

Small Modular Reactors

Time Frame for Development and Outlook for Commercial Viability

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Hear detailed information and discussion on the business outlook for Small Modular Nuclear Reactors:

Developing Designs and Preparing for Licensing Review:

- Richard Black, Director, Office of Advanced Reactor Concepts, US DOE*
- Michael Mayfield, Director, Advanced Reactor Program, US NRC*
- Daniel T. Ingersoll, Senior Program Manager, Oak Ridge National Laboratory*
- Donald Hoffman, President and CEO, EXCEL Services Corporation*
- Paul Lorenzini, President and CEO, NuScale Power*
- Michael Shepherd, Vice President, Babcock & Wilcox*
- Michael Anness, Manager, Advanced Reactors, Westinghouse Electric Company*

Business Outlook for Small Modular Reactors in the US:

- Don Moul, Vice President, FirstEnergy Nuclear Operating Company*
- Andrea Sterdis, Manager, New Nuclear Licensing, TVA*
- W. Kenneth Hughey, Director, New Plant Licensing, Entergy Nuclear*
- Michael Sellman, Director, Alternate Energy Holdings*
- Jonathan Hinze, Vice President, Ux Consulting*
- Jim Moody, Director, Commercial Services, General Dynamics Electric Boat*
- David Blee, Executive Director, U.S. Nuclear Infrastructure Council*
- Chris Hansen, Associate Director, IHS CERA*

International Outlook for Advanced Reactor Development:

- Mary Saunders, Deputy Assistant Secretary, U.S. Department of Commerce*
- James Glasgow, Partner, Pillsbury Winthrop Shaw Pittman LLP*
- William A. Macon, Jr., Army Reactor Program Manager, U.S. Army*
- Randall Lee Beatty, Group Leader, INPRO, International Atomic Energy Agency*
- M. Hadid Subki, Unit Head, International Atomic Energy Agency*
- Vladimir Kuznetsov, former Lead Researcher, Kurchatov Institute (Russia)*

...See inside for details!

DAY 1: Monday, June 28, 2010

7:30 Conference Registration and Continental Breakfast

8:45 Chair's Opening Remarks
 Donald Hoffman, President and Chief Executive Officer, EXCEL Services Corporation

Small Modular Light-Water Reactors — Developing Designs and Preparing for Licensing Review

9:00 **Research and Development Priorities and the Role of DOE**
 **KEYNOTE**
 • R&D needs and priorities for small reactors
 • Improving and validating designs and costs
 • Enhancing SMR licensing policy and requirements
 • DOE's development priorities for advanced reactor concepts
 • SMR's role in US energy policy and energy security
 Richard Black, Director, Office of Advanced Reactor Concepts, Office on Nuclear Energy, US Department of Energy

9:30 **Licensing Issues for Small Modular Reactors**
 • Key regulatory issues affecting all small reactor designs
 • Emergency planning
 • Health physics
 • Control room staffing and design
 • Human performance
 • Physical security and defense in depth
 • Establishing zones for security — What is appropriate for specific designs and locations?
 • In-service inspections
 • From the general to the specific — Evaluating individual designs
 Michael Mayfield, Director, Advanced Reactor Program, US Nuclear Regulatory Commission

10:00 **Historical Perspectives on SMR Interest and Designs**
 • Small modular reactors — Not a new concept!
 • Historical background on small reactor concepts and designs
 • Development of small modular reactors, from the 1980s to the present
 • Key design elements — Comparing some of the advanced designs and current thinking on SMRs
 Daniel T. Ingersoll, Senior Program Manager, Oak Ridge National Laboratory

10:30  **Networking & Refreshment Break**


11:00 **Developing SMR Designs and Preparing for Licensing Review**
 **CASE STUDIES**
 • Design features and evolutionary approaches for small, modular Light-Water Reactors
 • Factory fabrication of SMRs
 • Cost factors compared to conventional reactors
 • Cost factors in development and construction
 • Cost of fuel and refueling compared to conventional reactors
 • Licensing issues and timelines
 • Coordination with potential buyers and users — Nuclear power operators, Department of Defense, and other buyers
 Moderator: Daniel T. Ingersoll, Senior Program Manager, Oak Ridge National Laboratory
 Paul Lorenzini, President and Chief Executive Officer, NuScale Power
 Michael Shepherd, Vice President, Business Development, Babcock & Wilcox
 Michael Anness, Manager, Advanced Reactors, Westinghouse Electric Company

12:30  **Networking Luncheon**

Business Outlook for Small Modular Reactors in the US

1:45 **Business Outlook for Development of SMRs — Perspectives of Nuclear Operators**
 **CASE STUDIES**
 • Perspectives of small and large power producers on developing small reactors
 • Issues for regulated versus deregulated utilities in developing projects
 • Potential market for municipal and cooperative utilities
 • Permitting issues — Time frame and cost of development
 • Construction issues — Parameters, key factors, and known unknowns
 • Cost issues affecting operations including additional security and containment
 • Financing construction — Fee base/decommissioning funds
 Moderator: Donald Hoffman, President and Chief Executive Officer, EXCEL Services Corporation
 Don Moul, Vice President, Nuclear Support, FirstEnergy Nuclear Operating Company
 Andrea Sterdis, Manager, New Nuclear Licensing, TVA
 W. Kenneth Hughey, Director, New Plant Licensing, Entergy Nuclear
 Michael Sellman, Director, Alternate Energy Holdings; Board Member, NuScale Power

