



Scoping Meeting

Small-Scale Advanced Reactor Generic Environmental Impact Statement (GEIS)

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U.S. Nuclear Regulatory Commission
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Webinar Info: <https://usnrc.webex.com>; Meeting No: 905642855
Technical Difficulties? Please email Daniel.Barnhurst@nrc.gov

Purpose of the Meeting

- Overview of the NRC's Mission
- What is a GEIS
- Describe the NRC's environmental review process and scoping
- Approach for developing the GEIS
- Describe how you can provide comments during the scoping period
- **Listen to and gather your comments**

Who We Are and What We Do

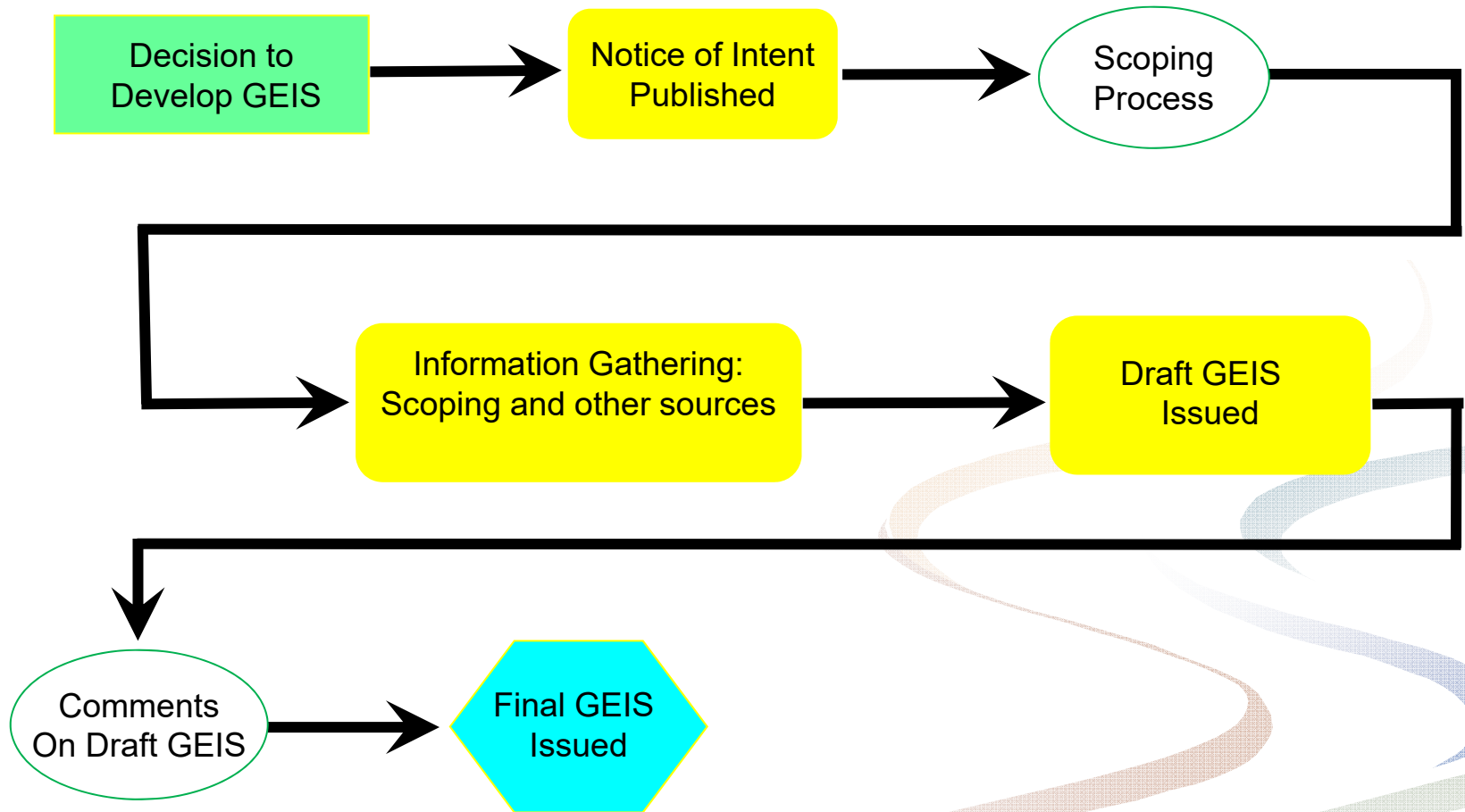
U.S. Nuclear Regulatory Commission

- Independent Federal Agency
- Over 45 years of experience regulating operating reactors and other civilian use of nuclear materials
- Mission: To protect public health and safety, promote common defense and security, and protect the environment

What is a GEIS

- A type of environmental impact statement that considers the environmental impacts of environmental issues to reach generic or common conclusions.
- An application specific review is required for any environmental issues that are not generic and would be analyzed in a supplemental environmental impact statement.
- A GEIS streamlines the environmental review because the site specific review only needs to focus on unbounded category 1 issues and category 2 issues.

