

# **Harris Nuclear Plant Expansion**

**Cape Fear Water Supply Plan Meeting  
Fayetteville, NC  
October 1, 2007**

# Introduction

- Progress Energy's service area is experiencing significant growth in population and electricity demand
- Progress Energy has developed a balanced solution to meet these future energy needs:
  - ◆ Energy conservation
  - ◆ Alternative energy sources
  - ◆ New power generation sources
- New baseload nuclear generation capacity benefits:
  - ◆ Enhance energy supply
  - ◆ Energy supply diversity
  - ◆ Minimize environmental effects

# Introduction (continued)

- Progress Energy has proposed to evaluate the Harris Nuclear Plant site for two new advanced nuclear power units
  - ◆ Westinghouse AP1000 Reactor
  - ◆ Standardized reactor system
  - ◆ Pre-approved design by NRC
- The licensing and planning for the proposed units needs to be evaluated well in advance to keep the Company's generation options open for future electrical demand

# The Westinghouse AP1000 Reactor



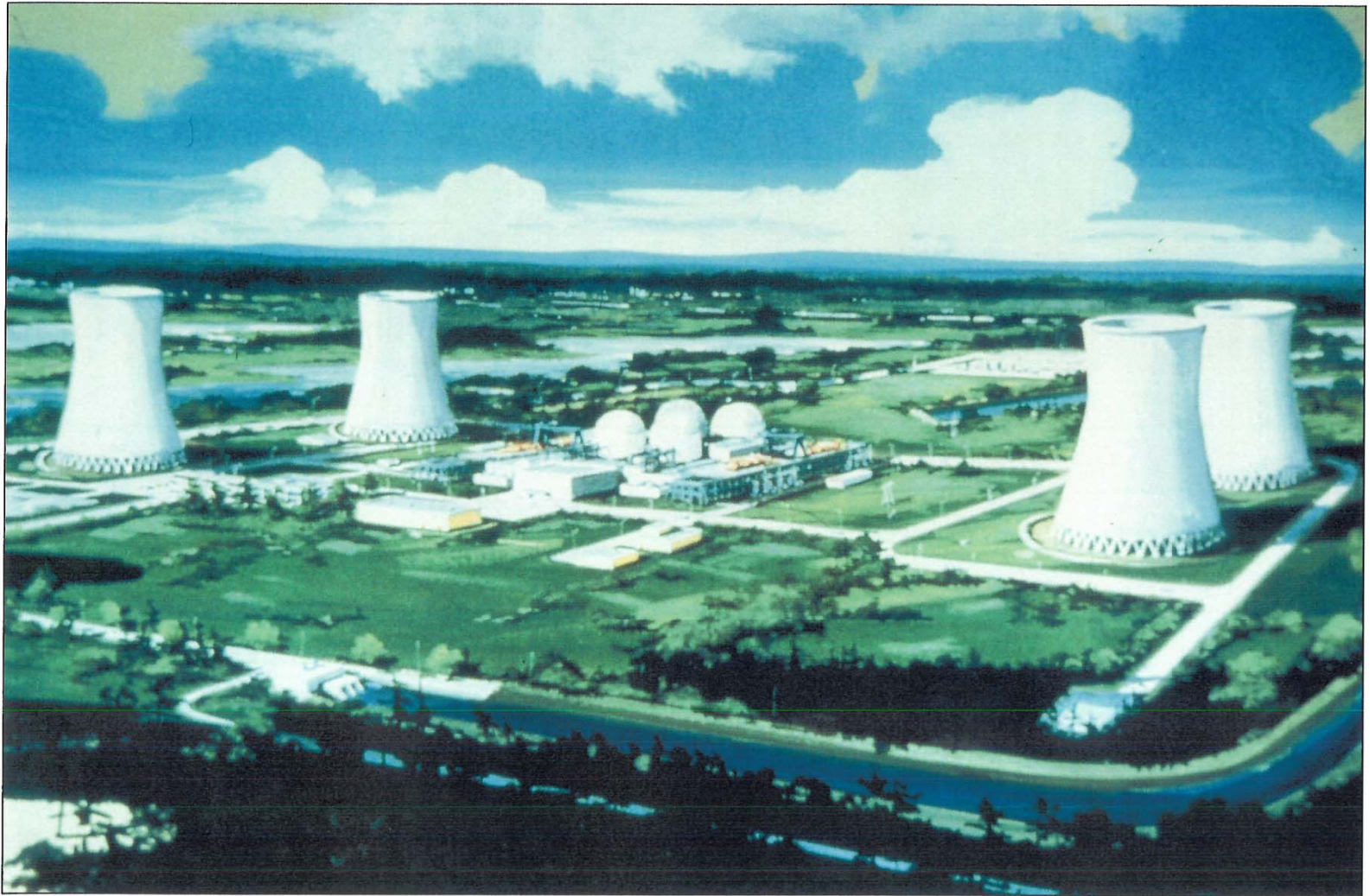
**The Westinghouse AP1000**



# Current Harris Plant (Unit 1)



# ORIGINAL PLAN FOR FOUR UNITS



*(artist conception circa 1970s)*

# Nuclear Licensing Process

- Progress Energy will submit a Combined Construction and Operating License Application (COLA) to the Nuclear Regulatory Commission (NRC) for the HAR in early 2008
  - ◆ Environmental Report addresses several areas:
    - ◆ Water quantity and quality
    - ◆ Fisheries and wildlife
    - ◆ Terrestrial ecology
    - ◆ Recreational
    - ◆ Historic and cultural resources
    - ◆ Socioeconomics
- This will begin the NRC NEPA process for evaluation and permitting of the reactors
- Provides for public and interested stakeholder input

