

CIBO Environmental & Energy/Sustainability Committee Meeting

Update on New Technologies and Nuclear Licensing

February 6, 2024

CLEARPATH

Potential for Nuclear Resurgence

Intro

- Intro to ClearPath
- Current Nuclear Policies

Policy Updates

- Nuclear Fuel Legislation
- Nuclear Regulatory Commission Legislation
- Ongoing and Upcoming Projects

Interest in New Nuclear

- Repowering Energy Communities
- Nuclear for Industrial heat
- Other emerging demand drivers

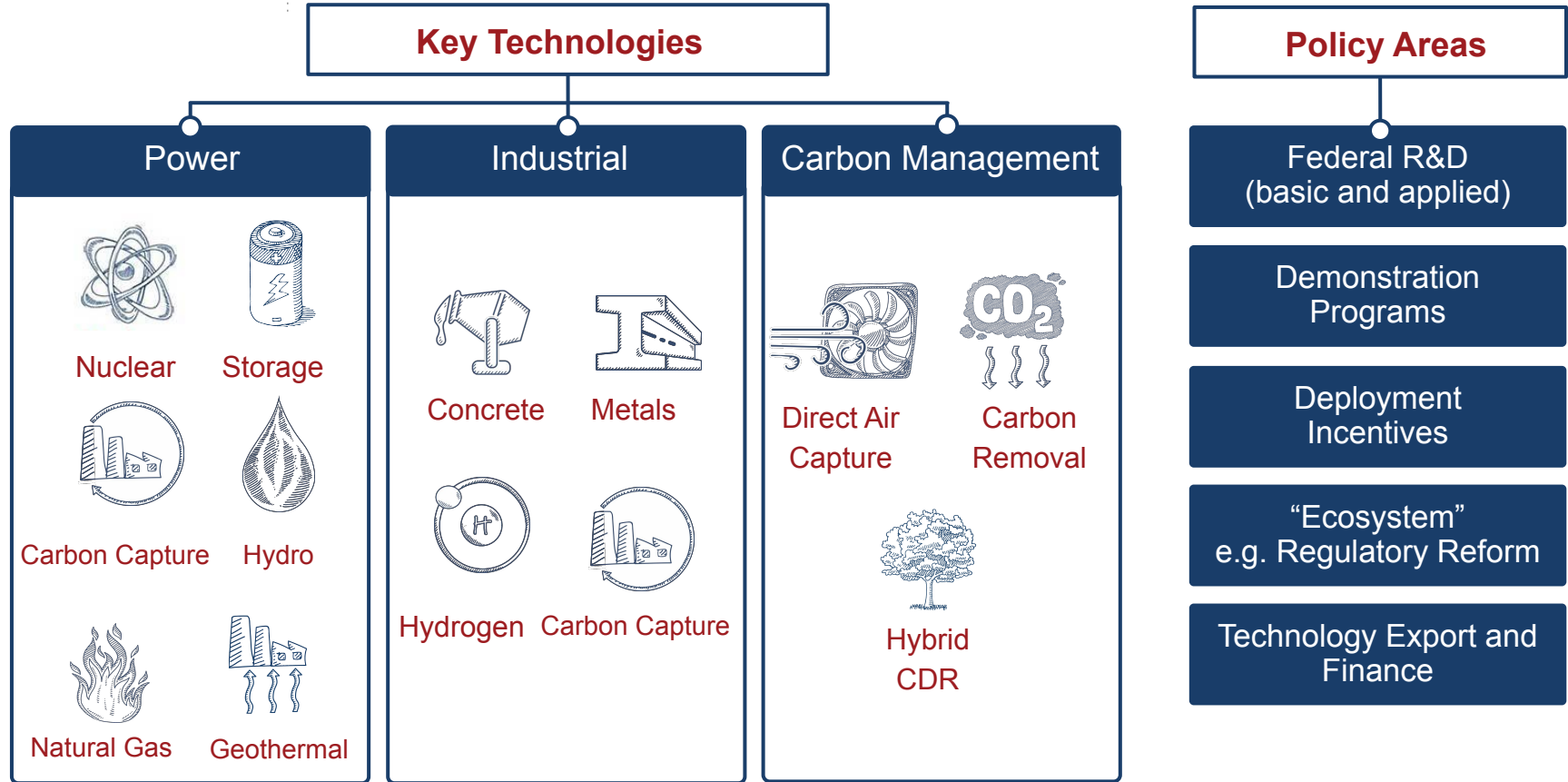
ClearPath Mission and Vision



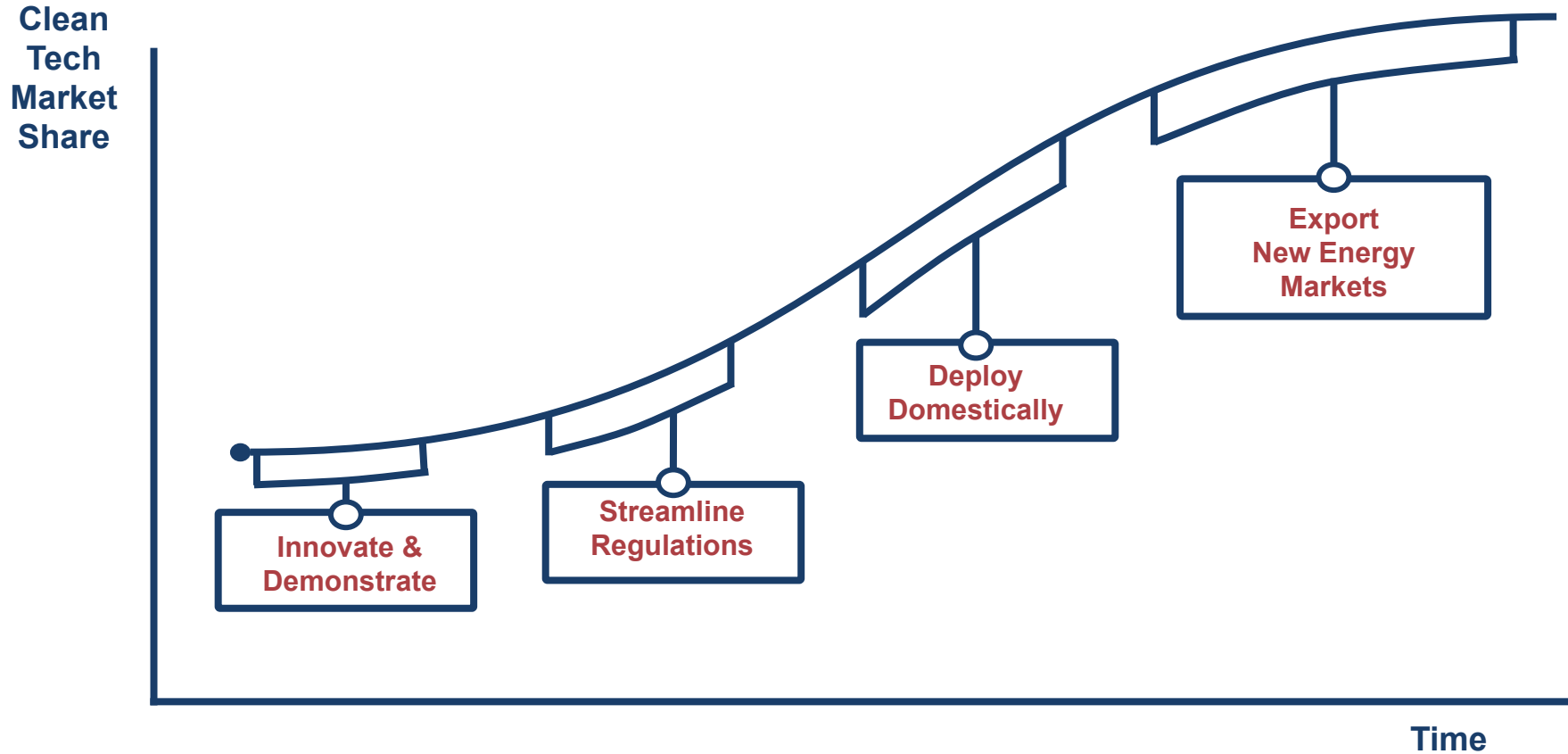
Mission: ClearPath's mission is to develop and advance policies that accelerate innovations to reduce and remove global energy emissions.

