



# **New Infrastructure for New Nuclear Power Plants**

**Chairman Nils J. Diaz  
U.S. Nuclear Regulatory Commission**

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# National Energy Plan

**On August 8, 2005, President Bush Signed Into Law The First National Energy Policy Act In More Than A Decade.** The President has stated that the new law will encourage energy efficiency and conservation, promote alternative and renewable energy sources, reduce our dependence on foreign sources of energy, increase domestic production, modernize the electricity grid, and **encourage the expansion of nuclear energy.**



# Energy Policy Act of 2005

Nuclear Power 2010 and the Generation IV Nuclear Energy Systems Initiative establishes a partnership between government, industry, and research programs to address the need to modernize and expand the Nation's baseload electric generation capacity. The plan now provides several incentives, including:

- A new form of Federal risk insurance for the first six builders of new nuclear power plants.
- Tax credits for advanced reactors that have been certified by the NRC and are in service before January 1, 2021.
- Two demonstration projects for commercial production of hydrogen at nuclear plants.



# Factors Affecting the Nation's Nuclear Energy Future

Factors positively influencing the prospects of constructing new nuclear power plants:

- Support by the President and the Congress for expanding the use of nuclear power, including incentives for the first six plants
- Concerns with the Nation's energy security
- High cost of oil and natural gas
- Environmental considerations
- Low and stable electrical production costs from nuclear
- Low interest rates and inflation
- Renewed interest by utilities in building new nuclear power plants
- NRC's establishment of an improved licensing process



# Factors Affecting the Nation's Nuclear Energy Future

Factors with potential negative influence on the prospects of constructing new nuclear power plants:

- High capital cost of new nuclear power plants
- Financing considerations
- New licensing processes have not yet been fully tested



# Major Challenges

New infrastructure needed for new nuclear power plants:

- Improved environmental assessments
- Improved techno-legal framework
- Improved reactor design and construction
- Reliable suppliers
- Well-qualified personnel



# 1997 NRC Mission Statement

NRC's mission is to regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of the public health and safety, to promote the common defense and security, and to protect the environment.

Source: NRC Strategic Plan, FY 1997-2002



# 2004 NRC Mission Statement

License and regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment.

Source: NRC Strategic Plan, FY 2004-FY 2009



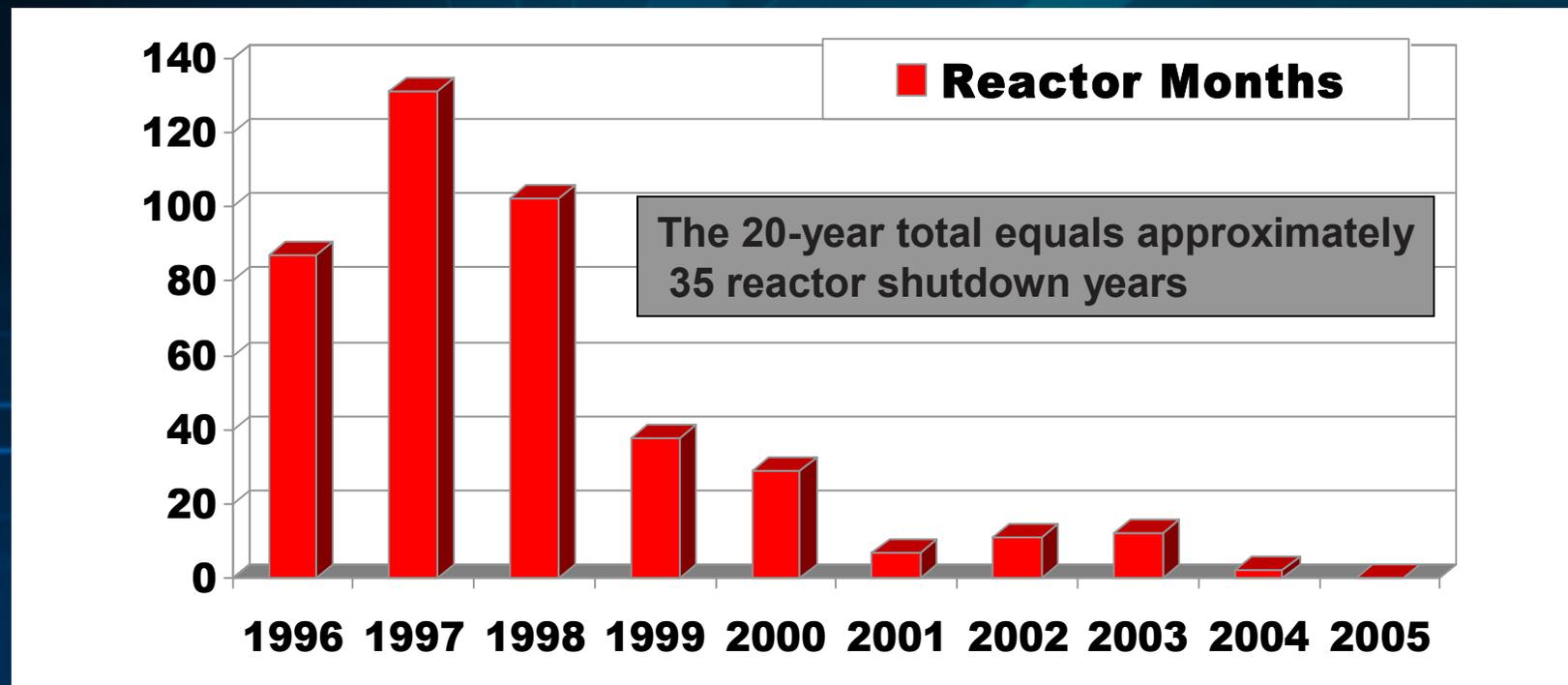
# **NRC's Strategic Objective**

Enable the use and management of radioactive materials and nuclear fuels for beneficial civilian purposes in a manner that protects public health and safety and the environment, promotes the security of our nation, and provides for regulatory actions that are open, effective, efficient, realistic, and timely.

