

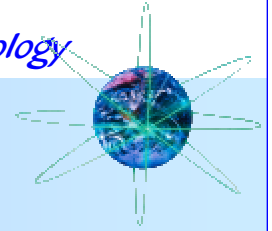
Overview of Recent DOE Nuclear Energy Program Activities

NERAC Fall 2001 Meeting



*William D. Magwood, IV, Director
Office of Nuclear Energy, Science and Technology
U.S. Department of Energy*

November 5, 2001

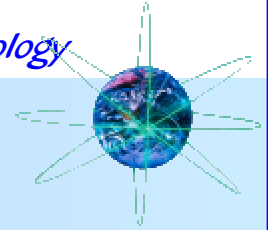


The U.S. National Energy Policy

Three basic attributes:

- ◆ Provides long-term, comprehensive strategy
- ◆ Advocates new, environmentally friendly technologies to increase energy supplies and encourage efficient energy use
- ◆ Integrates energy, environmental and economic policies

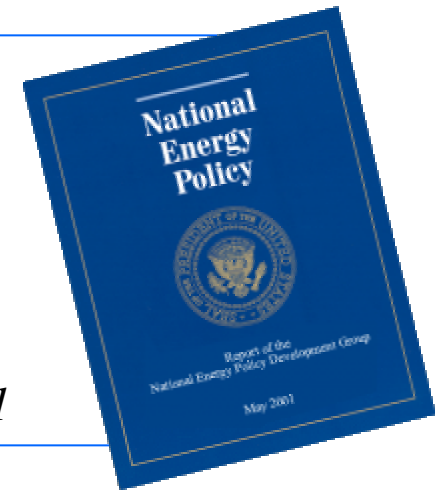




The U.S. National Energy Policy and Nuclear Power

“The NEPD Group recommends that the President support the expansion of nuclear energy in the United States as a major component of our national energy policy.”

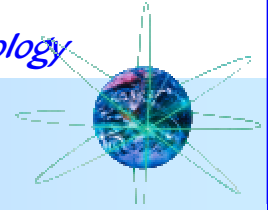
Report of the National Energy Policy Development Group, May 2001



Calvert Cliffs Nuclear Power Plant

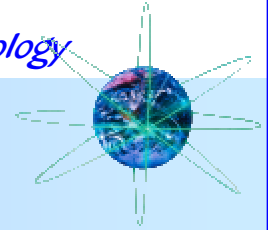
Recommendations:

- Support expansion of nuclear energy in the United States
- Develop advanced nuclear fuel cycles and next generation technologies
- Develop advanced reprocessing and fuel treatment technologies



The National Energy Policy: Specific Components of the Recommendation to Expand Nuclear Energy

- ◆ **Nuclear Regulatory Commission:**
 - Make safety and environmental protection high licensing priorities
 - Safely uprate existing plants
 - Relicense existing plants
 - Increase resources for nuclear safety enforcement
- ◆ **DOE and EPA**
 - Assess potential for Nuclear Energy to improve air quality
- ◆ **DOE**
 - Use best science to provide deep geologic repository
- ◆ **Avoid taxation of qualified decommissioning funds**
- ◆ **Extend Price-Anderson Act**
- ◆ **R&D Advanced Nuclear Fuel Cycles and Next Generation Technologies**
- ◆ **Collaborate Internationally on cleaner, more efficient, less waste-intensive and more proliferation-resistant technologies**



Current Nuclear Energy R&D Activities

Nuclear Power 2010 -- An effort designed to support the construction of the next U.S. nuclear power plant by 2010

◆ Gas Reactor Activities

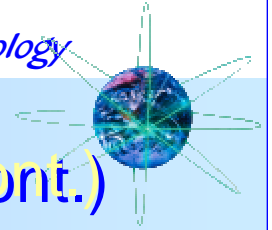
- Improved fuel manufacturing processes and inspection
- GT-MHR plant cost evaluation
- Cooperation with NRC -- gas reactor framework
- Fuel testing efforts

◆ ALWR Activities

- AP1000 Independent Review and Analysis
- Pilot demonstration -- Reg Guide on “transient and accident analysis methods”

◆ Generic

- Early site permit (ESP) activities
- Verification and validation of analysis codes



Current Nuclear Energy R&D Activities (cont.)

