Advanced Nuclear Energy

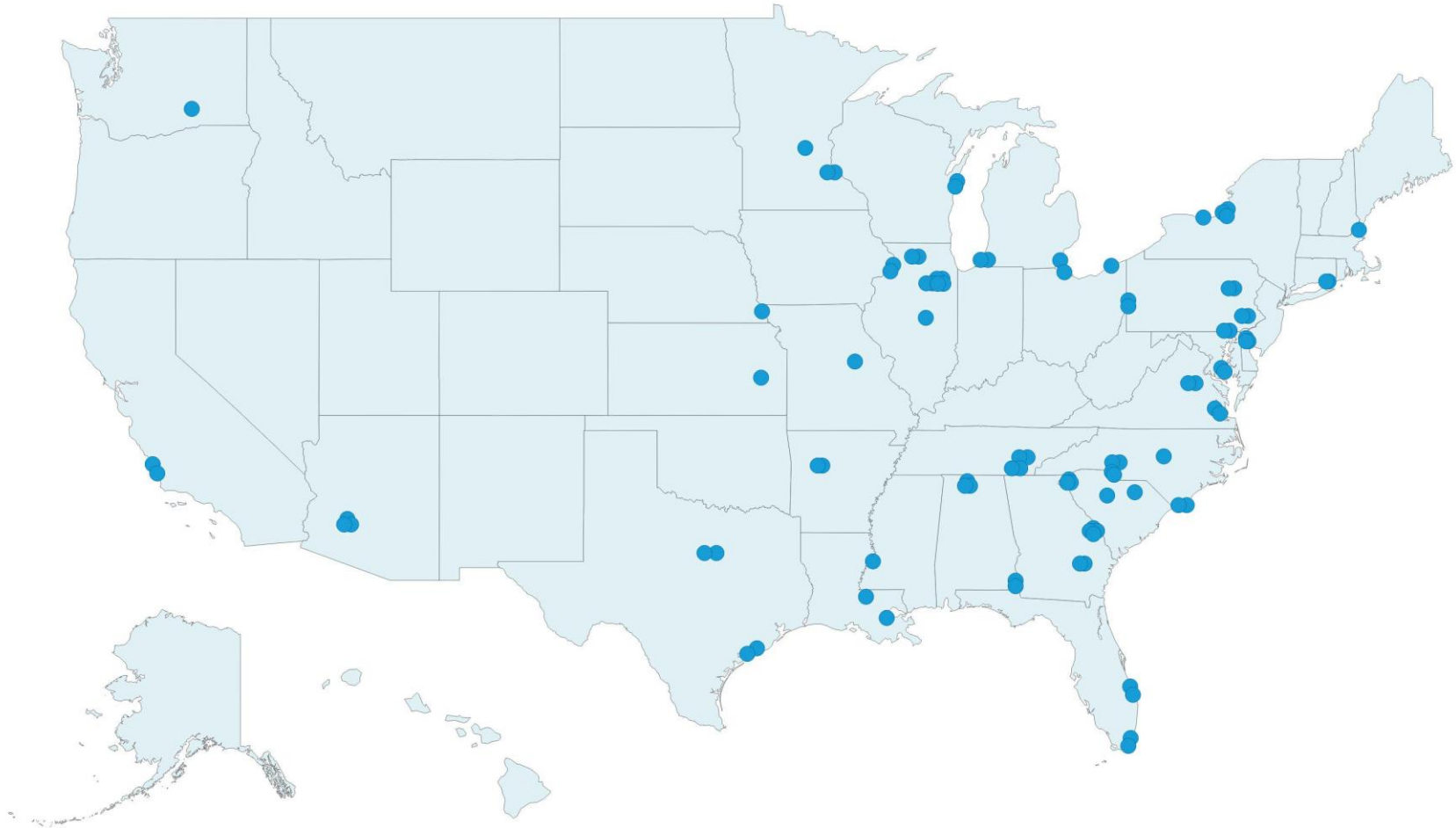
Bridging Promise and Deployment

Alisha Pinto
Senior Energy Industry Analyst, Utility Research & Policy
Alisha.pinto@nrucfc.coop

TODAY WE WILL COVER…

- Why Nuclear Energy is back
- What Advanced Nuclear Technologies Include
- What the First Projects tell us
- Policy, Financing and Supply Chain Challenges
- What leaders should watch for

