



U.S. DEPARTMENT OF
ENERGY

Nuclear Energy

PROPOSED NUCLEAR ENERGY UNIVERSITY PROGRAM (NEUP) NEW DIRECTIONS

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PRIMARY MISSION

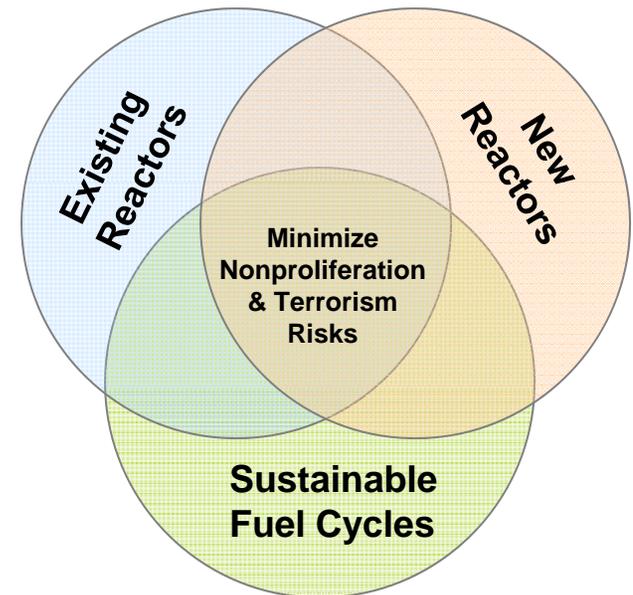
The primary mission of the Office of Nuclear Energy is to advance nuclear power as a resource capable of making major contributions in meeting the Nation's energy supply, environmental and energy security needs by resolving technical, cost, safety, security and regulatory issues through research, development and demonstration.



NE's Research & Development (R&D) Roadmap Objectives Supported by NEUP R&D Activities

Roadmap Objectives

- Develop technologies and other solutions that can improve the reliability, sustain the safety, and extend the life of current reactors
- Develop improvements in the affordability of new reactors to enable nuclear energy to help meet the Administration's energy security and climate change goals
- Develop sustainable nuclear fuel cycles
- Understand and minimize the risks of nuclear proliferation and terrorism





Overall NEUP Program Three Program Areas

■ Fuel Cycle R&D (FCRD)

- Separations and Waste Forms
- Advanced Fuels
- Systems Analysis and Integration
- Materials Protection, Accountancy, and Controls (MPACT)
- Used Fuel Disposition and Storage

■ Reactor Concepts (RC)

- Small Modular Reactors
- Next Generation Nuclear Plant
- Light Water Reactor Sustainability
- Advanced Reactor Concepts



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Nuclear Energy Enabling Technologies (NEET) Program

- NEET Crosscutting Technology Development activity supports multiple reactor concepts
 - Reactor Materials
 - Proliferation Risk Assessment
 - Advanced Methods for Manufacturing
 - Advanced Sensors and Instrumentation
 - Modeling and Simulation

- NEET compliments RC & FCRD activities
 - Activities broadly applicable to RC/FCRD, but longer timeframe
 - Not redundant
 - Ultimately may benefit specific RC/FCRD tech development



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NE Funding for Universities

- More than 20% of the NE R&D budget will be used to support university-based activities
- Up to 20% of the NE R&D budget is allocated to the peer-reviewed NEUP
 - Support for infrastructure, students, and research and development are all components of the NEUP scope
 - All on-going and new University-supported activities directly funded by DOE-NE will be included in NEUP (M and S Hub program is the one exception)
 - Requirement for university cost share has been waived for NEUP
- Other NE University Investments Outside NEUP
 - NE funds fuel management support for University-based Research Reactors
 - National Laboratories use NE R&D funds to support specific R&D or support efforts at universities