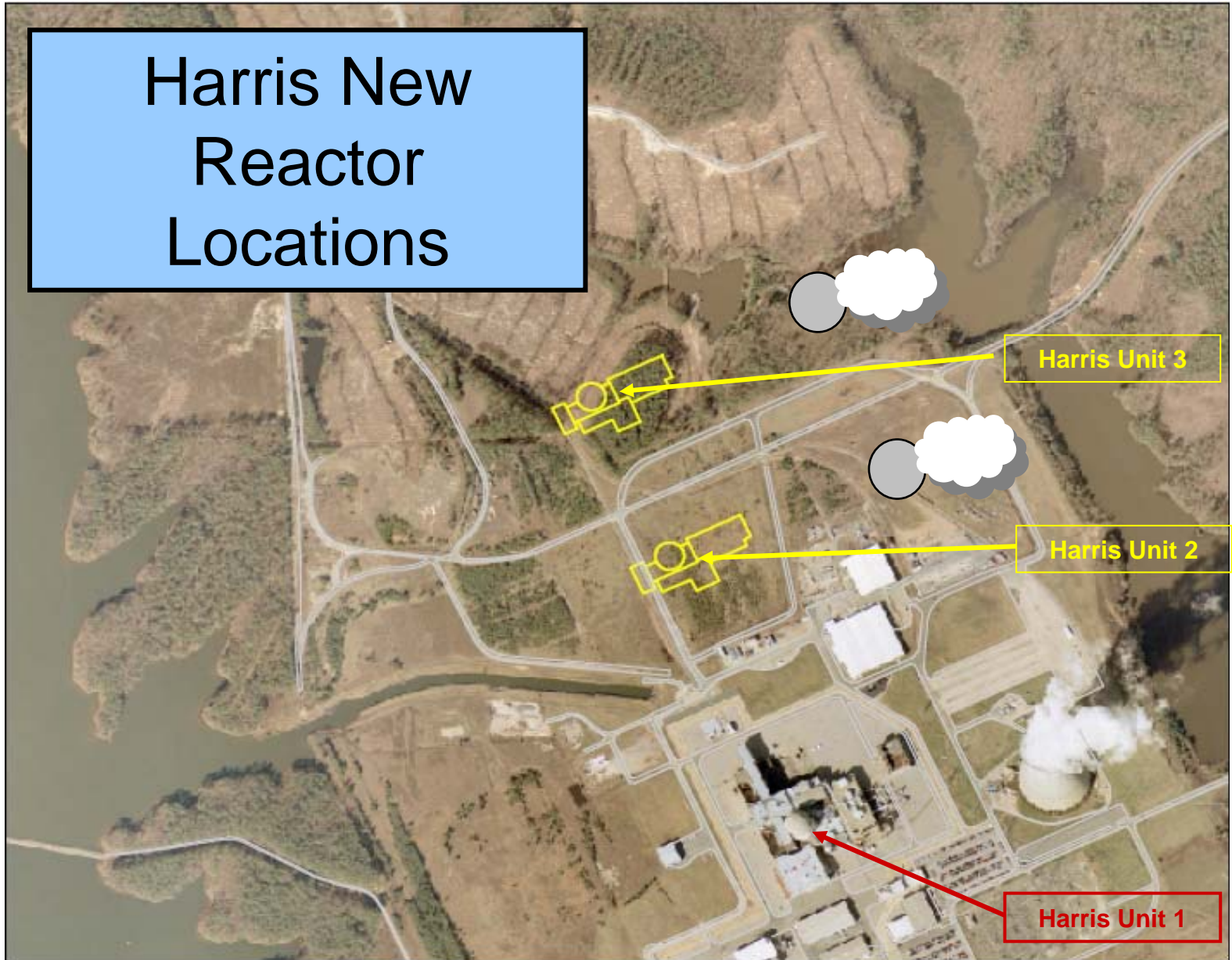
# Proposed HAR Timeline

- Submit Harris COLA to NRC: early 2008
