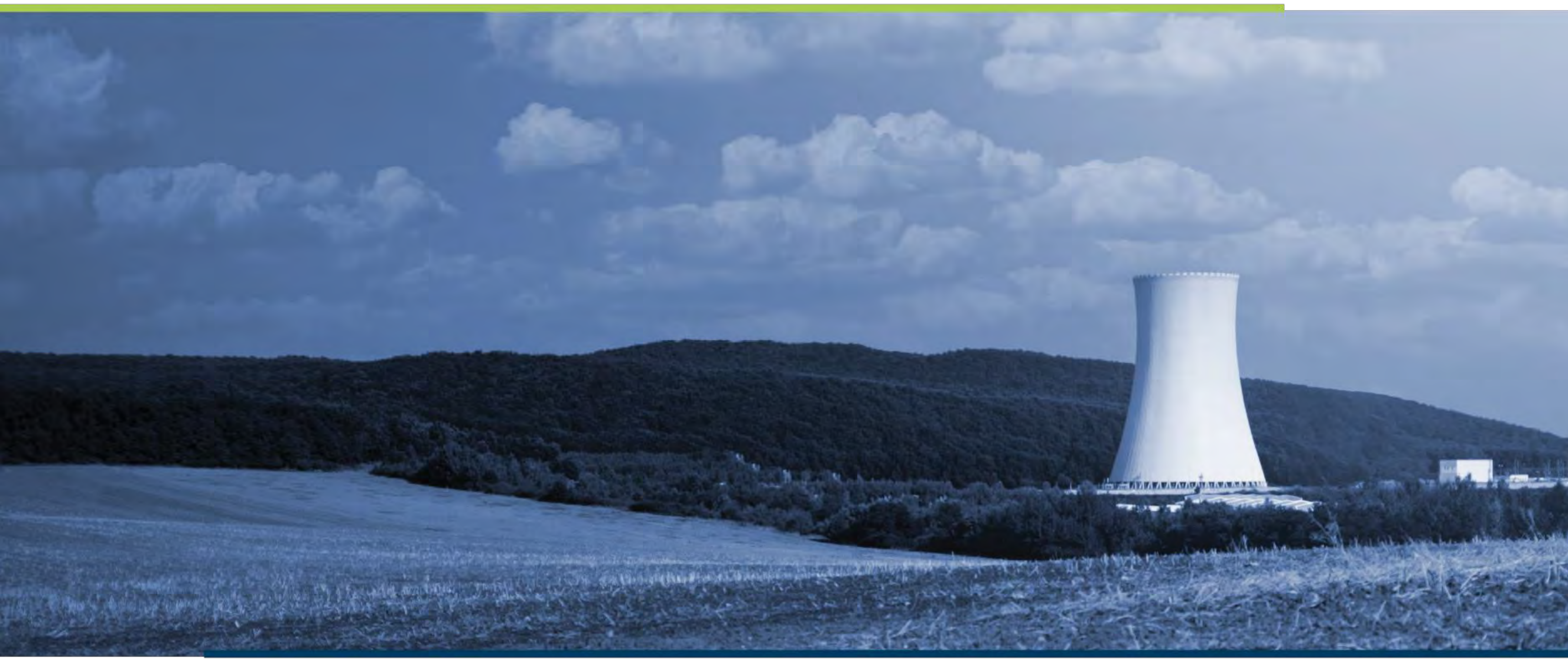
Request for Information on Establishment of Nuclear Lifecycle Innovation Campuses

Response from: West Virginia Office of Energy



West Virginia Office of Energy

April 1, 2026

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Executive Summary

West Virginia is a national energy powerhouse. As the country's fifth largest energy producing state, a member of the PJM Interconnection regional transmission organization, and a net exporter of energy, West Virginia understands energy. West Virginia's leadership in the energy industry, and its 100+ year long history of energy production, processing, and distribution, make it a highly favorable state for entrance into the nuclear landscape. West Virginia enjoys a vast transportation network developed for coal distribution, abundant development sites ready for industrial use, and a location surrounded by nuclear-ready or nuclear-fueled states, all of which position the state to be an important contributor to the integrated nuclear fuel cycle. This RFI will detail West Virginia's favorability as a potential site for a future Nuclear Lifecycle Innovation Campus ("Innovation Campus") and present its planned solutions to potential challenges as it seeks to undertake a new nuclear enterprise in the state.

West Virginia is determined to become a regional leader in nuclear energy development through engagement in multiple national initiatives and the formation of strong interstate partnerships. The State is an active participant in the Atoms for Appalachia collaboration with Kentucky, Tennessee and Virginia. It was also selected as one of a select few states to host the National Governors Association Nuclear Energy Retreat, demonstrating national recognition of its commitment. West Virginia is developing a comprehensive 25-year nuclear energy plan as part of the Governor's 50x50 strategy (50GW of total generation by the year 2050) and is directly involved in NASEO's Nuclear First Movers Initiative, The Appalachian Regional Commission and the DOE supported GAIN network. Collaboration with nuclear subject matter experts from across the country has allowed for significant development and played an important role in nuclear planning. Together, these engagements have brought significant subject matter expertise into the State and contributed to establishing a formal in-state nuclear working group, positioning West Virginia to strategically advance nuclear deployment, research, workforce development, and fuel cycle innovation.

West Virginia is approaching nuclear energy with enthusiasm, recognizing its potential to become a national leader in the sector. The state is strategically positioning itself to develop the infrastructure needed to support a full, end-to-end Innovation Campus in the future. West Virginia is intentionally beginning with nuclear initiatives that are actionable and high-value, particularly those tied to the spent and partially spent fuel stream and backend services, areas where the state can quickly demonstrate success and build momentum. This initial phase would also include the development of a dedicated entity, potentially entitled The West Virginia Nuclear Authority (similar to nuclear authorities already established in eight other states), that would provide West Virginia with the capacity to administer nuclear siting, financial incentives, community engagement, workforce development, risk management, and other appropriate functions, and be tasked with stewarding nuclear development in the state. This phased approach allows West Virginia to leverage its long-standing strengths as an energy powerhouse while steadily expanding into additional nuclear functions, including generation capacity for targeted commercial and industrial loads.

West Virginia has the experience and strategic vision to integrate nuclear energy into its strong energy portfolio, and it is positioning nuclear energy as a practical component of future capacity growth. In addition, West Virginia's nuclear energy planning advances the goals outlined in recent federal executive orders, which collectively underscore the urgent national imperative to secure economic resilience, energy independence, and technological leadership. The creation of a modern, secure, sustainable, and fully integrated nuclear lifecycle campus in West Virginia will play an important role in this effort.

As a potential nuclear campus site, West Virginia offers favorable geography and established energy infrastructure to support a nuclear lifecycle campus, along with a regulatory environment primed for flexible nuclear development. Geographically, WV is centrally located among multiple states on the PJM Interconnection grid, enabling efficient distribution, transmission, and coordination of power with surrounding states that already benefit from nuclear generation. The state's energy infrastructure is robustly constructed, extensively networked, and immediately prepared to transmit additional power sources, supported by long-standing experience in developing delivery systems for new energy resources. In addition, West Virginia's major river systems and extensive rail network provide critical logistical advantages for transporting heavy equipment, specialized materials, and nuclear-related components. These multimodal transportation assets strengthen the state's ability to support safe, efficient movement of goods essential to nuclear operations, and further enhance its suitability as a future nuclear campus location.

West Virginia is actively leveraging public-private partnerships to advance nuclear development and attract the high-performance technologies emerging across the sector. The state is already working to mobilize significant private capital alongside targeted state investments, positioning itself to support new nuclear-related industries and the large energy loads they bring, including data centers and other power-intensive operations. This momentum is reinforced by strong political support for energy growth, demonstrated through recent statewide initiatives such as the establishment of a Data Economy Office and the rapid expansion of the West Virginia Office of Energy, to meet rising demand for energy planning and innovation. Combined with a skilled, legacy energy workforce eager to take on new challenges, these efforts underscore West Virginia's commitment to building a modern, competitive, and investment-ready environment for nuclear development.

Challenges exist along West Virginia's nuclear path, but the state is confident in its ability to address them through its deep energy expertise, strong workforce, and long-standing role as a national energy leader. West Virginia is actively diversifying its energy portfolio, positioning nuclear as a natural extension of its strengths in coal, natural gas, and emerging advanced energy sectors. With an engaged Governor, strong legislative backing, and a clear commitment to responsible energy growth, the state is well-prepared to navigate the complexities of nuclear development and advance toward becoming a leading player in the nation's evolving nuclear industry.

RFI Responses

Question 1: State Interest

What level of interest does your state have in hosting a comprehensive Nuclear Lifecycle Innovation Campus? Provide a detailed description of your state's strategic vision and approach to developing an Innovation Campus that integrates all functions outlined in Section II of this RFI, or, if not all functions are integrated, please specify why.

West Virginia has the maximum interest in hosting a comprehensive Nuclear Lifecycle Innovation Campus in alliance with national priorities and continuing to play a strategic role in the nation's energy security. The state also understands and embraces the Trump administration's May 2025 executive orders that call for the significant expansion of nuclear energy output, providing a catalyst for a national nuclear energy renaissance.

West Virginia proposes to serve as the nation's central hub for nuclear fuel recycling, interim storage, and long-term materials stewardship. West Virginia is the 39th most populous state in the U.S., the country's fifth-largest energy producer, and a long-standing net supplier of energy. West Virginia has a deep and rich manufacturing history incorporating chemical manufacturing, steel and metal manufacturing, and glass production; as well as global-scale coal and natural gas production, all of which offer a strong foundation for the activities associated with developing Innovation Campus infrastructure, site facilities, technical services, and operations.

Additionally, West Virginia's new 50x50 energy policy framework outlines an ambitious goal for the state to triple its electric generating capacity to 50 GW by 2050, to ensure its role as a dominant regional energy supplier and attract large scale energy loads, including those associated with the nation's burgeoning AI industry. Nuclear energy is integral to achieving this goal and the state's overall economic strategy. Achieving this target will require continued use of traditional fossil resources such as coal and natural gas for baseload power generation, alongside the expansion of other energy sources, including nuclear energy. West Virginia's regulated utility companies are very interested in meeting shifting power load demands within the state.

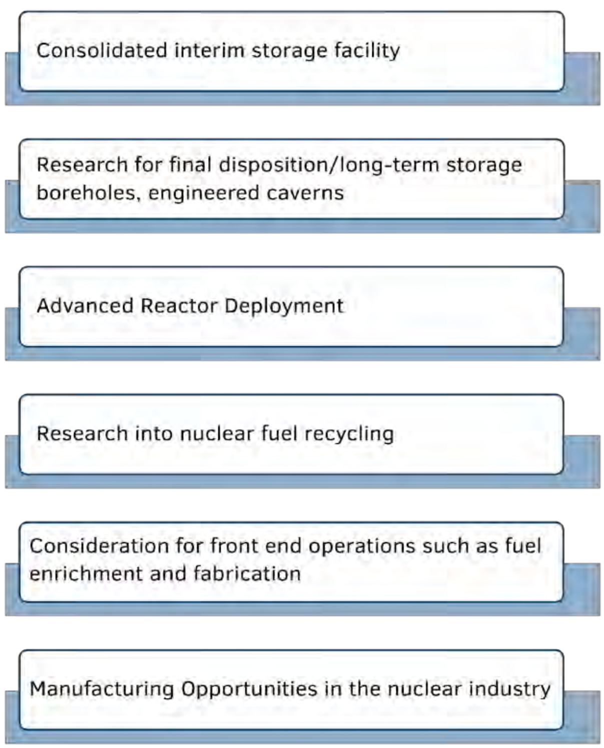
West Virginia has already taken significant steps to proactively build the foundation for long-term participation in the nuclear energy space. In 2022, the state passed legislation repealing its decades-long moratorium on nuclear power plant construction,[1] signaling its commitment to developing the industry. In 2024, the state enacted legislation enabling deployment of energy microgrids specifically encouraging the use of Small Modular Reactors (SMRs) as key power components of independent, self-supporting energy resources, to attract the hyperscale power loads associated with the information technology industry. Additionally, West Virginia has a nuclear power working group consisting of government, higher education, and industry representatives focused on the state's nuclear energy opportunities. A comprehensive nuclear energy policy is also currently under development and will guide the state's energy integration into the nuclear lifecycle, as well as support future in-state nuclear power generation. Within this context, an Innovation Campus will serve as an initial platform for

[1] Nuclear Newswire

West Virginia's entry into the nuclear power sector, as well as contribute to nuclear lifecycle activities across the broader region.

State leadership has thought deeply about the enactment of a nuclear lifecycle opportunity and has proposed a development cadence to guide West Virginia across the range of industry requirements. The West Virginia Office of Energy (WVOE) Nuclear Lifecycle Innovation plan will consider the order of operation as described below, focusing on the "back-end" of the process first.

