GAIN

Gateway for Accelerated Innovation in Nuclear

Trends in State-Level Energy Markets and Policy: **North Dakota**

Prepared by

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National Strategy for Establishing Relationships with Utilities/End-Users

North Dakota

Prepared by Envoy Public Labs

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Executive Summary

Introduction

Since July 2018, the Gateway for Accelerated Innovation in Nuclear (GAIN) has supported the *National Strategy for Establishing Relationships with Utilities/End Users*. Direct engagement, in targeted states, with the electric utility industry (EUI) and a broad set of stakeholders has yielded a detailed picture of the ecosystem in which generation planning takes place. From this picture, GAIN has begun to build an understanding of what information utilities need to assess advanced nuclear technologies, and how to provide that information. Broad deployment of advanced reactors into the US market will require well-informed customers who can see value in the technology as part of a clean, resilient resource portfolio. Doubt about whether the US customer base was well-enough informed about advanced reactor technologies was first raised at the March 8-9, 2018 symposium, *Enabling Advanced Reactors for the Market,* sponsored by GAIN in partnership with the Nuclear Energy Institute (NEI) and the Electric Power Research Institute (EPRI). A subsequent pilot study in Minnesota and follow up study in Arizona both found that most utilities and key energy stakeholders, including environmental and ratepayer advocates, state regulators, and legislators, did not have sufficient information to properly evaluate advanced reactor technologies. GAIN is well-positioned to serve as a conduit for resources from the US national laboratories to potential customers of advanced reactor technologies; a more informed US customer base will better enable the US market for commercial deployment of advanced reactors.

To support GAIN's role in fostering awareness and knowledge of advanced reactor technologies amongst potential customers, four additional states were selected for direct engagement: Colorado, North Dakota, Washington, and Wyoming. North Dakota was chosen for the study due to its outsized dependence on coal-fired generation, extreme weather conditions, and economic reliance on extraction. The state boasts a robust extraction economy and offers the possibility for advanced reactors to serve mining loads, as well as serve as a potential replacement for coal assets forced to retire due, in large part, to the influence of out-of-state policies and market influences. North Dakota also has a relatively high price for industrial electricity. The study included 6 respondents from across North Dakota, including various utilities, NGOs, and state officials, as well as one regulator in South Dakota. As with previous studies, respondents were asked questions regarding their power procurement and communications methods, as well as their policy interests. Questions were also asked to gauge respondents' knowledge and sentiments regarding advanced nuclear energy; questions were included to specifically understand the impacts of one specific legacy nuclear issue involving an DOE-led experiment concerning a nuclear waste storage concept. The ultimate goal of the preliminary engagement completed by this study was to better understand the circumstances and challenges facing the EUI and its stakeholders in North Dakota, while identifying opportunities for GAIN and positioning it as a resource for utility planners and state-level utility stakeholders.

Key Findings

- North Dakota's economy and government revenue are inexorably linked to the extraction industry and fossil fuels, and regional and national decarbonization trends indicate that the state's economy will face significant pressure to transition in the coming decades. **The state is planning for this transition by establishing a multibillion dollar sovereign wealth fund and supporting demonstration projects for new energy technologies, specifically carbon capture, utilization, and storage.**

- Poor stakeholder engagement and coordination at the local level led directly to the failure of a nuclear-related DOE project and prompted an objectively negative policy outcome for nuclear in the state. Although the "experimental borehole" was never intended to contain any nuclear waste, premature announcements and subsequent backpedaling bred local skepticism that ultimately doomed the project. **In North Dakota and beyond, state and local actors hold de facto veto power over any nuclear project, and should be considered critical stakeholders by AR developers.**

- Though the state government of North Dakota is unlikely to implement policies that impact the energy sector in meaningful ways, **policy originating in more progressive, neighboring states has an outsized impact on the strategic planning of power producers in the state of North Dakota.** Out-of-state policies are already driving the adoption of additional wind generation, as well as the premature closure of some coal-fired units, and should continue to impact NorthDakota as neighboring states explore even more ambitious decarbonization policies.

