

# Accelerating Advanced Nuclear Deployment: State, Federal, and Private Actions

Judi Greenwald, Executive Director  
([jgreenwald@nuclearinnovationalliance.org](mailto:jgreenwald@nuclearinnovationalliance.org))

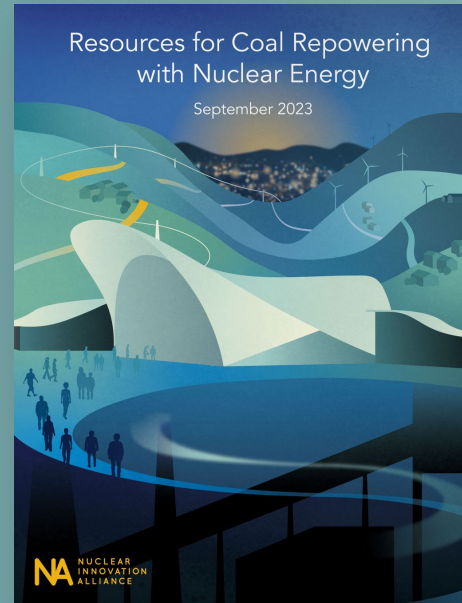
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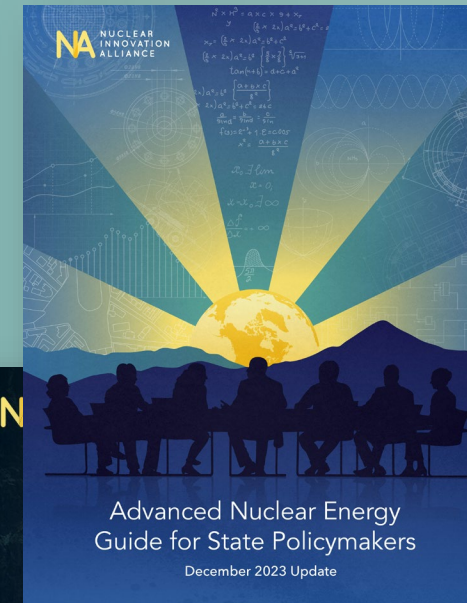
# Who is Nuclear Innovation Alliance (NIA)?

- NIA is a “think-and-do” tank working to ensure advanced nuclear energy can be a key part of the climate and energy solution.
- NIA identifies barriers, performs analysis, engages with stakeholders and policy makers, and nurtures entrepreneurship through its Nuclear Innovation Bootcamp.



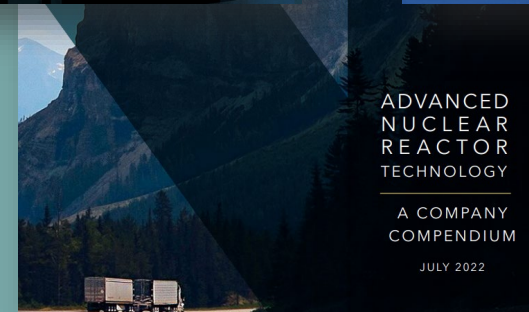
Resources for Coal Repowering  
with Nuclear Energy

