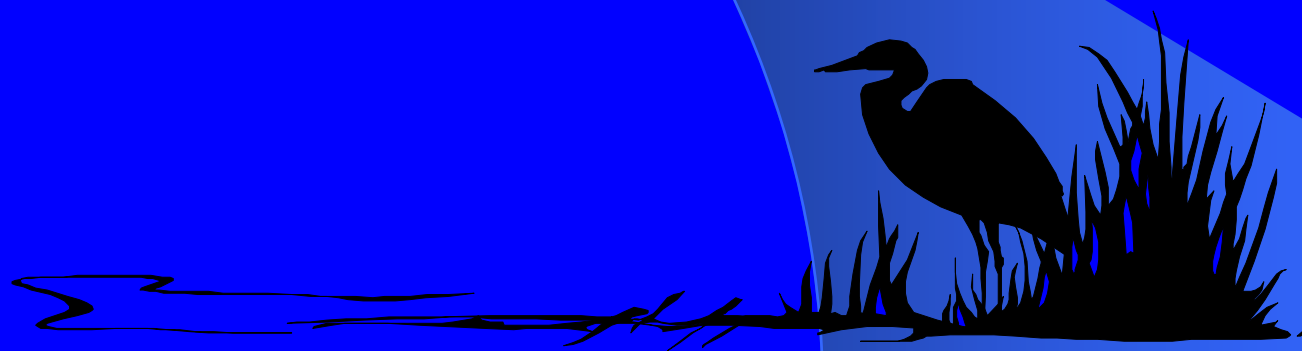
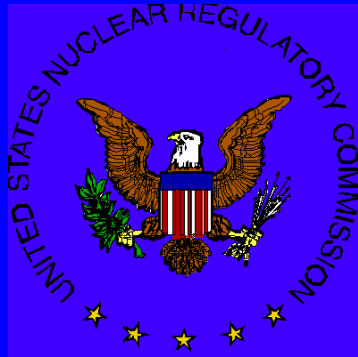


# Preliminary Results of Environmental Review Brunswick Steam Electric Plant, Units 1 and 2

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Nuclear Regulatory Commission  
October 18, 2005

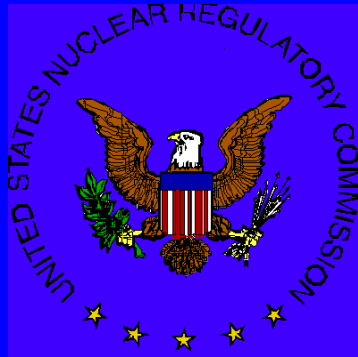




# Purpose of Today's Meeting

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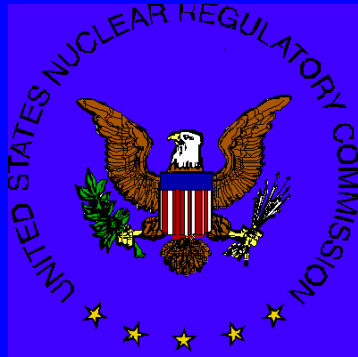
- Discuss NRC's license renewal process
- Describe the environmental review process
- Discuss the results of our review
- Provide the review schedule
- Accept any comments you may have today
- Describe how to submit comments



# Brunswick Steam Electric Plant, Units 1 and 2 License Renewal

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- Operating licenses expire in 2016 and 2014, respectively
- Application requests authorization to operate the plant (Units 1 and 2) for an additional 20 years