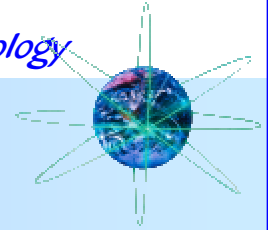
Generation IV -- Effort to develop an international R&D agenda to develop next-generation nuclear power plants

◆ **Generation IV Roadmap**

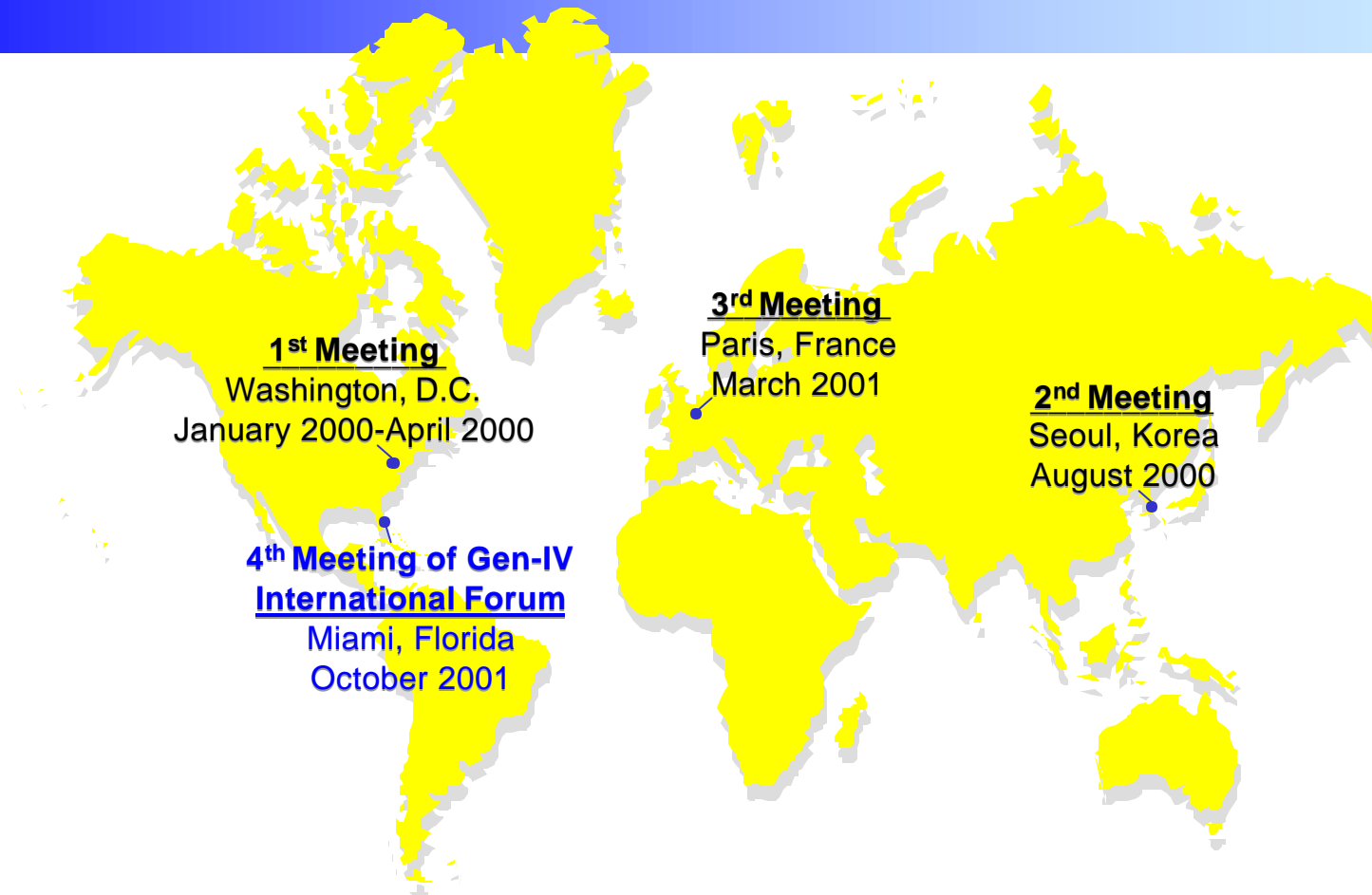
- Over 100 experts from a dozen countries involved
- Generation IV International Forum (GIF) now formal
- OECD Nuclear Energy Agency established as international R&D fund coordination
- Targeting Fall 2002 meeting in Japan to establish international collaboratives