September 2023



Advanced Nuclear Energy  
Guide for State Policymakers

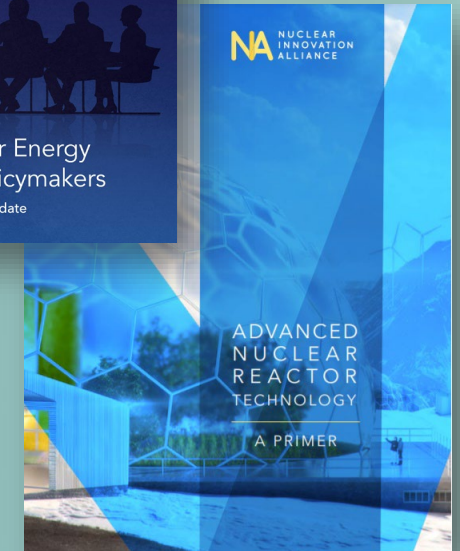
December 2023 Update



ADVANCED  
NUCLEAR  
REACTOR  
TECHNOLOGY

A COMPANY  
COMPENDIUM

JULY 2022



ADVANCED  
NUCLEAR  
REACTOR  
TECHNOLOGY

A PRIMER

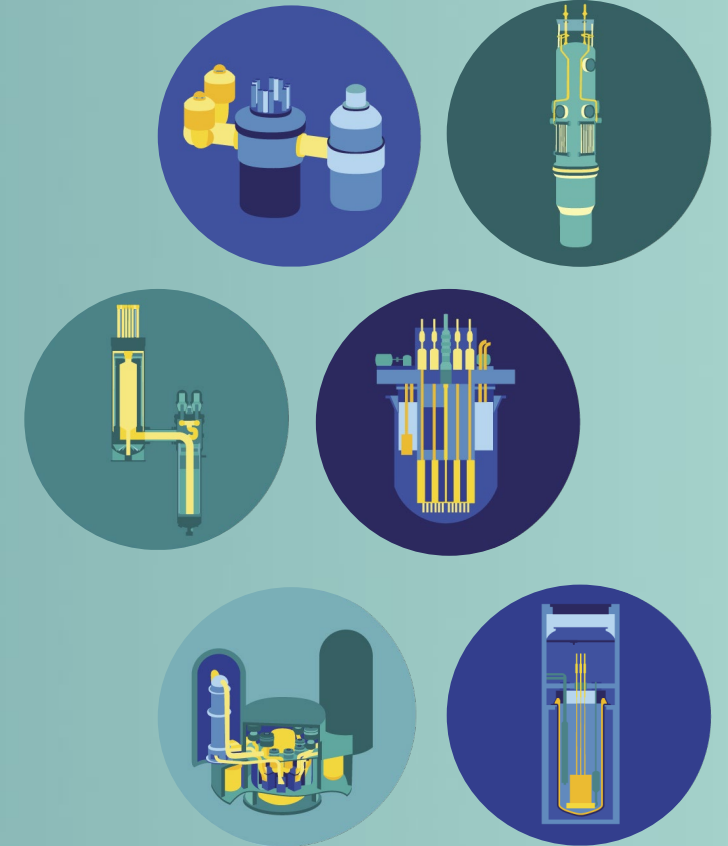
# Four Fast Takeaways on Advanced Nuclear Energy

Nuclear energy can play a major role in creating a clean energy economy

Advanced reactors have a wide array of different commercial use cases

States are taking a leading role in advanced nuclear energy deployment

Inflation Reduction Act and other federal support can catalyze deployment



# Advanced nuclear energy adds flexibility and versatility in comparison to conventional nuclear through innovative design