Vision: America leads the world in addressing climate change by developing innovative, market-competitive clean energy technologies.

ClearPath Policy Pillars



Policy can push energy technology up the “S-curve”



Nuclear: Recently Enacted Policies

Energy Act 2020

- Comprehensive reauthorization of nuclear energy research and development programs
- Advanced Reactor Demonstration Program Authorization
- HALEU Fuel Authorization
- Russian Suspension Agreement Extension
- Fusion R&D reauthorization (five years)

IIJA

- Advanced Reactor Demonstration Program, partial funding, only for 2 big demos - \$2.5 billion (direct funding)
- Authorized siting studies for isolated communities
- Civil nuclear credit program - \$6 billion (direct funding)

CHIPS+

- Fission for the Future, DOE supports AdvR deployment with prioritization of fossil closure communities - \$800 million (auth 2023-27)
- National Nuclear University Research Infrastructure Reinvestment - \$15 million (auth)
- DOE-SC Fusion research - \$250 million (auth 2023-27)

Tax Bill

- HALEU Approps - \$700 million
- 45U - Existing-nuclear PTC, dynamic and based on plant revenue
- 45Y&48E - Clean Electricity PTC/ITC
- 45V - Hydrogen PTC credit stacking with 45U. ITC option
- 48C - Advanced Energy Projects ITC extension - \$10 billion
- Office of Nuclear Energy national lab infrastructure - \$150 million
- LPO: Loan Guarantee expansion to \$80 billion & \$250B loan authority for energy repowering generation
- Advanced Industrial Facilities Deployment program - \$5.8 billion

Policy Updates

Nuclear Fuel Security Act and Russian Import Ban

The issue: 20% of LEU fuel used in U.S. civil nuclear reactors comes from Russia

The need: Prevent Russian dumping to secure investments for new fuel cycle investments

Nuclear Fuel Security Act

– PASSED –
FY24 NDAA

This bill

- Creates a rotating fund for the HALEU Availability Program
- Accelerates production of low-enriched uranium (LEU) and high-assay, low-enriched uranium (HALEU) through a new Nuclear Fuel Security Program
- Ensures the availability of domestically produced, converted, and enriched uranium, by expanding the American Assured Fuel Supply Program

Reduce/Prohibiting Russian Uranium Imports Act

– Passed House –
– Senate Vote Pending –

This bill

- Phases out Russian uranium, and suspends imports by 2028

The ADVANCE Act (S.1111) vs Atomic Energy Advancement Act (H.R.6544)

