LINE Commission
Office of Nuclear Energy Overview

U.S. Department of Energy | Office of Nuclear Energy

August 20, 2021

U.S. DEPARTMENT OF
ENERGY

Office of
NUCLEAR ENERGY

Office of Nuclear Energy: By the Numbers

285

Total employees (HQ and DOE-ID)

6 **Program offices**

NE-3	NE-4	NE-5	NE-6	NE-ID	NE-8
DAS for Nuclear Infrastructure Programs *Tracey Bishop*	**DAS for Nuclear Fuel Cycle and Supply Chain** *Andrew Griffith*	**DAS for Reactor Fleet and Advanced Reactor Deployment** *Alice Caponiti*	**DAS for International Nuclear Energy Policy & Cooperation** *Aleshia Duncan*	**Manager, Idaho Operations Office** *Robert Boston*	**DAS for Spent Fuel & Waste Disposition** *Kim Petry, Acting*

4 **Locations**

Washington, DC	Germantown, MD	Idaho Falls, ID	Las Vegas, NV
Forrestal	*Germantown*	*Idaho Operations Office*	***Nevada Field Office***

What We Do

Mission

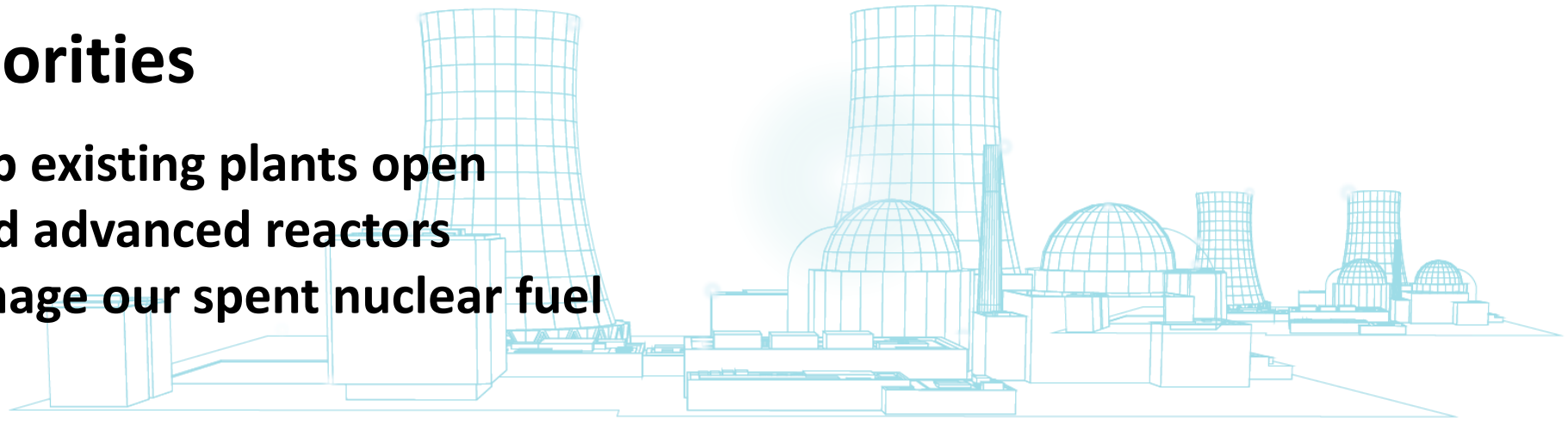
To advance nuclear science and technology to meet U.S. **energy, environmental, and economic needs**.

Our Work

Solve challenges related to technology, cost, safety, security, and proliferation resistance through early-stage research, development, and demonstration.

