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Non-power Production or Utilization Facility (NPUF) License Renewal Rulemaking

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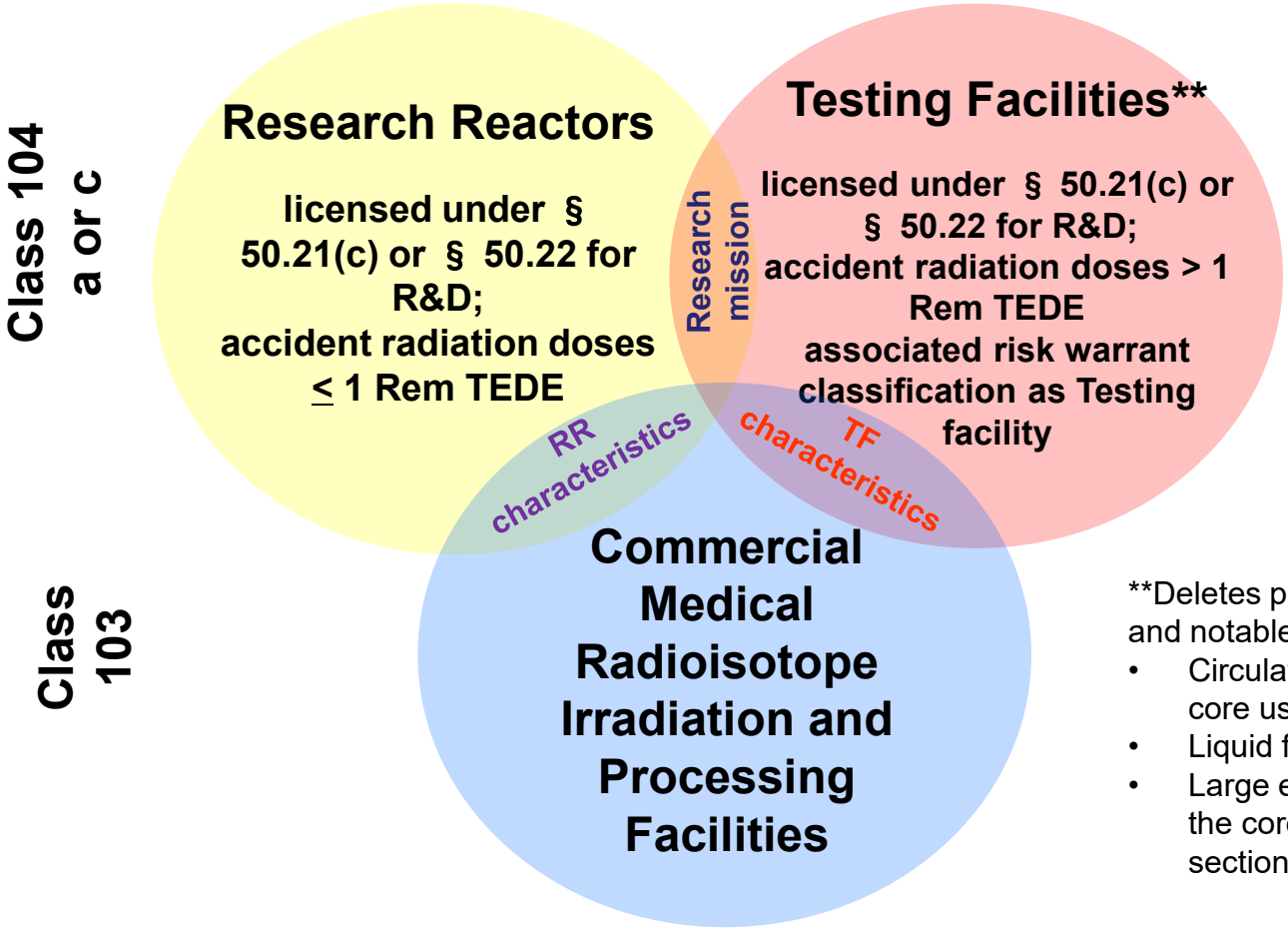
Relationship of NPUF Entities



**Deletes previous power levels and notable safety considerations:

- Circulating loop through the core used for fuel experiments
- Liquid fuel loading
- Large experimental facility in the core (> 16 in^2 in cross-section)

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⇨ 9 rulemaking objectives

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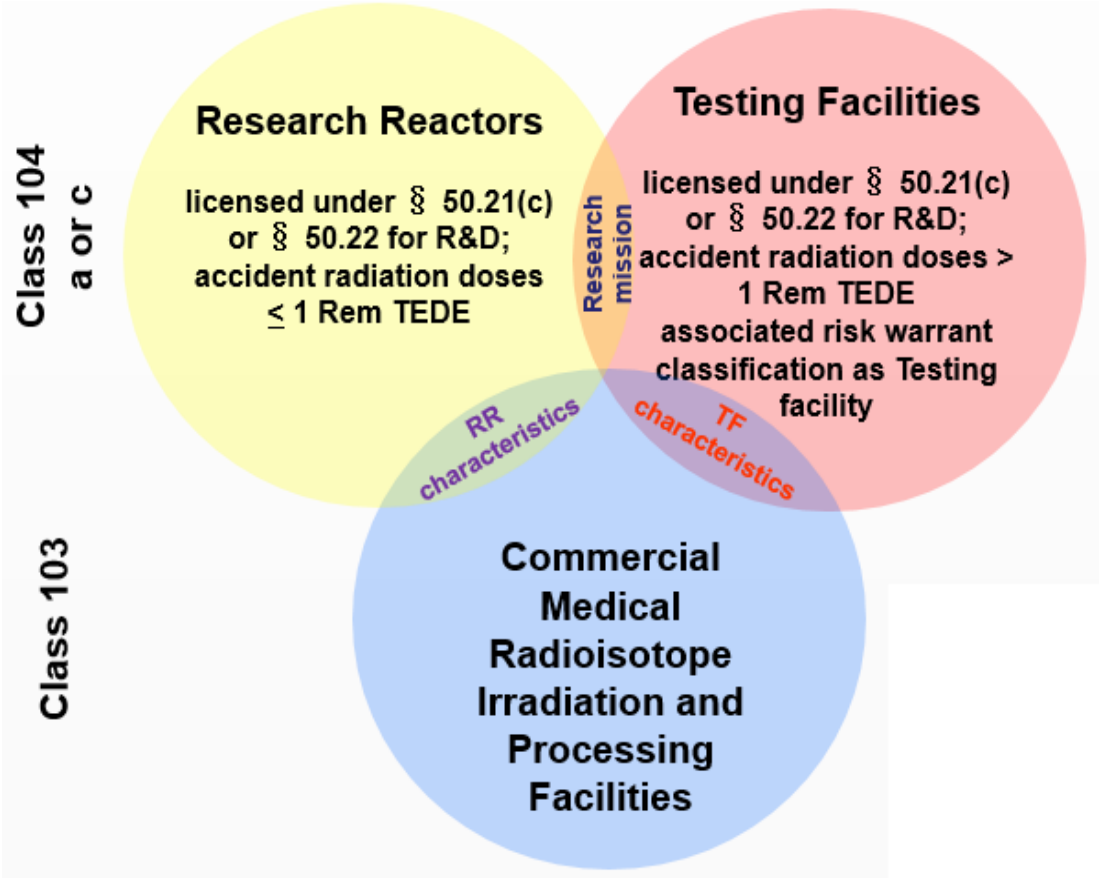
NPUF Rule Summary

