

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

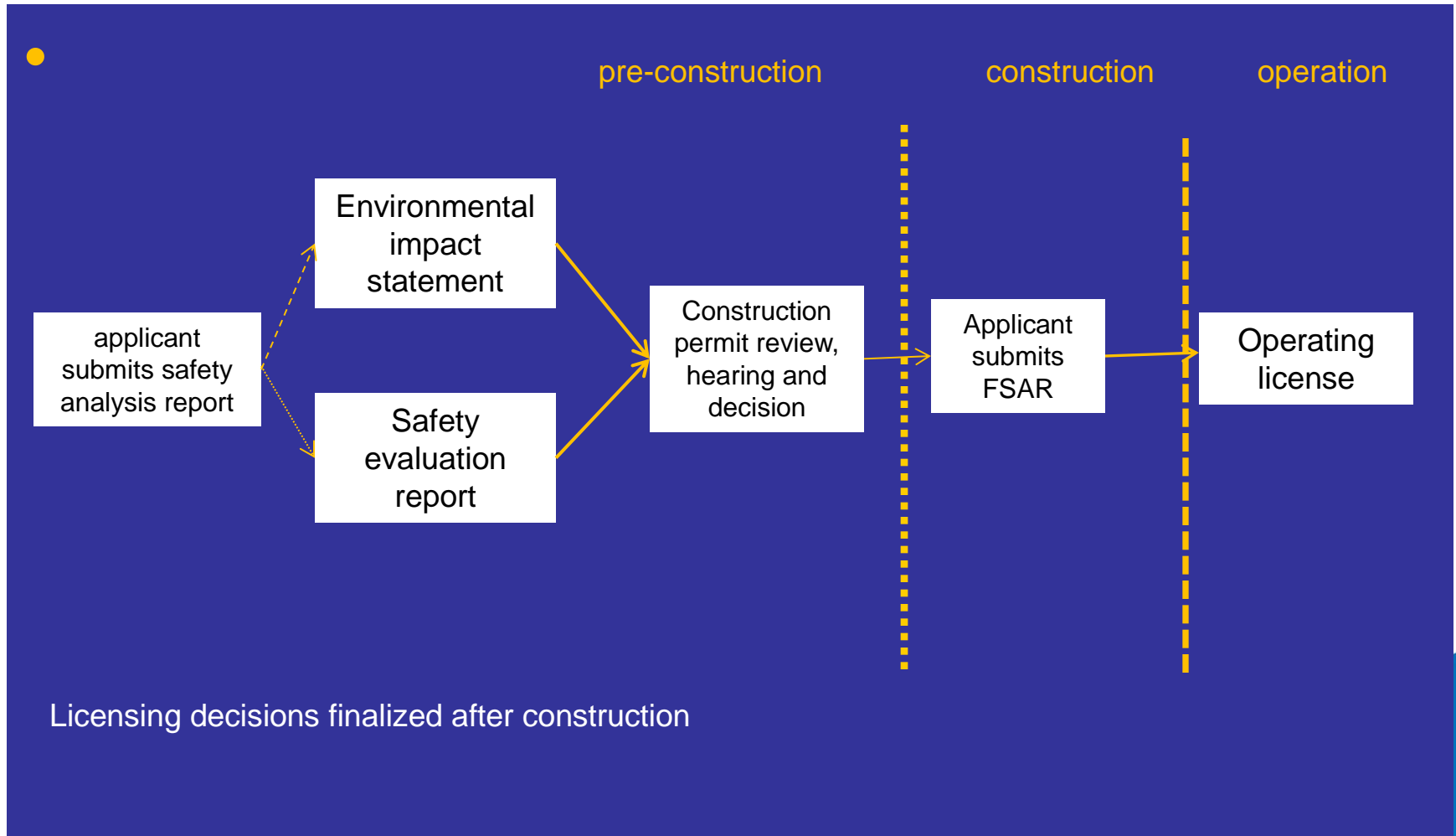
Donna Williams

Office of New Reactors

