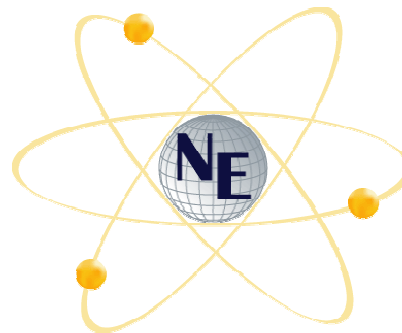




# Nuclear Energy: Securing Our Energy Future

The U.S. Department of Energy's Office of Nuclear Energy

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**February 4, 2008**



# Nuclear Energy: Securing Our Energy Future

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- Nuclear energy is vital to meet our needs for carbon-free, dependable and economic electric power.
  - Today, 104 nuclear reactors generate about 20 percent of America's electricity. U.S. electricity demand is projected to grow by 50 percent by 2030.
  - To maintain the 20 percent nuclear share requires building 45 to 50 new nuclear reactors.
  - Nuclear power is the only proven base load producer of electricity capable of meeting expected increases in demand that does not emit greenhouse gases.
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## Enable Industry To Deploy The Next Generation Of Nuclear Power Plants

### The President's Budget supports:

- Continuing interactions with the NRC and industrial partners in support of two Combined Operating License applications being reviewed by the NRC.
- Continuing first-of-a-kind design finalization activities for the standardized AP 1000 and ESBWR Designs.
- Accelerated design finalization activities necessary to complete vendor component/equipment specifications.
- Complete review of application requests and issue conditional agreements for Standby Support.

### Program Element (\$ in Millions)

	FY 2008 Approp	FY 2009 Request
<b>NP</b>		
<b>2010</b>	<b>\$133.8</b>	<b>\$241.6</b>

# The Global Nuclear Energy Partnership

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- The Global Nuclear Energy Partnership currently consists of 20 partner nations, 18 candidate partner nations, and three international organizations.
  - In the past year, the GNEP Statement of Principals was signed by the 20 partner nations who share the common vision of the necessity of the expansion of nuclear energy for peaceful purposes worldwide in a safe and secure manner.
  - GNEP envisions a new, commercial partnership effort to recover, recycle and safely utilize latent nuclear fuel, without producing separated plutonium alone.
  - GNEP represents a move towards green energy by recycling and reusing valuable energy resources to the fullest. The Department will leverage existing and new technologies to establish advanced recycling facilities.
  - By recycling used nuclear fuel, the volume and radioactive toxicity of wastes would steadily decrease, significantly increasing the capacity of a geologic repository.
  - The Department will initiate these programs and projects through the Advanced Fuel Cycle Initiative; however, we envision that commercial recycling facilities would be built by the private sector.
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# Securing Our Energy Future —

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## Develop Advanced Nuclear Reactor and Fuel Cycle Technologies

### The President's Budget supports:

- Research and development on fuel cycle technologies that will support the economic and sustained production of nuclear energy while minimizing waste and satisfying requirements for a controlled, proliferation-resistant nuclear materials management system.
- Research and development to achieve desired goals of sustainability, economics, and proliferation resistance in support of the Next Generation Nuclear Plant.
- Research and development on enabling technologies, nuclear-based hydrogen production technologies, and technologies that will apply heat from Generation IV nuclear energy systems to produce hydrogen.

### Program Element (\$ in Millions)

	FY 2008 Approp	FY 2009 Request
<b>Advanced Fuel Cycle Initiative</b>	<b>\$179.4</b>	<b>\$301.5</b>
<b>Generation IV</b>	<b>\$114.9</b>	<b>\$70.0</b>
<b>Nuclear Hydrogen Initiative</b>	<b>\$9.9</b>	<b>\$16.6</b>

## Maintain Critical National Nuclear Infrastructure

### The President's Budget will:

- Maintain the INL Site-Wide infrastructure required to support research and development programs in accordance with the INL Ten-Year Site Plan.
- Maintain the national nuclear infrastructure to provide energy systems for space exploration and national security needs, and fuel services for U.S. university research reactors.
- Maintain and operate the systems, facilities, and protective forces needed to protect DOE personnel and assets at the Idaho site.

### Program Element (\$ in Millions)

	FY 2008 Approp	FY 2009 Request
<b>Idaho Facilities Management</b>	<b>\$115.9</b>	<b>\$104.7</b>
<b>Radiological Facilities Management</b>	<b>\$48.1</b>	<b>\$38.7</b>
<b>Idaho Site-Wide Safeguards &amp; Security</b>	<b>\$72.3</b>	<b>\$78.8</b>



# FY 2009 Budget Request — Nuclear Energy

The U.S. Department of Energy's Office of Nuclear Energy

<u>Program:</u>	<u>FY 2008 Adj. Appropriation<sup>a</sup></u>	<u>FY 2009 Request<sup>a</sup></u>
<b>Research and Development</b>		
NP 2010	133,771	241,600
Generation IV	114,917	70,000
Nuclear Hydrogen Initiative	9,909	16,600
Advanced Fuel Cycle Initiative	179,353	301,500
<b>MOX Fuel Fabrication Facilities</b>	278,789	487,008 <sup>b</sup>
<b>Infrastructure</b>		
Radiological Facilities Management	48,119	38,700
Idaho Facilities Management	115,935	104,700
Idaho Sitewide S&S	75,261 <sup>b</sup>	78,811 <sup>b</sup>
Program Direction	80,872	80,544
Less Security Charge for Reimbursable Work	-3,003	0
<b>Total, Nuclear Energy</b>	<b>1,033,923</b>	<b>1,419,463</b>

<sup>a</sup> All values are dollars in thousands.

<sup>b</sup> Funds included in Other Defense Activities Appropriation