	Commercial	Medical Therapy	R&D	Testing
1. Create related NPUF definitions	✓	✓	✓	✓
2. Extend applicability of 10 CFR 50.59	✓	✓	✓	✓
3. 10 CFR 50.135 license renewal process	✓	N/A	N/A	✓
4. Eliminate NPUF financial qualification information requirement	✓	N/A	N/A	✓
5. Amend timely renewal provision	✓	✓	✓	✓
6. Provide an accident dose criterion	✓	✓	✓	N/A
7. Eliminate license terms	N/A	✓	✓	N/A
8. Clarify existing environmental reporting requirements	✓	✓	✓	✓
9. Require updated FSAR submittals	✓	✓	✓	✓

1. Related NPUF Definitions

- NPUF added by EPSMR rule (88 FR 80076, November 2023)

- Conforming changes to definitions for non–power reactor, research reactor, etc.



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Conforming Changes

- **Non-power production or utilization facility** means a non-power reactor or other production or utilization facility, licensed under § 50.21(a), § 50.21(c), or § 50.22, that is not a nuclear power reactor or a production facility as defined under paragraphs (1) and (2) of the definition of "production facility" in § 50.2.
- ***Non-power reactor*** means:

  (1) A testing facility; or

  (2) A research reactor, which is a nuclear reactor licensed under § 50.21(c) or § 50.22 for research and development:

  (i) For which a safety assessment demonstrates accident radiation doses consistent with § 50.34(a)(1)(ii)(D)(2); and

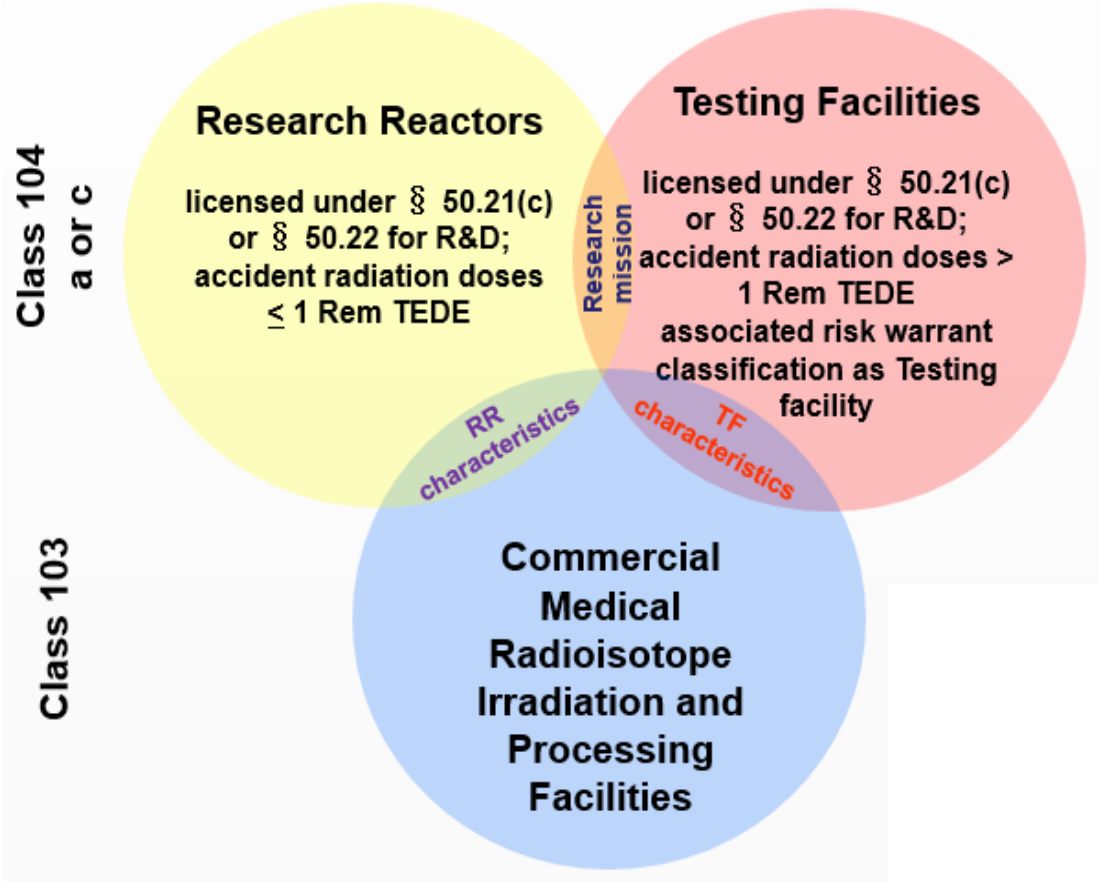
  (ii) That is not a testing facility
- ***Testing facility*** means a nuclear reactor licensed under § 50.21(c) or § 50.22 for research and development for which:

