TVA Small Modular Reactor Construction Permit Project

Presented by Jeff Perry

Senior Project Manager

Clinch River Construction Permit Project

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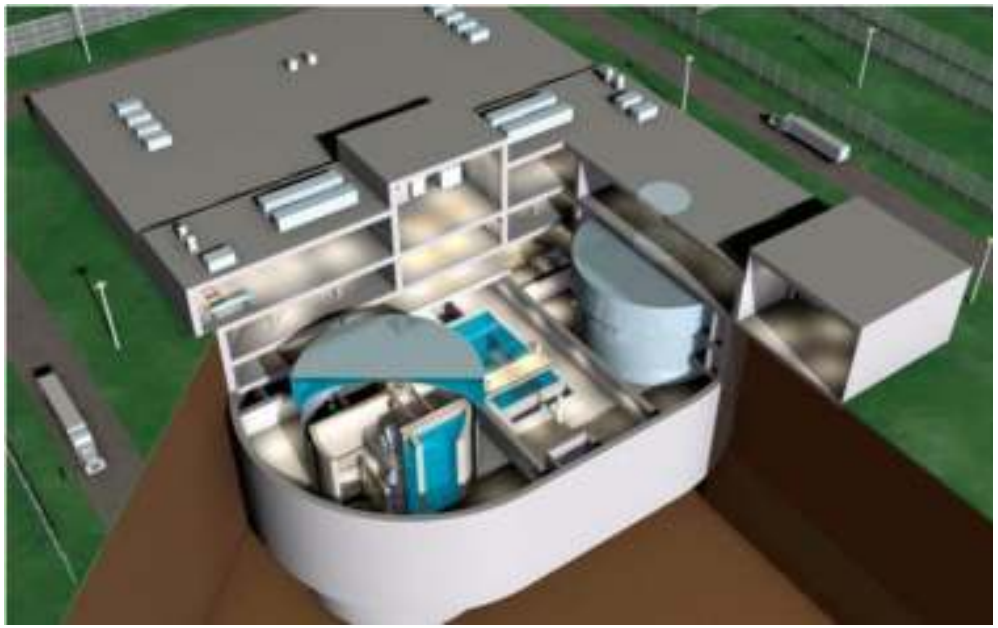
Nuclear Projects at TVA

	Under Construction	*Engineering/Licensing*	*Studies*
			
	Watts Bar 2	**Bellefonte 1**	**Clinch River**
Additional Nuclear Megawatts	**1,180 MWe**	**1,260 MWe**	**TBD**

Value in Developing SMR Option

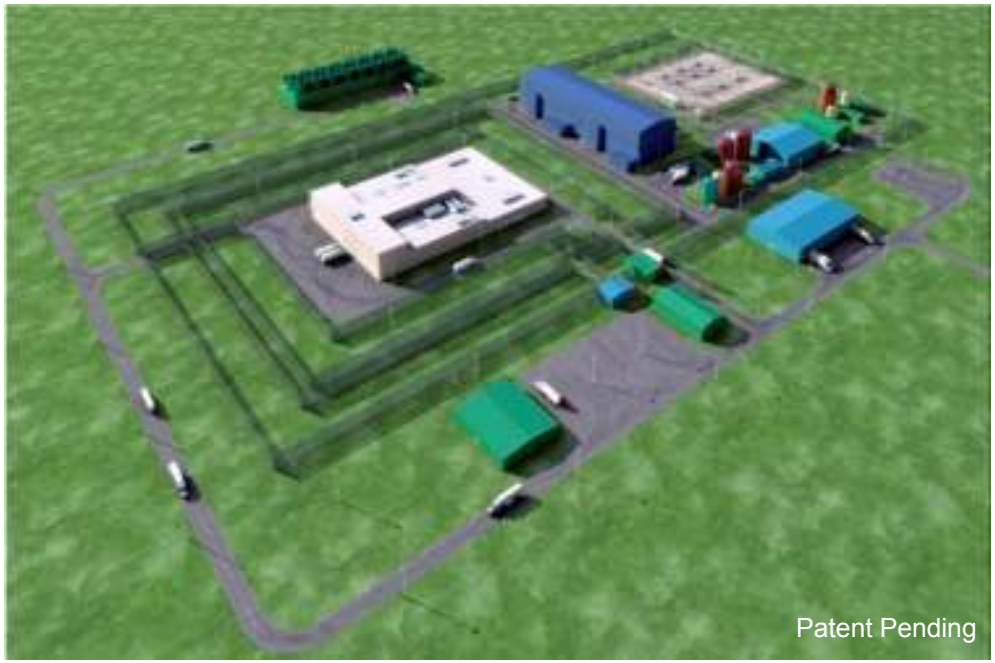
- Increasing siting options
- Managing investment risk
- Re-establish US supply chain
- Engineering and manufacturing jobs



