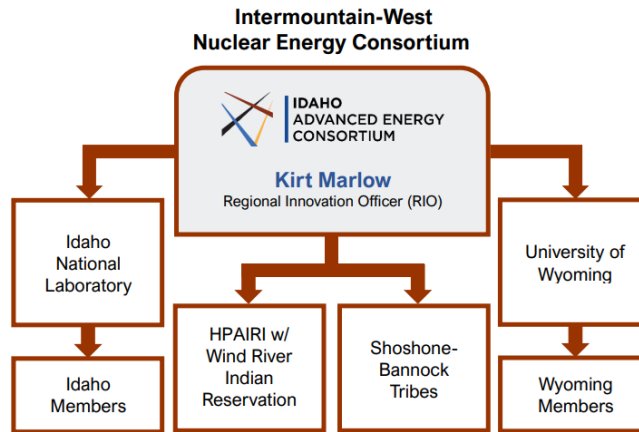


# The Intermountain-west Nuclear Energy Corridor Designation Proposal

## 1.0 Introduction

With an EDA Tech Hub designation, Idaho and Wyoming will formalize the creation of the Intermountain-west Nuclear Energy Corridor, building on the strengths of the states' history in energy production, research and development, equity, and security. A Tech Hub designation will catalyze America's advanced nuclear energy industry by growing an already present regional nuclear manufacturing and service sector in Idaho and Wyoming while accelerating entrepreneurship, commercializing long-standing research programs, and scaling up the energy economy. INEC will be led by the Idaho Advanced Energy Consortium (IAEC), Idaho's premier advanced energy economic development organization. IAEC Executive Director Kirt Marlow will participate as the Regional Innovation Officer for the INEC Tech Hub.

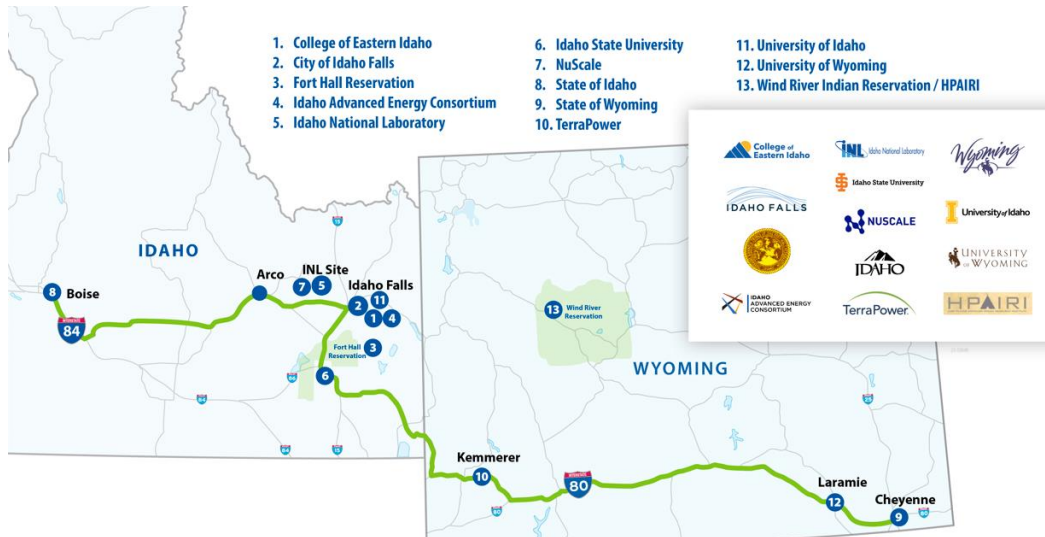


If successful, U.S. export revenues of new nuclear are estimated at \$1.9 trillion and the domestic market is anticipated to reach \$90 billion over the next 30 years (*Global Nuclear Market Assessment Based on IPCC Global Warming of 1.5° c Report, 2020*). The U.S. is expected to prove the viability of advanced nuclear small modular reactors (SMR) and microreactor technologies in the coming decade. With an EDA Tech Hub designation, INEC can solidify a sizable portion of the global SMR/advanced reactor market for domestic vendors, expand clean electricity generation, increase energy equity and security, support underserved populations and much more. Through EDA support and with the region's unique resources, infrastructure and capabilities, the INEC Tech Hub will create a thriving economic engine to efficiently manufacture and deploy advanced nuclear technologies across the globe in 10 years.