ADVANCE

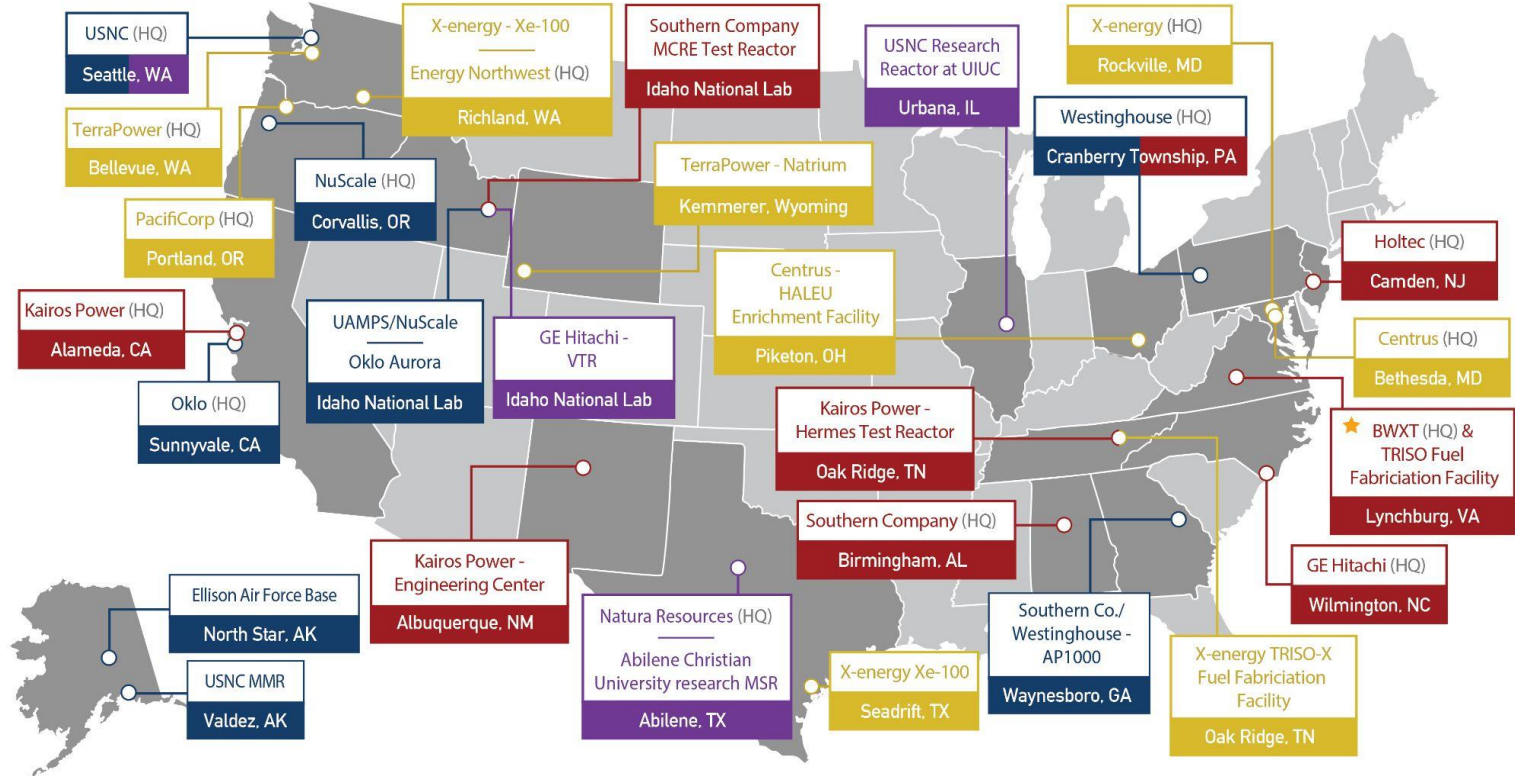
- Additional change to Commission corporate support funding would have significant positive impact
- Additional provisions are focused on NRC traineeships, nuclear closure communities, and being prepared to license additional nuclear fuel cycle facilities

- 50%+ of both bills are aligned
- Overlapping topics include: exports; investments by allies; fees; prizes; creating metrics and milestones; siting nuclear on brownfields, and extending Price Anderson.

