U.S.NRC
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ASME Boiler & Pressure Vessel Code Week
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Applicability of Section III to Integral PWRs – Status of NRC Activities

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Introduction

- The NRC is currently engaged in a large amount of activity in preparation for expected license and design certification applications for advanced reactors.

- The NRC expects design certification applications from various integral Pressurized Water Reactor (iPWR) vendors in the 2012 to 2013 time frame.

Advanced Reactor Program

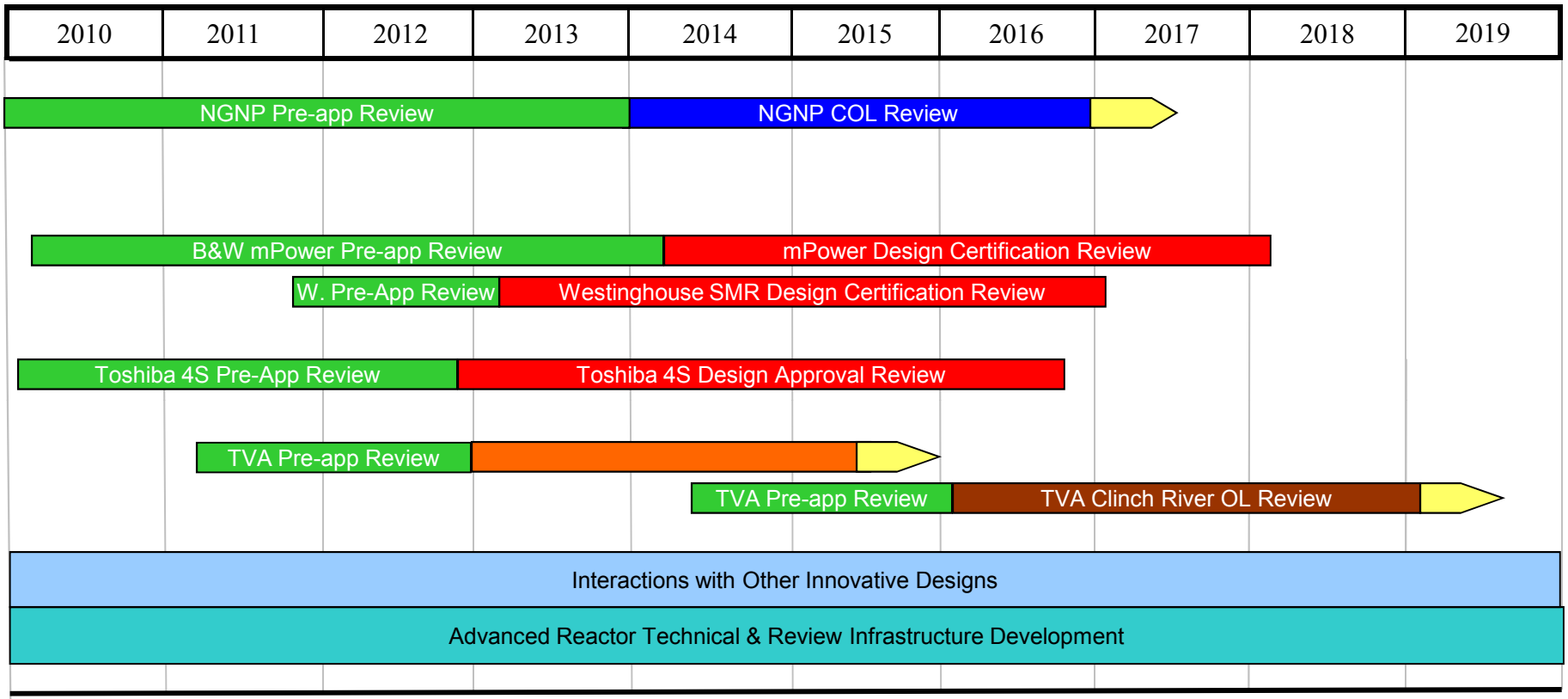
Advanced Reactor Background

- Small modular reactors (SMR) are defined as those with an output of less than 300 mWe (per IAEA)
- Small Modular Reactors
  - High temperature gas cooled reactors (HTGR)
    - PBMR
    - Prismatic
  - Liquid metal reactors (LMR)
    - Toshiba: 4S
    - General Electric: PRISM

Advanced Reactor Background

- Integral pressurized water reactors (iPWR)
  - NuScale
  - B&W mPower
  - Westinghouse SMR
  - Holtec Inherently Safe Modular Underground Reactor (HI-SMUR)
- Other
  - Hyperion
  - Terra Power
  - ??

Potential Small Modular Reactor Licensing Applications



Legend:

Operating License | Design Certification | Construction Permit | Other SMR Activities | Hearing

Pre-application Review | Licensing (COLA/ESP) | R&D/Infrastructure Development

NOTE: Schedules depicted for future activities represent nominal assumed review durations based on submittal time frames in letters responding to RIS 2011-02 from prospective applicants or other public settings. Actual schedules will be determined when applications are docketed.

06/08/2011

iPWR Current Activities

- **TVA is planning to submit an application for the Clinch River Site under the Part 50 licensing process.**

- **The construction permit application will be based on B&W's mPower design which is currently in the pre-application review phase.**

- **TVA's proposal necessitates:**
  - Coordination of 10 CFR Part 50 and 10 CFR Part 52 reviews.
  - Update of 10 CFR Part 50 infrastructure and NRC inspection programs.
  - Discussions with TVA are ongoing regarding approach to Part 50 application.

iPWR Current Activities (Cont'd)

- **B&W mPower Design Certification Activities**:
  - Pre-application activities currently underway.
  - Public meeting to discuss application of ASME B&PV Sections III and XI to the mPower design was held at NRC HQ on August 2, 2011.
- **Westinghouse SMR design** :
  - WEC presented an overview of their SMR design to NRC staff on July 12, 2011.
  - WEC met with NRC Commissioners on July 18, 2011.
- **HOLTEC HI-SMUR design** :
  - HOLTEC presented an overview of their HI-SMUR design to NRC staff on July 21, 2011.
  - HOLTEC met with NRC Chairman on July 21, 2011.

NRC Regulations for iPWRs

- 10 CFR 50.55a requires that PWRs (and BWRs) meet ASME B&PV Code, Section III requirements for Class 1, 2 and 3 components

- 50.55a was written before the advent of iPWRs

- NRC is assessing the extent to which ASME III is applicable to or needs to be supplemented for iPWRs

Conclusions

- The NRC expects design certification applications from various integral Pressurized Water Reactor (iPWR) vendors in the 2012 to 2013 time frame.
- Activity surrounding iPWRs has increased considerably since the May 2011 Code Week.
- The NRC is currently reviewing the applicability and completeness of the rules in Sections III (and XI) of the ASME Boiler and Pressure Vessel Code for iPWRs.
- NRC has initiated discussions with multiple potential iPWR design certification applicants to better understand how Section III (and XI) requirements will be implemented for iPWRs.