Figure 1 West Virginia Innovation Campus Functions in Proposed Order of Priority



West Virginia has identified partially spent and spent nuclear fuel streams management as a near-term actionable strategic opportunity. West Virginia proposes anchoring the Nuclear Lifecycle Innovation Campus around advanced fuel recycling, materials recovery, and responsible long-term nuclear materials stewardship. This opportunity would anchor the early phase of its Innovation Campus' lifecycle functions. A key component is obtaining a license for and developing a consolidated interim storage facility (CISF), hosted at the Innovation Campus and operated by a private-sector partner. The CISF would enable storing partially spent and spent nuclear fuel from decommissioned or active nuclear power plant sites at one location. This would simplify security and reduce government liability for storage costs, as well as offer a resource for neighboring states that would further advance West Virginia's goal of serving as a regional nuclear technology hub. Pennsylvania, Maryland, Virginia, and Ohio currently host a combined 16 operating nuclear reactors and store their spent nuclear fuel across ten sites. The CISF and the state's nuclear research capability will serve as a powerful and effective launching pad for development of nuclear technology within the state that would have regional and national impacts, consistent with the cadence of its Innovation Campus undertaking.

West Virginia has intently considered the needs associated with nuclear lifecycle infrastructure development and operation and recognizes the importance of the extensive research required to support advanced nuclear technology. The state recognizes that the nuclear energy industry's research requirements must focus on enhancing safety, reducing capital costs, developing advanced fuel and materials production, undertaking advanced recycling, and scaling up advanced reactor technologies. Thus, it views nuclear technology research as a potential "point of the spear" for West Virginia's early Innovation Campus and will rely on outputs from nuclear energy research facilities already operating in the state to provide input into its initial nuclear focus.

West Virginia University (WVU) and Marshall University have extensive experience and are deeply engaged in energy research; both are well positioned to tackle the research required by the nuclear energy industry and the state's nuclear power enterprise. Additionally, the National Energy Technology Laboratory (NETL) in Morgantown, West Virginia near WVU, is a local but nationally funded research lab primed to undertake nuclear energy research in support of both the initial and secondary phases of Innovation Campus development. NETL and WVU have a long-standing and interconnected research partnership. West Virginia intends to incorporate knowledge obtained from WVU's robust nuclear energy research, reporting, and experiments to jumpstart the early phases of the State's nuclear ambitions. West Virginia universities will be engaged to discuss workforce development pipelines from other energy sectors.

Moreover, the Innovation Campus will be structured to contribute research aimed at developing commercially viable, proliferation-resilient technologies that could support a more efficient closed-fuel cycle. The Innovation Campus will be a strong and welcoming host for research partnerships. These collaborations will advance research into the benefits of sustainable fuel cycles and address how to make them viable in the U.S. Among its highest priorities, the Innovation Campus will actively engage in the effort to evolve from once-through to closed-cycle nuclear fuel use to repurpose spent nuclear fuel.

Recognizing that spent nuclear fuel is also targeted for long-term storage, West Virginia believes that it offers geological attributes suitable for the alternatives of borehole and engineered cavern facilities to meet such storage requirements. West Virginia is proposing an additional early phase Innovation Campus undertaking that will layer in research for the potential use of available state lands for final disposition of spent fuel. West Virginia would work to demonstrate the efficacy of the state's geology (and similar geology in other states) within the scope of research performed by its universities and laboratories as a means of final spent fuel storage, emphasizing West Virginia's capability to respond to comprehensive nuclear lifecycle needs. This proposed geological research would explore final fuel disposition options, positioning West Virginia to develop end-of-lifecycle infrastructure.

West Virginia's Innovation Campus will also be positioned to support advanced reactor deployment by hosting research, experimental, or demonstration reactors operated by commercial developers or state academic institutions. Additionally, the site could host SMRs to power the Innovation Campus and nearby energy-intensive infrastructure, including new data centers. The Innovation Campus' CISF could then potentially accept spent nuclear fuel from demonstration reactors operating on its site. Eventually, the Innovation Campus may, through nodal sites within the state and associated with the primary facility, offer itself as a strategic reserve for HALEU-enriched and recycled uranium in secondary development phases.

Over time, West Virginia's facility could also be designed to integrate Low Level Radioactive Waste (LLRW) disposal, a "low hanging fruit" concept for generating additional revenue. This would be compatible with continued operation within the boundaries of the Appalachian Waste Compact, which ensures "interstate cooperation for the proper management and disposal of low-level radioactive wastes, and is aimed at reducing the State's volume of low-level radioactive waste."[2]

Finally, West Virginia is positioning itself for future nuclear industry manufacturing opportunities to leverage its rich manufacturing history and exceptional manufacturing workforce. This will be a byproduct of the siting of an Innovation Campus within the state and will serve as an in-state supply chain resource – dramatically reducing supply chain delivery timelines – as the progression of nuclear lifecycle infrastructure expands with the addition of Innovation Campus functions and processes.

West Virginia's robust transportation corridors, including interstate highways, Class I rail lines, and navigable rivers, provide dependable and secure routes for nuclear materials movement, an attractive attribute for promoting private investment, and offer significant supply chain benefits.

The potential activities described above represent the initial phase of West Virginia's Innovation Campus, targeted for development within one to ten years from Innovation Campus launch. In successive ten-year development periods, West Virginia will undertake expansion of the Innovation Campus to support a broader range of front-end and back-end nuclear lifecycle activities including nuclear fuel fabrication, enrichment, reprocessing, and final physical spent fuel disposition, aligning with the state's vision for energy leadership and diversification, and the nation's goal of achieving energy dominance that can strengthen its national security and supply chain resilience.

Additionally, please identify what your state requires from the federal government in order to be a host for an Innovation Campus, or what private resources may be required, and what resources the state would plan to contribute.

West Virginia expects private sector investment to serve as the lead resource for capital development of Innovative Campus facilities and commercial activities. The State will also pursue federal participation where appropriate, such as through cost-sharing for research initiatives, advanced reactor deployments, and other federally aligned activities. Federal loan guarantees, grants, and cooperative agreements may also support eligible components. West

[2] https://compacts.csg.org/compact/appalachian-states-low-level-radioactive-waste-compact/

Virginia, in addition to aligning its funding with state policy initiatives, will target its contributions toward catalyzing private investment, including State contributions to support its comprehensive 50x50 energy framework, as well as other potential tax incentives. Later RFI question responses provide additional detailed information.

Question 2: Proposed Sites Within the State

What specific sites within your state would you propose for hosting a Nuclear Lifecycle Innovation Campus, and why are they viable and suitable for the necessary functions? Please consider existing nuclear infrastructure, proximity to DOE sites, land availability, zoning, and environmental suitability. Include details on site characteristics, such as maps, geologic stability, access to utilities, and transportation networks.

West Virginia has an excellent selection of potential sites under consideration that may be viable for hosting an Innovation Campus, each located along accessible and development-ready industrial corridors. West Virginia is advancing multiple potential sites, demonstrating site flexibility.

Potential sites vary in composition and may consist of reclaimed mining lands, repurposed industrial sites, and/or other sites that offer robust electrical transmission capacity. Sites being considered vary in size from several hundred acres to several thousand acres, depending upon the nature of infrastructure requirements and the potential for assembling multiple smaller sites in proximity to one another, representing a multi-site aggregation. Research pilot projects will need large areas and sites must be geologically suitable for securing spent fuel storage. Sites suitable for Innovation Campus development will also have access to water for cooling and robust foundations for heavy construction and be located along accessible and development-ready industrial corridors with proximity to transportation networks.

West Virginia is currently considering a range of sites. Most of the potential sites are in some or all the following:

- Industrial areas with strong water and chemical infrastructure
- Remote, unpopulated areas with rail access
- Among former surface mines in coalfields

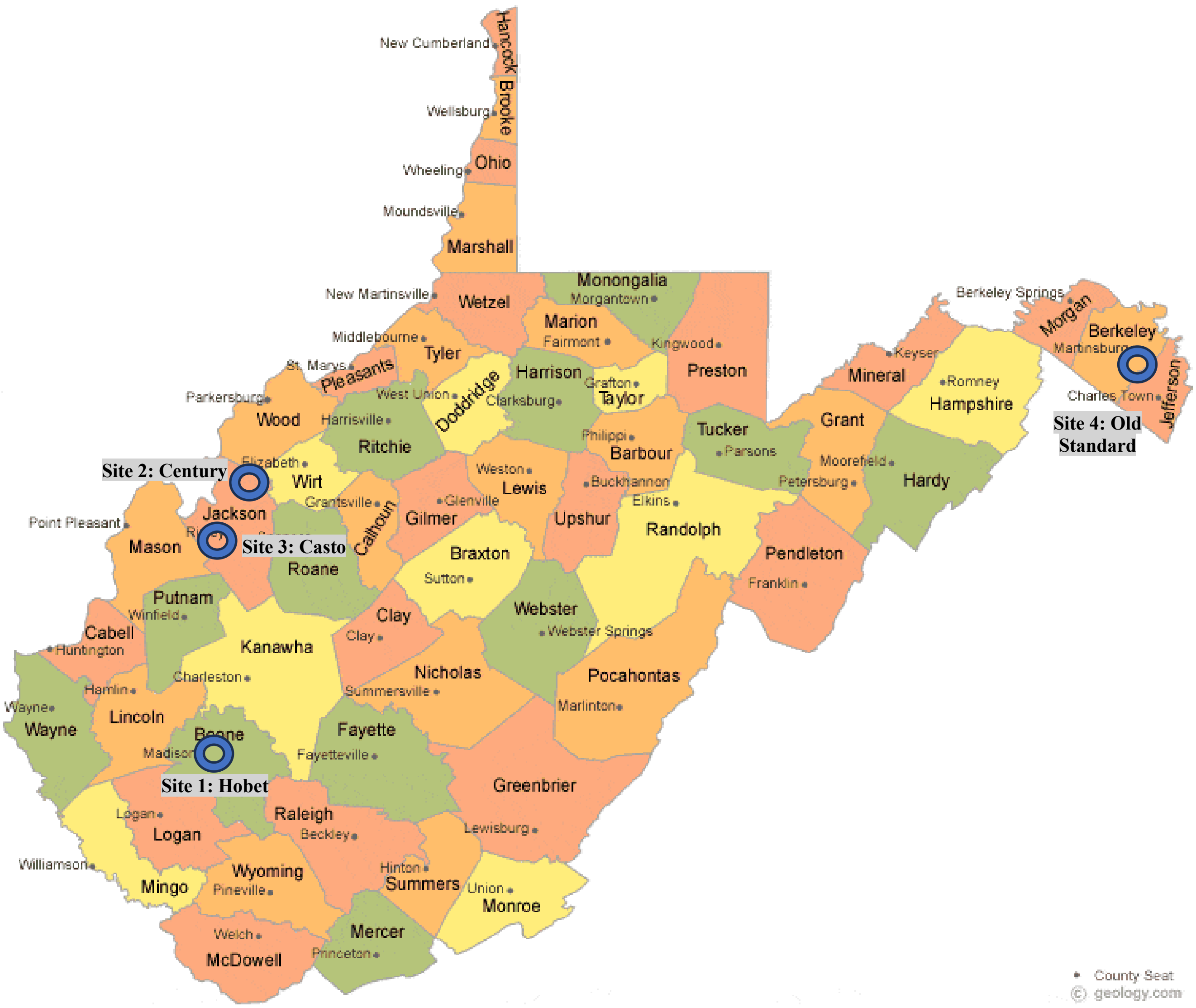
West Virginia will continue evaluating suitable site locations using its Economic Development Siting (EDS) site-selection tool, an established online site selection platform that has been successfully used to assess project development sites when considering investment throughout the state. The tool evaluates potential sites based on a suite of site and area characteristics, such as site availability, infrastructure readiness, suitability for expansion, and proximity to transportation networks. Additionally, WVU is developing a new Energy Siting tool for the WVOE to assess location suitability for advanced energy projects. WVU's tool will evaluate depleted mine lands for their potential use for developing nuclear energy infrastructure. West Virginia will also engage its Office of Coalfield and Community Development for preferred Innovation Campus site identification. This partnership will utilize Land Use Master Plans (LUMPs) developed for WV county, as significant skilled labor resources will be likely recruited from former coalfield sites. Together, these tools and resources will provide a robust, data-driven foundation for identifying sites that meet the technical, environmental, logistical, and workforce requirements for nuclear lifecycle infrastructure.

The following sampling of potential sites were initially obtained from **westvirginia.gov/available-sites/**. As shown in

Figure 2, potential sites are in Boone and Jackson counties in the state's central region (Jackson County borders the Ohio River), as well as Jefferson County in the state's eastern panhandle (a site noted for site size, access to energy and natural resources, and access to transportation networks). None of the proposed sites have been fully vetted; West Virginia is early in the site selection process. The sites have not been qualified for geological characteristics.

- Site 1: Hobet; 1,000 acres; Latitude/Longitude: 38.1102, -81.8497; Boone County
  - Adjacent to US Route 119, no water lines listed, power available.
- Site 2: Century; 380 acres; Latitude/Longitude: 38.9388, -81.8242; Jackson County
  - Five miles from US Route 33 and I-77, access to rail & waterway, water, gas, and power all available
- Site 3: Casto, 508 acres, Latitude/Longitude: 38.7587, -81.7046, Jackson County
  - 0.01 mile from I-77, water, power, and gas all available
- Site 4: Old Standard, 407 acres, Latitude/Longitude: 39.3051, -77.7739, Jefferson County
  - Railway access, 0.25 mile from US Route 40, 2 mi from dam, 35-acre lake on site, water, power, and gas all available

Figure 2 West Virginia County and County Seat Map



The potential viable sites above were selected using the state's EDS tool, using inputs consistent with state energy goals and industrial development needs – including compatibility with existing land use zoning classifications and the ability to accommodate long-term growth. Many West Virginia industrial sites have zoning designations compatible with large-scale energy and manufacturing projects and are located near established energy corridors, benefitting from West Virginia's long history of manufacturing and power generation, site availability, community readiness, and appropriate regional economic factors in support of site selection success.

