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Case Study of V.C. Summer 2 & 3

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**Office of Nuclear Energy
U.S. Department of Energy**

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Project Overview

■ Owned by two South Carolina utilities

- South Carolina Electric and Gas (SCE&G)
- South Carolina Public Service Authority (“Santee Cooper”)

■ Two Westinghouse AP1000 reactors

- Consortium with Westinghouse and CB&I (formerly Chicago Bridge and Iron)

■ Expansion of an existing nuclear plant

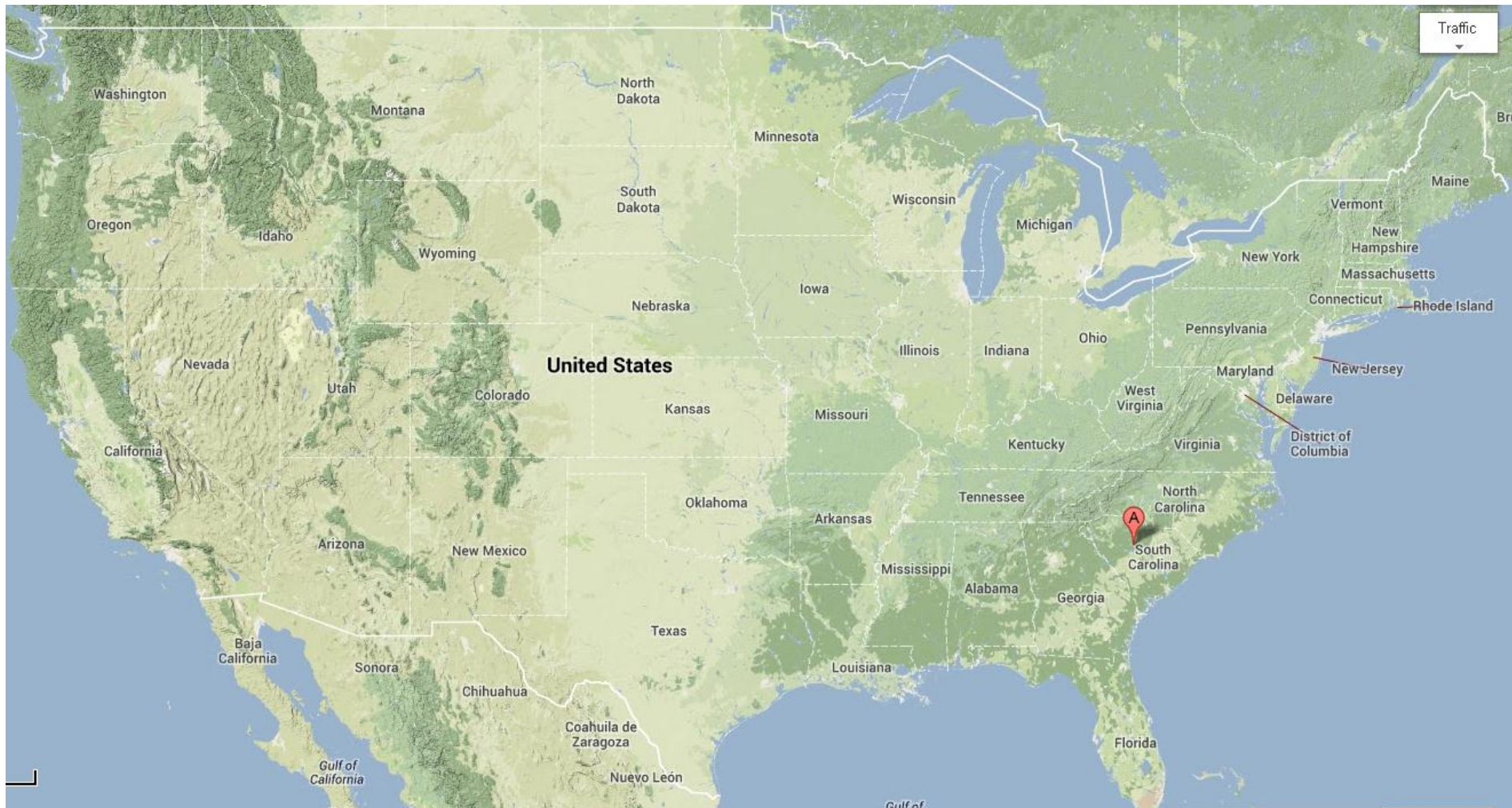
- V.C. Summer Unit 1 is a 966 MW PWR licensed through 2042