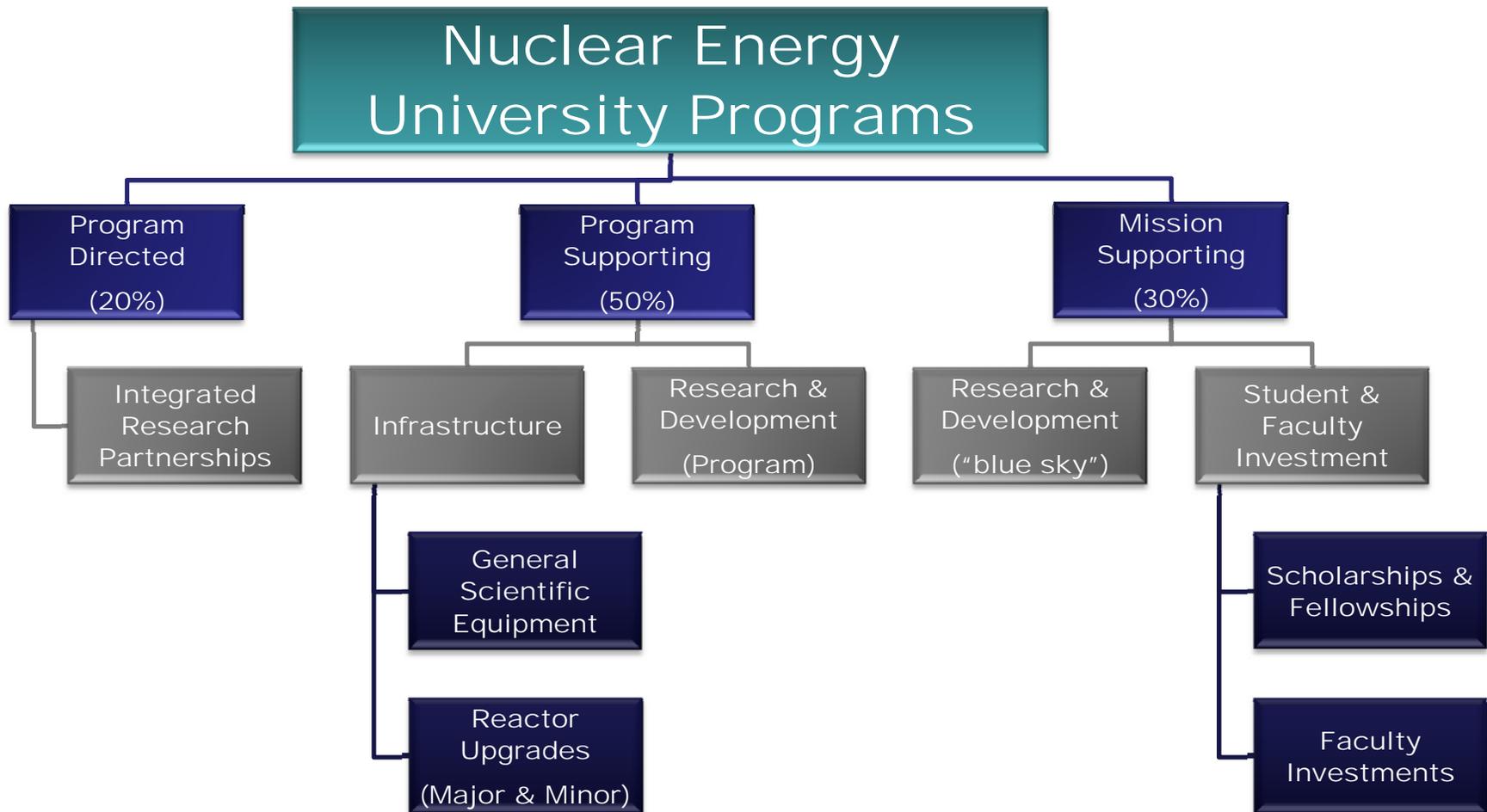


Proposed New Directions for NEUP

- NEUP will have three components: *Program-Directed (PD)*, *Program-Supporting (PS)*, and *Mission-Supporting (MS)*
 - Competition and Peer Review are required for all NEUP activities—technical quality and program relevance are the two areas to be evaluated
 - The entire NEUP program is investigator-initiated in that all ideas and proposals are generated by Principal Investigators and their collaborators.
 - Moving from PD to PS to MS, the components require projects to have less emphasis on relevance to specific NE program directions
 - Federal staff (augmented with laboratory advisors) will evaluate relevance and a separate peer review will evaluate technical quality
 - Pre-proposals will be required for all components from which a subset will be encouraged to provide full proposals
- Program administered by CAES and managed by NE
 - The University community will have input in the year-by-year evolution of the NEUP program



