



# Preliminary Results of Environmental Review Browns Ferry Nuclear Plant, Units 1, 2, and 3

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Nuclear Regulatory Commission

January 25, 2005





# Purpose of Today's Meeting

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- Discuss NRC's license renewal process
- Describe the environmental review process
- Discuss the results of our review
- Provide the review schedule
- Accept any comments you may have today
- Describe how to submit comments



# Browns Ferry Nuclear Plant, Units 1, 2, and 3 License Renewal

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- Current operating licenses expire
  - Unit 1 – 20 Dec 2013
  - Unit 2 – 28 Jun 2014
  - Unit 3 – 2 Jul 2016
- Application requests authorization to operate units for an additional 20 years



# NRC's License Renewal Review

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- Safety review
  - Environmental review
  - Plant inspections
  - Advisory Committee on Reactor Safeguards (ACRS)





# National Environmental Policy Act

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- NEPA requires Federal agencies to use a systematic approach to consider environmental impacts
  - Commission has determined that an environmental impact statement (EIS) will be prepared for a license renewal action



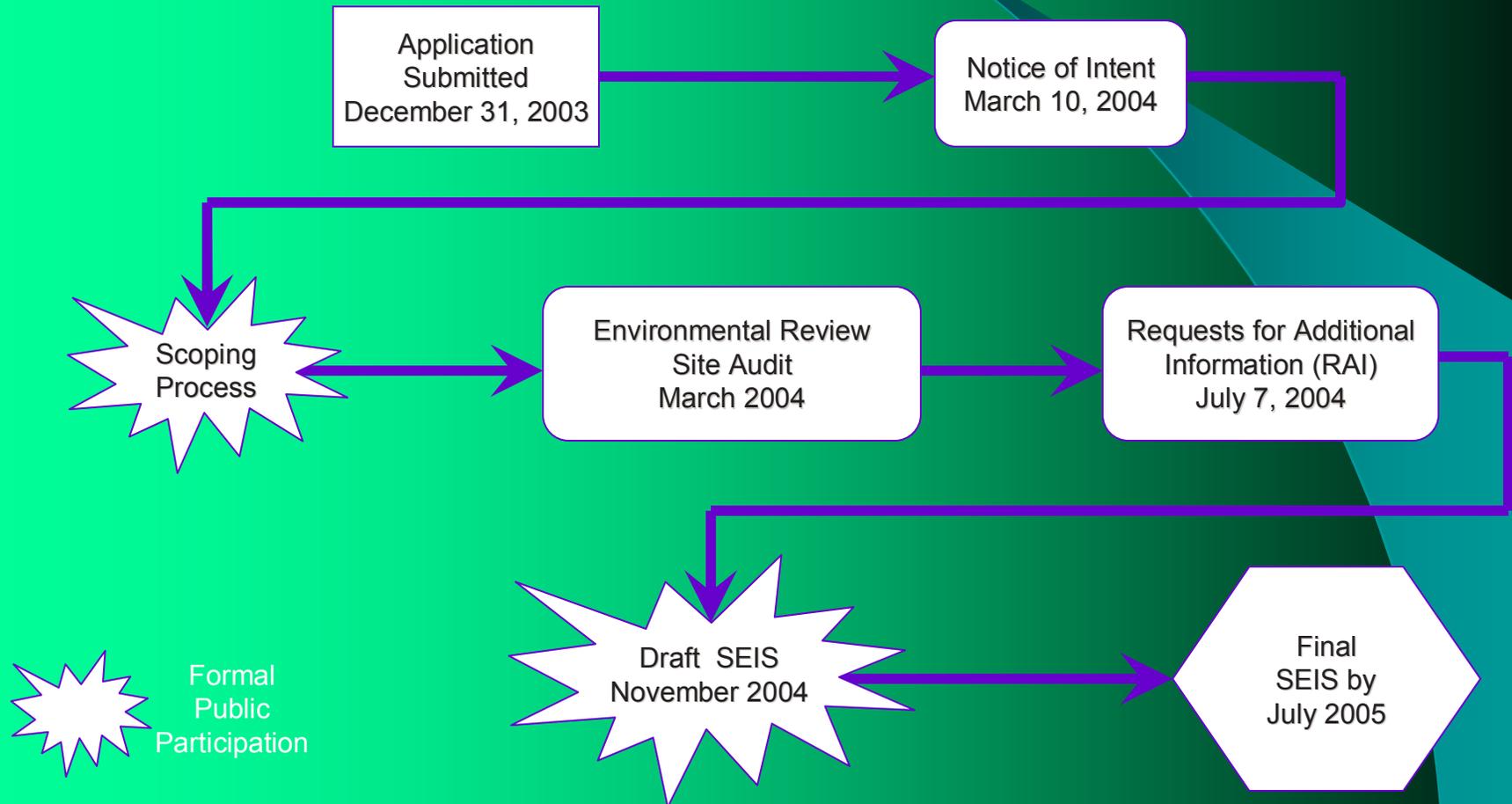
# Decision Standard for Environmental Review

