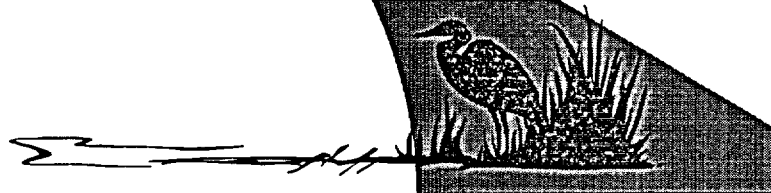




# Preliminary Results of Environmental Review St. Lucie Units 1 & 2

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Nuclear Regulatory Commission  
December 3, 2002



# Purpose of Today's Meeting

- 
- 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



## St. Lucie Units 1 and 2 License Renewal

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- Operating licenses expire in 2016 (Unit 1) and 2023 (Unit 2)
- Application requests authorization to operate units for an additional 20 years

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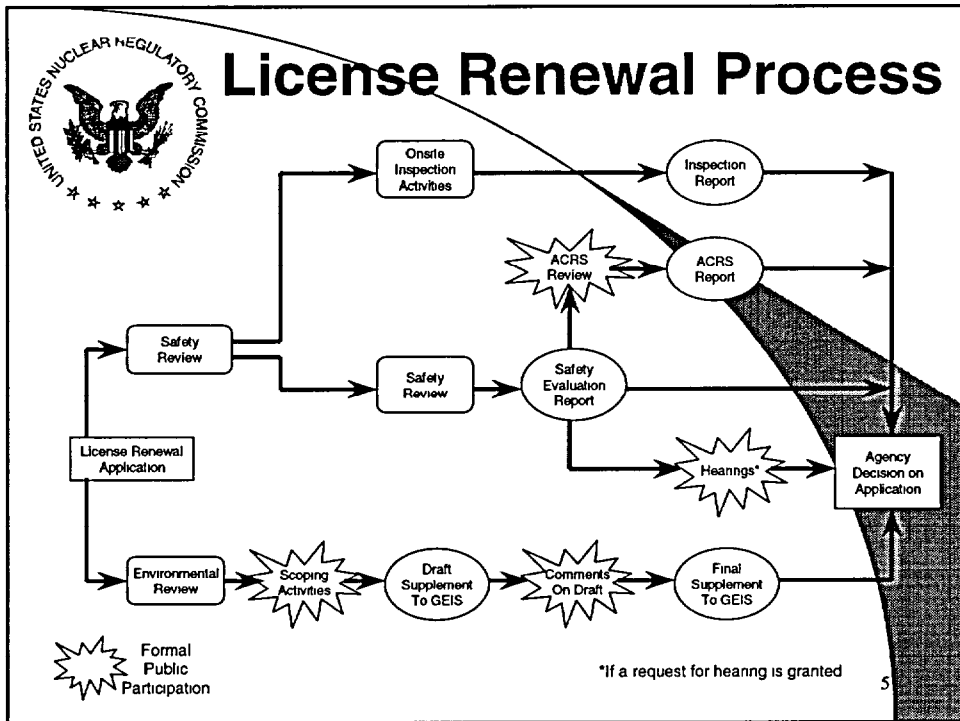


## NRC's License Renewal Review

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

4



**National Environmental Policy Act**

- 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

6



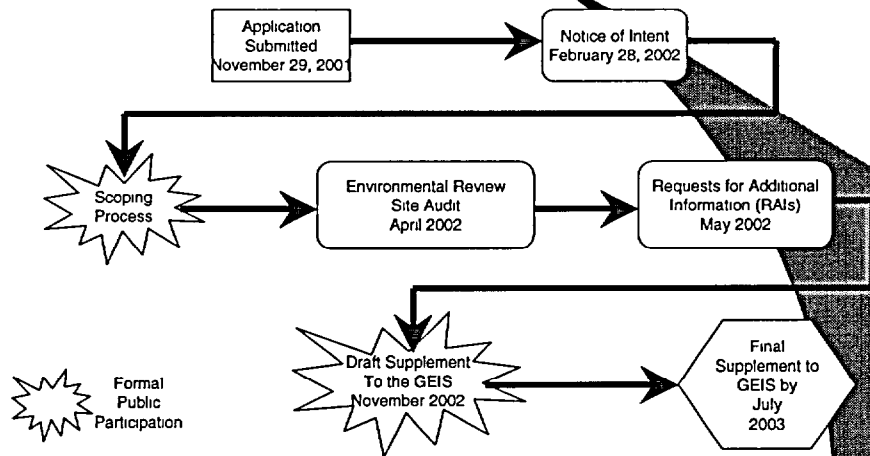
# Decision Standard for Environmental Review