◆ **International - NERI**

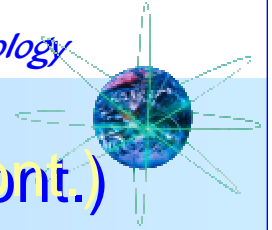
- Agreements signed with South Korea and France
- Six projects awarded with South Korea and four with France
- Japan and South Africa (PBMR focus) next



Generation IV International Forum



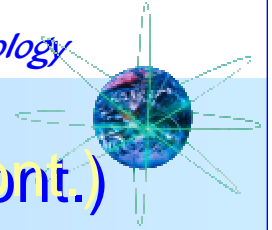
- ◆ GIF countries are participating in Generation IV Technology Roadmap
- ◆ Roadmap scheduled for September 2002 completion
- ◆ Roadmap will guide direction of future collaboration R&D



Current Nuclear Energy R&D Activities (cont.)

- ◆ **Nuclear Energy Research Initiative (NERI) -- Long-Term research and development to address issues affecting the future use of nuclear energy.**
 - 69 projects awarded to date representing approximately \$79 million in R&D over the 3-year project durations.
 - FY 2002 solicitation to be issued in November.

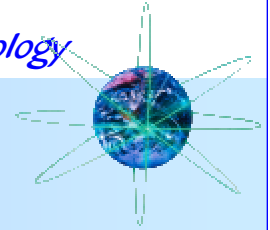
- ◆ **Nuclear Energy Plant Optimization (NEPO) -- Cooperative research with industry to improve the long-term reliability and efficiency of existing nuclear power plants.**
 - 10 projects are underway in aging management and 9 projects in generation optimization.
 - Since the start of this program in FY 2000, 3 generation optimization projects have been completed.