## Conventional Nuclear Energy

Predominantly Large:  
More than 1000 MW<sub>e</sub>

Predominantly  
Light-Water Reactors

Primarily Baseload  
Generation

Designed with Active  
Safety Systems

Reactor Size

Reactor Technology

Generation Type

Safety Approach

## Advanced Nuclear Energy

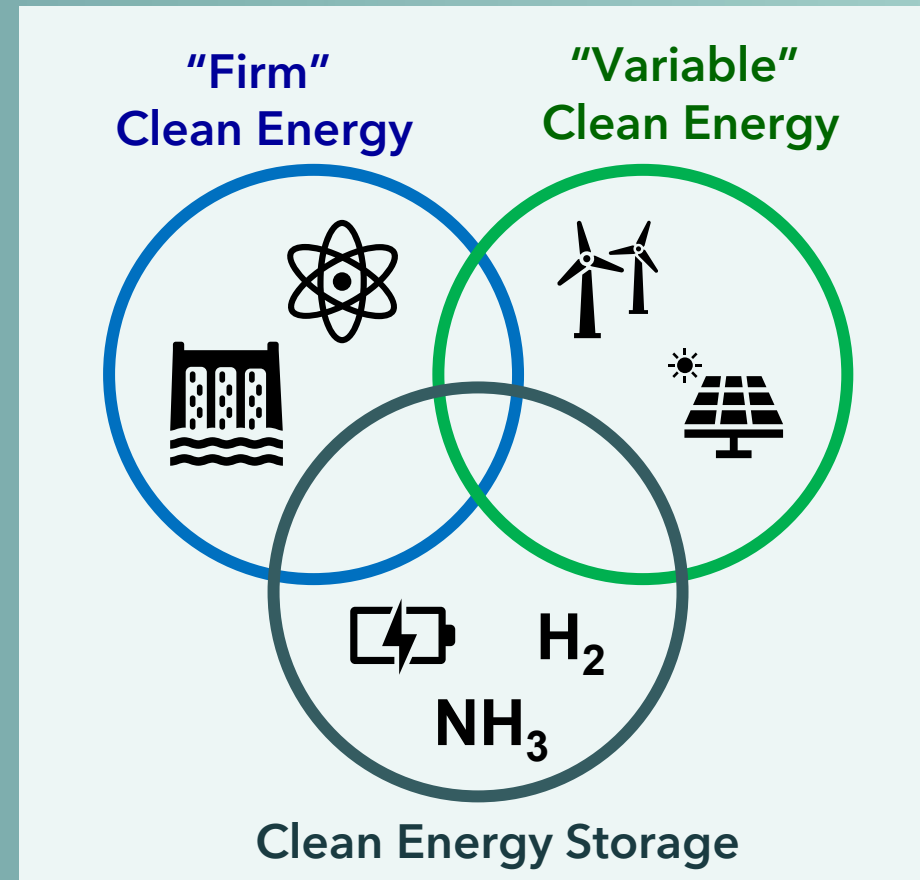
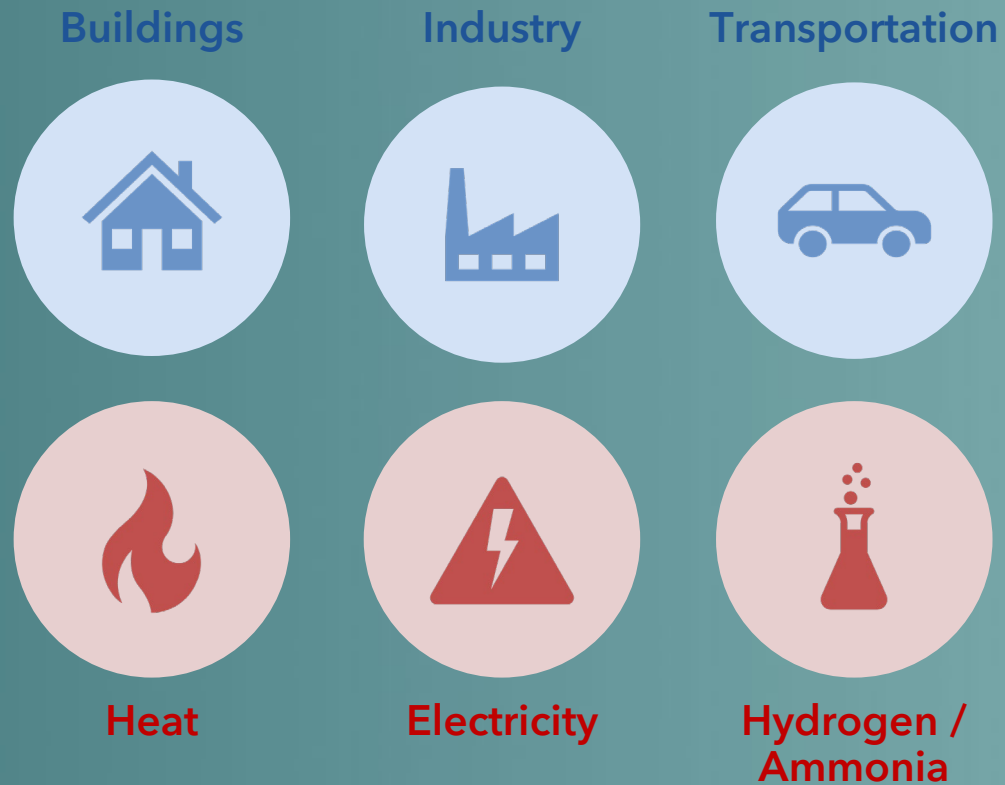
Versatile:  
1.5 MW<sub>e</sub> to 300+ MW<sub>e</sub>

