Nuclear Power 2010
Program Overview

2005 Regulatory Information Conference
Session A2: New Reactor Licensing Issues

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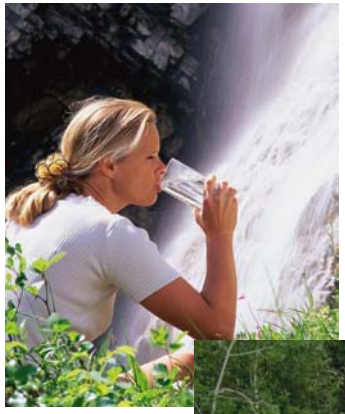
Why Nuclear Energy?

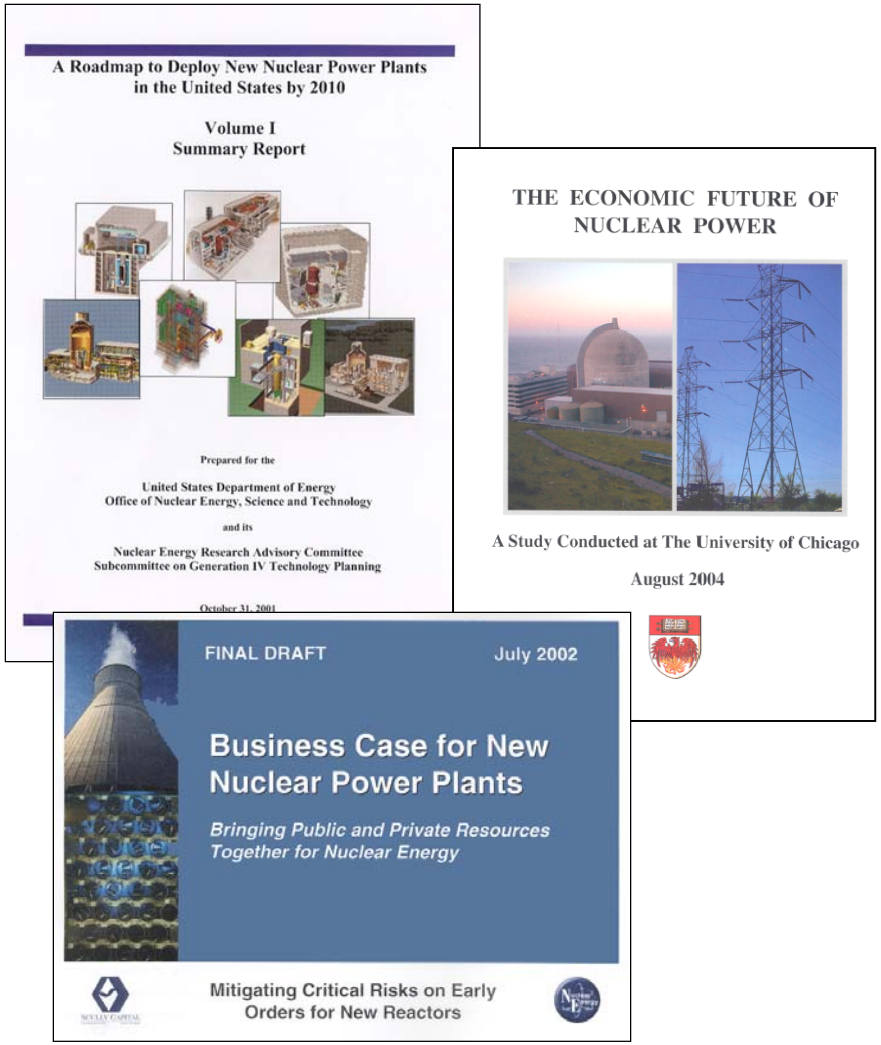
- **Projected Demand**
  - EIA forecasts the U.S. will need about 335,000 megawatts of new generating capacity by 2025
  - All recent capacity additions and projected future additions are primarily fueled by natural gas
- **Over the next decade, nuclear power is needed to:**
  - Reduce U.S. reliance on price-volatile fuels such as natural gas for electricity production
  - Enhance U.S. energy independence and ensure our energy security and economic strength while being environmentally responsible
- **As we approach mid-century, nuclear power can:**
  - Provide inexpensive electricity for future economic growth
  - Produce large quantities of cost-effective hydrogen for transportation
  - Become a major source of clean water



National Energy Policy calls for expansion of Nuclear Energy

Nuclear Plant Deployment Challenges for First Few Plants

- **Licensing Uncertainties**
- **High Initial Capital Cost**
  - Greater than $1,400/KWe for initial plants
  - Utilities no longer willing to pay for designs and other first-plant costs in deregulated market
- **Long construction durations**
  - 4-5 years vs. 18 months for CCGT
- **Nuclear Waste Disposal**
- **Accident Indemnification**



