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Pennsylvania's Nuclear Energy Opportunity: Building on Legacy to Drive Growth and Security

Introduction

Pennsylvania is positioned to lead the next era of nuclear energy innovation. Strategic investments in infrastructure for reactor technologies, integrated supply chains, public-private partnerships, and the reuse of existing energy sites can support energy reliability, economic growth, and national security. These efforts align directly with Team Pennsylvania's goals to Collaborate, Lead, Impact, and Empower.

Nuclear Energy in Pennsylvania's Economy

Pennsylvania is a national leader in nuclear power generation with nuclear supplying over one-third of the commonwealth's electricity.[1] Four nuclear plants operate eight reactors across the state today: Beaver Valley, Limerick, Peach Bottom, and Susquehanna. Together, they contribute approximately $2.36 billion annually to Pennsylvania's gross state product, support more than 15,000 direct and indirect jobs, and generate over $80 million in state tax revenue.[2]

Pennsylvania's nuclear sector is also supported by a strong energy research and development ecosystem, proximity to leading academic institutions, and multiple companies instrumental to the nuclear supply chain. These assets form a foundation for future nuclear innovation, including advanced reactors, fuel recycling, hydrogen integration, and medical and industrial isotope production.

Challenges and Headwinds

Despite its strengths, Pennsylvania's nuclear sector faces several challenges.

- **Supply chain constraints**: Limited domestic capacity for fuel enrichment and component manufacturing creates vulnerabilities in the deployment of new technologies.

- **Investment and first-mover risk**: Capital costs for nuclear projects are high, particularly for first-mover projects involving advanced reactor technologies, which often bear disproportionate financial, technical, and market risk before costs are reduced and deployment models are validated.

- **Regulatory and permitting uncertainty**: Permitting timelines can stretch for years. While recent federal actions signal an intent to accelerate and modernize the nuclear

regulatory process, establishing predictable timelines and clear regulatory pathways remains critical. Without supportive policy and financing mechanisms, it will be difficult to scale advanced nuclear deployment.

- **Aging infrastructure and workforce**: Most existing reactors are more than 40 years old.[3] Many skilled nuclear workers are approaching retirement age, and talent pipelines have not kept pace with projected needs.

Opportunities for Growth

We have identified opportunities that could position Pennsylvania as a leader in next-generation nuclear development:

Deployment of Advanced and Existing Technologies

New reactor designs, including small modular reactors (SMRs), microreactors, and high-temperature gas-cooled reactors, offer flexible, low-carbon energy options. These technologies and existing technologies are well-suited for energy security, rural energy reliability, and energy export. Pennsylvania can lead by continuing to support projects at former coal sites and other brownfield locations. These sites often have existing grid access and energy infrastructure, which can reduce deployment costs and timelines.

Repurposing Legacy Energy Infrastructure

Pennsylvania has dozens of decommissioned coal plants, brownfield sites, and other undertapped energy assets. With proper planning, these locations can become innovation hubs for nuclear demonstration and grid resilience. Crane Clean Energy Center, for example, is the focus of early-stage plans to restart nuclear generation to power artificial intelligence data centers.[4,5]

Strategic Industry Partnerships

Private-sector interest in nuclear energy is growing. Amazon has announced a $20 billion investment in data centers that will be powered by nuclear energy from the Susquehanna plant.[4] Additionally, more than $90 billion in planned private sector energy and data center investments were announced at the inaugural Pennsylvania Energy and Innovation Summit, including commitments to nuclear energy projects and uprates at existing plants across the commonwealth. Team Pennsylvania can help accelerate partnerships with utilities, technology firms, and manufacturers that need reliable energy to support growth and innovation.

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Market Development and Supply Chain Integration

Nuclear power can contribute to grid stability and resilience. Capitalizing on the existing nuclear and energy supply chain, including established manufacturers, component suppliers, engineering firms, and service providers, can help Pennsylvania achieve economic development goals and energy security goals.

The Role of Team Pennsylvania

Team Pennsylvania is a neutral convener with deep experience connecting industry, government, labor, academia, and community partners. Our role in the Nuclear Strategic Impact Initiative includes:

- Reconvene and expand the Nuclear Task Force with additional stakeholders from industry, government, labor, academia, and future end-users
- Begin development of Strategic Roadmap framework and timeline to align deliverables across the next 6 to 12 months
- Coordinate with Governor's Office and legislative leadership to explore executive and legislative actions that signal high-level commitment
- Engage philanthropic and federal funding partners to identify opportunities for co-investment and technical assistance

With strong coordination, Pennsylvania can build on its nuclear legacy to deliver growth, resilience, and national leadership.

Next Steps

We are formally advancing nuclear energy as a Strategic Impact Initiative. We are identifying pilot projects, coordinating with stakeholders to reduce risk, and developing funding strategies. We are especially focused on efforts that link innovation with long-term economic development. To get involved or explore partnership opportunities, contact energy@teampa.com and a member of our team will follow up.

Sources

1. U.S. Energy Information Administration, Pennsylvania State Energy Profile, 2024
2. The Brattle Group, *Pennsylvania Nuclear Power Plants' Contribution to the State Economy*, 2016
3. World Nuclear Industry Status Report, "Age Distribution of U.S. Nuclear Fleet," 2024
4. AP News, "Microsoft Seeks to Restart Three Mile Island Reactor," 2025
5. Wired, "The AI Boom Is Raising Hopes of a Nuclear Comeback," 2025