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

7



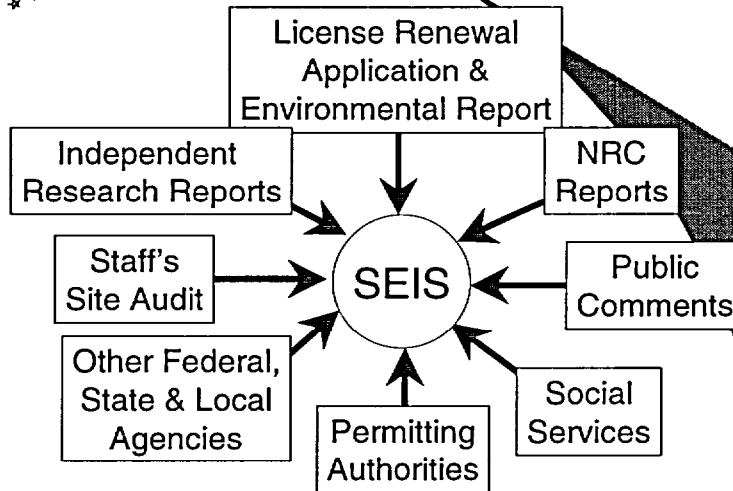
# Environmental License Renewal Process



8



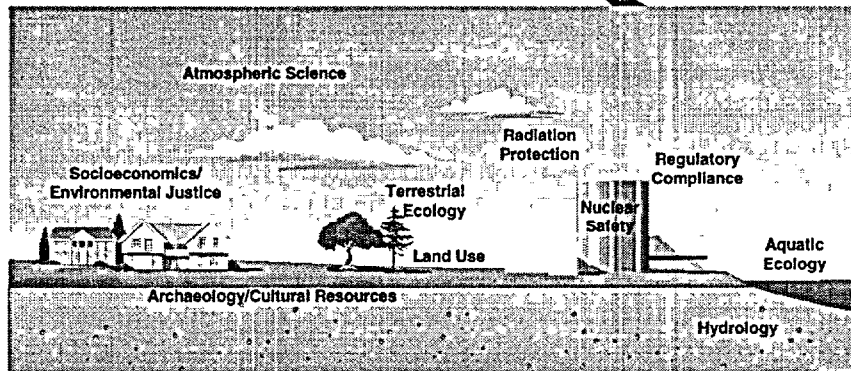
# Information Gathering



9



# Team Expertise



10

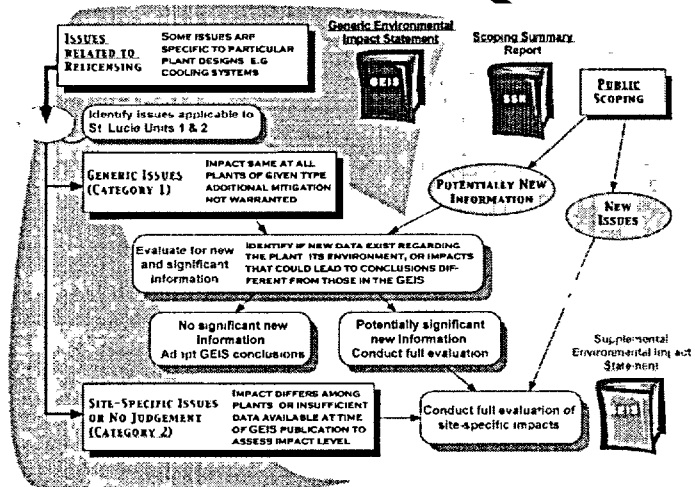


# How Impacts are Quantified

- NRC has defined the following 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*
- These were used in the GEIS and all Supplemental EISs
- Usage is consistent with the Council on Environmental Quality guidance for NEPA analyses



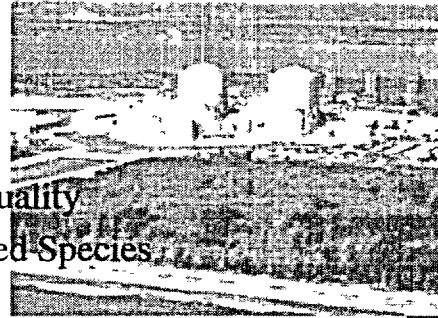
# Scope & Approach





## Environmental Impacts of Operation

- Cooling System
- Transmission Lines
- Radiological
- Socioeconomics
- Groundwater Use and Quality
- Threatened or Endangered Species
- Uranium Fuel Cycle
- Decommissioning



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## Cooling System

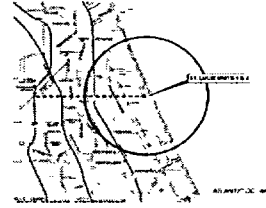


- **Entrainment**
  - <0.02% mortality of fish eggs and larvae passing the intake
- **Impingement**
  - <4 lb/day fish and <2 lb/day shellfish impinged
  - Velocity caps limit # in intake canal
- **Heat Shock**
  - Complies with Florida Water Quality Standards
- **ALL IMPACTS SMALL**

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# Transmission Lines

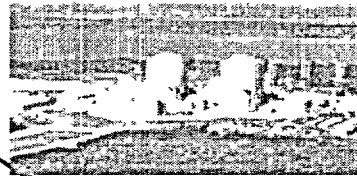


- 11 mi of corridors covering 766 acres
  - ROW impacts SMALL
- Electric shock from electromagnetic fields
  - Maximum induced currents below National Electric Safety Code limits - impacts SMALL
- Health effects of chronic exposure to electromagnetic fields
  - National Institute of Environmental Health Sciences review concluded that health studies do not show sufficient evidence of risk to warrant concern - impact is not further characterized

