Environmental Justice and Nuclear Power

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Agenda

- What is Environmental Justice (EJ)
- U.S. Nuclear Regulatory Commission (NRC) National Environmental Policy Act (NEPA) Review Experience
- EJ Assessment Process
- NRC EJ Populations Screening Analyses
- NRC Low-level Radioactive Waste (LLW) NEPA Review EJ Outcomes
- EJ Impacts Case Study
Executive Order 12898 (Clinton 1994)

“To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marianas Islands.”
NRC Early Site Permit and Combined License
NEPA Reviews

[Map of the United States showing different states marked with icons indicating studied locations.]
# Typical NEPA Resource Areas for Nuclear Siting

## Health Impacts
- Radiological Health
- Nonradiological Health
- Air Quality
- Noise
- Occupational Health
- Rad Transportation
- Accidents
- Waste Management

## Environmental Impacts
- Aquatic Ecology
- Terrestrial Ecology
- Surface Water Hydrology
- Groundwater Hydrology
- Land Use
- Visual Aesthetics
- Historic and Cultural Resources
- Socioeconomics
- Environmental Justice

## Socioeconomic Impacts
- Tax Revenue
- Traffic / Trans. Infrastructure
- Community Infrastructure
- Housing
- Education
- Economics and Employment
- Demographics/Migration
Simplified NRC EJ Impact Analysis Process

- Review Application
- Review Scoping Comments
- Review Previous NEPA Docs

1. Identify Affected Area & Close Proximity
2. Identify Comparison Area
3. Determine Threshold Proportions

- Preliminary EJ Groups Identified
  - Map and Tabulate Minority Block Groups
  - Map and Tabulate Low-Income Block Groups

4. GIS Analysis

5. Census Block Group Screening Analysis

6. Determine Impact Pathways

7. Pathways Found?
   - Disproportionately High and Adverse Impacts?
     - No
8. Characterize Impacts

No
Drilling into EJ Assessment Approach

A population is identified as minority in an area affected by the action if “either

(a) the minority population of the affected area exceeds 50 percent, or
(b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis” – CEQ 1997

The same approach applies for low-income populations —individuals living at or below the federal poverty level.
Drilling into EJ Assessment Approach

Determine Impact Pathways

- Consult with other resource areas on the impacts they are finding—is there linkage to EJ populations?
- Desktop surveys—research the local area using tools like Google Earth, academic research, and stakeholder data sources
- Dashboard surveys—drive the wider area as part of the usual site visit, attempt to ground the truth in desktop findings
- Interview stakeholders—meet personally with local officials and organizations serving underserved populations
- Document observations for the record
Drilling into EJ Assessment Approach

Characterize Health Impacts

- Are the radiological or other health effects significant or above generally accepted norms?
  - For example, are particular races more susceptible to effects of specific health effects than the general public?

- Is the risk or rate of hazard significant and appreciably in excess of the general population?
  - For example, if EJ groups are located in close proximity, does this increase their risk compared to the general public?

- Do the radiological or other health effects occur in groups affected by cumulative or multiple adverse exposures from environmental hazards?
  - For example, are the same EJ groups also located near other facilities with nuclear material?
Drilling into EJ Assessment Approach

- Is there an impact on the natural or physical environment that noticeably and adversely affects a particular group?
  - For example, would local construction noise, traffic, and dust impacts be more noticeable in close proximity to the proposed action site and are EJ groups present there?

- Are there noticeable adverse impacts on a group that are likely to appreciably exceed those of the general population?
  - For example, are chemical effluents more harmful to a particular race or would any expected increases in concentrations in local fish and wildlife disproportionately affect EJ groups consuming local food resources?

- Do the environmental effects occur in groups affected by cumulative or multiple adverse exposure from environmental hazards?
  - For example, are the same EJ groups also located near other mining or industrial facilities with locally adverse impacts?
Example Wording of Impact Conclusions

• The NRC did not identify any minority or low-income populations near the proposed action site in concentrations that are meaningfully greater than the concentration found in the comparison area (e.g., state) population. Thus, disproportionately high and adverse human health, environmental, physical, or socioeconomic effects on these groups would not be expected as a result of the proposed action.

• The NRC did not identify any potential environmental pathways by which the identified minority or low-income populations in the affected area would likely experience disproportionately high and adverse human health, environmental, physical, or socioeconomic effects as a result of the proposed action.

• The NRC determined that potential environmental pathways including (list…) exist by which the identified minority or low-income populations in the affected area would likely experience disproportionately high and adverse human health, environmental, physical, or socioeconomic effects (describe the specific impact) as a result of the proposed action.
Census Data Geographic Resolution

- State
- County
- Zip Code
- Census Tract
- Census Block Group
- Census Block
Bell Bend
EJ Block Groups
(50 mi radius)

Low-Income
Minority
Low-Income & Minority
Fermi
EJ Block Groups
(50 mi radius)

Low-Income
Minority
Low-Income & Minority
Grand Gulf
EJ Block Groups
(50 mi radius)
V.C. Summer EJ Block Groups (50 mi radius)

Low-Income

Minority

Low-Income & Minority
# EJ Impact Findings by Plant Site NEPA Review

<table>
<thead>
<tr>
<th>Site</th>
<th>State</th>
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<th>EJ Populations</th>
<th>EJ Impact</th>
<th>Impact Pathway</th>
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* - License terminated by licensee
+ - Application suspended
* - Application withdrawn

t - License terminated by licensee
Local Reconnaissance of V.C. Summer Nuclear Station Unit 2 Project Revealed:

• 90%+ African American residents
• Low-income not revealed by Census, and high unemployment
• Subsistence and cultural fishing
• Reliance on backyard gardens
• These practices are fading with aging population
• Significant foot travel, lack of scheduled transportation
Locations for Subsistence and Cultural Fishing Found Near V.C. Summer
Scoping Customized to Community

- Staff interviewing of stakeholders
- Additional scoping meeting in Jenkinsville, SC
- Less formal, open house format used to receive public comments
- Local residents conducted a survey and the responses were included on the record as comments
Open House for Community near V.C. Summer
EJ Outreach Findings for V.C. Summer

• Staff determined MODERATE traffic impacts would occur at the peak of site employment
• Impacts are “disproportionate and adverse”
  ▪ Local community would experience most of the traffic impacts
  ▪ Local community is an Environmental Justice population
• Environmental Justice impact found
MODERATE Transportation Impacts Determined
Mitigative Factors

• Transportation impacts will be mitigated by Applicant
• Local job training center in Dawkins
• Partnership between construction contractors and local community colleges for training certifications
• Active recruitment of new industry to Fairfield County
Summary of V.C. Summer EJ Assessment

• Environmental Justice thresholds tripped
• Scoping tailored to local community needs
• MODERATE traffic impacts found
• Disproportionate and adverse impacts to the Environmental Justice population results
• Mitigation prevents a LARGE impact to the community
Environmental Justice Capabilities at PNNL

• Demographic Analysis
• Environmental Assessment
• Coordination with Cultural Resources
• “Boots on the ground” field observations, dashboard surveys
• Stakeholder Engagement
  ▪ Develop a plan
  ▪ Define stakeholders
  ▪ Tailored communication and messaging
  ▪ Customer service
Thank you!

To learn more, contact:

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