

# *Fission Vision: A Look at What's Next for Nuclear*

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MOST Programs National Tripartite  
Alliance Conference

August 27, 2024



# *Our Time Together...*



Current Fleet



Advanced Reactor Landscape



Advocacy and Opportunities



## THE NUCLEAR ENERGY INSTITUTE

is the **policy organization** of the nuclear technologies industry, based in Washington, D.C.

On behalf of its members, NEI is the **unified voice** of the nuclear energy industry on various **policy, technical, and regulatory issues.**

- **300+ MEMBERS IN 17+ COUNTRIES**



# 300+ Members



Nuclear Utilities



EPCs & Suppliers



Fuel Cycle



Decommissioning



National  
Labs



Investment &  
Financial Firms



Advanced  
Reactors



Universities



Law Firms



Consultants

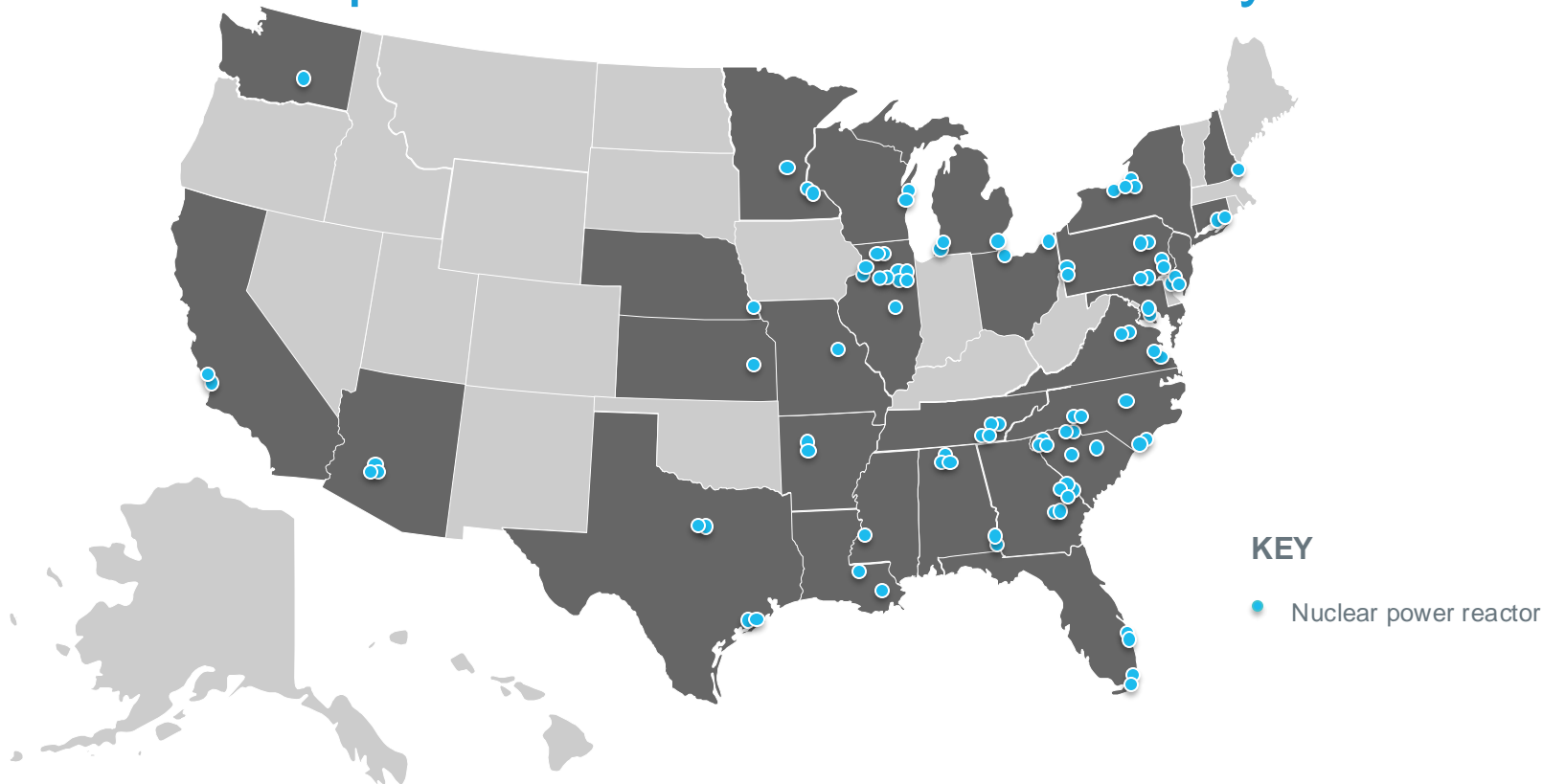


Labor Unions



NGOs &  
Think Tanks

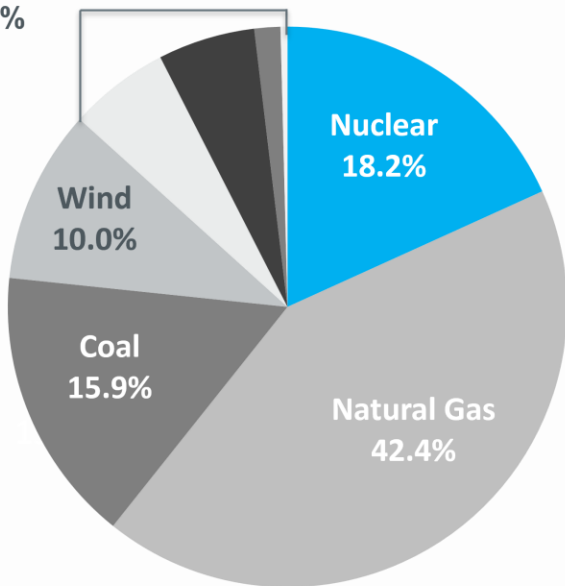
# Current Fleet: **94 reactors** at 53 plant sites across the country



