

Westinghouse Electric Company And Ameren Missouri

Strategic Partnerships for SMR Deployment

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The Westinghouse-Ameren Vision

We will be the first to deploy a 100% American-made, safe, and economic SMR that will produce cleaner energy, enhance our country's energy security and capitalize on a transformational economic development opportunity to create sustainable clean energy jobs.

- **Creating Sustainable Clean Energy Jobs**

- SMR component manufacturing
- Plant construction
- Engineering, design and training

- **Working within constraints**

- Land, grid, cooling water, financing, distributed service territory

- **Offering clean energy**

- Offset owner costs for infrastructure development: land, cooling, T&D
- Generation diversity
- Operational flexibility

- **Providing project certainty**

- Reduced licensing risk
- Short-construction duration
- Cost predictability and certainty



New applications for nuclear...

*Aging Fossil Plants
District Heating
Remote Markets
Small Grid Markets
Desalination
Process Heat*

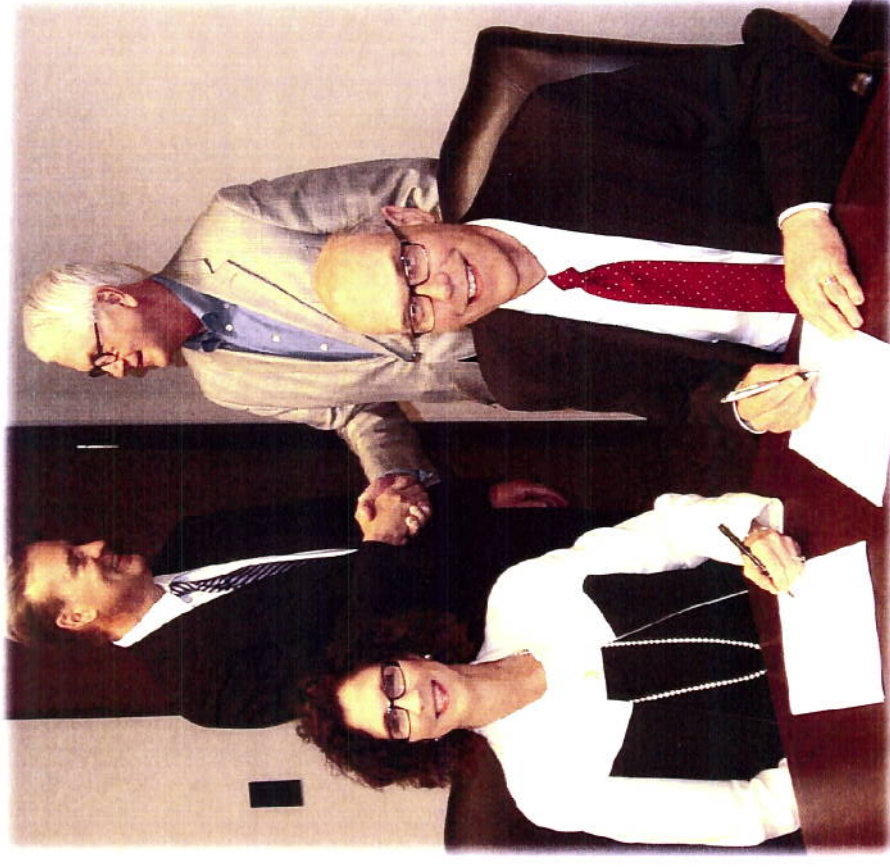


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Historic Partnership with Missouri's Electric Service Providers

- Westinghouse FOA application submitted!
- Award selection is expected in the fall of 2012
- Westinghouse chose to partner with Ameren Missouri and members of the Missouri Utility Alliance
 - Location suitable for economic access to global markets
 - Nuclear operator, development to date, and ready site
 - Broad support from political leaders and the public
 - Public and private utilities
 - Heartland territory