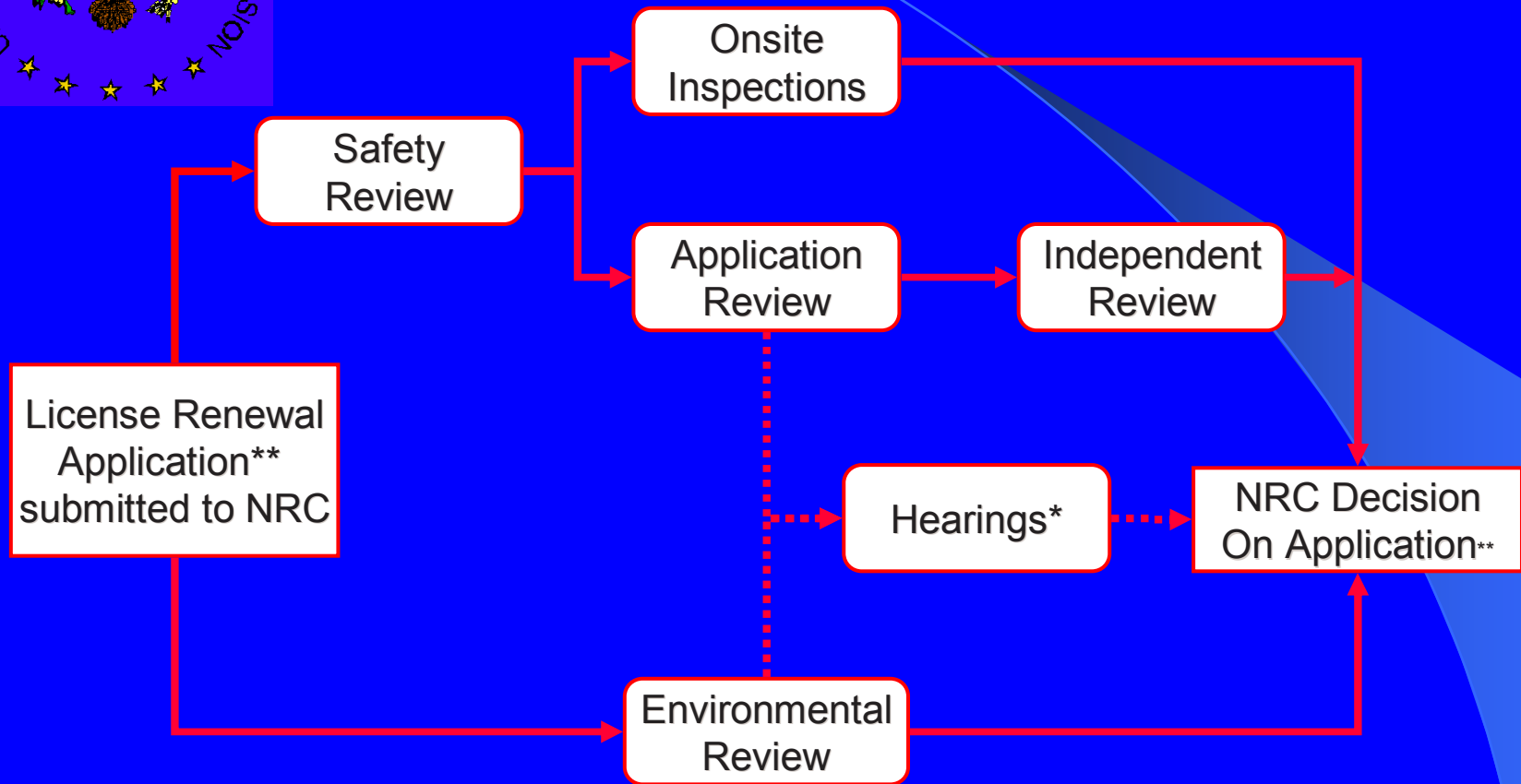
# NRC's License Renewal Review

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



# License Renewal Process

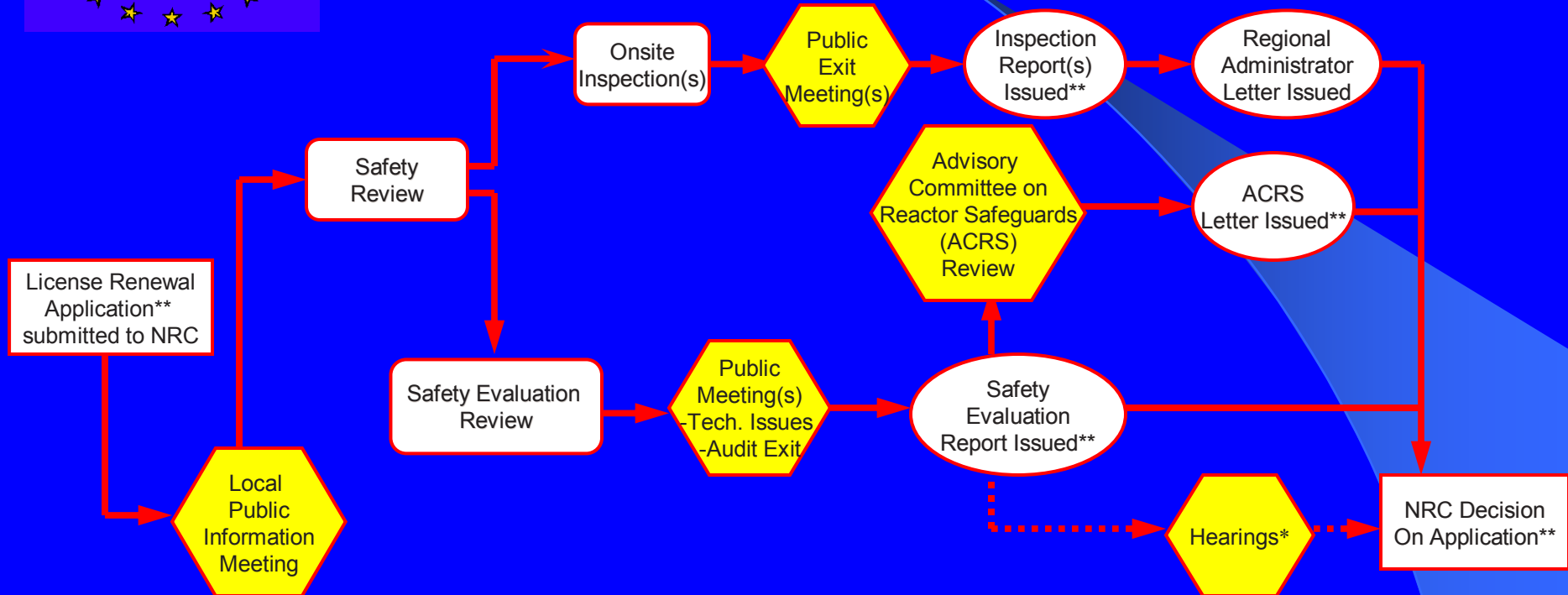


\* If a Request for Hearing is Granted

\*\* Available at [www.nrc.gov](http://www.nrc.gov)