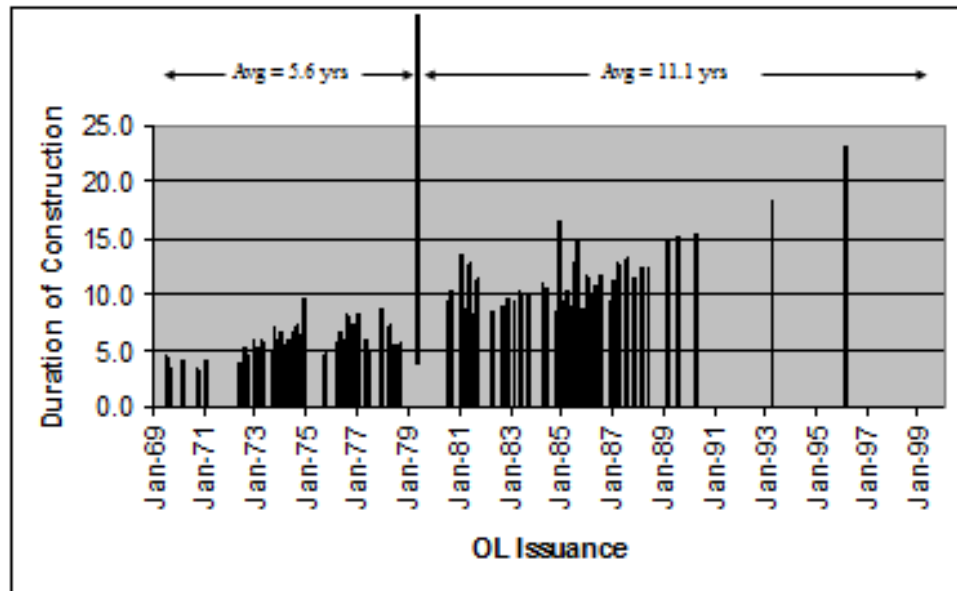
U.S. Nuclear Regulatory Commission

April 21, 2015

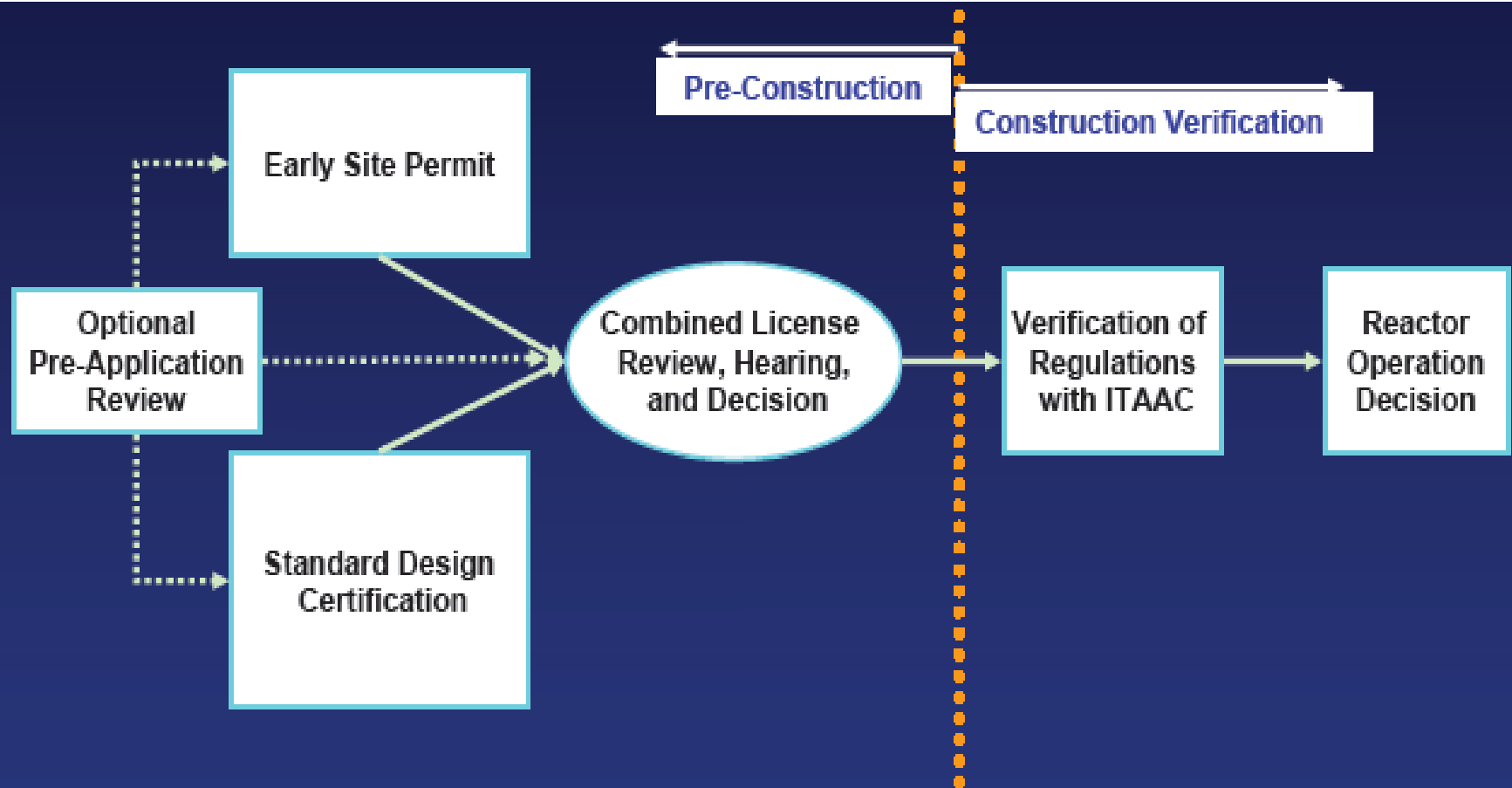
