



Office of Nuclear Energy,
Science & Technology

Nuclear Power 2010 Program Report

RIC 2006 – Session T2D New Reactor Licensing, Preparing For Combined License Reviews

**Rebecca Smith-Kevern, Acting Associate Director
Office of Nuclear Power Technology
Office of Nuclear Energy, Science and Technology
U.S. Department of Energy**

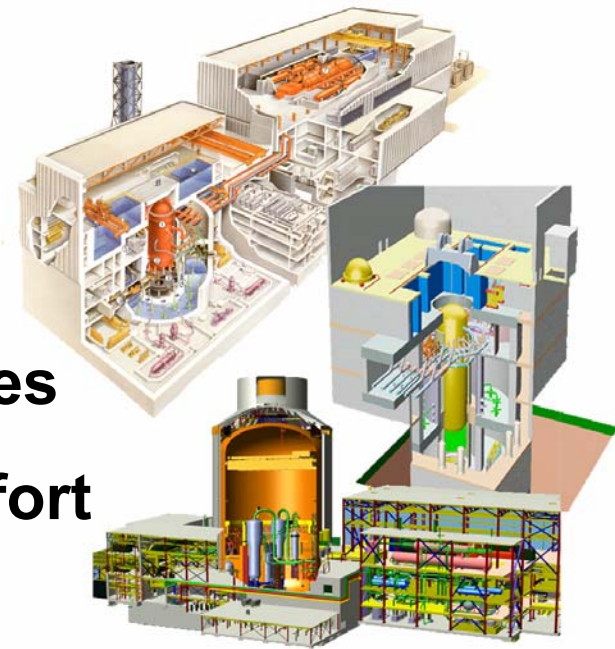
March 7, 2006





Nuclear Power 2010 Overview ... *Working with Industry to Build New Nuclear Plants*

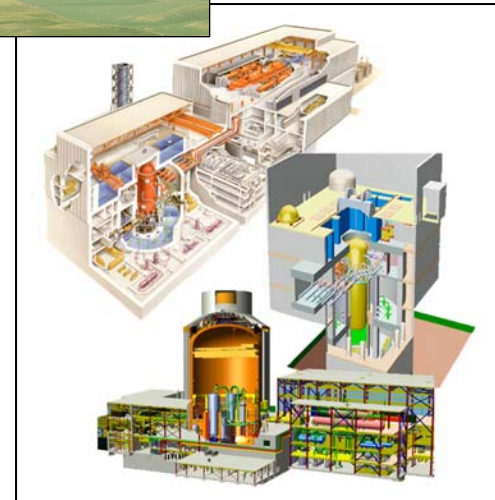
- ◆ **Program initiated in February 2002**
- ◆ **Based on Near-term Deployment Roadmap**
- ◆ **Focused on addressing technical, regulatory and institutional challenges**
- ◆ **Government/industry cooperative effort**
 - 50-50 Cost-shared industry projects
 - Market-driven





Nuclear Power 2010 ... *Program Scope and Goal*

- ◆ **Exploring sites for new nuclear plants**
- ◆ **Demonstrating key untested regulatory processes**
 - Early Site Permit (ESP)
 - Combined Construction and Operating License (COL)
- ◆ **Developing new light water reactor designs**
 - Design Certification for new reactors
 - First-of-a-kind engineering for new standardized nuclear plant designs
- ◆ **Developing concepts to mitigate financial risks**



Program Goal *Pave the way for industry decisions to build new advanced light water reactor nuclear plants in the United States that will begin operation early in the next decade.*



Nuclear Power 2010 ... *Current Program Activities*

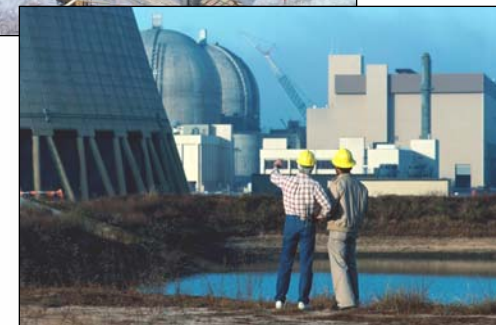
New Plant Licensing Demonstration Projects