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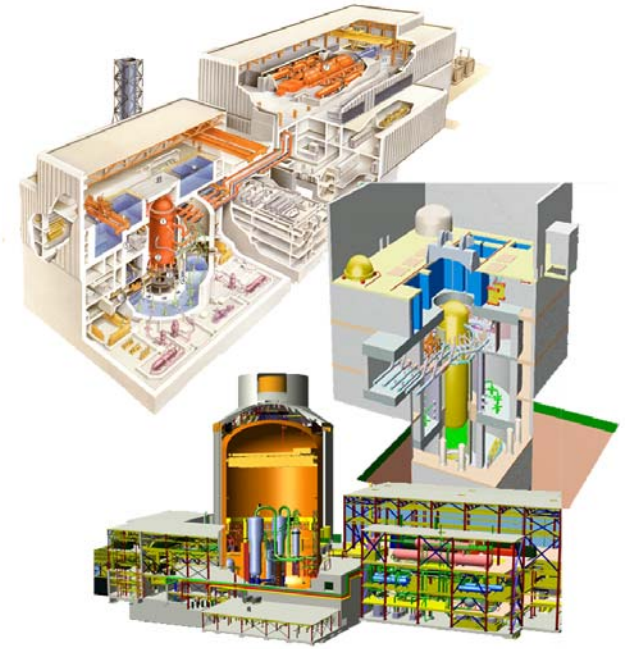
- **Program initiated in February 2002**
- **Based on Near-term Deployment Roadmap**
- **Focused on addressing technical, regulatory and institutional challenges**
- **Government/industry cooperative effort**
  - Cost-shared projects
  - Market-driven



Program Goal	*Pave the way for an industry decision to build and operate at least one new advanced light water reactor plant in the United States early in the next decade.*

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Working with Industry to Build New Nuclear Plants

- **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 technologies
  - First-of-a-kind engineering for new standardized nuclear plant designs
- **Developing concepts to mitigate financing risks**

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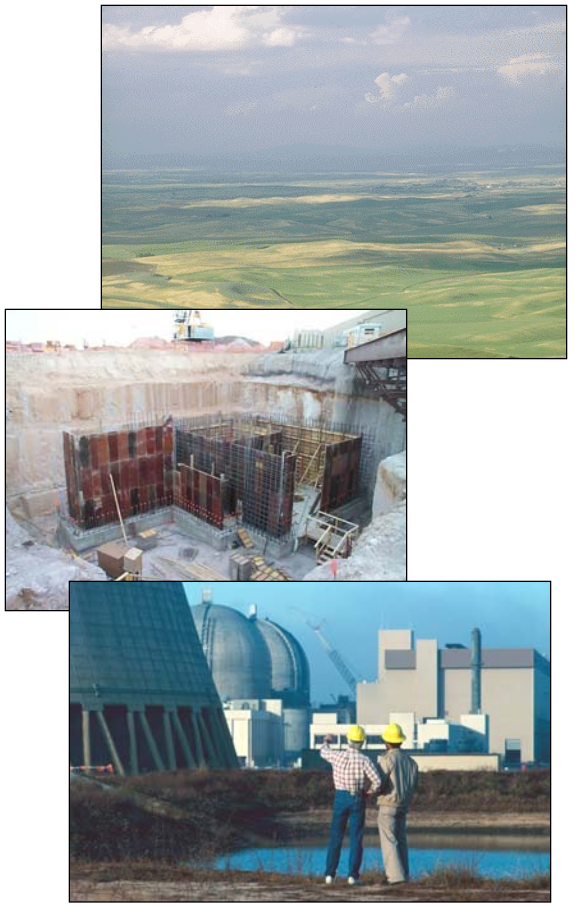
Next Major Step -- New Plant Licensing Demonstration Projects

- **Solicitation issued in November 2003**
- **Work Scope to include:**
  - Construction and Operating License
  - Advanced Reactor Design Completion
  - Project Cost and Financial Analysis
  - Siting Analysis and Permits
- **Cost-shared projects with industry providing a minimum of 50 percent**
- **Five proposals received**
- **Three Projects initiated with industry consortia led by:**
  - TVA
  - Dominion
  - NuStart
- **Reactor technology focus**
  - ABWR
  - AP 1000
  - ESBWR



Program Summary

Explore sites for new NPPs		Dominion and Exelon Scoping Studies	✓
		TVA Bellefonte Site Studies	●
		Texas Gulf Coast Nuclear Power Plant Feasibility Study	●
Regulatory Demonstration	ESP	Dominion, Entergy, Exelon Projects	●
	COL	Generic COL Application Guidance – EPRI, NEI	●
		New Nuclear Plant Licensing Demonstration Projects	●
Developing New LWR Designs		Schedule & Constructability Assessment	✓
		Design Certification and First-of-a-Kind Engineering	●
Financial Risk Mitigation		Economic Policy Study	✓
		Business Case	✓
		SEAB Nuclear Energy Task Force Analysis	✓

✓ Completed ● On-going