- Widespread opportunities including small and medium-sized utilities

Light water SMRs offer unique near-term option

“Twin Pack” mPower Design

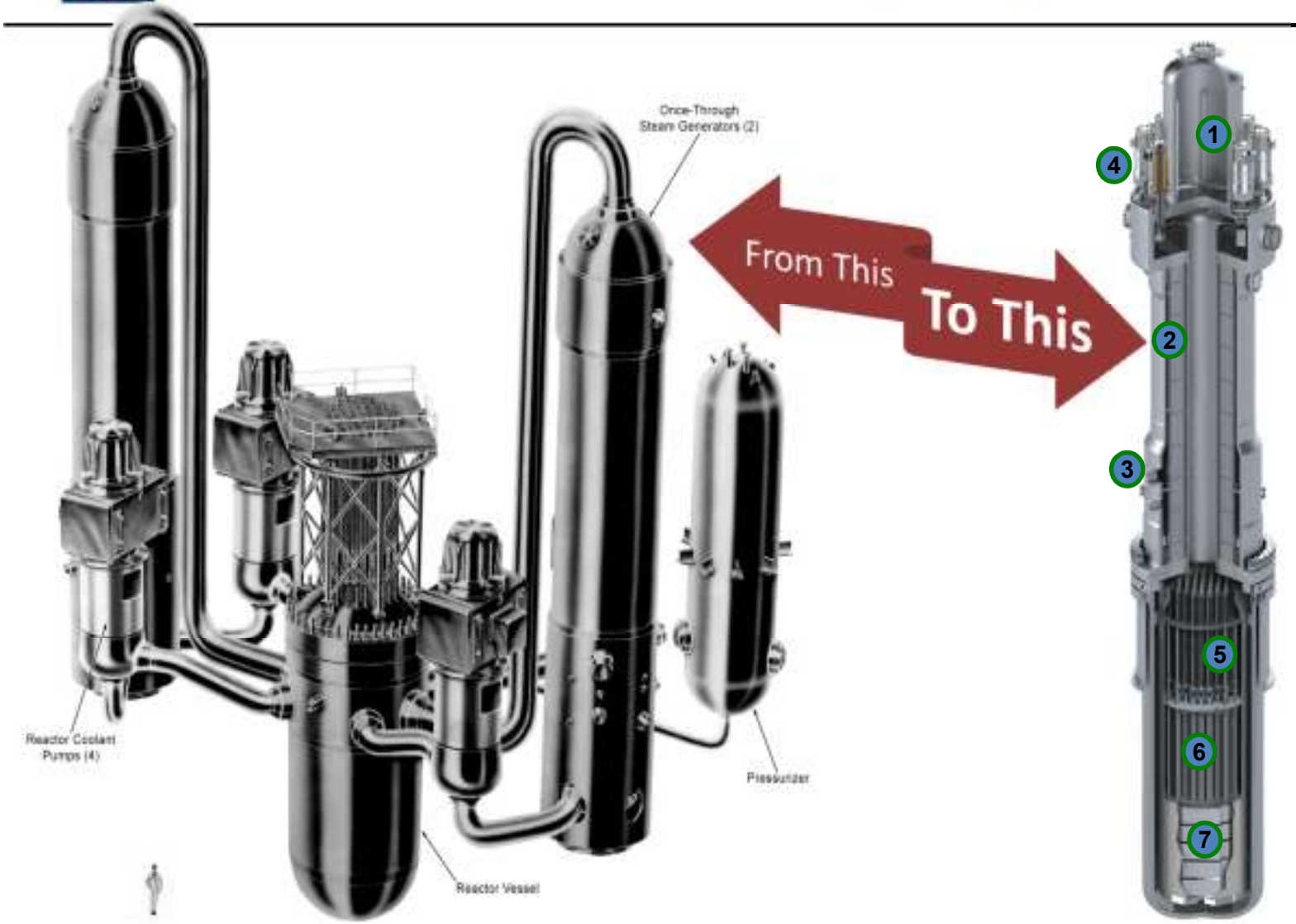


mPower “Twin Pack” Site Layout
with Water-Cooled Condenser

- Integrated Pressurized Water Reactor
- Passive Safety Systems
- 2 x 180MWe units
- Low profile, separated NI and TI
- All safety-related SSCs below grade
- One-to-one Reactor to T/G alignment
- Enhanced security posture to reduce O&M
- Rail shippable, largely modularized
- Conventional steam cycle components
- 48 Month Operating Cycle capability
- 3-year construction schedule

Security-informed plant design contains O&M costs

Reduces Complexity



1. **Pressurizer**
2. **Once-Through Steam Generator**
3. **Feedwater Inlet / Steam Outlet**
4. **Reactor Coolant Pumps**
5. **Electro- Hydraulic CRDMs**
6. **Upper Internals**
7. **Reactor Core**

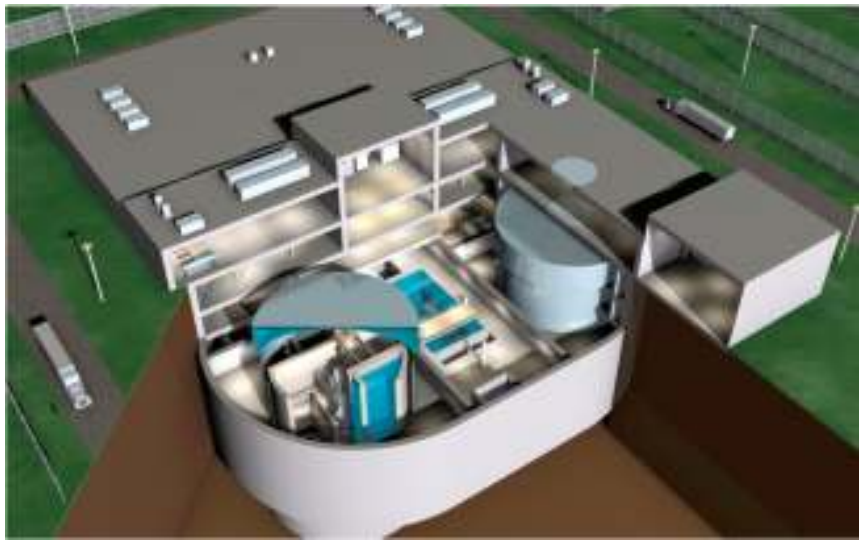
Nuclear Island Features

Fully underground

- Protected from external threats
