Nuclear Energy University Programs

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March 20, 2012

NILUA Territori IIS. Denartment of Fran





NEUP Mission and Objectives



NUCLEAR ENERGY RESEARCH AND DEVELOPMENT ROADMAP

REPORT TO CONGRESS

April 2010



Mission:

Engage the U.S. university community to conduct program directed, program supporting, and mission supporting research and development, related infrastructure improvements, and student education support to build world class nuclear energy and workforce capability as an integral component of the Office of Nuclear Energy.

Objectives:

Support the NE R&D Roadmap objectives while bolstering university R&D infrastructure, especially research reactors.



NEUP 2012 Structure







Funding Opportunities in 2012



Research & Development

 Competitive R&D subcontract solicitation through INL's NEUP Integration Office (IO)

Capabilities, Infrastructure & Equipment

Competitive grants in conjunction with DOE-ID
 Integrated Research Projects

- Competitive subcontracts through INL's NEUP IO
 Fellowships
 - Competitive grants in conjunction with DOE-ID



2012 NEUP Proposed Schedule

Proposed Schedule 2012	RPA/FOA	Pre Apps Due	Proposals Due	Awards Announced
R&D (PS and Blue Sky)	Sept '11	Oct.'11	Jan. '12	April '12
Integrated Research Projects(PD)	TBD		TBD	TBD
Infrastructure Equipment Reactors	Oct. '11		Feb.'12	April '12
Scholarships and Fellowships	Dec. '11		Feb. '12	April '12



Possible Areas of Interest to Hybrids

Advanced Energy Conversion (ARC-2) – (FEDERAL POC – BRIAN ROBINSON & TECHNICAL POC – JIM SIENICKI) Development of new energy conversion systems that use advanced technologies or innovative engineering is sought... projects that explore coupling of the reactor heat source with diverse process heat applications (cogeneration, coal-to-liquids, chemical feedstocks) and/or other energy products with an emphasis on novel approaches that can greatly improve the ease of coupling, the operability of the combined system, and the ultimate economics. The scope of the proposed project should include a thorough viability assessment of the advanced energy conversion system, a detailed technology gap analysis, and a comprehensive technology development roadmap.



2012 Mission Supporting: Reactor Concepts RD&D (MS-RC1) - (FEDERAL POC - SAL GOLUB & TECHNICAL POC -ROBERT HILL) Identification, investigation and development of revolutionary transformational advanced reactor system concepts having the potential to significantly improve performance in sustainability, safety, economics, performance, security or proliferation resistance... Concepts could also include small modular reactors with unique capabilities to address operational missions other than the delivery of baseload electric power, such as industrial process heat or mobile reactors that can provide temporary power during emergency situations. The scope of the proposed project should include a thorough viability assessment of the concept, a detailed technology gap analysis and a comprehensive technology development roadmap that identifies research needed on key feasibility issues



SMALL MODULAR REACTORS) Advanced **Concepts (SMR-1)** (FEDERAL POC – TIM BEVILLE & TECHNICAL POC – DAN INGERSOLL) – SMR concepts offer the opportunity to expand nuclear energy to a broader range of customers and energy-intensive applications, including base-load electricity for remote communities or dedicated facilities, dispatchable electricity to stabilize local grids with high renewable fractions, process heat applications, etc. The more diverse customer base imposes new or enhanced requirements such as extreme reliability or power agility. Innovative concepts are sought that are designed from the outset to provide increased levels of safety and robustness and new functionalities while also maintaining or improving the operational and economic performance. The concepts may utilize advanced technologies or innovative engineering but should be viable for eventual commercial deployment. The scope of the proposed project should include: a thorough viability assessment of the advanced concept, a detailed technology gap analysis, and a comprehensive technology development roadmap. 10



• 2012 FUEL CYCLE R&D MS-FC (FEDERAL POC – BRADLEY WILLIAMS & TECHNICAL POC - MIKE GOFF)- Game-changing, innovative ideas will play an important role in developing revolutionary fuel cycle concepts of the future. Developing and defining these concepts can support the Fuel Cycle Research and Development (FCR&D) Program's mission to research, develop, and demonstrate alternatives to the current U.S. commercial fuel cycle to enable the safe, secure, economic, and sustainable expansion of nuclear energy while minimizing proliferation and terrorism risks...Project proposals should include a description of the concept, an analysis of technology risks and feasibility, and a technology roadmap describing how this concept can be further developed.



Background

NEUP R&D Review Process

Phase I-





April



NEUP Scholarship and Fellowship Review Process



December

February-March

April-May

April-June (year after the award)



NEUP Infrastructure Review Process





NEUP Integrated Research Projects Review Process



December

February-March

April-May