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V.C. Summer Location

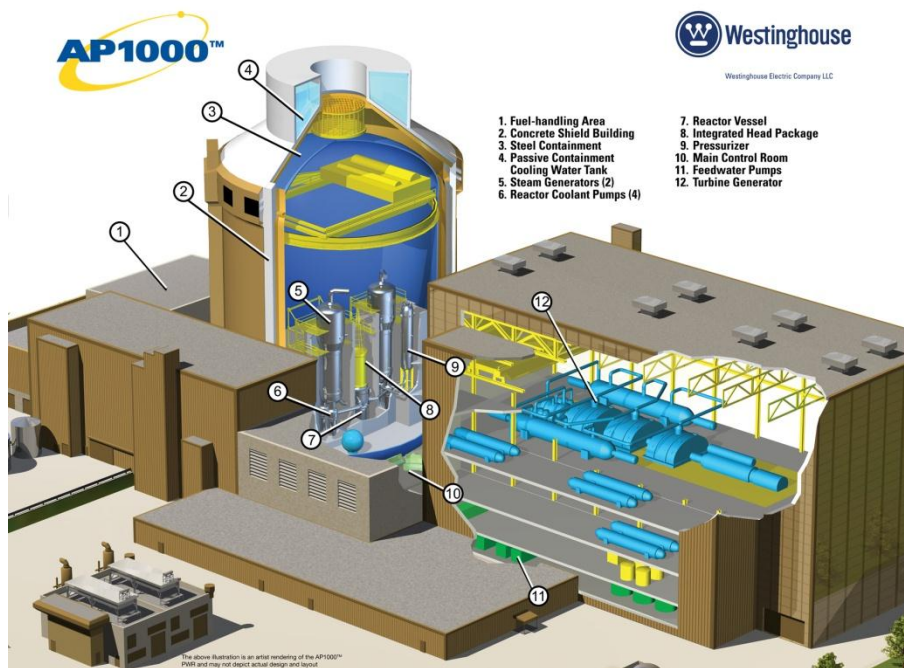




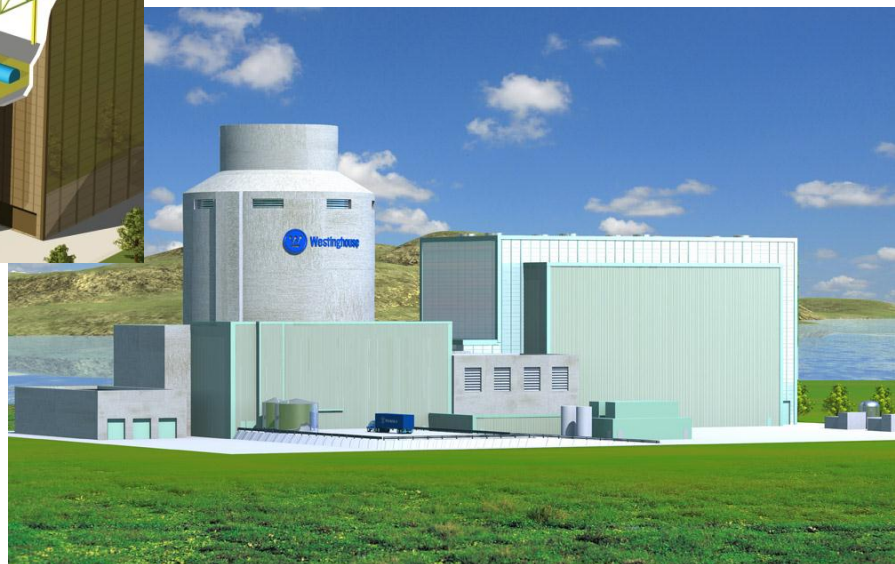
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Westinghouse AP1000