  (1) Analyzed accident radiation doses are in excess of those set forth in § 50.34(a)(1)(ii)(D)(2); or

  (2) The Commission determines that the design, operation, or use and the associated risk warrant classification as a testing facility

2. Extend Applicability of 10 CFR 50.59

- Extend applicability to NPUFs regardless of decommissioning status
- 10 CFR 50.59 currently is not applicable to NPUFs once fuel is moved offsite
- Avoid burden of issuing license amendments

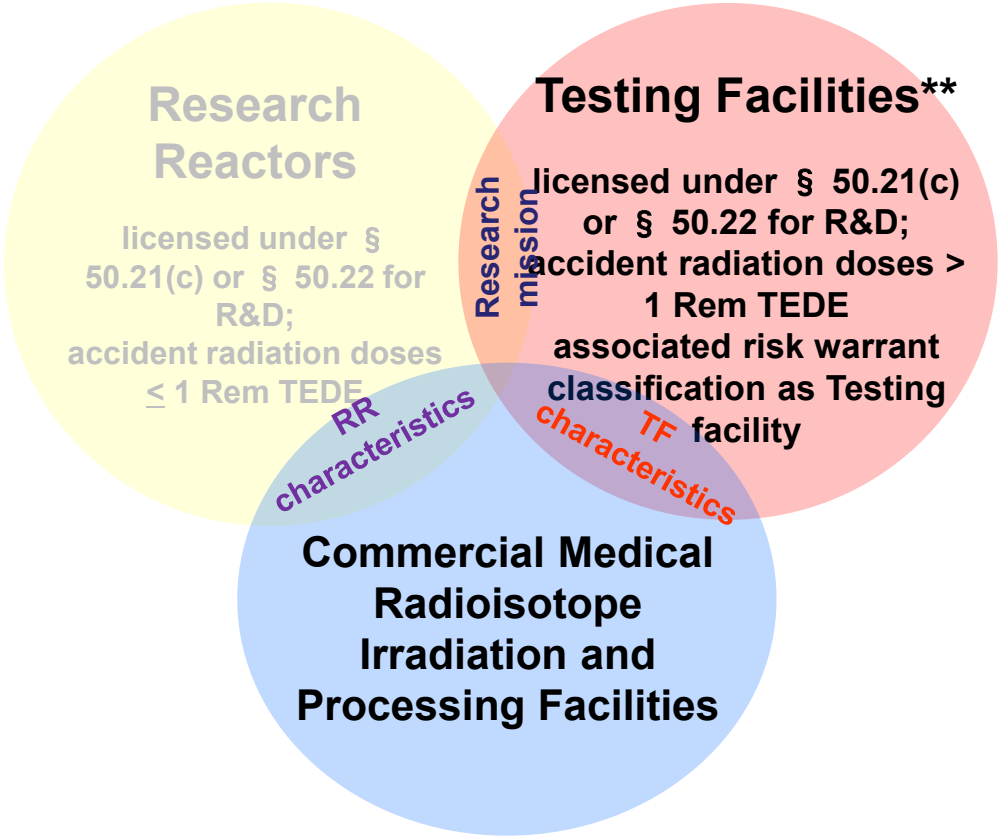


3. New License Renewal Process

- Consolidate license renewal requirements under 10 CFR 50.135 for testing facilities and NPUFs licensed under 10 CFR 50.22
- Clarify license renewal process
- Enhance regulatory efficiency