Today's Nuclear Industry



96

Nuclear Reactors

17%

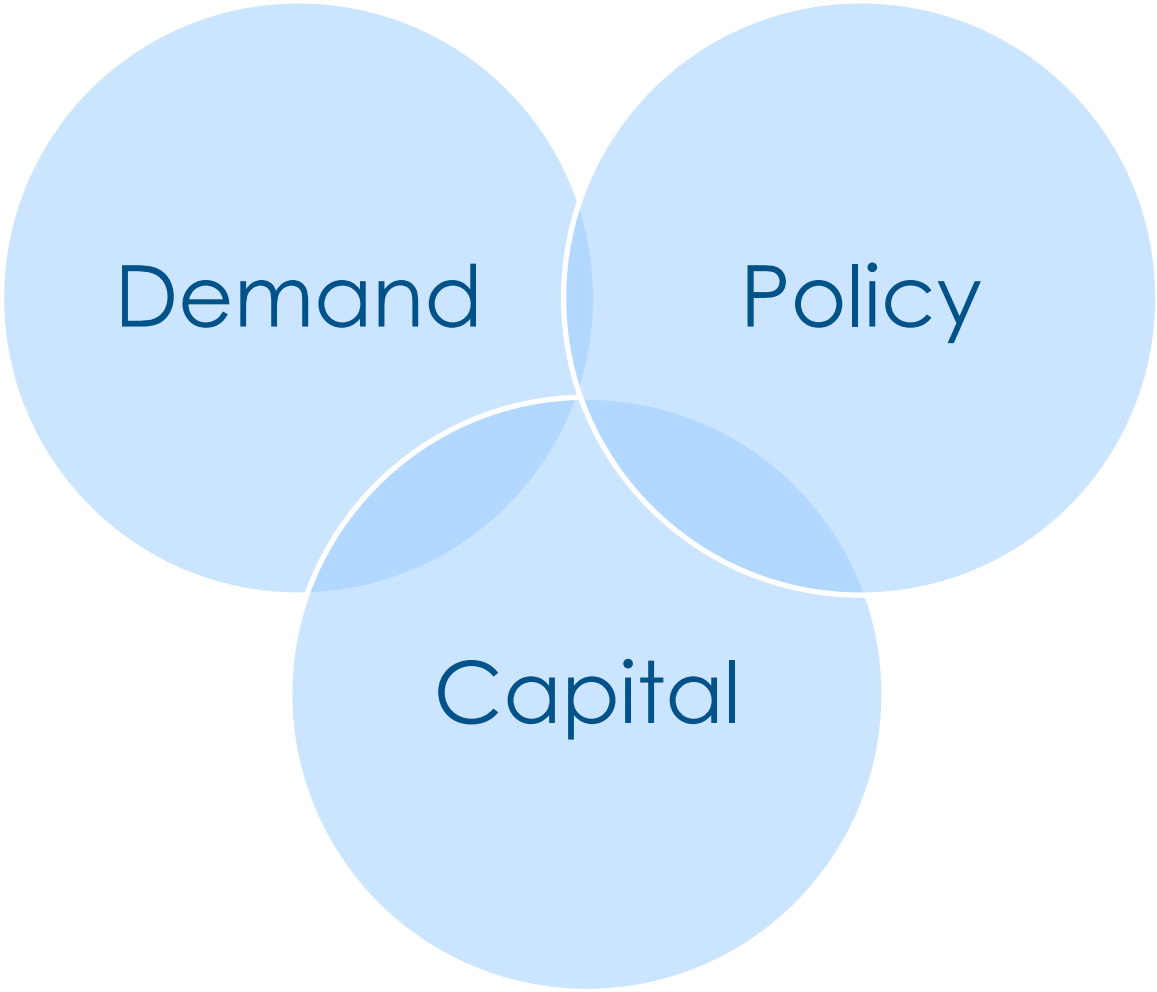
Of Power Generation

15%

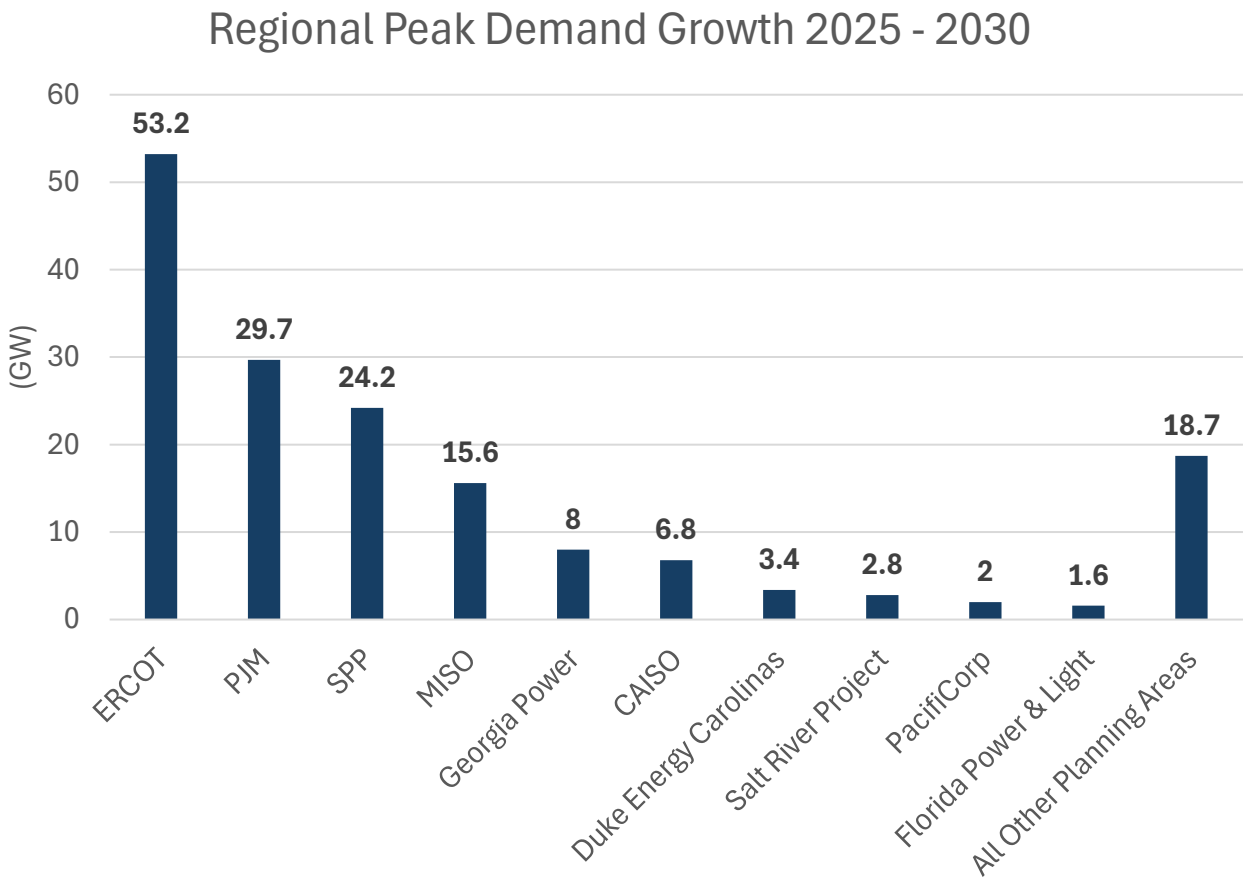
Of Electricity Delivered by Co-ops

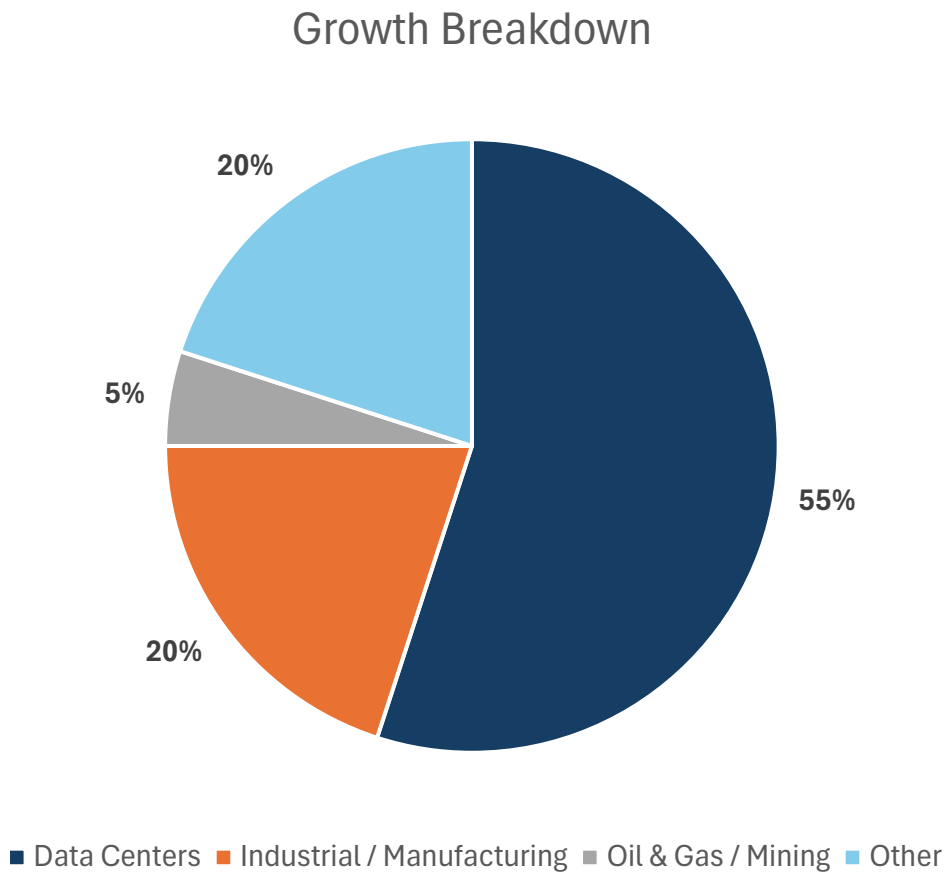
Forces Driving Nuclear Energy's Resurgence

Nuclear Resurgence Driven by **Rising Energy Demand**, **Federal Policy Support**, and **Renewed Investor Interest**

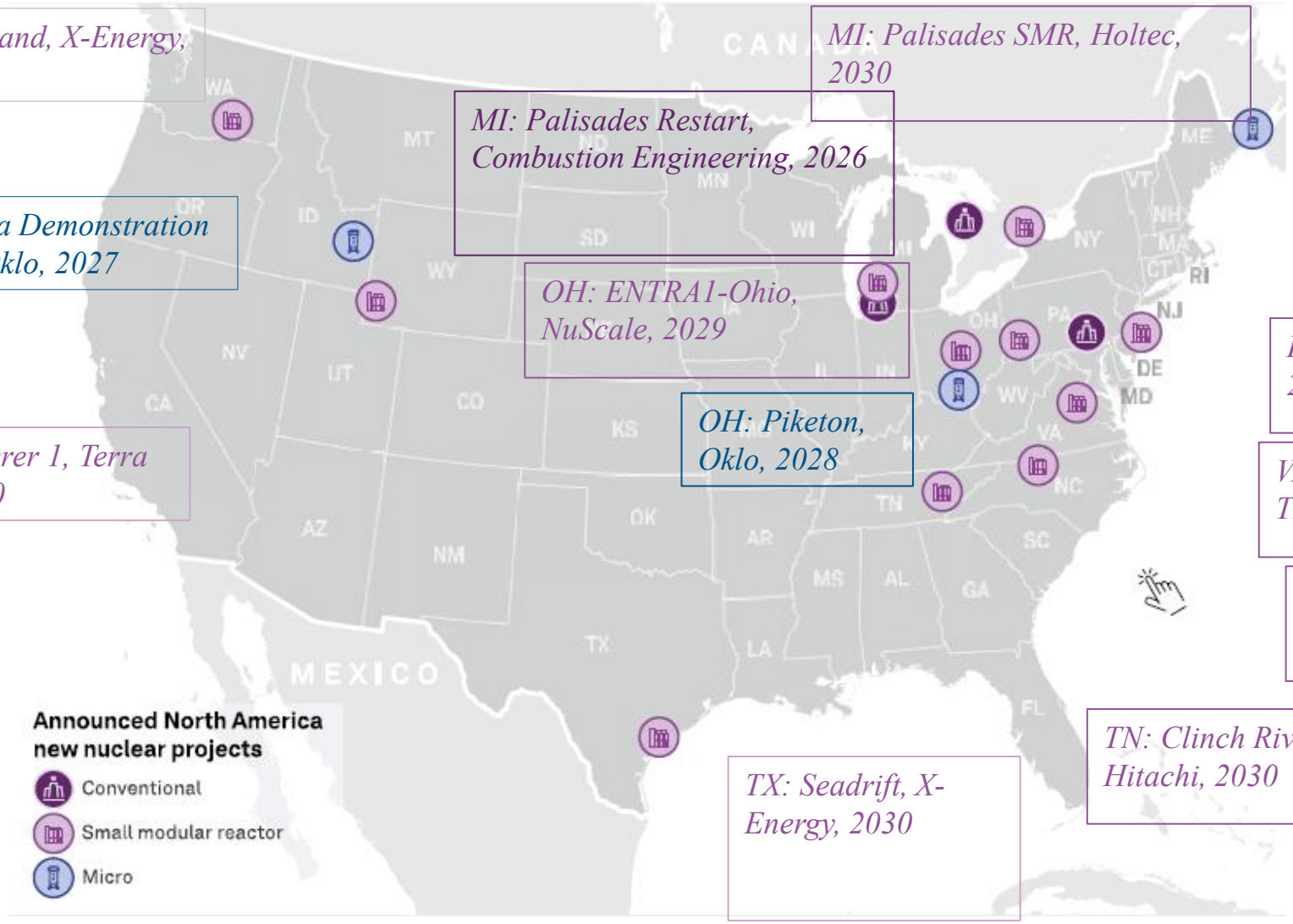


Growing Power Demand in the U.S.





Announced Nuclear Reactor Profiles for 2024 in the U.S.