Other siting opportunities in addition to the four noted sites above have been identified:

- Grant County, within the eastern region of the state, where regulated electric utilities have shown interest in nuclear development.

- Mason County, where an industrial partner expressed interest in SMR development on site.
- The Kanawha Valley in the center of the state and the Ohio River Corridor in the north.

Environmental information is also integrated into state siting evaluations, enabling consideration of environmental factors such as wetlands, protected habitats, historical resources, and existing environmental permits to locate sites with minimal environmental constraints and proactively plan for any necessary mitigation. The State's approach ensures that environmental stewardship remains a key component of site selection criteria.

Although West Virginia does not currently host nuclear power generation, it is located in close proximity to various states with operating commercial nuclear power reactors. Figure 3 shows that there are 13 states (PA, MD, VA, NC, SC, TN, IL, MI, OH, NY, NJ, GA, AL) with nuclear power generation within approximately 500 miles of West Virginia. Together, these states operate 64 reactors, representing over two thirds of the operating commercial reactors in the US. This clearly illustrates the region's existing strength and creates an extraordinary opportunity for collaboration, supply chain integration, and shared workforce development.

West Virginia recognizes the importance of domestic enrichment capacity, including both fuel types (LEU & HALEU), to support national energy security and advanced reactor deployment. As the Innovation Campus evolves, the State is well-positioned to support enrichment-related activities in coordination with private sector partners, particularly given its proximity to significant domestic uranium resources, including the Coles Hill deposit in Virginia.

The State's excellent property development siting tools allow the incorporation of multiple infrastructure considerations for Innovative Campus site selection and enable West Virginia to identify sites in relation to nuclear facility locations where it can effectively collaborate within a regional network.

Figure 3 Operating Commercial Nuclear Power Reactors

Question 3: Potential Private Sector Partners

Which private sector partners does your state anticipate working with to develop these Nuclear Lifecycle Innovation Campuses? What roles will those partners play? Provide details on the process and timeline for selecting and engaging these partners.

West Virginia is interested and willing to pursue any and all funding opportunities offered at federal, state, or private funding levels.

West Virginia anticipates attracting significant private investment once an Innovation Campus is sited within the state, both for underwriting the range of privately-owned nuclear infrastructure (e.g., SMRs and advanced reactors) and supply chain modernization operations (e.g., innovative component manufacturing, advanced nuclear material handling, and spent fuel management), and in the form of significant new end use loads, ranging from large scale manufacturing to hyperscale data centers. Data centers anchor large, predictable load profiles that support financing for advanced reactors.

Electric utilities such as American Electric Power (AEP), FirstEnergy, and Dominion Energy are projected to expand their presence within West Virginia in support of power generation development. AEP and FirstEnergy are the dominant existing electricity generation companies serving West Virginia. Dominion Energy, which predominately serves neighboring Virginia, has expressed interest in pursuing both SMR and advanced reactor designs to supplement West Virginia's coal-fired plants, an initiative fully aligned with the State's goal of establishing 50 GW of in-state generation capacity within the next 25 years. The State recognizes that other advanced reactor companies can also be targeted as private sector partners. Negotiations with data center developers and other hyperscale power users demonstrating interest are underway. West Virginia is confident that major technology market participants will consider the state for hyperscale data center development.

Key private investors searching the U.S. for suitable investment opportunities are increasingly entering into power purchase agreements to jumpstart advanced nuclear generation investment. West Virginia's economic development team will lead the effort and aggressively pursue these private investors and others – infrastructure and private equity funds, venture capital sources, and specialized energy investment firms – with the goal of attracting their funding to underwrite the costs associated with West Virginia's staged plan for scaling up to a fully functioning Innovation Campus. According to S&P Global, private equity and venture capital investments in advanced nuclear companies in 2024 surpassed the total deal value of the past 15 years combined.[3]

In parallel with private investment and equity participation, West Virginia anticipates that private sector partners may leverage federal financing tools administered by the DOE, including low-cost debt financing available through DOE's Loan Programs Office and its Energy Infrastructure Reinvestment and Energy Dominance Financing authorities. These programs can support qualifying private companies across the nuclear lifecycle. Coordination with DOE financing mechanisms would help mitigate risk during early project phases, improve capital stack

[3] S & P Global, *Private equity flows to advanced nuclear companies hit record high in 2024*
By Meerub Anjum and Neel Hiteshbhai Bharucha Feb 4 2025

feasibility, and accelerate private sector participation in the development of an Innovation Campus. Through mechanisms like loan guarantees, direct loans, tax credits, and public-private partnerships, the government shares risks with investors, mobilizing large-scale private capital for infrastructure development.

Data center developers will likely be investors in Innovation Campus infrastructure and investment structures that can reduce taxpayer/ratepayer costs. West Virginia has already been incentivizing data center development with its House Bill 2014, made law in 2024. This bill established rules for the designation of microgrids in the state that can incorporate discrete independent forms of nuclear power generation within their closed loop structures, to facilitate construction of high-impact data centers – an explicit goal of the bill. Paul Tice, Senior Fellow at the National Center for Energy Analytics, has proposed an asset-based project finance model to replace the outdated utility-driven approach of the past 60 years, to shift power generation development sponsorship away from risk-averse electric utilities and toward global infrastructure investment firms more experienced in managing and financing complex infrastructure development projects.[4]

The selection process for any form of investment partnership will depend on the location and scope of the potential Innovation Campus, such as proposed acreage, how many sites the campus will consist of, the electric utility serving the site, a favorable state regulatory environment, and other key investment criteria. However, these private partnership structures present a path forward towards meeting the risk and size of a proposed campus-scale development, with the opportunity of generating interest in states compatible with such private partners' investment objectives. It isn't unrealistic to suggest meeting the DOE's preliminary development launch within 2027 if such investment entities are engaged early by a state like West Virginia, which is positioned to engage expeditiously with private sector partners. It is projected that many private sector partners can be engaged before the end of CY 2026, assuming the DOE moves to select campus siting soon after the response due date of April 1st.

In addition to generation and supply chain partners, West Virginia will seek to collaborate with established private sector firms specializing in spent fuel management and nuclear materials handling to support the full nuclear lifecycle. It has been projected that West Virginia's Innovation Campus will attract leading providers of spent nuclear fuel management, transportation, storage, and decommissioning services in the U.S., with decades of experience supporting commercial nuclear operators and programs. Engagement with these firms would allow the State to incorporate proven technologies and industry best practices for nuclear materials stewardship, regulatory compliance, and long-term fuel management planning.

Question 4: Site Infrastructure Requirements

What infrastructure and resources can your state provide or support at the proposed site(s) to meet the requirements of all Innovation Campus functions? Detail availability of power (e.g., grid reliability, capacity for enrichment plants, AI data centers), water (e.g.,

[4] National Center for Energy Analytics. *New Energy Strategy Needed to Spark America's Nuclear Energy Revival.* August 12, 2025.

cooling for reactors and reprocessing), waste storage, secure transportation corridors, and physical/cyber security systems.

West Virginia will identify and evaluate suitable locations for an Innovation Campus using its established EDS site-selection tool and the WVU/WVOE Energy Siting tool (currently under development). WVU is designing its Energy Siting tool specifically for advanced energy projects to evaluate potential locations for these projects. The use of these project development and investment siting tools, along with other considerations (including geographic suitability, potential environmental constraints, and workforce availability), will ensure that the selected sites are appropriate for Innovation Campus functions.

Although the State can't identify a specific timeframe for ensuring future site readiness (depending upon readiness requirements), West Virginia is very amenable to working expeditiously and in alignment with federal timelines to prepare sites for development. State focus is on long-term and dependable deployment for industry end use.

The State of West Virginia boasts numerous site infrastructure strengths, summarized below.

- **Energy and Grid Stability**: A reliable electric grid with substantial generation capacity of more than 15 GW, and a power transmission grid managed by PJM Interconnection and operated by American Electric Power and FirstEnergy. West Virginia's transmission system features a robust high-voltage network (up to 765 kV) moving electricity from coal-fired plants to the mid-Atlantic. Major updates and new, high-capacity 500-kV lines are also proposed for the region, including the MidAtlantic Resiliency Link, to better ensure stability and redundancy for high-demand industrial operations. The extensive network of high-voltage transmission lines provides the State with strong regional connectivity, with many industrial sites already possessing substation infrastructure. Notwithstanding PJM Interconnection's prospective power supply-demand imbalance driven, in part, by rapid data center growth within its service territory and generation retirements, West Virginia's existing net excess electric power generation capacity, combined with new future nuclear generation, will be strengthened as a consequence of Innovation Center placement in the State to support both new in-state power loads and adding to West Virginia's power export capacity.
- **Water Resources**: Abundant surface water and established industrial water systems are available to support essential cooling and processing needs.
- **Natural Gas Infrastructure**: West Virginia is the United States' fifth largest natural gas producing state, offering robust interstate pipelines as well as impressive in-state distribution and transmission pipelines. The State enjoys significant gathering, processing, and storage facilities. It's projected that West Virginia's robust existing natural gas infrastructure may be used for cogeneration, process heat, and hybridization by employing natural gas technologies to provide dispatchable, redundant, reliable power suitable for future microreactor development.
- **Partially Spent and Spent Fuel Handling**: The State's long history in energy and manufacturing industries means that many potential sites should have pre-existing spent fuel-handling capabilities.

- **Transportation and Logistics**: Secure transportation corridors, including interstate highways, Class I rail lines, and navigable rivers, provide dependable routes for specialized material movement.
- **Security**: Physical security frameworks are well developed across industrial facilities and complemented by strengthened cybersecurity systems through partnerships with utilities and federal agencies.
- **Diverse Site Availability**: The availability of brownfield and former coal plant sites, which are often ideal for nuclear redevelopment under DOE programs.

Specify any state investments or upgrades needed (e.g., transmission lines, rail networks, cybersecurity infrastructure).

West Virginia is proactively identifying and planning strategic, targeted infrastructure enhancements to fully support an Innovation Campus. These upgrades could involve:

- **Transmission Capacity**: Enhancing transmission capacity in specific regions to support significant new industrial loads. (Refer to recent agreements between AEP, First Energy and PJM regarding WV transmission developments)
- **Water Systems**: Modernizing water intake or discharge systems at selected sites.
- **Transportation Connections**: Improving rail spurs or intermodal connections to accommodate specialized transport requirements.
- **Site Security and Resilience**: Expanding secure perimeter infrastructure, strengthening digital resilience, and preparing industrial sites for the unique operational needs of advanced nuclear technologies.

West Virginia is prepared to make strategic, multi-faceted investments to ensure the success of the Innovation Campus. The State will apply a tested approach, built upon its strong track record of investing in industrial site readiness, transportation, and utility infrastructure, to Innovation Campus development.

Future investments are projected to include:

- Site preparation and utility extensions
- Natural gas infrastructure enhancements resulting from Innovation Campus siting
- Transportation enhancements
- Workforce training initiatives aligned with advanced nuclear and fuel-cycle industries

By way of example, West Virginia has supported site development in the northern part of the State with the Fairmont Technology Park, a premier, high-security business campus focused on technology, research, and innovation located along the I-79 High Tech Corridor. Fairmont features extensive fiber networks, 24/7/365 connectivity to Lambda Rail, and major federal tenants like NASA and NOAA satellite operations. It also hosts the Form Energy Building (also referred to as Form Factory 1), a $760 million, 55-acre Form Energy manufacturing facility in Weirton, West Virginia, located at the former Weirton Steel site. Form Energy produces innovative iron-air batteries designed for 100-hour, long-duration energy storage to support the power grid. The State also recently awarded grant funds to develop other business ready sites to prepare for large-scale commercial and industrial development, with the goal of reducing development timelines and making the State attractive to private sector partners.[5]

Other notable large-scale sites that West Virginia has supported, and continues to support, include major private manufacturing investments, such as Toyota Motor Manufacturing and the Nucor Steel facility; as well as federally coordinated site development efforts such as the FBI Criminal Justice Information Services Division campus and the NETL.

These efforts demonstrate West Virginia's broader economic development strategy, which reflects a strong commitment to partnering with federal agencies and private industry to establish a modern, comprehensive infrastructure foundation capable of supporting the entire integrated nuclear fuel cycle.

Question 5: Regulatory Framework and Licensing Support

How would your state approach regulatory oversight for the Nuclear Lifecycle Innovation Campus?

West Virginia has a well-established regulatory structure capable of supporting Innovation Campus development, with several state agencies positioned to play key roles in Campus oversight:

- The Department of Environmental Protection (DEP) would lead environmental permitting and compliance;
- The Public Service Commission (PSC) would oversee utility-related matters, including grid interconnection and energy infrastructure;
- The Division of Homeland Security and Emergency Management (DHSEM) would support emergency preparedness and coordination; and
- The Department of Commerce, through the WVOE, would serve as a central partner in coordinating energy policy, industrial development, and workforce initiatives related to nuclear deployment.

These agencies collectively bring experience regulating complex industrial operations and are prepared to expand their scope to incorporate Innovation Center requirements.