- NRC NEPA Review: 2008–2011

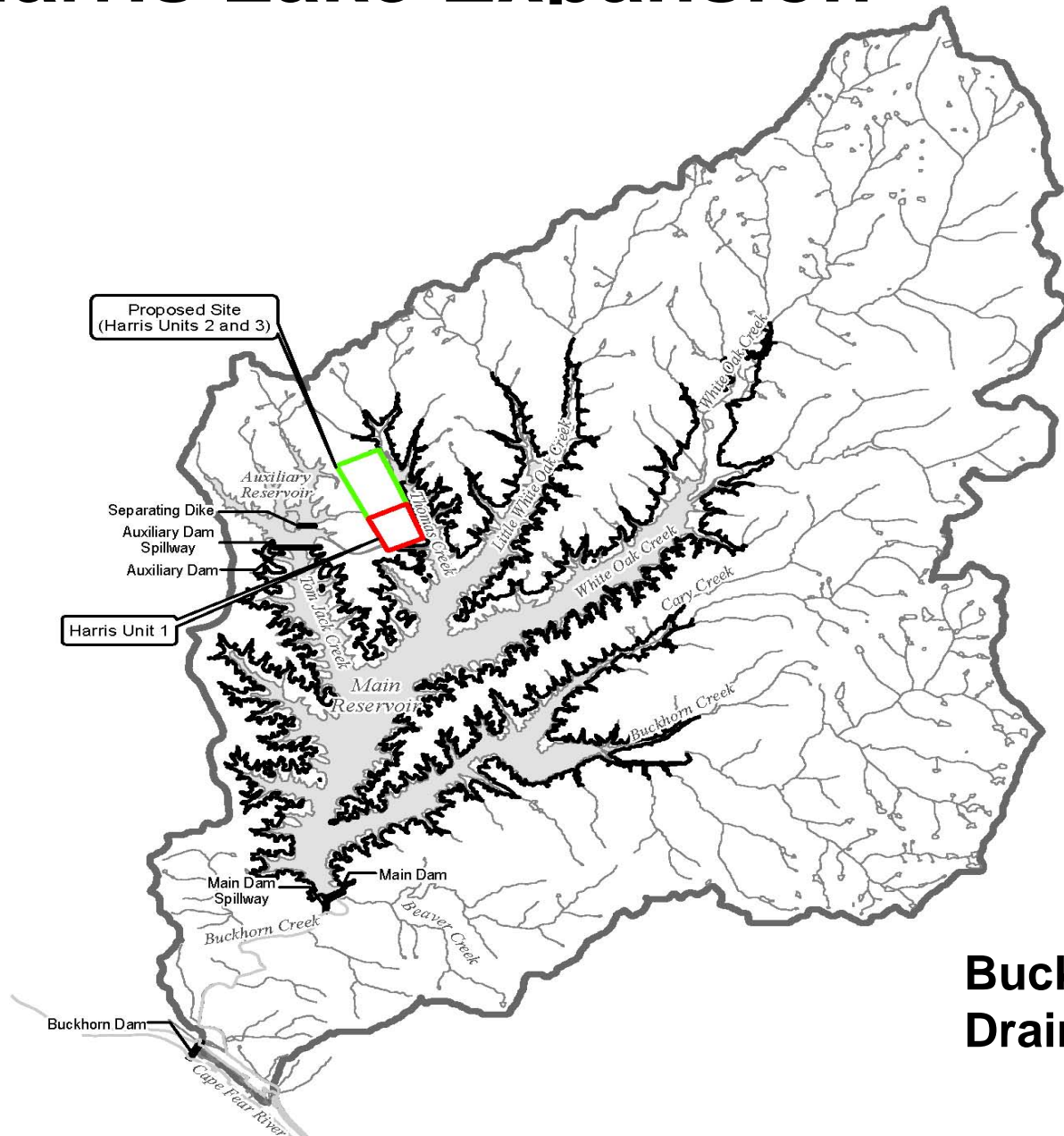
*If* nuclear power is still an option:

