Emerging Market Opportunities
Advanced Reactors

Global Nuclear Energy Markets

Carol Lane
clane@x-energy.com

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X-energy is reimagining nuclear’s role in solving tomorrow’s energy challenges

- X-energy was founded in 2009 to address the world’s most serious energy challenges and make a lasting contribution to clean energy technology in the United States and around the world.

“I began X-energy because the world needs energy solutions that are clean, safe, secure, and affordable. With so much at stake, we cannot continue down the same path.”

-Dr. Kam Ghaffarian, Founder & CEO
Utilities

- Compact, ultra-safe capacity that will replace retiring intermediate-sized (150 MWe-450 MWe) power plants to meet environmental mandates

Government

- Interest in power-purchase agreements with utilities for on-base, grid independent power aligned with emissions reduction goals

Industrial / Commercial Clients

- Able to support new industrial and commercial applications (e.g., petrochemicals, agriculture, desalination) for the first time
Global Competition is Increasing

China’s HTR-PM plant is being constructed today to begin operations in 2017

“This technology is going to be on the world market within the next five years,” said Zhang Zuoyi, director of the Institute of Nuclear and New Energy Technology, Technology Review reported. “We are developing these reactors to belong to the world.”
Strategic Roadmap for Advanced Reactors

Technology
- Technology Maturity
- Critical Milestones Design, Development
- Analysis
- Test/Demos

Licensing
- Safety
- Customers
- Market Conditions
- Investors
- Site Selection

Economics
- Long lead items
- Manufacturing
- Construction
- Operations
# Advance Nuclear Reactors
## Development to Commercialization Cycle

**Technical Maturity**
- Initial Concept
- Early testing
- Technology validation
- Basic Design
- Technology Demonstrations
- White Papers/Topical Reports
- Pre-Application mtg w NRC
- Development of DC Application
- Site Selection
- Long lead
- Fuel development
- Prototype Reactor (full scale) - FOAK
- Reactor Operations

**Financial Tools**
- Government Grants
- Lab expertise
- Government Grants (Cost Share)
- DOE Loan Guarantee
- Investment Tax Credit
- Production Tax Credits

**Legislation**
- NICMA
- NEIMA
- NEIMA

**DOE Programs**
- Government Grants
- Lab Capabilities/expertise
- GAIN
- SMR Technical Licensing (NuScale model)

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Nuclear Energy. Reimagined.
Congressional Support for Advanced Reactors Grows

The Senate vote to add Advanced Reactor Capabilities bill to the Senate energy policy bill passed 87-4
Contact Information

Nuclear energy. Reimagined.

X Energy LLC
7701 Greenbelt Road, Suite 320
Greenbelt, MD 20770
Phone: 301.358.5600

www.x-energy.com
@xenergynuclear