Federal and State Roles in New Nuclear Power Reactor Licensing

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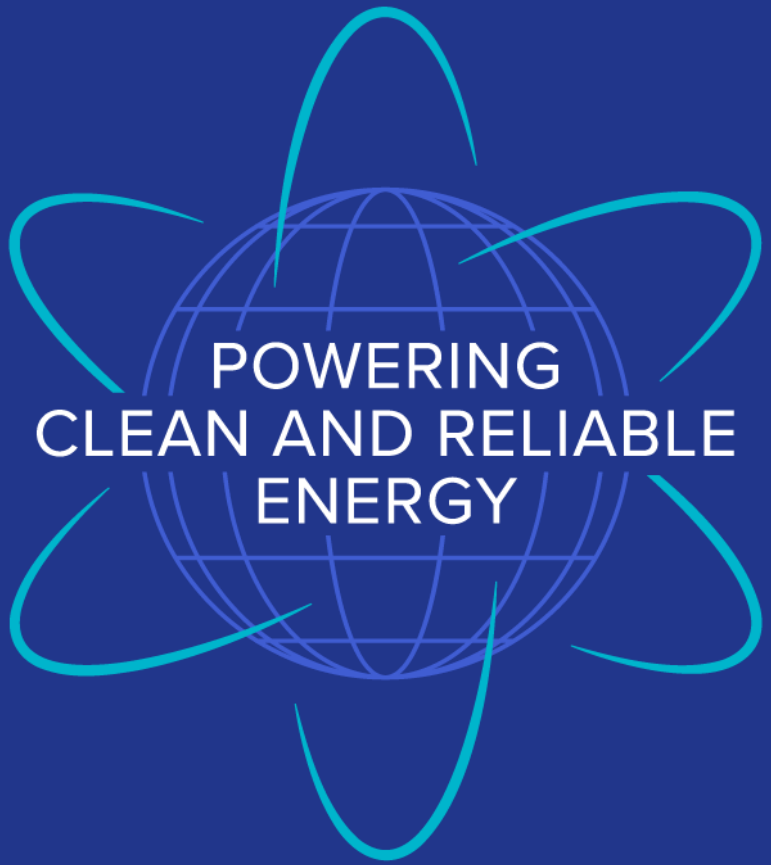

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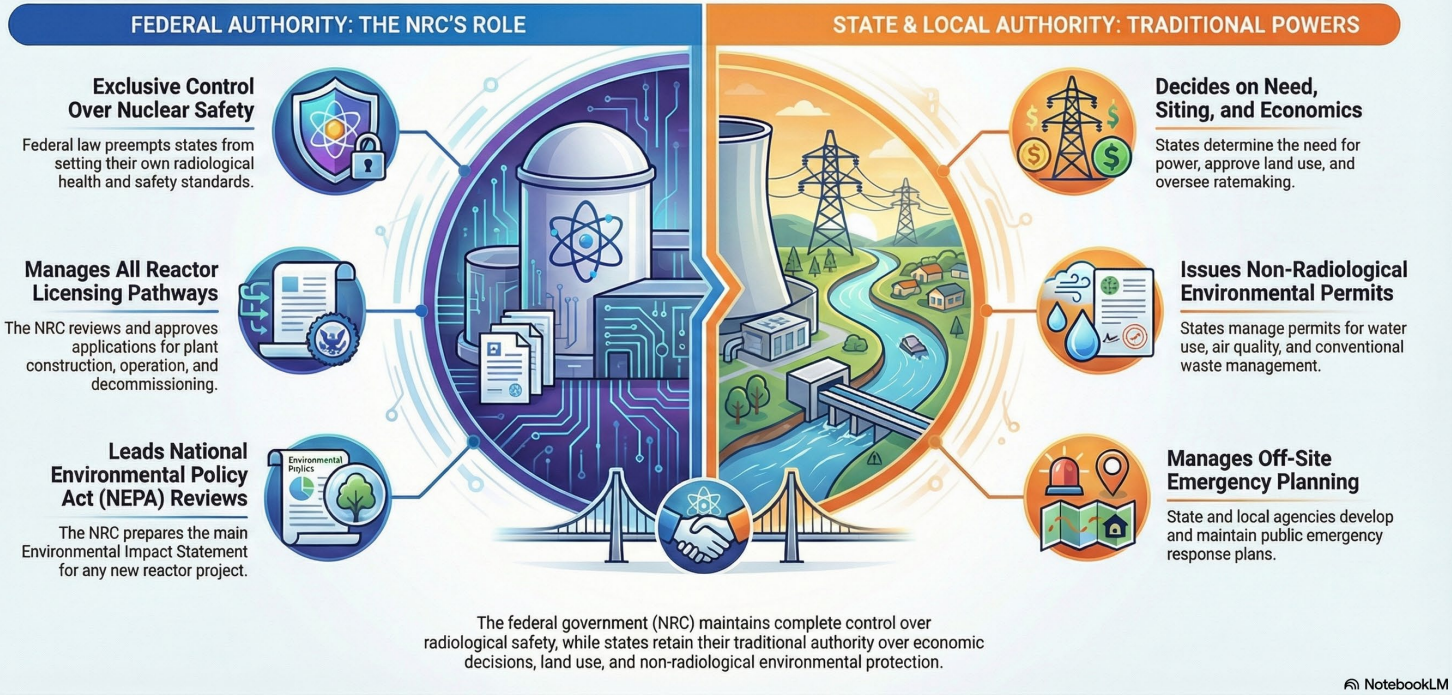
Nuclear Power Licensing: A Federal & State Divide

To clarify the distinct roles and responsibilities of the federal government versus state and local governments in the complex process of licensing a new nuclear power reactor.



***Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Comm'n*, 461 U.S. 190 (1983)**

Key Statutes Governing NRC Licensing & Regulation

- **Atomic Energy Act of 1954, as amended (AEA)**
  - The NRC's organic statute; focuses on radiological safety
  - Unusually broad delegation of authority to NRC to implement the statute's purposes; also imposes some prescriptive requirements
- **Energy Reorganization Act of 1974** – split Atomic Energy Comm'n into NRC & DOE
- **Administrative Procedure Act (APA)**
  - Applicable to federal agencies
  - Requirements guide agency rulemaking and adjudicatory processes
- **National Environmental Policy Act (NEPA)**
  - Applicable to federal agencies; amended by the FRA of 2023
  - Purely procedural statute but requires agencies to take a "hard look" at proposed major federal actions; see SCOTUS *Seven County* case

Federal Primacy Over Radiological Safety

- The **AEA** establishes a comprehensive federal framework under which NRC has authority to regulate possession and use of certain radioactive materials
  - **Source material** (uranium and thorium), **byproduct material** (reactor-produced materials), and **special nuclear material** (enriched uranium and plutonium)
- NRC is responsible for licensing and regulating **nuclear power plants and certain other types of civilian nuclear facilities**, subject to limited cessions of authority to "Agreement States" for specified radioactive materials uses
- AEA contains distinct statutory authorities for certain other federal facilities not within NRC's jurisdiction (e.g., **certain DOD and DOE facilities**)
  - AEA § 91(b) and § 110(b) (DOD – military/national defense applications)
  - AEA § 110(a)(2) (facilities operated "under contract with and for the account of DOE")

AEA Federal Preemption Principles

- The U.S. Supreme Court has found the AEA to be **broadly preemptive** of state and local regulation of **radiological health and safety**
- Federal government maintains complete control over the **safety aspects of nuclear energy generation**
- **States retain substantial authority over non-safety matters**, such as utility regulation, need-for-power determinations, ratemaking, land use, and other traditional police-power functions, so long as those measures do not operate as regulation of radiological safety in purpose or practical effect
- Courts will consider whether a challenged state law was enacted with the goal of regulating radiological safety, or if it has "some direct and substantial" effect on the safety of nuclear plant construction and operation

NRC Core Responsibilities/Authorities

- **Reactor licensing, safety and design-basis regulation (technical specifications, QA, maintenance rule, etc.); inspections via Reactor Oversight Process**
- **National Environmental Policy Act (NEPA) implementation** for NRC licensing actions via 10 CFR Part 51, including consultations with other federal and state agencies
- Radiological effluent controls and monitoring as part of NRC reactor program
- Physical security/cybersecurity and safeguards (Design Basis Threat (DBT)-based security programs, access authorization, security plans)
- Operator licensing and licensed operator requalification
- **Emergency preparedness (EP) onsite and the overall EP program adequacy determination for licensing (with FEMA's findings on state/local offsite plans)**
- Spent fuel management; reactor decommissioning and license termination

