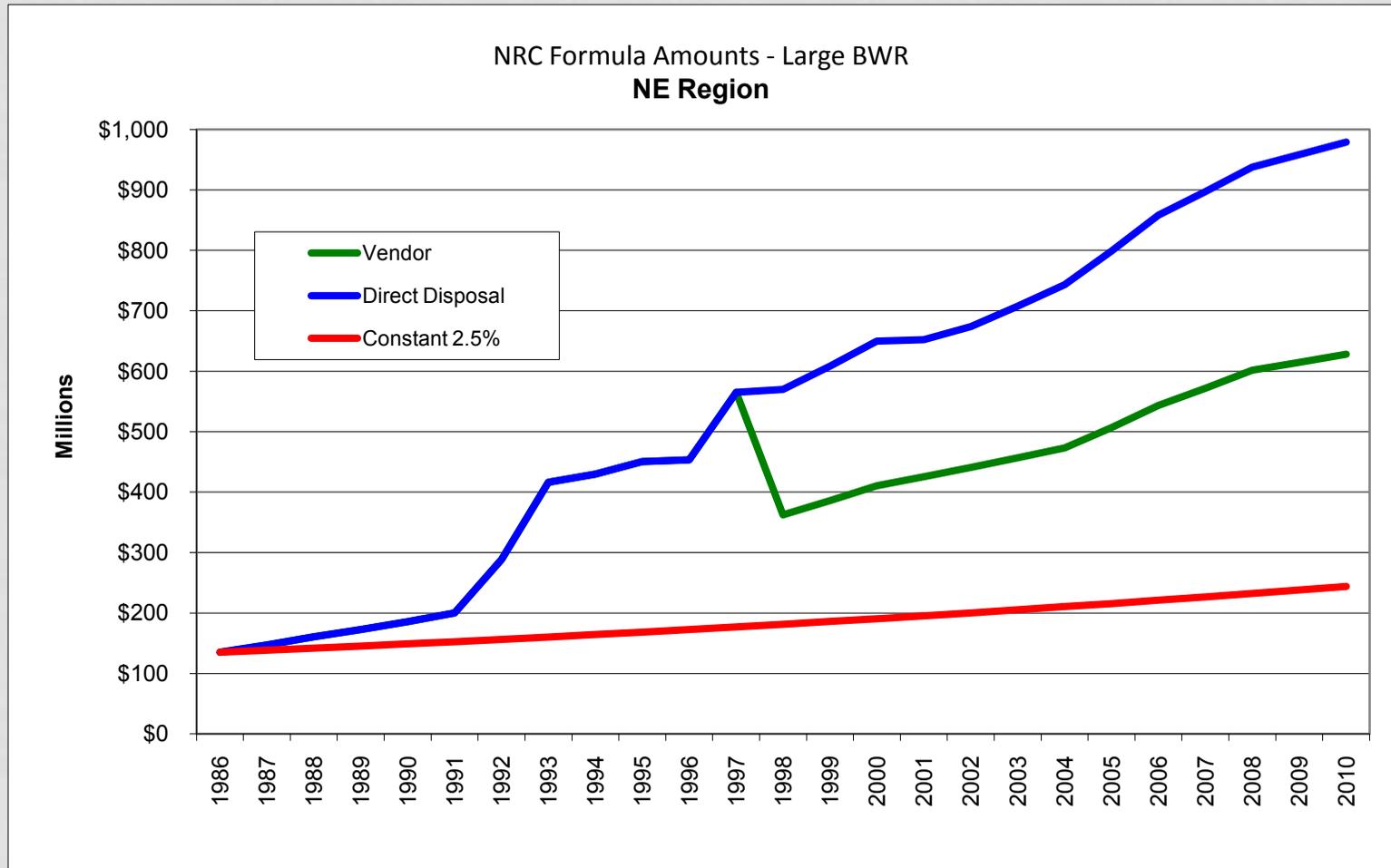
COMPOSITE ESCALATION



CALCULATING A FORMULA AMOUNT



CALCULATING A FORMULA AMOUNT



MAJOR FUNDING RISKS

- Early shutdown
- Increase in physical work
 - Unidentified scope (e.g., tritium contamination)
 - Changes in requirements (e.g., termination criteria)
- Schedule delays
- Insufficient NDT earnings
- Higher than assumed cost escalation

“CO-MINGLING FUNDS”

- Use of a single NDT fund for all post-shutdown costs
- Must use separate sub-accounts or separately identify costs
- Waiver of 10 CFR 50.82 required to use NDT funds for costs other than NRC-defined decommissioning

HISTORICAL COSTS - DIRECT

Plant	Direct Rule Amount (Million 2010 \$)	Estimated Cost (Million 2010 \$)	Over/Under Funded (%)
Maine Yankee	\$779	\$775	1%
Trojan	\$465	\$636	-37%
Yankee Rowe	\$624	\$783	-25%
Haddam Neck	\$719	\$1,188	-65%
Rancho Seco	\$916	\$784	+14%
SONGS Unit 1	\$800	\$879	-10%

HISTORICAL COSTS - VENDOR

Plant	Vendor Rule Amount (Million 2010 \$)	Estimated Cost (Million 2010 \$)	Over/Under Funded (%)
Maine Yankee	\$453	\$775	-71%
Trojan	\$406	\$636	-56%
Yankee Rowe	\$363	\$783	-116%
Haddam Neck	\$418	\$1,188	-184%
Rancho Seco	\$584	\$784	-34%
SONGS Unit 1	\$510	\$879	-72%

HISTORICAL COSTS

LICENSE TERMINATION

Plant	Vendor Rule Amount (Millions 2010 \$)	License Termination (Million 2010 \$)	Over/Under Funded (%)
Maine Yankee	\$453	\$540	-19%
Trojan	\$406	\$314	23%
Yankee Rowe	\$363	\$623	-72%
Haddam Neck	\$418	\$674	-61%
Rancho Seco	\$502	\$618	14%
SONGS Unit 1	\$510	\$400	22%

CONCLUSIONS

- Significant uncertainty exists in decommissioning scope
- No rules describing how to separate costs; thus subject to interpretation
- Historical costs may have significantly exceeded waste processor rule amounts
- Deferral of activities may not reduce funding requirements or mitigate underfunding

ABZ, INCORPORATED

- Founded in 1986
- Experience includes:
 - Decommissioning
 - Performed over 30 estimates and evaluations
 - Clients include utilities, state regulators, and the Federal government
 - Severe accident cleanup costs
 - Performed over 60 analyses
 - Clients include utilities as well as ANI and NEIL
 - Evaluation of spent fuel storage and transportation costs and activities
 - Assisted utility decision making
 - Assisted Federal government review
 - Licensing and regulatory assistance



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