Environmental Review Process



Scoping Process

- Scoping process helps determine the significant issues to be analyzed in an environmental impact statement
- Comments that are relevant are considered in developing the environmental impact statement
- A Scoping Summary Report will be issued following the close of the scoping period

Scoping Process for the GEIS

- Identify the parameters needed to evaluate the environmental impacts of constructing and operating a small-scale advanced reactor
- Help us identify issues that can be resolved generically in the GEIS and issues that will need to be addressed in a site-specific supplemental environmental impact statement
- GEIS scoping period ends on **June 30, 2020**

GEIS Background

- Staff issued an information paper (SECY 20-0020) informing the Commission that it planned to develop an advanced reactor GEIS for small-scale reactor of approximately 30 megawatts thermal.
- Exact power level to be determined in scoping process.

GEIS Approach

- Generally follow approach of license renewal GEIS. Address construction and operational impacts
- Rely on Decommissioning GEIS and Continued Storage GEIS
- Determine which environmental issues will be categorized as generic (category 1) or site-specific (category 2)
- Supplemental environmental impact statement issued for each future application.

GEIS Approach (Cont.)

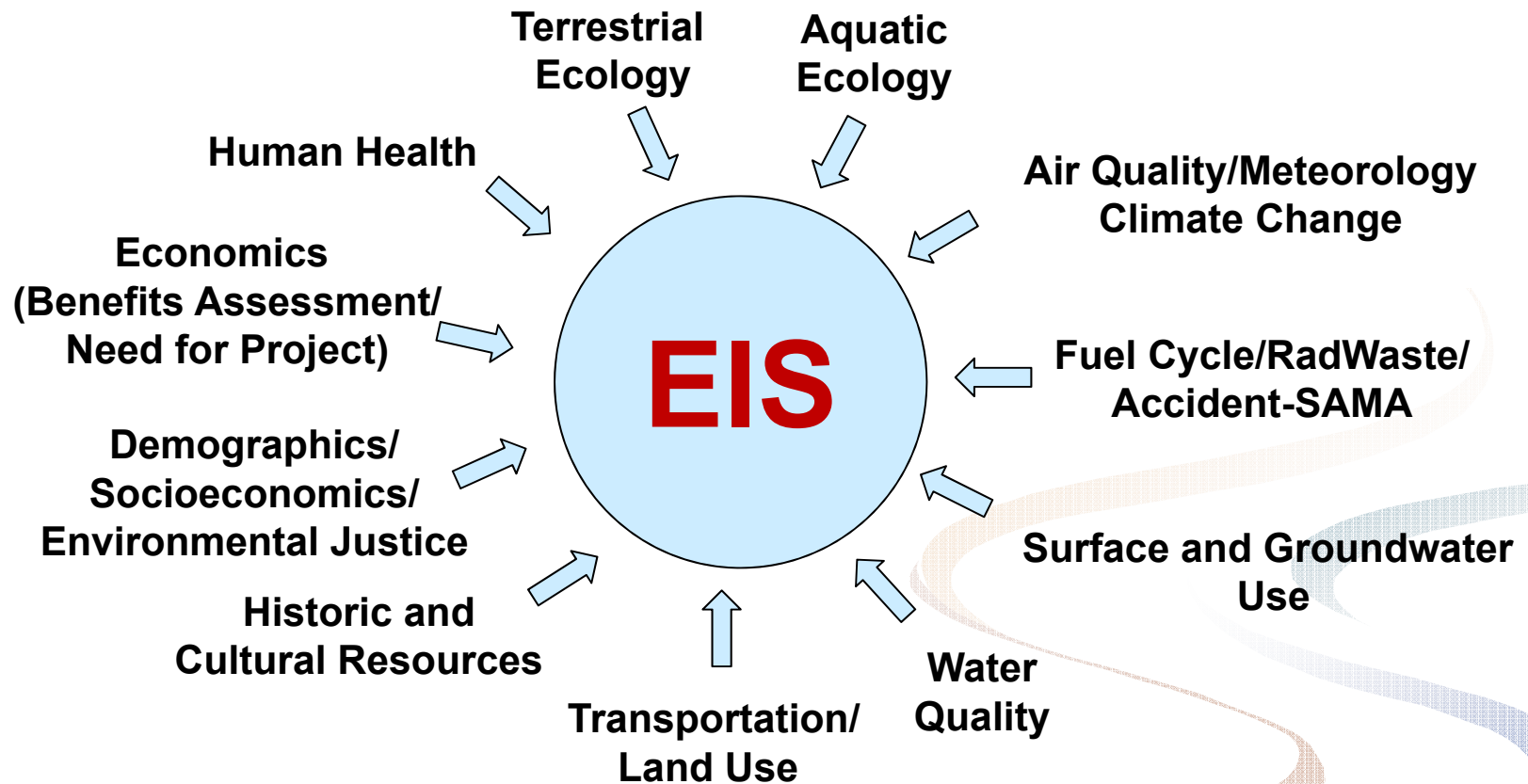
How to generically evaluate the impacts from any type of advanced reactor located anywhere in the US?