WA: Richland, X-Energy, 2030

MI: Palisades SMR, Holtec, 2030

NJ: Oyster Creek, Holtec, 2030s

MI: Palisades Restart, Combustion Engineering, 2026

PA: Three Mile Island Restart, Babcock &Wilcox, 2028

ID: Aurora Demonstration Project, Oklo, 2027

OH: ENTRA1-Ohio, NuScale, 2029

PA: ENTRA1-PA, NuScale, 2029

OH: Piketon, Oklo, 2028

WY: Kemmerer 1, Terra Power, 2030

VA: North Anna SMR, TBD, 2030s

NC: Belews Creek, TBD, 2035

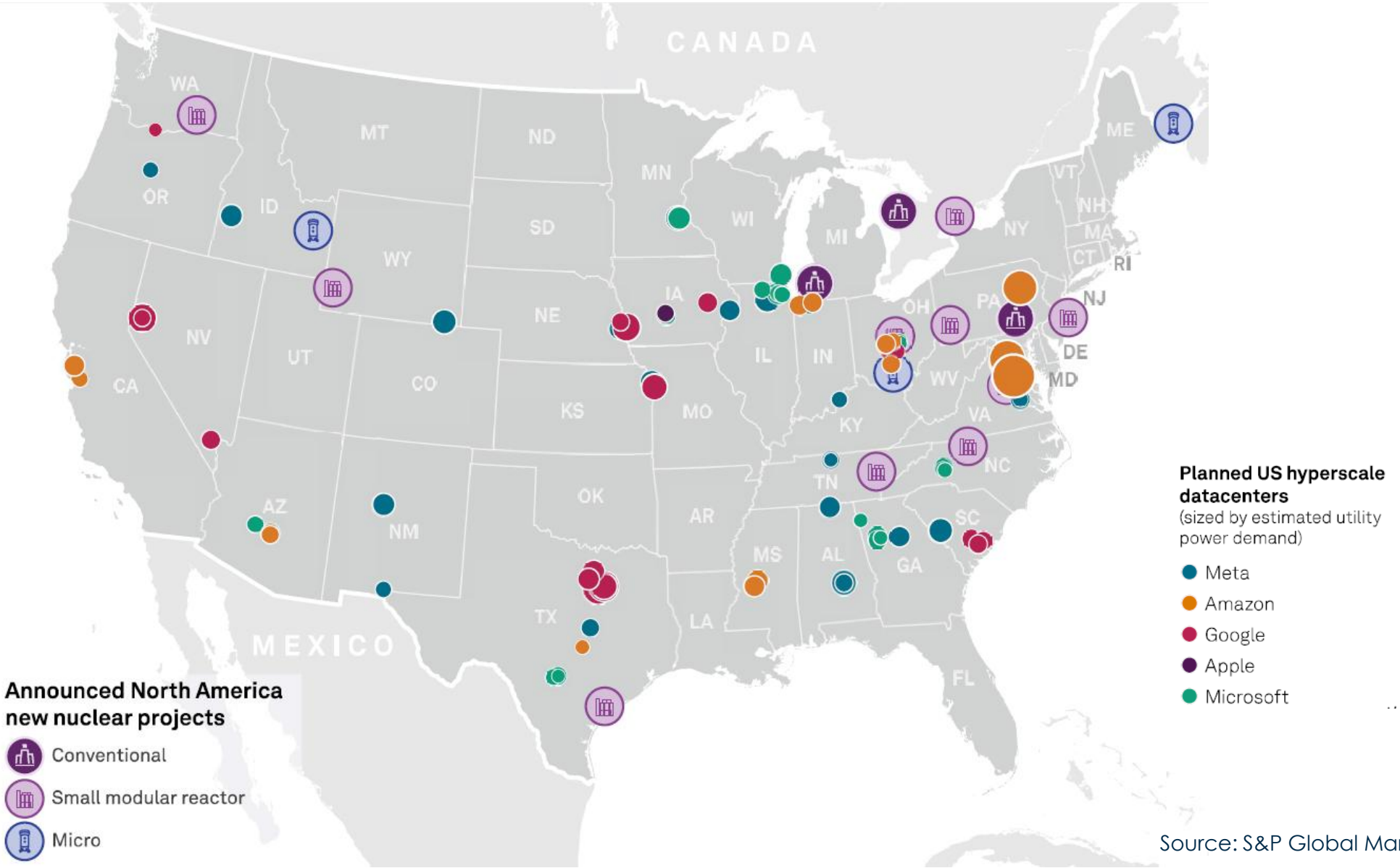
TN: Clinch River, GE-Hitachi, 2030

TN: TVA-ENTRA1, NuScale, 2030

TX: Seadrift, X-Energy, 2030

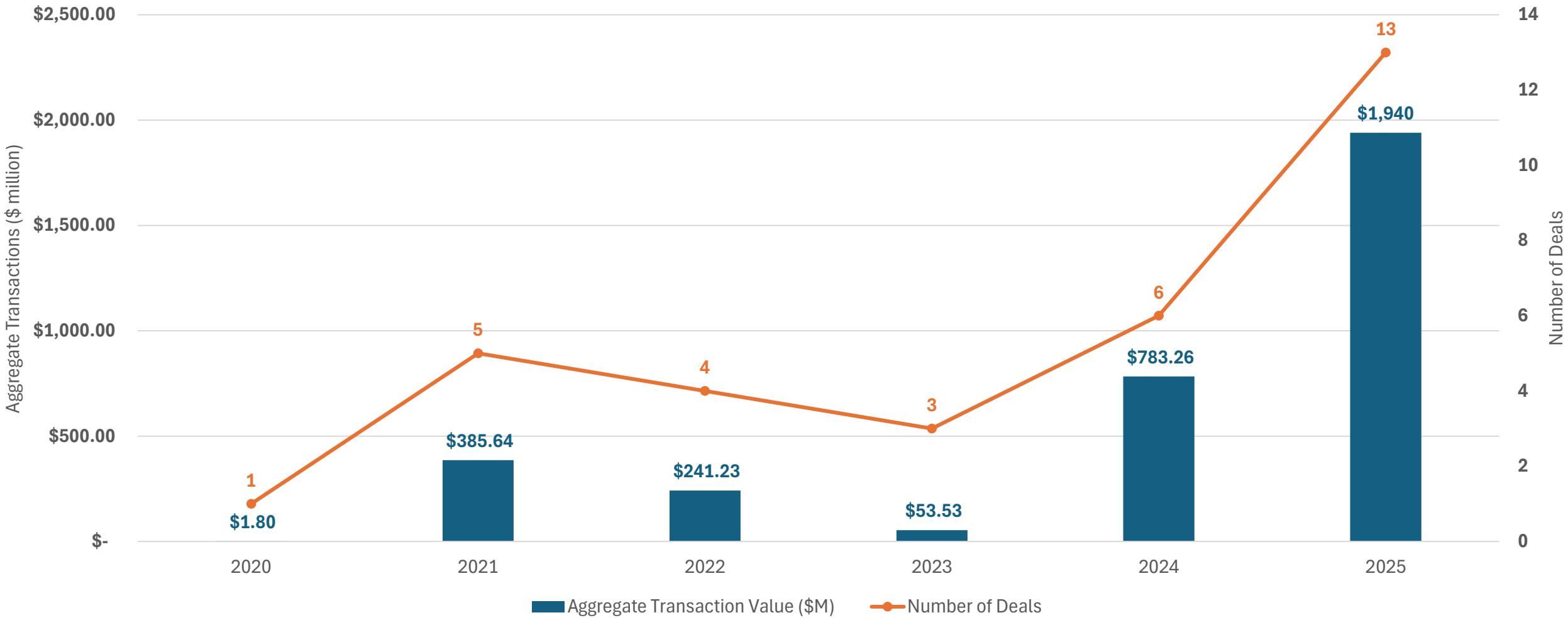
Source: S&P Global Market Intelligence

Planned U.S. Hyperscale Datacenters & Announced Nuclear Projects



Source: S&P Global Market Intelligence

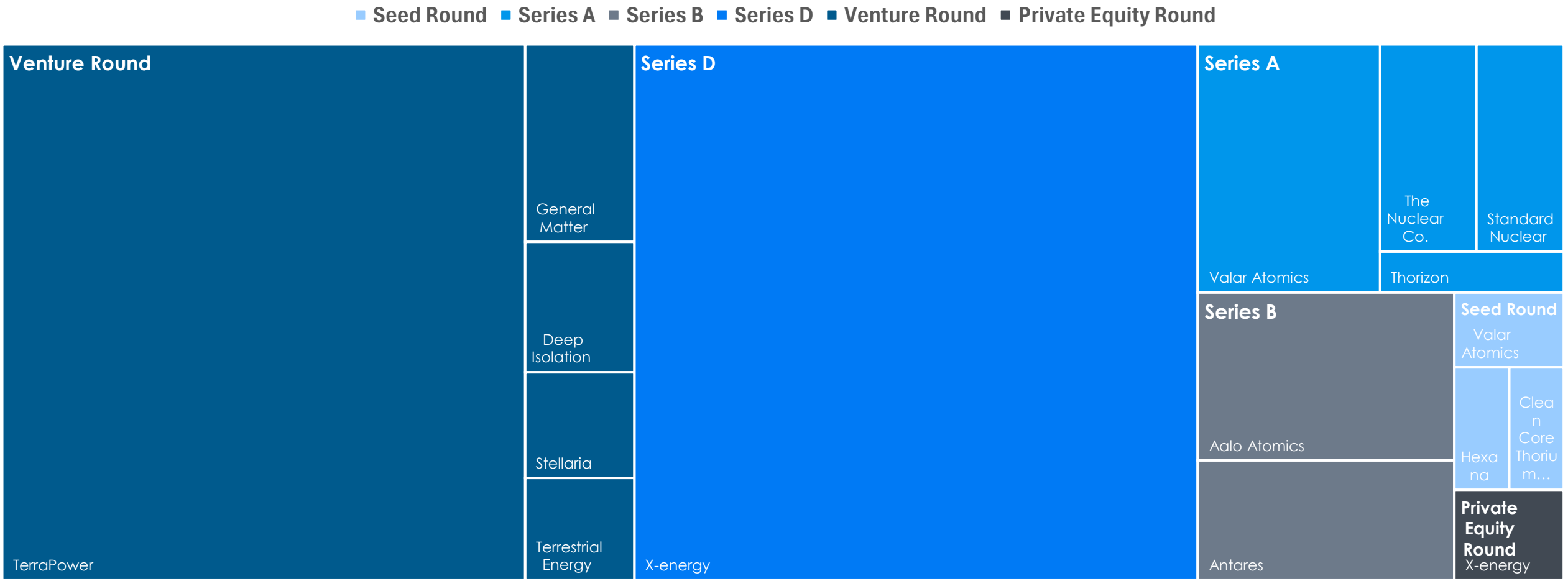
PE/VC-backed Investments in Advanced Nuclear, 2020-2025