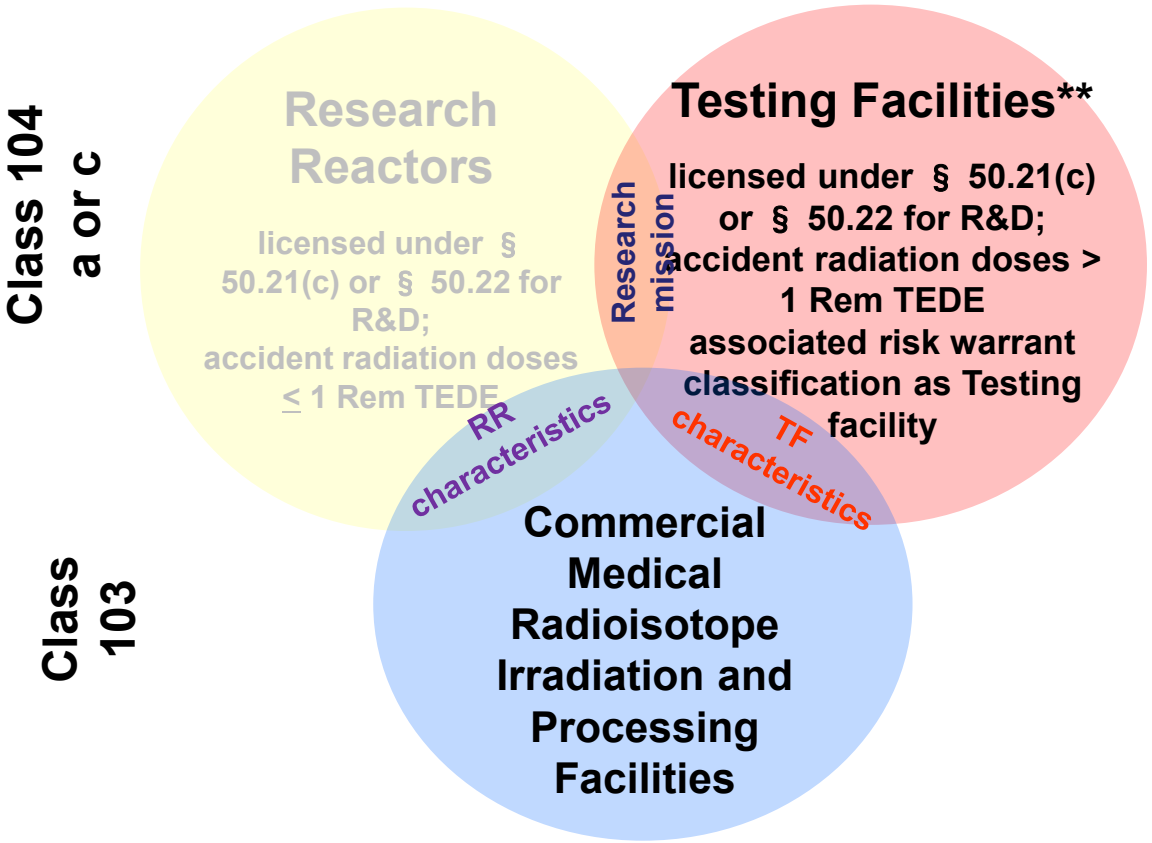
Class 104 a or c

Class 103



4. Eliminate NPUF Financial Qualification Information Requirement

- Eliminate 10 CFR 50.33(f)(2) financial qualification requirement at license renewal only
- Primary means to ensure safety is through NRC's oversight and enforcement programs
- Reduce licensee burden without compromise to public health and safety



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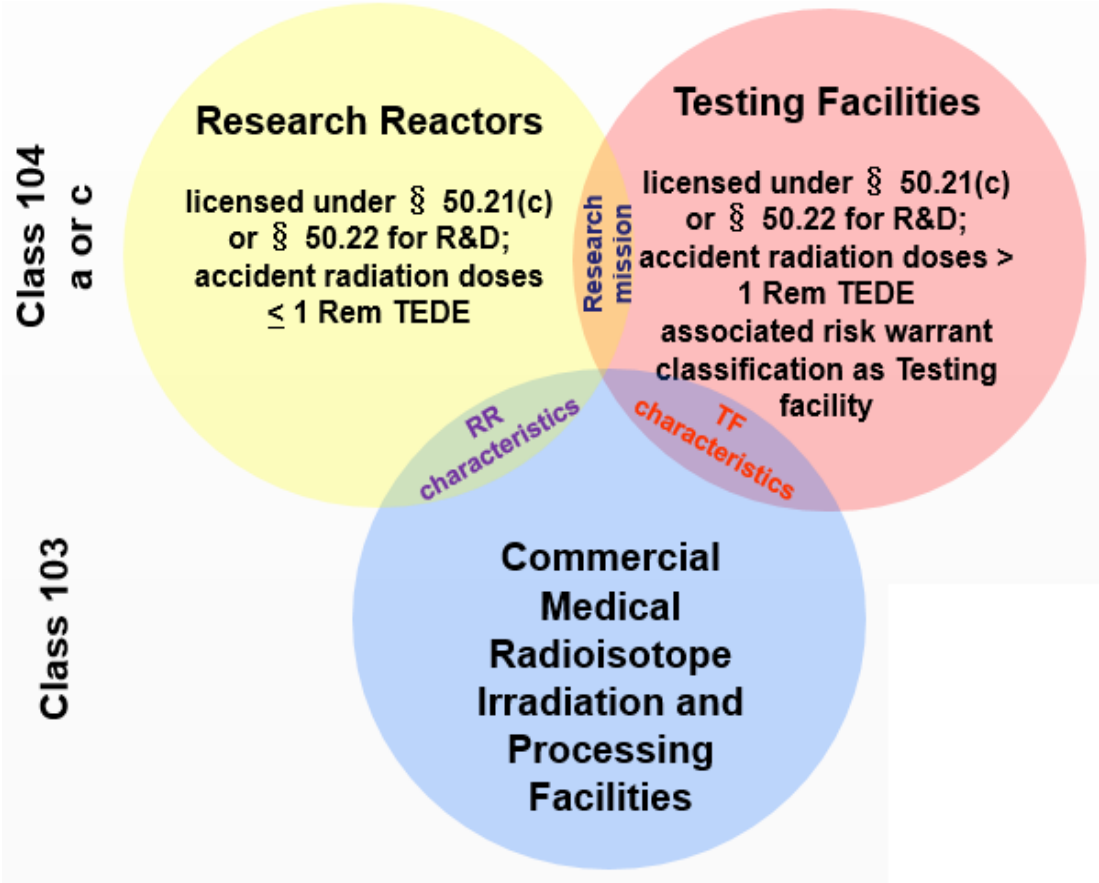
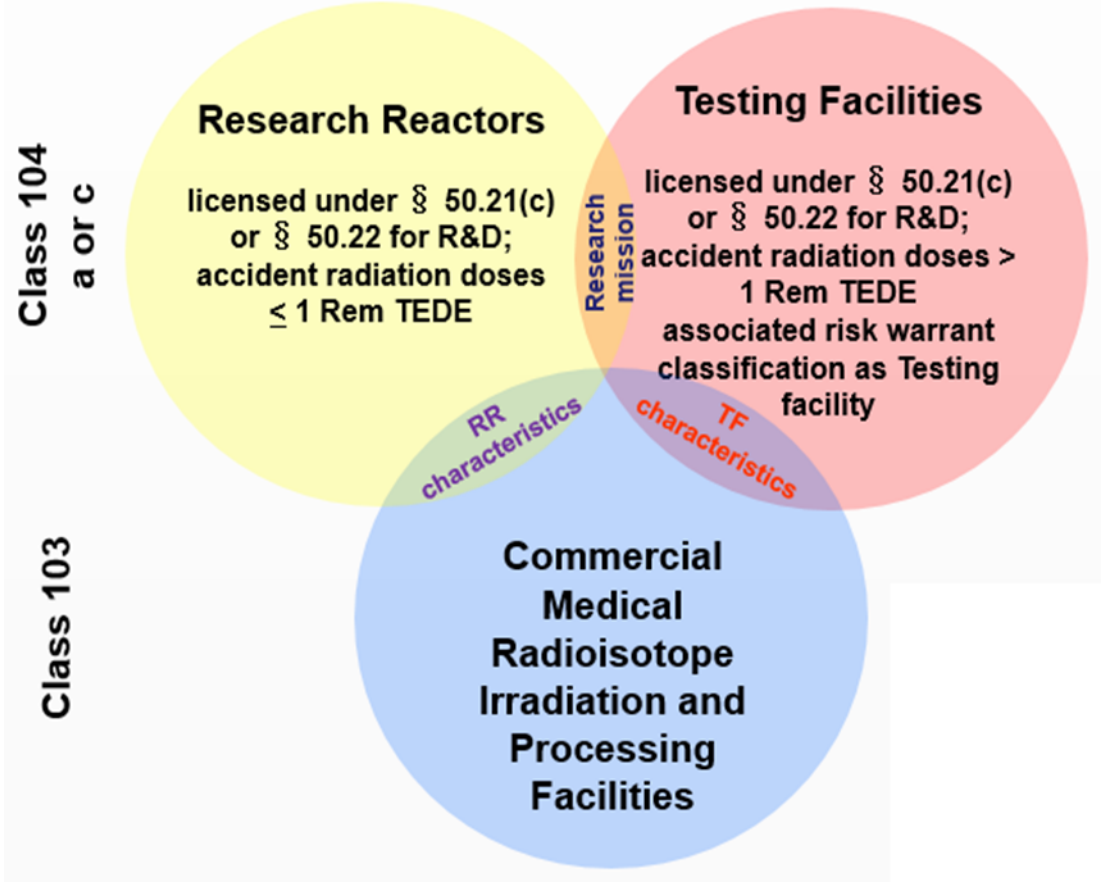
5. Amend Timely Renewal Provision