# Safety Review Process



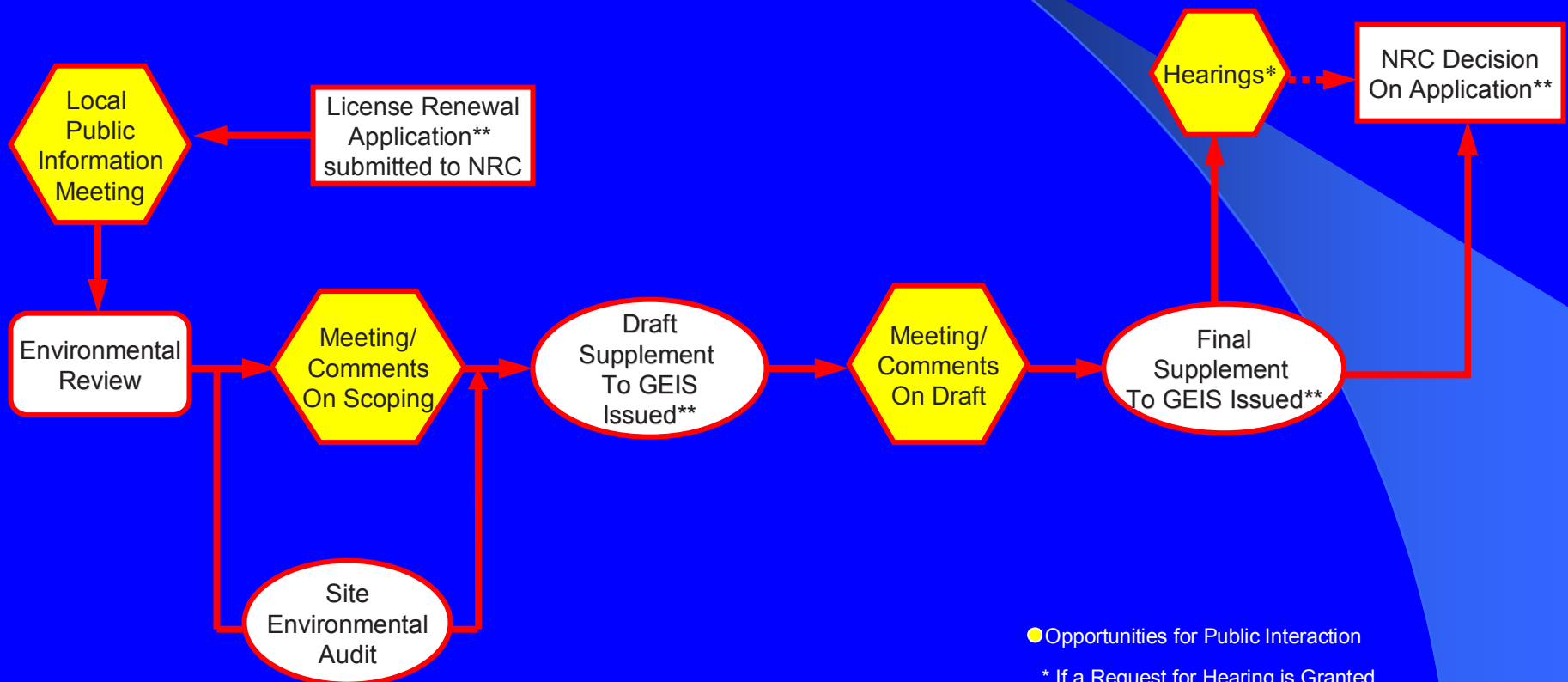
● Opportunities for Public Interaction

\* If a Request for Hearing is Granted

\*\* Available at [www.nrc.gov](http://www.nrc.gov)



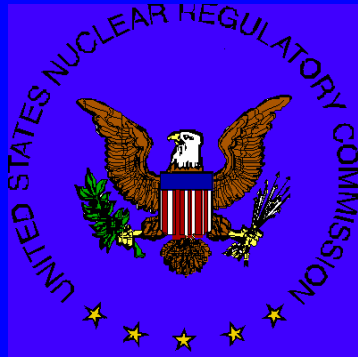
# Environmental Review Process



● Opportunities for Public Interaction

\* If a Request for Hearing is Granted

\*\* Available at [www.nrc.gov](http://www.nrc.gov)

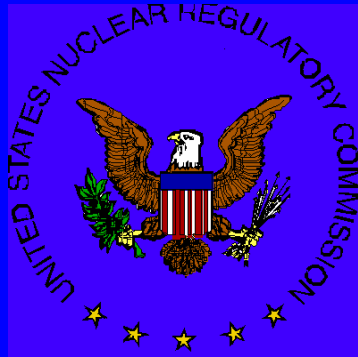


# National Environmental Policy Act

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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

