New Reactor Licensing and Construction Oversight

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Deputy Director, Office of New Reactors
US NRC
August 18, 2009
New Reactor Applicants

Total number of units: 32

4/8/2008
## Project Alignments

<table>
<thead>
<tr>
<th>Year</th>
<th>EPA Reg./Corps District</th>
<th>Project/Program Review</th>
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<tbody>
<tr>
<td>2005</td>
<td>IV/Nashville</td>
<td>TVA - Bellefonte (AL) (2) Hearing</td>
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<tr>
<td>2006</td>
<td>IV/Charleston</td>
<td>Duke - Lee Station (SC) (2) Hearing</td>
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<td>2007</td>
<td>IV/Charleston</td>
<td>South Carolina E&amp;G - Summer (SC) (2) Hearing</td>
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<td>2008</td>
<td>IV/Wilmington</td>
<td>Progress Energy - Harris (NC) (2) Hearing</td>
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<td>2009</td>
<td>IV/Savannah</td>
<td>Vogtle - Hearing</td>
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<td>2010</td>
<td>IV/Jacksonville</td>
<td>Southern - Vogtle (GA) (2) Hearing</td>
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<td>2011</td>
<td>IV/Jacksonville</td>
<td>Progress Energy - Levy (FL) (2) Hearing</td>
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<td>2012</td>
<td>IV/Jacksonville</td>
<td>Florida P&amp;L - Turkey Pt. (FL) (2) Hearing</td>
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### AP1000 Program Review

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<tbody>
<tr>
<td>North Anna</td>
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<tr>
<td>Grand Gulf</td>
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<tr>
<td>Dominion - North Anna (VA) (1) Hearing</td>
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<tr>
<td>Entergy - Grand Gulf (MS) (1) Hearing</td>
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<tr>
<td>Entergy - River Bend (LA) (1) Hearing</td>
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<tr>
<td>Exelon - Victoria (TX) (2) Hearing</td>
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<td>DTE - Fermi (MI) (1) Hearing</td>
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### ESBWR Program Review

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<tbody>
<tr>
<td>UniStar - Calvert Cliffs (MD) (1) Hearing</td>
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<tr>
<td>PPL Generation - Bell Bend (PA) (1) Hearing</td>
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<tr>
<td>AmerenUE - Callaway (MO) (1) Hearing</td>
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<tr>
<td>UniStar - Nine Mile Point (NY) (1) Hearing</td>
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### EPR Program Review

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<tr>
<td>UniStar - Nine Mile Point (NY) (1) Hearing</td>
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### ABWR Program Review

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<tr>
<th>Project/Program Review</th>
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<tbody>
<tr>
<td>NRG Energy - South Texas Project (TX) (2) Hearing</td>
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### USAPWR Program Review

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<th>Project/Program Review</th>
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<tr>
<td>Luminant - Comanche Peak (TX) (2) Hearing</td>
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### Additional Information

- TVA - Bellefonte (AL) (2)
- Duke - Lee Station (SC) (2)
- South Carolina E&G - Summer (SC) (2)
- Progress Energy - Harris (NC) (2)
- Vogtle
- Southern - Vogtle (GA) (2)
- Progress Energy - Levy (FL) (2)
- Florida P&L - Turkey Pt. (FL) (2)
- Dominion - North Anna (VA) (1)
- Entergy - Grand Gulf (MS) (1)
- Entergy - River Bend (LA) (1)
- Exelon - Victoria (TX) (2)
- DTE - Fermi (MI) (1)
- UniStar - Calvert Cliffs (MD) (1)
- PPL Generation - Bell Bend (PA) (1)
- AmerenUE - Callaway (MO) (1)
- UniStar - Nine Mile Point (NY) (1)
- NRG Energy - South Texas Project (TX) (2)
- Luminant - Comanche Peak (TX) (2)
- IV/Nashville
- IV/Charleston
- IV/Charleston
- IV/Wilmington
- IV/Savannah
- IV/Jacksonville
- IV/Jacksonville
- III/Norfolk
- IV/Vicksburg
- VI/New Orleans
- VI/Galveston
- V/Detroit
- III/Baltimore
- III/Baltimore
- VII/Kansas City
- II/Buffalo
- VI/Galveston
- VI/Fort Worth
Combined License, Early Site Permits, and Design Certifications

- Early Site Permits with Mandatory hearing
- Design Certifications (optional hearing)
- Combined License Review and Mandatory Hearing
- Verification of Inspection, Test, Analysis, and Acceptance Criteria (optional hearing)
- Reactor Construction
- Reactor Operation
Design Certifications Approved or Under Review
Early Site Permits

Issued ESPs:
• Clinton (IL)
• Grand Gulf (MS)
• North Anna (VA)

Under Review:
• Vogtle (GA)
Combined License Application
Review Process – Public Participation

Pre-app Public Mtg

Documents Available To Public

Combined Operating License Application

Safety Review

Environmental Review

Scoping Activities

Draft EIS

Comments on Draft

Final EIS

ACRS Meeting

ACRS Report

Hearing

Commission Decision on Application

Public Participation

Inspection Activities

Inspection Reports

Site Safety Review

Safety Evaluation Report

7
NRC’s Siting Activities

From the NRC’s Mission: To protect public health and safety, promote common defense and security, and protect the environment.

**LOOKING INWARD** - NRC considers site safety factors as part of its Atomic Energy Act responsibilities by evaluating the design of the facility to protect against natural phenomena (i.e., environmental factors that affect the design such as earthquakes, floods, tornado-generated missiles, etc.) and emergency and security planning.