Coordination with the DOE and the Nuclear Regulatory Commission (NRC) would be central to West Virginia’s regulatory approach. West Virginia would institute structured communication channels that would allow state oversight to complement federal authority, avoiding duplication and ensuring that permitting timelines and regulatory expectations remain clear and predictable. The State would work closely with both the DOE and the NRC to ensure that all activities align with federal safety, security, and licensing requirements. The State’s Department of Commerce and the WVOE will play a key role in facilitating this coordination, serving as a primary point of contact for federal-state engagement and ensuring that State agencies remain aligned with DOE and NRC processes. This includes engagement with DOE to ensure that its comprehensive array

[5] https://www.developmentauthority.com/news-and-media/news-updates/p/item/66111/gov-morrisey-awards-21m-to-develop-businessready-sites-across-23-west-virginia-counties

of financing mechanisms is accessible to State agencies and private partners thereby enabling financing structures that facilitate Innovation Campus development.

Additionally, West Virginia is in the process of becoming an Agreement State with the NRC. Agreement State status would give West Virginia the authority to license and regulate nuclear byproducts, source materials, and special nuclear materials.[6] Achieving this status would provide the State with greater autonomy in handling nuclear materials while receiving federal support for program development. Although not a prerequisite for nuclear development, taking this step demonstrates the State's commitment to responsible nuclear materials management. As part of this status, the State would focus on establishing heightened awareness of radiation safety and radioactive materials management. The State would also comply with USDOT's hazardous materials regulations and NRC's nuclear materials transportation package certification process for the transport of spent nuclear fuel. NRC retains licensing authority regardless of Agreement State progress.

In the context of the State's coal industry, West Virginia's DEP operates a state-authorized RCRA hazardous-materials program, which regulates generation, treatment, storage, and disposal of hazardous combustion residuals from coal-related operations. The program enforces federal cradle-to-grave requirements, including permitting, inspections, and financial assurance for closure and post-closure care. This includes oversight of facilities that manage coal-related combustion residuals and by-products, ensuring compliance with both state and federal RCRA standards.

What regulatory streamlining and expedited permitting can your state offer (e.g., RCRA), while ensuring compliance with federal standards?

West Virginia is evaluating opportunities to streamline regulatory processes and offer expedited permitting, where appropriate. The State has documented success in accelerating industrial development through coordinated permitting, resolute project teams, and consolidated review processes. For example, upon passing House Bill 2014 (HB 2014), the State expedited the process for data center development. HB 2014 created a streamlined pathway for high-impact data centers and microgrids, allowing the State to fast-track siting, permitting, and utility-related approvals. The law reduces regulatory friction for large-scale digital infrastructure and has already prompted rulemaking to implement a Certified Microgrid Development Program explicitly for accelerating data-center deployment.

West Virginia's streamlined approach to data center development simplifies permitting, demonstrates the State's ability to create an efficient regulatory environment for emerging industries, and provides a competitive incentive. West Virginia would use similar strategies for nuclear development to enable the State to provide predictable timelines and responsive regulatory support.

Ensuring compliance with federal standards will remain a central priority for the State. West Virginia would align its environmental, safety, and industrial regulations with federal requirements, including those established by the NRC, DOE, DOT, and EPA. The State would

[6] Bowles Rice

continue to strengthen its internal capabilities through training, partnerships, and technical assistance programs that support consistent application of federal standards. This approach ensures that state oversight complements federal authority and provides an additional layer of assurance for communities, industry partners, and federal agencies.

In areas where DOE assumes ultimate safety responsibility, how would your state partner with DOE to exercise oversight?

In cases where DOE holds ultimate safety responsibility, West Virginia would structure its oversight role to support federal authority while maintaining appropriate state involvement. The State will focus on areas such as environmental compliance, emergency preparedness, transportation safety, and coordination with local governments, while deferring to DOE and NRC on matters of nuclear safety and licensing.

This shared-responsibility model allows West Virginia to remain actively engaged in oversight while ensuring that federal agencies retain primary authority over nuclear safety. Through this collaborative approach, the State is aiming to create a regulatory environment that is both supportive of innovation and grounded in the highest standards of public safety.

Question 6: Legislative and Policy Requirements

Are there any federal or state statutes, regulations, or policies that need to be amended or enacted to facilitate the development and operation of a Nuclear Lifecycle Innovation Campus in your state? Provide specific examples of legislative barriers (e.g., restrictions on nuclear waste storage or disposal, reprocessing bans, or zoning laws) and propose strategies to address them, including timelines for legislative changes.

West Virginia is actively positioning itself as a future nuclear energy state. In 2022, the State repealed its decades-long moratorium on nuclear power plant construction. By removing this legal barrier, West Virginia signaled its intent to incorporate nuclear energy into its power generation portfolio. West Virginia is working to develop bills that reflect the State's broader intent to encourage nuclear power development.

West Virginia continues to review its existing legal and regulatory framework as it relates to nuclear development and is looking at legislation that would further promote/enhance these types of activities. The State is mindful that certain initiatives within the full nuclear lifecycle may require additional clarity. While the review is ongoing, West Virginia is not currently aware of any roadblocks regarding development.

While the State has not adopted explicit prohibitions on partially spent and spent nuclear fuel storage or reprocessing, these areas have not historically been part of West Virginia's energy landscape, and the State is evaluating how its current statutes align with the needs of a modern nuclear industry. This review is intended to ensure that the State's policies align with federal expectations and support the expeditious development of a Nuclear Lifecycle Innovation Campus.

As part of this evaluation, West Virginia is considering whether targeted statutory amendments may be beneficial to fully support the development of a Nuclear Lifecycle Innovation Campus. The State recognizes that emerging technologies and advanced fuel-cycle activities may call for updated language or expanded authority within existing laws. These considerations are being approached with the goal of creating a regulatory environment that is both supportive of innovation and consistent with the State's long-standing commitment to safety.

In conducting this review, West Virginia is examining several areas of state law that may warrant refinement to better support nuclear development. These include portions of the West Virginia Code related to environmental resources, public safety, economic development, and utility regulation. For example, updates to environmental provisions may help to ensure alignment with radiological monitoring standards, while clarifying the jurisdiction of the PSC could support the deployment of advanced reactors and nuclear-powered data centers. The State is also reviewing administrative rules under the DEP to determine where alignment with federal standards such as those used by the NRC may be beneficial. These evaluations are ongoing and will guide any future policy recommendations.

The State is prepared to move efficiently should legislative action be appropriate. The State's established legislative process, combined with strong interest in energy innovation, provides a pathway for timely consideration of any proposed updates. The State is considering the possibility of engaging an additional legislative session focused specifically on energy. Potential changes could then be introduced during the next Regular Session, possibly in the current session, with regulatory rulemaking to follow as needed. This approach allows the State to remain aligned with federal timelines while ensuring that policy decisions are made thoughtfully and with broad input.

The strategy for advancing any potential legislative or regulatory changes will follow the collaborative model that has guided West Virginia's broader energy initiatives. Engagement with legislative leadership, industry partners, labor organizations, academic institutions, and local governments will help ensure that policy decisions reflect a wide range of perspectives. As community engagement and public transparency will be critical to advancing any statutory or regulatory changes, public communication will continue to emphasize the State's commitment to safety, environmental responsibility, and long-term economic development.

Question 7: Timeline for State Support

What is your state's proposed timelines for providing regulatory approvals, infrastructure development, and community agreements to support the Nuclear Lifecycle Innovation Campus? Include key milestones, such as site selection, permit reviews and issuance, infrastructure upgrades, workforce training program launches, and community engagement initiatives.

West Virginia anticipates that the development of a Nuclear Lifecycle Innovation Campus can follow a structured and efficient project timeline. While specific milestones will ultimately be set in coordination with private and federal partners, the state is prepared to support an accelerated schedule by leveraging private sector engagement, federal collaboration, innovative funding and financing opportunities, and established expedited permitting pathways. For instance, the State is ready to start preliminary site screening now, even before final federal decisions have been made. Indeed, discussions on early site permitting are already underway, positioning West Virginia to advance quickly. The State will also seek federal assistance in sequencing activities, especially for NRC-regulated milestones, to ensure alignment with federal safety and licensing steps. In general, the key activities by milestone are outlined below.

Site Selection

- Guided by the West Virginia Economic Development Siting Tool and the new WVU/WVOE Energy Siting Tool.
- Prioritizes infrastructure readiness, environmental suitability, and community alignment.

Supported by the State's established site-readiness programs and Land Use Master Plans.

Permitting Reviews

- Coordinated across DEP, PSC, DHSEM, and the Department of Commerce's Office of Energy.
- Modeled on the streamlined review processes used for large-scale data centers and advanced manufacturing projects.
- Designed to align with DOE and NRC review pathways.

Permit Issuance

- West Virginia can offer accelerated permitting timelines through consolidated agency coordination.
- The State's experience with expedited approvals for energy and data centers provides a proven framework.

Infrastructure Upgrades

- Sequenced to align with federal milestones and private-sector investment.
- May include targeted improvements to transmission, water systems, rail access, and site-specific utilities.
- Supported by the State's long-term infrastructure planning and economic development programs.

Workforce Training Launch

- Integrated into the State's 25-year energy plan, which includes advanced nuclear workforce development.
- Leverages partnerships with WVU, Marshall University, community colleges, and apprenticeship programs.
- Introduces programmatic learning in elementary and high school grade levels.
- Designed to scale as project phases advance.

Community Agreements

- Built through early engagement with local governments, economic development authorities, and community organizations.
- Focused on transparency, safety, and long-term economic benefits.
- Supported by the State's established community-engagement frameworks for major industrial projects.

Operational Readiness

- Achieved through coordinated state-federal planning, including emergency preparedness, environmental compliance, and infrastructure commissioning.

- Supported by West Virginia's experience bringing large-scale industrial and energy facilities online.
- Informed by the State's long-range energy planning and commitment to aligning with federal safety standards.

Question 8: Anticipated Public and Stakeholder Concerns

What challenges do you anticipate within your state to any of the Nuclear Lifecycle Innovation Campus functions (e.g., from environmental groups, local communities, Tribal nations, or political entities), particularly for sensitive activities such as reprocessing, plutonium handling, or waste disposal?

West Virginia has a long-standing history of energy production and heavy industry, and this background has contributed to a workforce and public that are generally familiar with large-scale energy projects. Even with WV's strong energy culture, public hesitation around nuclear materials, spent fuel, and reprocessing is expected and must be addressed early. The State recognizes that a Nuclear Lifecycle Innovation Campus will generate questions and concerns from a range of stakeholders. Potential opposition may come from environmental organizations (e.g. in regards to spent fuel storage and long-term management, water impacts, siting decisions, perceived risks of fuel-cycle activities, disruptions to natural habitats or recreational sites, waterways, etc.) and the State must plan for open communication with these groups. Challenges may also be brought by national organizations that traditionally oppose nuclear development, local communities (seeking clarity on safety, transportation, and environmental impacts), and or business owners / stakeholders (in coal, energy or unrelated industries) concerned over potential economic impacts. Political entities may also raise questions related to siting, regulatory authority, and long-term stewardship, particularly as a project moves from planning to implementation.

Certain activities within the full nuclear lifecycle are inherently more sensitive and may draw heightened attention from stakeholders. These include spent fuel recycling, advanced separations, plutonium-bearing material handling, and any form of long-term storage or management of high-level waste (HLW). Even in West Virginia, a state with strong energy familiarity, planning for these activities will require clear communication, transparent safety protocols, and early engagement with communities. Accessible technical education is also critical for building trust, especially around sensitive activities like reprocessing or plutonium-bearing materials. West Virginia understands that public confidence will depend on demonstrating alignment with federal safety standards, providing accessible information about risk mitigation, and ensuring that local stakeholders have opportunities to participate in the planning process. Indeed, federal partners (DOE, NRC, national labs, etc.) would likely be requested to provide technical speakers and trusted experts to help address misconceptions and reinforce confidence.

The State has not yet widely solicited feedback (e.g., through public forums, surveys, social media, etc.) in regard to nuclear energy, siting, storage or transport within the State. As a preliminary baseline for future stakeholder engagement, however, WVOE has collaborated with WVU to administer a public opinion survey to better understand statewide awareness and perceptions related to nuclear energy development.

Political risks are also an important consideration. Although West Virginia has strong bipartisan support for energy development and diversification, nuclear projects can attract national-level scrutiny that may influence local discourse. Concerns may arise around federal-state jurisdiction, long-term liability, or the perception of nuclear activities within certain communities. The State recognizes that maintaining broad political support will require consistent communication, alignment with federal partners, and a clear demonstration of economic and workforce benefits. By approaching these issues proactively and collaboratively, West Virginia aims to build a durable foundation of public trust and stakeholder confidence as the Nuclear Lifecycle Innovation Campus advances.

Question 9: Stakeholder Engagement Strategy and Cooperation Mechanisms

What is your state's plan to engage stakeholders- including political entities, local communities, Tribal nations, environmental groups, industry partners- to ensure timely public acceptance and compliance with regulatory frameworks for all Nuclear Lifecycle Innovation Campus functions?

Through its membership in regional and national nuclear coalitions (including the National Governors Association – West Virginia Nuclear Energy Retreat & Technical Assistance group, West Virginia's Nuclear Policy and Energy Working Group, and the national Nuclear Energy Institute) West Virginia is seeking to stay at the forefront of collaboration and benchmarking with energy experts and political and nuclear industry stakeholders.