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To determine whether or not the adverse environmental impacts of license renewal for Browns Ferry Nuclear Plant, Units 1, 2, and 3, are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

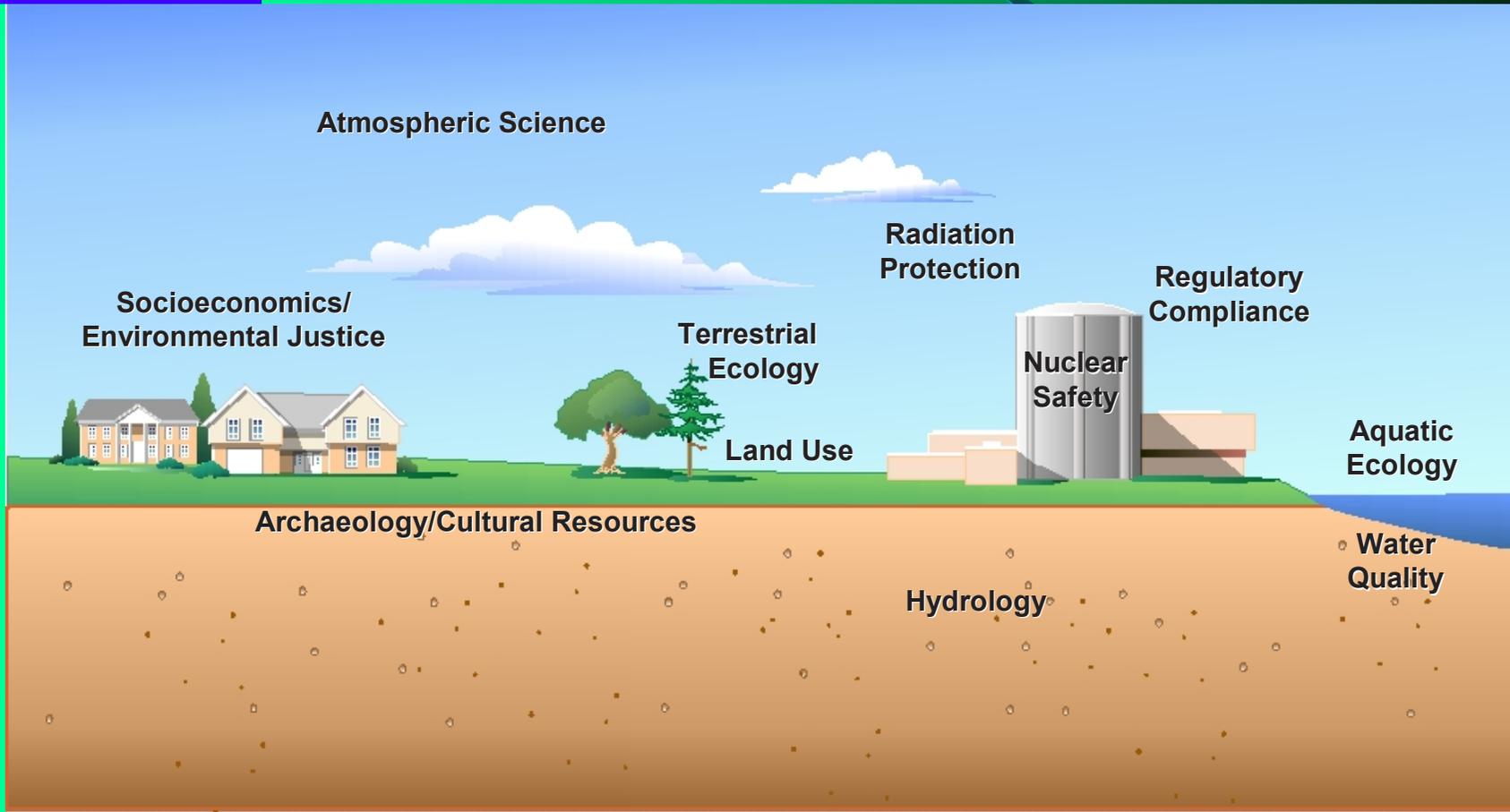


# Environmental Review Process for License Renewal



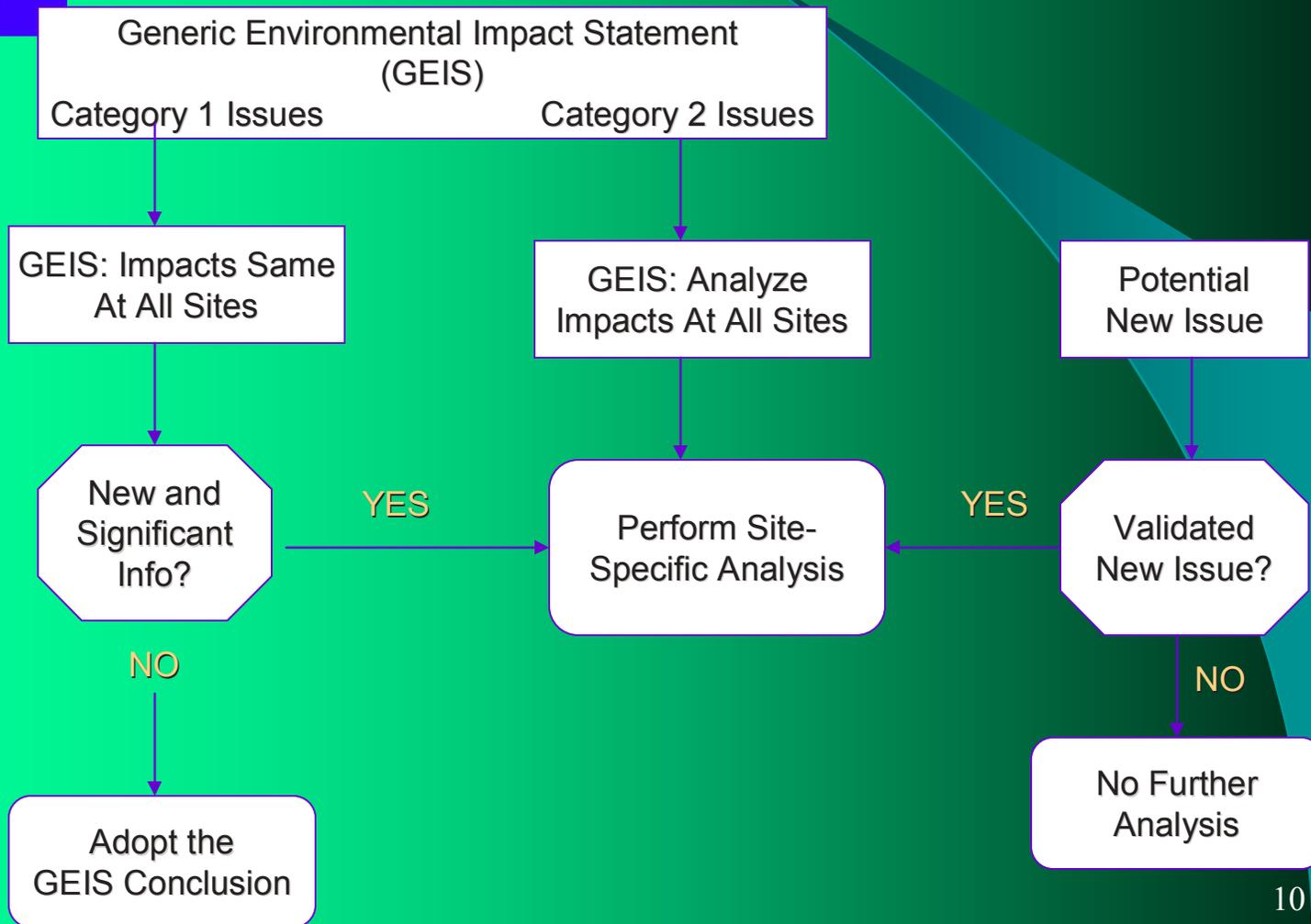


# Team Expertise





# Analysis Approach



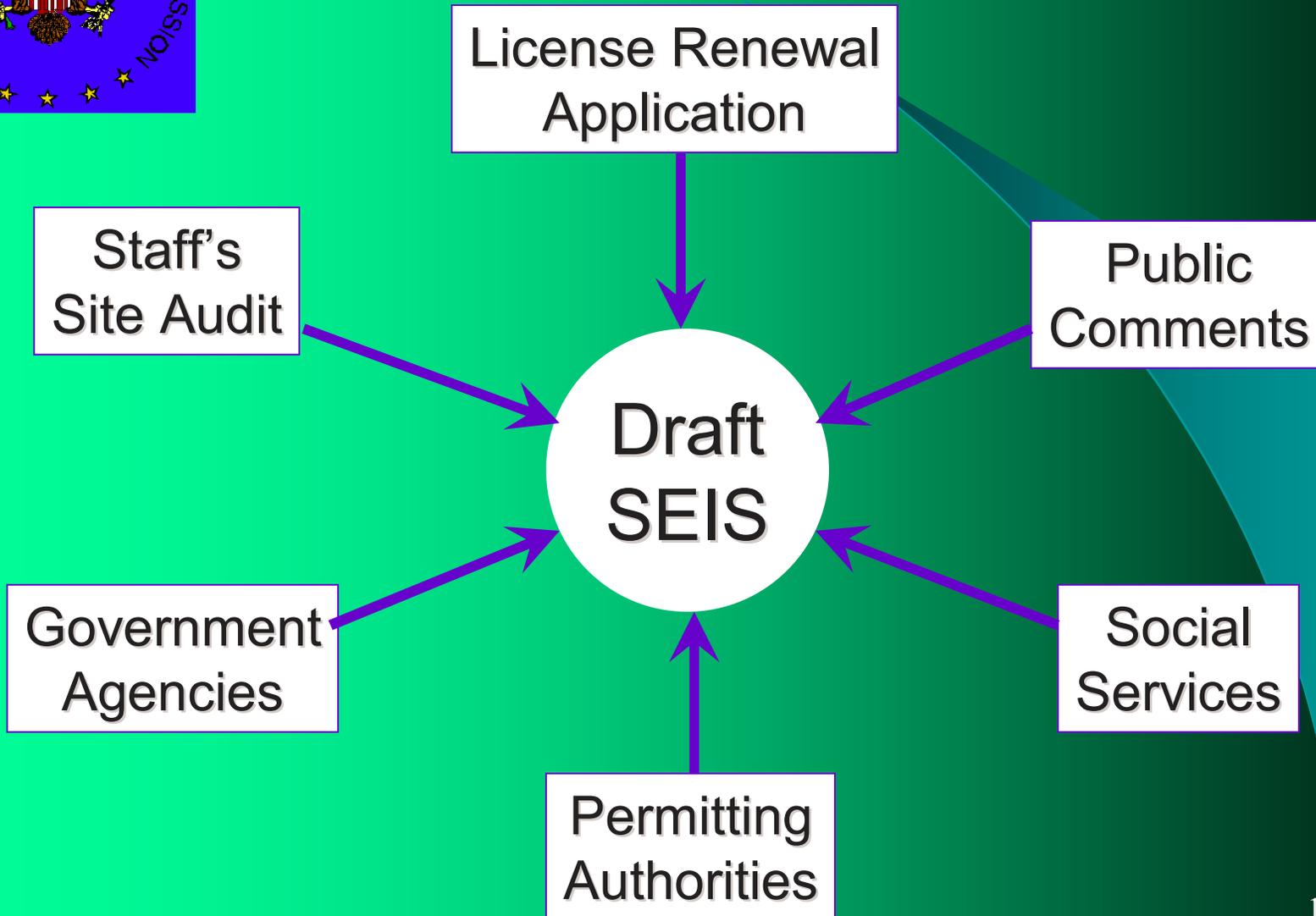


# How Impacts are Quantified

- NRC-defined impact levels:
  - SMALL: *Effect is not detectable or too small to destabilize or noticeably alter any important attribute of the resource*
  - MODERATE: *Effect is sufficient to alter noticeably, but not destabilize important attributes of the resource*
  - LARGE: *Effect is clearly noticeable and sufficient to destabilize important attributes of the resource*
- Consistent with the Council on Environmental Quality guidance for NEPA analyses



# Information Gathering





# Environmental Impacts of Continued Operation

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- **Cooling System**
  - **Transmission Lines**
  - **Radiological**
  - **Socioeconomic**
  - **Groundwater Use and Quality**
  - **Threatened or Endangered Species**
  - **Accidents**



# Cooling System Impacts

## ➤ Category 2 Issues

- Entrainment of Fish and Shellfish in Early Life Stages
- Impingement of Fish and Shellfish
- Heat Shock
- Water Use Conflicts
- Microbiological Organisms