Source: S&P Global Market Intelligence

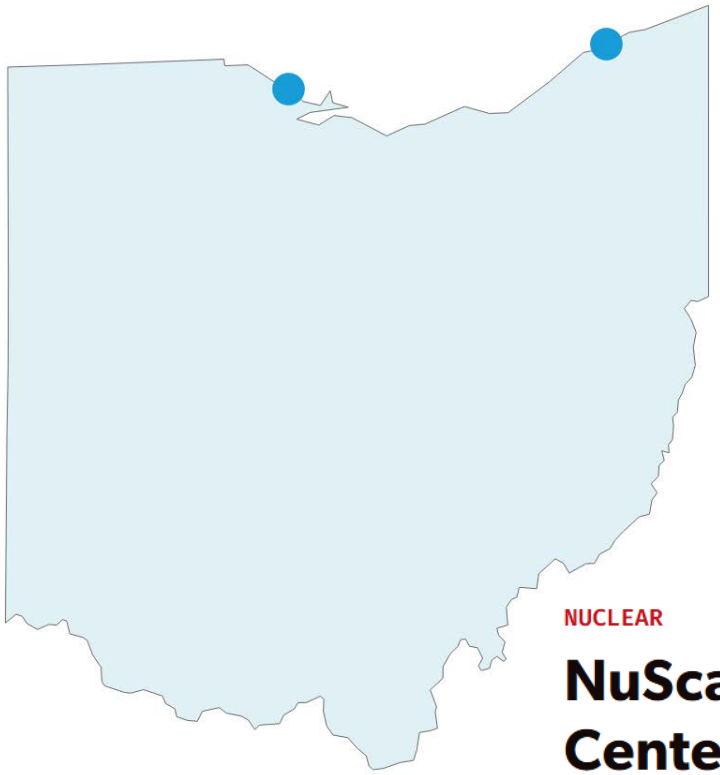
Private Financing for Nuclear Start-ups in 2025

$1.9 Billion across 13 Firms



Source: Crunchbase, 2025

Nuclear Industry updates in Ohio



Oklo, Centrus Sign Letter of Intent to Purchase Nuclear Fuel for Aurora Powerhouse Deployment in Southern Ohio

NEWS PROVIDED BY
Centrus Energy Corp. →
Jun 18, 2026, 06:56 ET

NUCLEAR

NuScale Gets a Win with SMRs for Data Centers in Ohio and Pennsylvania

Aaron Larson

Friday, October 6, 2023

Centrus
Fueling the Future of Nuclear Power

NEXT-GEN NUCLEAR

Elementl Power Partners with GE Vernova Hitachi to Advance Future 1.5 GW SMR Project in Southeast Ohio

By utilizing GE Vernova Hitachi's BWRX-300 small modular reactor design for this project, Elementl is pushing to bring the first new SMR projects online in the U.S.

June 22, 2026 ▪ 3 min read

ADD US ON GOOGLE

The Technology Landscape

SMR

Small Modular Reactors

MICROREACTORS

Compact Power. Anywhere.

Nuclear Technologies

Conventional Nuclear Energy
700 MW +

- Baseload Power
- Light Water Cooling
- Large, custom-built projects with long construction timelines
- All Currently Operating US Commercial Reactors

Small Modular Reactors
20 – 400 MW

- Offers Flexibility
- Water or Metal Cooling
- Factory Fabrication & Modular assembly to reduce costs
- Potential for lower financing barriers

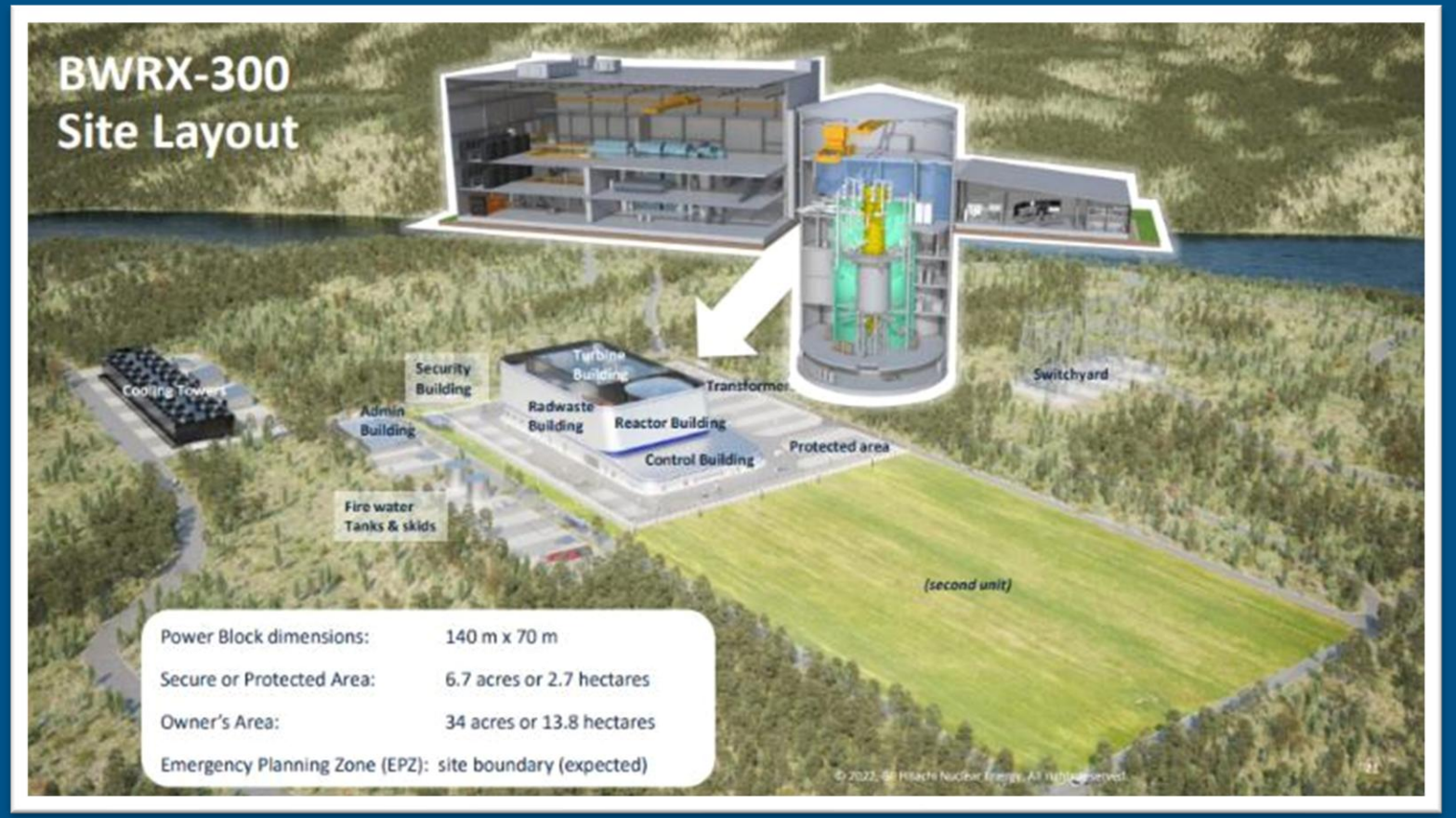
Microreactors
1 – 20 MW

- For localized, mission-critical applications, e.g. military, microgrids
- Metal Cooling
- Transportable and designed for minimal on-site construction
- Requires high-grade fuel