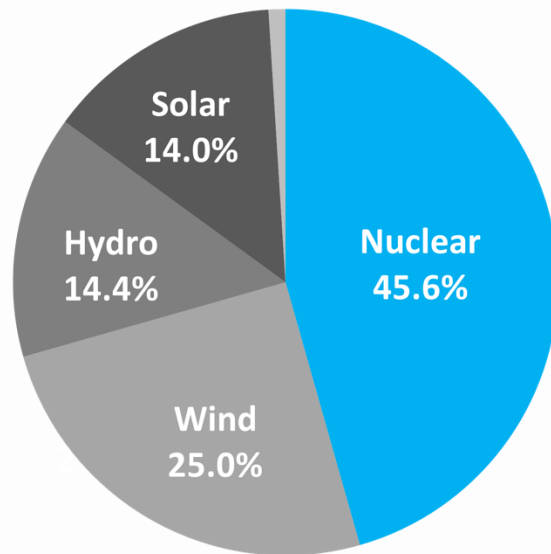
# U.S. Electricity in 2023

## Total Electricity (Left) vs. Carbon-Free Generation (Right)

Hydro – 5.8%  
Solar – 5.6%  
Biomass & Petroleum – 1.5%  
Geothermal – 0.4%

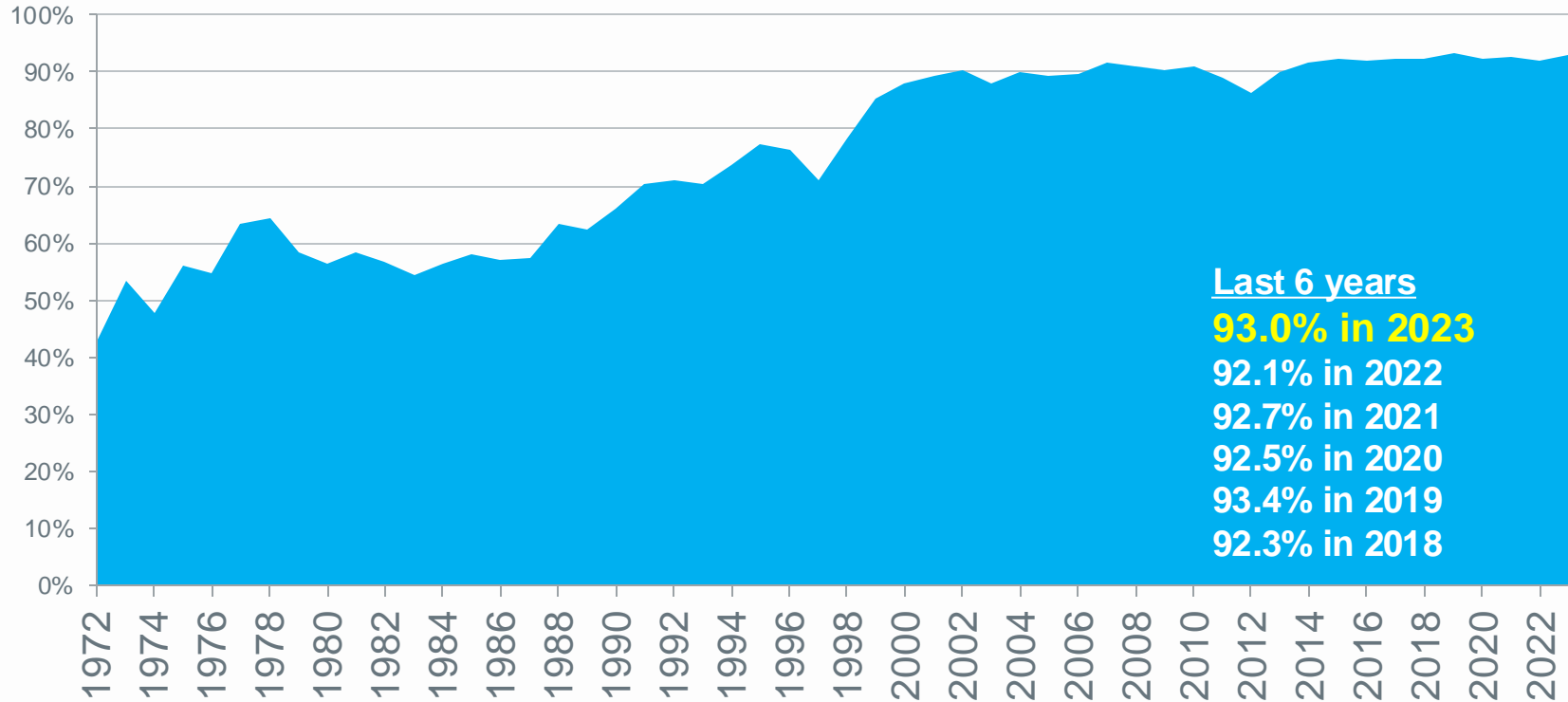


Geothermal  
1.0%



Notes: Includes small-scale solar.  
Source: U.S. Energy Information Administration  
