NRC Commissioners Briefing

Muhannad (Mike) Shaqqo
SVP, Advanced Reactors
Westinghouse Electric Company

July 21, 2022

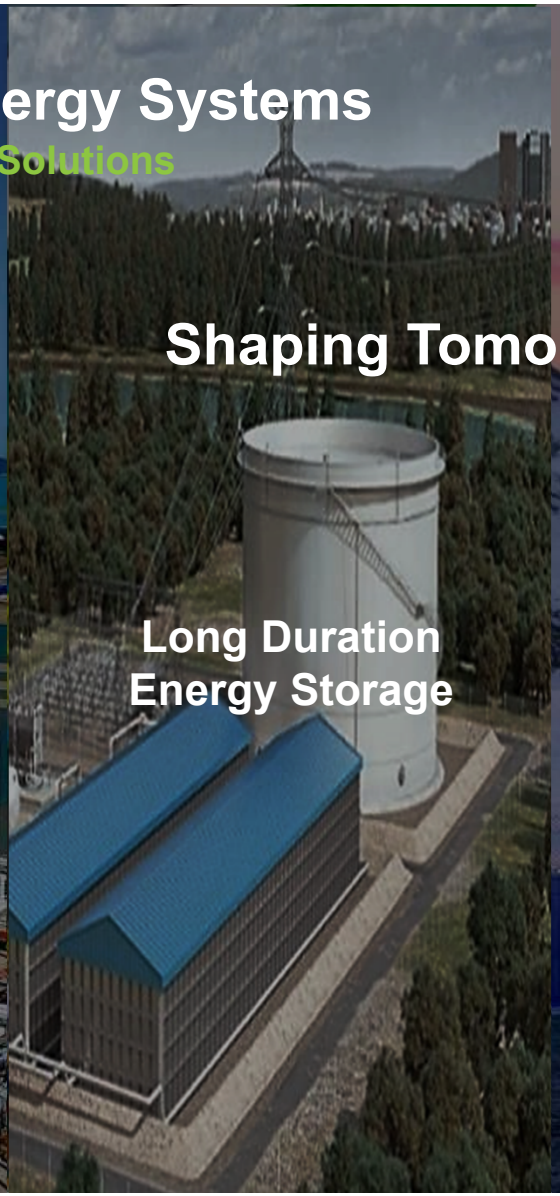
Westinghouse

Westinghouse Energy Systems

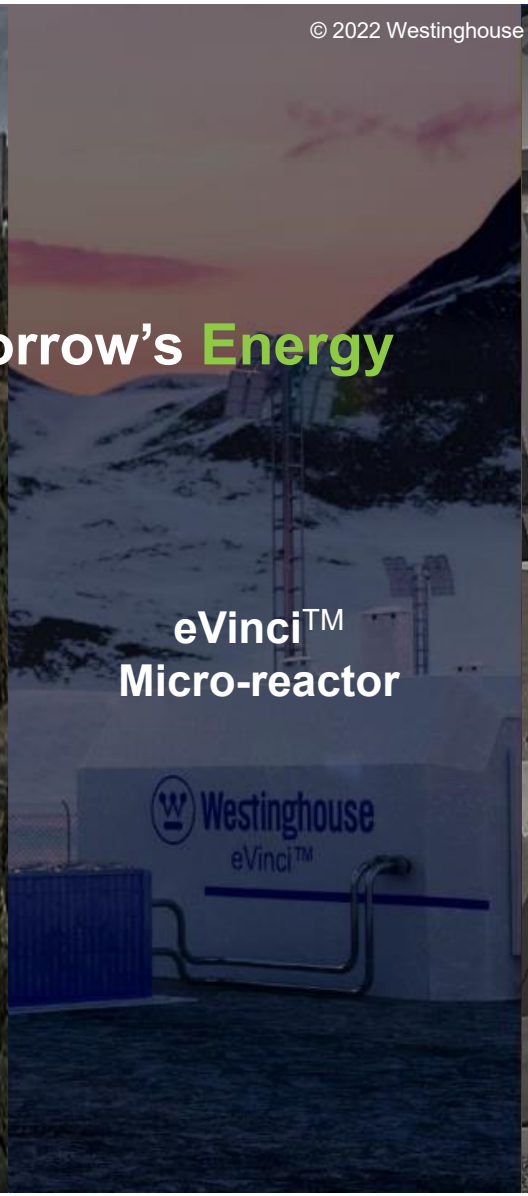
A Portfolio of Innovative Solutions

Shaping Tomorrow's Energy

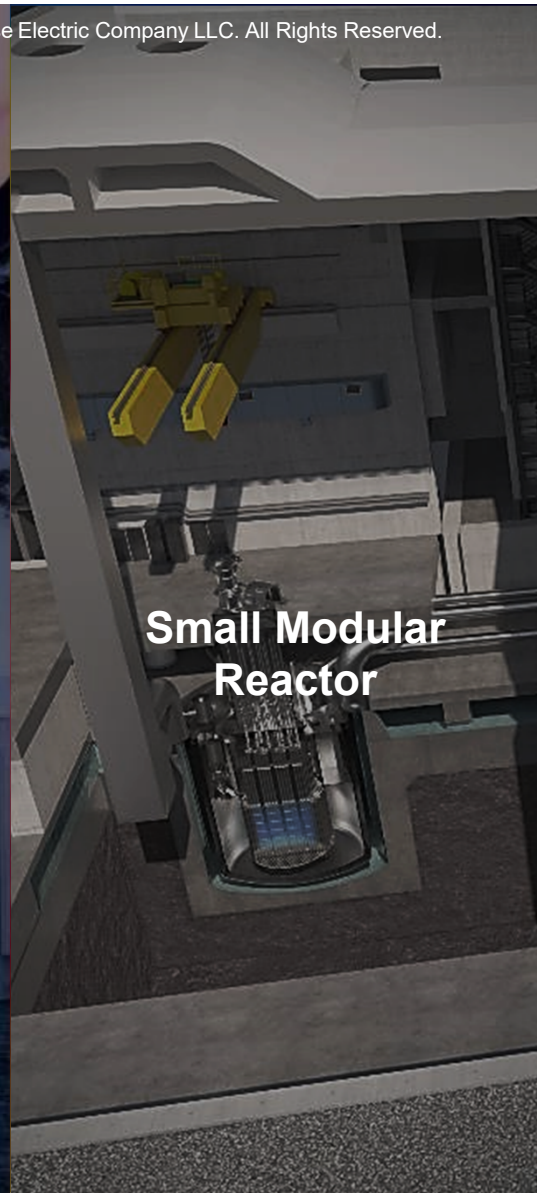
AP1000® Technology



Long Duration Energy Storage



eVinci™ Micro-reactor



Small Modular Reactor

Westinghouse

AP1000 Overview