Small Modular Reactors

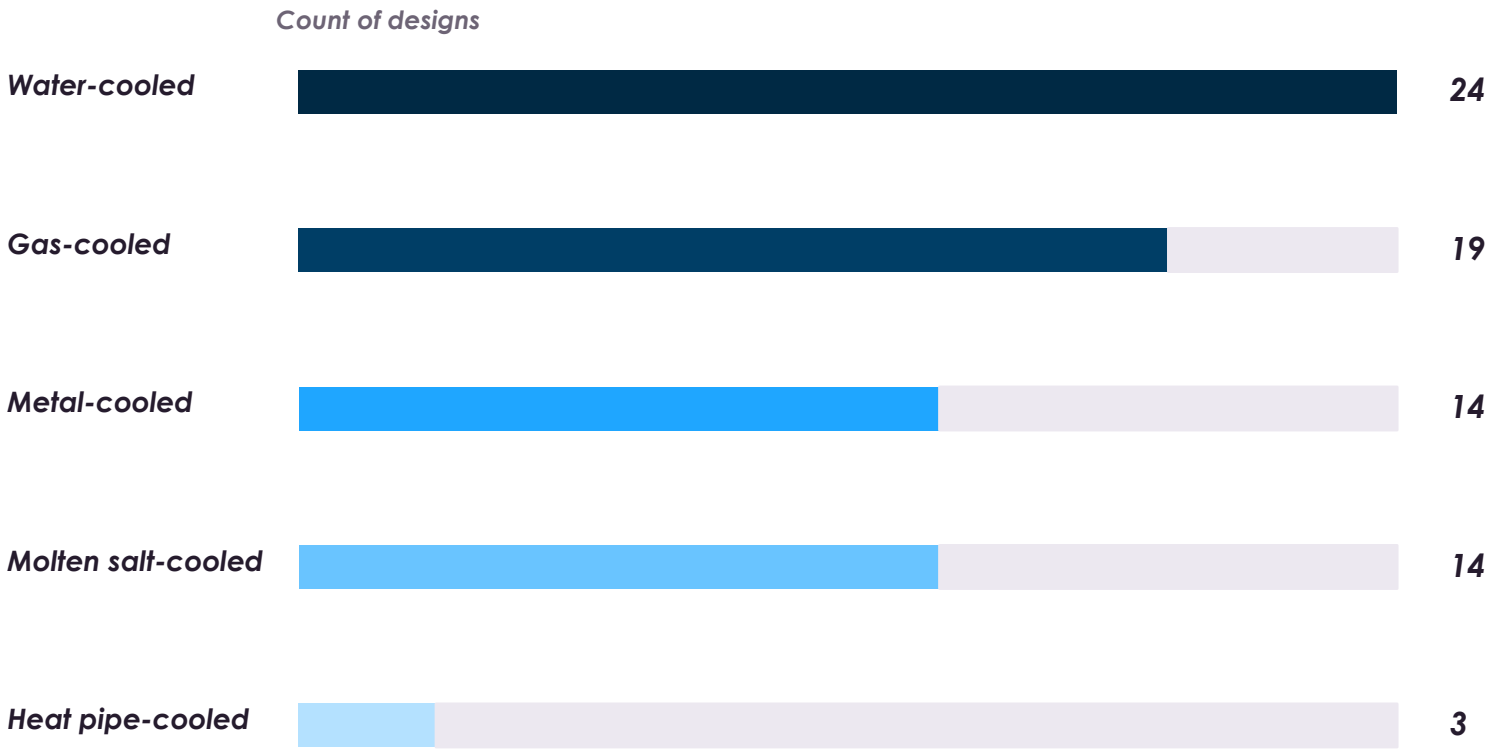
Small Modular Reactors (SMR)

- 20-400MW
- “Fast installation”
- Water, molten salt or liquid metal for cooling
- Improved safety systems
- Smaller footprint
- Designs are typically Generation III+ or Generation IV



SMRs are Not a Single Technology

74 Designs Across 5 Cooling Technologies



Little agreement on best path forward

Additionally:

- Variety of fuels and temperatures
- Multiple Configurations
  - Land based
  - Marine based
  - Multi module
  - Mobile

Source: Nuclear Energy Agency

Potential SMR Benefits

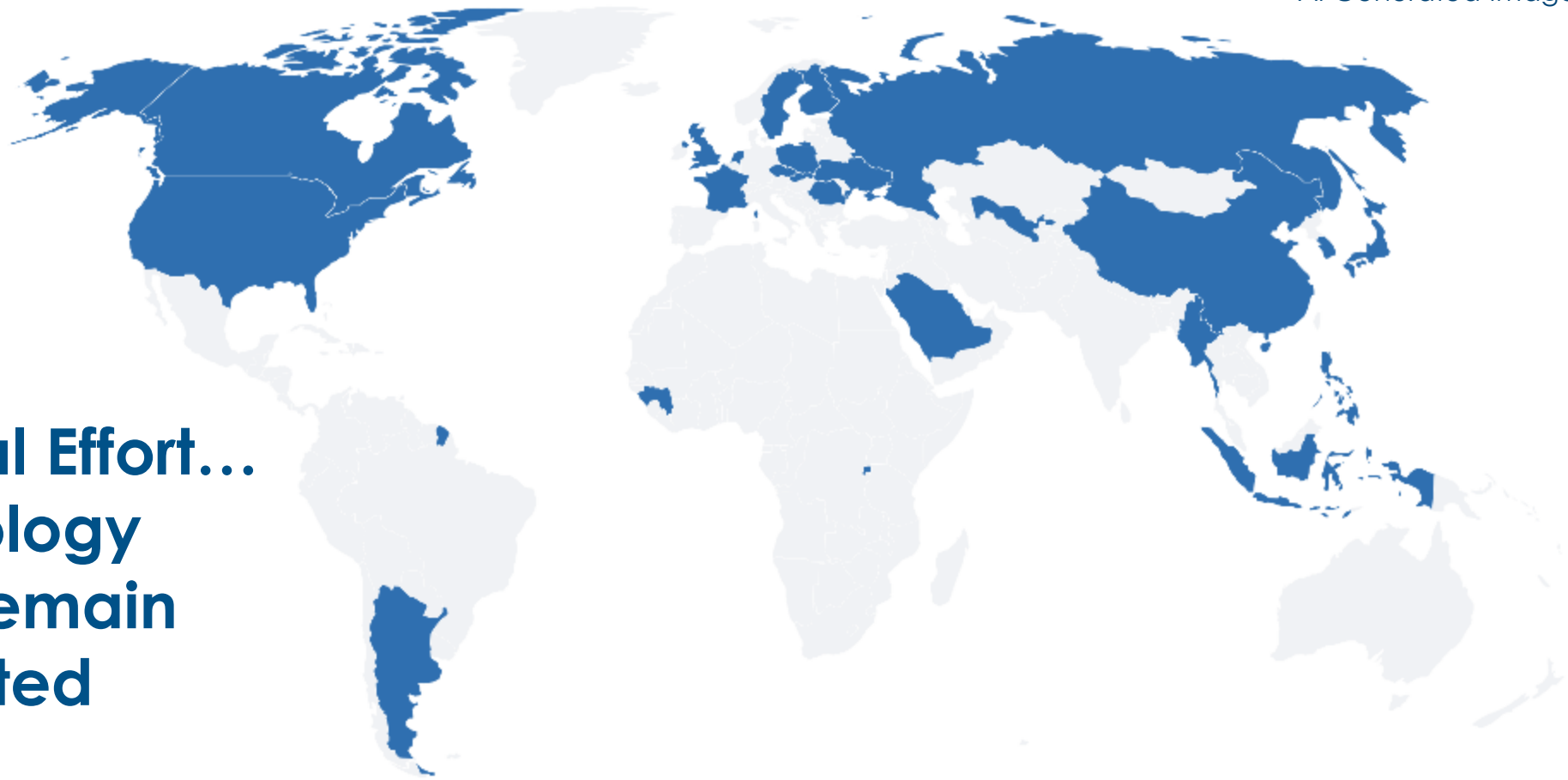
New and improved safety systems

Modular and can Expand over time

Refueling every 3-7 years

Footprint is much smaller (35 acres vs. 1,000 acres)

