

U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

The New Reactor Program Process, Progress, and Plans (And a Peek Over the Horizon)

November 19, 2009

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Office of New Reactors



NRC Organization

- Five member Commission led by the Chairman
- Commissioners serve 5-year terms
- Approximately 4000 employees and an annual budget of \$1billion (FY10)—90% paid by user fees
- Headquarters in Rockville, Maryland
- Four regional offices:
 - Philadelphia, Pennsylvania
 - Atlanta, Georgia
 - Chicago, Illinois
 - Arlington, Texas



NRC Regulates:

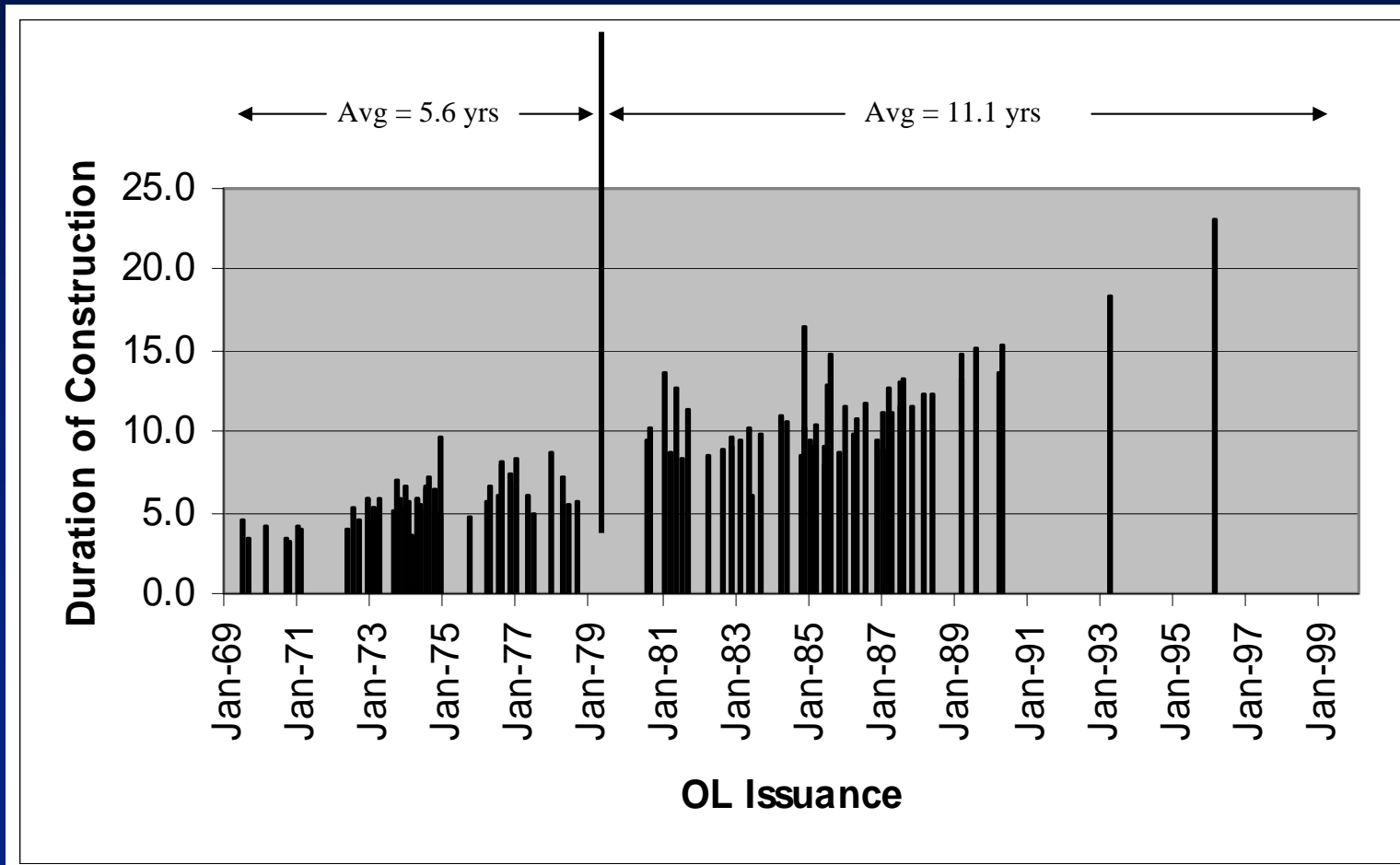
- 104 commercial nuclear power plants that provide about 20 percent of the nation's electricity
- 45 fuel facilities involved in the extraction, processing, and fabrication of uranium into reactor fuel
- Approximately 4,000 large and small users of nuclear material for industrial, medical, or academic purposes
- Low-level and high-level waste facilities, interim storage of spent nuclear fuel, containers used in the transportation of radioactive fuel, and decommissioning of nuclear facilities