- Construction (Unit 2): 2012–2018 or later
- Operational (Unit 2): 2018 or later
- Unit 3 would follow Unit 2 by 1-2 years

# Harris New Reactor Locations



# Harris Lake Expansion

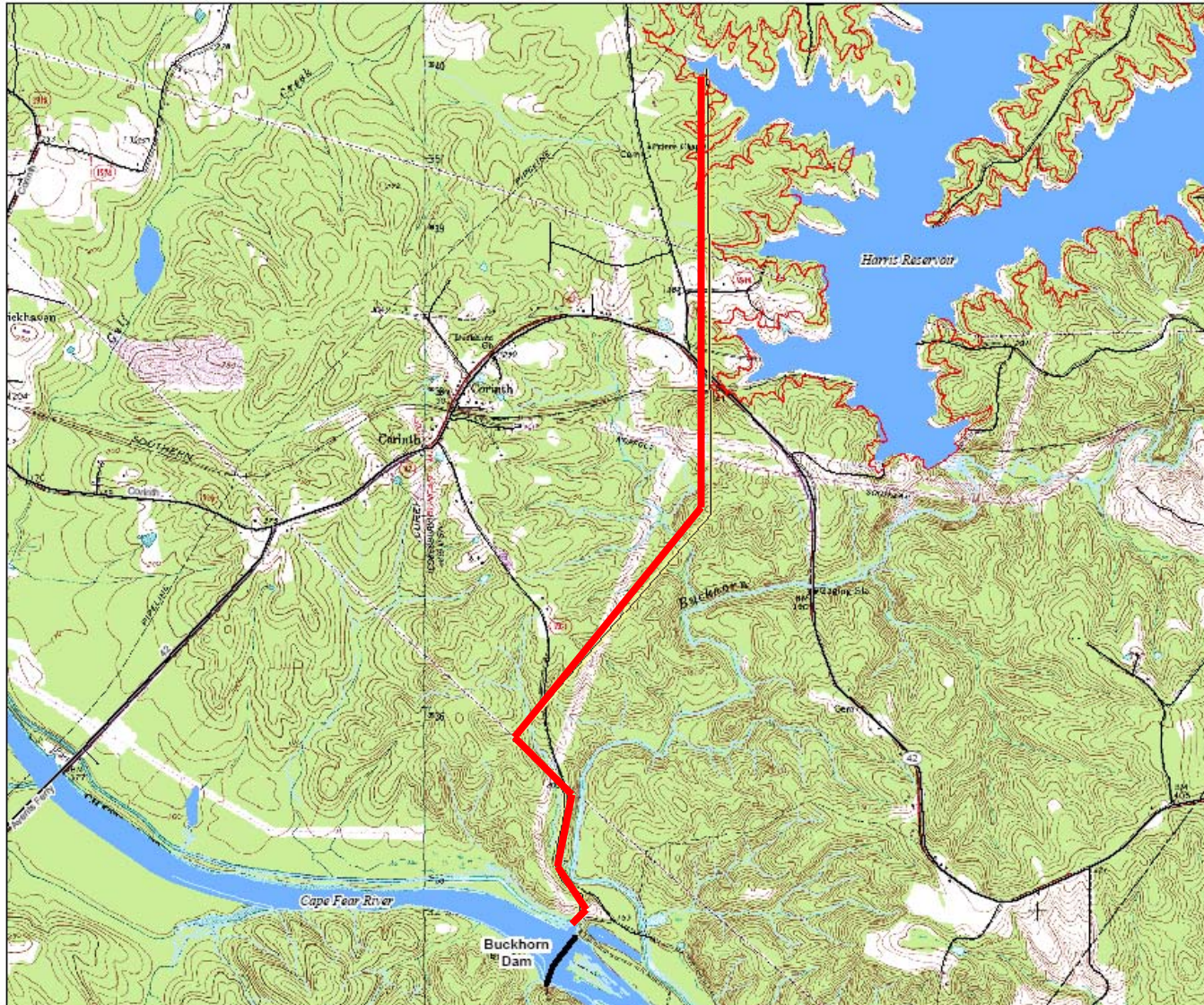


**Buckhorn Creek  
Drainage Basin**

# Harris Lake Main Dam



# Proposed Cape Fear River Makeup Water Pipeline Route



## Makeup Water Pipeline Route

Progress Energy Carolinas (PEC)