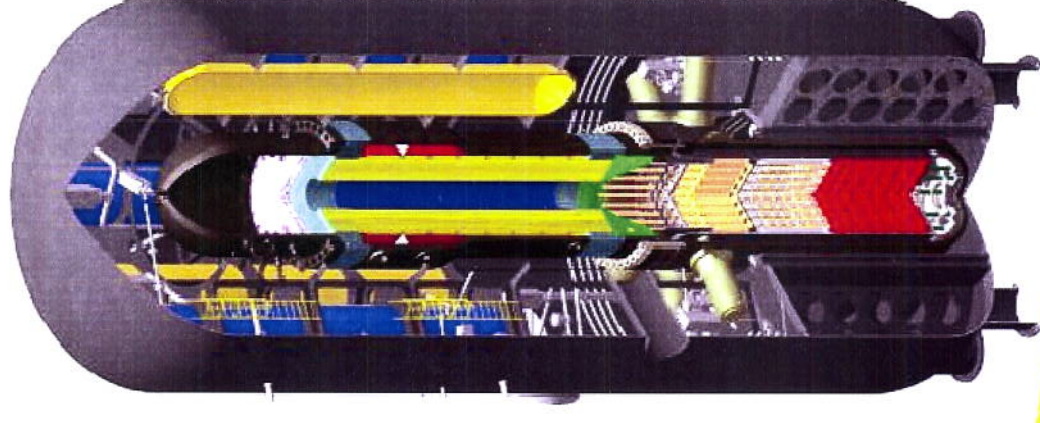
Westinghouse SMR Product Philosophy

Best opportunity for cost competitiveness

- Most power with the least amount of material
- Fully modular design
- Plant modules are installed, not constructed
- Rail and truck transportable

Speed to market

- Proven ability to design, license & deploy reactors
- Existing supply chain, technical skills & licensed technologies
- Eliminates supply chain bottlenecks
- Leveraging **AP1000®** plant experience and lessons learned



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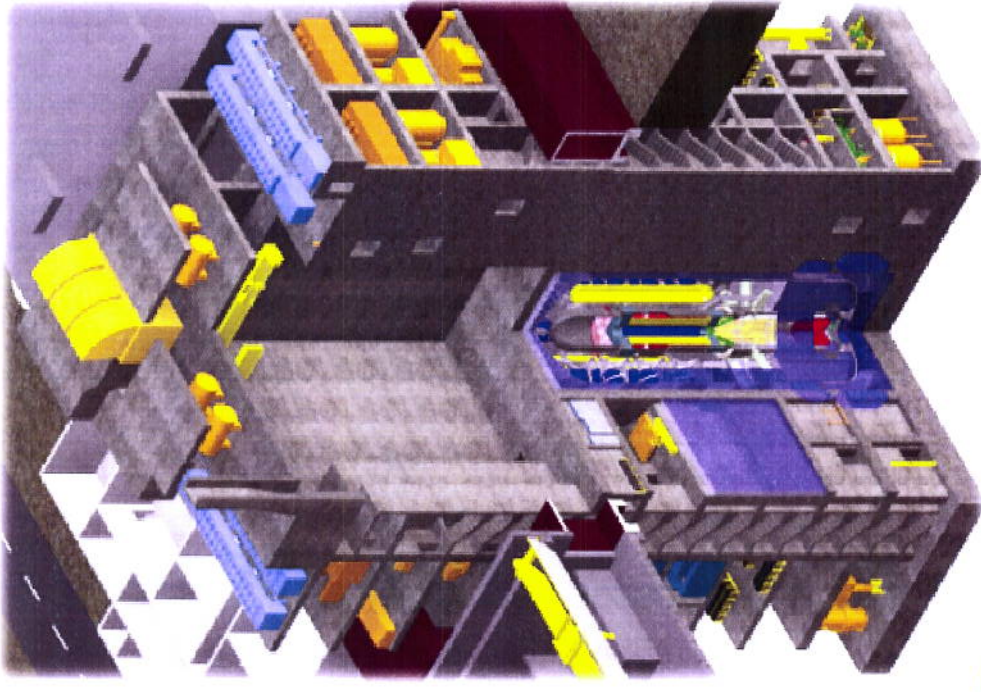
Westinghouse SMR Product Features