Wide Variety of  
Reactor Technologies

Flexible and  
Dispatchable Generation

Designed with Inherent  
Safety Systems

# Nuclear energy is an important complementary clean energy source to help fully decarbonize U.S. energy production



# Conditions for Success for Advanced Nuclear Energy

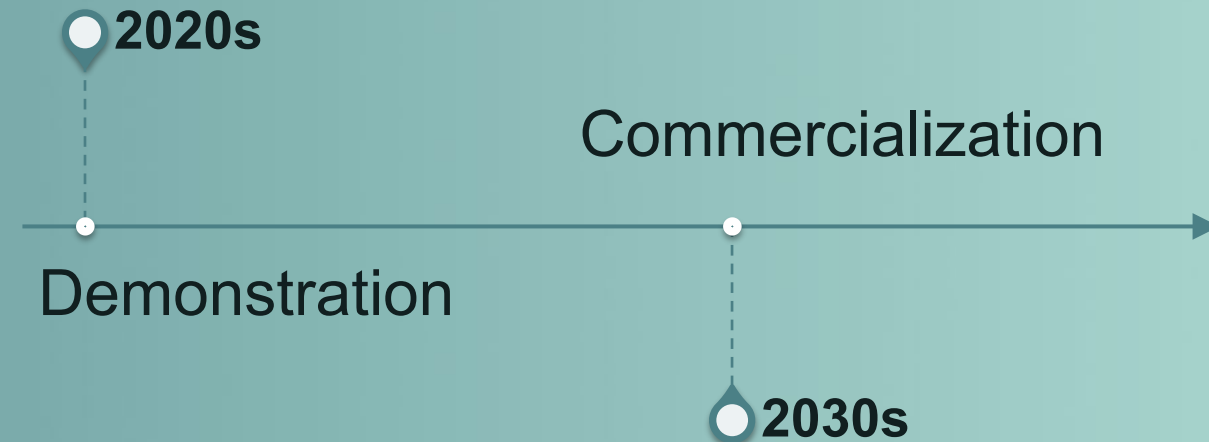
- A whole of society effort from government, civil society, customers, communities, and investors is needed
- Licensing modernization and public investment facilitate rapid private innovation
- Greater financial sector as well as public investment is needed for global decarbonization at scale

 **Competitive cost**

 **Getting to market**

 **Public acceptance**

 **Scaling**



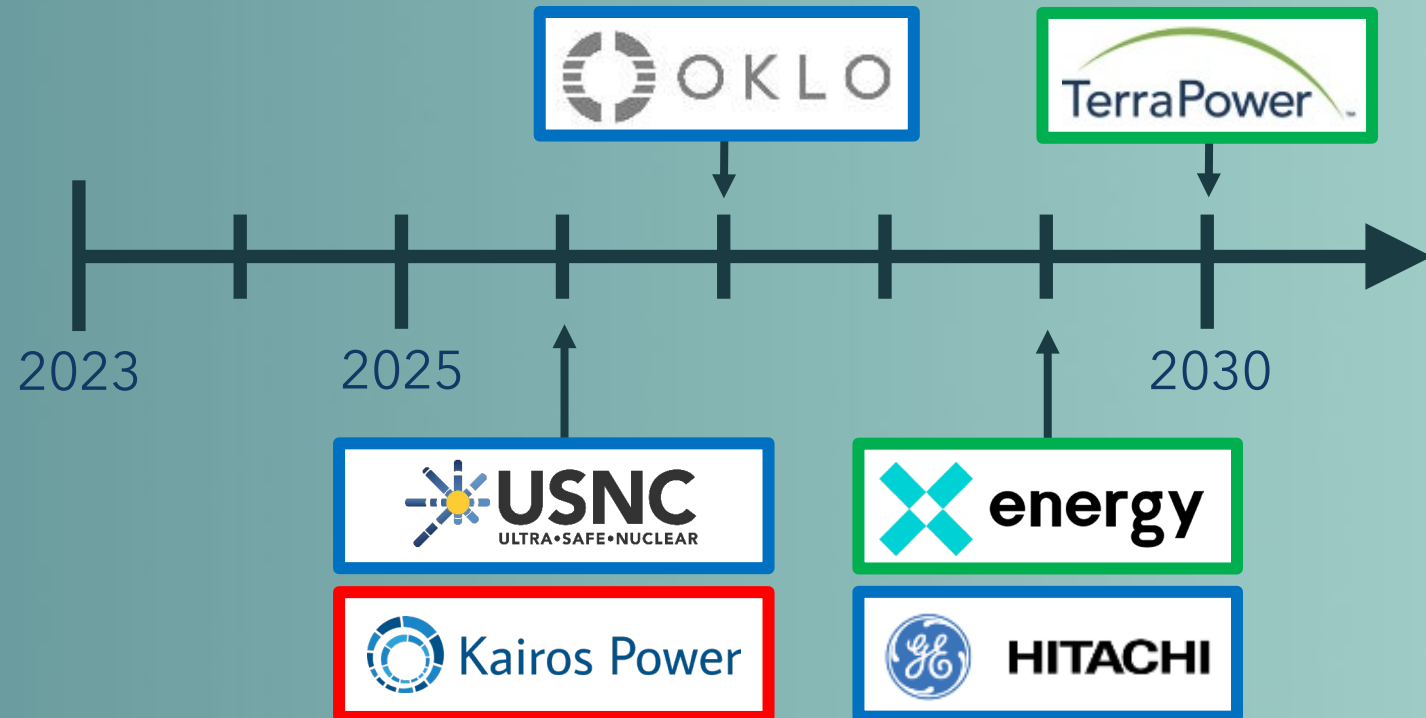
# Public-private partnerships are accelerating the demonstration and deployment of advanced reactors