◆ **Dominion Energy - COL for ESBWR at North Anna Site**

- COL Application preparation and NRC review
- ESBWR design certification and first-of-a-kind engineering
- Site deployment planning; financial, legal, and risk assessment

◆ **NuStart Energy LLC - COL for single site/technology yet to be selected**

- Design certification and COL application development for two reactor technologies AP1000 (Bellefonte site) or ESBWR (Grand Gulf site)
- Funding for one COL and completion of engineering for selected reactor technology





Nuclear Power 2010 ... *New Plant Licensing Demonstration Projects* *(continued)*

Dominion COL Demonstration project – ESBWR at North Anna

- ◆ **Cooperative agreement finalized:**
 - March 2005
- ◆ **Planning Phase complete**
 - Baseline project schedules, detailed task breakdown and budgets
 - Project interface and oversight agreement established: June 2005
 - ESBWR Design Certification application to NRC: September 2005
- ◆ **Implementation phase: FY 2006 – FY2011**
 - COL application preparation and submittal to NRC: September 2007
 - ESBWR Design Certification: As late as January 2010
 - Approved COL issued by NRC: April 2010 (estimated)





Nuclear Power 2010 ... New Plant Licensing Demonstration Projects (continued)

◆ NuStart Energy COL Demonstration project

- Nine power companies teamed with GE & Westinghouse
- Exelon, Entergy, Progress, Duke, Southern, FP&L, Constellation, TVA, EDF
- Cooperative agreement finalized: April 2005
- Planning Phase completed
 - Baseline project schedules, detailed task breakdown and budgets
 - ESBWR design certification application submitted to NRC: August 2005
 - Site selection: September 2005 (Bellefonte for AP1000; Grand Gulf for ESBWR)
- Project implementation phase: FY 2006 – FY 2011
 - AP1000 Certified: December 2005
 - AP1000 and ESBWR COL application preparation: October 2006 – February 2008
 - ESBWR Design Certification: As late as January 2010
 - COL application to NRC: October 2007 (AP1000) **or** February 2008 (ESBWR)
 - COL issued by NRC: AP1000 -July 2010 **or** ESBWR-November 2010 (estimated)



Energy Policy Act of 2005 (EPAct)

- ◆ **Signed into law on August 8, 2005**
- ◆ **Provides 3 key incentives for construction and operation of new advanced nuclear power plants**
 - Section 638, “Standby Support” – Energy (Part of NP 2010)
 - Section 1306, “Production Credits” – Treasury
 - Section 1703, “Loan Guarantees” – Energy
 - Designed to reduce regulatory and financial uncertainties for “first movers.”



EPAct, Section 638, “Standby Support”

- ◆ **Covers delays for first six reactors constructed.**
 - Failure of NRC to comply with scheduled review and approvals
 - Litigation that delays start of full-power operation
- ◆ **Risk insurance provisions:**
 - 100% of cost of delays for first two new plants (not more than \$500 million each)
 - 50% (not more than \$250 million each) for third through sixth plant after initial 180 days
 - Up to 3 different advanced reactor designs
- ◆ **Issued Notice of Inquiry – November 2005**
- ◆ **Held public workshop and received comments – December 2005**
- ◆ **Publish Interim Final Rule – May 6, 2006**
- ◆ **Publish Final Rule – August 8, 2006**



EPAct, Section 1306, “Production Credit” (Section 45J of IRS code)

- ◆ **Treasury lead, but NP 2010 staff supporting Treasury in developing process for allocation and approval of production credits**
- ◆ **Covers advanced nuclear facility placed in service before January 1, 2021**
- ◆ **Limited to a maximum of \$125 million per 1000 megawatts per year for 8 years (1.8 cents per kilowatt-hour)**
- ◆ **National megawatt limitation of 6,000 megawatts**
- ◆ **Treasury to issue a notice on the production credit in February 2006 with guidelines for allocation and approval process**



Other EPAct Provisions

- ◆ **Loan guarantees for advanced nuclear projects (Section 1703)**
 - principal and interest
 - up to 80% of cost for new nuclear facilities
 - term shall not exceed 30 years or 90 percent of projected useful life
- ◆ **Renewal of Price-Anderson Act (Sections 601-610):
accident liability indemnification**
 - \$10 billion liability limit
 - Adjusted at least every 5 years
 - Increased indemnification for damage outside US to \$500 million