225+ MWe capacity

- All the advancements of the **AP1000** reactor
 - Passive safety system
 - Simplicity
 - Standardization & modularization
- An integral, standalone PWR
- Compact design, proven components

Highest levels of safety with fewer accident scenarios

- 7 days of passive heat removal with onsite inventory
- 100% reliance on natural forces



Most Economic SMR



Planning for the DOE's Schedule of Accelerated SMR Deployment by 2022

- Westinghouse will submit the Design Certification application for its SMR in the third quarter of 2013
- Westinghouse SMR technology based on the already-licensed **AP1000** technology
 - **Expeditionary review cycle for NRC personnel**
- Ameren Missouri will submit a COL for **five** Westinghouse SMRs at the Callaway Energy Center in second quarter 2014
 - Previous NRC docketed COLA for a large single unit at the Callaway site **facilitates** the development of the reference COL for the Westinghouse SMR



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Overall Westinghouse SMR Licensing Strategy

Westinghouse has *the most experience* in the U.S. licensing process

- Three designs licensed under 10 CFR-Part 52
 - System 80+, AP600, **AP1000**
- SMR passive safety systems design similar to **AP1000**
- Utilize **AP1000** PWR licensing basis to the extent possible
 - Safety analysis codes are licensed for passive plants
 - Large experimental database applicable to passive plants
- **AP1000** Design Control Document provides starting point for SMR DCD
 - DCD development currently underway



SMR Licensing Basis Proven Passive Safety

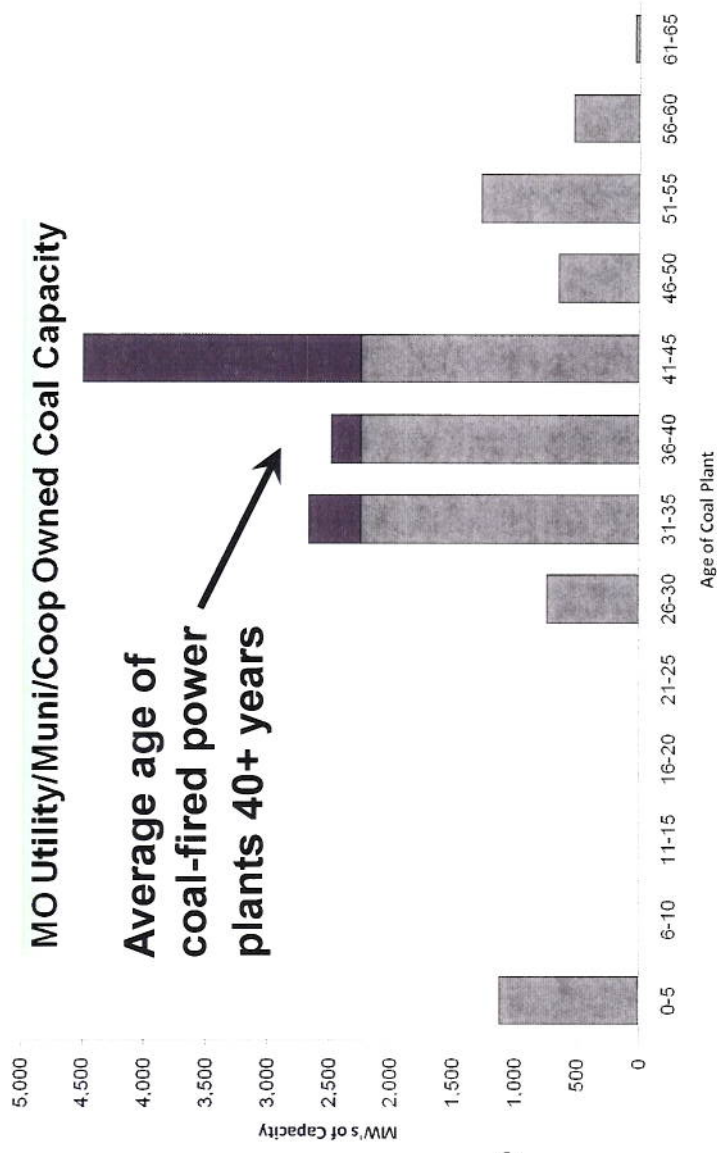
- Passive systems are largely the same as **AP1000**
 - Reliable active systems are designed as first line of defense to mitigate accidents
 - No need for ac power or operator action for 7 days following accident – important post-Fukushima
- Safety Analysis Codes
 - State-of-the-art simulation specifically designed for passive safety technology.
- Extensive testing basis
 - Passive safety has been tested through 20 separate test programs, much of which is directly applicable to the SMR
 - SMR-specific testing plan submitted to NRC for review

