

The background features a dark blue gradient with faint, light-colored technical diagrams. On the left, a large circular scale with tick marks and numerical labels (160, 170, 180, 210, 220, 230, 240, 250, 260) is visible. To the right, there are several circular diagrams with arrows indicating clockwise or counter-clockwise rotation, resembling control panels or flowcharts.

ADVANCED REACTOR GENERIC ENVIRONMENTAL IMPACT STATEMENT AND RULEMAKING

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BACKGROUND

THE NUCLEAR REGULATORY ENVIRONMENTAL REVIEW PROCESS AT THE NRC



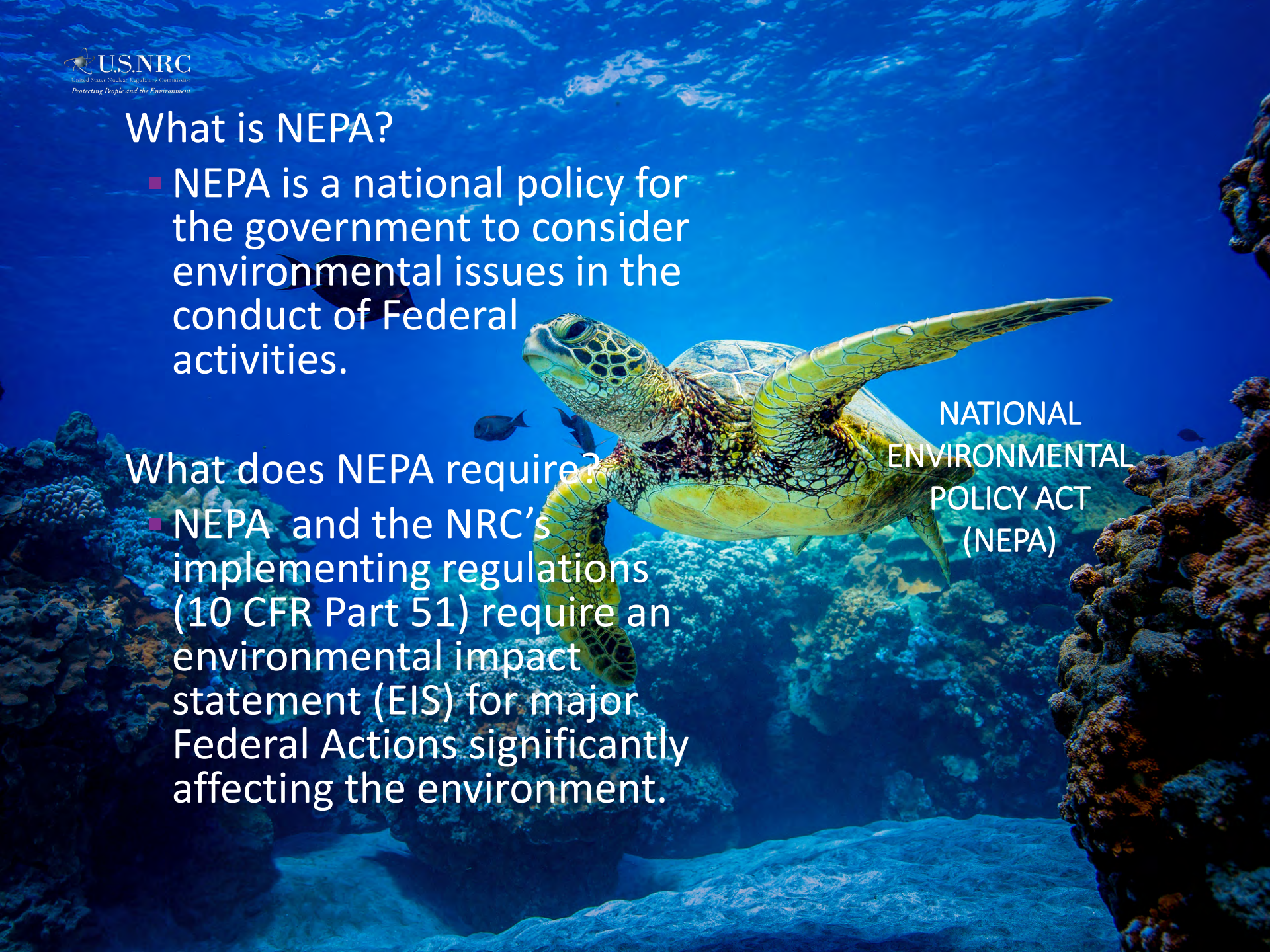
What is NEPA?