Top Priorities

1. **Keep existing plants open**
2. **Build advanced reactors**
3. **Manage our spent nuclear fuel**



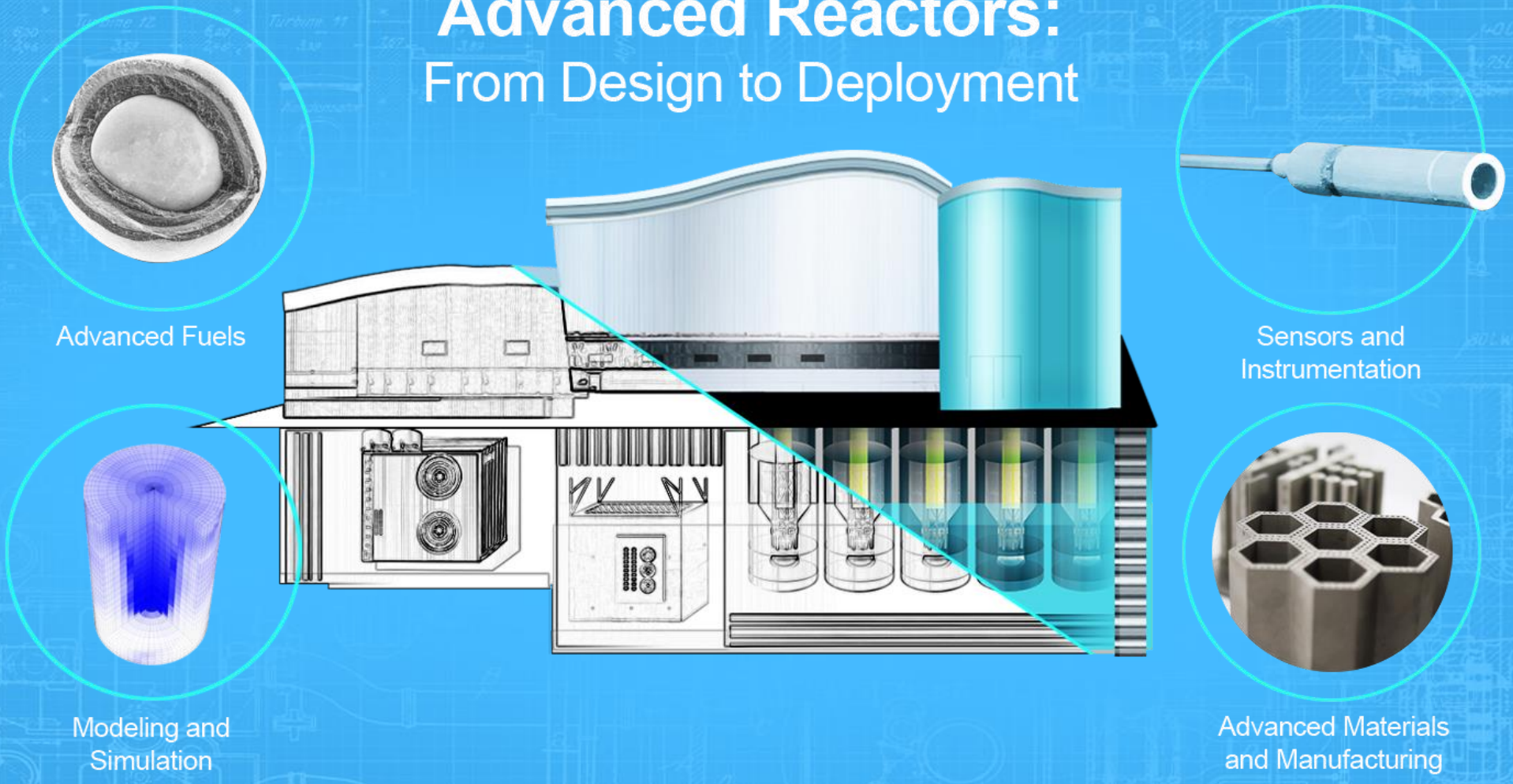
Top Priorities: Keep Existing Plants Open

Enhance Performance and Reduce Operating Costs

- Develop advanced digital technologies
- Apply risk-informed systems analysis
- Provide technical analysis for continued long-term operation
- Commercialize Accident Tolerant Fuels
- Demonstrate hydrogen production