- Establish limits on the size of the reactor and the site so most environmental impacts would be category 1.
- Use a technology inclusive plant parameter envelope to bound all types of small-scale reactors.
- Use a site parameter envelope to bound the site.

GEIS General Assumptions

- Assumes the site meets NRC regulations in 10 CFR 100 Reactor Siting Criteria
- Assumes the reactor meets NRC dose limits in 10 CFR 20 Standards for Protection Against Radiation
- Project can receive required permits from other agencies
- Standard mitigation practices followed (best management practices)

Resource Areas/Issues



Draft Plant Parameter Envelope

Parameter	Value/Description	Assumptions
Site Size	100 acres	<ol style="list-style-type: none"> 1. Meets NRC Siting Regulations 2. Stand-alone site or designated portion of larger site (e.g., Government reservation, military base, or existing power plant site) 3. Complies with applicable zoning 4. Not inconsistent with any comprehensive plans or other land use plans
Permanent Footprint of Disturbance	30 acres	<ol style="list-style-type: none"> 1. No prime farmland, or not adjacent to actively used farmland 2. No wetlands, floodplains, surface water features, riparian habitat, climax or old-growth vegetation, or dedicated conservation land
Temporary Footprint of Disturbance	Additional 20 acres	<ol style="list-style-type: none"> 1. Restored to original grade and seeded or planted with indigenous vegetation once construction is complete. 2. Meets assumptions for permanent footprint
Offsite right-of-way	1000 ft X 100 ft (new right-of-way) or unlimited length (within or adjacent to existing right-of-way)	<ol style="list-style-type: none"> 1. Meets assumptions for site size 2. Does not cross or pass adjacent to parks, wildlife refuges, or conservation lands 3. Does not cross Wild and Scenic River or National Heritage River, or river of similar state designation

Draft Plant Parameter Envelope (Cont.)

Parameter	Value/Description	Assumptions
Cooling and Service Water Intake	1000 Gallons per minute (gpm)	1. If water cooled, maximum amount of water removed from surface water bodies for cooling water makeup
Consumptive water use	400 gpm	1. Consumption through evaporative loss during the cooling process
Plant Water Discharge	600 gpm	1. Amount of water discharged to waterbody after use for plant purposes including cooling (i.e., blowdown), and service water system. 2. Also includes other discharges from potable and sanitary systems (if applicable).
Blowdown Temperature and Constituent Concentrations	Within applicable Clean Water Act limits.	1. Discharge results mainly from plant blowdown. 2. Discharges are regulated under a clean water act permit and meets established discharge limits for temperature and for quantity of waste and concentration of each constituent.
Potable and Sanitary Water Use and Discharge	5 gpm	1. If groundwater is used, pumping rates fall within permissible limits. 2. If municipal water and sewage is used, usage amount is available and within capacity of the system.

Draft Plant Parameter Envelope (Cont.)

Parameter	Value/Description	Assumptions
Emissions from construction equipment and standby power equipment during operations	Criteria pollutants are less than Clean Air Act <i>de minimis</i> levels.	1. Clean Air Act requires a conformity determination for maintenance or nonattainment areas that exceed <i>de minimis</i> values. Not applicable to attainment areas.
Megawatts Thermal (MW(t))	60 MW(t)	1. Total thermal power generated by all units on site; can be more than one unit, however total thermal power is 60 MW(t).
The operational life for which the plant is designed	80 years	1. Bounding value. Assumes 40 year license with two 20 year license renewals for operational life
Building Height	50 feet	1. Tallest structure, other than meteorology tower
Foundation embedment	50 feet	1. The depth from finished grade to the bottom of the basemat for the most deeply embedded power block structure

Draft Plant Parameter Envelope (Cont.)