AP1000 provides a large head-start to license SMR



Ameren Missouri Maintains the Nuclear Option To Replace The State's Aging Fossil Fuel Fleet

- Aging coal fleet provides approximately 80% of Missouri's electricity
- Environmental Regulations have the potential to dramatically affect the viability of these plants
- Need for power in the state in a time consistent with DOE SMR development objectives



Ameren Missouri Licensing Experience/Activities

- COL team assembled in 2006 to self perform a S-COL for a large PWR Unit
- Conducted numerous pre-submittal reviews and audits
- COL submitted in July 2008 and subsequently docketed by NRC
- COL Environmental Report had preliminary reviews completed and found no major issues with the placement of additional nuclear generation on the site
- Team has maintained involvement in the New Plant Licensing activities and is ready to move ahead on Westinghouse SMR R-COLA Licensing development

Ameren can leverage its COL experience to pursue the reference SMR COL with certainty and responsiveness



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Westinghouse Project Certainty

- **Product Design**
 - Leveraging over 60 years of nuclear design & operating plant experience
 - Most power with the least amount of material
 - Simplified modular design with less on-site assembly
 - Shortened installation duration – 18-24 months
- **Licensing Experience**
 - 3 *certified* ALWR designs, licensed fuel designs
 - Regulatory requirements understood, multitude of licensed topical reports
 - Valued relationships with U.S. NRC
- **Project Implementation**
 - Continuous, successful reactor deployment experience
 - Established resources and organization for deployment



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Strong Support for Westinghouse's Application to DOE

Product Development Team



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Westinghouse Electric Company LLC



GENERAL DYNAMICS
Electric Boat

Customer Support Team

- Westinghouse's NexStart SMR Alliance was announced on May 17th

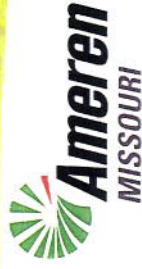


Additional Support

- Over 500 letters of support were received
- Over a dozen letters of support from U.S. universities
- Strong support from Missouri's Governor Nixon and other key stakeholders



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NexStart SMR Alliance



Westinghouse Electric Company LLC



- ✓ Multiple seriously interested customers
- ✓ NexStart SMR Alliance will ensure that a license **moves forward**
- ✓ Adam Heflin, Ameren Missouri CNO, Chair of NEI SMR Task Force

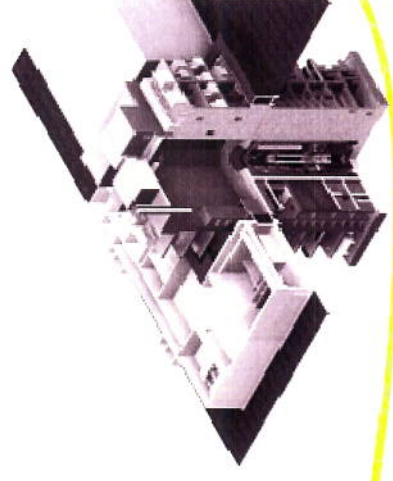


Missouri Statewide Alliance

- An unprecedented alliance including all of Missouri's electric service providers have joined the NexStart SMR Alliance in support Westinghouse's investment fund application to DOE:
-
- Strong support from Governor Jay Nixon and federal policymakers, including U.S. Senators Toomey, Blunt, Casey, McCaskill and many others
 - Additional statewide supporters include the University of Missouri, Local Chambers of Commerce, Trade Associations, International and Local Union Leadership and others



Questions?