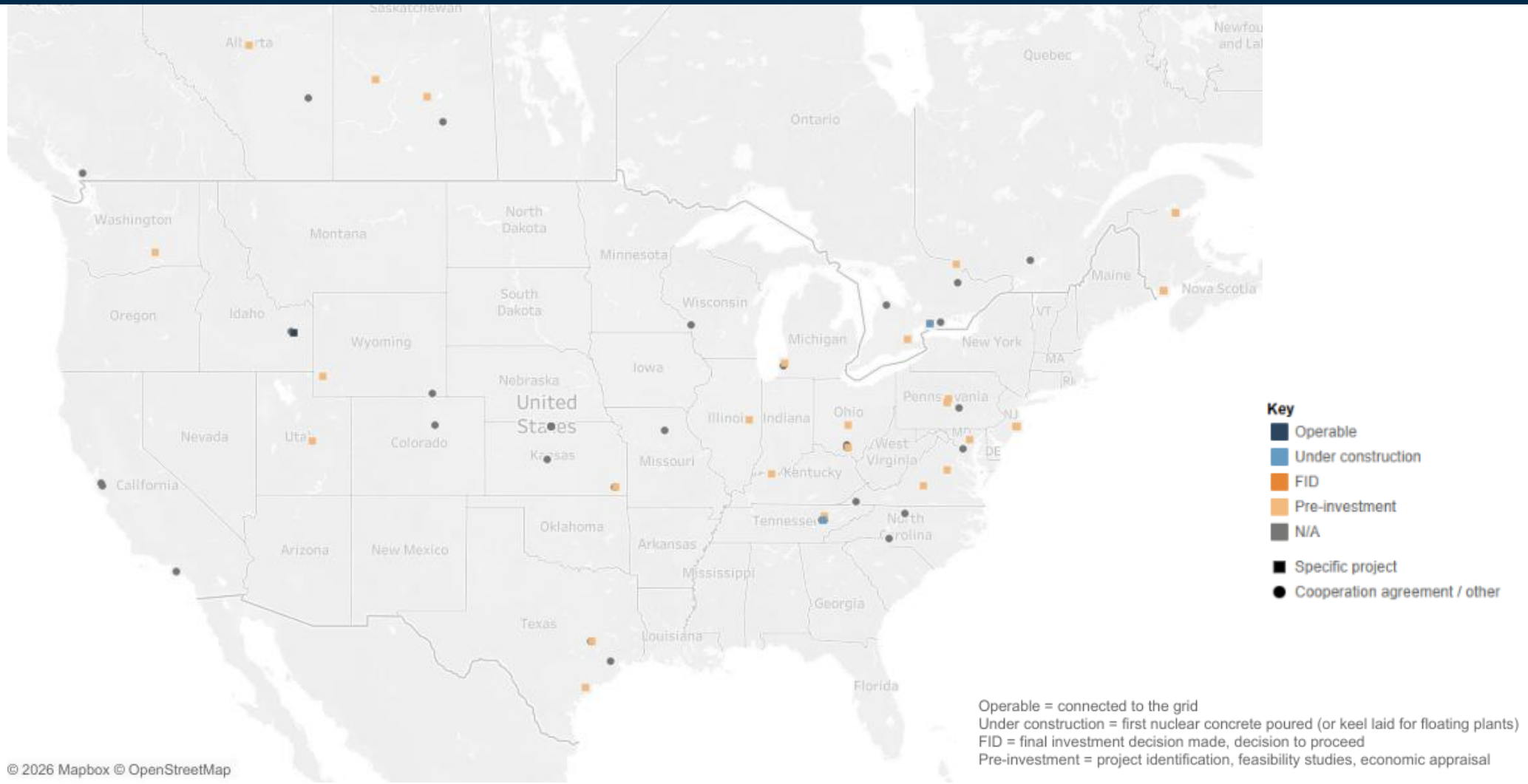
AI Generated Image



SMR is a Global Effort… But Technology Pathways Remain Fragmented

Source: Nuclear Energy Agency

SMR Projects in North America



Source: World Nuclear Assoc.

Project Profiles

FIRST-OF-A-KIND (FOAK)

The implementation or deployment of a **novel design**, **technology**, or **solution**.

…Building what hasn't been built before.

TerraPower Natrium, Kemmerer Unit 1 (Wyoming)

Status

Most advanced U.S. reactor project in licensing

NRC issued construction permit (March 2026)

Technology

Sodium-cooled fast reactor

~345 MW

Paired with molten-salt energy storage- 100-500 MWe+ for 5.5+ hours,

Timeline

Target: ~2030 commercial operation

~36 months from nuclear concrete pour to fuel load

Estimated Cost

~$4 billion total project cost

Up to $2B DOE cost-share + private matching funds

Why It Matters

Leading advanced reactor in U.S. pipeline

Demonstrates grid-flexible nuclear generation

TVA Clinch River BWRX-300 (Tennessee)

Status

TVA submitted construction permit application (2025)

Currently under NRC review

First U.S. utility pursuing BWRX-300 deployment

Technology

Boiling-water SMR

~300 MW

Evolutionary light-water design with passive safety features

Timeline

Target: early 2030s commercial operation

Benefits from prior site permitting work at Clinch River

Estimated Cost

Not publicly disclosed

Canadian project ~US$15.1 billion

Supported by ~$400M DOE funding

Why It Matters

TVA has nuclear experience

Most conventional SMR pipeline

Potential anchor for broader deployment

X-energy Xe-100 – Dow Long Mott Generating Station (Texas)

Status

NRC accepted construction application (2025)

Environmental review completed

Technology

Four high-temperature gas-cooled reactors

Total ~320 MW capacity

Uses TRISO fuel

Electricity and industrial steam

Timeline

Likely early 2030s in-service

Final investment decision not expected before ~2028

Estimated Cost

Multi-billion-dollar project (~$3B–$5B+ estimate)

Up to $1.2B DOE cost-share under ARDP

Final cost not disclosed

Why It Matters

Purpose-built for industrial decarbonization (power + process heat)

Holtec SMR-300, Pioneer Units 1 and 2 (Michigan)

Status

NRC accepted initial construction permit for review

Includes limited work authorization request

Technology

Light-water pressurized-water reactor (~340 MW per unit)

More conventional design, but still first-of-a-kind

Timeline

Target: ~2030

Key steps remaining: full permit, financing, construction

Estimated Cost

~$7B–$10B (external estimate, not developer-confirmed)

Why It Matters

Located at existing Palisades nuclear site

More familiar technology for regulators and operators

Oklo's Aurora-INL Project (Idaho)

Status

Received DOE Nuclear Safety Design Agreement

Advancing under DOE Authorization Pathway

Technology

Advanced Sodium-cooled fast reactor

Uses liquid metal cooling and metal fuel derived from HALEU

Timeline

Target: 2027-2028 commercial operation

Under DOE Reactor Pilot Program, broke ground in 2025

Secured DOE site in 2019

Estimated Cost

Not publicly disclosed ~70 million for 15 MWe FOAK estimate

Why It Matters

Demonstrates a microreactor model of 15 – 75 MW

First advanced reactor being built under DOE's Reactor Pilot Program, accelerated licensing

What Do We Learn from the "First" Five?

1. No single technology pathway has emerged as the clear winner
2. Projects vary by fuel, size, cooling technology, customer and regulatory pathway
3. Most commercial timelines point to the early-to-mid 2030s
4. First-of-a-Kind costs remain high and uncertain
5. Funding streams, strategic customers, and repeatable designs are central to success

Federal Policy & Incentives

Federal Support is Targeting Scale

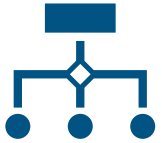
American Nuclear Supply Chain Loans

- Announced June 2026
- $17.5 billion financing available for 5 eligible projects
- Each project site will have 2 reactors.
- Deployment of a total 10 large-scale commercial nuclear reactors
- Westinghouse's AP1000 design will be used for all the projects, standardizing the expansion
- Each reactor will generate 1.1 GW of power

Federal Support is Reducing Early Development Risk

Gen III + SMRs Pathways to Deployment Program

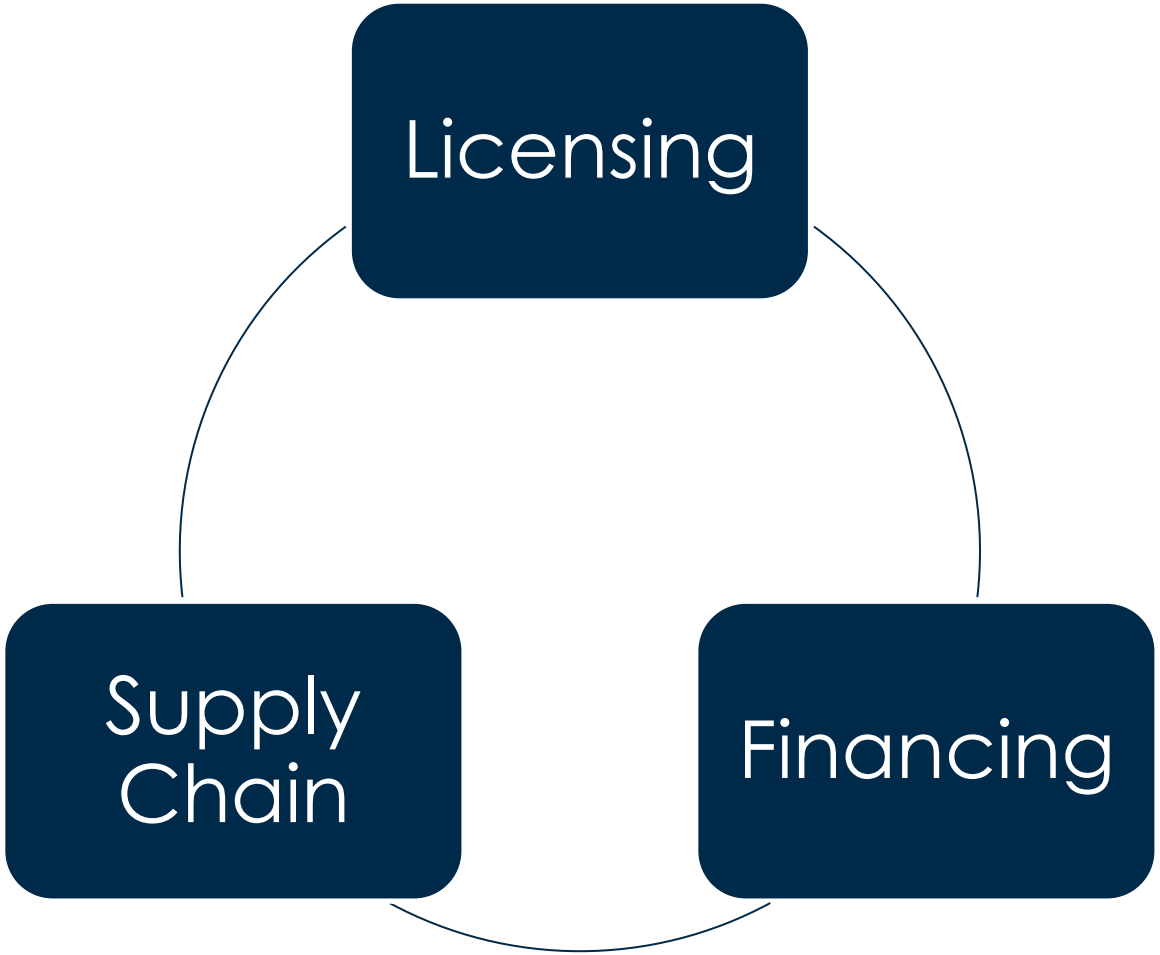
- Expand nuclear energy capacity to 400 GW by 2050
- TVA and Holtec to receive $800 million for projects in Tennessee and Michigan
- Early deployment of advanced light-water SMR: GE-Hitachi BWRX-300
- 8 companies awarded $94 million in May 2026