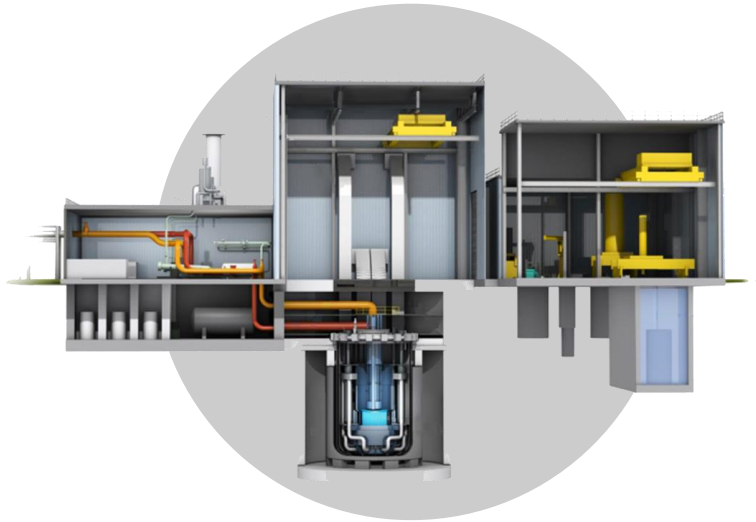
Exelon: Dresden Generating Station

Top Priorities: Build Advanced Reactors



Top Priorities: Build Advanced Reactors

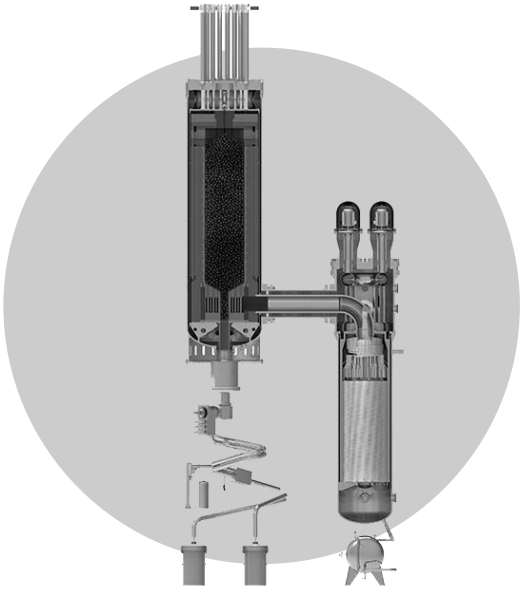
1 DEMONSTRATION — **GOAL:** ***Test, license and build operational reactors within 5 - 7 years.***



Natrium Reactor

Sodium-cooled fast reactor + molten salt energy storage system

TERRAPOWER



Xe-100

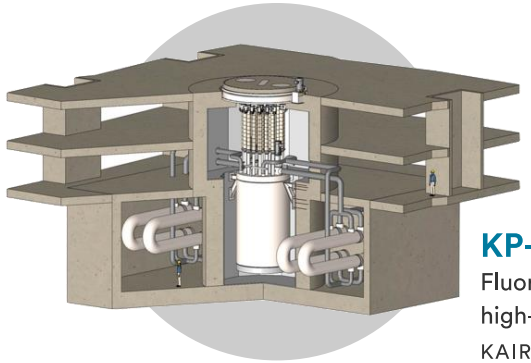
High-temperature gas reactor

X-ENERGY

Top Priorities: Build Advanced Reactors

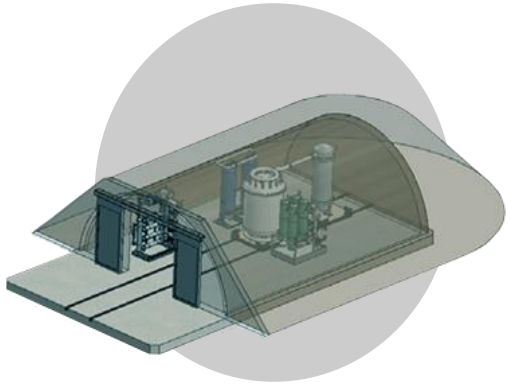
2 RISK REDUCTION

GOAL: ***Solve technical, operational and regulatory challenges to support demonstration within 10 - 14 years.***