In addition, West Virginia is working to develop a Nuclear Policy that focuses on public engagement and the development of communities that are not just accepting of, but enthusiastic about, the development of nuclear potential in the State. The State is planning to undertake early and continuous community education programs to ensure that residents understand nuclear technology, safety, and economic benefits before major decisions are made, in alignment with recent WV State Code updates regarding the designation of "Energy Ready" communities. These will include planning for a "Nuclear Ready" community designation program (such as one already in operation in KY) to help communities statewide become in engaged in the process of nuclear development through regulatory support, workforce training and education; developing educational outreach programs related to the nuclear fuel cycle within all public schools (e.g., adding an "Energy" STEM course to local curriculums as a parallel track to chemistry and physics and/or an elective course and a focus on vocational / technical course work); and developing an engaged and enthusiastic energy workforce by offering training programs in a variety of energy-based careers, including nuclear energy. The State will coordinate with local governments to ensure that this outreach is accessible and available to all residents.

Provide a conceptual strategy, including community outreach programs, public hearings, Tribal consultations, and partnerships with local organizations.

Public conversation will be a significant part of the development of West Virginia's nuclear policy. The State recognizes the importance of providing forums for local, community-based hearings, which allow for new development to be community supported. The State, in concert with the West Virginia Office of Energy, is currently developing a public engagement plan that will include surveys, public hearings, and other forms of community engagement to anticipate and respond to community concerns regarding nuclear development. Though most specific outreach plans and schedules have not been finalized, the West Virginia Office of Energy has already collaborated with West Virginia University (WVU) to distribute a public opinion survey and solicit general feedback. Federal expert assistance (e.g. from DOE, NRC, national labs, etc.) may also be requested to support technical education, public meetings, and "nuclear-ready community" initiatives.

Include examples of successful stakeholder engagement from past nuclear, industrial, or infrastructure projects in your state.

West Virginia recognizes that for any project with potential community impacts, social buy-in and community alignment are foundational. The State has worked on, or is currently working on, a variety of public programs that have engaged communities through successful energy sector and related infrastructure outreach. State offices and other outlets have undertaken a wide variety of stakeholder engagements and public feedback campaigns to support projects across multiple energy industries (including coal, natural gas, and renewable). Examples include:

- Coal Industry (mines, plants, reclamation)
    - Public hearings, comment periods, and ongoing engagement with local governments and affected communities to support SMCRA permitting and mine-reclamation plans.
    - Structured outreach to workers, county commissions, and economic-development authorities to inform and discuss coal-plant retirement and repowering decisions.
    - Environmental group, community resident, and industry leader engagement with water-quality and air-permit renewal processes.

- Natural Gas and Midstream Infrastructure
    - Required PSC hearings, local siting meetings, and environmental-permit consultations to support the development of combined-cycle gas plants (e.g., Harrison and Moundsville proposals).
    - Multi-county landowner engagement and extensive environmental-group participation for pipeline projects (e.g., Mountain Valley Pipeline).

- Renewable Energy and Transmission
    - Visual-impact consultations, wildlife-agency coordination, and community meetings to address noise and land-use concerns for wind power projects on Backbone Mountain.

- County-level outreach, environmental-group engagement, and public comment on land-use changes for solar development projects on reclaimed mine lands.
- Multi-state hearings, local government coordination, and environmental-impact consultations on transmission upgrades (e.g., PATH/MAPP processes).

Additional recent energy industry outreach and community engagement programs have included:

- WVU public opinion survey
- Energy Policy public outreach including HB2014.
- Community Engagement staff and initiatives through the OOE
- The West Virginia Energy Summit
- Letters of support from communities and utilities
- Solicitation of media and public inquiries into the DOE loan program process
- Efforts associated with recent/planned industrial development including NUCOR, FORM Energy, Fidelis, Frontieras and others.

West Virginia currently has no Tribes designated within the State, so that will be of no concern in the development process.

Question 10: HLW Management, Treatment, Storage and Disposal

How would your state implement the management of material requiring long term management?

Understanding that the development of both interim and long-term storage options for nuclear materials management is a DOE priority, West Virginia is fully open to hosting a nuclear interim storage site. The State is assuming once-through fuel use, with interim storage in West Virginia and ultimate disposal in a federal repository. The State's initial goal is to pursue NRC licensing for, and then develop, a consolidated interim storage facility (CISF). As WV lacks HLW storage infrastructure, it will work to align closely with federal licensing pathways. Developing a CISF is considered achievable in the near-term as it requires relatively little beyond an available site, concrete infrastructure, security, and a receptive community.

The State's focus would likely be first on storing the spent fuel that will be generated at the Innovation Campus, then on accommodating other spent fuel generated in West Virginia (e.g. from new research, new power, existing medical, etc.), and finally on storing spent fuel generated out of state. The State's first CISF could also be designed to generate revenue as a resource for researching other longer-term fuel cycle capacities, such as borehole sites or lab-based reprocessing facilities.

Because the U.S. currently follows a once-through fuel cycle, no facility in the U.S. practices commercial reprocessing (recycling) of spent fuel.[7] Any move to nuclear fuel reprocessing would require extraordinary capital investment, complex safeguards and security, and major

[7] Congress.gov.

federal policy and market shifts. It is, therefore, not realistic to assume that reprocessing can be undertaken during initial Innovation Campus development in West Virginia. West Virginia, does, however, fully support exploration of ways to expand U.S. recycling capabilities and processes (such as pyro processing, electrochemical separation and advanced aqueous recycling) to reduce waste volumes, produce reusable fuel, support advanced and fast reactors, and strengthen domestic fuel security. Should reprocessing ever become a viable consideration, the State also has chemical recycling infrastructure in place that could one day be co-located or re-developed for nuclear use.

The maintenance of deep geologic repositories, such as boreholes, for spent fuel and high-level HLW[8] is foundational to U.S. nuclear energy policy.[9] Deep borehole disposal, however, is *not* currently consistent with the U.S. Nuclear Waste Policy Act (NWPA) for disposal of commercial spent nuclear fuel or HLW, and is therefore not a licensed disposal option in West Virginia, (though it is being studied by DOE and various national labs[10]). Under current law, the DOE—not individual states—has responsibility for siting, building, and/or operating any geologic repository for commercial spent fuel.[11] Thus, while West Virginia could host R&D boreholes or demonstration projects, actual disposal of commercial spent fuel in deep boreholes would require new federal policy and NRC licensing frameworks.

The most likely scenario consists of West Virginia providing safe fuel storage capacity until the DOE develops a national repository or CISF, as opposed to the State building disposal borehole infrastructure. While the disposal of spent nuclear fuel in deep geological storage sites has not been fully studied in West Virginia, the 2017 "Appalachian Ethane Storage Hub Study" explored the use of the State's shale reserves and found them to be favorable for the storage and distribution of ethane natural gas.[12] The goal of that study was to evaluate the storage potential of subsurface stratigraphic units along a pipeline route, with one of the individual formations and intervals of interest being the Greenbrier Limestone for subsurface mined caverns.

For long-term disposition of residual spent fuel streams and permanent storage of Class IV waste, West Virginia is exploring deep borehole disposal technologies. Directional boreholes drilled several kilometers into stable geologic formations offer a promising approach to permanently isolating small volumes of HLW in a cost-effective and environmentally protective manner. Boreholes and deep geological repositories require well characterized special geology, as well as avoidance of sites that are adjacent to wellsprings of geothermal power.

Though no information currently exists on the viability of HLW storage in particular, it requires a similar stable geological environment to that available in West Virginia, meaning the state

[8] U.S. Environmental Protection Agency.

[9] The U.S. Nuclear Waste Policy Act.

[10] Sandia Energy. "Key Spent Nuclear Fuel Documents" database website. 2026. https://energy.sandia.gov/programs/nuclear-waste-management/key-spent-nuclear-fuel-documents/.

[11] U.S. Environmental Protection Agency (EPA). "Summary of the Nuclear Waste Policy Act, 42 U.S.C. §10101 et seq. (1982)." 2026. https://www.epa.gov/laws-regulations/summary-nuclear-waste-policy-act.

[12] From the Marcellus, Utica, and Rogersville shale; explored in the Appalachian Ethane Storage Hub Study of 2017, issued by WV Department of Commerce and OOE.
https://www.capito.senate.gov/imo/media/doc/Appalachian%20Ethane%20Storage%20Hub%20Study%20Act%20One-Pager%20FINAL.pdf

could potentially serve as a HLW repository. There is Marcellus shale in the Kanawha valley, for instance, that potentially could be drilled into for deep storage reservoirs, and from which caverns could be engineered in the shale layer for interim storage. The concept of digging directional boreholes to store and seal spent fuel thus has potential in West Virginia.

Retired surface mine lands and other previously disturbed industrial sites could also provide suitable locations for storage, following rigorous geological and environmental evaluation. Retired surface mine lands are potentially better candidates than deeper geological caverns as they offer several potential advantages: already disturbed land, large footprints, and remote locations that could prove easier for siting from a community and political standpoint. If the geology is acceptable, they could also be transitioned to lined landfills. It should be noted, however, that though plentiful, the State has ruled out the repurposing of spent deep coal mines, because they present challenges in regard to protection of water pathways, risk of remaining seams, structural instability, and potential for methane pockets.

Describe proposed infrastructure (e.g., interim storage facilities, reprocessing options, deep geologic disposal facilities including boreholes) and compliance with state and federal environmental regulations.

Though West Virginia is eager to leverage a Nuclear Lifecycle Innovation Campus to potentially support the entire fuel cycle over the long term, including fuel enrichment, fabrication, storage, and reprocessing, it will initially use this Innovation Campus opportunity to plan for nuclear facilities that can support the back end of the nuclear fuel cycle, while ensuring compliance with state and federal regulations regarding nuclear material safeguards. The pathway to West Virginia becoming an integral part in our nation's energy security thus likely begins with CISF. The CISF would need to be licensed by the NRC under 10 CFR Part 72 for a commercial storage or fuel-cycle facility (safety, security, radiological protection)[13]; any application for such a license would include both safety and environmental assessments to demonstrate anticipated impacts and mitigation controls.

West Virginia is thus proposing the initial first step of undertaking the DOE's consent-based siting process for a federal CISF and then negotiating strong state control via contractual agreements. The State would then work to develop a CISF that would be licensed, constructed, and operated in conjunction with the Innovation Campus. The Campus would be located in an area with accessible transportation infrastructure that can support the delivery of spent nuclear fuel canisters to the CISF. Planning for the facility would then be undertaken to incorporate applicable federal, state, and local regulations into design, construction, and protocols for operation.

Longer term plans for building out the Innovation Campus could be to design and construct research facilities and proving grounds which would focus on fuel recycling, packaging, transportation, and disposal partnering with partners the DOE, universities, and industry. West Virginia is making steady progress towards becoming an NRC Agreement State. Agreement State status will allow the State to issue radioactive materials license to a nuclear research facility and provide the regulatory framework under which it could possess and work with source

[13] NRC

material, byproduct material, and special nuclear materials. Such a facility would potentially require permits for air emissions. In West Virginia these permits are issued by the West Virginia Department of Environmental Protection (WV DEP). The WV DEP also provides inspections and oversight to ensure compliance with the federal Clean Air Act under authority assigned to is by the U.S. Environmental Protection Agency.

If research conducted at the Innovation Campus and throughout West Virginia indicates that the geological conditions in West Virginia are amenable to a deep borehole, a borehole could be designed and constructed to receive, at a minimum, the spent fuel stored at West Virginia's CISF facility. Fuel reprocessing options would be a consideration in the future, at either the Innovation Campus or another location.

West Virginia's Innovation Campus facility will adhere to and ensure compliance with all state and federal regulations governing licensing and operation of any nuclear facility. At the federal level this will include NRC licensing and National Environmental Policy Act (NEPA) submissions such as environmental impact statements; as well as compliance with EPA standards (e.g., for geologic disposal and environmental protection),[14] the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act (RCRA) for mixed or hazardous wastes, the Endangered Species Act, etc. Compliance would be supported through established permitting processes, environmental monitoring programs, and alignment with federal standards governing radiological materials, transportation, and long-term stewardship.

West Virginia does not currently host licensed HLW storage facilities; any storage or handling of HLW would thus initially occur under federal authority and in accordance with DOE and NRC requirements. As the State evaluates the potential for an Innovation Campus, therefore, it will also review and confirm that designs and operation protocols comply with state environmental quality and radiation-control statutes, as well as document compliance with state water rights regulations, air permitting, waste-handling permitting, land-use and zoning approvals, etc.

Upon receiving Innovation Campus siting authorization, West Virginia will create a nuclear siting and oversight framework to require such State permits as well as impact assessments and state-level environmental reviews. This framework will establish monitoring, emergency-planning, and public-engagement requirements; and coordinate with the NRC, DOE, and EPA through formal Memorandum of Understanding (MOU) agreements.

Specify any existing capabilities (e.g., licensed storage sites).
There are currently no licensed used fuel or storage facilities or supporting types of infrastructure in West Virginia.