Record-setting Operations

- **(4) AP1000 Units Safely Operating in China with (4) Additional Units Ordered** – Over **(14)** Reactor Years of Industry Leading Experience
- **(2) AP1000 Units Nearing Completion at Vogtle** – Operation Expected in 2022 / 2023**
- **(10) AP1000 Reactors are Ordered / Under Construction / In Operation**

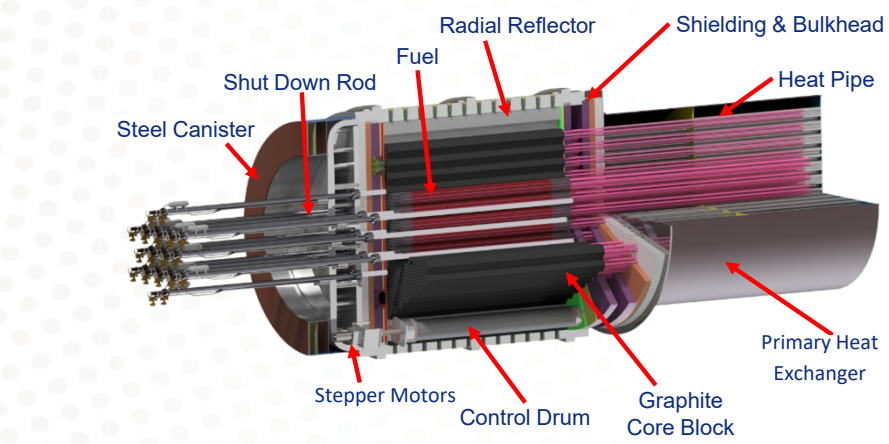
- **Sanmen 1, a Westinghouse AP1000 Technology, Received a Perfect Score** by the World Association of Nuclear Operators (WANO)*