3:15  **Networking & Refreshment Break**

3:45 **Supply Chain for Small Reactors — Critical Questions for Commercial Viability**
 **CASE STUDIES**
 • Developing plans for accelerated development and construction
 • Economics of small modular reactors
 • International growth of SMRs
 • Developing a new manufacturing industry to support development of SMRs
 • Factory fabrication of systems and components
 • Supply chain capacity
 • Estimating needs across the supply chain
 • Fuel supply for SMRs
 Moderator: Donald Hoffman, President and Chief Executive Officer, EXCEL Services Corporation
 Jonathan Hinze, Vice President, International Operations, Ux Consulting
 Jim Moody, Director, Commercial Services, General Dynamics Electric Boat
 David Blee, Executive Director, United States Nuclear Infrastructure Council

5:00 **Investment and Finance Perspectives on Small Modular Reactors**
 • Where have the investments occurred to date?
 • How investors view the key areas of risk and opportunity
 • Will small reactors be proposed as a replacement for large reactors?
 • Will international buyers of SMRs wait for US regulatory approval?
 • How quickly could the international market for SMRs take off?
 Chris Hansen, Associate Director, IHS CERA

5:30  **Networking Cocktail Reception**

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 Nuclear Engineering Consulting

DAY 2: Tuesday, June 29, 2010

7:30 Continental Breakfast

8:30 *Chair's Introduction to Day Two*
 Donald Hoffman, President and Chief Executive Officer,
EXCEL Services Corporation

- What could be done to support development and deployment of SMRs?

Vladimir Kuznetsov, Ph.D., former Lead Researcher, Kurchatov Institute (Russia); former Unit Head, International Atomic Energy Agency

12:30 Close of Conference

International Scope of Small Modular Reactors and Outlook for Advanced Reactor Development

8:45 **International Scope of SMRs — Implications for US Manufacturing and Exports**



KEYNOTE

- International development of small reactors — Where is the interest and how fast will new SMRs be built?
- Building international cooperation for licensing, including common standards for safety and security
- Benefits to US manufacturers
- International sourcing

Mary Saunders, Deputy Assistant Secretary, Manufacturing and Services, U.S. Department of Commerce

9:15 **International Trade, Export Controls, and SMRs**

- Export opportunities as the demand for nuclear power grows
- Export controls for nuclear components and technical data
- Export compliance and due diligence
- Bilateral and multilateral agreements that govern international supply of SMRs
- Protection against nuclear liability in countries that may order SMRs

James Glasgow, Partner, Pillsbury Winthrop Shaw Pittman LLP

9:45 **US Military Interest in Small Modular Reactors**

- Historical perspective of the former Army Nuclear Power Program
- Department of Defense feasibility study for deploying nuclear power plants on military installations
- Regulatory options and challenges for a new DoD program
- Next steps toward nuclear power for defense energy security

William A. Macon, Jr., Army Reactor Program Manager, U.S. Army Nuclear and Combating WMD Agency

10:15 **Networking & Refreshment Break**



10:45 **International Development of Modular Reactors — An Overview and Update**

- International scope of the market and supply chain
- Update on INPRO — International Project on Innovative Nuclear Reactors and Fuel Cycles
- Progress in global and regional plans for standardizing and regulating SMRs — Safety, legal, institutional, technical cooperation, and fuel cycle

Randall Lee Beatty, Ph.D., Group Leader, INPRO, International Atomic Energy Agency

M. Hadid Subki, Ph.D., Unit Head, Small and Medium Sized Reactors, International Atomic Energy Agency

11:45 **Advanced Small and Medium Sized Reactor Designs — New Developments and Steps in R&D**

- Advanced reactor concepts, deployment potential, and status of R&D — Water cooled reactors, gas cooled reactors, sodium cooled reactors, and heavy liquid metal cooled reactors
- Safety features to achieve defense in depth
- Is competitive economics possible for small and medium sized reactors?
- Fuel cycle flexibility including use of spent nuclear fuel, and non-electrical applications

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Small Modular Reactors

Time Frame for Development and Outlook for Commercial Viability

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- DOE's development priorities and funding for small nuclear reactors
- Developing SMR designs and preparing for licensing review
- Business outlook and perspectives from nuclear power operators
- Challenges for licensing and regulation including health and security issues
- Supply chain for manufacturing and operations
- International outlook for advanced reactor development
- And more! — See inside for full agenda

Registration Fee:	Early Bird Discount	Standard Rate
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