Question 11: State-Specific Limitations

What state-specific limitations- regulatory, political, environmental, geologic, or community-based- might hinder the development of any of the Nuclear Lifecycle Innovation Campus functions outlined in Section II of this RFI? Provide a general

[14] U.S. Environmental Protection Agency

assessment of these barriers and propose strategies to address them, including regulatory reforms, public engagement, or infrastructure investments.
[Response]

State-specific CISF development limitations or other facility development limitations to support an Innovation Campus can be grouped across four categories: regulatory barriers, geologic constraints, environmental limitations, and political/community barriers. Key issues within each are as follows:

Regulatory Barriers:
- A need to more fully address certain nuclear-specific activities—such as long-term material management, advanced fuel-cycle operations, and radiological monitoring—in state statutes and regulations.
- New strategies, protocols and workflows to govern coordination among WV DEP, the State's Public Service Commission (PSC), the Department of Emergency Management (DHEMS), and the Department of Commerce's Office of Energy (OOE); and with US DOE and the NRC oversight agencies.
- Some permitting pathways were designed for traditional industrial sectors and may require modernization to support nuclear lifecycle activities.

Geologic Constraints:
- While most of West Virginia has stable geology and low seismic risk, some regions include karst formations, abandoned mine workings, or steep terrain, among other features that may limit suitability for large-scale nuclear infrastructure.

Environmental Limitations:
- Environmental constraints may include wetlands, protected habitats, legacy industrial impacts, or watershed sensitivities.
- Geographical limitations related to mountainous terrain and available land space.
- Some sites may require additional environmental assessment or mitigation.

Political or Community Barriers:
- While West Virginia has strong public familiarity with energy production, nuclear development may raise questions about spent fuel management, transportation, and long-term stewardship.
- Environmental groups and certain political stakeholders may express concerns about advanced fuel-cycle activities.
- Maintaining bipartisan support will require clear communication and demonstration of economic and workforce benefits.

To overcome such barriers, West Virginia will work to develop best practices and mitigation strategies to support nuclear development, most of which have already been used to successfully mitigate similar concerns on other energy infrastructure developments. These could include:

Regulatory Mitigations:

- WV offers a favorable regulatory environment primed for flexible nuclear development. The State has documented success in accelerating industrial development through coordinated permitting, resolute project teams, and consolidated review processes.
- WV's existing statutes only cover radioactive-material transport but are readily amendable. The State will expedite pursuit of targeted regulatory updates to ensure clarity and alignment with federal standards.
- West Virginia's nuclear planning will include application of coordinated, expedited permitting processes (i.e., a "one-stop permitting process") similar to those used for data centers and advanced manufacturing.
- Creation of a West Virginia Nuclear Authority to encourage nuclear readiness, identify effective financial and tax incentives, and administer responsible community engagement.
- Finalize the process of becoming an Agreement State with the NRC.

Geologic and Environmental Mitigations:

- Engagement of the State Geological Survey and State Geologist Jessica Moore to support exploration of geologic site.
- Use of the West Virginia's Economic Development Siting Tool and WVU's Energy Siting Tool (which incorporates geologic screening) to identify locations with favorable geologic, environmental, and infrastructure characteristics.
- Use of environmental overlays in siting tools to prioritize locations with minimal ecological conflicts.

Political and Community Mitigations:

- Early and transparent community engagement emphasizing safety, environmental stewardship, and economic opportunity.
- Hosting of public dialogues and town hall meetings with communities that could see nuclear developments.
- Establishing of format to designate counties as Nuclear Ready (similar to Kentucky's nuclear-ready communities designation process).
- Conducting of a feasibility study to evaluate the policy, technical, and economic dimensions of nuclear development.

Question 12: Environmental and Safety Stewardship

What strategies will your state employ to ensure environmental stewardship and radiological safety across all Nuclear Lifecycle Innovation Campus functions, particularly for activities such as enrichment, reprocessing, and waste disposal?

Environmental protection and radiological safety are foundational to all Innovation Campus activities, especially CISF siting, enrichment, reprocessing, and waste handling. As part of planning to license, construct, and operate a CISF at its Innovation Campus, West Virginia would require that environmental monitoring systems be designed and implemented by the site owner/operator, with reports provided to the NRC as the site regulator.

All monitoring would be conducted and reported in accordance with the NRC's Regulatory Guide (RG) 1.21, "Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste."[15] Although originally written for nuclear power plants, RG 1.21 explicitly applies to spent fuel storage facilities as well. In addition, other regulations such as 10 CFR Part 20 (NRC)[16] and 40 CFR Part 190 (EPA)[17] will provide guidelines regarding methods acceptable to the NRC for monitoring and measuring radioactive effluents, evaluating releases, reporting public doses, and demonstrating compliance with public dose limits.

While environmental monitoring will be the responsibility of each nuclear site's owner/operator, with reporting required to the NRC as site regulator, West Virginia may also implement its own monitoring systems as necessary. Specific environmental monitoring systems to monitor NRC licensed activities would include passive radiation dose monitoring at the fenceline and beyond, air effluent monitoring, stormwater monitoring, groundwater monitoring, and potentially monitoring of offsite flora and fauna for uptake of radioactive contaminants. Radiation detection equipment will be required for deployment in all areas surrounding spent fuel storage sites and built into all nuclear materials movement and handling operations. The WV DEP may also conduct independent monitoring and/or request duplicate samples for independent laboratory analysis.

WV DEP (consistent with its roles and responsibilities within the state) will supervise radiation monitoring and the tracking of associated metrics, including the monitoring of water and soil adjacent to, or in a mandated radius of, nuclear facilities. These monitoring systems will meet current federal standards for operation and provide real-time, around-the-clock surveillance to make certain that any issues are caught quickly and dealt with swiftly to mitigate the potential for harmful incidents. All systems deployed will be crucial to preserving the State's natural beauty as well as keeping waterways, soil, and air safe and healthy for West Virginia residents.

Provide conceptual plans for environmental monitoring systems, safety protocols, emergency response capabilities, and compliance with federal and state regulations.

West Virginia will follow the NRC's Code of Federal Regulations (CFR) to employ federally mandated radiological safety protocols. These will include adherence with the ALARA principle, which stands for "As Low As Reasonably Achievable," and which requires that dosages of radiation both be kept as low as possible to minimize risks of exposure and be kept as far as possible from vulnerable populations.[18] As a potential Agreement State, West Virginia will also be required to develop, document, and implement a radiation protection program. These guidelines will provide a framework for how West Virginia will adhere to the use of proper safety equipment for the handling of any radioactive materials, barriers and shielding to protect

[15] Nuclear Regulatory Commission. Regulatory Guide (RG) 1.21, "Evaluating, and Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid Waste." https://www.regulations.gov/document/NRC-2020-0278-0007

[16] https://www.nrc.gov/reading-rm/doc-collections/cfr/part020/full-text

[17] https://aecom.sharepoint.com/:w:/r/sites/WVDOHIIJA/Shared%20Documents/General/400_Technical/436_Energy/Nuclear%20Campus%20-%20DOE%20RFI%20Response/RFI%20Responses%20WORKING%20DRAFT%20-%20w%20TEMPLATE%2003-13-26.docx?d=wc487a2395941453cab252fc0ba5c0a5a&csf=1&web=1&e=0PeoPg

[18] https://www.nrc.gov/reading-rm/basic-ref/glossary/alara

against radiation exposure in the work environment, and radiation monitoring systems that will be employed on campus sites and all transportation systems moving hazardous materials.

Fuel lifecycle facilities will be licensed by the NRC. The facility owner/operator has the responsibility for implementing radiation safety protocols applicable to workers and the public as described in 10 CFR Part 20. All facilities will be managed in accordance with state "Proliferation Resistance through Advanced Safeguards," and "Material Control," regulations, as well as International Atomic Energy Agency (IAEA) Compliance.

In terms of radiological safety, West Virginia is already well positioned as a state with many rural, mountainous areas that geographically distance its few large population centers and provide geographic isolation. Nonetheless, West Virginia may seek to engage communities more deeply in nuclear safety and readiness via the development of a "Nuclear Ready Community" program, similar to one enacted in Kentucky (Kentucky Act 164-2804). That legislation allows communities to apply for a "nuclear-ready" designation from the State's Nuclear Energy Development Authority. To qualify, counties must hold educational meetings on nuclear topics, identify state-approved sites suitable for nuclear development, and pass resolutions (or ballot initiatives) declaring readiness for nuclear power projects.[19]

10 CFR, Part 72, contains explicit emergency planning requirements for CISFs; 10 CFR, Part 70, contains emergency planning requirements for other fuel lifecycle facilities such as enrichment and fuel fabrication. For CISFs, the key regulation is 10 CFR § 72.32, "Emergency Plan," which requires license applicants to submit and maintain an NRC-approved emergency plan. The approved plans will require the involvement of Local Emergency Planning Committees (LEPC) and the West Virginia Emergency Management Division (WVEMD) in order to ensure compliance and coordination at the state-level and across localities.

The WVEMD is currently working with several federal grants and agencies to administer programs related to emergency management, including FEMA, the Pipeline and Hazardous Materials Safety Administration, and the National Telecommunications and Information Administration. The West Virginia Office of Energy has developed a state energy security plan in order to address energy emergencies that will be updated annually as developments are made in energy capabilities and facilities within the State. Alongside this plan, state federal and local agencies will participate in tabletop emergency exercises to practice emergency responsive capabilities.

State and federal compliance will be maintained through a coordinated regulatory framework that will tie together West Virginia's own oversight responsibilities with the requirements set forth by federal agencies, such as the NRC, EPA, DOE, and FEMA. West Virginia will meet these obligations by developing and updating a Formal Radiation Protection Program as required for Agreement States; implementing ALARA-based safety practices; and ensuring that all monitoring, reporting, and emergency-response activities align with CFR standards. The West Virginia DEP and WVOE will maintain continuous communication with federal partners, participate in required audits and inspections, and update state energy security and emergency-response plans annually to reflect new technologies and facilities. Regular tabletop

19 Kentucky Cabinet for Economic Development

exercises, grant-supported training, and interagency coordination will ensure that compliance is not only met on paper but actively practiced across local, state, and federal levels.

Question 13: Transportation Corridors

What intrastate and interstate transportation corridor challenges exist in your state for the secure movement of nuclear materials (e.g., UF6, fuel assemblies, UNF, isotopes, HLW)?

West Virginia enjoys a vast transportation network for coal distribution, abundant development sites ready for industrial use, and a geographically isolated location surrounded by nuclear-ready or nuclear-using states. These attributes position West Virginia as a favorable location for siting facilities related to the integrated fuel cycle, and for safe nuclear materials transportation throughout the state. West Virginia does, however, face transportation challenges related to its mountainous terrain, impacts of severe storms and winter weather, and aging infrastructure, which may pose constraints for nuclear material shipments.

While rail is the most viable transport option for spent fuel to a CISF in West Virginia, the state's highway network is extensive and vital for both regional and national freight movements. The network faces challenges, however, from mountainous terrain, impacts of severe weather (including snow and flooding[20]), aging infrastructure, and increasing freight demand. Local highways also suffer from capacity issues and bottlenecks, particularly around urban centers and major corridors (e.g., I-81, I-70, I-64, I-77, US 35, WV 9, etc.), which experience recurrent congestion and reliability issues.[21] Furthermore, while public works projects are underway to address many challenges related to the State's aging highway infrastructure, a significant portion of bridges and some pavement sections are in poor condition, especially in rural areas and on truck routes. [22] West Virginia is aware of the need for, and is undertaking infrastructure projects to target, needed highway infrastructure and congestion relief improvements.

Identify existing infrastructure (e.g., rail lines, highways, ports), regulatory requirements (e.g., state DOT approvals, federal transport regulations), and potential public acceptance challenges.

West Virginia possesses a strong multimodal transport foundation into which it can effectively integrate the logistics essential for moving specialized nuclear materials. Railroads, which would be the most viable mode of transport for spent fuel to any state CISF, are integral to West Virginia's multimodal freight strategy, and link highways, ports, and industrial sites. The State's rail transportation network has already been effectively designed for coal industry transport. It supports 11 established freight railroads – including two heavy-haul Class I freight railroads (CSX and Norfolk Southern) that account for 78.5% of the state's route miles.[23] Rail is central to the state's history and economy, especially for coal, chemicals, and automotive sectors, and remains vital for shipment of bulk commodities. As the State's rail sector faces challenges from

[20] *WV State Freight Plan 2023.* Section 5.1.1, 5.1.2

[21] *WV State Freight Plan 2023.* Table 6, p. 3-10; WV-9-PEL-Final-Report, Section

[22] About 2% of NHS lane miles are in poor condition. 14% of NHS bridge deck area is in poor condition. WV State Freight Plan 2023, Section 3.2.2, Table 4 & 5, p. 3-8, 3-9

[23] WV State Freight Plan 2023, Section 3.3, 3.3.1 2

declining coal shipments, however, nuclear materials transport has the potential to enhance diversification on this shipping platform and bolster the long-term viability of the State's rail industry.