New NEUP Structure





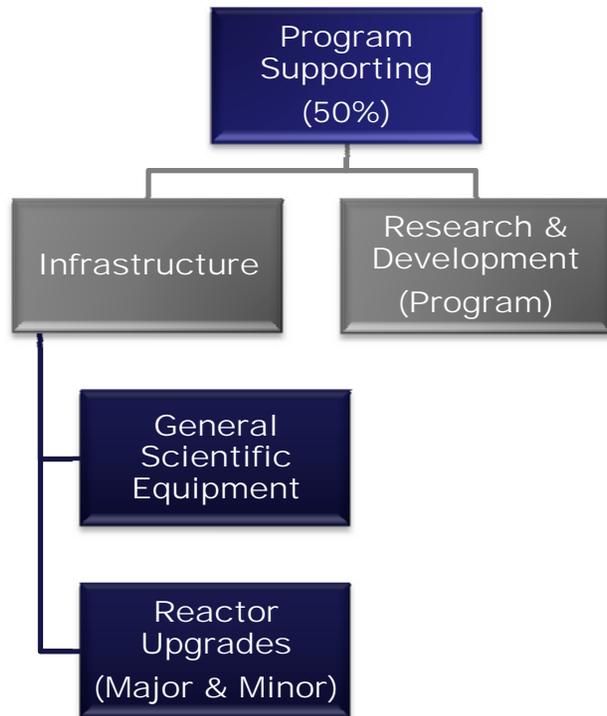
Program-Directed Component



- New component of NEUP
- Approximately 20% of NEUP funding in this component (enough to support two fully-funded projects)
- Integrated Research Partnerships:
 - Larger projects, maximum of \$2.5M/year for three-years (can re-compete once)
 - Call for proposals will identify specific research challenges
 - Will require detailed full proposals with the most comprehensive relevance and peer review
- Weighting is 50% relevance and 50% technical quality (if technical quality is evaluated as “not recommended”, or if evaluated as “not relevant”, project will not be funded.)
 - Peer review team evaluates technical quality (highly recommended, recommended, not recommended)
 - Federal Program staff evaluates relevance (highly relevant, relevant, not relevant)
 - Relevance-impact based on achieving near-term program goals



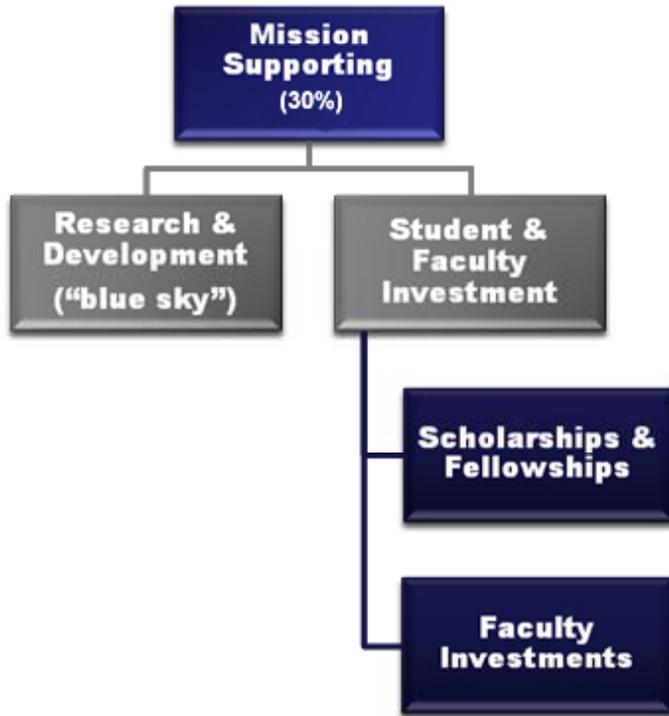
Program-Supporting Component



- Approximately 50% of NEUP funding
- R&D Element:
 - Maximum of \$1.2M for three or four years (~\$400k/yr)
 - Managed using revised process with pre-proposals and proposals undergoing peer review and management review
- Review weighting is 35% relevance and 65% technical quality
 - Relevance based upon impact of achieving identified mid-term goals
- Includes Equipment Infrastructure Upgrades



Mission-Supporting Component



- Approximately 30% program
- R&D Component
 - Broadly targets all technical bin areas; replaces the “investigator initiated” component
 - Maximum of \$600k for three or four year projects (~\$200k/yr)
 - Managed using revised process with pre-proposals and proposals undergoing peer review and management review
- Review weighting is 20% relevance and 80% technical quality
 - Relevance is judged by how the project supports the overall objectives identified in the NE R&D Roadmap
- Includes investments in students and faculty



FY 2010-11 NE Budget Summary

Nuclear Energy

Program	FY 2010 Approp	FY 2011 Request
Integrated University Program	5,000	0
RE-ENERGYSE	0	5,000
Nuclear Power 2010	105,000	0
Generation IV Nuclear Energy Systems	220,137	0
Reactor Concepts RD&D	0	195,000
Fuel Cycle R&D	136,000	201,000
Nuclear Energy Enabling Technologies	0	99,300
Radiological Facilities Mgt.	72,000	66,818
- <i>Space and Defense Infrastructure</i>	42,000	47,000
- <i>Research Reactor Infrastructure</i>	10,000	4,818
- <i>Los Alamos Nuclear Infrastructure</i>	10,000	0
- <i>Oak Ridge Nuclear Infrastructure</i>	10,000	0
- <i>Pu-238 Production Restart</i>	0	15,000
Idaho Facilities Management	173,000	162,482
Idaho Sitewide Safeguards and Security	83,358	88,200
International Nuclear Energy Cooperation	0	3,000
Program Direction	73,000	91,452
Congressionally Directed Projects	2,500	0
Transfer from State Department (International Nuclear Safety Program)	2,800	0
Total - Office of Nuclear Energy	872,795	912,252
Total - NE University Program	59,200	TBD



Sample Breakdown for an \$80M Budget