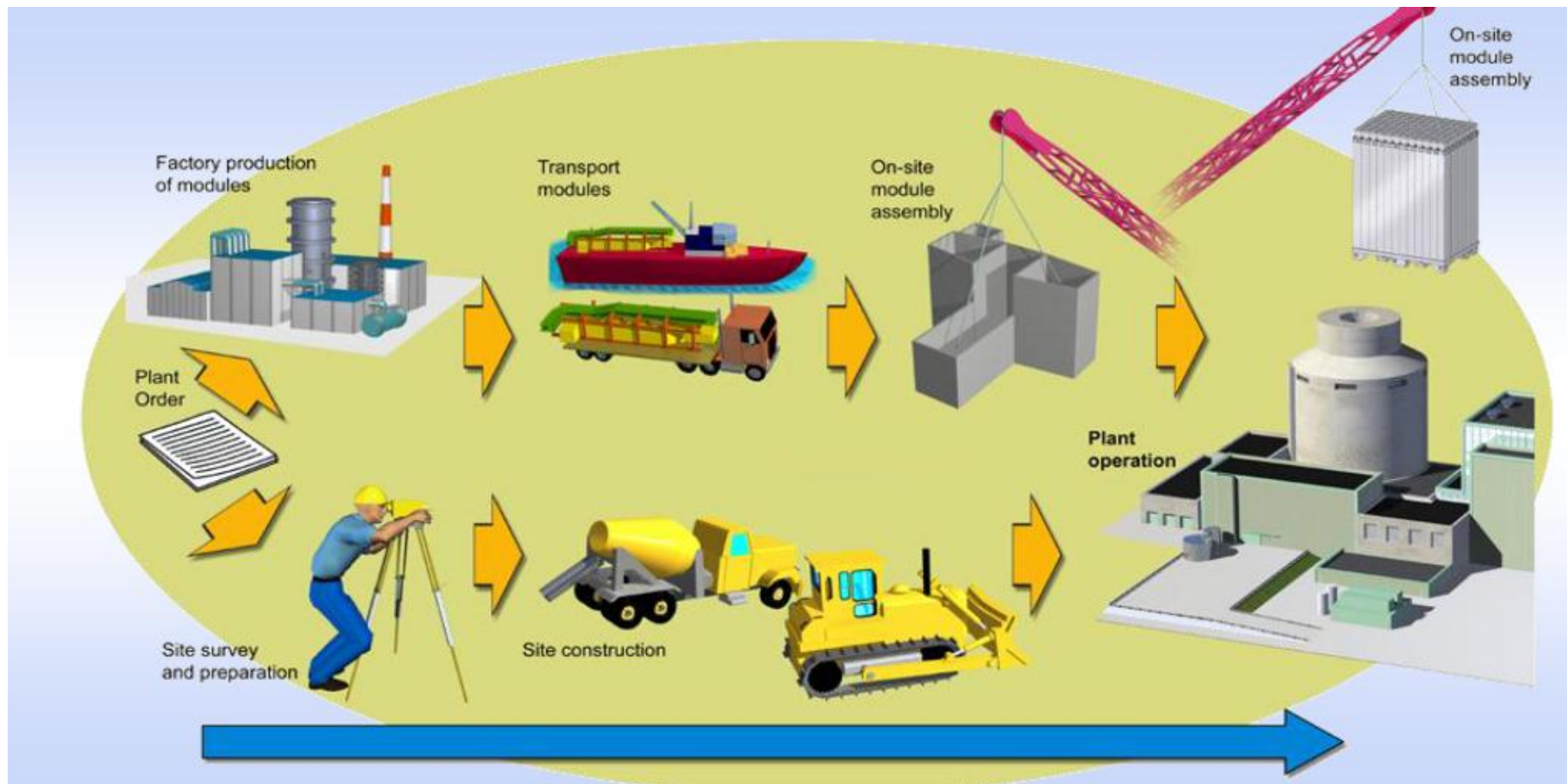


Received Final NRC Design
Certification December 2011





AP1000 Modular Construction





Ownership Structure

■ **SCE&G is the majority owner and operator**



- Wholly-owned subsidiary of SCANA, an investor-owned utility company
- Vertically-integrated utility for part of South Carolina
- Owns 55% of V.C. Summer 2 & 3, and has agreed to purchase an additional 5% of the project
- Owns two-thirds of V.C. Summer 1; operates the reactor

