Licensing the Next Generation of Nuclear Plants

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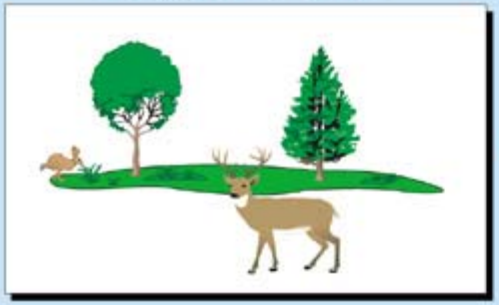
New Construction Prerequisites (from the regulator's perspective)

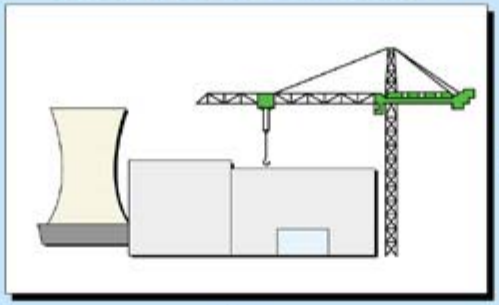
- Maintain safety of licensed plants
- Enhanced safety for future plants
- Independent and credible regulator
- Meaningful public participation
- Predictable licensing process
- Support national goals related to energy