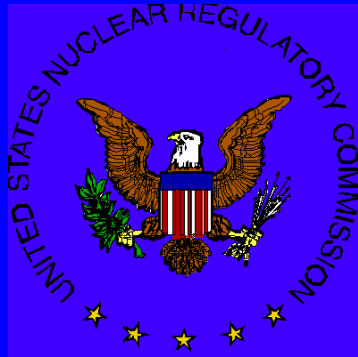




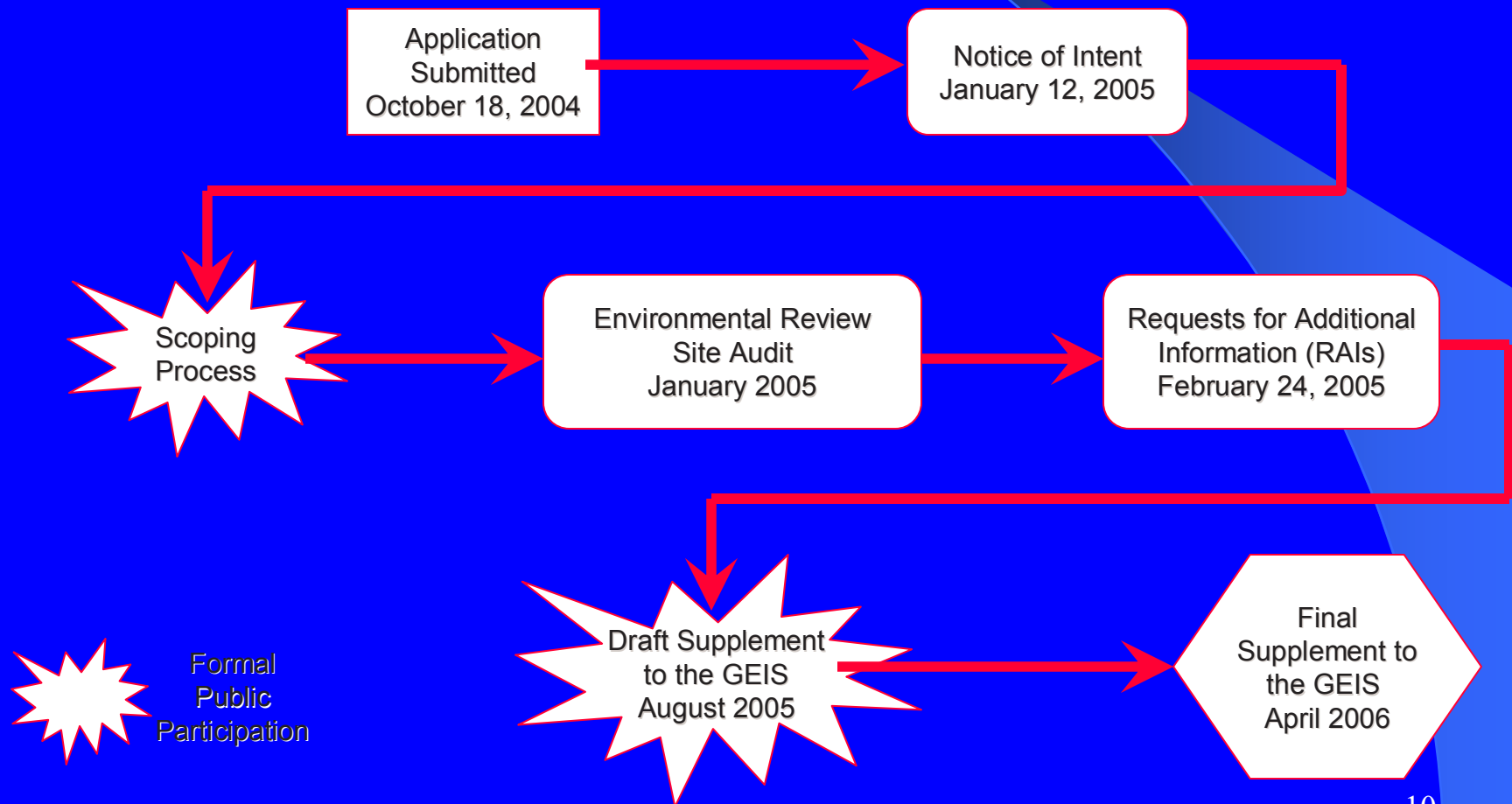
# Decision Standard for Environmental Review

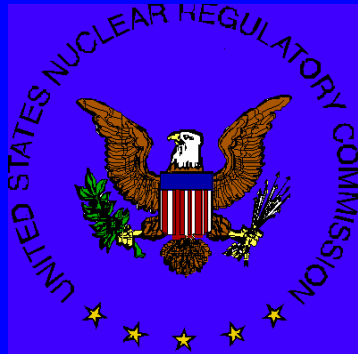
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To determine whether or not the adverse environmental impacts of license renewal for Brunswick Steam Electric Plant, Units 1 and 2 are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