# Two-step Licensing Process



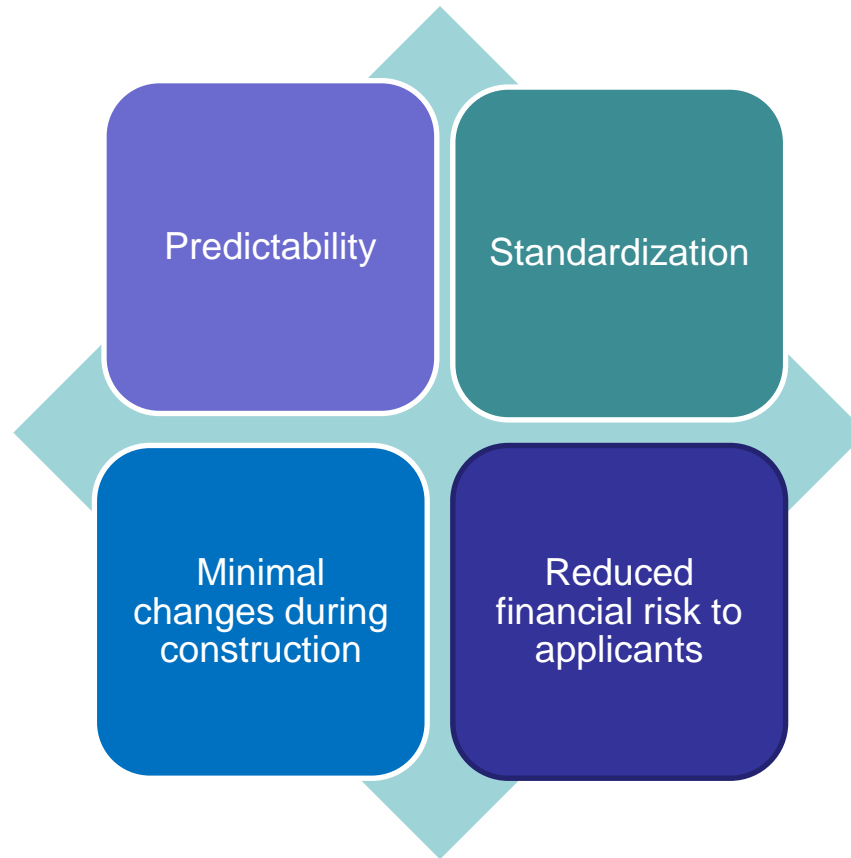
## Construction times for the current U.S. Fleet