Source: NRC Strategic Plan, FY 2004-FY 2009



# Operating Experience: Unplanned Reactor Shutdowns (6 months or longer)



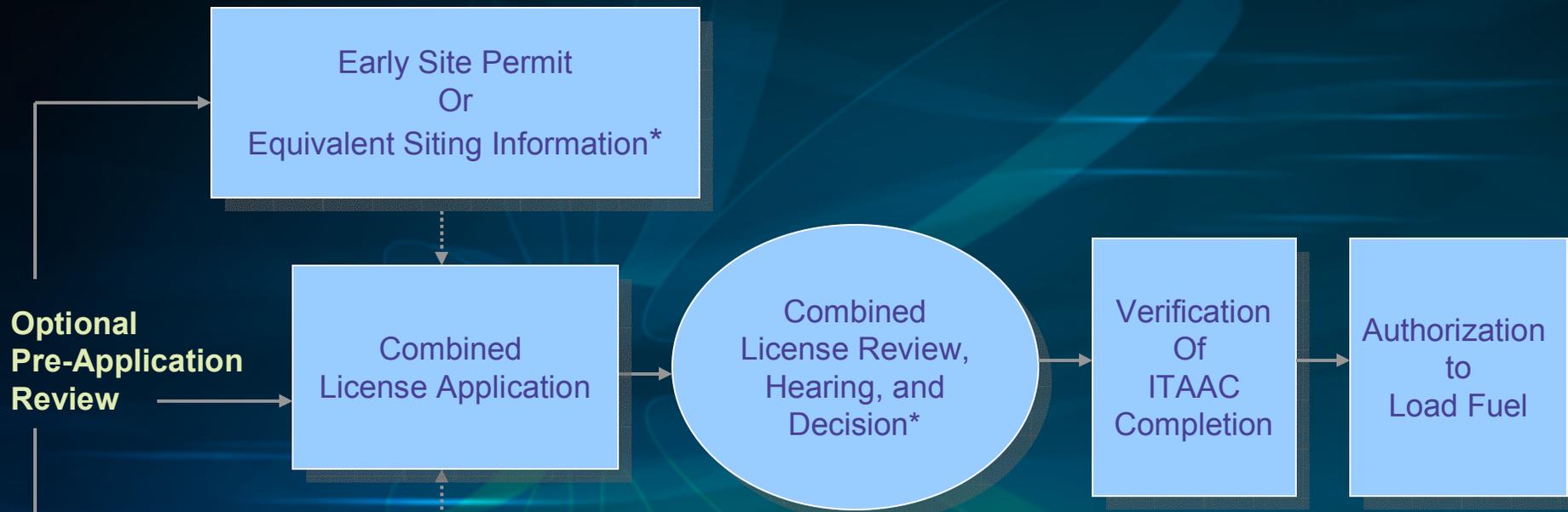


# New Reactor Licensing Activities Forecasted (As of November 1, 2005)

Organization	Designs Endorsed or Under Consideration	Sites Under Consideration	Applications Planned or Submitted
Southern Nuclear Operating Company	AP1000/ESBWR	Vogtle	ESP: 8/2006 COL: 3/2008
Constellation	EPR	Calvert Cliffs or Nine Mile Point	ESP: 2007 COL: 2008
Dominion	ESBWR	North Anna	ESP: submitted in 2003 COL: 2007
Duke	AP1000	TBD	COL: early 2008
Progress Energy	TBD	Carolinas	COL: 1 <sup>st</sup> Qtr 2008
	TBD	Florida	COL: 1 <sup>st</sup> Qtr 2008
NuStart Energy	AP1000	Bellefonte	COL: late 2007
	ESBWR	Grand Gulf	ESP: submitted in 2003 COL: early 2008
Entergy	ESBWR	River Bend	COL: late 2008
South Carolina Electric & Gas	AP1000, ESBWR, or EPR	TBD	COL: TBD



# Part 52 Licensing Process



\*A combined license application can reference an early site permit, a standard design certification, both, or neither. If an early site permit and/or a standard design certification is not referenced, the applicant must provide an equivalent level of information in the combined license application.



# Expectations and Permutations

Often Not a Good  
**Combination**



# Realistic Schedule for a New NPP

## From Licensing to Construction to Initial Operation (With an Approved Site and a Certified Design)

Assuming an applicant submits a complete and very well documented COL application, based on a standardized reactor design with an approved Design Certification, that enables the NRC to make a finding of reasonable assurance of safety of the proposed facility, and if the NRC finds that the facility meets the acceptance criteria prescribed in the COL, it is currently estimated that:

Time from license application to decision on COL, including adjudication	~3 years
Time for construction, ITAACs, fuel loading, initial operations	~5 years
Total time	<hr/> 8 years



# The Train is Leaving the Station

- Am I on it?
- Do I know where it is going?
- Do I know what to do once I am on the train?
- Do I know if everybody on the train knows what they should do?
- Do I have the plan, the tools, the resources I will need to get it to its destination?
- Do I and everyone else know what to expect during the trip?
- Do I know what to do when it gets to its final destination?