AEAA

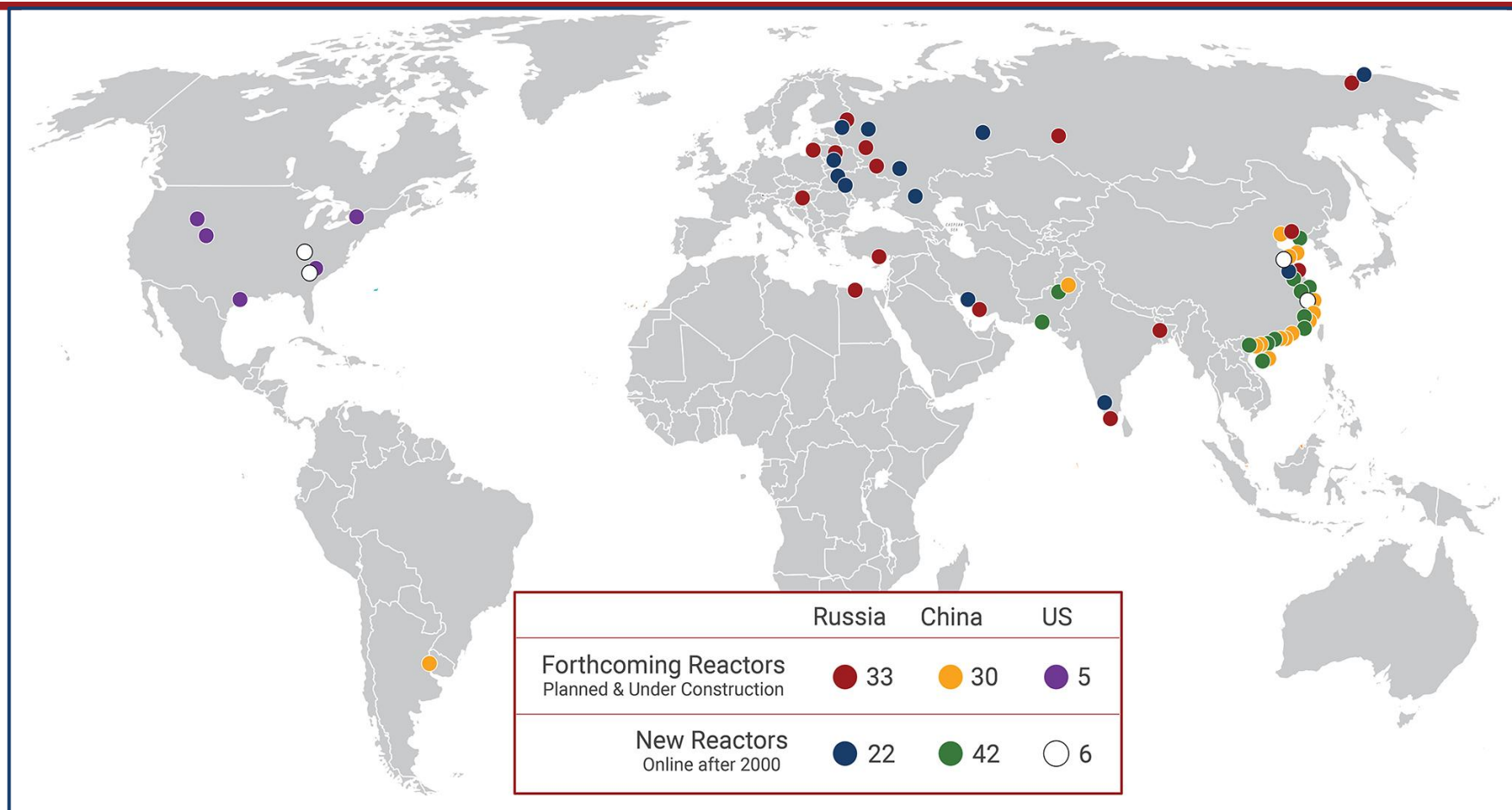
- Additional provisions would have significant positive impact
- Improves the environmental review/permitting process
- Accelerates the issuance of subsequent reactor licenses
- Creates a pilot program for long-term PPAs

Major Advanced Nuclear Projects in the US



ARDP Demonstration (Advanced Reactor Demonstration Program)	ARDP Risk Reduction (Advanced Reactor Demonstration Program)	Commercial Reactors	Research Reactors	★ Department of Defense Project Pele
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New and Forthcoming Reactors Worldwide



Interest in New Nuclear

New Nuclear for Non-Electric and Repowering Applications

Continued Interest

- There are no restrictions to licensing a nuclear plant at an industrial site, or for non-electric purposes
- Additional research is ongoing at Electric Power Research Institute (EPRI), Idaho National Lab (INL) and elsewhere



Repowering Energy Communities

Opportunity

- **32%** of coal plants are scheduled to retire by 2044
- **296** coal plants meet the criteria to host new nuclear after retirement
- **~75%** of energy jobs saved in coal to nuclear repowering

Interest and Action

- TerraPower reactor with PacifiCorp in Wyoming
- Duke NRC Early Site Permit
- EPRI White Paper Series
- Ongoing studies (DOE, BTI)



Process Heat and Industrial Electricity

- X-energy at Dow Facility in Texas
- H2 hubs and 45V H2 production tax credit
- Upstream oil and natural gas



Other Domestic Policy Interest

- LPO New Nuclear Accelerator Program (under development)

Nicholas McMurray

Managing Director, International and Nuclear Policy
mcmurray@clearpath.org