Updated: February 2024

# Nuclear power's capacity factor averaged **above 90%** for more than 20 years





# New Vogtle Units 3 & 4



**Waynesboro, GA**

Courtesy: Georgia Power

Two Westinghouse  
AP-1000 Reactors  
1100 MW(e) each

★ ★ ★ *Unit 3 in commercial  
operation, July 2023*

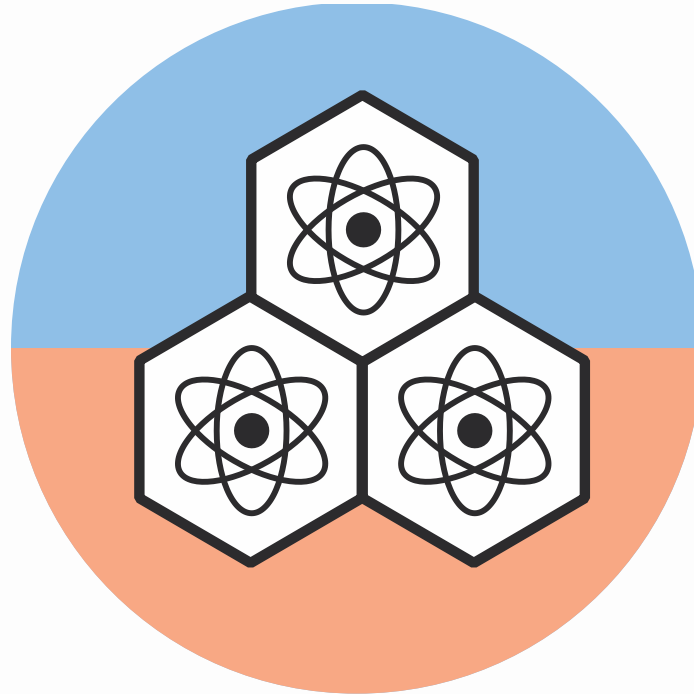
★ ★ ★ *Unit 4 in commercial  
operation, April 2024*