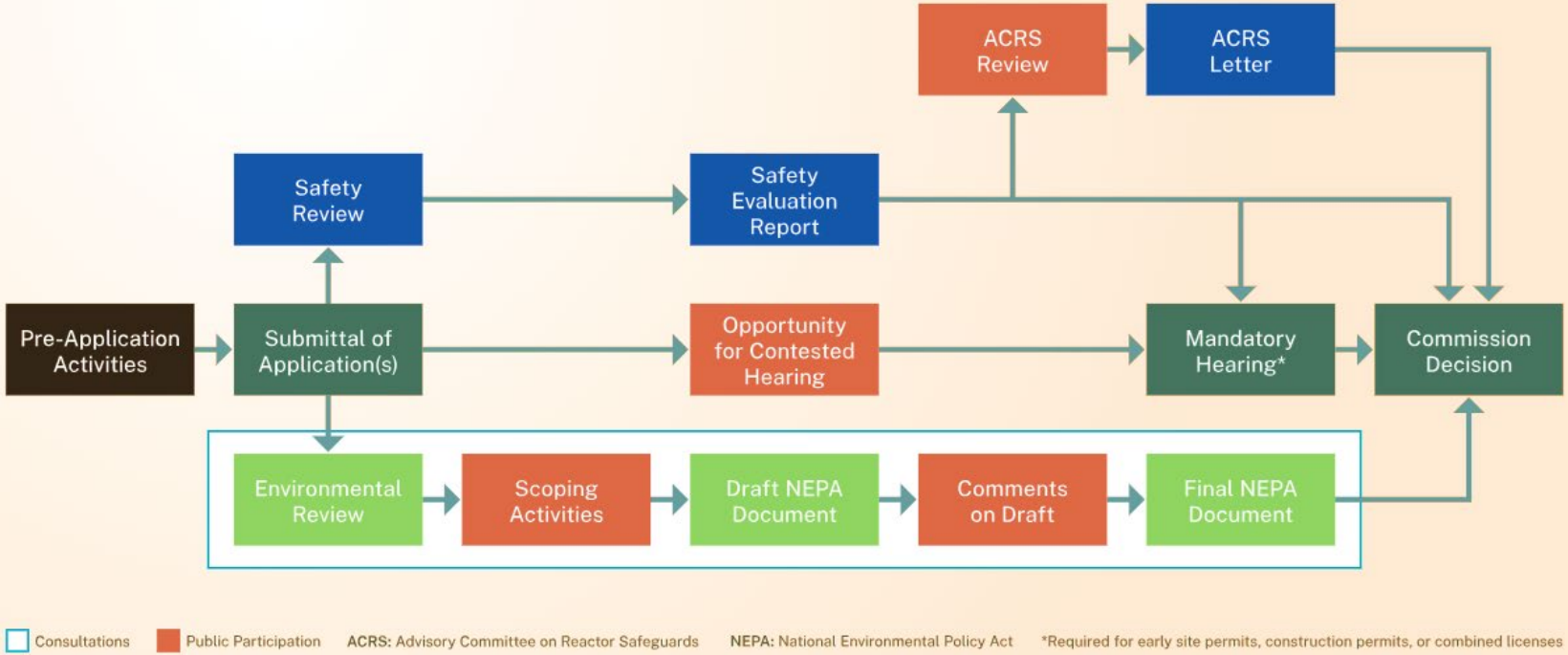
But NRC Does Not License/Regulate in a Vacuum . . .

- **FEMA** – offsite emergency preparedness, including review and approval of state and local offsite radiological emergency plans and preparedness
- **EPA (often via state delegation)** – e.g., Clean Air Act major source air permit; Clean Water Act (CWA) NPDES discharge permits; CWA § 401 water quality certifications
- **USACE** – CWA § 404 permits for dredge and fill in waters of the U.S. and wetlands (e.g., cooling water intakes, outfalls, causeways, embankments)
- **FWS and NOAA** – consultations regarding effects of proposed action on listed species and critical habitats under Endangered Species Act (ESA)
- **National Historic Preservation Act** – § 106 consultation with **State & Tribal Historic Preservation Officers** for impacts on historic and cultural resources
- **DOT** – materials, waste, and fuel transportation

Current NRC Reactor Licensing Pathways

Attribute	10 CFR Part 50 Traditional · since 1956	10 CFR Part 52 Modernized · since 1989	10 CFR Part 53 Advanced · Final Rule 2026
Safety Philosophy	Deterministic Prescriptive design-basis rules	Deterministic + standardized Design certification adds finality	Risk-informed / performance-based PRA-driven; technology-inclusive
License Instruments	Construction Permit (CP) + Operating License (OL) Two-step; sequential	Early Site Permit (ESP) Design Certification (DC) Combined License (COL)	CP · OL · COL Manufacturing License (ML) Standard Design Approval (SDA)
Technology Scope	Light water reactors (LWR) Rules tailored to Gen II/III LWR	Primarily LWR Non-LWR requires exemptions	All commercial reactor types LWR, SMR, molten salt, sodium, gas
Siting requirements	10 CFR Part 100 Low population density preferred	10 CFR Part 100 ESP allows for early site approvals	Alternative siting criteria Higher population density sites possible
Key Features	Mature; extensive precedent Current fleet mostly licensed via Pt. 50 Prescriptive safety rules No ITAAC required Still available for new builds, including non-LWRs (see, e.g., TerraPower (WY), X-energy (TX), Kairos (TN))	ESP allows for “banking” of sites DC provides generic design finality COL combines CP + OL in one step ITAAC required before fuel load E.g., AP1000, NuScale certified designs E.g., Vogtle Units 3 and 4 COLs	Covers full plant life cycle Factory fuel load + transport possible More flexible operational approaches Generally Licensed Reactor Operators Graded security requirements More flexible FQ requirements Load-following explicitly allowed

Overview of the NRC Licensing Process



Source: NRC, https://www.nrc.gov/about-nrc/regulatory/licensing/ecoe/nepa-environment-analysis/considerations.html

Key State Authorities/Responsibilities

- **Non-radiological environmental permitting** – States (and, where applicable, Tribes) often implement federally delegated water, air, waste programs
- **Off-site emergency planning and protective actions** – States and local governments develop and maintain **offsite** radiological emergency plans and make protective action decisions for the public
- **Land use, zoning, and local approvals** – including transmission line routing, historic preservation, tribal consultation, and county and municipal approvals
- **Utility regulation** – Integrated resource planning; certificates of public convenience and necessity; cost recovery mechanisms (e.g., rate base treatment); grid interconnection (with Regional Interconnection and FERC)
- **Taxation, incentives, and local agreements**