

U.S. NUCLEAR REGULATION ... AND UN-REGULATION?

History, Trends, and Recent Developments

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SMRs: Key Questions, Perspectives
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Nuclear Information and Resource Service



U.S. Nuclear Safety Regulation: Compromised from the Start

1947: Atomic Energy Commission established

- “The impetus for peaceful atomic development came mostly from considerations other than meeting America’s energy demands.”
- The prevailing sense of ***urgency reflected the fear of falling behind other nations*** in fostering peaceful atomic progress.”
- “it assigned the AEA three major functions: (1) to continue its weapons program, (2) to promote the commercial uses of nuclear power, and (3) to protect against the hazards of those peaceful applications. ***Those functions proved to be incompatible when they were carried out by a single agency.***”

U.S. Nuclear Safety Regulation: Compromised from the Start

AEC's Regulatory Program

- “The AEC’s determination to *push nuclear development through a partnership with private industry* had a major impact on the agency’s regulatory policies.”
- “The AEC’s Fundamental objective in drafting regulations was to ensure that public health and safety were protected *without imposing overly burdensome requirements* that would impede industrial growth. ...
- “It soon became apparent that *the AEC’s judgment on safety issues could be influenced by its ambition* to promote the private development of nuclear power.”

Birth of the U.S. NRC

Energy Reorganization Act (1974)

- “One of President Nixon’s responses to the energy crisis was to ask Congress to create a **new agency that could focus on, and presumably speed up**, the licensing of nuclear plants.”
- “After much debate, Congress divided the AEC into the U.S. Energy Research and Development Administration and the U.S. Nuclear Regulatory Commission (NRC) in legislation that it passed in 1974.”

Evolution of the NRC

Three Mile Island Disaster (1979)

- Revealed lack of information-sharing about safety and design problems
- Overconfidence in reactor safety and “impossibility” of disasters
- Inadequate training requirements, absence of “safety culture”
- No licensing requirement for detailed emergency plans

Evolution ... to (D)Evolution

Post-Three Mile Island

- Stronger requirements for operator training, testing, and licensing and use of operating room simulators
- Increased resident inspectors to 2+ per plant
- New office to review information on and performance of reactors
- Emergency planning: FEMA-approved emergency plans, endorsed by state & local emergency response agencies

1988: NRC “realism rule”

- State/local governments don’t need to approve plans
- They will follow NRC emergency plans in a disaster

(D)Evolution of the NRC

1990: Below Regulatory Concern proposal

- Defeated by movement organizing

1988: Decommissioning regulations

- **1995: CAN v. NRC** – “arbitrary and capricious”
- **1996 Decom rule change:** make deregulation legal

1991: License “Renewal”

- Yankee Rowe reactor vessel cover-up
- **1995 revised regs** – no inspections, “aging management plan,” Generic Environmental Impact Statement

1999-2000: Design Basis Amnesty and Reactor Oversight Process

- “Performance-Based Regulation” and Probabilistic Risk Assessment

Federal Legislation

2018: Nuclear Energy Innovation Capabilities Act (S.97)

- R&D infrastructure and subsidies

2019: Nuclear Energy Innovation & Modernization Act (S.512)

- NRC to create “technology-inclusive, performance-based” licensing; limits NRC license fees

2021: Bipartisan Infrastructure Bill (IIJA)

- ~\$10 billion for unprofitable reactors, “advanced reactor demonstrations,” hydrogen production

2022: Inflation Reduction Act

- Subsidies and financing for new and old reactors, HA-LEU fuel, hydrogen (\$100+ billion)

2023: Nuclear Fuel Security Act (in NDAA 2023, H.R. 2670)

- Redirects \$2.7 billion of IIJA funds to HA-LEU and fuel production

2024: ADVANCE Act (S.870)

- Revises NRC mission and promotes nuclear exports, accelerated licensing, foreign ownership, etc.

May 23 Nuclear Exec. Orders

14302: Reinvigorating the Nuclear Industrial Base

14301: Reforming Nuclear Reactor Testing at the Department of Energy

14300: Ordering the Reform of the NRC

14299: Deploying Advanced Nuclear Reactor Technologies for National Security

Executive Orders: “What is it?”