- NEPA is a national policy for the government to consider environmental issues in the conduct of Federal activities.

What does NEPA require?

- NEPA and the NRC's implementing regulations (10 CFR Part 51) require an environmental impact statement (EIS) for major Federal Actions significantly affecting the environment.

NATIONAL
ENVIRONMENTAL
POLICY ACT
(NEPA)



MAJOR ACTS AND REGULATIONS GOVERNING ENVIRONMENTAL REVIEWS*

- National Environmental Policy Act (NEPA, 1970)
- Endangered Species Act (ESA, 1973)
- National Historic Preservation Act (NHPA, 1966)
- Clean Water / Air Act
- FAST-41
- President's Council on Environmental Quality (CEQ)
- 10 CFR Part 51- Environmental Protection Regulations For Domestic Licensing And Related Regulatory Functions

* Not a complete list

NRC's NEPA Process

Notice of Intent to Conduct Scoping and Prepare EIS

Scoping Process

Notice of Availability of Draft EIS

Public Comments on Draft EIS

Notice of Availability of Final EIS

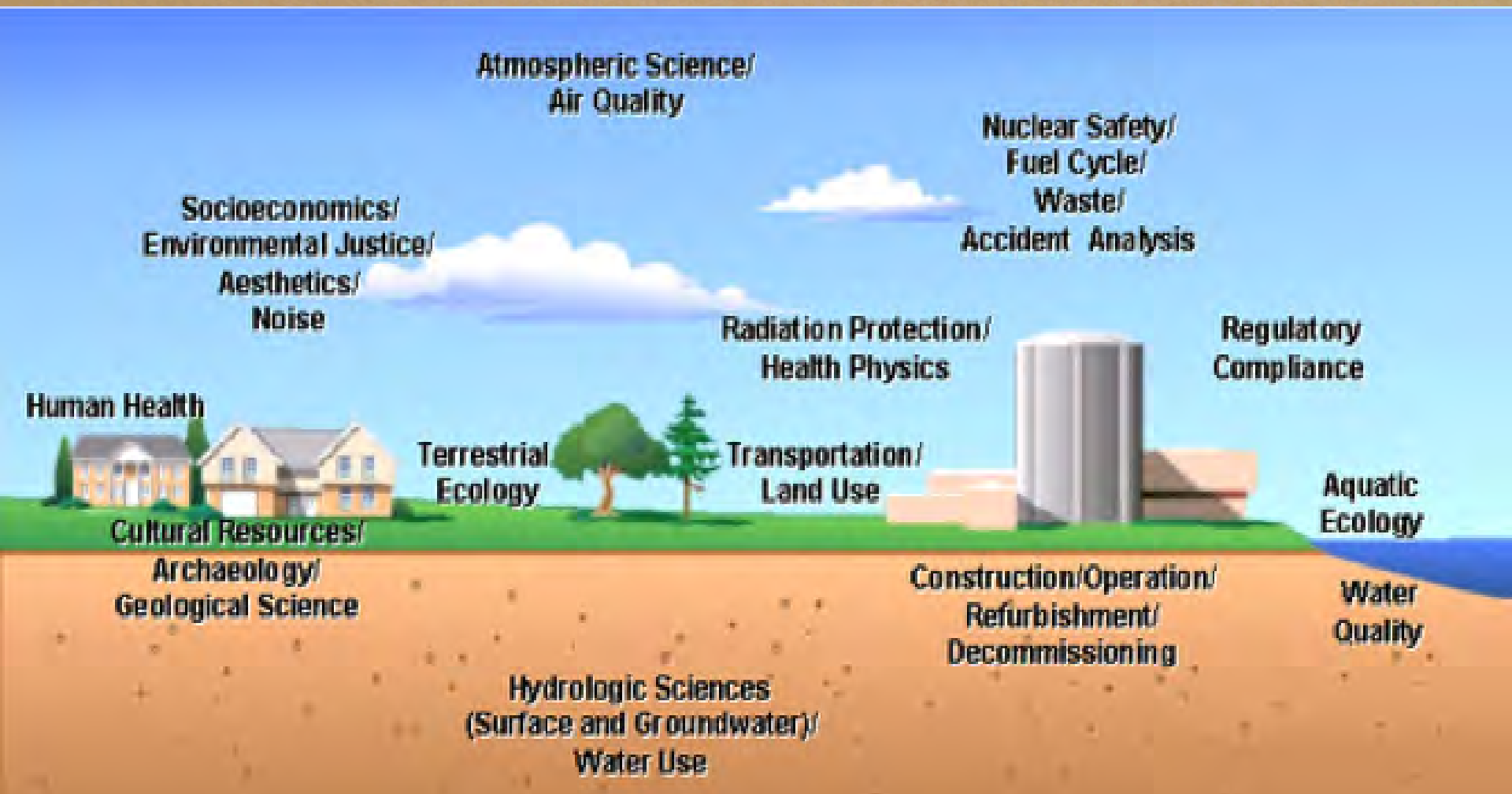
REVIEW PROCESS

- Publish *Federal Register* notice
- Public scoping period with advertised and facilitated meetings held in plant vicinity
- Publish *Federal Register* notice
- Public comment period on Draft EIS for 45 to 75 days with advertised and facilitated public meetings held in plant vicinity
- Publish *Federal Register* notice

COORDINATION
&
CONSULTATION
WITH FEDERAL,
STATE, LOCAL,
AND TRIBAL
GOVERNMENT
AGENCIES



ENVIRONMENTAL RESOURCES ASSESSED



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ADVANCED REACTOR GENERIC ENVIRONMENTAL IMPACT STATEMENT AND RULEMAKING