**LOOKING OUTWARD** - NRC considers environmental values as part of its National Environmental Policy Act responsibilities by evaluating the facility impacts on the human environment (i.e., construction and operational demands and releases such as water use and quality, socioeconomics, terrestrial and aquatic species, routine and accidental releases, etc.)
NRC Siting Expertise
(Staff, Contractor, and Sister Agencies under MOUs)
Information Gathering

- Combined License Application
- Staff’s Site Audit
- Public Comments
- Tribal, State & Local Agencies
- Social Services
- Federal Agencies
Engaging Stakeholders in NEPA Space
Principal Milestones

After issuing Federal Register Notice (FRN) of Availability of Application, determine interest of U.S. Army Corps of Engineers, U.S Environmental Protection Agency, or others (e.g., State or Tribal Nation) interest in cooperating agency status

FRN on Acceptance and Sufficiency Review for docketing and initiating review; may be in combination with FRN of Intent to Prepare EIS and Conduct Scoping (including public meeting) or FRN of Hearing Opportunity or both

Compile and reconcile scoping comments (including scoping meeting in site vicinity); conduct technical review (i.e., audit application information and determine need for additional information, develop independent sources, conduct consultations, and perform analyses) and develop EIS; file Draft EIS with EPA for EPA FRN of Filing, issue NRC FRN of Availability of Draft EIS, and conduct public meeting to solicit comments during public comment period

Consider and disposition comments, modify EIS, as appropriate, file Final EIS with EPA for EPA FRN of Filing, issue NRC FRN of Availability
Participation of NRC’s Sister Federal, State and Tribal Agencies

Commitment to keep agencies informed of regulatory framework and rule changes, and invite participation in the rulemaking process and development of implementation guidance. Ensure that overlapping areas are covered by Memoranda of Understanding with appropriate Sister agencies (e.g. EPA, USACE, USGS, State and Tribal Programs); cooperating agencies have “staff equivalent” status.

Commitment to provide project application material early and when publicly available; include agencies on distribution for project correspondence and notices throughout the review process; afford Federal, State and Tribal agencies opportunity to observe NRC site audit activities with NRC review team and provide for logistics and access equivalent to a team member.

Commitment to conduct timely consultations with stakeholders (USFWS, US Fisheries, SHPOs, ACHP, State Rad Health/Environmental Protection/Natural Resource Agencies, etc.) and initiate dialog early in the review process (this excludes the pre-application readiness assessments).

Provide timely and direct access to the NRC’s NEPA products to agencies for Section 309 review and comment, and provide adequate review period (i.e., 45 days with two built-in 15-day extensions).
MOU between NRC and Corps

- NRC worked closely with the Corps and updated the MOU in September 2008

- NRC is the *lead* Federal agency for development of EIS for new reactor applications

- Corps would be *cooperating* Federal agency for development of EIS, when appropriate (principally, when Corps permits will be needed – this is applicable for most new reactors)

- While Corps is integrated into the NRC Environmental Review Team, MOU allows flexibility for other approaches

- Goal – a single EIS provides necessary support for NRC license decisions and Corps permit decisions
Limited Work Authorization Rule

- Rulemaking defined “Construction” for NRC purposes in the context of the activity’s nexus to radiological safety; “Construction” requires authorization by the Nuclear Regulatory Commission.

- Rulemaking referred to “Pre-construction” activities that do not have a nexus to radiological safety and, consequently, do not require authorization by the Nuclear Regulatory Commission.

- Rulemaking established that “Pre-construction” impacts must be addressed in EIS and must be considered as cumulative impacts.

- LWA grants permission to undertake “Construction” before COL is issued; however, license decision must be supported by EIS.
Construction of Plants

• Nuclear plants will be built more rapidly than their predecessors
  – Detailed engineering essentially complete by start of construction
  – Use of modular construction techniques
  – Start of component fabrication before license issuance

• Components and modules will be fabricated in other countries

• Necessitates changes in NRC approach to oversight
NRC CONSTRUCTION OVERSIGHT HAS MULTIPLE COMPONENTS

Oversight will assure plants are constructed as designed.

Pre-Combined License  Construction under Combined License  Start-Up

Early component procurement

Construction start per LWA

Combined License Issue

Fuel load

Abbreviations
ESP – Early Site Permit
IMC – Inspection Manual Chapter
ITAAC – Inspections, Tests, Analyses, and Acceptance Criteria
LWA – Limited Work Authorization

ESP Inspect. - IMC 2501
- QA for design, procurement, & construction
- Translation of certified design into design details

QA and Eng. Inspect. - IMC 2502

IT AAC Inspections - IMC 2503

Non - ITAAC Inspections - IMC 2504

Assessment - IMC 2505

Oversight of Vendor Activities

IMC 2501
- ESP QA controls on integrity & reliability of data collected for site

IMC 2502
- QA for design, procurement, & construction
- Translation of certified design into design details

IMC 2503
- Verification of successful performance of ITAAC-related activities

IMC 2504
- QA for construction & operations
- Problem identification, reporting, & corrective action
- Work planning/control over work & contractors
- Translation of certified design into design details
- Design change process
- Pre-operational & startup testing
- Operational programs & operational readiness

IMC 2505
- Guides inspection planning

Vendor Oversight
- Verification of QA program implementation, compliance, reporting and corrective action
Construction Inspection Program Status

- Implementing enhanced vendor inspection program and related quality assurance activities
- International cooperation
- ITAAC policy and procedures
Anticipated Construction

• Construction inspections to begin 2011

• Indications of likely construction:
  – Long-Lead Equipment Orders:
  – Engineering, Procurement, and Construction Contracts:
  – Construction of large fabrication facilities in the U.S.