

# Options for Licensing New Reactors in the U.S. – Lessons Learned and Considerations for the Future

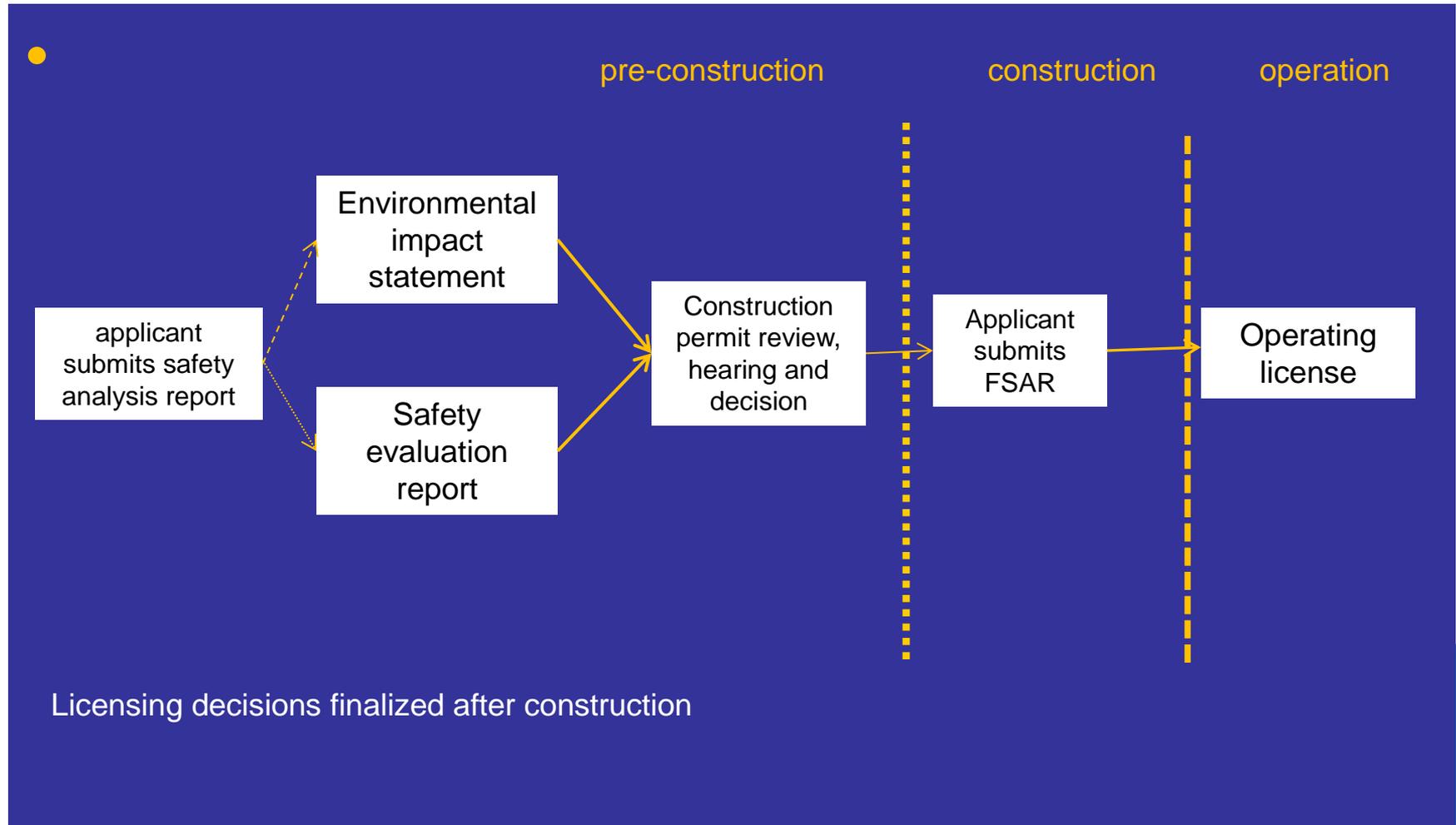