Results

North Dakota is the largest producer of lignite coal in the United States and its electric grid is dominated by coal-fired generation. However, lignite coal is largely unexportable due to its high moisture content, resulting in the majority of the state's electric grid being supplied by mine-to-mouth coal plants. As a consequence of mine-to-mouth operations and near-zero transportation costs, the coal plants in North Dakota may be the last remaining coal plants in the country. However, as the mines usually have more workers than their corresponding coal plants, the inevitable decommissioning of mine-to-mouth coal operations will result in a much higher concentration of job loss. Moreover, political decisions being made outside the state are strongly influencing in-state energy decisions. Wind generation has risen to over 25% of in-state net generation over the last two decades, largely due to neighboring Minnesota's passage of a Renewable Portfolio Standard (RPS) in 2007 and its impact on utilities with service areas and generating assets that span both states. Further discussion to aggressively decarbonize in Minnesota has encouraged Great River Energy, a Minnesota G&T cooperative with no service area within North Dakota, to announce closure of Coal Creek Station, the largest coal-fired power plant in North Dakota. Republicans have held the governor's office and majorities in both chambers of the legislature since 1995, resisting political pressure from its comparatively more progressive neighbor to the east. Other than a 10% renewable goal passed in 2007 in response

to an aggressive buildout of wind capacity in the state, the legislature has been fairly reluctant to consider any legislation that would constrain carbon; SB 2344, passed in 2019, states explicitly that, “it is in the public interest to promote the use of carbon dioxide to benefit the state, to help ensure the viability of the state’s coal and power industries, and to benefit the state economy.” Instead, the legislature has sought to extend the lives of North Dakota coal plants by supporting the use of CCS technology. Project Tundra, a CCS project intended to be deployed at Minnkota’s Milton R. Young coal plant, is still in the planning and financing phase, but already has garnered both state and federal support and funding. Former governor and now-US Senator John Hoeven has expressed strong support for CCS.

Despite the relative market insulation of mine-to-mouth coal operations, decline of coal-fired generation broadly is forcing energy planners and policymakers in North Dakota to brace for change in its energy economy. A ballot initiative passed in 2010 following an oil boom emanating from production in the Bakken formation established the Legacy Fund, a sovereign wealth fund that takes in 30% of certain oil and gas tax revenues. With more than $7B invested by the end of 2020, the Legacy Fund is intended to help future generations transition economically, especially the large, economically vulnerable labor force that is involved with the mine-to-mouth coal operations. Beyond energy policy and planning stakeholders, labor and building trades could see advanced nuclear technology as a way forward through economic transition, if properly engaged. However, a successful engagement strategy must begin with full transparency with local and state governments, including all aspects of the nuclear fuel cycle. A DOE-funded experimental borehole project was scuttled in 2016 following citizen- and municipal-led public outcry that resulted in legislation prohibiting the storage, exploration, testing, or disposal of high-level radioactive waste within the state. Moreover, AR developers seeking to deploy their technology in North Dakota will need to be highly cost-competitive. The North Dakota PSC has comparatively limited regulatory authority over utilities operating in the state, relative to similar regulatory bodies in other states included in the scope of this study, but uses its powers to ensure regulated utilities are deploying lowest-cost generating assets in-state to serve North Dakota ratepayers. Increasing integration of wind into the generating mix of the Upper Midwest and Great Plains will also necessitate designs that can follow load at parity with other generating technologies like natural gas. The most likely candidate to replace retiring coal assets will be new natural gas peakers; however, if advanced reactor developers are able to show load-following abilities, they could find a niche market in the state as legacy coal assets reach their retirement dates. Extreme weather conditions, a sparse population, and multiple DOD facilities are attractive aspects of the state, particularly for microreactor developers, as North Dakota utilities face transmission constraints.