- Create two-year timely renewal for Class 103 and testing facilities and exempt Class 104a and 104c NPUFs, other than testing facilities
- 30 days in 10 CFR 2.109 is not a sufficient period of time for adequate assessment of license renewal application
- Two years would provide sufficient time and allow facility to operate under current license terms



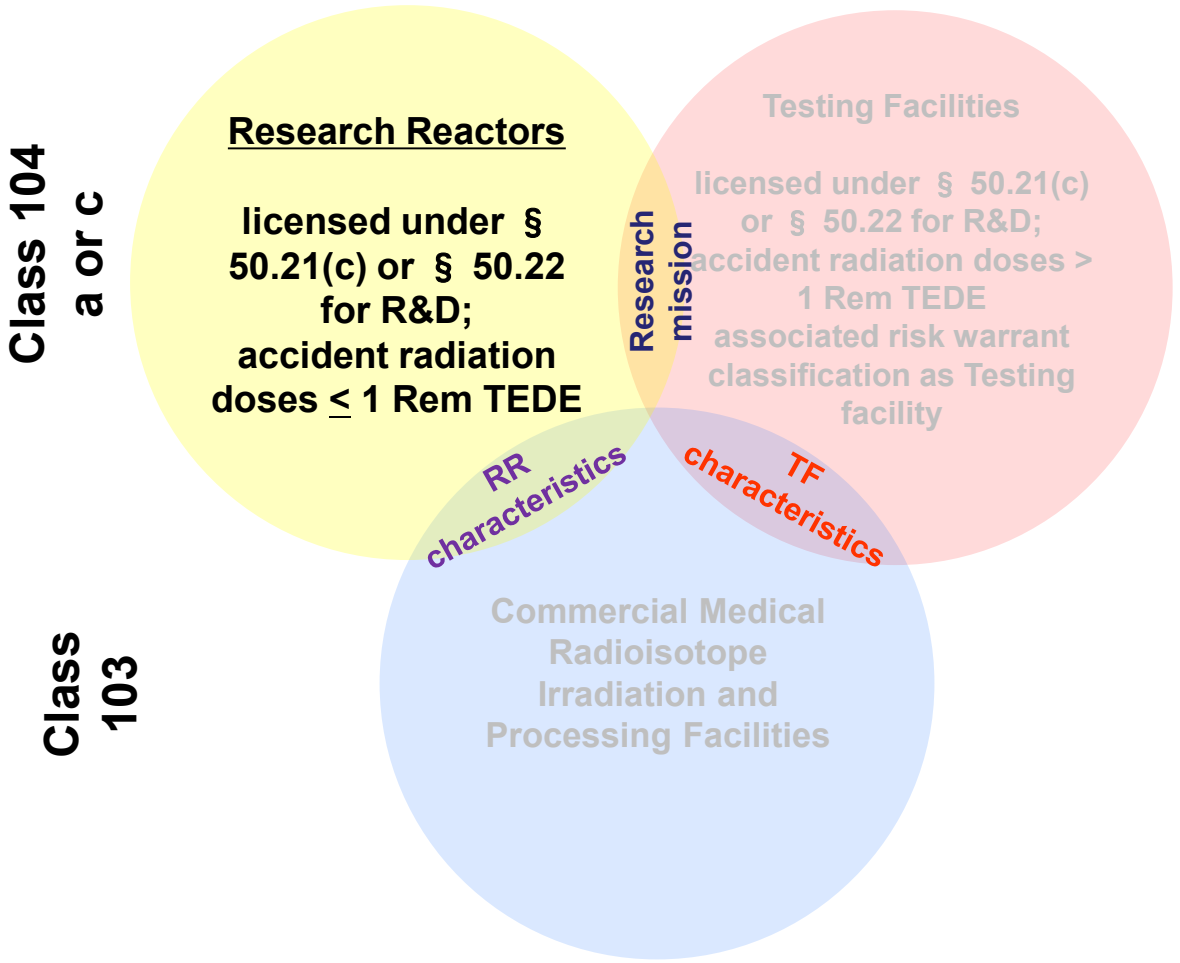
6. Provide an Accident Dose Criterion

- Create new accident dose criterion for NPUFs, other than testing facilities, in 10 CFR 50.34
- Part 20 public dose limits are unnecessarily restrictive as accident criteria
- Proposed criterion would align with early phase EPA PAG and provide adequate protection from unnecessary exposure to radiation