INEC's primary key technology focus area (KTFA) # 9 is advanced energy and industrial efficiency technologies, specifically advanced nuclear technology deployment and production to expand electricity generation, storage, clean energy access, etc. KTFA (# 8) cybersecurity and critical infrastructure protection is also critical to INEC efforts. Lastly, KTFA (# 4) advanced manufacturing is a natural supporting technology needed to produce and deploy SMR and microreactors. This combination of KTFA, will allow INEC to create a globally competitive nuclear energy Tech Hub in the next decade.

The INEC geographical area includes the Idaho Falls and Pocatello metropolitan statistical areas (MSAs); Laramie, Rock Springs and Blackfoot micropolitan statistical areas; and Caribou, Bear

Lake, Lincoln (including Kemmerer, WY) and Carbon counties. The corridor’s main office will be in Idaho Falls, where IAEC is located. Idaho and Wyoming are both EPSCoR eligible states, and Wyoming also qualifies as a low population state.



## 2.1 Designation Criteria: Economic Impact and Market Competitiveness

**Environmental Advantages:** The need to deploy SMRs and microreactors is driven by the global adoption of net-zero goals. The world will benefit from increased air quality and greenhouse emissions reduction, etc. by accelerating deployment of SMR and microreactors. As a dispatchable power resource, nuclear energy has the lowest life cycle emissions, the smallest footprint, and is highly transportable, making it the perfect complement to other renewable resources in a decarbonized world. By leveraging INEC’s deployment of advanced nuclear we can further enhance the global energy economy with the deployment of additional clean energy technologies (like hydrogen, synthetic fuels, etc.) also being developed in the INEC region. Combining these advanced energy technologies lays the groundwork for creating hyper-efficient integrated energy systems, taking a giant leap towards a cleaner energy future.

**Expertise Advantages:** INEC represents an unrivaled concentration of subject matter expertise in nuclear energy, advanced reactor technologies, cyber (physical, grid security, etc.), material testing and energy manufacturing. The Idaho Falls MSA has a nuclear engineer location quotient of 92.37, the highest in the nation (U.S. Bureau of Labor Statistics, 2022). Idaho National Laboratory employs one of the largest concentrations of technical professionals in the Rocky Mountain region (Idaho Department of Labor, 2023).

**Economic Advantages:** The INEC region has achieved first-mover status for advanced nuclear deployment with two planned SMR projects, including a repurposed power generation facility in Kemmerer, Wyoming (Natrium) and Idaho’s first commercial SMR (VOYGR) along with many microreactor projects (PELE, OKLO, etc.). These projects are slated to springboard the market of SMR and microreactor deployment made easier by the region’s ready access to raw materials. Our region’s business-friendly nature is supported by decades of ancillary legislation, including capital investment tax exemption legislation and Idaho’s zero-based regulation Executive Order, and Wyoming’s commitment of \$10 Million dollars to support SMR deployment (Bleizeffer,

2023)- making INEC an extremely accessible home for large energy capital projects. With low cost of living and growth across the INEC region, led by over 6.5% regional population growth in eastern Idaho, INEC is the premier location to actualize this exclusive opportunity (Regional Economic Development for Eastern Idaho, 2023). In addition to the deployment of new nuclear technologies, the INEC region is uniquely positioned to reconfigure coal infrastructure and offering skilled workers from the coal industry continued meaningful work, at higher rates of pay, in a new nuclear power plant. NEI (2023) estimates nuclear power plant jobs pay an average of 20% more than jobs supported by other energy sources. Retaining these jobs will sustain local communities that may otherwise be devastated by the shutdown of coal power stations.