■ **Santee Cooper**

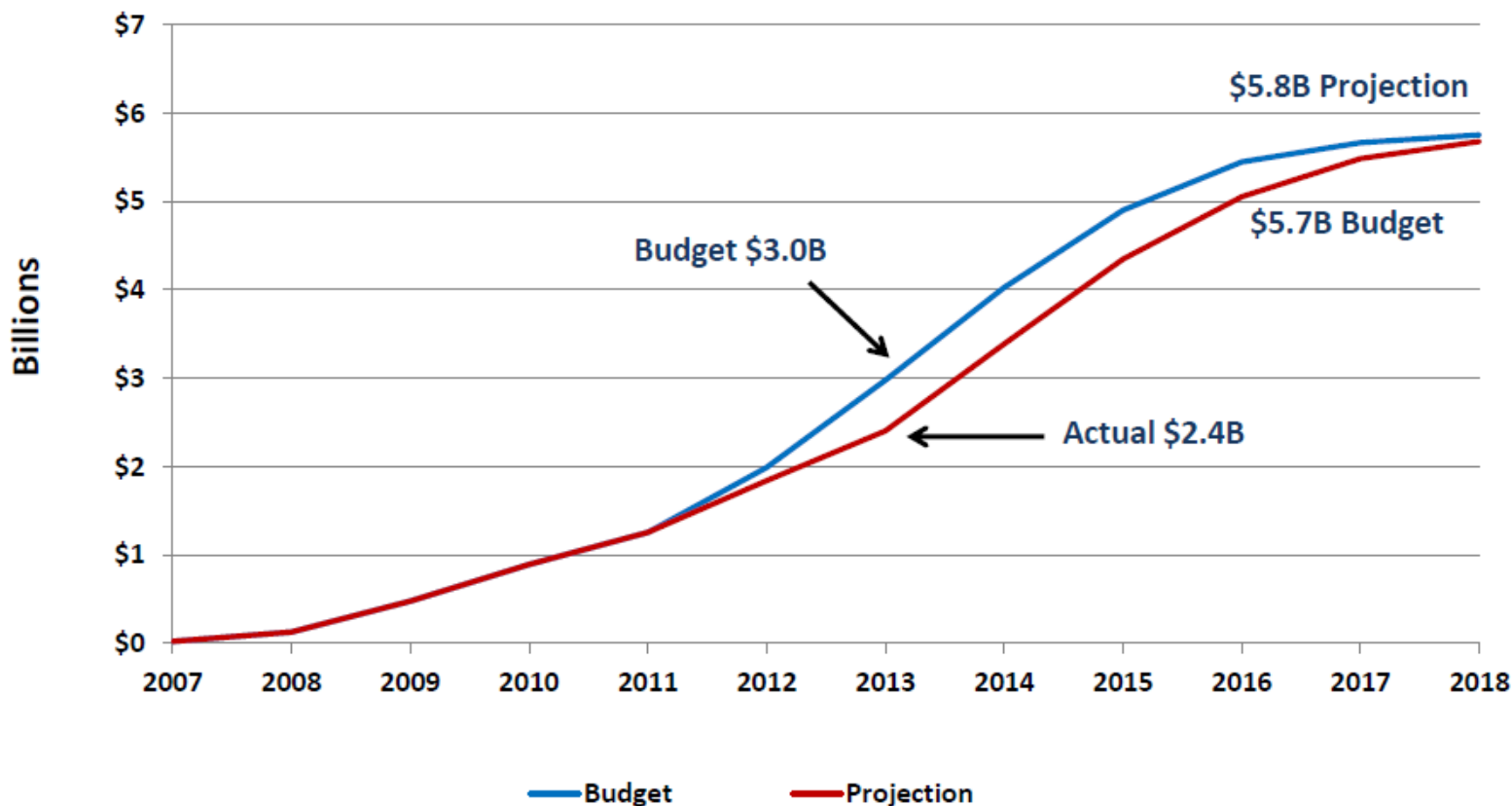


- State-owned utility
- Minority owner of both V.C. Summer projects



Total Spending Forecast

**SCE&G's 55% Share of Total Project Costs
(Includes AFUDC, Transmission and Escalation)**

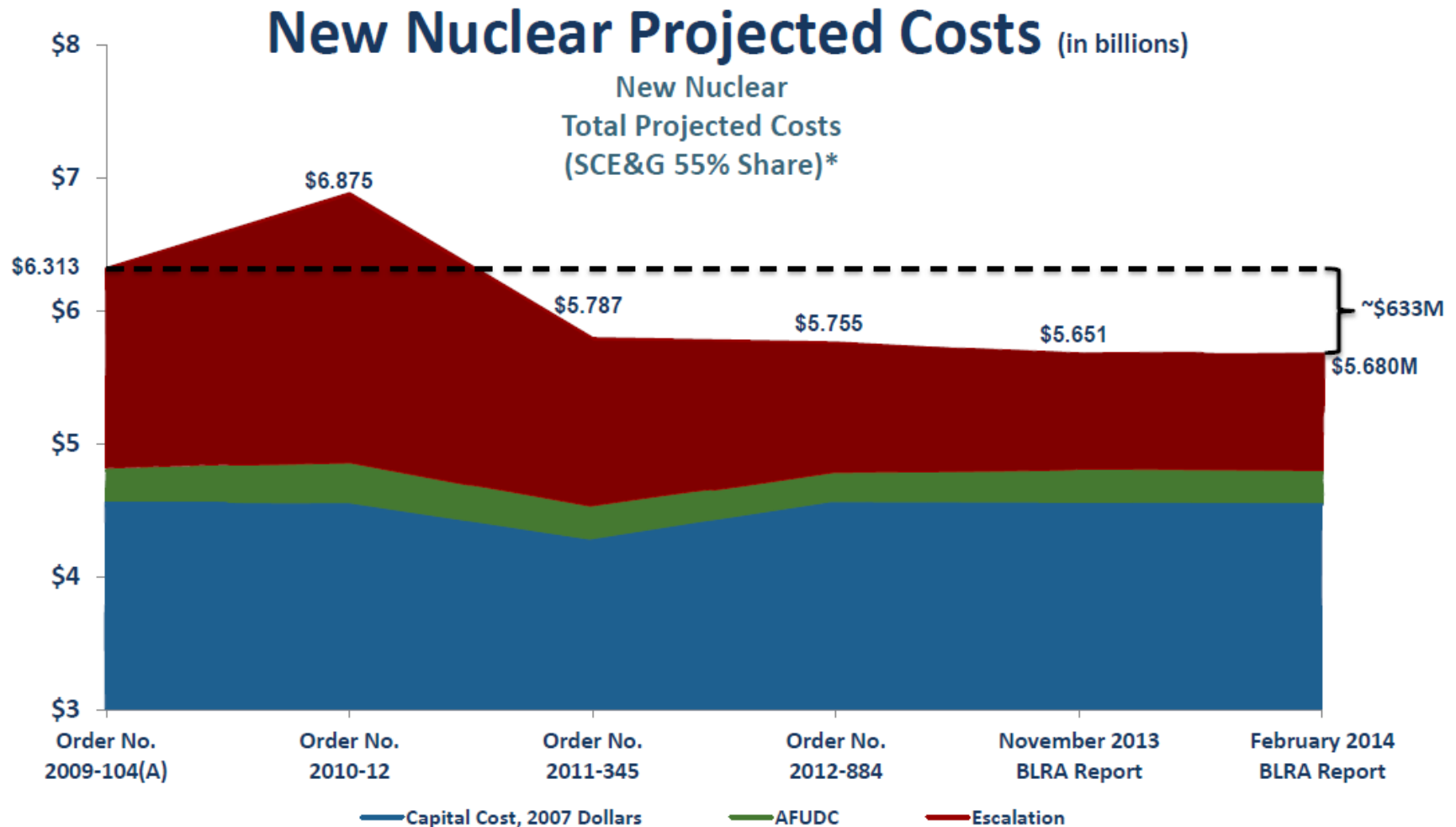


Note: Reflects nuclear capex as filed February 2014 in BLRA Quarterly Report

* SCE&G's additional 5% ownership interest in the New Nuclear project does not impact the BLRA Projected Cost Calculation



Evolution of Cost Forecasts



Note: Reflects new nuclear projected costs as filed February 2014 in BLRA Quarterly Report; SCE&G 55% share

* SCE&G's additional 5% ownership interest in the new nuclear project does not impact the BLRA projected cost calculation