CURRENT STATUS

- On September 21, 2020, the Commission approved development of the ANR GEIS and directed the staff to codify the results through rulemaking (SRM-SECY-20-0020, ADAMS Accession No. ML20265A112).
- Scoping Summary Report issued on September 25, 2020 (ADAMS Accession No. ML20260H180).
- Staff has completed writing sections of the draft ANR GEIS.
- Staff is developing the proposed rule package, which includes: proposed rule language, revisions to guidance documents, regulatory analysis, and other related rulemaking documents.
- Proposed rule package due to the Commission in November 2021.

KEY FRAMEWORK

- The ANR GEIS uses a technology neutral, performance-based approach that utilizes a plant and site parameter envelope (PPE/SPE).
- Most environmental issues are decoupled from reactor power level.
- The PPE/SPE values and assumptions were developed to maximize the number of resource areas that could be generically resolved while addressing a wide variety of designs and sites.
- Category 1 issues are environmental issues that are generically resolved as SMALL; while Category 2 issues impacts cannot be determined and are not analyzed in the ANR GEIS because they are site-specific.
- It is anticipated that an applicant for any advanced reactor would be able to use the ANR GEIS (LWRs, Non-LWRs, SMRs, fusion reactors).
- The ANR GEIS evaluates both construction and operation for 16 “resource areas” such as land use, visual, ecology, air quality, water use, socioeconomics, noise, decommissioning, fuel cycle, transportation of fuel, and continued storage.