**2.2 Designation Criteria: Assets/Resources/Capabilities**

The INEC region contains many public and private entities that have historically supported the energy economy, nationally and internationally. Our leaders know how critical our corridor’s role is solving the world's future energy needs. In Idaho, the Leadership in Nuclear Energy Commission make recommendations to the governor on policies and actions the state of Idaho can take to support the nuclear industry. In Wyoming, House bills 74 and 200, along with the Wyoming Energy Authority, create opportunity and collaboration for SMRs and decarbonization advancements in the state (Envoy Public Labs, 2020). INL is the nation’s center for nuclear energy R&D where 52 reactors have been built and where the global nuclear industry has its roots. INL and its partners, including decades of support from University of Wyoming, have facilitated over 70 years of intensive research and development with world-class facilities and expertise that would be virtually impossible to replicate. INEC plans to use tools such as the CONNEX™ Wyoming program – a partnership designed to strengthen the local and domestic manufacturing supply chain, to enable a regionwide, globally efficient production chain.

**2.3 Regional Coordination and Partnerships**

IAEC is leading the following regional partners to create the INEC Tech Hub.

<b>Industry/Employer</b>	TerraPower, Curtiss-Wright, Moxie Endeavors, Kiewit, Premier Technologies, ESTECH, Idaho Environmental Coalition, Idaho Falls Power
<b>State, Local, or Tribal Government</b>	Shoshone Bannock Tribes, HPAIRI/Wind River Indian Reservation, Idaho Department of Commerce, Idaho State Senate, city of Idaho Falls, Wyoming State Senate, state of Idaho, state of Wyoming, Butte County, Wyoming Energy Authority
<b>Higher Education</b>	College of Eastern Idaho, University of Wyoming, University of Idaho, Western Wyoming Community College, Idaho State University
<b>Economic Development</b>	Idaho Advanced Energy Consortium (Lead for INEC), Altura, Wyoming Business Council
<b>Labor Organization</b>	Idaho Workforce Development Council, Idaho AFL-CIO, USW Local 652, Wyoming Workforce Services
<b>National Laboratory</b>	Idaho National Laboratory
<b>Industry Association</b>	Wyoming Manufacturing Works

INEC recognizes the importance of convening, listening, educating, and partnering with community members to advance energy equity. The INEC region is the center for nuclear energy collaborations such as the National Reactor Innovation Center and the Gateway for Accelerated Innovation in Nuclear, national programs hosted by and facilitated from INL. Shared interests of INEC members have established connections across key groups including

industrial experts, higher education institutions, industry, and government entities. An EDA Tech Hub designation allows INEC to create resources for existing and new industry partners to collaborate on, use, and build on to support the needs of our Tech Hub partners.

#### **2.4 Designation Criteria: Partner Associations, Diversity, and Service to Underserved**

INEC partners have engaged diverse and underserved populations for decades with rural populations and roughly 13% of the states' population is Hispanic and almost 3.5% is American Indian and Alaska Native (U.S. Census Bureau, 2021).

INEC will build on past efforts, including the *Sin Limites* events to engage the Hispanic communities, engaging young women in STEM through *My Amazing Future*, engagement and workforce development with the Shoshone-Bannock Tribes, and tribal outreach and building capacity with the Wind River Energy Commissioners. An intentional task force will help INEC expand existing programs, create regionwide coordination, and enhance efforts to support and expand minority owned small business development and entrepreneurship. Reaching some of the most rural populations in the country can be difficult, so INEC has focused on additional investments to bring opportunities to these populations.