## ➤ Preliminary findings

- Impacts are SMALL
- No additional mitigation required



# Transmission Lines

- **Category 2 issues**
  - Electromagnetic fields, acute effects (electric shock)
- **Issue not categorized**
  - Electromagnetic fields, chronic effects
- **Preliminary findings**
  - Impacts are SMALL
  - No additional mitigation required



# Radiological Impacts

- **Category 1 issues**
  - Radiation exposures to the public
  - Occupational radiation exposures
  
- **Preliminary findings**
  - No new and significant information identified
  - GEIS concluded impacts are **SMALL**



# Socioeconomic Impacts

- **Category 2 Issues**
  - **Housing**
  - **Public Services: public utilities**
  - **Offsite land use**
  - **Public services, transportation**
  - **Historic and archaeological resources**
- **Issue not categorized**
  - **Environmental Justice**
- **Preliminary findings**
  - **No new and significant information identified**
  - **GEIS concluded impacts are SMALL**



# Groundwater

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- **Category 2 Issues**
  - **Groundwater use conflicts (cooling towers)**
  
- **Preliminary findings**
  - **No new and significant information identified**
  - **GEIS concluded impacts are SMALL**



# Threatened and Endangered Species



Bald eagle



Gray bat



Leafy prairie clover



Rough pigtoe

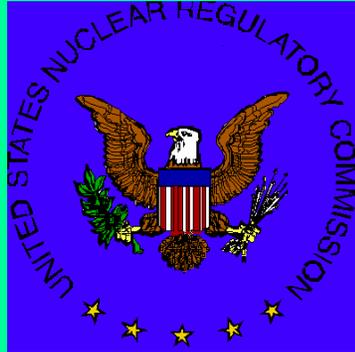


Slackwater darter



# Cumulative Impacts of Operation

- **Considered impacts of renewal term operations combined with other past, present, and reasonably foreseeable future actions**
  - **evaluated to end of 20-year renewal term**
  - **geographic boundaries dependent on resource**
- **No significant cumulative impacts were identified**



# Other Environmental Impacts Evaluated

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- **Uranium Fuel Cycle and Solid Waste Management**
- **Decommissioning**