Beyond rail, West Virginia is connected via multiple interstates (I-64, I-77, and I-79) with larger strategic transportation corridors (such as the National Highway System [NHS], National Highway Freight Network [NHFN], Appalachian Development Highway System [ADHS], and Coal Resource Transportation System [CRTS]).[24] West Virginia operates the 6th largest state-maintained highway system in the U.S., with 38,850 miles of public roadway that ensure reliable regional connectivity for industrial and hazardous-materials transport. The state's highways are critical for freight and heavy cargo transport, carrying over one-third of tonnage and nearly two-thirds of value.[25] The availability of heavy truck shipping within the State also opens the possibility of repurposing (through state-sponsored training) the existing trucking workforce to support nuclear shipping. West Virginia's location within the Mid-Atlantic energy corridor positions it to support nuclear fleets across neighboring states, while creating a centralized hub for fuel recycling, materials recovery, and long-term stewardship. This approach would allow the Innovation Campus to simultaneously support national fuel security, spent fuel minimization, and economic development in former energy-producing regions.

Furthermore, West Virginia supports two public port facilities along the Ohio and Kanawha Rivers (the Port of Huntington Tri-State and the Mid-Ohio Valley Statistical Port District) that are among the largest in the U.S. by tonnage. These ports provide barge transport and heavy-cargo handling at entry points along the Ohio, Kanawha, and Monongahela Rivers.[26] In 2019, 72 million tons moved via West Virginia's inland waterways. As tonnage is projected to decline by 72% by 2050, diversification of port facilities to support the handling of nuclear materials could help maintain this infrastructure's critical contribution to the West Virginia freight economy. All of these assets (rail, ports, and highways) are managed by the West Virginia Division of Transportation (WV DOT), which coordinates closely with federal partners.

The transport of nuclear-related materials across state lines adheres to a rigorous federal regulatory structure. Shipments must comply with U.S. Department of Transportation (US DOT) regulations covering routing, labeling, carrier certification, and vehicle standards; as well as NRC requirements for certified transport casks and packaging, especially for spent fuel and special nuclear material.[27] Federal Railroad Administration (FRA) oversight also requires adherence to additional federal safety protocols for rail shipments of spent fuel and high-level waste.[28] West Virginia is committed to ensuring alignment of all spent fuel routing, inspection activities, and emergency-response planning with national requirements for nuclear-material movement, through coordination with federal authorities.

The State anticipates that planning for the transportation of radioactive materials will raise public concerns, particularly in regard to the safety of moving materials through heavily populated areas

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24 *WV State Freight Plan 2023*, Section 3.1.1, p. 3-3

25 IBID, Section 3.2, p. 3-4

26 *WV State Freight Plan 2023*, Section 3.4, 3.4.1 1, p. 1

27 https://www.nrc.gov/materials/transportation

28 https://railroads.dot.gov/sites/fra.dot.gov/files/2023-07/Final%20RRS%20SCCOP%206.30.23.pdf

and/or sensitive environmental habitats and landscapes. The potential for development of a spent fuel storage facility may also raise concerns regarding diffusion of radioactive materials into local ecosystems and/or public water facilities. Community members are likely to seek clear and trustworthy information on emergency-response readiness, transport routing decisions, and the security measures required for spent-fuel shipments. Environmental groups may focus on potential impacts to waterways, rail corridors, and communities along transport routes. Addressing these concerns effectively will require frequent and transparent public communication, solicitation of public feedback and community involvement, demonstrated compliance with all federal safety standards, and coordinated planning with local emergency-response agencies.

Propose solutions to enhance transportation networks, including infrastructure upgrades or stakeholder engagement plans.

To support nuclear-related transport, West Virginia may pursue targeted railroad infrastructure upgrades that could include rail siding and staging upgrades, construction of specialized intermodal transfer points, and/or installation of secure staging areas to accommodate NRC-certified transport containers. Port facilities may need redesigns to incorporate increased crane capacity, secure laydown areas, and radiation-monitoring systems. Highway corridors may require enhancements for heavy-haul or escorted shipments, such as reinforced pavement, as well as targeted improvements for congestion relief. There may also be upgrades required for hauling equipment to meet the needs of traveling over West Virginia roads. Protocols for transport could include guidelines for best practices packaging of nuclear materials that would focus on radiation prevention and detection to help offset infrastructure concerns.

Strengthening emergency-response capabilities along designated transport routes will also be an important component of long-term readiness. LEPCs, emergency personnel and first responders will need to be newly trained and involved with the development of protocols for nuclear response. Through these efforts, however, West Virginia can ensure that its transportation network remains safe, resilient, and fully aligned with federal requirements for spent fuel shipment and storage.

Question 14: Proposed Agreement Framework

What type of agreement should be employed to support the development and operation of the Nuclear Lifecycle Innovation Campus- such as cooperative agreements, contracts, financial assistance mechanisms, loan guarantees, or voluntary agreements under the DPA? Limit suggestions to contractual authorities already granted to DOE (e.g., under the Atomic Energy Act of 1954, Energy Policy Act of 2005, or DPA). Describe how this agreement framework will facilitate partnerships and align with private funding and operational needs across enterprise functions.

West Virginia recognizes that selection for siting of an Innovation Campus will require a formal agreement between DOE and the State, setting forth roles, terms, commitments, and obligations between the parties. The State could potentially seek a cooperative agreement with the DOE's Office of Energy Dominance Financing (formerly the Loan Programs Office, which handles their financing opportunities), as a core opportunity. West Virginia would enter into such an agreement subject to mutually acceptable terms and conditions to memorialize requirements for the development and long-term operation of an Innovation Campus. The State acknowledges that such an agreement must align with existing federal legislative authorities in place to control and manage the nuclear environment within the United States.

West Virginia will prioritize solicitation of private sector partners to achieve the requisite industrial development in support of its Innovation Campus infrastructure requirements, leveraging the State's favorable regulatory structure and aggressive economic development approach. Key strategies may include, for example, utilizing high tech and industrial sector power-purchase agreements (PPAs) to finance Small Modular Reactors (SMRs) to enable a private power source supply chain and leveraging private equity for additional infrastructure development. West Virginia will enable mutually acceptable agreements between the State and private sector partners, incorporating legislatively authorized regulatory modification as necessary, in support of serving new power loads from Innovation Campus participants and other new commercial entrants into the state, including hyperscale data centers.

In addition, the State may seek application for federal support through the Nuclear Waste Fund, a U.S. Treasury fund established by a 1989 amendment to the Nuclear Waste Policy Act (1982) to pay for the disposal of HLW and spent nuclear fuel. This fund has accrued, including interest, more than $54 billion that the Energy Secretary could potentially make available for nuclear spent fuel disposal or long-term retrieval storage via contracts with West Virginia as an entity that "generates or holds title to high-level radioactive waste, or spent nuclear fuel, of domestic origin for the acceptance of title, subsequent transportation, and disposal of such waste or spent fuel."[29] In addition, should the "Accelerating Reliable Capacity (ARC) Act" pass (proposed, bi-partisan federal legislation that "seeks to provide up to billion in federal cost-overrun insurance to support advanced nuclear reactor projects by mitigating investor risk"[30]), the State could also seek cost overrun insurance through the federal government as a backstop to protect ratepayers from significant nuclear construction cost overruns.

Federal funding could also be used for building or infrastructure improvements at a potential West Virginia nuclear campus site, similar to how federal funds were used in 1992 for roadway and other external improvements to New Mexico's Waste Isolation Pilot Plant (WIPP). The Waste Isolation Pilot Plant is the "nation's only repository for the disposal of transuranic spent fuel generated by atomic energy defense activities."[31] WIPP began operation in 1999 and is "located 33 miles southeast of Carlsbad, New Mexico, in the Chihuahuan Desert, far from major population centers."[32]

It is projected that the State's abundant industrial base, available land, favorable regulatory environment, and other inherent attributes described in this RFI response, will make it easier for

29 House.gov. United States Code, "42 USC 10222: Nuclear Waste Fund." 2026.

30 Nico Portuondo. Politico.com. "Bipartisan duo to introduce federal backstop for nuclear reactors." Feb 10, 2026. https://subscriber.politicopro.com/article/eenews/2026/02/10/bipartisan-duo-to-introduce-federal-backstop-for-nuclear-reactors-00772225

31 U.S. Department of Energy (DOE). "Waste Isolation Pilot Plant." https://www.energy.gov/em/waste-isolation-pilot-plant-wipp#

32 IBID.

West Virginia, compared to other states, to attract private sector investment and commercial partnerships for development of a comprehensive nuclear ecosystem.

Question 15: Technology and Industry Partnerships

What experience, interest, or concern does your state have regarding specific technologies for the Nuclear Lifecycle Innovation Campus- such as advanced reactor designs, reprocessing methods, or AI-driven systems for data centers and operations?

West Virginia's recently passed legislation, West Virginia HB 2014 (April 2025), the "Power Generation and Consumption Act," is now actively encouraging data center development by allowing data centers themselves to create independent microgrids.[33] This legislation provides tax incentives and sets up a regulatory framework, with oversight via the state Department of Economic Development and a designated Data Economy Office. HB 2014 positions West Virginia to attract hyperscale data center partners who require large, stable power loads compatible with nuclear energy.

HB 2014 created a welcoming regulatory environment for data centers; by doing so it has also increased interest among investors and developers for siting their projects in West Virginia and incentivized active data center investment for data center construction and operations. These developers are considering West Virginia due to its central location, enabling co-location/funding along multiple industrial and transport corridors with access to neighboring states and the eastern seaboard. West Virginia will seek to explicitly connect AI-driven data center development to nuclear powered microgrids to show a strong market demand driver for advanced reactors.

The WVOE will continue to explore the need for any new legislation that would be required for must for other commercial enterprises, like attracting a partner for CISF, advanced reactor deployment, research into nuclear fuel recycling, etc. The State is willing to support permitting as needed. West Virginia is dedicated to economic development, is actively working to attract industry and business to the State and would consider new legislation next session.

Describe existing nuclear industry collaborations, state incentives to attract private-sector partners, and proposed partnerships to support all enterprise functions, including manufacturing, R&D, and isotope production.

As it is in the process of becoming a Nuclear Agreement State, West Virginia is also a member state or partner in a wide variety of collaborative nuclear planning groups and regulatory agencies. These include the:

- Atlantic Council Global Energy Center's "Atoms for Appalachia" collaboration
- National Association of State Energy Officials, "Nuclear First Movers" group
- National Governors Association's "West Virginia Nuclear Energy Retreat & Technical Assistance Committee," comprised of representatives from the:

[33] https://www.wvlegislature.gov/bill_status/bills_text.cfm?billdoc=hb2014%20sub1%20enr.htm&yr=2025&sesstype=RS&i=2014

- Clean Air Task Force
- Advanced Nuclear Advisors
- Gateway for Accelerated Innovation in Nuclear
- Dominion Energy
- Nuclear Energy Institute
- Tennessee Nuclear Energy Advisory Council
- Virginia Nuclear Energy Consortium
- Virginia Department of Energy
- Marshall University

- The National Nuclear Policy and Energy Working Group, which includes representatives from the following companies and educational organizations:
  - Gateway for Accelerated Innovation in Nuclear & Idaho National Laboratory
  - West Virginia Department of Health
  - Dominion Energy
  - Envoy Public Labs
  - West Virginia University
  - Holtec
  - First Energy
  - American Electric Power
  - Marshall University
  - West Virginia Department of Education
  - Workforce West Virginia
  - Nuclear Energy Institute

Question 16: Secondary Waste Management

How would your state assist in managing, storing, and disposing of secondary waste streams generated by Nuclear Lifecycle Innovation Campus activities?

While not explicitly included as part of the fuel lifecycle, low-level radioactive waste (LLRW) will be generated during research activities and in the fuel recycling process. Disposal options for LLRW are limited in the U.S. LLRW currently generated in West Virginia must be shipped to West Texas or Utah for disposal.

Over time, it is possible that West Virginia's Innovation Campus can be designed to integrate LLRW disposal for generating additional revenue. To ensure LLRW from West Virginia-hosted research and nuclear fuel lifecycle facilities could be managed in West Virginia, the State will also work with the Appalachian Waste Compact and Compact states (Pennsylvania, Delaware, and Maryland) to pursue a new LLRW disposal site. This site would be licensed by West Virginia's radioactive materials licensing authority in combination with its other solid waste and environmental regulatory agencies.

It is important to note that long-term, in-state LLRW disposal is currently not authorized under West Virginia law. Any such capability would require enabling legislation, the establishment of an appropriate state-level regulatory framework, and formal alignment with the Appalachian

States Low-Level Radioactive Waste Compact. West Virginia is not currently designated as a host state under the Compact, and any change in that status would require a multi-step process, including Compact Commission consideration, coordination and consent among member states (Pennsylvania, Maryland, Delaware), and demonstration that statutory, regulatory, and technical requirements can be met.

Describe compliance with state environmental regulations, access to existing commercial LLW disposal sites, and any proposed state investments in waste management infrastructure.

West Virginia will fully comply with any state environmental regulations governing LLRW disposal. The OOE does anticipate that LLRW disposal within the state will require passing new legislation, but such legislation is still in the process of drafting and discussion. There have not yet been any state-level investments proposed for the management of LLRW.

Question 17: Government Furnished Data/Technology/Equipment

What government- furnished data, technology, or equipment (e.g., reactor designs, reprocessing technologies, safeguards systems) would your state require to support the Nuclear Lifecycle Innovation Campus functions? Specify whether your state currently holds rights or licenses for such data or technology, and if not, outline how you would pursue acquiring them through DOE, DoW, or other federal entities.

