



DOE Support for CFPP

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Office of Nuclear Energy

DOE Office of Nuclear Energy – Mission Pillars

- Advance nuclear power to meet the nation's energy, environmental, and national security needs.
- Resolve technical, cost, safety, security and regulatory issues through research, development and demonstration.

Existing Fleet



Advanced
Reactor
Deployment



Fuel Cycle
Infrastructure



Global
Competitiveness



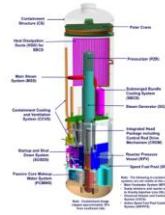
The U.S. Advanced Reactor Landscape is Very Promising

- Over 60 companies and research institutions are working to develop innovative nuclear reactor designs to meet future energy needs
 - Near-term deployment: Light water-cooled Small Modular Reactors (SMR) (e.g. NuScale)
 - Mid- to long-term deployment: Sodium-, gas-, lead-, molten salt-cooled designs
 - Microreactors

Advanced Light Water Reactors



GE-Hitachi
BWRX-300



SMR LLC
SMR-160



NuScale Power
SMR

Microreactors



Oklo, Inc
Aurora



Westinghouse Nuclear
eVinci

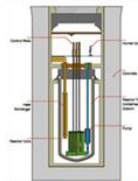
Fast Reactors



GE Hitachi
PRISM



TerraPower
TWR



Advanced Reactor
Concepts LLC
ARC-100

Gas Reactors



X-Energy
Xe-100

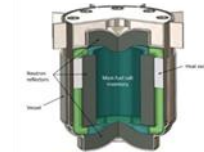


Framatome
SC-HTGR

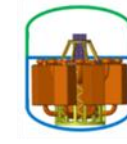


Terrestrial Energy
USA IMSR

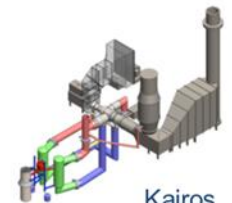
Molten Salt Reactors



TerraPower
MCFR



Elysium USA
MCSFR



Kairos
Power
UCB PB-
FHR

DOE Funding Programs for Reactor Development and Demonstrations

- Advanced SMR Research and Development (R&D) Program (Initiated in 2019)
 - Domestic development of light water SMRs
- DOE Advanced Reactor Demonstration Program (ARDP) (New)
 - Demonstrate multiple advanced reactor designs at various stages of technological maturity
 - Construction of two demonstration reactors within five to seven years (following award)
 - Solicitation underway; selections to be announced in Fall 2020
- Any entity that receives FY 2020 funds of more than \$200,000 under the Advanced SMR R&D program is not eligible to receive FY 2020 funds from within the ARDP (FY 2020 Congressional appropriation language)
- NuScale development activities are currently supported through the Advanced SMR R&D program

Advanced SMR Research and Development Program

- The Office of Nuclear Energy is in its ninth year of direct support for U.S. SMR technologies
 - Support initiated in 2012 through the SMR Licensing Technical Support program
- DOE has long recognized the potential benefits of advanced SMR technologies:
 - Improved safety features
 - Lower capital investment compared to large nuclear plants
 - Modularity and siting flexibility
 - Can provide flexible power, heat, hydrogen, and desalination solutions
 - Economic development
 - U.S. industry, manufacturing, and job growth



NuScale SMR module

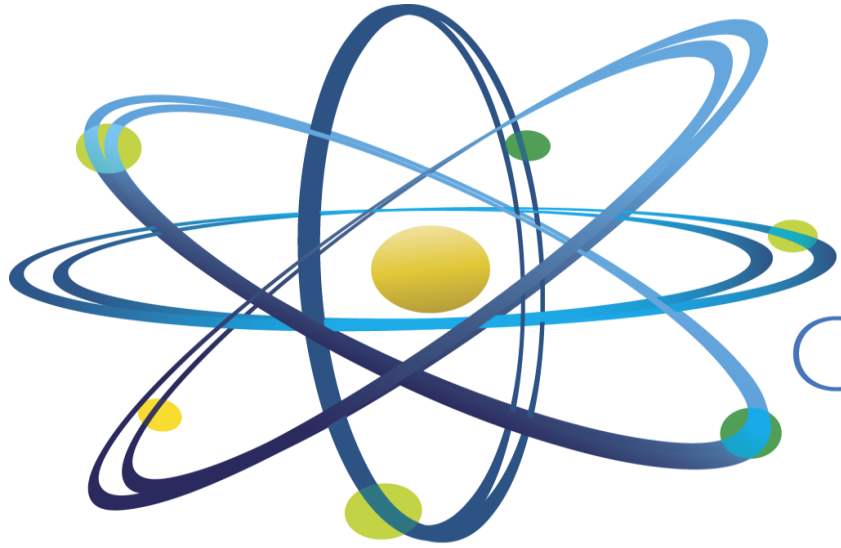
Advanced SMR Research and Development Program

- Program budget to-date:
 - Federal Government fiscal year (FY) 2019 - \$100 million (M)
 - FY 2020 - \$100 M
 - FY 2021 - TBD
 - House Appropriations subcommittee mark for FY 2021 - \$297.3 M
 - Program funding - \$105 M
 - Emergency funding - \$192.3 M
 - Senate Appropriations subcommittee mark for FY 2021 – TBD

Cost-Shared Cooperative Agreement

- DOE has historically supported reactor development projects through cooperative agreements
 - e.g., WEC AP1000 and GE ESBWR through the Nuclear Power 2010 program
- In the mid-to-late 2010's, CFPP project support was considered through other mechanisms:
 - Joint Use Modular Plant (JUMP)
 - Power Purchase Agreement for Idaho National Laboratory
- Due to several considerations, DOE and UAMPS have agreed to pursue support through a direct cost-shared cooperative agreement
 - Federal cost-share envisioned to be ~\$1.4 B through Commercial Operation Date (anticipated in 2029)
 - Cooperative agreement to be used as funding vehicle, subject to the availability of Congressional appropriations
 - Procurement package for this approach currently under review within DOE

Questions?



Clean. **Reliable. Nuclear.**