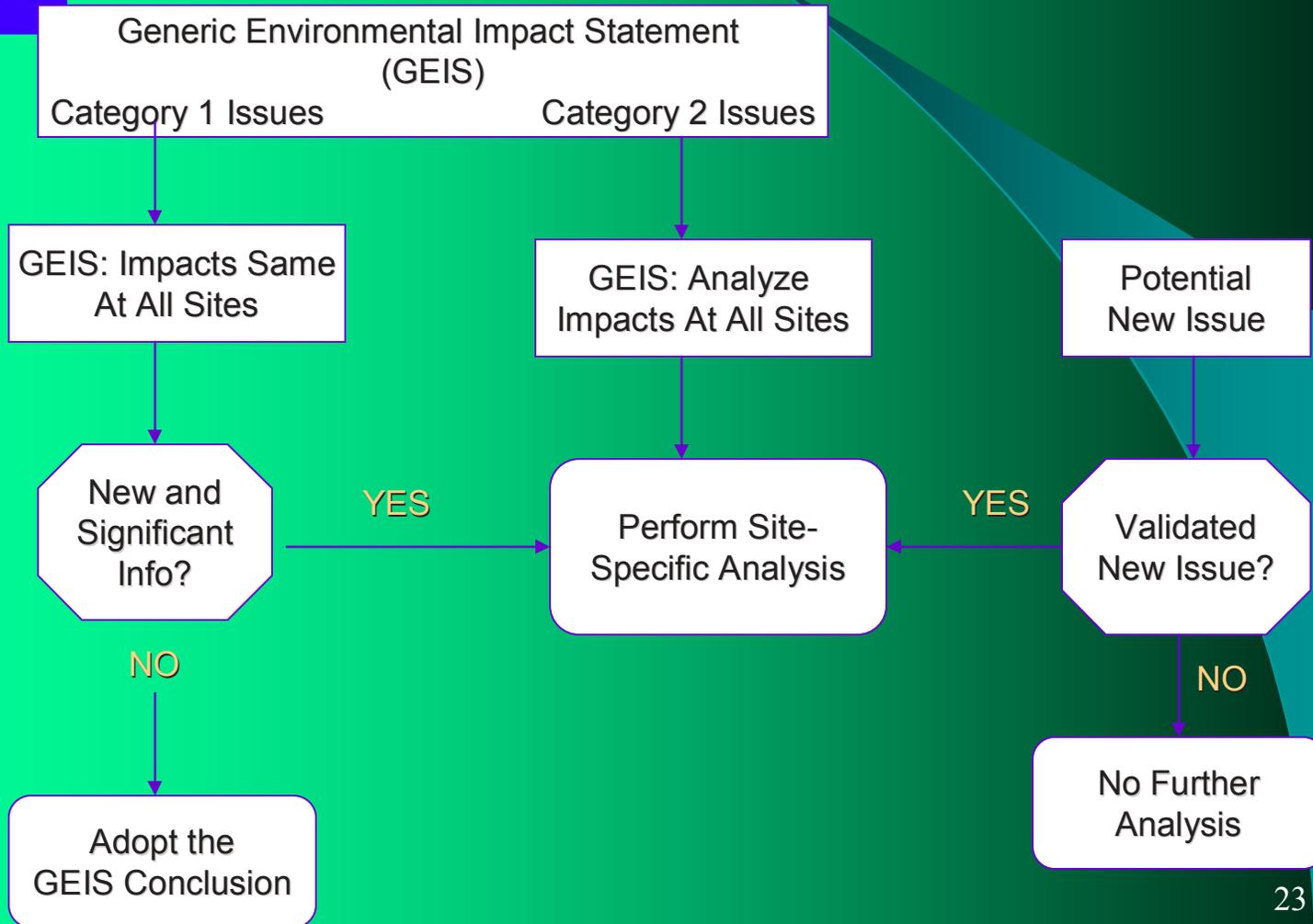


# Alternatives

- **No-action**
- **Alternative energy sources**
  - **New generation facilities (Coal, Coal Gasification, Natural Gas, Nuclear)**
  - **Purchased electrical power**
  - **Other alternatives (Oil, Wind, Solar)**
  - **Combination of alternatives**
- **Environmental effects of alternatives in at least some impact categories reach MODERATE or LARGE significance**



# Analysis Approach





# Preliminary Conclusions

- **GEIS Conclusions on Category 1 issues adopted.**
- **Impacts resulting from Category 2 issues are of SMALL significance.**
- **No new impacts identified.**
- **Environmental effects of alternatives may reach MODERATE or LARGE significance.**



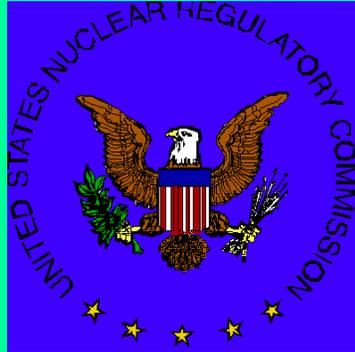
# Postulated Accidents

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Design-basis accidents

➤ Severe accidents

➤ Severe accident mitigation alternatives  
(SAMAs)



# SAMA Evaluation Process

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- Characterize overall plant risk
  - Identify potential improvements
  - Quantify risk reduction potential and implementation costs
  - Determine whether implementation of any of the improvements is required to support license renewal



# Preliminary Results of SAMA Evaluation

- Approximately 135 candidate improvements considered
- Set of SAMAs reduced to 43 based on multi-step screening process
- Detailed cost/benefit analysis shows that none candidates are cost beneficial



# Preliminary Conclusions

- Impacts of license renewal are SMALL for all impact areas
- Impacts of alternatives to license renewal range from SMALL to LARGE
- The staff's preliminary recommendation is that the adverse environmental impacts of license renewal for Browns Ferry are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable



# Environmental Review Milestones

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- Draft SEIS issued – December 3, 2004
- Draft SEIS comment period ends – March 2, 2005
- Issue final SEIS – July 2005



# Point of Contact and Reference Documents

- Agency point of contact:  
Michael Masnik  
(800) 368-5642, Ext. 1191
- Documents are located at Athens-Limestone Public Library, Athens, Alabama
- Draft SEIS can also be viewed at the NRC's Web site ([www.nrc.gov](http://www.nrc.gov)) at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement21/sr1437s21.pdf>



# NRC Addresses

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Provide written comments:

- By mail at: Chief, Rules and Directives Branch  
Division of Administrative Services  
Mailstop T-6D59  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555
- In person at: 11545 Rockville Pike  
Rockville, Maryland
- E-mail at: [BrownsferryEIS@nrc.gov](mailto:BrownsferryEIS@nrc.gov)