7. Eliminate License Terms

- Exempt Class 104a and 104c NPUFs, other than testing facilities, from 40-year fixed term in 10 CFR 50.51
- No license term specified in AEA for Class 104 NPUFs
- Consistent with AEA's minimum regulation standard
- Reduce burden for licensees and NRC, but maintains public health and safety



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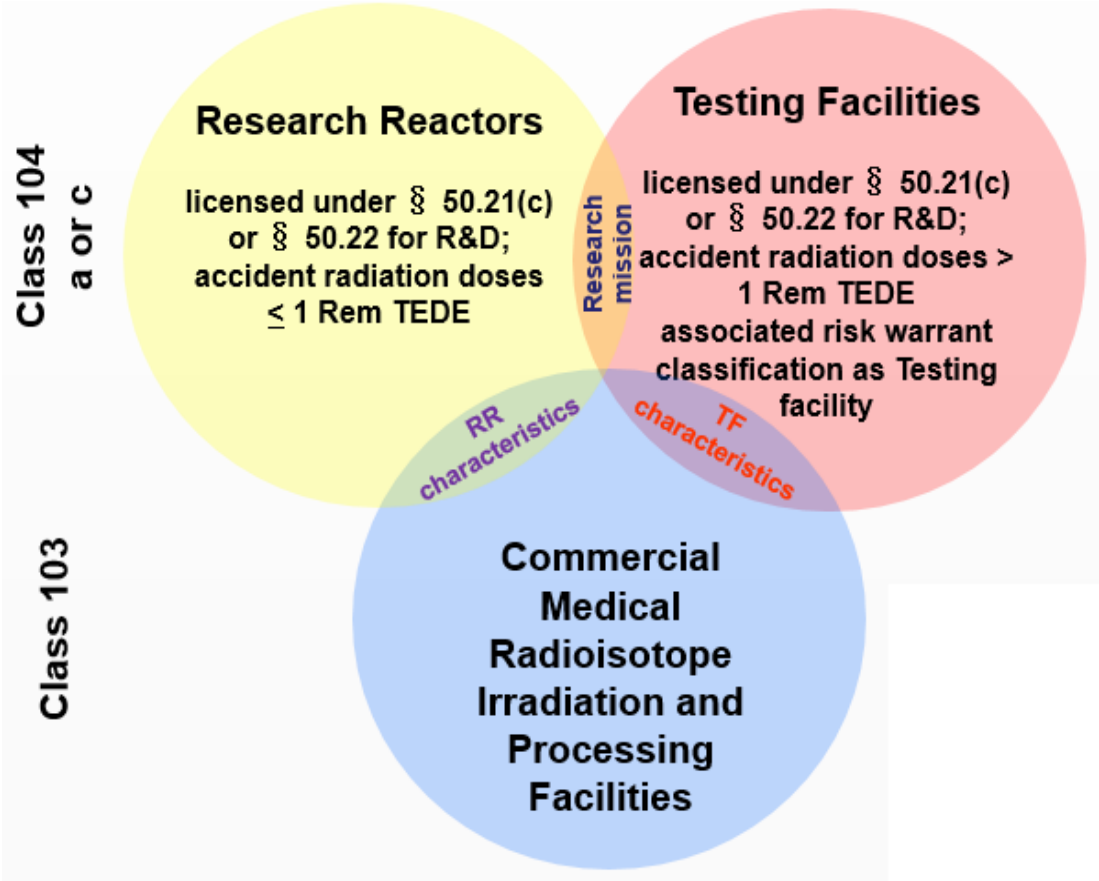
Implementation

- Separated into 4 groups
  - Class 104a and 104c licensed NPUFs, other than testing facilities:
    - Group 1 and 2 issued an immediately effective non-expiring license by Order
    - FSAR update set by Order.
      - Group 1 spaced between 1 and 3 years
      - Group 2 spaced between 2 and 5 years
    - Group 3 (still in NUREG-1537) license renewal
      - Will be issued a non-expiring license when renewed
      - FSAR update based on date non-expiring license issued
  - Class 103 and 104c testing facilities
    - Group 4 - still undergo license renewal
    - FSAR update by ORDER (*NIST Only*)
    - Current Class 103 CPs, issued OL with 20 year* term
      - FSAR update based on date of issuance of OL

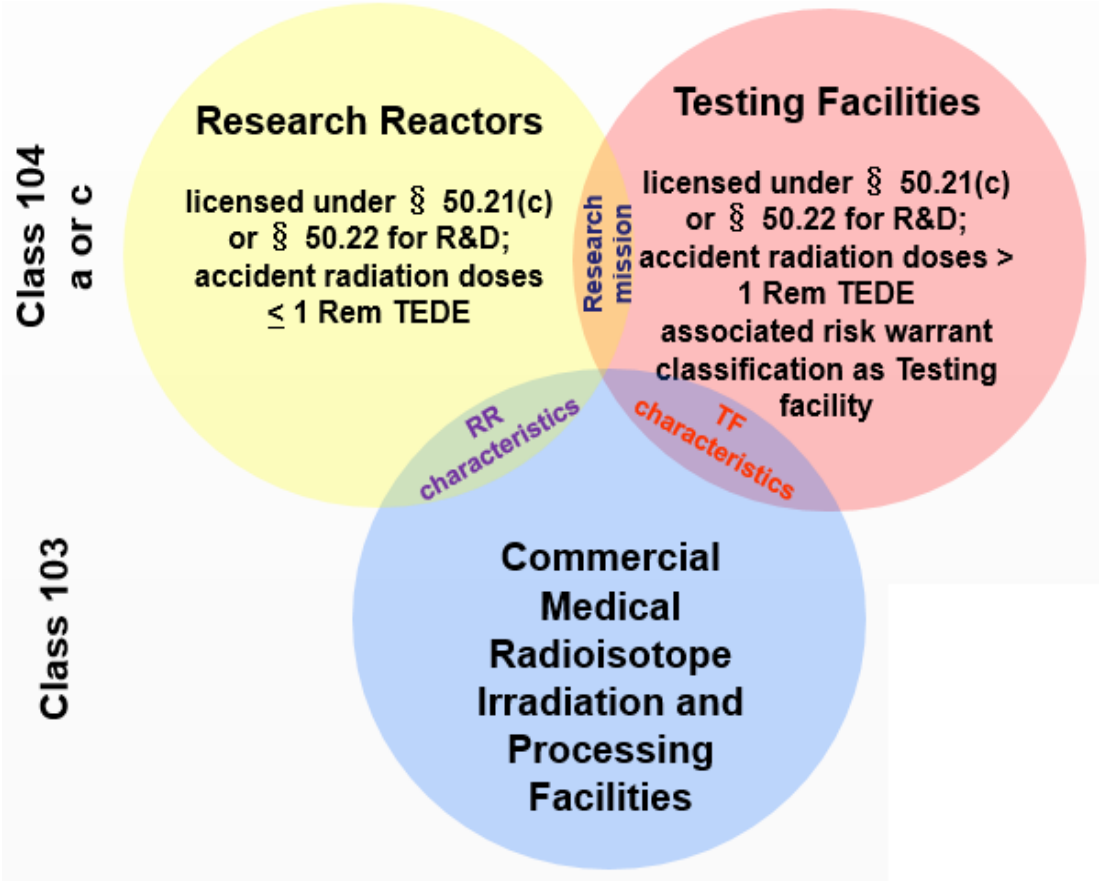
8. Clarify Existing Environmental Reporting Requirements