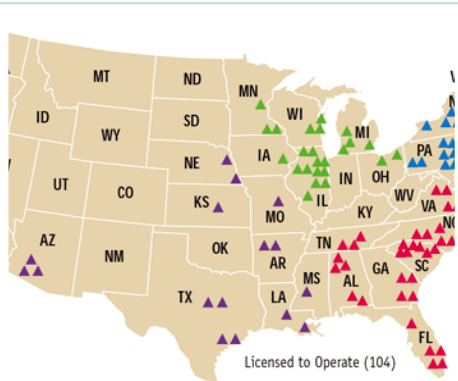
# One-Step Licensing Process



# 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

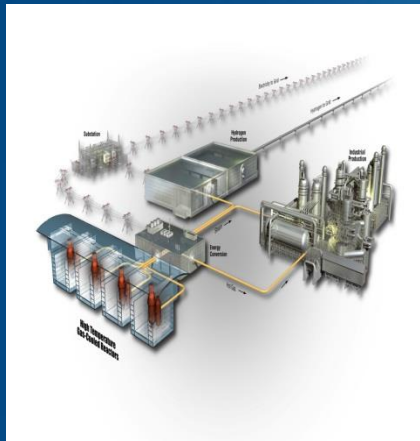
# Lessons Learned and Process Improvements

- 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



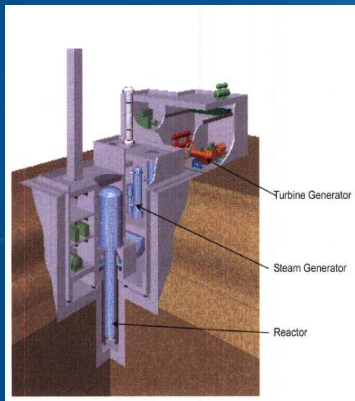
# How do Advanced Designs fit into this model?

## Non-Light Water Reactors

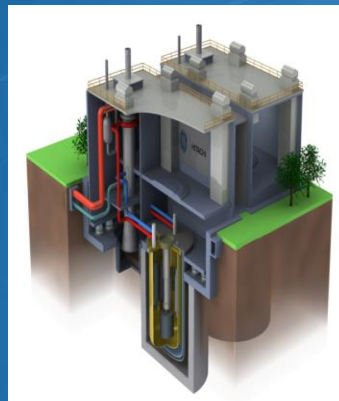


High Temperature  
Gas-Cooled  
Reactors (HTGRs)

## Liquid Metal Reactors



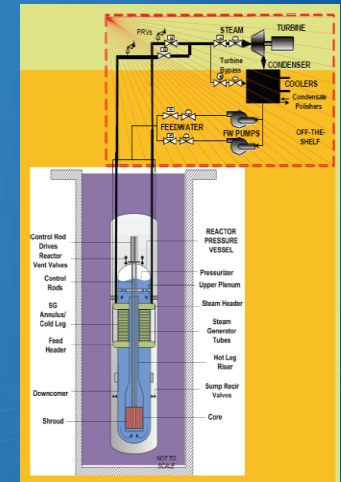
4S



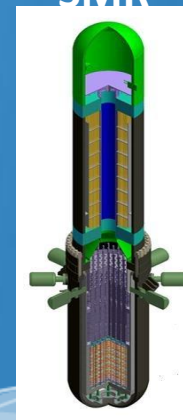
PRISM

## Small Modular Reactors

B&W mPower      NuScale



## 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?