Conditions of the Mid-1980s did not Favor Nuclear Construction

- **Energy efficiency improvements**
- **Economic restructuring**
- **Significant drop in electricity demand**
- **Excess generating capacity**
- **Oil (traded fossil energy) price collapse**
- **Electricity market liberalization & privatization**
- **Regulatory interventions after TMI**
- **High Interest rates**
- **Chernobyl**

Completion Times for the Current Fleet

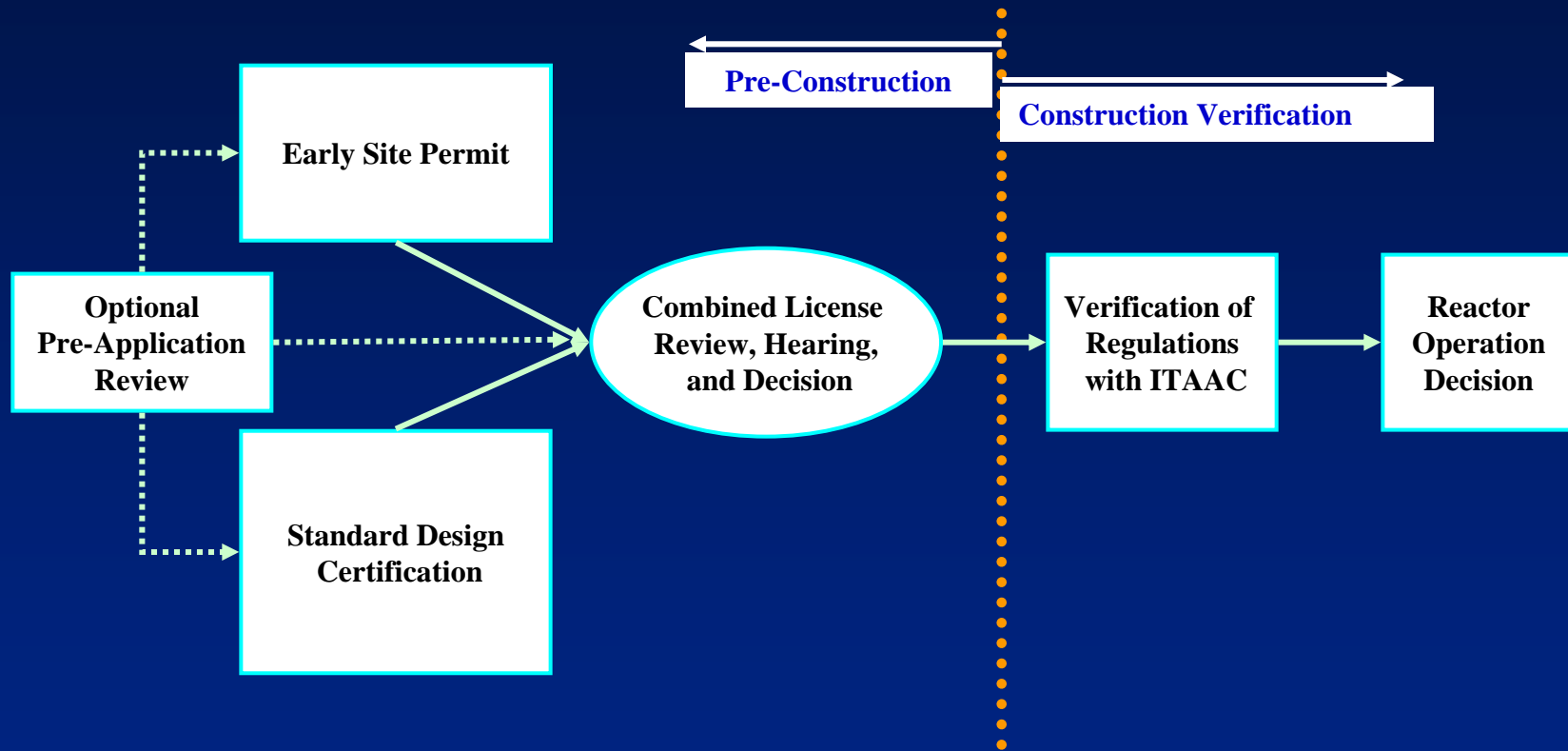




Licensing Process - 10 CFR Part 52

- Early Site Permit
- Design Certification
- Manufacturing License
- Design Approval
- Combined License
- Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC)

Part 52 - Fitting the Pieces Together



- Licensing decisions finalized before major construction begins
- Inspections w/ITAAC to verify construction
- Limited work may be authorized before COL issuance

