

Nuclear Energy Institute
Comments for Public Record
North Dakota House Energy and Natural Resources Committee

The Nuclear Energy Institute (NEI) applauds North Dakota for considering House Bill 1025, a bill that allows for the exploration of nuclear technology. This is an important piece of legislation that will help enable the development, demonstration, and deployment of advanced nuclear power systems. The electricity sector in the United States has undergone significant transformation over the last decade and that transformation will continue. NEI recently conducted a survey of its member utilities and found that these utilities anticipated needing more than 100 gigawatts, equivalent to more than 300 advanced reactors of new nuclear power by 2050 in order to guarantee reliable access to clean energy. Non-electric sectors such as industrial heat and transportation are also considering nuclear energy to transition to a reliable, clean and affordable energy supply. Ensuring that state energy policies are in place that enable commercial deployment of advanced reactors by the early 2030s is essential to ensuring an affordable, secure, and resilient energy sector well into the future.

Supportive state policies such as HB 1025 will have important benefits that reach beyond North Dakota's borders. While the United States once led the world in nuclear energy technology exports, we are no longer the leading supplier of nuclear reactors; we are in a race against other countries to capture a growing international market share, and by creating a pathway to commercial deployment here at home, we will unlock markets for U.S. technology across the globe.

Nuclear power is vital to the energy system

Currently, 94 commercial nuclear power reactors provide nearly 20 percent of America's electricity and more than half of the nation's carbon-free electricity.¹ Because electricity generation from nuclear energy does not release carbon dioxide and other harmful air pollutants, by maintaining a strong nuclear fleet, the United States will not have to choose between the health of its electric grid and the health of its citizens. Nuclear plants run 24 hours a day, 7 days a week producing power with unmatched reliability and have the added benefit of having their fuel on site, only requiring refueling every 18-24 months. This makes nuclear energy the ideal complement to variable generation from wind and solar power. In addition, nuclear plants are hardened facilities that are protected from physical and cyber threats, helping to ensure we have a resilient electricity system in the face of potential disruptions.

New advanced reactor designs are being developed by entrepreneurial U.S. companies seeking to expand the value of nuclear technology to our energy system. These designs will be commercially available this decade and will be ready for large-scale deployment by the early 2030s to meet domestic and global clean energy needs. Enacting state policies that encourage the use of these new nuclear technologies is particularly timely, as the U.S. Energy Information Administration forecasts the retirement of 140 gigawatts of capacity by 2040 across the U.S.² In addition, the EIA estimates that demand for electricity in the U.S. will expand by almost 15 percent during that time. Advanced nuclear plants to

¹ U.S. Energy Information Administration – Electric Power Monthly (January 2023).

² U.S. Energy Information Administration – 2019 Annual Energy Outlook: Table A8.

replace this retired generation and to meet this growing demand can be a vital part of the clean domestic electricity landscape. In fact, a recent Vibrant Clean Energy survey found that utilities were expecting to bring more than 300 gigawatts of advanced nuclear online by 2050.

Focusing only on the need for additional electricity in the U.S. in the upcoming decades would mistakenly overlook the likelihood of and the need for more energy in other sectors, such as transportation, industrial heat and hydrogen. Nuclear is the only clean, reliable and affordable energy source that can produce heat and steam that is needed for many of these processes. Although the U.S. led the world into the age of nuclear energy, we have lost ground to other countries with substantial, state-funded advanced reactor programs. Russia, China and other countries are moving quickly to bring their technology to the international market. Therefore, it is imperative that new U.S. advanced reactors be available soon for both domestic and international deployment, because exports of nuclear energy can create strategic partnerships with other countries.

Nuclear energy is poised to expand in the U.S.

NEI believes our nuclear energy future will include safe long-term operation of our existing nuclear power reactors through subsequent license renewals to allow operation out to eighty years; additional large light water reactors (LWRs); and widespread deployment of advanced reactors including both advanced water-cooled small modular reactors (SMRs) and non-light water reactors.

The existing domestic nuclear fleet is a central part of our nation's critical infrastructure and should not be taken for granted. Policymakers in state capitals and Washington DC have taken action to preserve sixteen reactors that were at risk of closing prematurely, by valuing those reactors for their emissions-free generation. These actions have had the added benefit of preserving more than ten thousand family-wage jobs.

The United States, fueled by private capital and innovation, has recently experienced a surge in advanced reactor technologies with dozens of projects worth billions of dollars being announced over the past year. One thing is clear, states have policies that support and encourage the deployment of advanced reactors, also have companies planning projects, which lead to future jobs and economic growth, in addition to reliable, clean and affordable energy.

Advanced reactors are an economic powerhouse

The electric utility sector in the United States is rapidly evolving. NEI believes it is in the best interest of the U.S. that nuclear power remains a significant and growing supply of clean electricity as this evolution continues. Therefore, it is imperative that the commercial nuclear industry in the U.S. continue to rapidly innovate new products and designs so that these products are available when the market needs them. According to a recent SMR Start report,³ advanced reactors can be a cost competitive and highly valuable part of our future energy system. The report also outlines the tremendous benefits to jobs and the economy, stating:

“Construction and operation of a 400 megawatt SMR plant with multiple reactors is estimated to employ about 600 manufacturing and construction workers for about 4 years and about 200 permanent positions for the 60+ years the SMR operates. The data shows that each permanent

³ <http://smrstart.org/wp-content/uploads/2017/09/SMR-Start-Economic-Analysis-APPROVED-2017-09-14.pdf>

position creates a multiplier effect resulting in 1.66 additional jobs in the local community and 2.36 additional jobs in the rest of the state. Nuclear jobs pay 36 percent more than average salaries in the local area.

“Based upon experience with a 1,000 MWe nuclear facility, a 400 MWe SMR plant is expected to generate over \$377M in direct and indirect economic output annually. This includes over \$181M in the plant’s electricity sales and induced spending at the local, state and national levels of \$7M, \$32M, and \$157M, respectively. The SMR plant is expected to pay about \$6M in state and local taxes and \$27M in federal taxes annually.” The advanced reactor supply chain could also create thousands of jobs to support a domestic and international market. SMR Start identified options available to states that wish to support the commercialization of advanced reactors.⁴

Conclusion

We appreciate and applaud the continued support for nuclear energy that inspired HB 1025. With this continued support and the dedication of the industry, NEI is confident that the U.S. will regain its leadership role in nuclear technology and generation.

On behalf of NEI and its members, we thank North Dakota for considering this important legislation. The legislation also will ensure that these economic engines continue to be the backbone of the nation’s electric infrastructure. Legislation such as HB 1025 will facilitate the development and deployment of innovative nuclear reactor technologies.

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⁴ <http://smrstart.org/wp-content/uploads/2017/07/SMR-Start-State-Options-for-New-Nuclear-Approved-2017-06-26.pdf>