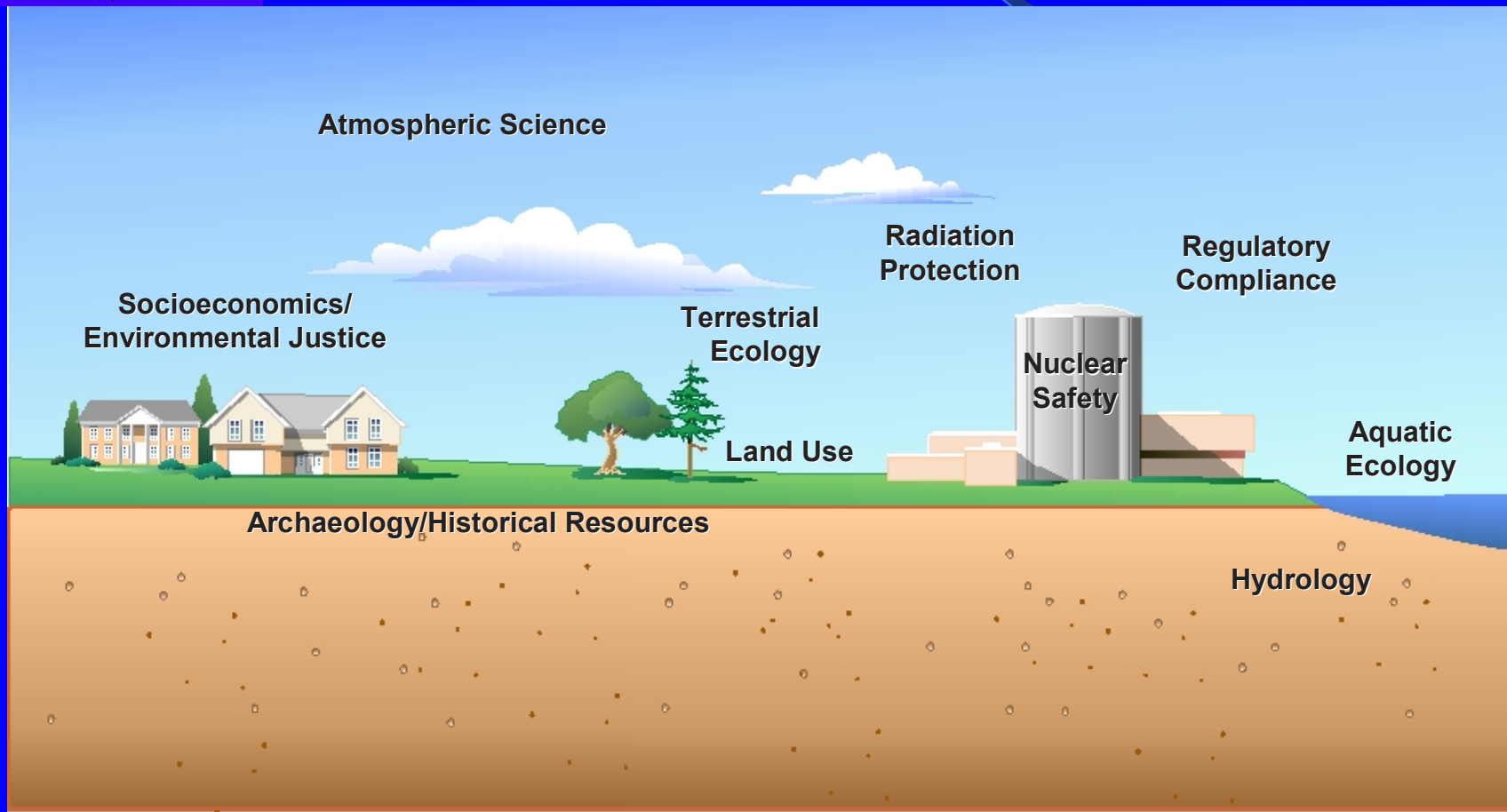


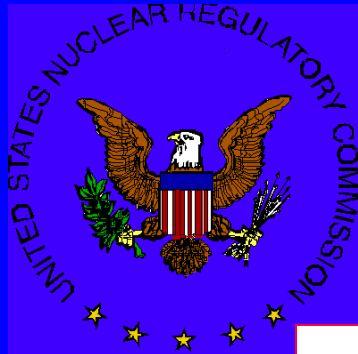
# Environmental License Renewal Process



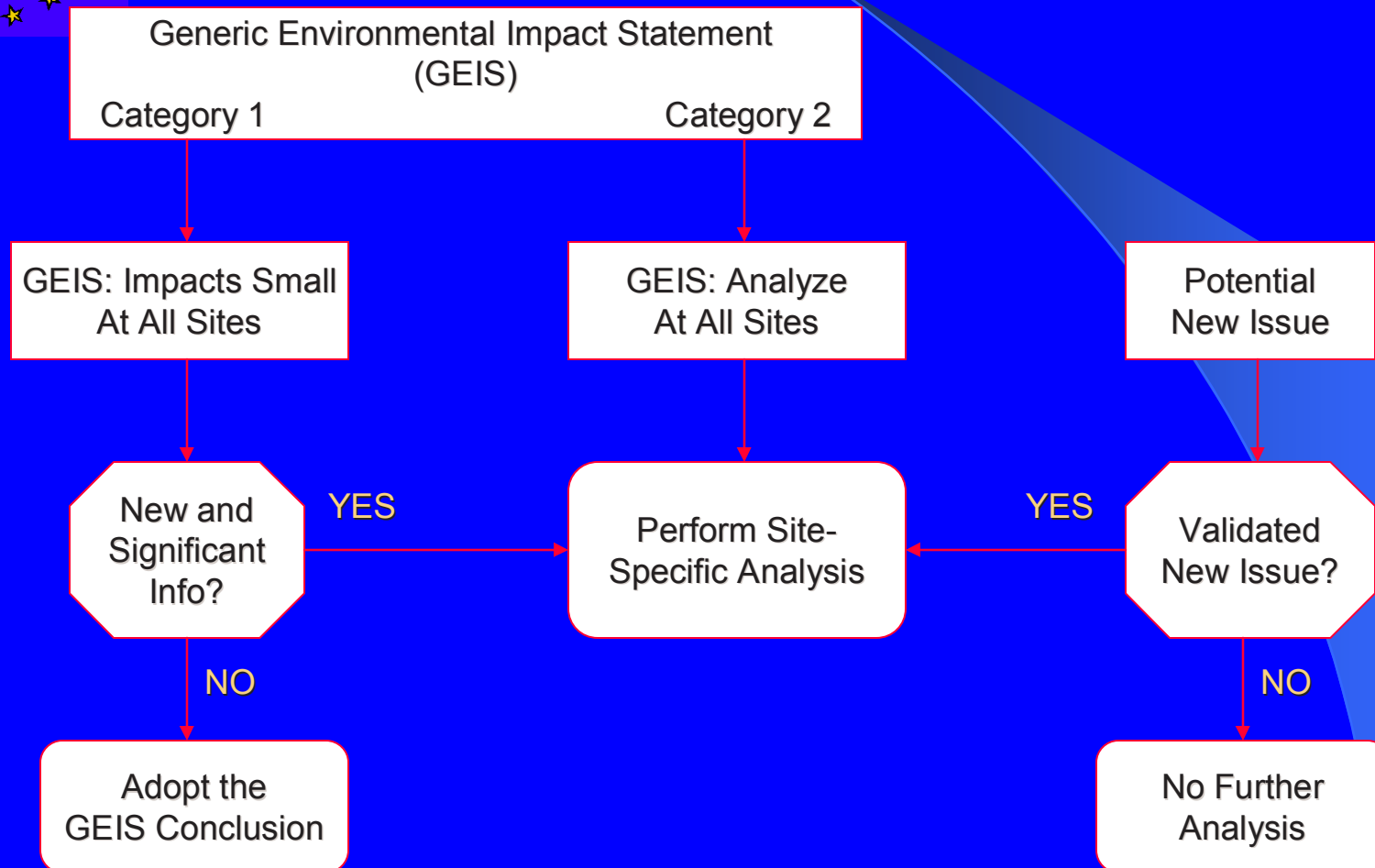


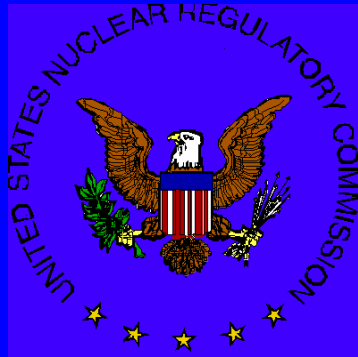
# Team Expertise





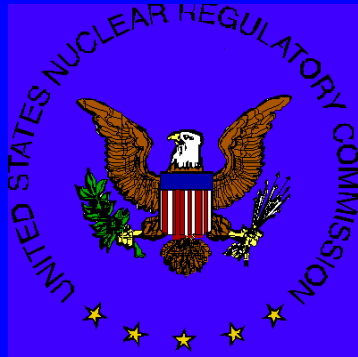
# Analysis Approach



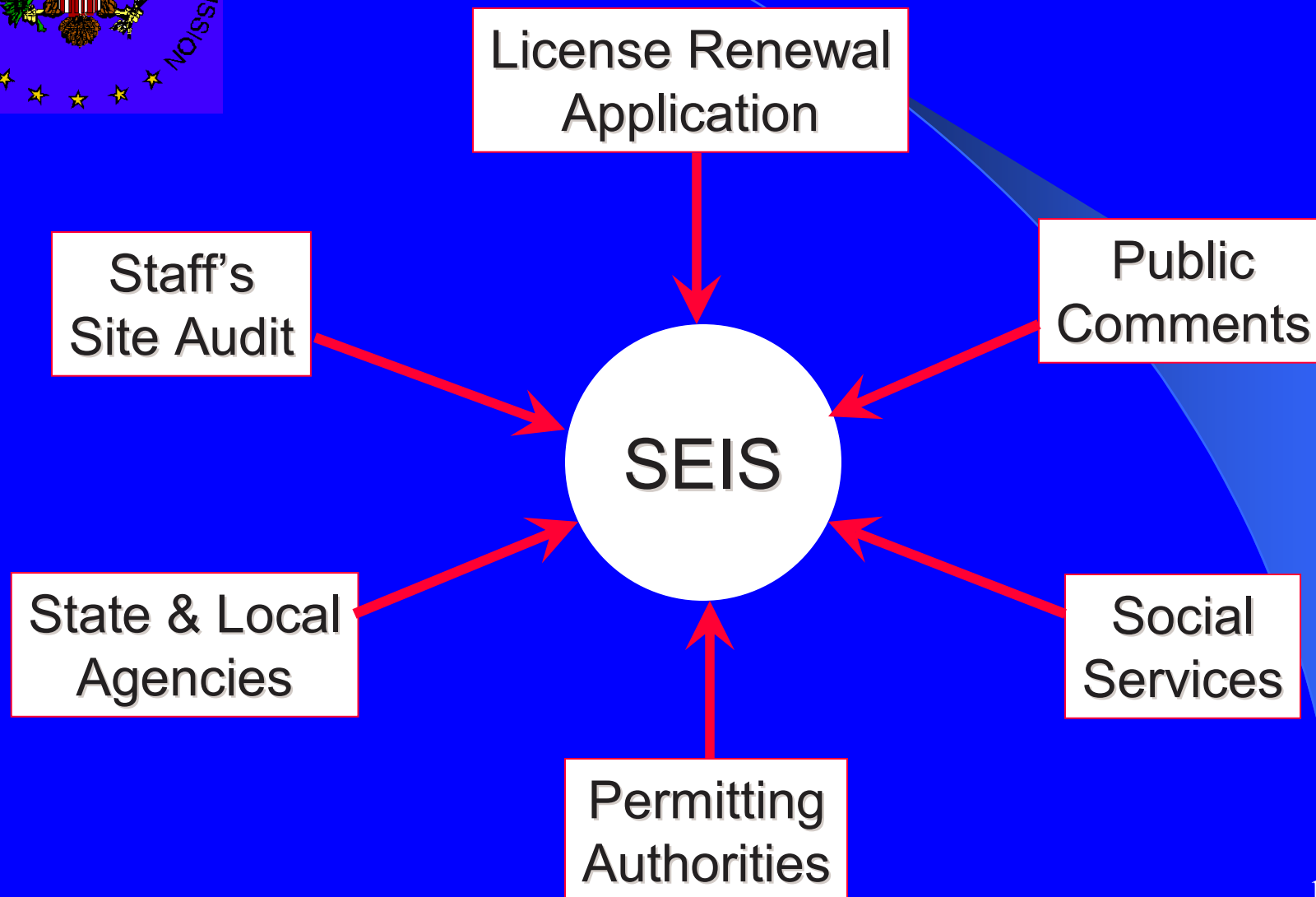


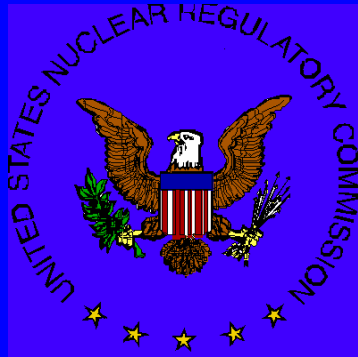
# How Impacts are Quantified

- 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

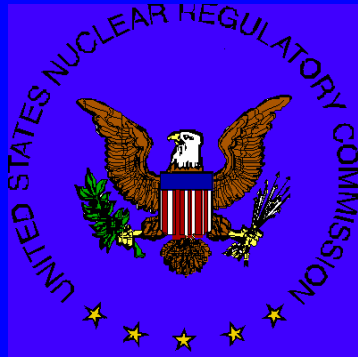




# Environmental Impacts of Operation

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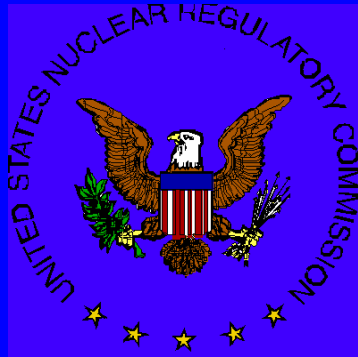
- Cooling System
- Transmission Lines
- Radiological
- Threatened or Endangered Species
- Cumulative Impacts
- Severe Accidents



# Cooling System Impacts

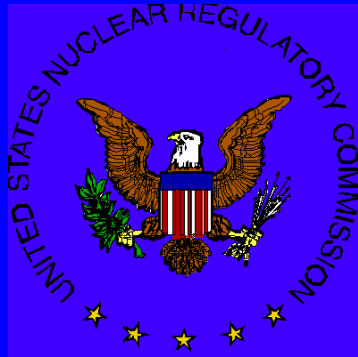
- 
- Category 2 Issues