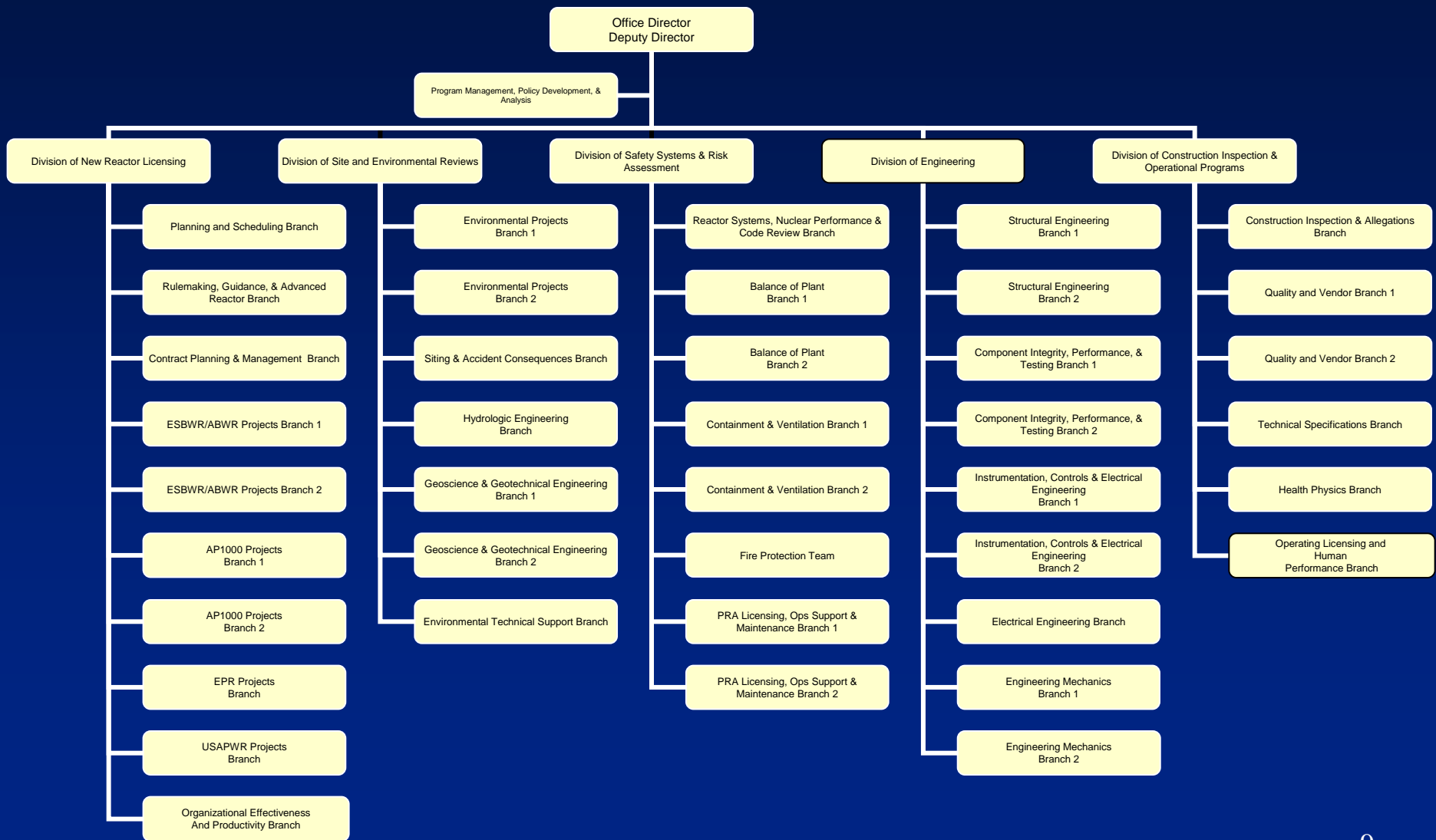


NRO Mission

The Office of New Reactors serves the public interest by enabling the safe, secure, and environmentally responsible use of nuclear power in meeting the nation's future energy needs.



Office of New Reactors





New Reactor Applications Under Review [Aug 2008]

- **11 Combined License Applications**
 - Calvert Cliffs, South Texas, Bellefonte, North Anna, Lee, Harris, Grand Gulf, Vogtle, Summer, Callaway, and Levy County
- **3 Design Certification (DC) Applications**
 - General Electric Economic and Simplified Boiling Water Reactor (ESBWR)
 - AREVA Evolutionary Power Reactor (EPR)
 - Mitsubishi U.S. Advanced Pressurized Water Reactor (US APWR)
- **1 Amended DC Application**
 - Westinghouse AP1000 Certification Amendment
- **1 Early Site Permit/Limited Work Authorization**
 - Vogtle



New Reactor Applications [November 2009]

- 18 Combined License Applications
- 3 Design Certification (DC) Applications
 - General Electric Economic and Simplified Boiling Water Reactor (ESBWR)
 - AREVA Evolutionary Power Reactor (EPR)
 - Mitsubishi U.S. Advanced Pressurized Water Reactor (US APWR)
- 2 Amended DC Applications
 - Westinghouse AP1000 Certification Amendment
 - ABWR Aircraft Impact Amendment (STP)

New Reactor Licensing Applications

Schedules by Calendar Year

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

11/05/09

Schedules depict completion of staff safety and environmental reviews. Issuance of license is dependent upon completion of hearing process as well as design certification rulemaking for the selected design.


Schedule begin date is reflected as docketing date, or expected docketing date, following staff acceptance review.

Schedules depicted for future activities represent nominal assumed review durations based on submittal time frames in letters of intent from prospective applicants. Actual schedules based on schedules shown on NRC public web pages.

Legend


Combined License

Received 
Projected 

Rulemaking / Hearing 

Design Certification 

Received 

Early Site Permit 

Received 

Numbers in () next to COL name indicate number of units/site.