IMPLEMENTATION

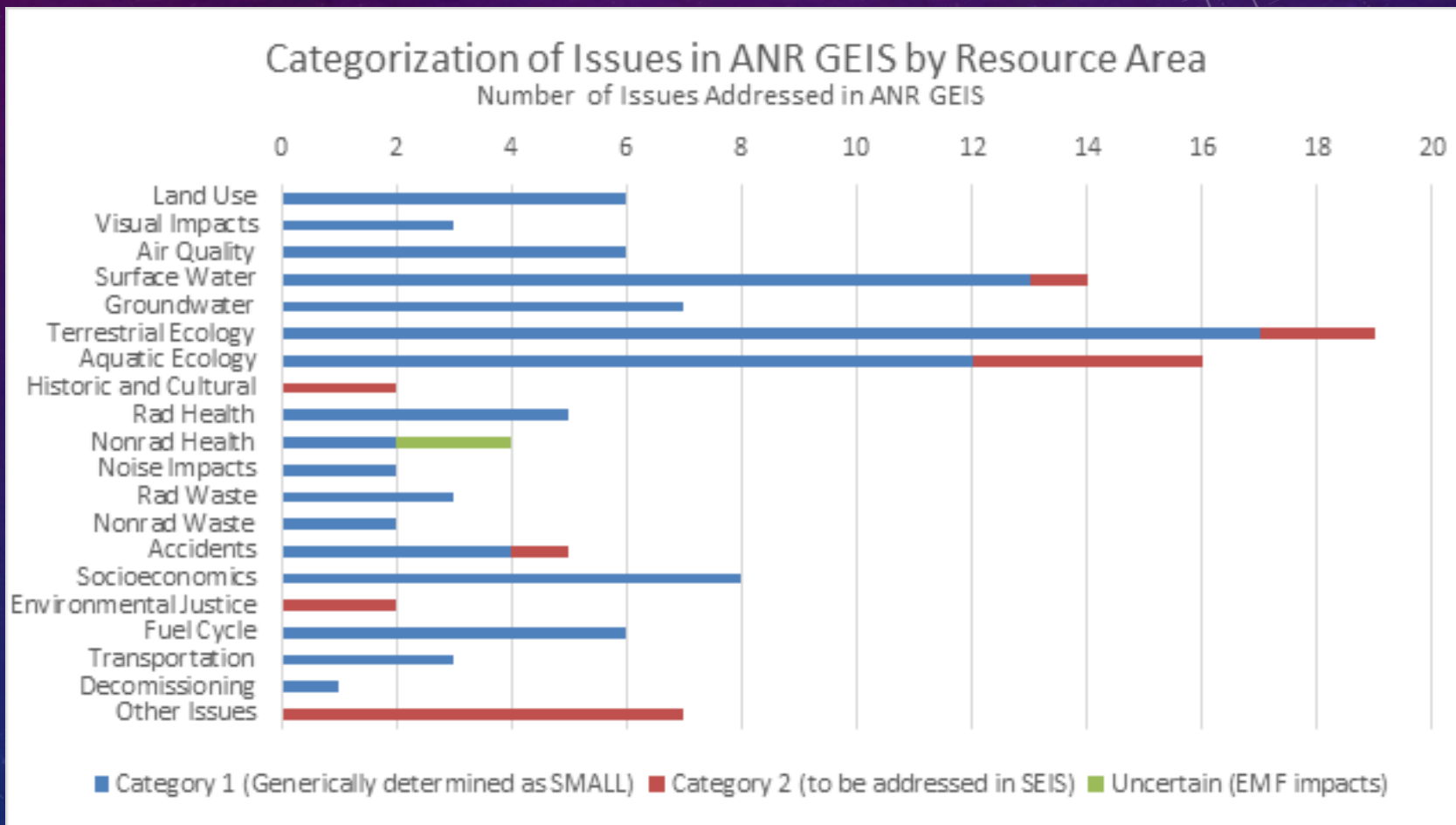
- ANR applicants may use GEIS findings in the Environmental Report provided:
 - reactor and site meet the plant and site parameter envelope (PPE/SPE) values and assumptions used in the GEIS, and
 - there is no new and significant information between the time the GEIS is finalized and when the applicant submits their application.
- NRC Staff would:
 - verify the PPE/SPE demonstration for Category 1 issues,
 - audit the applicant's new and significant process,
 - produce a Supplemental EIS that focuses on Category 2 issues and issues that could not meet the PPE/SPE values and assumptions while incorporating the demonstrated ANR GEIS findings.