- Enables security-informed architecture
- More efficient seismic design
- Steel containment, with space for O&M activity

"Passive safety" design

- No safety-related emergency AC power
- 72-hour safety-related control/monitoring battery
- No shared active safety systems between units
- 14-day underground ultimate heat sink
- Multiple defense-in-depth layers deliver ~10^{-8} CDF



Enhanced spent fuel pool configuration

- 20 year wet storage capacity
- SFP underground, inside reactor building
- Large heat sink with 30-day "coping time"

" Simple and robust" architecture lowers cost and risk, enhances licensing

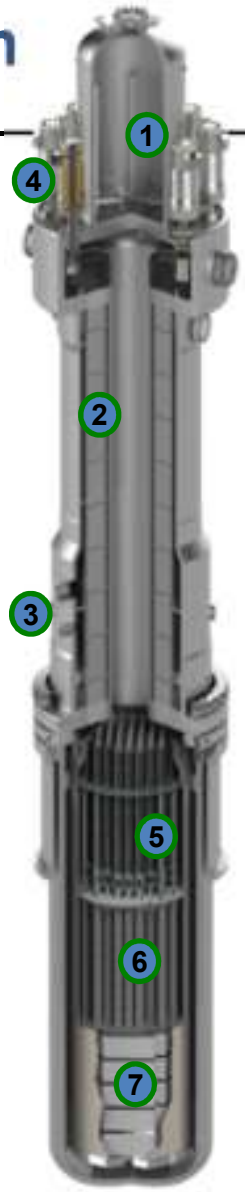
Licensing Approach

Design Certification: 10CFR Part 52

- Extensive NRC pre-licensing engagement
- NRC preparing Design Specific Review plan for mPower design
- ACRS visit to mPower Integrated Systems Test facility
- Design Certification application drafted – on-track for 2013 submittal
- Component Prototyping Testing
- Integrated Systems Testing