ABWR DESIGN CENTER REVIEW

SOUTH TEXAS PROJECT (2)  PUBLISHED SCHEDULE

ABWR DESIGN CERTIFICATION RENEWAL

STP AIA DC AMENDMENT  RECEIVED, NOT SCHEDULED

DC RENEWAL   NOT SCHEDULED

AP1000 DESIGN CENTER REVIEW



DC AMENDMENT  PUBLISHED SCHEDULE

RULEMAKING 

SOUTHERN - VOGTLE ESP  ISSUED

SOUTHERN - VOGTLE (GA) (2)  PUBLISHED SCHEDULE

TVA - BELLEFONTE (AL) (2)  PUBLISHED SCHEDULE

DUKE - LEE STATION (SC) (2)  PUBLISHED SCHEDULE

PROGRESS ENERGY - HARRIS (NC) (2)  PUBLISHED SCHEDULE

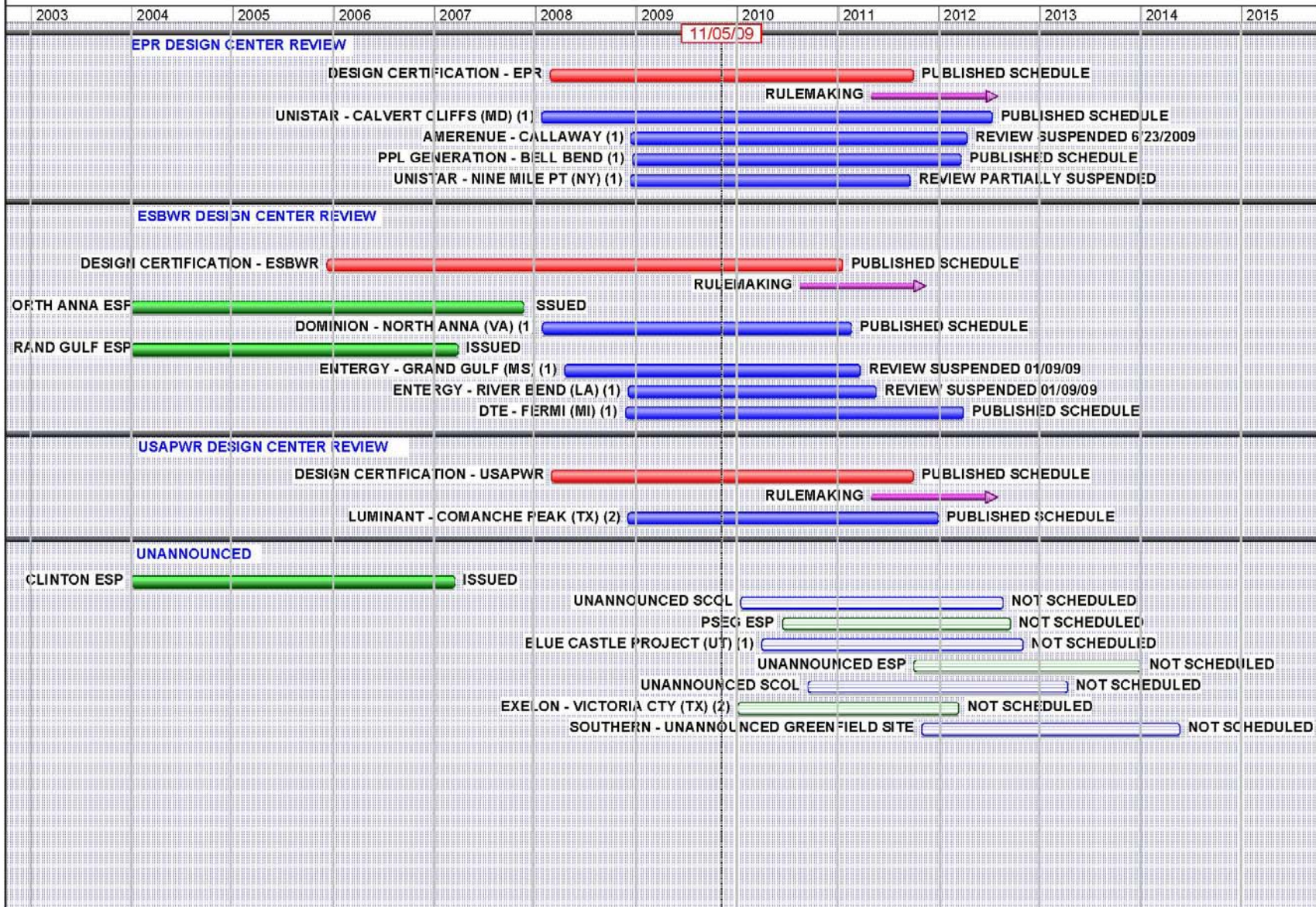
SOUTH CAROLINA E&G - SUMNER (2)  PUBLISHED SCHEDULE