Parameter	Value/description	Assumptions
Maximum number of Construction workers	150 people	1. Maximum number of construction workforce, half of whom in-migrate to the host county is less than 5% of total host county populations
The number of total permanent staff to support operations	50 people	1. Maximum operations workforce all of whom in- migrate to the host county.
The additional number of temporary staff for refueling outage	100 people	1. No refueling workers in-migrate to the host county.
Noise Generation	65 Dba	1. At site boundary

Draft Plant Parameter Envelope (Cont.)

Parameter	Value with units	Definitions/Assumptions
Station Capacity Factor	95% or greater	1. The percentage of time that a plant is capable of providing power to the grid
The normal plant operating cycle length	2 to 20 years	1. Different designs have different operating cycle length
Electrical output in mega-watt-electric MW(e)	20 MW(e)	<ol style="list-style-type: none"> 1. Most nuclear steam supply system designs are approximately 33 to 37% efficient applying a Rankine cycle without superheated steam. 2. It is acceptable that if the efficiency is higher than the bounding value can be slightly higher than 20 MW(e).

Draft Site Parameter Envelope

Parameter	Value/description	Assumptions
Water for Sanitary and Potable Water Uses	Up to 5 gpm supply provided by municipal systems or groundwater resources.	<ol style="list-style-type: none"> 1. If groundwater is used, pumping rates fall within permissible limits and the aquifer supplying water must support the required amount at a rate that is sustainable and does not impact offsite uses or users 2. If municipal water supply is used, usage amount is available and within capacity of the system 3. Sanitary discharge to sewage treatment plant is within available capacity and permissible. The plant is allowed to hook up to municipal water and sewage system with sufficient capacity
Surface Water-Availability	If plant uses surface water, monthly minimum flow is 75 cubic feet per second (cfs).	<ol style="list-style-type: none"> 1. Not applicable if plant is air cooled 2. Maximum average plant water withdrawals are less than 3% of minimum monthly flow of water body 3. Water availability is demonstrated by state-issued withdrawal permit 4. Withdrawals do not prevent the maintenance of applicable instream flow requirements 5. Water rights are obtainable, if needed, and amount is available without impact to other uses and users. 6. Large water bodies such as the oceans, Great Lakes are presumed to have sufficient water availability 7. Coastal Zone Management Act consistency determination obtained

Draft Site Parameter Envelope (Cont.)

Parameter	Value/description	Assumptions
Surface Water Discharge	If plant is discharging to surface water, monthly minimum flow is 75 cfs	<ol style="list-style-type: none"> 1. Not applicable if plant is air cooled 2. Maximum average plant discharge is small in comparison to monthly minimum flow of water body (<3%) and thermal and chemical components within the discharge would be diluted quickly 3. Discharge is in accordance with state/local permits 4. Altered current patterns and salinity gradients would be localized 5. Large water bodies such as the oceans, Great Lakes are presumed to have sufficient water capacity for dilution as long as restrictions on localized impacts are met
Groundwater- Availability and Quality	Pumping rate of < 100 gpm (regardless of proposed purpose)	<ol style="list-style-type: none"> 1. Pumping rate is sustainable, is a small percent of flow within the aquifer and does not impact availability to offsite uses and users 2. Withdrawal rates are within limits which are permissible by applicable state or local agencies 3. Groundwater usage does not impact quality within the aquifer

Draft Site Parameter Envelope (Cont.)

Parameter	Value/description	Assumptions
Air quality	Attainment, Maintenance Area, or Nonattainment	1. Emission of criteria pollutants are less than <i>de minimis</i> levels
Economics	Annual property tax for the proposed project is less than ten percent of the total property tax revenue of the host county	1. Overnight construction cost of the proposed project is no more than \$500 million USD

Likely Category 2 Issues

These issues are likely to be category 2 in the advanced reactor GEIS:

- Endangered Species
- Historic and Cultural Resources
- Severe Accidents/severe accident mitigation alternatives
- Climate Change

Likely Category 2 Issues (Cont.)

- Alternatives – require a comparison between project and alternatives only available when application is received
- Need for the project – need for the project can only be determined when application is received
- Cost and Benefit of the project can only be determined when application is received

Important Dates

- Scoping period ends - June 30, 2020
- Draft GEIS issued - May 1, 2021
- Final GEIS issued - May 1, 2022

How to Submit Scoping Comments

- Only need to submit comments once using one of the below methods.
 - ⊕ **Email comments to:** AdvancedReactors-GEIS@nrc.gov.
 - ⊕ **Submit comments** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2020-0101**.
 - ⊕ **Mail comments to:** Office of Administration, Mail Stop TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.
 - ⊕ **At this meeting:** Comments are recorded at this meeting. By Phone - Press * then 1. By WebEx - send WebEx chat to “All Panelists”