Combined Licenses, Early Site Permits, and Standard Design Certifications

Early Site Permit*

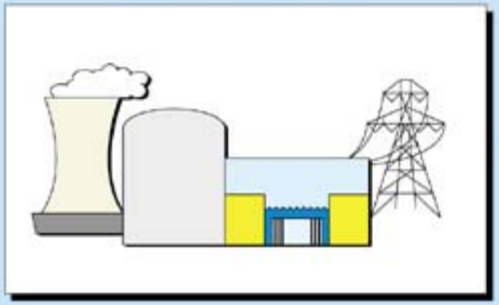


Reactor Construction



Verification of Inspection, Tests, Analyses, and Acceptance Criteria

Standard Design Certification*

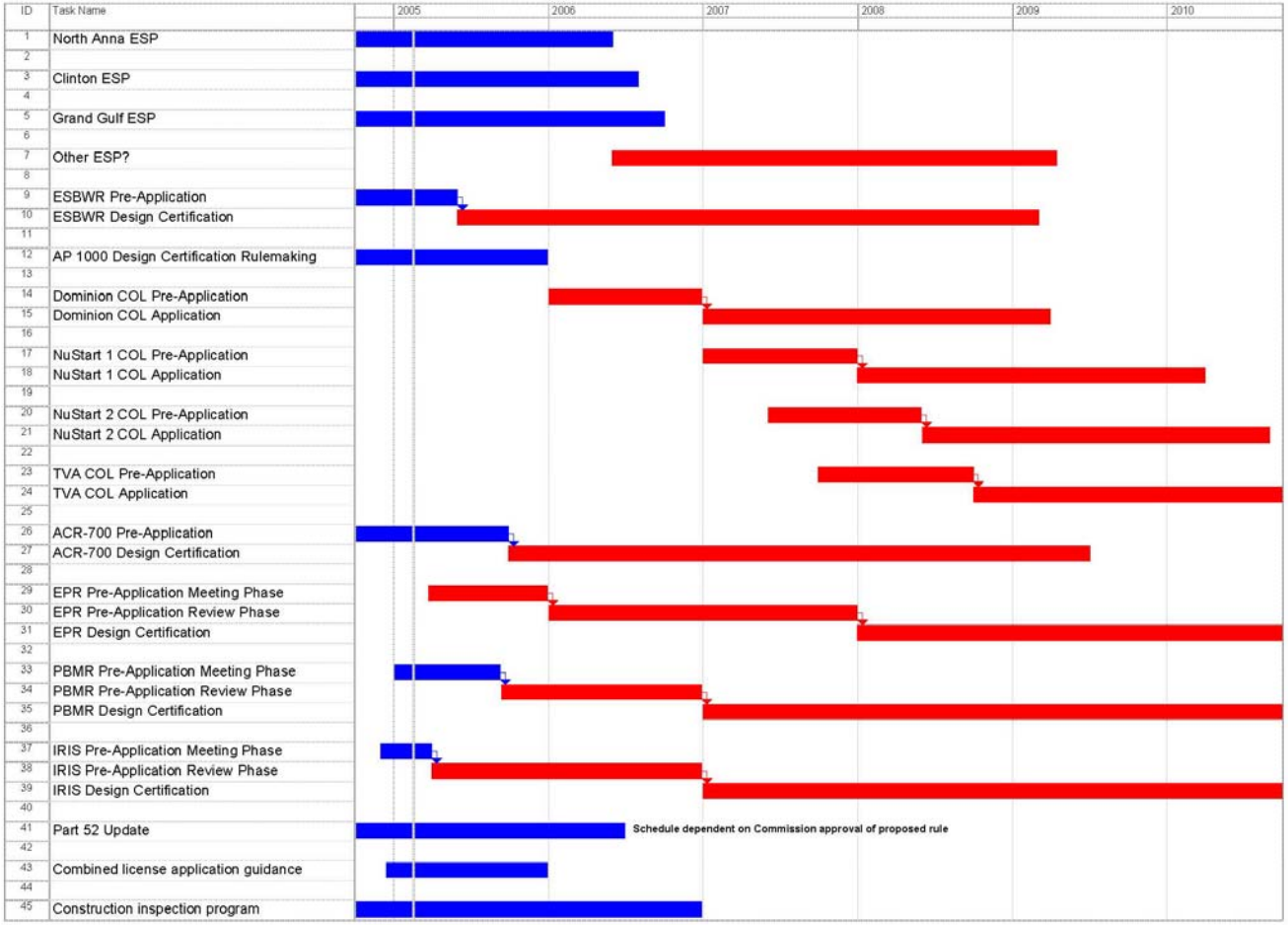


Combined License Review and Hearing

Reactor Operation

** or equivalent process*

Current and Upcoming New Reactor Licensing Activities

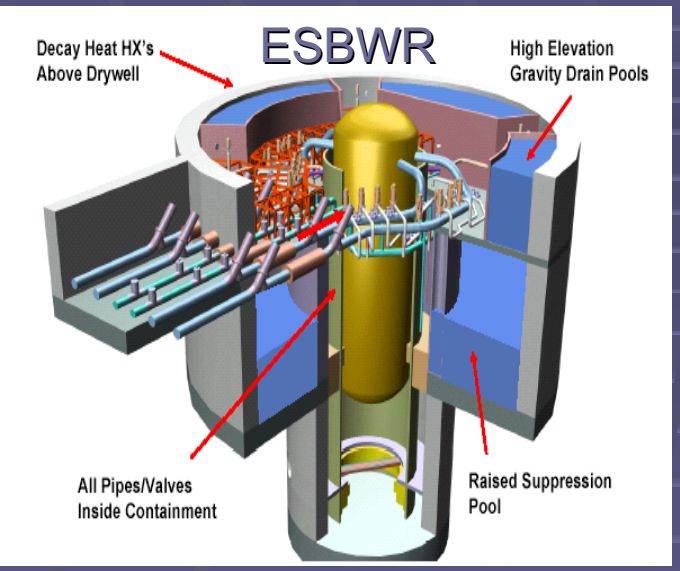