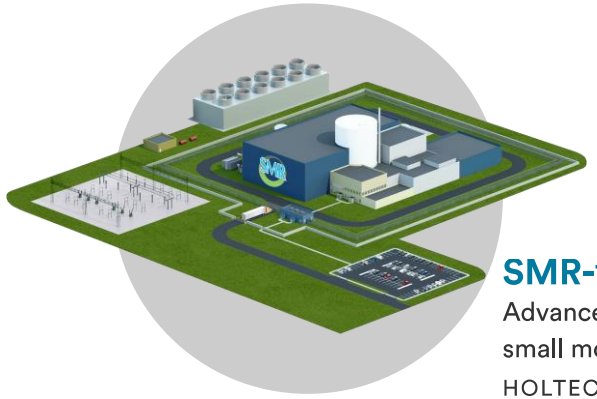


KP-FHR
Fluoride salt-cooled high-temperature reactor
KAIROS POWER

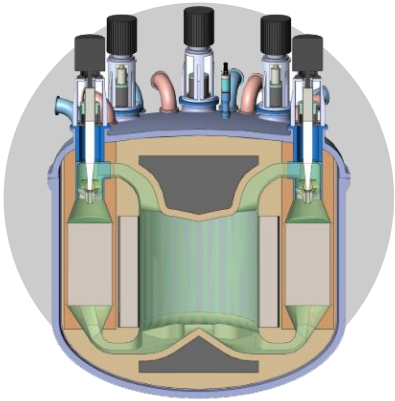
eVinci
Heat pipe-cooled microreactor
WESTINGHOUSE NUCLEAR



BWXT Advanced Nuclear Reactor (BANR)
High-temperature gas-cooled microreactor
BWX TECHNOLOGIES



SMR-160
Advanced light-water small modular reactor
HOLTEC INTERNATIONAL

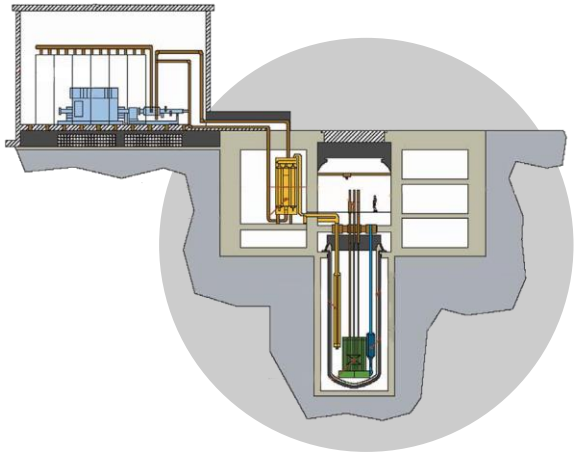


Molten Chloride Fast Reactor
SOUTHERN COMPANY

Top Priorities: Build Advanced Reactors

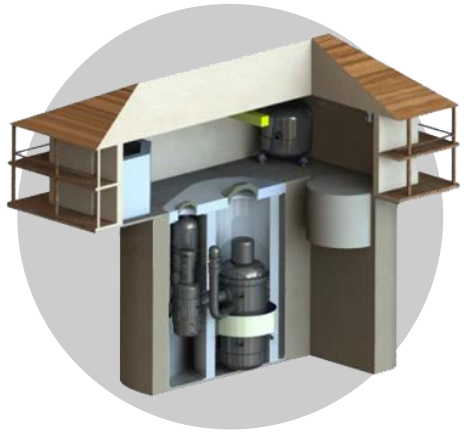
3 CONCEPT DEVELOPMENT

GOAL: ***Solidify concept to mature technology for potential demonstration by mid-2030s.***