First new power reactors  
built in U.S. in decades

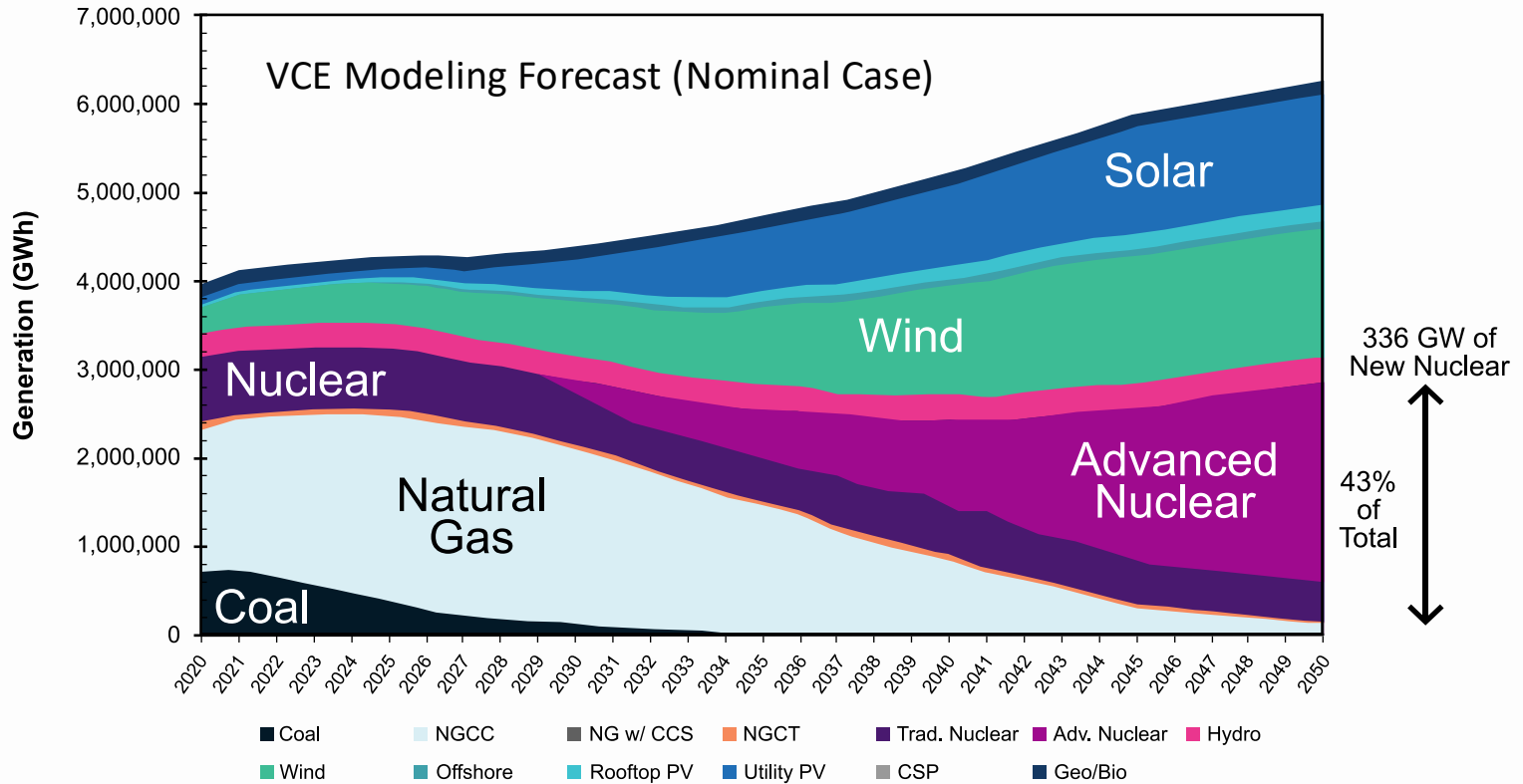
Four AP-1000 units already  
operating in China



# Advanced Reactors



# U.S. Market Opportunity for Advanced Nuclear



Source: Vibrant Clean Energy, *Role of Electricity Produced by Advanced Nuclear Technologies in Decarbonizing the U.S. Energy System* (June 2022), available at <https://www.vibrantcleanenergy.com/media/reports/>