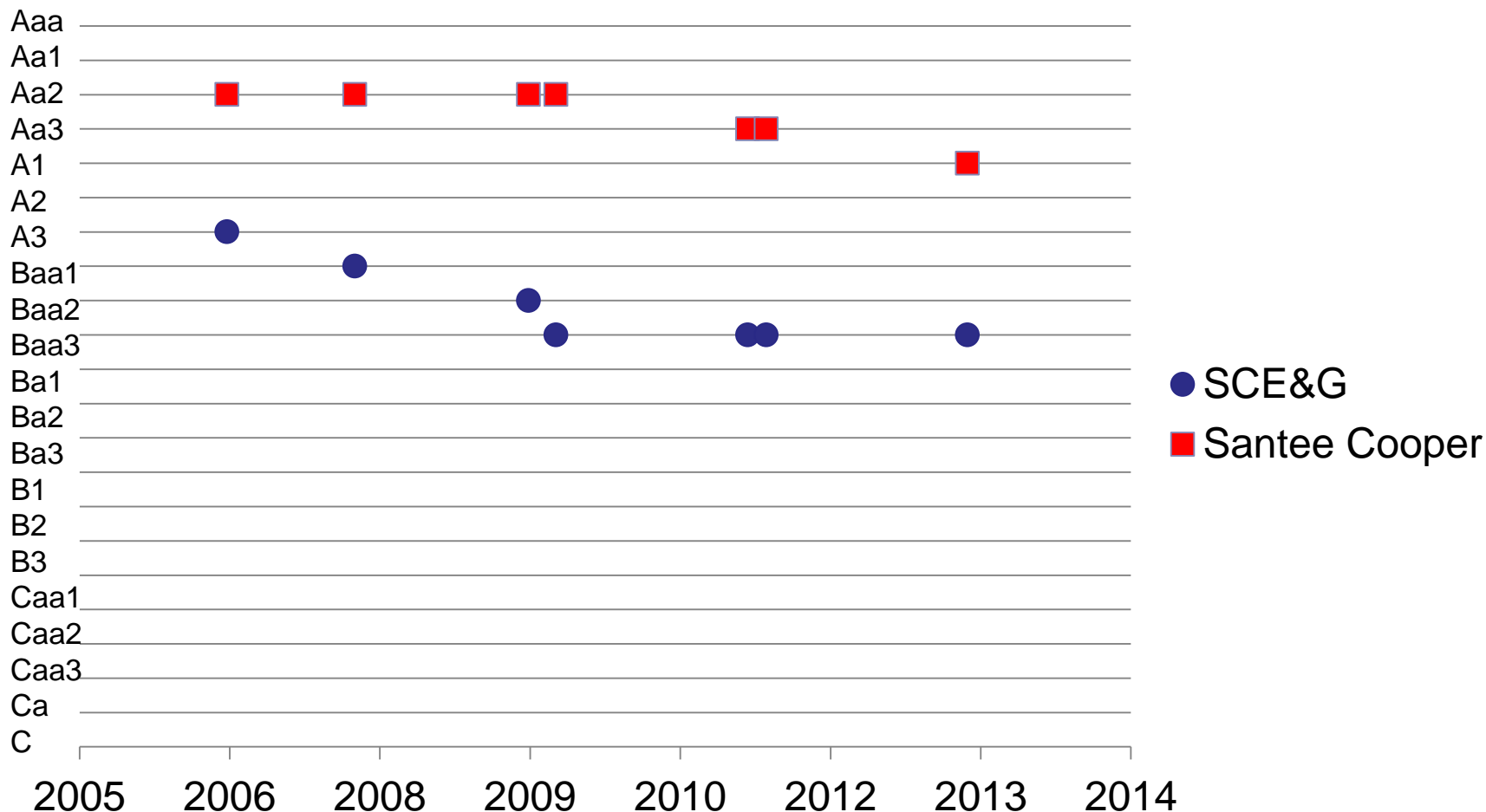
Financing

- **Expectation is that costs will be met via earnings, corporate debt and additional equity sales**
 - Debt: average maturity 18 years at a rate of 5.74%
 - Sold \$400 million in 30 year bonds at 4.6% in June 2013
 - Equity: raised almost \$300 million through stock purchase plans and new issuances
 - Expect to continue these approaches during construction
 - Have not sought a loan guarantee from DOE

- **SCE&G is allowed to file for rate increases annually to cover the financing costs incurred during the year**



Credit Rankings for Owners





Schedule

■ Original schedule “Substantial Completion”:

- Unit 2: April 1, 2016
- Unit 3: January 1, 2019

■ Agreement with state regulators includes an 18 month contingency

■ Original schedule expected COL from NRC by July 2011, actually received March 2012

■ Current schedule:

- Unit 2: Q4 2017 – Q1 2018
- Unit 3: Q4 2018 – Q1 2019



Contractor Responsibilities



Westinghouse

- Overall Consortium responsibility
- *AP1000* design authority - design, licensing, integration, configuration management, change control, and basic plant design
- Detailed design of 32 systems and containment and auxiliary buildings
- Procurement of major components and startup support for nuclear systems



- Detailed design of 29 balance-of-plant systems, site-specific systems, and the annex, radioactive waste and diesel generator buildings
- Design and construction of containment vessel
- Fabrication of structural and mechanical modules as well as piping systems
- Procurement of commodities and selected equipment
- Site specific design, construction and startup support



Supply Chain

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Challenges

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■ **Delays delivering sub-modules from Lake Charles CB&I facility**

- Quality control issues resulted in sizable delays for key modules (CA20, CA01)
- Work has been shifted from Lake Charles to the module assembly facility on site and to a different firm in South Carolina
- Caused a schedule delay and about \$200 in increased costs (prelim.)
- Allocation of these costs not yet determined

■ **Squib valves delivery delayed**

- Quality control management issues

■ **Rebar for nuclear island basemat**

- NRC inspectors determined that the spacing and depth of rebar was not in alignment with design certification document
- Subsequent analysis required to prior to approval to proceed
- About a six month delay



Contracting

■ SCE&G entered into an Engineering Procurement and Construction (EPC) contract with Westinghouse and CB&I

- Received approval to enter into contract in March 2009
- Contract approved in October 2011

■ Risk allocation

- Seven cost categories: four fixed/categories, three variable based on actual costs
- About two-thirds of the costs are either “fixed or firm” with escalation
- Escalation indices set by regulatory agreement