- Add requirement in 10 CFR 51.56 for NPUFs to provide an environmental report per 10 CFR 51.45
- Historically, NRC has relied on 10 CFR 51.41 to collect "environmental information"
- Improve consistency and clarify Part 51 requirements for licensing actions



9. Require Updated FSAR Submittals

- Extend applicability of 10 CFR 50.71(e) to NPUFs
- Ensure timely documentation of changes to licensing basis
- Benefit knowledge management, NRC's inspection program, and licensee operator training and exams



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FSAR Contents

Examples of things the FSAR Updates should include:

- Changes to the facility or facility operations resulting from new or amended regulatory requirements
- Changes and the effects of changes to the facility or procedures and experiments that are not described in the FSAR
  - licensee changes under 10 CFR 50.59 that result in changes to the FSAR
  - evaluations and analyses performed by the licensee to support an amendment to an NPUF operating license under 10 CFR 50.90;
  - responses by the licensee to the NRC's requests for additional information
  - changes in the facility site environs (e.g., new transportation, military, industrial, or residential facilities near your site
  - Refer to Reg Guide 2.7 for more examples

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FSAR Submittal

- By 10 CFR 50.4, “Written communications,” and the technical specifications:
  - The initial submittal must be on a total replacement basis (i.e., a complete FSAR that will replace the existing docketed FSAR)
  - Change pages are acceptable for subsequent updates unless submitted electronically, then a full FSAR is to be submitted.
  - The licensee is required to submit a list that identifies the affected pages of the FSAR changed in the submittal
  - a certification by a duly authorized officer of the licensee that:
    - the information accurately presents changes made since the previous submittal (up to a maximum date of 6 months before the submittal date
    - or that no such changes were made or needed
  - sensitive or proprietary information that the licensee seeks to have withheld from the public must be marked and submitted in accordance with 10 CFR 2.390

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QUESTIONS?

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BACK UP SLIDES

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Purpose of the NPUF Final Rule

- Implement Commission direction to streamline the license renewal process by establishing a more efficient, effective and focused regulatory framework
- Fix existing shortcomings in regulations for non-power licensees

Commission directed rulemaking

- The idea to eliminate license terms (or indefinite license term) was discussed in several SECY papers addressing license renewal for research and test reactors.
  - SECY-08-0161, Enclosure 1 –
    - license renewal streamlining options including an “Extended License Term” option which included the concept of indefinite terms
  - SRM for SECY-08-0161 states:
    - This long term plan should consider elements of the generic analysis approach, generic siting analysis, and the extended license term described in Enclosure 1 to SECY-08-0161.

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Extended license terms

- SECY-09-0095, Enclosure 2 discusses extended license terms and explains that the staff needs to study the topic:

  "The extended license term process could potentially provide significant benefit to RTR licensees while ensuring that the NRC continues to maintain adequate protection of the public and the environment."

No Notable Safety Considerations

- Accident dose criterion of 1 Rem TEDE or less
  - small fission product inventory
  - small radiological consequence for maximum hypothetical accident
- Low energy systems
  - low operating power and temperatures
  - minimal decay heat

No significant aging considerations

  - simple designs
  - proactive aging management / aging-related surveillance requirements
  - loss of coolant is an analyzed condition
- Slowly evolving licensing basis
  - Very low number of design changes each year
  - Few rulemakings apply

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No Nexus between License Renewal and Safety

Class 104a or c, except testing facilities

- In light of the following measures:
  - NUREG-1537
    - License renewal under NUREG-1537
  - Inspection program
  - Technical specifications
  - Existing reporting requirements
    - Safety issues with SSCs
    - Maintenance activities
  - FSAR Update rule requirement

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Summary of the NPUF Proposed Rule

- **Costs and Cost Savings (Undiscounted)**

	NRC	Licensee
Implementation Costs	$720,000	$140,000
Operations Costs	$1.8 million	$1.6 million
Cost Savings	$12 million	$5.5 million
Net Benefits (Cost Savings – Costs)	$9.4 million	$3.8 million

- **Total Net Benefit (Undiscounted): $13 million**
  - 3 Percent discounting: $8.9 million
  - 7 Percent discounting: $5.3 million
- **Backfit Considerations:**
  - Section 50.109 does not apply to NPUFs
  - Section 50.109 not applied to this proposed rule

Regulatory Policy – Class 104

The policy for regulation of Class 104 NPUFs is described in the Atomic Energy Act of 1954, as amended, Section 104a. and c.