# Advanced Nuclear Developer Members



# Advanced Nuclear Versatility

## Spectrum of Sizes and Options



Micro

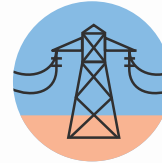


Small

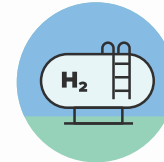


Large

## Variety of Outputs



Electricity



Hydrogen



Process Heat

## Multitude of New Customers



Data Centers



Oil & Gas



Steel



Petrochemical



Concrete



District Energy



Military Bases



Maritime



Coal



Pulp and Paper



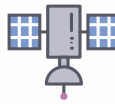
Vehicles



Block Chain Mining



Mining



Space



Aviation



Rail



Agriculture



Fashion

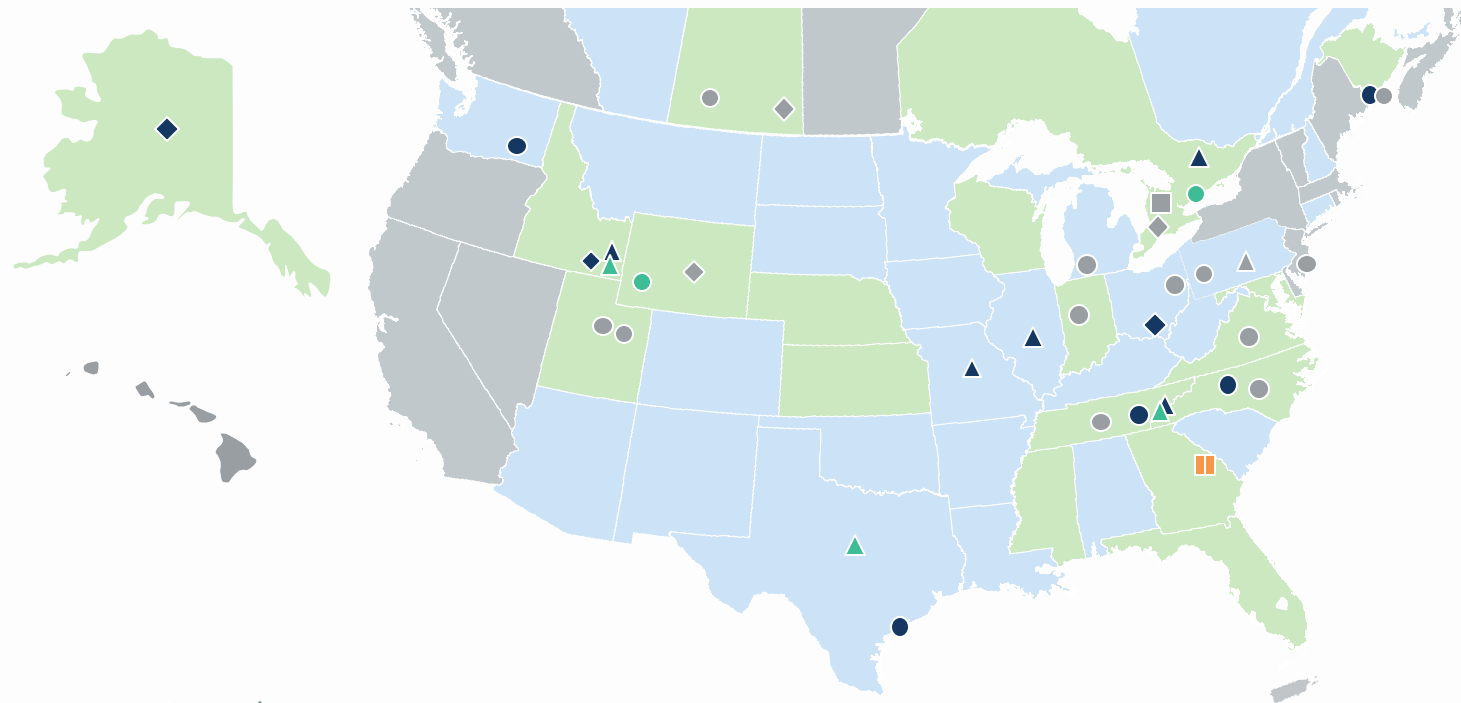
# Advanced Nuclear Deployment Plans

State support and projects that may be in operation by early 2030s



