Overview of TVA’s Small Modular Reactor (SMR) Program

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The Tennessee Valley Authority (TVA)

Public power provider

- 7-state region
- 80,000 square miles
- 9 million people
- 650,000 businesses
- 155 distributors
- 57 direct-served customers

FY2010 Generation

- Nuclear 36%
- Hydro 9%
- Coal 51%
- Gas/Oil 4%
- Renewables 1%
TVA’s Nuclear Fleet

- Watts Bar
- Sequoyah
- Bellefonte
- Browns Ferry

- Operational
- Construction
- Potential
TVA’s Move to a More Balanced, Diversified Generating Fleet

2007 Energy (MWh) Actual

- Nuclear: 26%
- Coal: 56%
- Gas: 0%
- Hydro: 6%
- Purchases: 12%
- Renewables: 0%

2013 Energy (MWh) Forecast

- Nuclear: 31%
- Coal: 35%
- Gas: 11%
- Hydro: 10%
- Purchases: 10%
- Renewables: 3%
Small Modular Reactor Advantages

TVA Advantages
- Supports TVA strategy for cleaner generation
- Financing affordability for new nuclear generation
- Ability to incrementally add generation where it's needed on the transmission system
- Repowering aging fossil sites (reusing assets such as environmental permits, transmission and water availability)

National SMR Technology Advantages
- Re-establishing U.S. manufacturing base for nuclear components
- "Good jobs" creation in manufacturing, construction, and operation
- Distribution of jobs in more locations
- U.S. SMR global leader with potential for export
- Broaden customer base beyond traditional large nuclear utilities

Nuclear Energy is Key to Achieving TVA’s Vision of Low-Cost Cleaner Energy
Value of the SMR Option to TVA

- Enhanced safety & security
- Incremental investment
  - Match demand growth
  - Lower financing risk
  - Affordable to smaller utilities
- More siting options
- Create good jobs

Consistent with TVA’s Vision
Complexity Reduced
Modularization Attributes:

- Modularity part of the design process
- Goal of 70-80% of construction being modular
- Ongoing integration of “area design”
- Strong attention to tolerances, interfaces, & integration
- Repeatability through automation and common tooling
- Robust quality assurance in fabrication facilities

“Economies of Replication vs. Economies of Scale”
Clinch River Site in Oak Ridge, Tennessee
Site Characterization Studies

- Previous site evaluation data
- Ecological surveys
- Cultural surveys
- Meteorological data collection
- Subsurface investigation
- Site layout plan
- Surface water level calculations
- Site infrastructure

Site evaluation activities are under way
Status of Clinch River SMR Project

• Early in design and licensing phase

• Seeking Department of Energy cost share

• Planned Milestones:
  – Submit license application to NRC in 2014
  – Receive NRC license in 2017
  – Commercial operation by 2022
Plans for Clinch River SMR Project

• Preparing a license application to the Nuclear Regulatory Commission for B&W mPower™ reactors

• Developing the business case
  – Refining cost estimates
  – Evaluating policy impacts/incentives
  – Evaluating generation alternatives

• Will proceed deliberately; decision gates before license submittal and again before beginning construction
Summary

• TVA’s Vision is to have more nuclear generation as part of a balanced electricity generation portfolio

• TVA is investing to create an SMR option

• Potential for more affordable, clean, baseload electricity generation