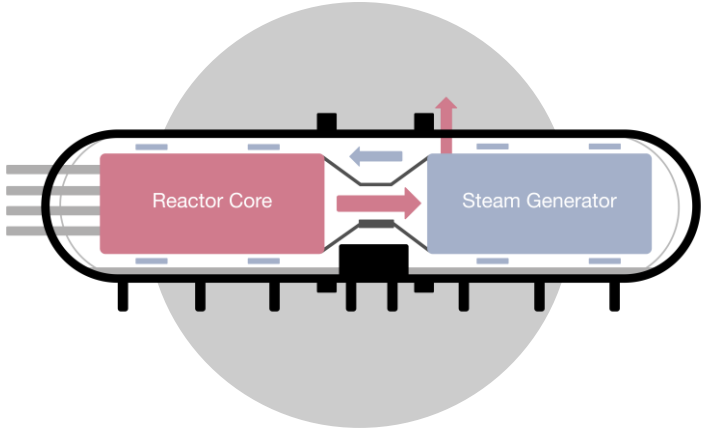
Advanced Sodium-Cooled Reactor Facility

ADVANCED REACTOR CONCEPTS



Fast Modular Reactor

GENERAL ATOMICS



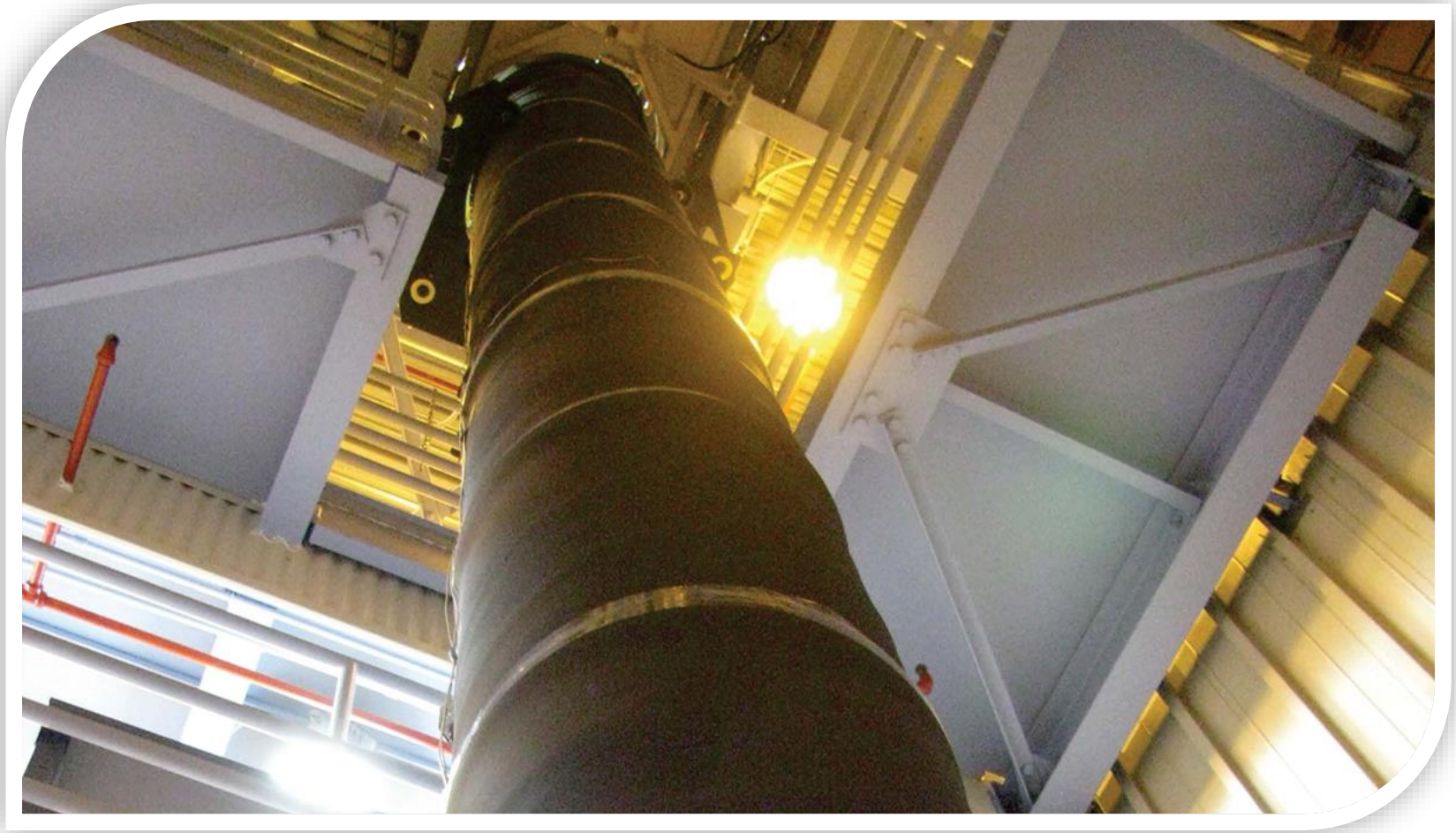
Horizontal Compact High-Temperature Gas Reactor