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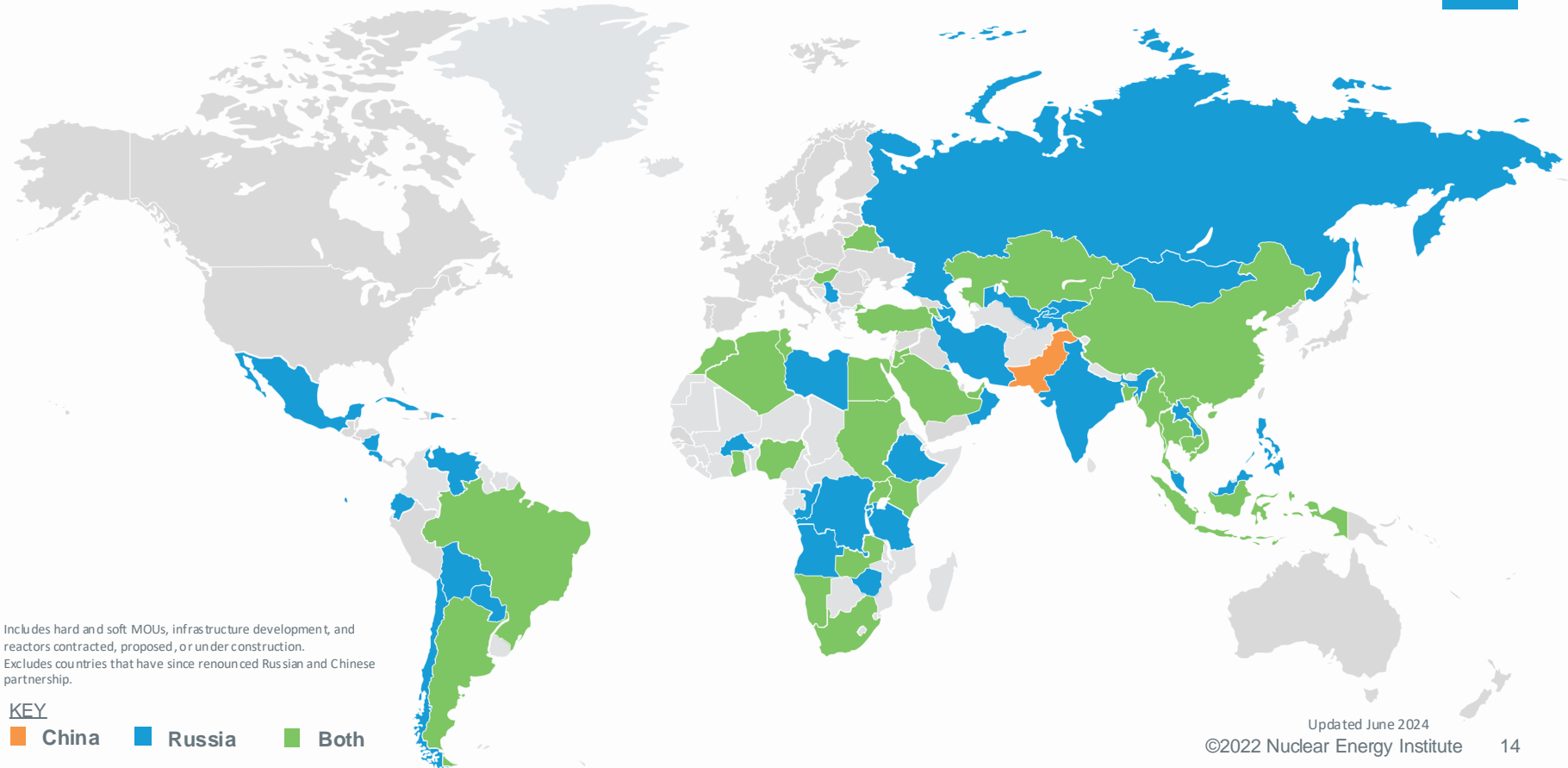
Updated 07/30/2024



## Legend






- |  |  |                         |                              |
|--|--|-------------------------|------------------------------|
| State Actions – Substantive Incentives | State Actions – Supportive and Exploring |                         |                              |
| Considered project                     | Planned project                          | Under construction      | Operating                    |
| Large (1,000 MWe)                      | Small (<300 MWe)                         | Micro-reactor (<50 MWe) | University / Research / Test |