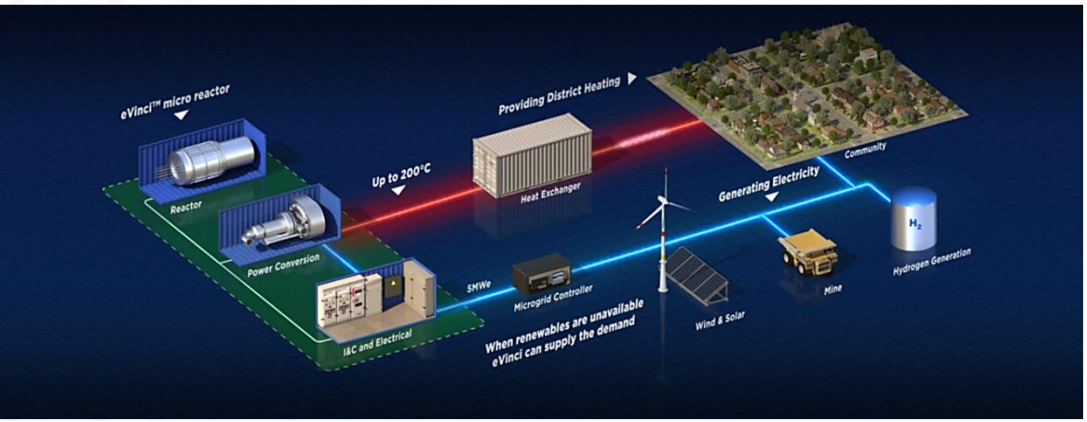
**WANO assesses nuclear power plants in terms of nuclear safety, power generation, effectiveness, equipment reliability, etc.*
***Information courtesy of Southern Company*

Westinghouse

eVinci Micro-reactor

Innovative Nuclear Battery Technology





Primary missions:

- Provides emission free, competitive and resilient distributed energy with superior reliability and minimal maintenance
- Size allows for transportability – factory built enables rapid installation and elimination of on-site fuel handling and storage

Development status:

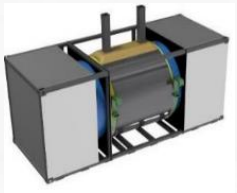
- Progressing through development and testing program
- In licensing pre-application engagements with US NRC and Canadian CNSC
- Significant market interest for diverse applications; remote/off-grid industries and communities, universities, hydrogen production and government/defense

Westinghouse

eVinci Micro-reactor
Deployment Model

Test Reactor for Safety Feature Performance

Test Reactor Testing, Data Collection, and Analysis



Standard Design Certification per 10 CFR Part 52 Subpart B

eVinci Micro-reactor Deployment

Assemble in Factory

Transport to Site

Install and Operate at Site

Primary Reactor

Replacement Reactor

Remote Monitoring Station

Limited Site Staff and Remote Operations

Refuel/Refurbish

or

Decommission

Depleted Reactor

Transport Away from Site

Westinghouse eVinci licensing strategy relies on current Part 52 regulations

Westinghouse

10 CFR Part 53 Development

- **Westinghouse is supportive of a risk-informed regulation for advanced reactors**
  - Treatment of safety functions, design criteria, and design features is beneficial
  - Potential efficiency gains in applications (e.g., fewer exemptions)
- **Key challenges**
  - Draft rule adds onerous requirements for micro-reactors
  - Does not address regulatory requirements for micro-reactor deployment

Westinghouse

Westinghouse Perspective on Priority

- **Global climate change commitments and energy/national security concerns are driving the need for existing and new nuclear**
  - AP1000 is ready now to address near-term energy needs
  - eVinci to support growing demand for distributed clean energy
- **Westinghouse supports NRC Part 50/52 rulemaking efforts**
  - Eliminate Design Certification expiration
  - Consider broader risk-informed, performance-based regulations for LWRs
  - Streamline process to allow vendors to update Design Certification recognizing lessons learned from constructed certified designs

Westinghouse

Thank You

westinghousenuclear.com

Westinghouse