DOE Reactor Pilot Program

- Launched May 2025
- Fast-track commercial licensing for advanced reactors
- Certify and construct advanced reactor designs for demonstrations
- 11 projects selected in August 2025
- Antares Nuclear reached “criticality” in June 2026

Federal Policy and Incentives Aims to Solve…



Microreactors

Microreactors

- Typically produces 1–20 megawatts of power
- Designed to be factory-built, modular, and easily transported
- Self-Contained System
- Passive Safety Features
- Minimal On-Site Infrastructure
- Versatile Applications

Major Players in an Evolving Field

Participating National Laboratories

Argonne National Laboratory
Idaho National Laboratory
Los Alamos National Laboratory
Oak Ridge National Laboratory
Pacific Northwest National Laboratory
Sandia National Laboratories

Participating Universities
(Through Nuclear Energy University Program)

Auburn University
University of Illinois
Massachusetts Institute of Technology
University of Michigan
Texas A&M University

GAIN Gateway for Accelerated Innovation in Nuclear

U.S. Army

U.S. Air Force

Westinghouse Electric Company
Radiant Industries
Ultra Safe Nuclear Corporation
Saltfoss Energy

Initial sites by 2029

ARMY

Army's nuclear comeback: Sweeping new program aims to break 'tyranny of fuel' at bases across the globe

Janus Program aims to install commercial microreactors by 2028 following Trump executive order

By Morgan Phillips Fox News

Published October 14, 2025 5:30am EDT

ADVANCED REACTORS

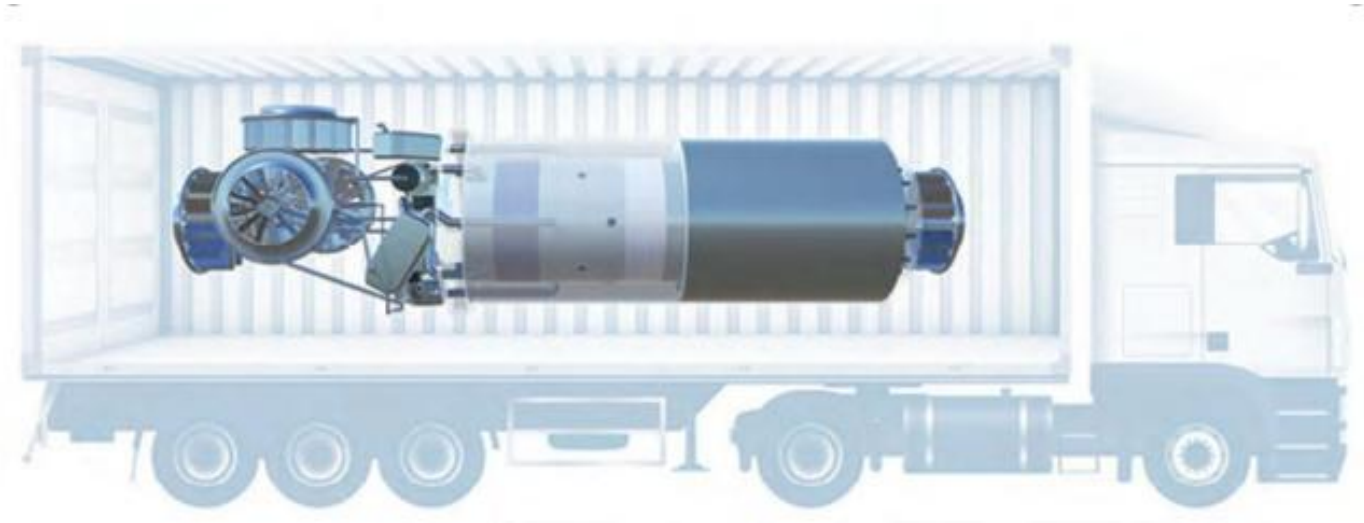
Air Force issues notice to partner with Oklo on microreactor deployment in Alaska

Mon, Jun 16, 2025, 1:00PM | Nuclear News

Fort Benning, Georgia	Fort Bragg, North Carolina	Fort Campbell, Kentucky
Fort Drum, New York	Fort Hood, Texas	Fort Wainwright, Alaska
Holston Army Ammunition Plant in Tennessee	Joint Base Lewis-McChord, Washington	Redstone Arsenal in Alabama

Microreactors Challenges

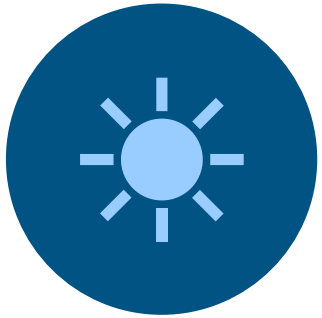
- High Initial Costs
- Nuclear Waste Management
- Public Perception & Trust
- Regulatory Complexity



Challenges

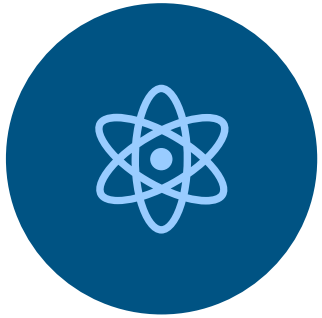
Nuclear Deployment Faces Timing Challenges