## Legend

- Make-up Water Line
- 240' Contour



0 1,250 2,500 5,000 Feet

# Cape Fear River and Buckhorn Dam



**Proposed  
Makeup Intake**

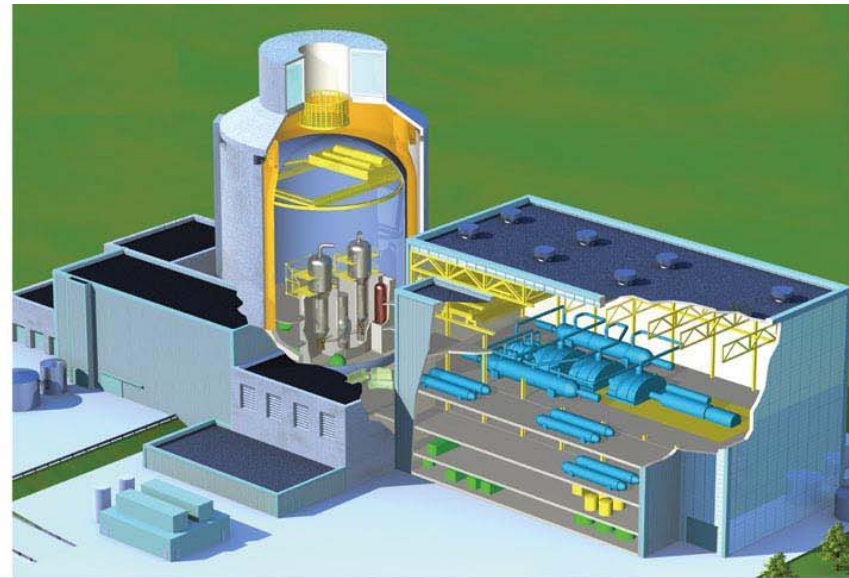
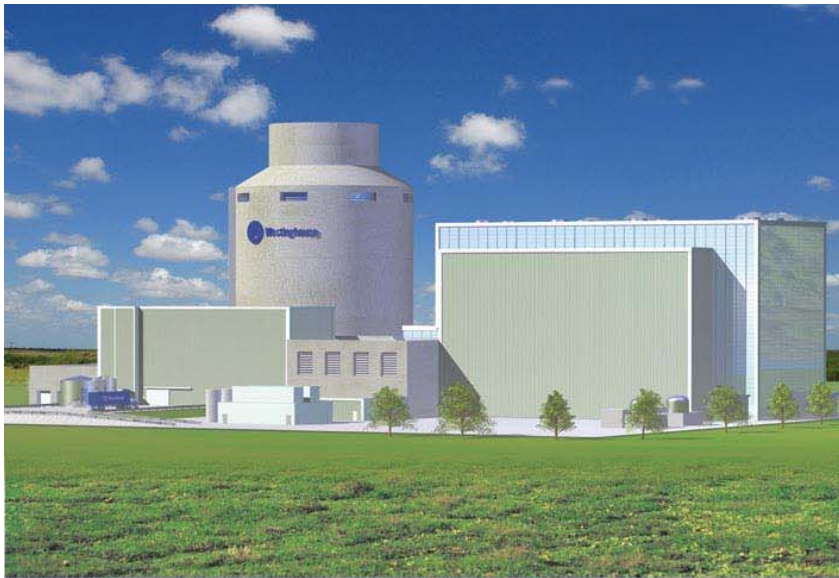
# Proposed HAR Water Needs

- Harris Lake will be raised 20 feet to increase reservoir storage capacity
- Make-up water capacity from Cape Fear planned for 60,000 gpm (~134 cfs)
- Net consumptive usage for 2 new reactors is ~29,000 gpm (~64 cfs)
- Anticipated minimum instream flow needs of ~20 cfs from Harris Dam to Buckhorn Creek

# Water Consumptive Demand Considerations

- Design reservoir capacity accounts for drought conditions during operation of reactors
  - ◆ 20 ft provides storage capacity to operate plants with no net river water withdrawals during extreme drought conditions
  - ◆ Water withdrawal operation strategy will allow pumping during normal or above flow river conditions and reduced pumping during low flow conditions
- Consideration of downstream in-stream flow needs in operational design

# Questions?



**The Westinghouse AP1000**