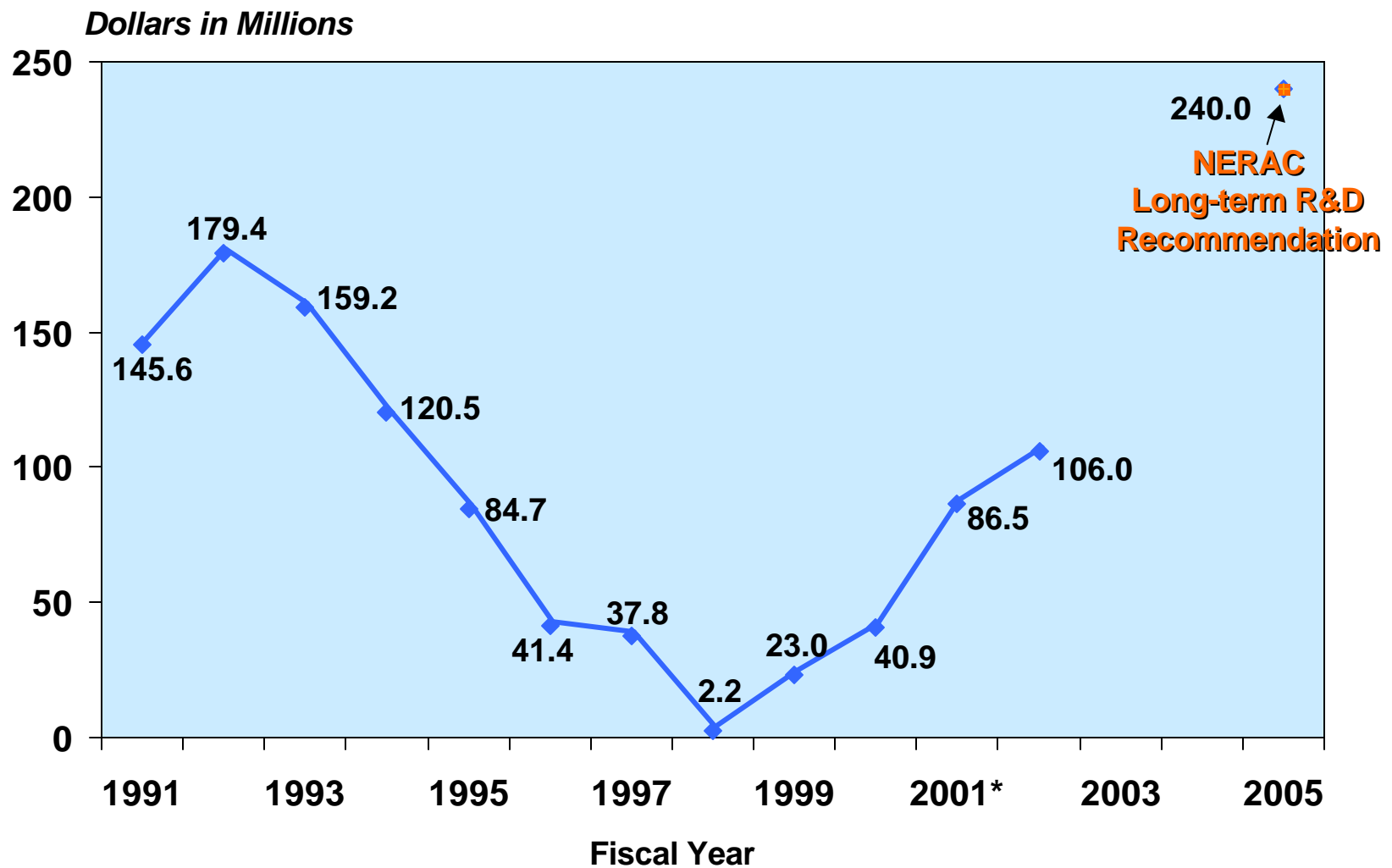
Current Nuclear Energy R&D Activities (cont.)

- ◆ **University Activities -- Continue essential support to U.S. universities**
 - Increase support of fellowships and scholarships
 - Revival of International Student Exchange Program
 - “Centers of Excellence”

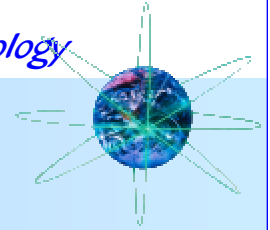
- ◆ **Advanced Accelerator Applications -- R&D to reduce the quantity and radiotoxicity of spent nuclear fuel**
 - Research in pyroprocessing
 - UREX demonstration
 - Expanding reactor-based transmutation work
 - Continue non-fertile fuel developments



Research & Development Budget History



*Does not include \$34 million of funding for the APT budget which was funded by DP in FY 2001.



FY 2003 OMB Budget

	FY 2001 Adjusted	FY 2002 Congressional Budget	FY 2002 House Mark	FY 2002 Senate Mark	FY 2002 Conference
Advanced Radioisotope Space and Defense Power Systems	31,647	29,094	28,200	29,094	29,000
Medical Isotope Program	19,197	18,177	16,177	18,177	17,177
University Program	11,974	11,974	15,895	19,000	17,500
Nuclear Energy Plant Optimization	4,857	4,500	5,000	9,000	7,000
Nuclear Energy Research Initiative	33,903	18,079	23,079	38,000	32,000
Nuclear Energy Technologies	7,483	4,500	4,500	14,000	12,000
Infrastructure	78,379	81,279	80,529	81,279	82,529
Nuclear Facilities Management	34,773	30,457	30,250	30,457	30,250
Advanced Accelerator Applications	33,925	0	0	55,000	50,000
Program Direction	23,042	25,062	20,500	25,062	23,000
Offset from Royalties/General Reduction	-2,352	0	0	-5,000	TBD
TOTAL NUCLEAR ENERGY	276,828	223,122	224,130	314,069	300,456