PROGRESS ENERGY - LEVY COUNTY (FL) (2)  PUBLISHED SCHEDULE

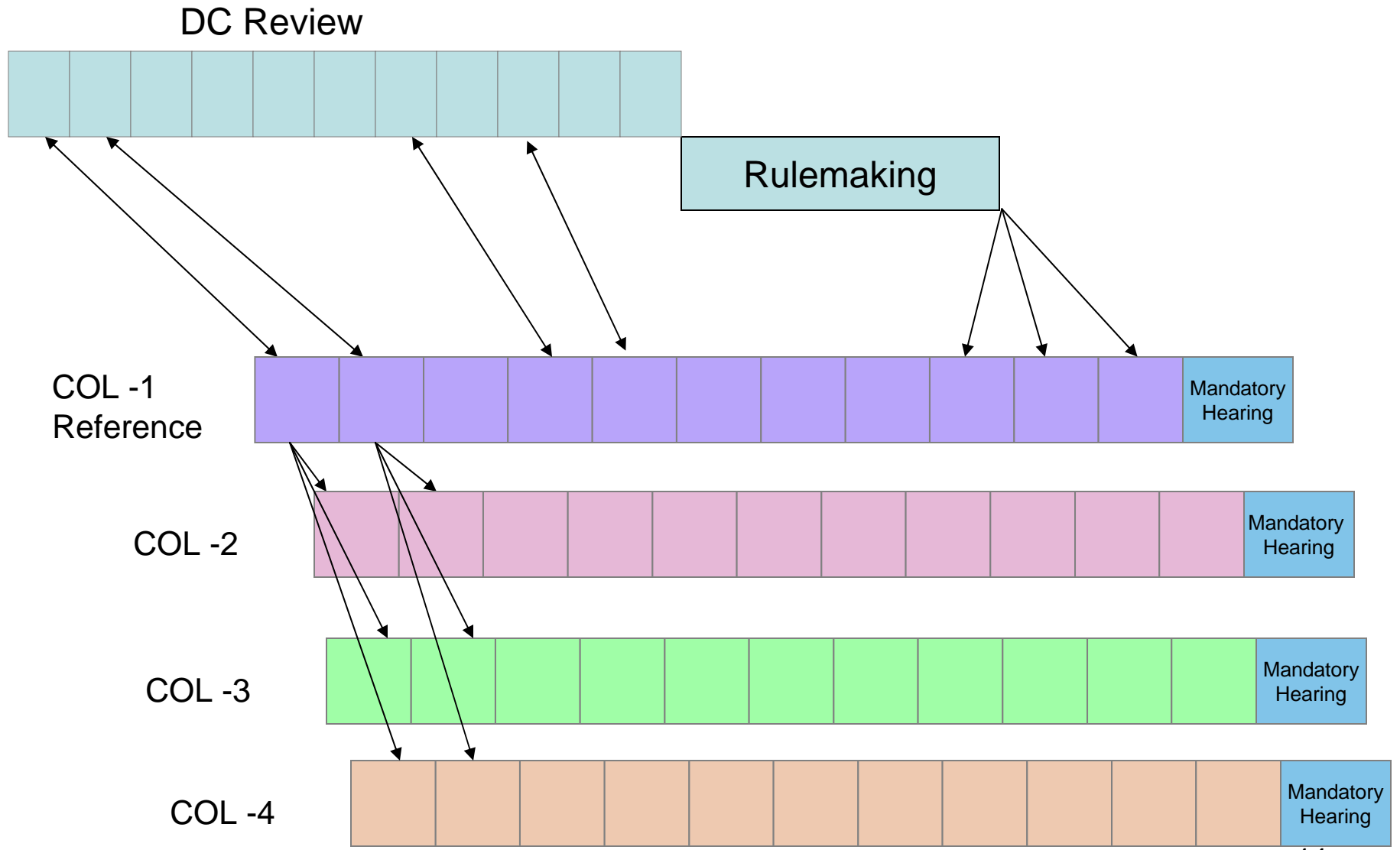
FLORIDA POWER AND LIGHT - TURKEY POINT (2)  NOT SCHEDULED

New Reactor Licensing Applications

Schedules by Calendar Year



One Issue, One Review, One Position





Potential DC Activity

- DC Renewal—2 for ABWR (2010)
- New DC (potentially 2012)



Potential ESP Activity

- Victoria County (2010)
- PSEG (2010)
- Unnamed (2012)
- Unnamed (2013)
- S.O.C.E.P.A. (?????)