## Federal Partnerships with Private Companies

Advanced reactor demonstration award

Advanced reactor development award

Enabling technology development award



# Recent Federal Legislation

## Infrastructure Investment and Jobs Act (IIJA) - 2021

IIJA authorized and appropriated funding for the DOE's ARDP.

- Authorized \$3.2 billion for ARDP projects
- Appropriated \$2.4 billion for ARDP projects
- Established OCED

## Creating Helpful Incentives to Produce Semiconductors and Science Act (CHIPS+) - 2022

"CHIPS+ Act" invested in the next generation of nuclear technologies and professionals

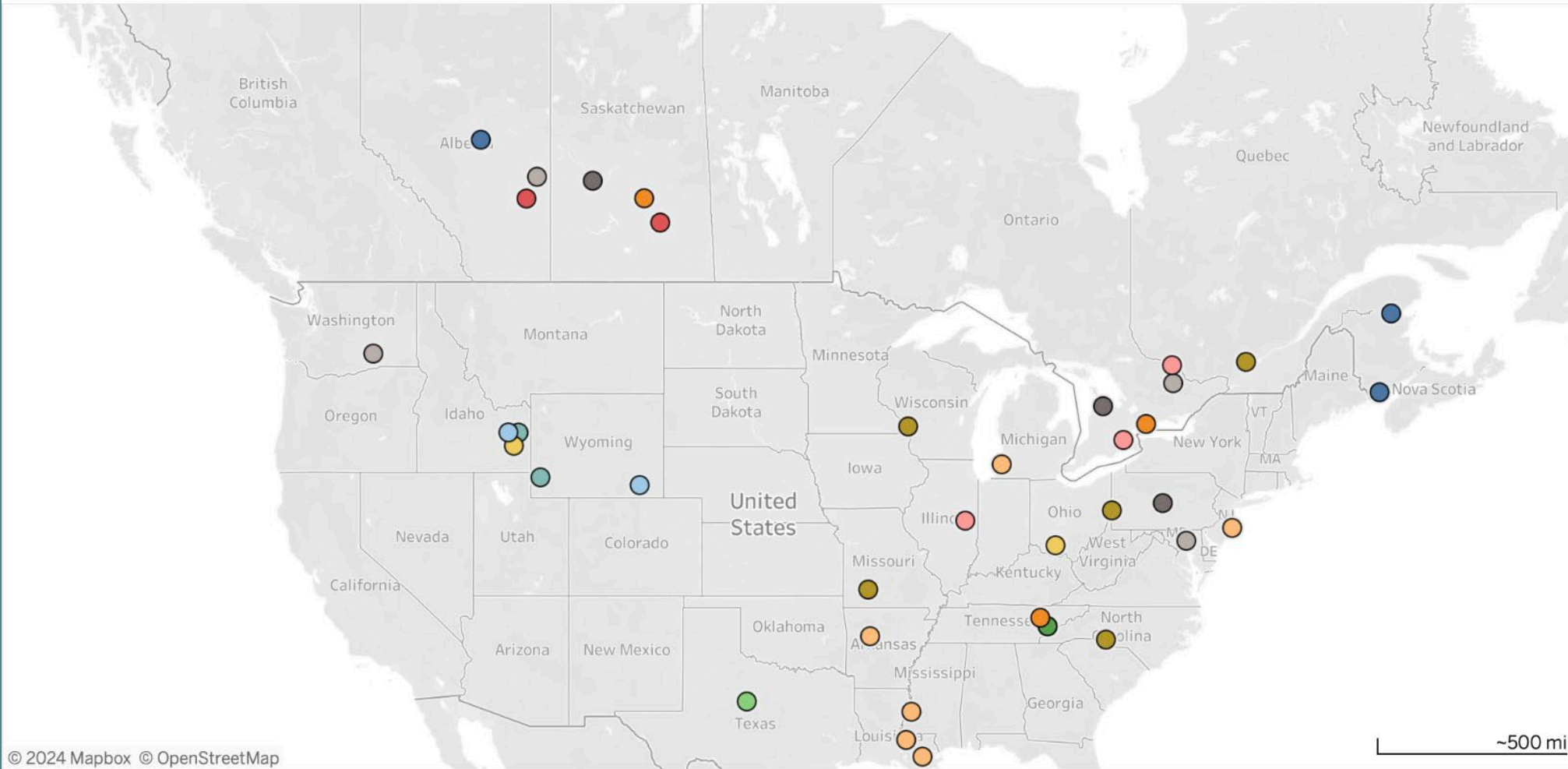
- Authorizes \$390 million for research reactors.
- Authorized \$800 million to support RD&D activities for advanced nuclear reactors, including projects near retired coal plants.

## Inflation Reduction Act IRA - 2022

- Included technology-neutral tax credits (clean electricity PTC and ITC, and a Hydrogen PTC)
- Invested \$700 million to jumpstart a domestic HALEU program.
- Additional lending authority for DOE Loan Program Office



# NIA Advanced Nuclear Technology Map - North America



- Developer**
- ARC Clean Technol...
  - BWXT
  - GE-Hitachi
  - Holtec
  - Kairos Power
  - Nuclear Energy eX...
  - NuScale Power
  - Oklo
  - TRN
- Status**
- (All)
  - Demonstration Re...
  - Development Agre...
  - DoD Demonstration
  - Due Diligence
  - MOU
  - PPA
  - Selected
  - Site Agreement
- Customer or Partner**
- (All)
  - Abilene Christian U...
  - Associated Electric...
  - Bruce Power
  - Company Owned D...
  - Cross River Infrast...
  - Department of Def...
  - Department of the ...
  - Diarvland Power C...

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Color depicts details about Technology Type (High Temperature Gas Reactor, Sodium Fast Reactor, etc.). Hover using mouse to learn more about each project.