Design Certifications

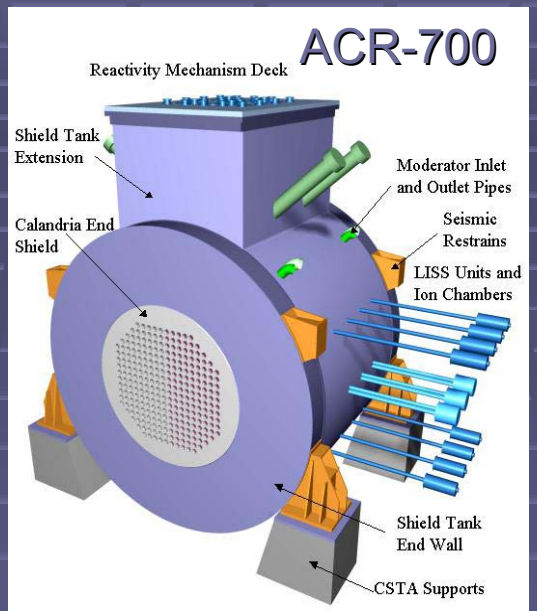
- NRC review and approval of a standardized design by rulemaking
- Already certified:
  - C-E System 80+
  - General Electric Advanced Boiling Water Reactor (ABWR)
  - Westinghouse AP600
- Certification Rulemaking in progress:
  - Westinghouse AP1000-FSER/FDA Completed September 2004
- Likely near-term certification reviews:
  - General Electric Economic and Simplified Boiling Water Reactor (ESBWR)