Sec. 104. Medical Therapy and Research and Development

a. …the Commission is directed to permit the widest amount of effective medical therapy possible with the amount of special nuclear material available for such purposes and to impose the minimum amount of regulation consistent with its obligations under this Act to promote the common defense and security and to protect the health and safety of the public.

c. The Commission is directed to impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public and will permit the conduct of widespread and diverse research and development.

Regulatory Policy – Class 103

The policy for regulation of Class 103 NPUFs is described in the Atomic Energy Act of 1954, as amended, Section 103.

Sec. 103. Commercial Licenses

a. The Commission is authorized to issue licenses to persons applying therefor to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use100 import, or export under the terms of an agreement for cooperation arranged pursuant to section 123, utilization or production facilities for industrial or commercial purposes.101 Such licenses shall be issued in accordance with the provisions of chapter 16 and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purpose and provisions of this Act.

c. Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed, but not exceeding forty years from the authorization to commence operations and may be renewed upon the expiration of such period.

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Regulatory Definitions

- Non-power reactor means a research or test reactor licensed under § § 50.21(c) or 50.22 of this part for research and development [*10 CFR 50.2 Definitions*].

- Research reactor means a nuclear reactor licensed by the Commission under the authority of subsection 104c of the Act and pursuant to the provisions of § 50.21(c) of this chapter for operation at a thermal power level of 10 megawatts or less, and which is not a testing facility as defined by paragraph (m) of this section [*§ 170.3 Definitions*].

Regulatory Definitions (cont.)

- Testing facility means a nuclear reactor which is of a type described in § 50.21(c) of this part and for which an application has been filed for a license authorizing operation at:

  (1) A thermal power level in excess of 10 megawatts; or

  (2) A thermal power level in excess of 1 megawatt, if the reactor is to contain:

  (i) A circulating loop through the core in which the applicant proposes to conduct fuel experiments; or

  (ii) A liquid fuel loading; or

  (iii) An experimental facility in the core in excess of 16 square inches in cross-section. [§ 170.3 Definitions]

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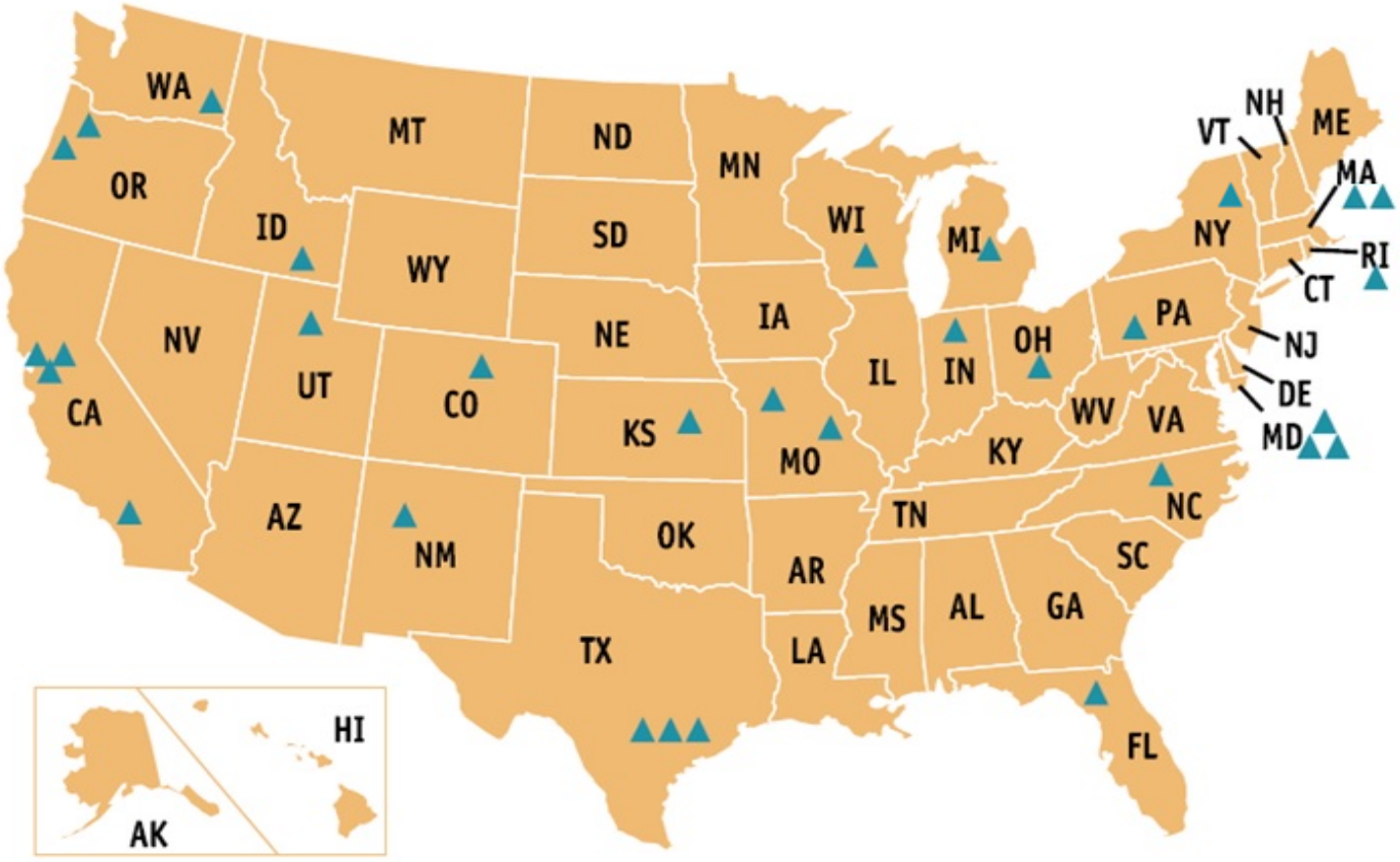
U.S. Non-Power Facilities



- 35 regulated NPUFs
  - 29 reactors operating in 21 States
  - 3 reactors permanently shut down and in decommissioning
  - 3 CPs; Shine, ACU, and Kairos