Donna Williams

Office of New Reactors

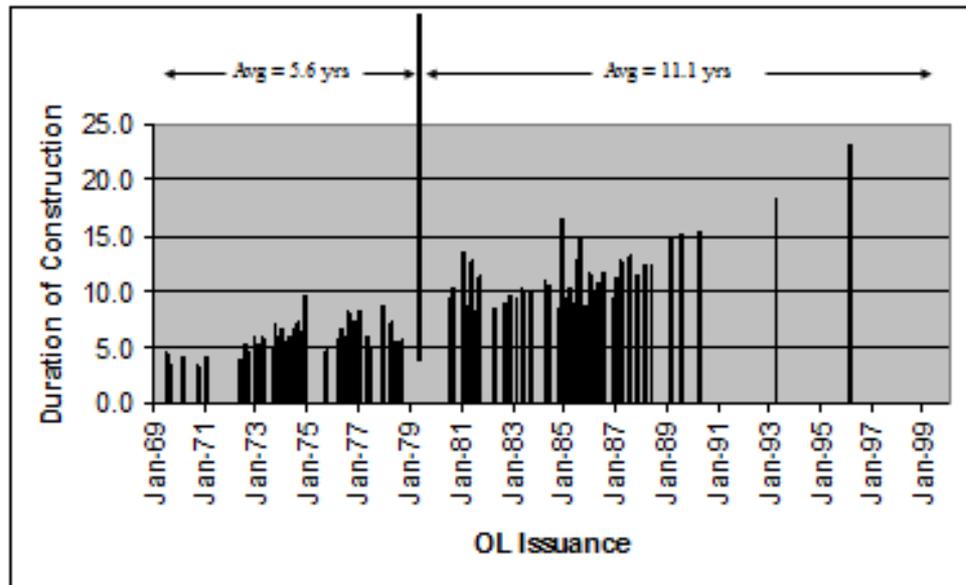
U.S. Nuclear Regulatory Commission

April 21, 2015