The Westinghouse Small Modular Reactor: Advancing the President's Agenda for U.S. Economic Growth, Energy Security and the Clean Energy Standard for America

The Administration's Energy Department Program will provide \$452 Million to expedite the deployment of Small Modular Reactors (SMR) for the U.S. and to Boost Exports

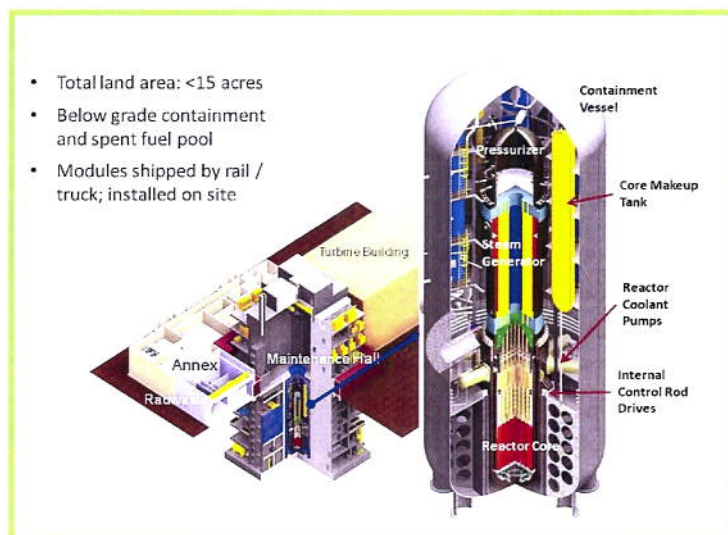
Missouri's cooperative, municipal and investor-owned electric service providers, led by Ameren Missouri, and partner Pennsylvania-based Westinghouse Electric Company have applied for the Dept. of Energy's SMR funding to be awarded in the summer of 2012. The Partnership offers a proven technology, a utility operator, labor, and local and state government support that can rapidly license and deploy an SMR, meeting DOE's program goals. Success will mean re-establishing U.S. leadership in the global nuclear industry and ensuring national energy security with safe, clean, economic nuclear energy.

Labor Supported Program for Clean and Green American Jobs, and Economic Growth

- A single SMR provides an estimated economic impact of nearly \$3 billion in greater than 15 states, stimulates greater than 9,500 direct U.S. jobs, and sustains more than 9,000 indirect U.S. jobs¹. As this technology is exported to the world good paying American jobs would grow.
- SMRs will make clean nuclear energy available for all electricity generators - large corporations and small cooperatives alike, and are ideal for replacing aging fossil fuel plants.
- DOE investment funding should be awarded to the team with the best opportunity to be the first mover in the next generation nuclear technology for the U.S. and for export to the world.

The ONLY Partnership That Can Deploy at a Pace to Meet Dept. of Energy Program Goals

- Westinghouse delivered the AP1000 advanced reactor design on the last DOE funding for nuclear deployment.
- Westinghouse SMR uses existing fuel design and proven, licensed, gravity-safe passive technology currently under construction in the US and internationally.
- Strong support from Missouri to rapidly deploy SMR technology – Governor and bi-partisan legislators, all electric service providers, labor, businesses, and universities.
- Ameren Missouri is a leading, award-winning nuclear plant operator and has already begun site development at the Callaway Energy Center.



¹ Based on independent economic impact analysis on U.S. economy for single SMR unit
– Development Strategies, May 2012