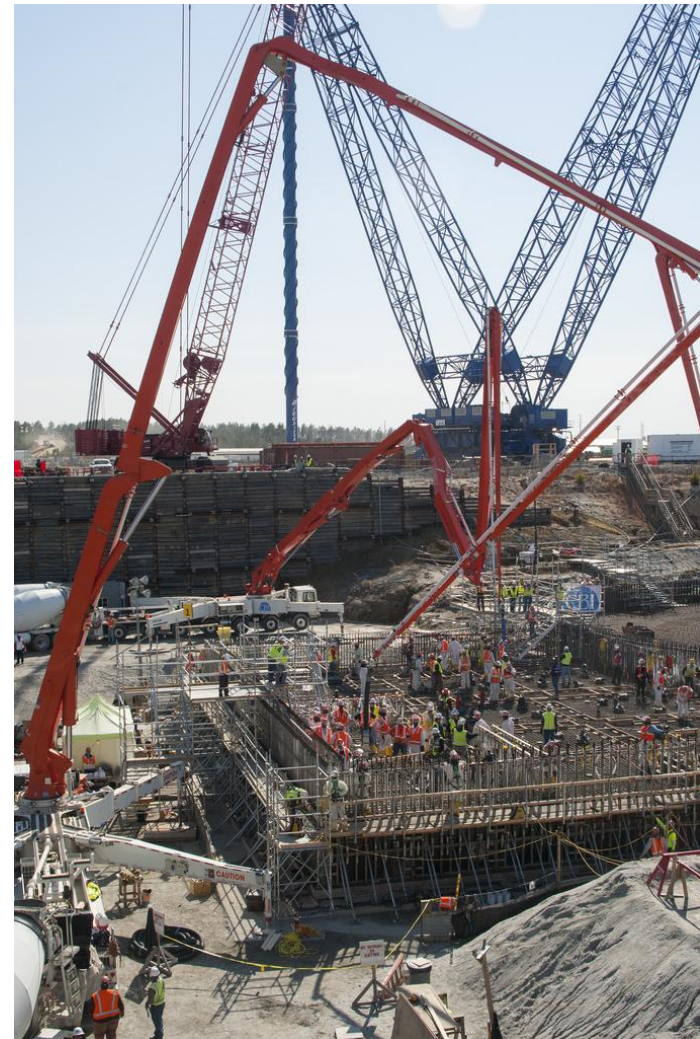
■ Dispute resolution

- Contract included formal and informal resolution methods



Major Milestones

- **Unit 2 First Nuclear Concrete March 2013**
- **Unit 3 First Nuclear Concrete November 2013**
- **Major modules installed in Unit 2**