PPE/SPE VALUES AND ASSUMPTIONS

- The PPE and SPE values and assumptions were developed by an interdisciplinary team of Subject Matter Experts assigned to prepare the GEIS. The SMEs developed the values and assumptions based on one or more of the following:
 - regulatory limits and permitting requirements relevant to the resource as established by Federal, State, or local agencies;
 - relevant information obtained from other NRC GEISs, including the License Renewal GEIS and the Continued Storage GEIS;
 - empirical knowledge gained from conducting evaluations and analyses for past new reactor EISs;
 - values and assumptions derived from other documents applying a PPE/SPE approach (such as the National Reactor Innovation Center PPE Report); and
 - subject matter expertise and/or development of calculations and formulas based upon education and experience with the resource.
- PPE and SPE values and assumptions were set broadly enough to make the GEIS a useful licensing tool, while still ensuring that project-specific analyses evaluate and document significant environmental impacts for the public and decision-makers and ensure that NRC's NEPA requirements (and related laws, rules, and regulations) are met.

ENVIRONMENTAL ISSUES

- A complete list of Environmental Issues for Each Resource Area are in ADAMS.



PPE/SPE VALUES AND ASSUMPTIONS

PPE/SPE Values and Assumptions Table includes parameters applicable to the resource area issues can be found at ML21189A176.

Example: Cooling Towers and Features.

DRAFT – PRELIMINARY TEXT		
Parameter	Values and Assumptions	Basis/Methodology
Cooling Towers	<ol style="list-style-type: none">1. No natural draft cooling towers2. Would be equipped with drift eliminators3. Makeup water would be fresh (salinity less than 1 ppt)	Various past new reactor EISs indicate that natural draft cooling towers are tall structures over 200 ft in height that may be visible from substantial distances and from which salt drift and fogging may affect substantial areas of offsite land.
Other Cooling Features	<ol style="list-style-type: none">1. No once-through cooling2. No new cooling ponds3. No new reservoirs4. No spray irrigation ponds	Once-through cooling systems have a substantial potential for significant impacts on aquatic biota from entrainment and impingement and are essentially not possible due to Section 316(b) of the Clean Water Act (33 U.S.C. § 1326-TN4823). Operation of cooling ponds can have potentially significant effects on aquatic and terrestrial biota. Building reservoirs can affect large areas of aquatic and terrestrial habitats, including sensitive wetland, floodplain, and riparian habitats.

CATEGORY 2 ISSUES

- Staff determined 19 resource area issues require a site or project specific analysis.
 - Surface Water Quality Degradation Due to Chemical and Thermal Discharges (Operation)
 - Terrestrial and Aquatic Endangered Species and Habitats (Construction and Operation)
 - Aquatic Thermal Impacts on Aquatic Biota (Operation)
 - Other Effects of Cooling-water Discharges on Aquatic Biota (Operation)
 - Historic and Cultural Resources (Construction and Operation)
 - Severe Accidents (Operation)
 - Environmental Justice (Construction and Operation)
 - Cross Cutting Issues- Climate Change and Cumulative
 - Non-Resource Related Issues
 - Purpose and Need
 - Need for Power
 - Site, Energy and System Design Alternatives

REGULATORY GUIDE 4.2 REVISIONS

- Regulatory Guide 4.2 provides guidance to applicants on the preparation of environmental reports
 - Guidance for ANR applicants mostly contained in Appendix C of RG 4.2.
 - General guidance for ERs referencing the ANR GEIS
 - Additional guidance for ANR applications
 - Demonstration method of PPE/SPE values and assumptions
 - If PPE/SPE value or assumption not met, then follow guidance in RG 4.2 Main Body

RULEMAKING SCHEDULE

November
2021

- Proposed rule submitted to Commission

May 2022
(estimated)

- Proposed rule publication for 60-day comment period

May 2023
(estimated)

- Final rule submitted to Commission

Jan 2024
(estimated)

- Final rule publication

QUESTIONS?