    - Entrainment of Fish and Shellfish in Early Life Stages
    - Impingement of Fish and Shellfish
    - Heat Shock
  - Preliminary findings
    - Impacts are SMALL
    - No additional mitigation required





# Transmission Lines

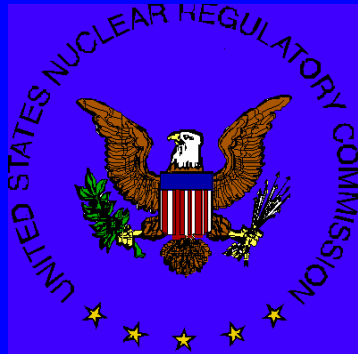
- **Category 2 issues**
  - **Electromagnetic fields, acute effects (electric shock)**
- **Issue not categorized**
  - **Electromagnetic fields, chronic effects**
- **Preliminary findings**
  - **Impacts are SMALL**
  - **No additional mitigation required**



# Radiological Impacts of Normal Operations

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



# Threatened or Endangered Species

- Sixteen terrestrial and fourteen aquatic Federally listed species potentially in vicinity
- Informal Consultation with FWS and NOAA Fisheries initiated
- IMPACTS ARE SMALL

Bald eagle



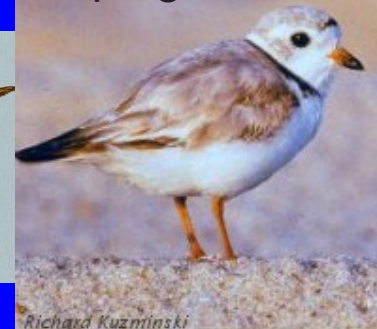
Leatherback turtle



Short-nosed sturgeon



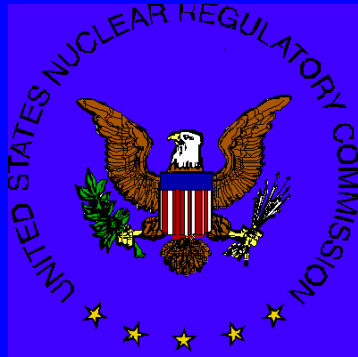
Piping Plover



Humpback whale



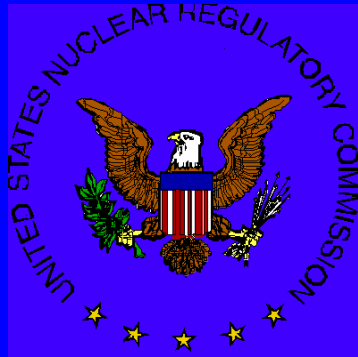
(<http://images.fws.gov>)



# Potential New and Significant Information

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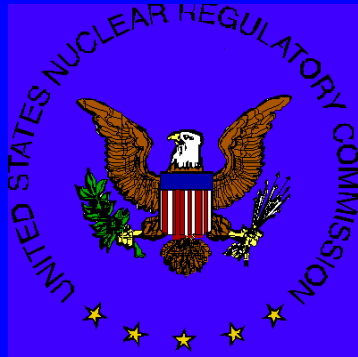
- No new and significant information identified:
  - during scoping
  - by the licensee
  - by the NRC staff



# Cumulative Impacts of Operation

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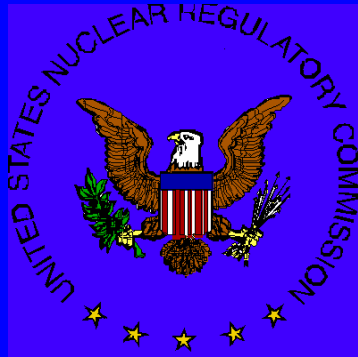
- Considered impacts of renewal term operations combined with other past, present, and reasonably foreseeable future actions
  - evaluated to end of 20-year renewal term
  - geographic boundaries dependent on resource
- No significant cumulative impacts