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Top Priorities: Build Advanced Reactors

High-Assay Low-Enriched Uranium (HALEU)

- Pursue multiple pathways to produce HALEU for testing and demonstration
- Piketon, OH - first licensed HALEU production facility in the United States
- HALEU production to begin early next year



Centrus Energy advanced centrifuge

Top Priorities: Manage our Spent Nuclear Fuel

Spent Nuclear Fuel Management

- Revamp DOE's overall integrated waste management strategy
- Update and restart a consent-based siting approach to building a federal interim storage facility
- Develop high-tech railcars to transport spent nuclear fuel
- Perform R&D on high-burnup fuel

Idaho Nuclear Technology & Engineering Center

Diversity, Equity and Inclusion

Executive Order 13985

Charges Federal government to pursue a **comprehensive approach to advancing equity for all**, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality.

President Joe Biden signs E.O. 13985 on January 20, 2021

Diversity, Equity and Inclusion

DOE Response to Executive Order 13985

Assess:

- Potential barriers in enrollment in, and access to, benefits and services
- Potential barriers in taking advantage of agency procurement and contracting opportunities
- Whether new policies, regulations, or guidance are necessary to advance equity
- Operational status and level of resources at DOE that serve underrepresented or disadvantaged communities

Secretary Jennifer Granholm and Chief of Staff Tarak Shah raise Pride flag at DOE

Diversity, Equity and Inclusion

12

U.S. Tribes

THE PRIORITIES

NETWG strengthens government-to-government relationships with the Office of Nuclear Energy and Indian Tribes to:

INCREASE
Tribal Membership & Involvement

Expand
STEM
Opportunities

INTEGRATE
Cultural Resource Management

FY2021 Budget

The Office of Nuclear Energy was appropriated $1.6B in FY2021, which comprises of four funding lines. Major highlights of each funding line include:

1. **Nuclear Energy Research and Development** funded at $1.5B.
    - Advanced Reactor Demonstration Program including Demonstration Reactors I and II funded at $250M.
    - Advanced Small Modular Reactors (NuScale/CFPP) funded at $115M.
    - Versatile Test Reactor reduced to $45M.
    - Accident Tolerant Fuel funded at $105.8M.
    - Idaho National Lab Infrastructure, including safeguards and security, funded at $455.8M.
    - Final year of High Assay, Low Enriched Uranium Enrichment Demonstration (in Piketon, Ohio) funded at $40M.
    - NE R&D Program Direction funded at request level, $75.1M.
2. **Interim Storage and Nuclear Waste Fund Oversight –** initial funding for $27.5M
3. **Uranium Reserve –** initial funding for $75M (appropriated to NNSA; to be executed by NE)
4. **Naval Reactors ATR Transfer -** continues at $91M.

FY2022 Budget Request

The Office of Nuclear Energy requested $1.8B for FY2022.

	FY 2020	FY 2021	FY 2022 Congressional Request	Change FY22 vs FY21
Nuclear Waste Fund Oversight		27,500	7,500	(20,000)
Uranium Reserve		[75,000]	-	[-75,000]
Nuclear Energy R&D	1,493,408	1,507,600	1,850,500	342,900
Office of Nuclear Energy	1,493,408	1,535,100	1,858,000	322,900
Integrated University Program	5,000	5,000	6,000	1,000
STEP R&D	5,000	5,000	-	(5,000)
Reactor Concepts RD&D	267,000	208,000	240,000	32,000
Fuel Cycle R&D	305,100	309,300	368,500	59,200
Nuclear Energy Enabling Technologies	113,450	122,869	124,000	1,131
Advanced Reactors Demonstration Program	230,000	250,000	370,350	120,350
Versatile Test Reactor Project	-	45,000	145,000	100,000
Infrastructure	334,450	337,500	356,850	19,350
Idaho Sitewide Safeguards and Security	153,408	149,800	149,800	-
International Nuclear Energy Cooperation			5,000	5,000
Program Direction	80,000	75,131	85,000	9,869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