Clinch River Construction Permit: 10CFR Part 50

- Facilitates earlier construction start
- Extensive regulatory framework prepared and reviewed with NRC in 2011 to establish content
- Clinch River ecological studies nearing completion
- Site boring plan developed
- DCA – CPA linkage agreement with NRC to accomplish "*one design – one review*" approach



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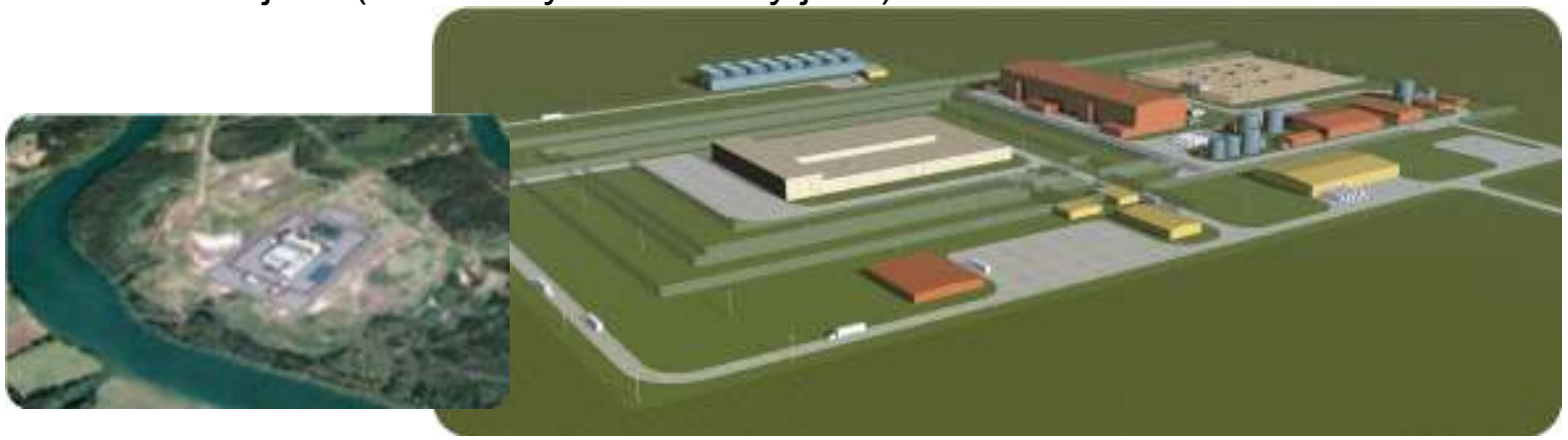
Lead Plant: Clinch River Construction Permit Project

On June 16, 2011, Generation mPower LLC announced a Letter of Intent with the Tennessee Valley Authority (TVA) related to design, licensing and construction of B&W mPower SMRs at TVA's Clinch River site.

- Licensing schedule supports potential commercial operation of first 2 modules by 2022
- Facility would power the Oak Ridge National Lab Complex and Y-12 Facility
- DOE SMR cost-share award is critical to project success

- A four-module project could support:
  - **~1,500** full time equivalent construction jobs; at peak, up to 4,000
  - **~450** operational jobs
  - **~7500** indirect jobs (secondary and tertiary jobs)



TVA Focus: Licensing Certainty and Economic Viability

How You Can Help

Send a letter to Secretary Chu at the U.S. Department of Energy in support of the Generation mPower, LLC proposal for the competitive SMR cost-share program.

Highlight TVA's nuclear operational experience

Highlight B&W's:

- Experience and capability in nuclear manufacturing, engineering, operations and safety
- U.S. footprint and manufacturing facilities
- Commitment to create U.S. jobs through the development of the B&W mPower reactor
- Potential to maintain US leadership and expansion of export opportunities