# Other Environmental Impacts Evaluated

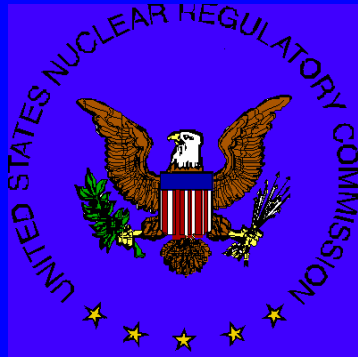
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- Uranium Fuel Cycle and Solid Waste Management
- Decommissioning



# Alternatives

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

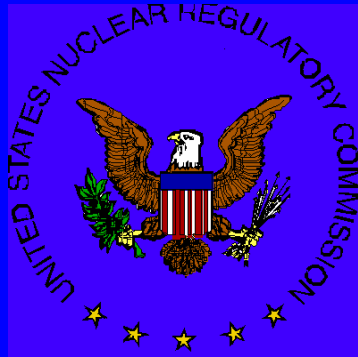


# Postulated Accidents

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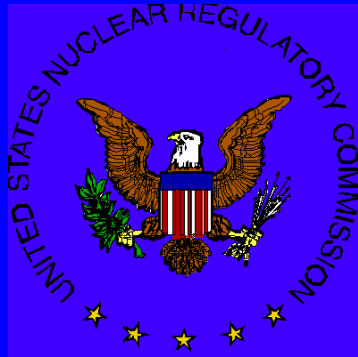
- Design-basis accidents
- Severe accidents
  - Severe accident mitigation alternatives (SAMAs)





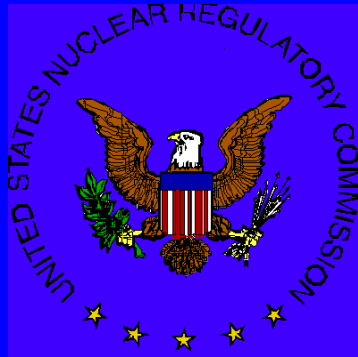
# SAMA Evaluation Process

- 
- 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

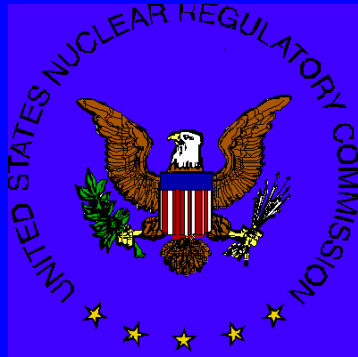
- 
- 43 potential SAMA candidate improvements considered for Brunswick Unit 1 and 2
  - Set of SAMAs reduced to 27 based on multi-step screening process
  - Detailed cost/benefit analysis shows that 15 of these SAMAs could be cost beneficial (7 from baseline analysis; 8 additional from uncertainty analysis)



# Preliminary Results of SAMA Evaluation

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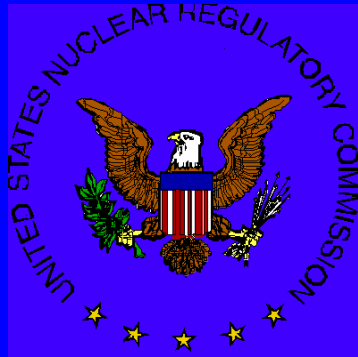
- None of the potentially cost-beneficial SAMAs relate to managing the effects of aging. Accordingly, none of the SAMAs are required to be implemented as part of license renewal
- Notwithstanding this, CP&L has committed to further evaluate the potentially cost-beneficial SAMAs for possible implementation, with a focus on:
  - SAMA 1 - Portable generator to supply DC power during a station blackout event, and
  - Those SAMAs that remain cost-beneficial if SAMA 1 were implemented
  - Completion of the evaluations is being tracked in the BSEP action tracking system



# Preliminary Conclusions

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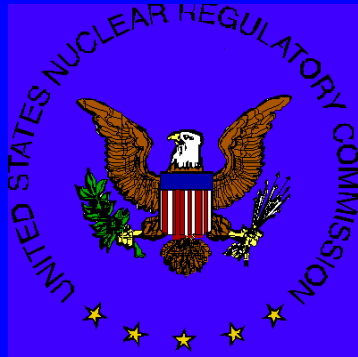
- Impacts of license renewal are SMALL for all impact areas.
- Impacts of alternatives range from SMALL to LARGE.
- The staff's preliminary recommendation is that the adverse environmental impacts of license renewal for Brunswick Steam Electric Plant, Units 1 and 2 are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.



# Environmental Review Milestones

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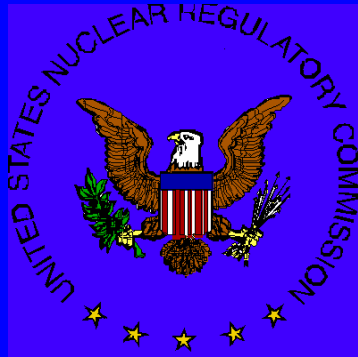
- Draft EIS issued – August 30, 2005
- Comment period ends December 2, 2005
- Issuance of Final EIS – April 2006



# Point of Contact and Reference Documents

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- Agency points of contact: Richard L. Emch, Jr.,  
(800) 368-5642, ext. 1590
- Documents are located at the William Madison Randall Library, 601S. College Rd., Wilmington, North Carolina
- The SEIS can also be viewed at the NRC's Web site ([www.nrc.gov](http://www.nrc.gov)) at: [www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement25/](http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement25/)



# Submitting Comments

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- By mail: Chief, Rules Review and Directives Branch  
U.S. Nuclear Regulatory Commission  
Mailstop T-6D59  
Washington, DC 20555-0001
  
- In person: 11545 Rockville Pike  
Rockville, Maryland
  
- E-mail: [BrunswickEIS@nrc.gov](mailto:BrunswickEIS@nrc.gov)