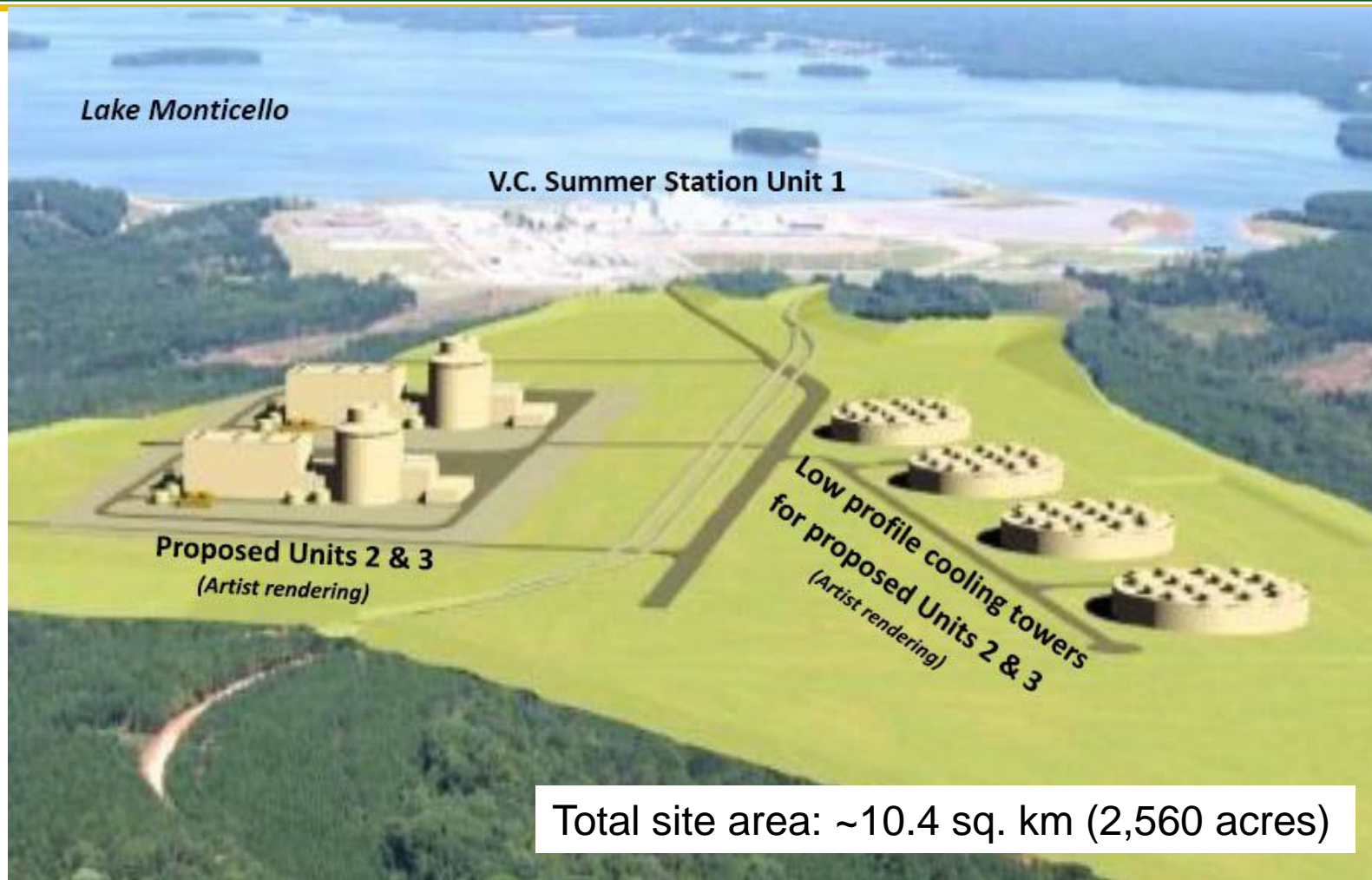




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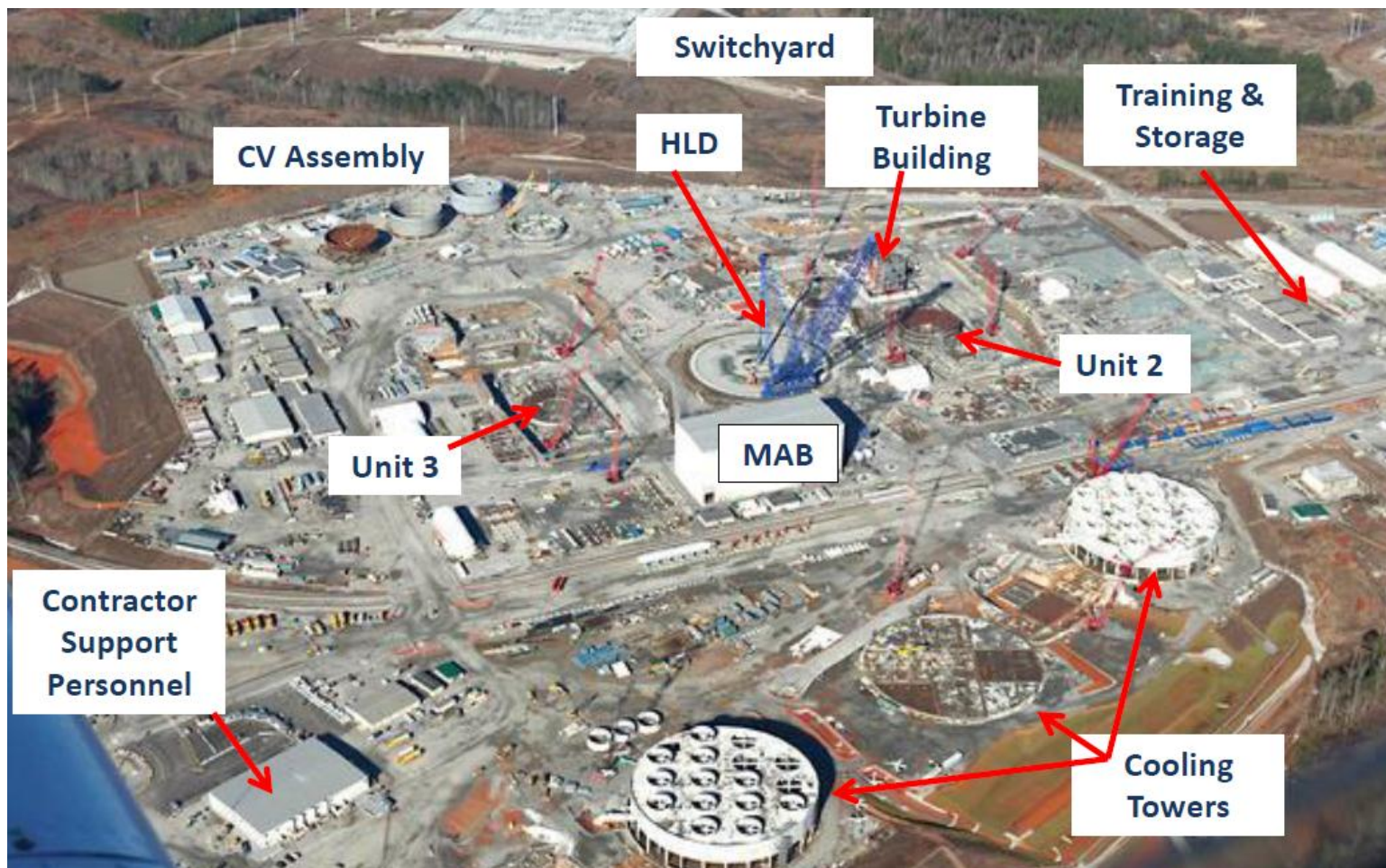
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Site Layout (1)





Site Layout (2)





Tentative Conclusions

- **Strong state support making financial burden manageable**
- **Supply chain and regulatory interactions have created challenges that have resulted in delays**
- **Flexible authorities (schedule) and contracting approach (dispute resolution) keeping project moving forward**