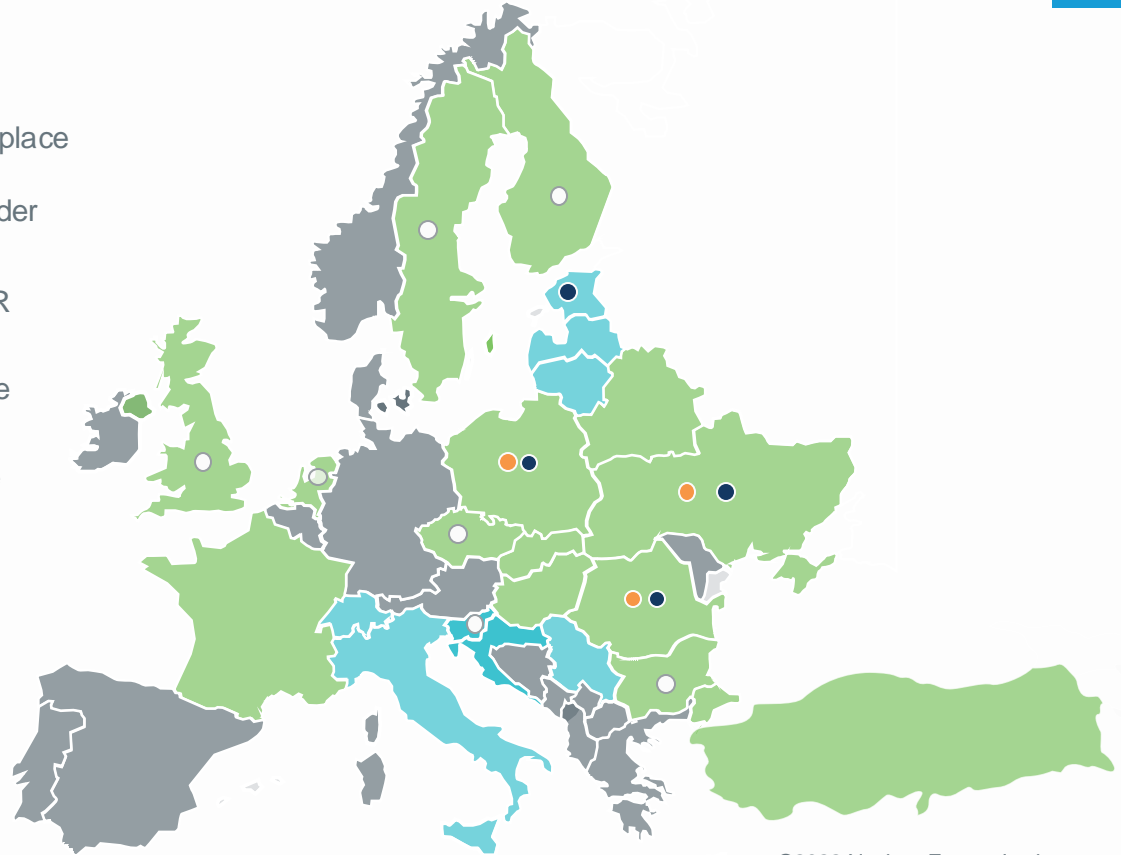
# Russian and Chinese Influence



# U.S. Advanced Nuclear Deployment – Europe

## KEY

-  National policies to support new nuclear in place
-  National policies to support new nuclear under consideration
-  U.S. supplier selected for one or more SMR projects
-  U.S. supplier selected for one or more large reactor projects
-  Near-term commercial opportunity for large and/or SMR projects





# NEI CBP Document Overview



April 2020

NEI 20-08

What to do - 59 Best Practices

IG #1

Dec 2021

1. Design Maturity and Details Required for Construction
2. Realistic Cost and Schedule Baselines

July 2022 IG #2

1. Organization Challenges are Tougher than Technical Issues
2. Collaborative Instead of Confrontational Contracting Strategies
3. Aggressive Risk Management instead of Risk Shedding

IG #3

July 2023

1. Extreme Ownership and Leadership from the Top
2. Nuclear Construction Quality and Safety Culture Mentality
3. Experience and Management of Stakeholders

How to do it

# NEI CBP Document Overview

April 2020

NEI 20-08

What to do - 59 Best Practices

Mar 2024

IG #4

1. First of a Kind (FOAK) Project Parameters and Challenges
2. Labor Efficiency, Extended Workweeks, Shiftwork, and Fatigue
3. Modularization Potential Benefits and Drawbacks



July 2024

IG #5

1. Project Management Involves Art and Science
2. Integrated Project Schedule, Owner Control, and Simplified Reporting Systems
3. Rigorous Configuration Management and Design Change Control

How to do it

# Advocacy



# Joint NEI/EPRI North American Advanced Reactor Roadmap



**01** First Mover Success

**02** Fast Followers

**03** Regulatory Efficiency

**04** Siting Availability

**05** Public Engagement

**06** Supply Chain Ramp-up

**07** Workforce Development

# Building The Pipeline



NAVIGATING™  
NUCLEAR

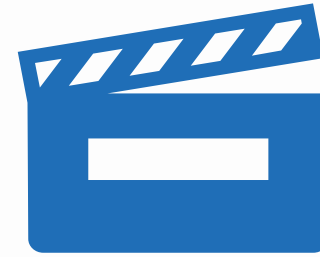
Energizing Our World



Partners Include:



American Nuclear Society  
AMERICAN NUCLEAR SOCIETY



# New Ad Campaign: *Nuclear for the Next Generation*

[https://www.youtube.com/watch?v=EmFtg\\_oVk0fA](https://www.youtube.com/watch?v=EmFtg_oVk0fA)



A woman with long brown hair, wearing a blue and purple backpack, is seen from behind, holding a large yellow sign with a pink border. The sign has the text "Mothers for Nuclear" written in black. She is walking in a city street with other people and buildings in the background. A red fire truck is visible on the right side of the street.

Mothers  
for  
Nuclear



mothers for nuclear



# Scan to Join Nuclear Matters Today!

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# Federal Recognition of Nuclear's Value

## Bipartisan Infrastructure Bill 2021

### Civil Nuclear Credit Program

\$6B to support financially challenged plants

### ARDP Funding

\$2.5B funding for two projects

### Nuclear Hydrogen Hub

\$8B total in the bill

## Inflation Reduction Act 2022

### Production Tax Credit (PTC) for Operating Plants

Up to \$15 per MWh

### Technology-Inclusive PTC for Clean Electricity

\$30 per MWh

### Technology-Inclusive Investment Tax Credit (ITC) for Clean Electricity

30% + 10% in energy communities +  
10% using  
U.S. components

### Clean Hydrogen Credit

\$3 per kilogram

## 118<sup>th</sup> Congress (Now)

### Nuclear Fuel Security Act

LEU/HALEU domestic production  
authorizing legislation contained in FY  
2024 NDAA