#### **2.5 Designation Criteria: Composition and Capacity of the Regional Workforce**

The Nuclear Energy Institute (2023) estimates that the construction and operation of a 600-megawatt SMR could employ 900 manufacturing and construction workers for about four years and create 300 permanent positions for the 60-year life of the plant. INEC's regional community colleges like College of Eastern Idaho, Western Wyoming Community College, Idaho State University's College of Technology, and others have long-standing histories of training the energy industry's workforce and are prepared to train the skilled labor force vital to producing and operating reactors. Partnerships with local labor unions and the recent opening of the Eastern Idaho Workforce Training Center signal commitment from the region. The INEC is also positioned to educate the energy workforce with nuclear engineering, materials science, and other related programs at nearby Idaho State University, University of Idaho, and the newly minted Nuclear Energy Research Center at the University of Wyoming. Supporting engineering, research, and technician related programs are housed within the two-state region making the intermountain west well-prepared to coordinate and facilitate this talent pipeline. Recent state legislation will increase enrollment into these programs: (1) Idaho LAUNCH, \$8,000 scholarship for every Idaho graduate headed into in-demand (nuclear energy and related) programs, and (2) Wyoming Innovation Partnership received ~\$55M in state funding to align higher education to meet the needs of the advanced energy industry.

Looking forward: INEC partners will support the existing Wind River Tribal College by expanding coursework aligned to workforce needs and creating a workforce training facility on the Fort Hall Reservation to tie our Native American workforce to upcoming energy projects. The in-depth workforce retention plan for the Natrium reactor will serve as the global footprint for how to upskill coal plant workers into nuclear operations professionals, reducing negative effects on these communities. EDA's support through a Tech Hub designation will expand current and future program offerings to meet the needs of the energy industry and its suppliers.

## **2.6 Designation Criteria: Innovative “Lab to Market” Approaches**

To enhance INEC's supply chain, we will commercialize research from our member universities and national laboratory including: The Idaho Global Entrepreneurial Mission Grant, INL's Technology Deployment Program, the University of Wyoming's Technology Transfer and Research Products Center, and the Wyoming Innovation Partnership. INEC's approach aspires to reinvigorate the entire nuclear energy and security infrastructure domain. These existing capabilities and initiatives cement INEC's stature as a hub for pioneering manufacturing, materials science, advanced construction, and cybersecurity, and advancing nuclear projects both nationally and internationally.

Looking forward: INEC intends to accelerate entrepreneurship and enhance the “lab to market” innovation ecosystem by creating: (1) Nucleus Collaborative Hubs that co-locate researchers, entrepreneurs, and experts to expedite technology development; (2) Fusion Incubators that provide budding nuclear start-ups with resources, mentorship, and seed funding; (3) Quantum Leap Internships that immerse young, diverse talent in pivotal nuclear projects; (4) Atomic Market Showcase, an annual event to spotlight recent nuclear breakthroughs.

## **2.7 Designation Criteria: National Security Impacts**

Regional and national energy security will be closely tied to our ability to rapidly expand clean electricity generation capacity. Trailblazing the next generation of nuclear reactors will bolster our geopolitical alliances and maintain U.S. influence on international safety standards. SMR and microreactors provide incomparable protection against natural disasters and intentional threats to power grids. The portability and modularity of these advanced reactors make them capable of powering even the most remote areas, ensuring energy security and greater access to affordable and reliable clean energy (NEI, 2023). By investing in the center of the U.S., those assets will be better protected and more secure. The INEC region is also home to many of the key contributors who developed the nation's physical and cybersecurity standards, including the NIST framework, securing critical digital systems, and improving infrastructure resiliency. The INEC regional economy is born out of a national laboratory and is driven by the energy industry, the critical effort to secure our nation is entrenched in the communities, partners and R&D efforts that have been, and will continue to be, built here.

## **3.0 Conclusion**

When deploying and efficiently producing microreactors and SMRs will make or break the world's ability to decarbonize the human footprint, provide national energy security, and achieve global competitiveness, urgency and conviction is imperative. INEC is key to accomplishing this task. With a long-standing history and growing infrastructure, INEC is poised to build on the region's foundation and lead advanced nuclear reactor deployment and production. Reactor development companies have already planned for their second, third, and more projects to be deployed in INEC communities. To accelerate and successfully achieve deployment goals, it will take an immense effort to strategically prepare the communities and workforce and centralize the supply chain. An EDA Tech Hub designation will solidify the Intermountain-west Nuclear Energy Corridor and its deployment of advanced nuclear technologies across the globe in 10 short years.

## Appendix

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