Potential COLA Activity

- Restart Nine Mile Point (2010)
- Blue Castle (2010)
- Unnamed COL (2010-2011)
- Unnamed COL (2011-2012)
- Southern COL (2012)
- Unnamed COL (????)



Deferred/Cancelled COLAs

- River Bend (deferred)
- Grand Gulf (deferred)
- Callaway (cancelled)
- Victoria County (converted to ESP)



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GOALS

From this point forward, the New Reactor Program goals are:

- I. *By the **end of FY2011**,
the NRC will have **completed the review of***
 - *Design Certifications,*
 - *Limited Work Authorizations, and*
 - *Combined Licenses*

- *needed for each of the new nuclear projects that are expected to **start operating during CY2016-CY2017.***



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GOALS

From this point forward, the New Reactor Program goals are:

II. *By the end of FY2011, the NRC will*

- *have developed the necessary construction inspection and support infrastructure (inspectors and training programs) and*
- *have under development additional support infrastructure (license examination programs, simulators, etc.) to implement the construction inspection, operator licensing, and construction oversight programs*

needed for all of the new nuclear projects that are expected to load fuel during CY2016-CY2017.



GOALS

From this point forward, the New Reactor Program goals are:

III. *By the **end of FY2011**, the NRC will have established an **Advanced Reactor Organization***

- *capable of conducting*
 - *the infrastructure development,*
 - *pre-application review,*
 - *Design Certification and COL review activities*
 - » *needed for the Congressionally mandated **NGNP***
 - » *and to address generic licensing infrastructure development applicable to **additional reactor technologies as they develop.***



GOALS

From this point forward, the New Reactor Program goals are:

IV. Provided the above expectations can be met, the NRC will assign available resources to the review of

- Design Certifications,*
- Early Site Permits,*
- Limited Work Authorizations, and*
- Combined Licenses*

that will be needed for the nuclear projects that are expected to undertake construction with the intent of operating during the CY2016-CY2020 time frame.



Review Group Labels

- Focus Projects
- Sequenced Projects
- Suspended Projects
- Potential Projects
- Advanced Reactor Projects



Looking Back...

- Challenges:
 - Infrastructure
 - Policies and procedures
- Successes:
 - Part 52 rulemaking
 - Limited Work Authorization rulemaking
 - Updated hearing policy
 - Interim staff guidance process
 - Designed Centered Approach



Looking Forward...

- Challenges:
 - Transition from initial licensing to construction and beyond
 - Sequencing of reviews
 - Possible change in the rulemaking process
 - Review of design certification renewals
 - ITAAC verification and closure



Concluding Reminders

Project status and schedules can be tracked at www.nrc.gov by clicking on “Nuclear Reactors” and then “New Reactors.”

HELP US HELP YOU

Key Terms in Part 52

- (a) *Early site permit* means a Commission approval, issued under subpart A of this part, for a site or sites for one or more nuclear power facilities.
- (b) *Standard design certification or design certification* means a Commission approval, issued under subpart B of this part, of a final standard design for a nuclear power facility. A design so approved may be referred to as a certified standard design.
- (c) *Combined license* means a combined construction permit and operating license with conditions for a nuclear power facility issued under subpart C of this part.

Key Terms in Part 52 (cont.)

(e) *Standard design approval or design approval* means an NRC staff approval, issued under subpart E of this part, of a final standard design for an entire nuclear power facility or a major portion thereof.

(f) *Manufacturing license* means a license, issued under subpart F of this part, authorizing the manufacture of nuclear power reactors but not their construction, installation, or operation at the sites on which the reactors are to be operated.

ITAAC – the inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Act, and the Commission’s regulations.