### FY 2024 Appropriations Legislation + Prohibiting Russian Uranium Fuels Act

\$2.72 Billion for domestic fuel production

Additional \$800 Million for Small Modular  
Reactors

### ADVANCE Act Signed into Law

# State Action for Nuclear Energy

## 2022

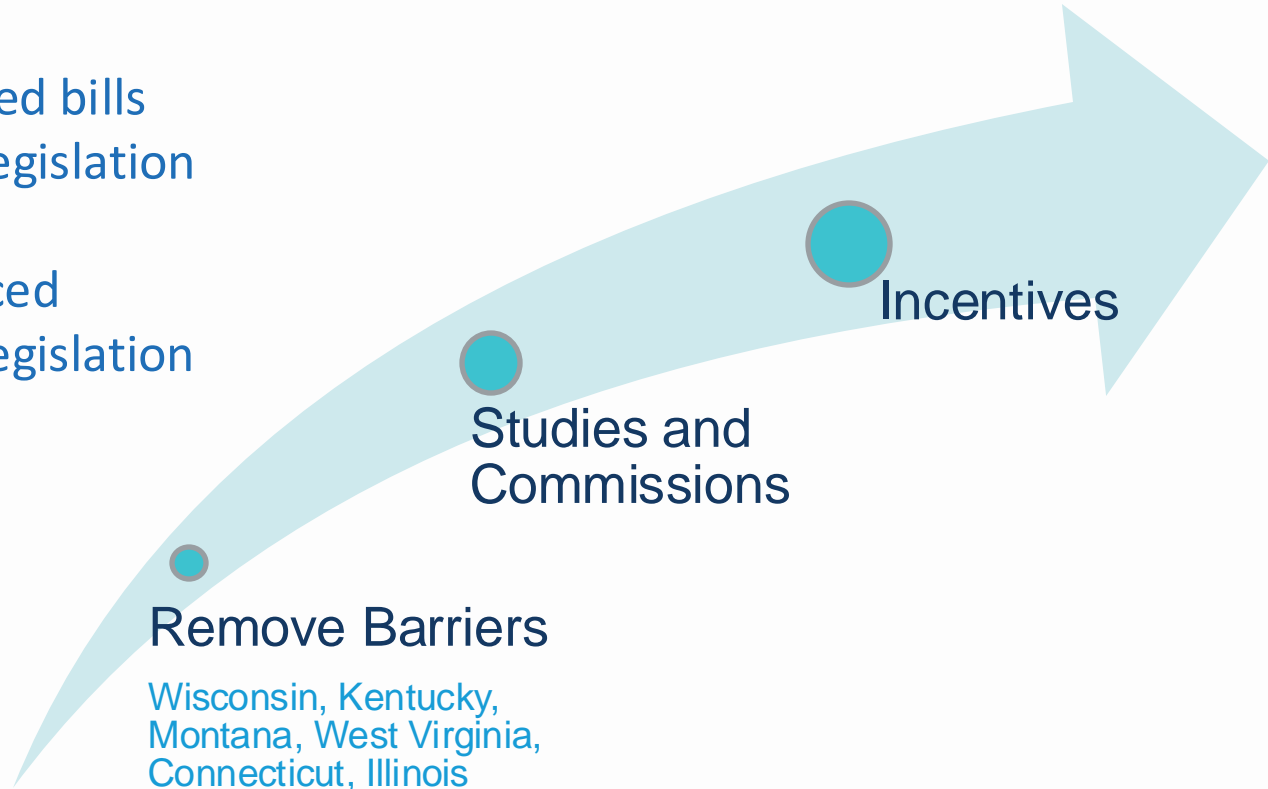
- 19 states introduced bills
- 12 states passed legislation

## 2023

- 200+ bills introduced
- 20 states passed legislation

## 2024 – Ongoing

- 25+ states
- 100+ bills





# Nuclear Is POPULAR!



Isabelle Boemeke



Miss America 2023 ©2022 Nuclear Energy Institute



# Nuclear Is POPULAR!

## BRINGING FISSION TO FASHION

EP7



**RICKEY RUFF**

*“...that’s what led me to nuclear, actually. The whole world does not need more fashion brands...but what we do need is a way to make things more responsibly, more sustainably, that will actually help our planet...I want us to be as clean as possible.”*

**Rickey Ruff**

**Senior Global Brand Process & Operations Manager, Adidas**

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#NUCLEARNOWFILM

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A N O L I V E R S T O N E F I L M

# NUCLEAR NOW

TIME TO LOOK AGAIN



<https://youtu.be/4c5RPk8FIik>





# Advanced Nuclear Energy Conference

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Sept. 10–12 • Philadelphia  
[nei.org/anec](http://nei.org/anec)

AT THE NUCLEAR ENERGY ASSEMBLY





# Thank You & Questions



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