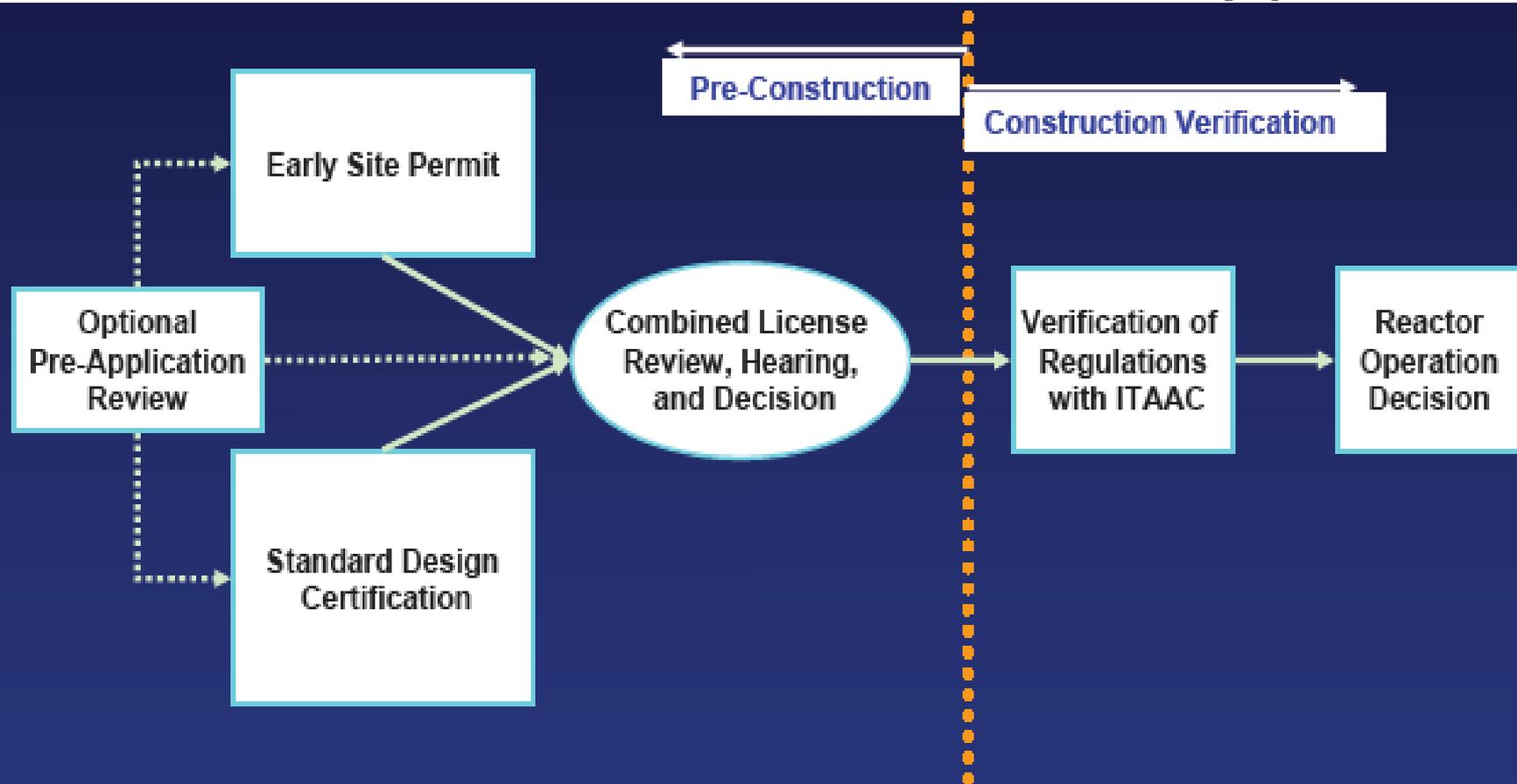
# Two-step Licensing Process



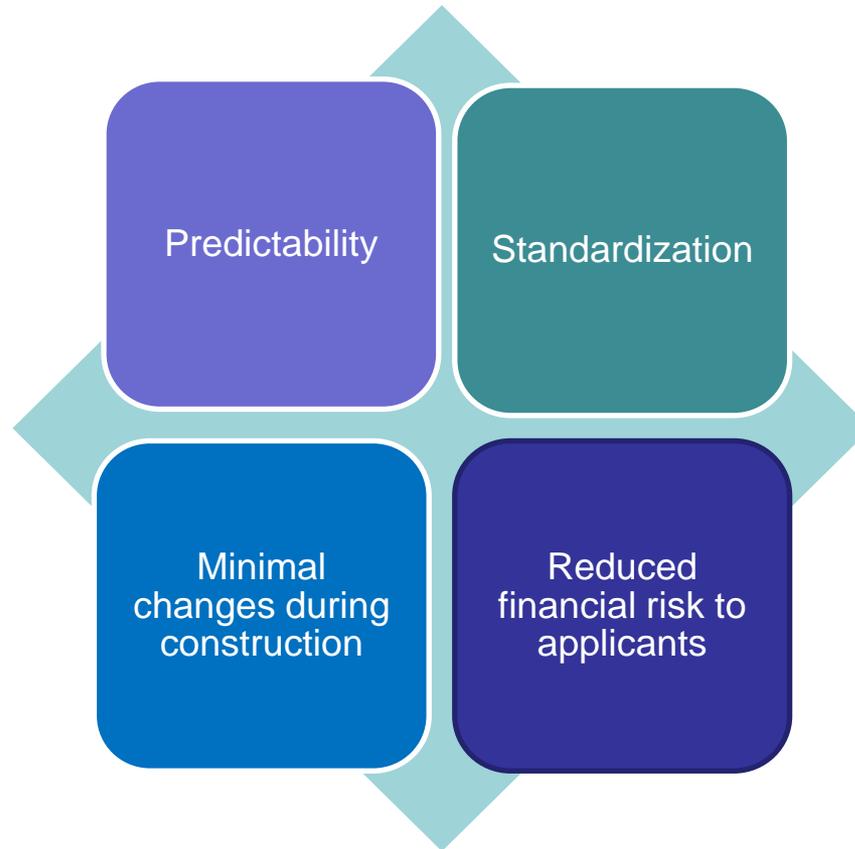
## Construction times for the current U.S. Fleet