Current and Potential Pre-application Reviews

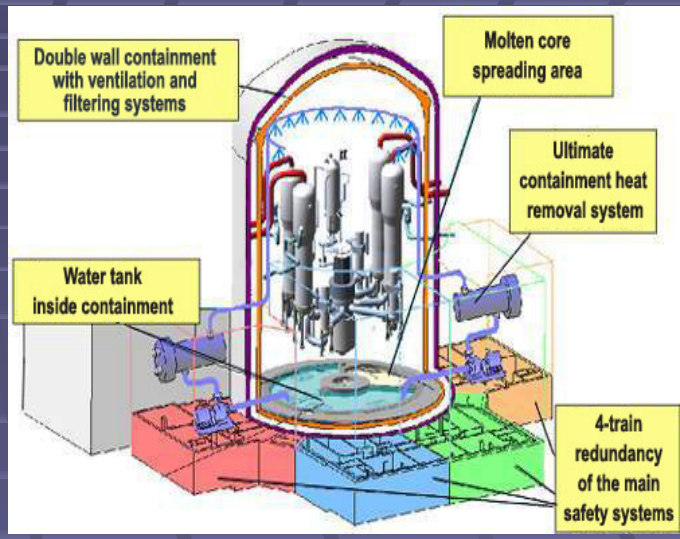
ESBWR



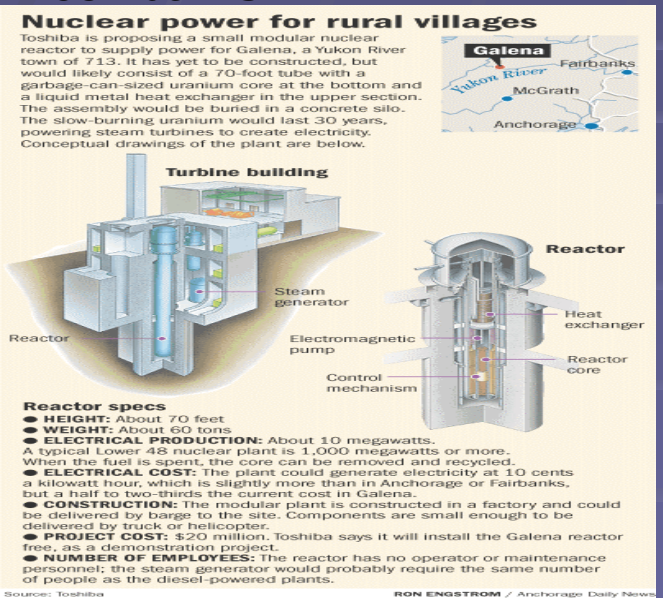
ACR-700



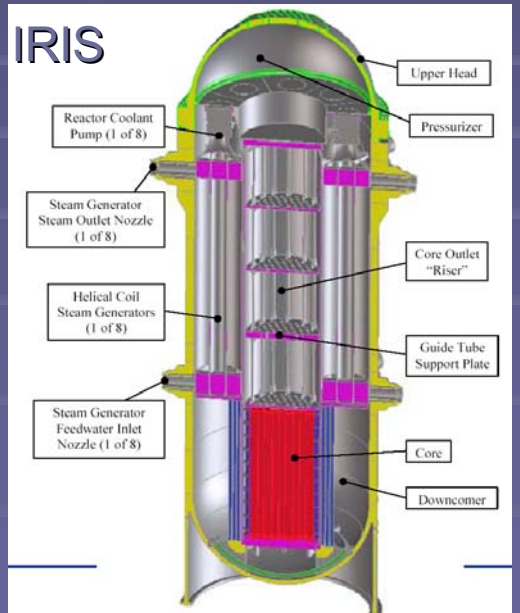
EPR



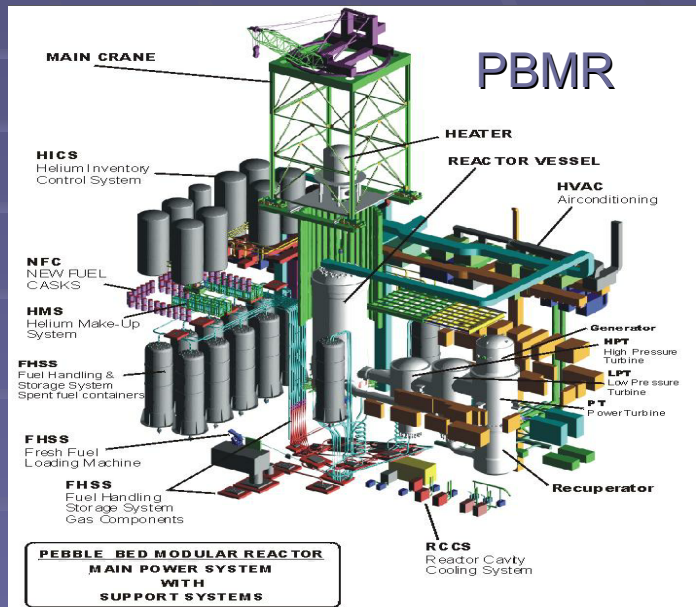
Toshiba 4S



IRIS



PBMR



ESP

- Allows early resolution of siting issues and ‘banking’ of a site for 10-20 years
- Review Areas
  - Site Safety
  - Emergency Preparedness
  - Environmental Protection
- Applications Received
  - September 2003 – Dominion (North Anna)
  - September 2003 – Exelon (Clinton)
  - October 2003- Entergy (Grand Gulf)

COL

- Combined construction permit and conditional operating license for a nuclear power plant
- May reference an ESP, a standard design certification, both, or neither
- Objective is to resolve all safety & environmental issues before authorizing construction
- Prior to fuel load, must verify the facility has been constructed in accordance with COL (CIP-ITAAC)
- COL is the fundamental licensing process in Part 52 for reducing regulatory risk for companies building nuclear power plants

COL Resources and Critical Skills Challenges

- Get realistic, and accurate information from the industry on plans for submitting applications
- The NRC staff plans to stagger the reviews to make the most efficient use of experienced resource teams
- Clear expectations on schedules/responsibilities (internal and external)

COL Challenges of the Part 52 Process

- Both DC and ESP applications/FSERs have COL items that need to be addressed during the COL review. Original Part 52 vision did not anticipate a large number of COL items that would need to be resolved.
  - For AP1000 there are 240 COL action items that need to be addressed in the COL application
  - ESPs applications contain additional follow-up at COL stage via items such as plant parameter envelope

NRC Preparations for a Combined License Application

- Current Activities
  - NEI COL Application Guidance-Review in Progress
  - 10 CFR Part 52 Proposed Rule
  - Construction Inspection Program
  - COL Program Review- (Programmatic information needed at COL-In progress)
  - Emergency Planning (EP) ITAAC

Construction Inspection Program - NRC Challenges -

- More aggressive construction schedules
  - Possible fabrication before COL issued
  - Modular construction – multiple locations
- Verifying successful completion of ITAAC
  - Unique to Part 52 licensing

Summary

- Stable and predictable licensing process
- 3 reactor designs have been certified
- AP1000 in design certification phase
- 6 designs in pre-application phase
- 3 ESP applications received in late 2003
- Modernizing regulatory infrastructure to address advanced reactors
- Planning for possible COL application in late 2006/2007
- For more information, visit our website: http://www.nrc.gov/reactors/new-reactor-licensing.html