# State of Play: State-level policy

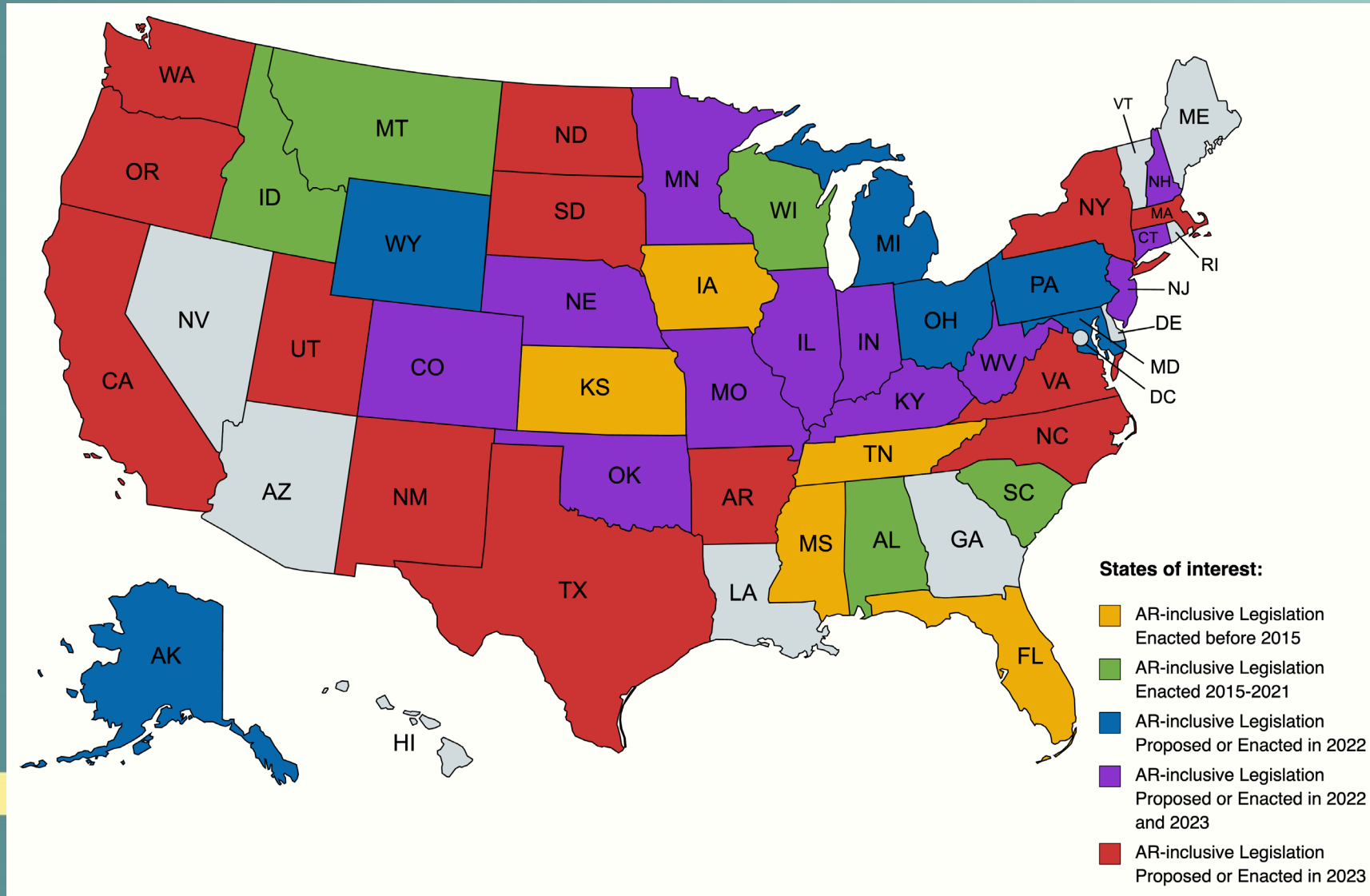
There are many opportunities to encourage & enable advanced nuclear energy construction

- e.g., through technology-inclusive Clean Energy Standards, feasibility studies, creating legislative committees or working groups, and creating labor and education programs.
- these initiatives originate from different offices, governors and state legislatures.

Recent actions include:

- Kentucky - signed SJR 79 to create a permanent nuclear energy development organization
- Virginia - Governor Youngkin signed into law bill establishing nuclear innovation hub
- Tennessee - Governor Lee established Nuclear Fund and Nuclear Development WG
- Texas - Governor Abbott has directed the PUC to explore SMR deployment