At this time, West Virginia does not hold rights or licenses to specific government-furnished data, technology, or equipment for Nuclear Lifecycle Innovation Campus functions. Rather than prescribing specific technologies at this stage, the State anticipates working with DOE, industry partners, and national laboratories to evaluate innovative and commercially viable technologies as the Innovation Campus concept evolves. Where appropriate, the State would pursue access to relevant data, technologies, or equipment through DOE programs, licensing arrangements, or public-private partnerships, while maintaining technology neutrality and flexibility over the course of development.

Question 18: International Export Capabilities

How will your state support the development of infrastructure and policies to support international exports of advanced reactors, nuclear fuels, isotopes, and technologies from the Nuclear Lifecycle Innovation Campus? Describe existing or proposed export infrastructure (e.g., ports), state policies to support global partnerships, and strategies to ensure compliance with export control laws and IAEA regulations.

While international exports of nuclear materials are not an immediate priority for West Virginia at this stage, the State recognizes the importance of U.S. leadership in global nuclear markets. West Virginia has no current existing or proposed export infrastructure for nuclear materials, or state policies in regard to global nuclear energy partnerships. The State does, however, have the capability to export internationally via a robust port system, and does so with a wide variety of products and services offered by West Virginia companies. These companies, both large and small, have contributed to rapid growth in state exports, valued at $8.1 billion in 2018.

In addition, West Virginia offers a dedicated, state-level International Development Team, which focuses on economic development through partnerships with international industries.[34] The International Development Team assists companies from Asia, Europe and around the world in establishing facilities in West Virginia and supports the State's existing companies in increasing their exports. Over 136 companies from 30 countries have chosen West Virginia as their ideal operational base in North America. Overall, the International Development Team is focused on enhancing West Virginia's success in the global economy.

Question 19: Constraints and Inhibiting Factors

What potential barriers or impediments could affect the successful siting and operation of a Nuclear Lifecycle Innovation Campus in your state, considering all nuclear functions?

West Virginia recognizes that several factors could influence the successful siting and development of a Nuclear Lifecycle Innovation Campus. While the State brings significant strengths, such as an experienced energy workforce, favorable geographical and geological features, a favorable regulatory environment, bipartisan support for advanced nuclear energy facilities, and a strong industrial foundation, there are also structural and community-level considerations that must be addressed to ensure long-term success. Successful siting will require broad alignment among state agencies, county, local governments, and host communities early in the process, and prior to advancing site-specific commitments. Early public education on nuclear materials and safety will also be important to successful siting and long-term operation.

A key barrier relates to ensuring the viability of siting conditions. West Virginia's mountainous topography, legacy mine workings, and areas of steep terrain can limit the number of locations suitable for large-scale nuclear infrastructure. Recent assessments of advanced nuclear deployment in the state have noted that most regions present at least one siting challenge, whether related to slope, geologic features, or proximity to population centers. These factors underscore the importance of the State's Economic Development Siting Tool and WVU's under development Energy Siting Tool, both of which will help identify locations with favorable geotechnical, environmental, and infrastructure characteristics. In addition, safety and security considerations, including spacing requirements between nuclear facilities, will be considered as part of site evaluation and planning.

For example, what resources, information, or expert assistance would be necessary to ensure that potentially interested communities have adequate knowledge and support to address concerns related to mining, reprocessing, waste disposal, or supporting industries?

West Virginia would need coordination with state radiological health function and health department leadership to ensure that monitoring, laboratory readiness, public guidance, education on nuclear materials and safety, and coordinated communications are established well before any project reaches operation. It would also need to align its nuclear efforts with non-radiological environmental permitting teams (e.g., in water, construction impacts, waste

[34] West Virginia Economic Development Agency. "International Development Team." West Virginia.gov. https://westvirginia.gov/divisions/international-development/

management, site restoration planning, etc.) with a transparent reporting cadence for the State to demonstrate responsible development.

The State may also need time and resources devoted to developing a dedicated Nuclear Authority, similar to authorities set up in eight other states, that could offer West Virginia the capacity to administer nuclear siting, financial incentives, community engagement, workforce development, and risk management; and which would be tasked with stewarding nuclear development. Access to federal siting expertise, including technical assistance from the DOE, the NRC and subject-matter experts, would be important to support informed, local decision-making and addressing community questions during early planning. More broadly, the RFI process assumes that states are entering a mutually committed process, rather than an exploratory exercise, which underscores the importance of clarity on roles, expectations, and siting feasibility.

Question 20: Unaddressed Considerations

What additional issues should DOE consider in implementing a successful Nuclear Lifecycle Innovation Campus in your state?

Coordination on the eventual final disposition of spent fuel, a federal level issue, will be key. As noted earlier, one of the envisioned roles of the Innovation Campus is to research potential spent fuel disposition pathways in West Virginia, which could help inform national policy and support the development of clear, timely federal guidance on safeguards, export controls, and technology-transfer processes. Such federal clarity will be essential to building private-sector confidence, supporting investment decisions, and reducing regulatory uncertainty during early stages of campus development. DOE support for public education, stakeholder outreach, and national-laboratory engagement would further strengthen campus development. From a programmatic perspective, national laboratory engagement, coordinated public outreach, and education are often instrumental in advancing technical credibility, workforce development, and public understanding of advanced nuclear fuel-cycle activities.

Provide insights on state capabilities, policies, or prior experience with nuclear, industrial, or large-scale infrastructure projects that reinforce your state's suitability as a host.

West Virginia brings substantial industrial and energy-sector experience and capability that will be directly relevant to hosting a Nuclear Lifecycle Innovation Campus. The State has a long history in energy production and industry, which supports a workforce familiar with complex, highly regulated, and high-hazard environments. Its policy framework, including the West Virginia Nuclear Lifecycle and Advanced Fuel Cycle Development Act, recognizes the need for secure domestic fuel-cycle capabilities; in addition, the West Virginia state energy policy focuses on developing the State's energy industry. West Virginia University provides strong academic and research capacity, including published analyses on advanced nuclear deployment and the use of former coal sites for small modular reactors. The State also benefits from multimodal infrastructure, including rail, river ports, and interstate corridors, all capable of moving large industrial components and specialized equipment.

West Virginia's prior experience includes hosting large scale coal and industrial facilities with characteristics comparable to advanced nuclear sites, such as grid connectivity, water availability, and industrial zoning. Assessments have found that many former coal sites in the State already meet key technical criteria for advanced nuclear development, reinforcing suitability for fuel-cycle and reactor-adjacent activities. The State also has deep experience in regulated energy markets, environmental compliance, and collaboration with federal agencies on energy research, workforce development, and industrial transition initiatives.

Question 21: Additional State Information

Please provide any additional information about your state's capabilities, policies, or prior experience with nuclear or related projects (e.g., energy, defense, industrial development) that supports its suitability to host a Nuclear Lifecycle Innovation Campus. Include details on existing infrastructure, economic development programs, or community support initiatives that enhance your state's readiness to support the desired nuclear innovation.

As outlined above, West Virginia has significant experience that can lend itself to successfully hosting a Nuclear Lifecycle Innovation Campus.

In addition, the State benefits from a dependable electric grid with strong reliability and substantial existing substation infrastructure across industrial and energy-intensive sites. West Virginia has abundant surface water resources supported by established industrial water systems built to serve legacy manufacturing, energy, and chemical operations. Many former and active industrial sites across the State already include waste-handling infrastructure, knowledge, and capacity. The State also offers robust multimodal logistics, including extensive Class I rail access, interstate highway corridors, and inland river ports, enabling efficient movement of materials, equipment, and commodities. Industrial facilities across the State maintain robust physical security frameworks, and cybersecurity has been strengthened through partnerships with utilities and federal agencies.

West Virginia also offers a range of economic development initiatives that support large scale projects, including tax incentives and workforce training to foster the growth of businesses. For example, purchases of tangible personal property and services directly used in research and development are exempt from the consumer sales tax. The West Virginia Economic Development Authority can also provide up to 45% in financing fixed assets by providing low-interest, direct loans to expanding state businesses and firms located in West Virginia. Even more, tangible personal property, including servers directly used in high-technology or Internet advertising businesses, is valued for property tax purposes at 5% of the original cost of the property. Sales tax is eliminated from all purchases of prewritten computer software, computers, computer hardware, servers, building materials and tangible personal property for direct use in a high-technology business or internet advertising business, further incentivizing data center growth.

Finally, as stated previously, West Virginia has a long track record of effective community engagement across energy-related projects and State agencies. Partner organizations routinely conduct outreach to support major infrastructure initiatives. The State recognizes that public engagement will be essential to shaping a robust nuclear policy as Innovation Campus planning moves forward.

Question 22: Financial responsibility, Cost Sharing, and Assurances

Describe how your state would approach cost-sharing and risk allocation for the development, operation, and closure of a Nuclear Lifecycle Innovation Campus. In particular, how would your state expect private entities to fund capital costs, operations, decommissioning, and long-term waste management (for example, decommissioning funds, closure funds, insurance, and other financial assurances)?

West Virginia envisions a balanced allocation of costs and risks across the development, operation, and closure of the Innovation Campus, with private partners expected to fund the majority of capital, operational, and decommissioning costs, while federal and state support is targeted and complementary. Federal participation would be pursued where appropriate, such as cost-sharing for research initiatives, advanced reactor deployments, and other federally aligned activities. Federal cost-sharing would be focused on early-stage research, demonstration reactors, and DOE-aligned infrastructure, rather than core commercial operations. Federal loan guarantees, grants, and cooperative agreements may also support eligible components. State contributions, if provided, would be targeted toward catalyzing private investment.

As previously noted, private sector investment is expected to lead the capital development of campus facilities and commercial activities. Private entities would be responsible for funding commercial operations and pilot activities. The State may provide non-financial support, such as workforce development initiatives and streamlined permitting assistance, to facilitate timely execution. Private operators would be required to establish and maintain dedicated decommissioning funds in accordance with federal requirements. NRC regulations mandate periodic reporting of funding status and demonstration of "reasonable assurance" that sufficient resources exist for radiological decommissioning. These obligations must be met through external, independent trust funds established under State law and maintained exclusively for decommissioning purposes.

Long-term closure obligations would be supported through a combination of external trusts, surety bonds, insurance instruments, or parent-company guarantees, consistent with federal requirements governing nuclear decommissioning trust funds. These mechanisms would ensure that long-term liabilities are fully funded and protected from operational or market risks.

What state or local contributions, if any, would be contemplated, and how would they be conditioned (for example, performance-based incentives, clawback provisions)?

West Virginia may provide targeted state or local support to facilitate site development, workforce readiness, or enabling infrastructure. These contributions would be designed to attract private-sector participation and complement federal investment. Incentives may include tax credits, site-readiness grants, or infrastructure cost-sharing, depending on project scope and statutory authority.

Any State incentives would likely be performance-based, tied to measurable outcomes such as job creation, capital investment, or facility milestones. Performance-based structures will ensure accountability and align state support with project delivery.

Clawback provisions would be incorporated into incentive agreements to protect public investment. These provisions typically require repayment or reduction of incentives if performance metrics are not met, ensuring that state resources are used effectively and responsibly.

Question 23: Revenue Sources and Cost-Recovery Approaches

What approaches would your state consider to ensure that beneficiaries of the Nuclear Lifecycle Innovation Campus (for example, reactor operators, fuel cycle companies, data center operators, utilities) contribute appropriately to the costs of long-term waste management, decommissioning, and environmental monitoring (for example, user fees, surcharges, host-community agreements)?

West Virginia is committed to ensuring that long-term spent nuclear fuel management, decommissioning, and environmental monitoring are sustainably funded, and that beneficiaries of the Innovation Campus contribute their fair share of these costs. Innovation Campus users will be required to pay for the spent fuel they generate through structured fees or required contributions to dedicated trust funds. The State's approach will maintain an appropriate distribution of financial responsibility so that costs remain with those generating spent fuels or benefiting from campus infrastructure, rather than shifting to host communities.

To achieve this, the State anticipates using a combination of cost-allocation formulas, user-fee structures, and scaled payments into dedicated decommissioning and environmental monitoring trusts. These predictable revenue mechanisms would provide stable financing to support long-term monitoring, emergency-response readiness, maintenance, and eventual closure, ensuring that obligations remain fully funded regardless of future appropriations cycles or operator financial conditions.

Conclusion

West Virginia is well positioned to establish a Nuclear Lifecycle Innovation Campus and emerge as a national leader in the nuclear sector. The State has a clear strategic vision that supports its 50x50 comprehensive energy strategy and is already advancing a phased approach to developing nuclear capabilities.

Though this opportunity is not without significant challenges, West Virginia has consistently risen to meet such challenges in a thoughtful, innovative, energetic fashion. This will be no different.

West Virginia's near-term focus on back-end lifecycle activities leverages its unique strengths, including favorable geography, established energy infrastructure, strong private sector partnerships, a skilled workforce, and a supportive regulatory environment, while complementing and enhancing the broader regional nuclear supply chain.

To guide development, the State has established a nuclear working group and drafted a nuclear strategy to support full integration across the nuclear lifecycle over the longer-term. These efforts align with the goals of the State's comprehensive energy strategy and recent federal executive orders emphasizing the importance of economic resilience, energy independence, and technological leadership.

The West Virginia Office of Energy, herein representing the State of West Virginia, appreciates the opportunity to respond to this RFI, and looks forward to continued collaboration with the DOE to advance this shared vision.

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