Mission Priorities

- Existing LWR Fleet
- Advanced Reactor Pipeline
- Fuel Cycle Infrastructure
- Nuclear energy provides about 20% of U.S. electricity
- Nuclear runs at full capacity 93% of the time
- 31 states have nuclear reactors
- The U.S. has 98 of the world's 447 commercial nuclear reactors.
## DOE Notional Descriptions of Nuclear Reactor Technologies

<table>
<thead>
<tr>
<th>Description</th>
<th>Electrical Output (MWe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Sized Reactors</td>
<td>&gt;600 - 1600</td>
</tr>
<tr>
<td>Mid-Sized Reactors</td>
<td>&gt;300 - 600</td>
</tr>
<tr>
<td>Small Modular Reactors</td>
<td>&gt;50 - 300</td>
</tr>
<tr>
<td>Very Small Modular Reactors</td>
<td>&gt;10 - 50</td>
</tr>
<tr>
<td><strong>Micro-Reactors</strong></td>
<td><strong>1 - 10</strong></td>
</tr>
</tbody>
</table>
DOE RD&D in Support of Micro-Reactors

• Micro-Reactors are based on reactor technologies that have been under development for a long time and are leveraging research and technologies from non-LWR advanced reactors

• Research & Development activities supporting Micro-Reactor commercialization:
  o Semi-autonomous and autonomous control systems coupled with remote monitoring capabilities to reduce on-site staffing
  o Improved materials and advanced manufacturing methods to reduce system costs and increase performance
  o Development of approved transportation containers for remote deployment and retrieval of Micro-Reactors
• Demonstration of Micro-Reactors before commercial deployment:
  o Many of the stakeholders would like the Micro-Reactors field tested before deployment
  o DOE is providing capabilities to test Micro-Reactor technologies and concepts at the Idaho National Laboratory

• DOE is aggressively working to establish an inventory of fuel to support near-term demonstration efforts
  o Micro-Reactor designs are fueled with high-assay LEU (up to 20% enriched uranium)
  o Availability of this material on the Micro-Reactor development timeline is currently limited
Private-Public Partnerships

Accelerating Advanced Nuclear in the U.S.

- Testing and Validation
  Instrumentation and controls, modeling and simulation
- Navigating the Regulatory Process
  Supporting safety & security of new technologies
- Early-Stage Advanced Reactor Technologies
  3D printed reactor components
- Demonstrating New Technology
  First-of-a-Kind Nuclear Demonstration

- $100 Million
- 10 States
- 13 Projects
Lab and University Partnerships

Advancing Nuclear Technology

- $64 million
- 29 States
- 89 Projects
- 39 Universities
Questions?