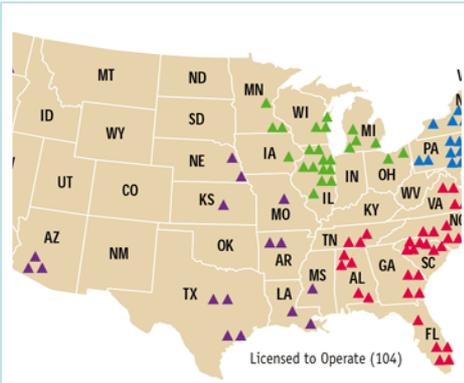
# One-Step Licensing Process



# Advantages of the One-Step Process



# Experience to date



Operating licenses  
issued

126



Design Certifications  
issued

5



Combined Licenses  
issued

4



# Challenges of the One-Step Licensing Process

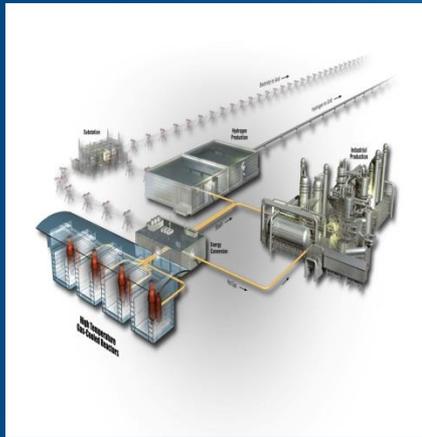
- Changes during construction are more difficult to implement
  - First of a kind, innovative features delay review
  - Challenging technical issues delay all combined license applications referencing a design
  - Can delay start of construction
- 

# Lessons Learned and Process Improvements

- Two lessons learned reports issued (2013) of the one-step process: combined licensing process and post-licensing (construction)
- Findings. Regulatory reviews are enhanced by:
  - Improved design detail in applications
  - Early identification and resolution of complex technical issues
  - Minimizing design changes after submittal
  - Improved communication between regulator and utility

# How do Advanced Designs fit into this model?

## Non-Light Water Reactors

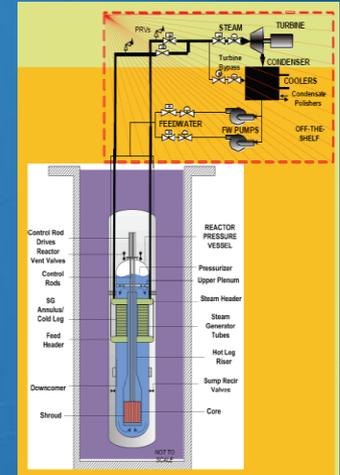


High Temperature Gas-Cooled Reactors (HTGRs)

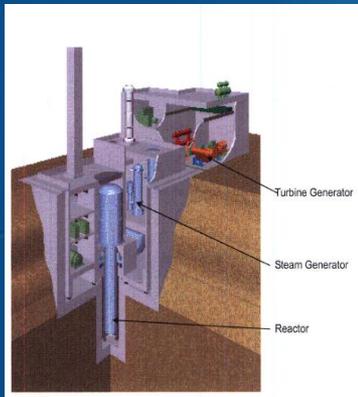
## Small Modular Reactors

B&W mPower

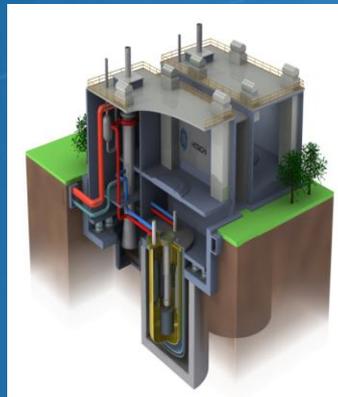
NuScale



## Liquid Metal Reactors

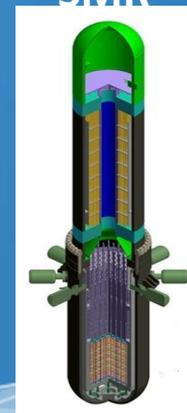


4S



PRISM

Westinghouse SMR



Holtec SMR-160



# Summary

- The one-step process, when implemented as designed, would provide greater predictability and less risk
- Would a licensability/feasibility review better enable the eventual building of advanced reactor designs?