# State policymaker interest in supporting advanced nuclear energy as a clean energy technology is accelerating



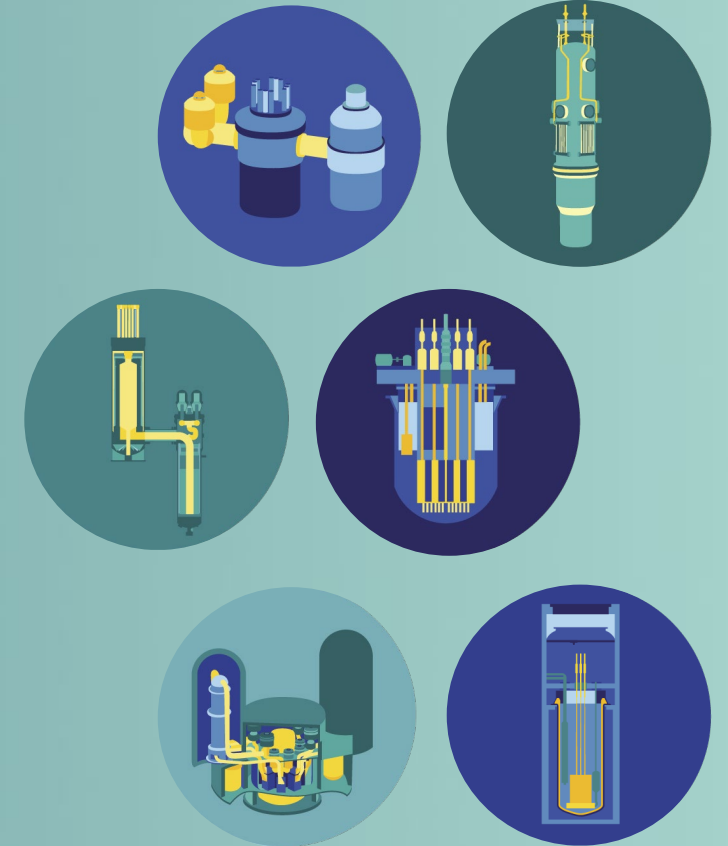
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# Back up slides

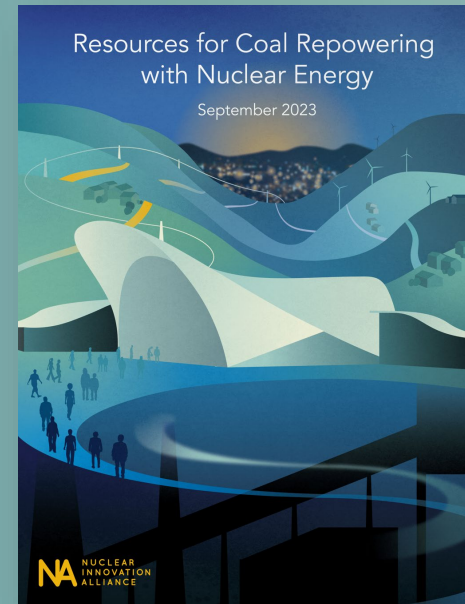
# Stakeholders can get up to speed on advanced nuclear energy and engage with policymakers on clean energy deployment



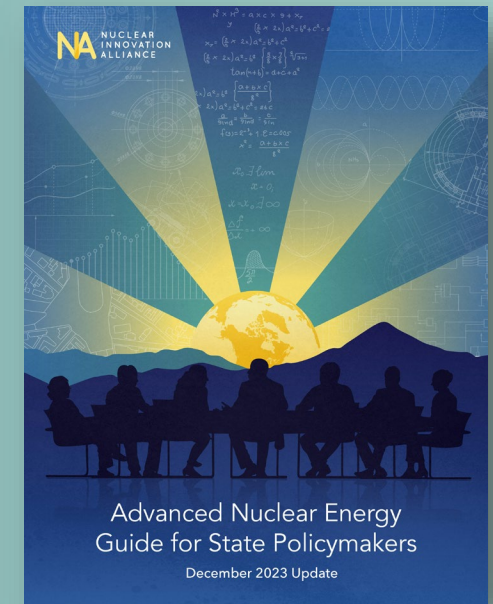
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# Advanced nuclear energy can contribute to a future clean energy economic in diverse set of applications

## Spectrum of Sizes and Options

Micro



Small



Large



## Variety of Outputs



Electricity



Hydrogen



Process Heat

## Multitude of Uses



Homes



Vehicles



Businesses



Aviation



Rail



Shipping



Concrete



Steel



Factories



Water



Space