What is an EO?

- Article II power: “take care that the laws be faithfully executed.”
- Presidential directive to federal agencies:
 - How to interpret laws/statutes
 - How to prioritize and undertake their duties
- EOs *cannot*:
 - Supersede or contradict laws
 - Exercise powers not granted to the Executive branch

Other Presidential Actions

DOE Authority at NRC

- DOGE Staffer at DOE assigned to NRC
 - Implementing EO 14300 (NRC reforms)
 - Told NRC Chair: ***“DOE, DOD would approve stuff, and then NRC would be expected to just kind of rubber-stamp it.”***

NRC Commission Changes

- June 14: Fired Commissioner Christopher Hanson (2-1)
- June 16: Reappointed David Wright as Chair (3-1)
- July 29: Commissioner Annie Caputo resigned (2-1)
- July 31: Appointment of former NRR Director Ho Nieh (3-1)

14299: Deploying ANR Technologies for National Security

Aligns nuclear power and AI as national security priorities

- DOD: begin using nuclear reactors to power bases and operations by 2028
- DOE: designate AI data centers and power supplies as **“critical defense facilities”**
- DOE create a HALEU fuel bank for reactors that power DOE and AI facilities
- DOE directed to **utilize “all available legal authorities”** to develop nuclear reactors and fuel infrastructure
- Nuclear Exports: State Dept. to pursue exports and 20 new cooperation agreements

14301: Reforming Nuclear Reactor Testing at DOE

Sets the Stage for DOE Takeover of New Reactor Regulation

- “The Secretary shall create a **pilot program for reactor construction and operation outside the National Laboratories**, pursuant to the AEA’s authorization of reactors under the Department’s sufficient control... “
- “... approve at least three reactors pursuant to this pilot program with the goal of achieving criticality in each of the three reactors by July 4, 2026.”
- “... use all available authorities to **eliminate or expedite the Department’s environmental reviews** for authorizations, permits, approvals, leases, and any other activity requested by an applicant or potential applicant.

14302: Reinvigorating the Nuclear Industrial Base

- **Finance “Restarts, Completion, Upgrades, or Construction”**
 - Target of 5 GW of upgrade capacity
 - Target of 10 new large reactors under construction by 2030
- Develop a plan to expand uranium conversion and enrichment capacity
- Program for transporting HALEU and reactors with HALEU
- Directs DOE to report on options for fuel chain infrastructure:
 - Consolidated Interim Storage
 - Reprocessing
 - Milling, Conversion, Enrichment, Fuel Fabrication
- Recommendations for disposal of reprocessing wastes

14300: Ordering the Reform of the NRC

Policy: 400 GW of nuclear power by 2050

Directs NRC to Subjugate Safety to Promotion

- “NRC’s mission shall include facilitating nuclear power while ensuring reactor safety”
- “In consultation with NRC’s DOGE Team ... reorganize the NRC to promote the expeditious processing of license applications and the adoption of innovative technology”
- “... undertake reductions in force in conjunction with this reorganization, though certain functions may increase in size ... including those devoted to new reactor licensing.”
- “The personnel and functions of the ACRS shall be reduced to the minimum necessary... focus on issues that are truly novel or noteworthy.”

14300: Ordering the Reform of the NRC

Regulatory Changes

- **9 months:** “review and wholesale revision of its regulations and guidance documents”
- **18 months:** “issue final rules and guidance to conclude this revision”
- **Licensing Deadlines:**
 - **New Reactors:** 18 months
 - **Relicensing:** 12 months
- **Radiation:** “NRC shall reconsider reliance on the linear no-threshold (LNT) model for radiation exposure and the ALARA standard”
 - *“Those models are flawed ...”*
- “Establish an expedited pathway to approve reactor designs that the DOD or the DOE have tested”

14300: Ordering the Reform of the NRC

Regulatory Changes -- Inspections and Enforcement:

- “Revise the Reactor Oversight Process and reactor security rules and requirements to reduce unnecessary burdens ...”
- “... ensure that reactor safety assessments focus on credible, realistic risks.”
- “Streamline the public hearings process.”

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