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# Radiological



## Category 1

Effluent monitoring and controls  
Rad Waste processing and packaging  
Environmental monitoring

- TLDs
- Air monitoring
- Biota sampling



Dose to the public during license renewal

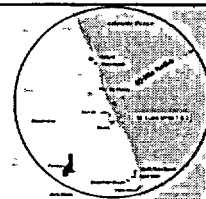
- All impact are SMALL

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## Socioeconomics



- **Housing and public utility impacts during operation**
  - No discernable change in housing availability, value, or rental rates
  - Increase in water usage can be met with existing capacity
  - Impacts are SMALL
- **Offsite land use and transportation**
  - Maximum employee addition (60) would not affect land use or congestion
  - Tax payments are small relative to county revenues
  - Impacts are SMALL
- **Historic and archaeological resources**
  - No known historic or archeological resources at the site
  - Ground disturbances will be preceded by surveys
  - Impact is SMALL
- **Environmental justice**
  - All impacts were SMALL, therefore Environmental Justice impact is SMALL

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## Groundwater Use and Quality

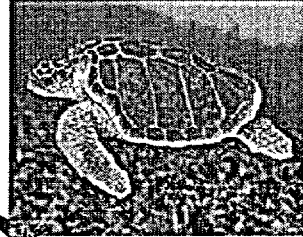


- **St. Lucie Units 1 & 2 use 1.4 million gal/d of groundwater**
  - < 10% of county supplies
- **Impacts are SMALL**

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## Threatened or Endangered Species



- Numerous federally- and state-listed species on plant site and within transmission corridors
- National Marine Fisheries Service determined that continued operation of St. Lucie Units 1 & 2 would not adversely affect listed aquatic species
- NRC still in consultation process with US Fish and Wildlife Service
- Preliminary conclusion that impacts of license renewal would be SMALL

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## Uranium Fuel Cycle

- No issues that were not addressed in the GEIS and found to be SMALL at all plants
- No new and significant information was discovered since the GEIS and during the review
- GEIS concluded that impacts are SMALL

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## Decommissioning

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- No issues that were not addressed in the GEIS and found to be SMALL at all plants
- No new and significant information was discovered since the GEIS and during the review
- GEIS concluded that impacts are SMALL

21



## Potential New and Significant Information

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

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## Alternatives to License Renewal

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- Alternatives not considered in detail
  - Alternative energy sources
    - Wind power
    - Solar power
    - Hydropower
    - Geothermal energy
    - Wood waste
    - Municipal solid waste
    - Other biomass-derived fuel
    - Fuel cells
    - Delayed retirement
    - Utility-sponsored conservation

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## Alternatives to License Renewal (continued)

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- Alternatives considered in detail (*i.e. deemed most reasonable for St Lucie Units 1 & 2*)
  - No Action (decommission after current term expires)
  - Alternative Energy Sources
    - Coal
    - Natural gas
    - New nuclear
  - Purchased Electrical Power
  - Combination of Alternatives

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## Alternatives to License Renewal (preliminary conclusions)

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- Impacts of alternatives, including the “No Action” alternative, range from SMALL to LARGE
  - Current site prevents alternative generation there
  - Alternative sites present
    - Higher socioeconomic impacts
    - More land/ecology disturbance
    - Higher atmospheric emissions
    - Potential aesthetic impacts

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## Impacts of Postulated Accidents

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- Design-Basis Accidents
- Severe Accidents
  - Severe Accident Mitigation Alternatives (SAMAs)

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## Results of SAMA Evaluation

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- 169 candidate improvements identified
  - 90 were already implemented
  - 29 not applicable
- Cost/benefit analysis for 50 remaining candidates
- None of the 50 candidates were found to be cost beneficial

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## Results of SAMA Evaluation (continued)

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- Overall conclusion:

Additional plant improvements to further mitigate severe accidents are not required at St. Lucie Units 1 and 2.

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## Preliminary Conclusion

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- 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 St. Lucie Units 1 and 2 are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable

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## Environmental Review Milestones

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- Draft EIS issued – 11/1/02
- Comment period – 11/1/02 to 1/13/03
- Final EIS issued on or before – 7/03

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## Point of Contact

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- Agency point of contact:  
Michael T. Masnik  
(800) 368-5642, Ext. 1191
- Documents located at the Indian River Community College library, and can be viewed at the NRC's Web site ([www.nrc.gov/reading-rm.html](http://www.nrc.gov/reading-rm.html))
- Draft SEIS can also be viewed at:  
[www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement11/](http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement11/)

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## NRC Addresses

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- Provide comments:
  - By mail at: Chief, Rules and Directives Branch  
Division of Administrative Services  
Mailstop T-6D59  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001
  - In person at: 11545 Rockville Pike  
Rockville, Maryland
  - E-mail at: [St\\_Lucie\\_EIS@nrc.gov](mailto:St_Lucie_EIS@nrc.gov)
  - On-line comment form with web version of draft

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