Data Centers:
18 - 24 months



Hybrid Solar + Storage:
2 years

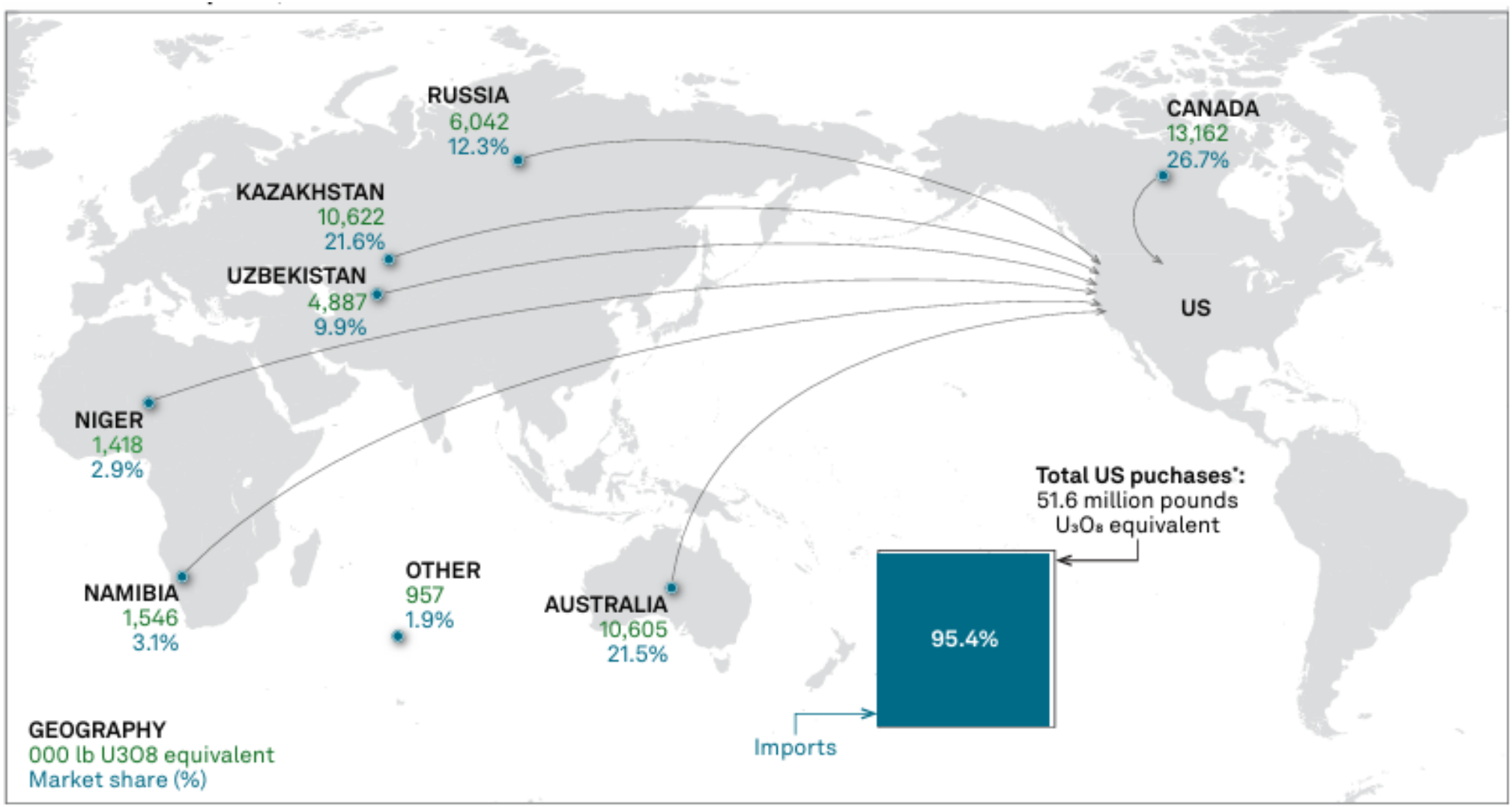
Combined Cycle Gas:
3 years



Nuclear Energy:
6 -15 years

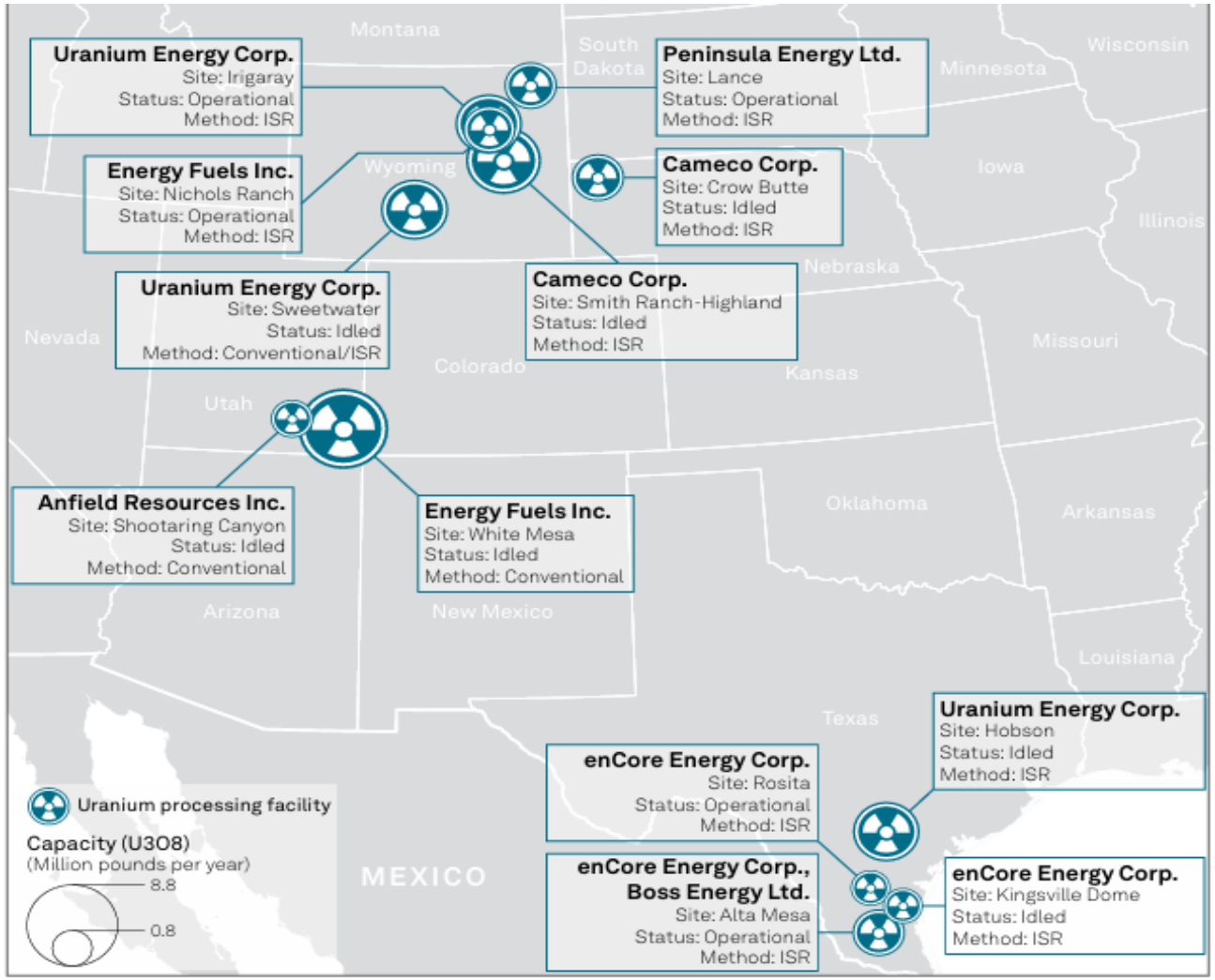
Fuel Supply Bottlenecks Threaten Growth

U.S. Imports 95.4% of Uranium for Power Plants



Source: S&P Global Market Intelligence

Limited uranium mining and processing with potential for expansion



Source: S&P Global Market Intelligence

What is Needed to Move Forward?

Technologies

Reactor concepts

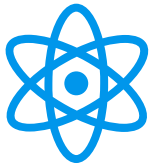
Water-cooled

Gas-cooled

Metal-cooled

Molten salt-cooled

Heat pipe-cooled

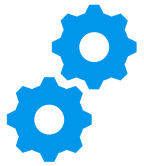


Reactor configurations

Land-based

Marine-based

Mobile



Enabling conditions

Frameworks: policy, regulatory, legal, security

Fuel cycle

Supply chain and infrastructure

Talent pipeline

Public engagement

Financing

Applications and markets

On-grid

Off-grid

Industrial heat

District heat

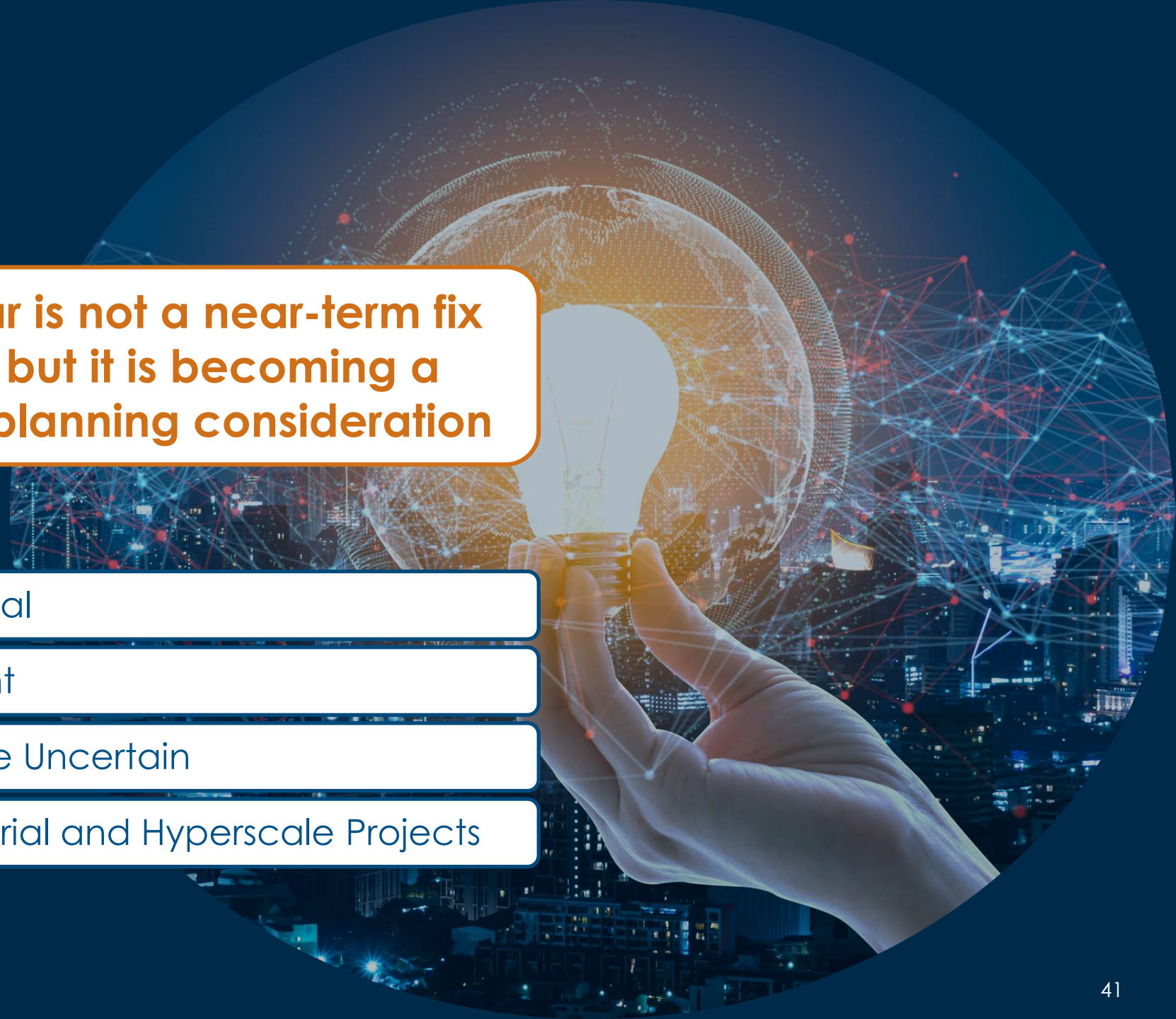
Potable water

Merchant shipping

Space

Source: Nuclear Energy Agency

Going forward…



Advanced nuclear is not a near-term fix for load growth, but it is becoming a serious long-term planning consideration

- Nuclear Momentum is Real
- But FOAK Risk is Significant
- Technology Pathways are Uncertain
- Watch the Military, Industrial and Hyperscale Projects

CFC

What we will be watching for…

Which first projects actually reach construction and operation?

Do costs fall after the first few deployments?

Can the U.S. scale HALEU, uranium enrichment and nuclear-grade manufacturing?

Will hyperscalers, utilities and public financing remain committed long enough to support deployment?

Thank You!

Alisha Pinto

CFC, Senior Energy Industry Analyst

703-467-2738

Alisha.Pinto@nrucfc.coop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