



**NORTH CAROLINA ENERGY POLICY COUNCIL
MEETING MINUTES
10:00 a.m., Wednesday, August 18, 2021
Virtual Via WebEx**

Energy Policy Council Members Present:

Brian LiVecchi, Lt. Governor Mark Robinson's designee
Bruce Barkley
Kendal Bowman
Rachel Estes
John Hardin
Jenny Kelvington
Sushma Masemore
Gus Simmons
Scott Tew
Paul Worley

Energy Policy Council Members Not-Present:

Paolo Carollo
Herbert Eckerlin
Ryan Gragg

CALL TO ORDER

Mr. Brian LiVecchi, Lt. Governor Mark Robinson's designee, called the Energy Policy Council (EPC) meeting to order at 10:00 a.m. on Wednesday, August 18, 2021. He opened the meeting and welcomed the members and participants. After establishing a quorum for the meeting, he asked for a motion to approve the EPC's May 19 meeting minutes. Mr. Paul Worley moved for approval of the minutes and Ms. Jenny Kelvington seconded the motion. The motion was unanimously approved. Mr. LiVecchi then introduced Mr. Marc Nichol, the first of two Nuclear Energy-related presenters.

PRESENTATION: Current Status of Advanced Nuclear Reactors

Mr. Marc Nichol, Senior Director for New Reactors. The Nuclear Energy Institute

Mr. Nichol stated that he would discuss the advanced nuclear reactor's technology, projects, cost-value and regulatory implications. Over sixty technologies for small modular reactors (SMRs), he stated, are being considered for development by the industry. According to Mr. Nichol, the U.S. Department of Energy (DOE) is funding twelve SMR initiatives, nine of which focus on technology and three that are demonstration projects. He said that one of the things that the DOE projects are investigating is the potential of converting existing coal generation plant sites to SMR generation. Using existing coal generation sites for SMRs is beneficial because their existing electric distribution infrastructure can be utilized. Mr. Nichol said that the three types SMRs include micro reactors, small modular reactors, and high temperature gas reactors. The versatility of SMRs, according to him, include various size options, a variety of electric generation outputs, stable operations and zero carbon emissions.



Mr. Nichol shared that DOE-supported SMR projects were underway by NuScale, TerraPower and Hitachi, GE Hitachi, X-Energy and others. Noting the current state of proposed coal-fired plant closures, he said that coal-to-nuclear transition was attractive because of the SMR's cost-competitiveness, clean generation, safety, and reliability. In addition to SMR's current DOE support, he said, that individual state regulatory and policy endorsement is needed.

After Mr. Nichols presentation, EPC members asked him questions. Mr. Brian LiVecchi asked if SMR installations will have "off-of-the-shelf" approval. Mr. Nichol said that "off-of-the-shelf" would most likely occur in the 2030s. He further stated that today's technology allows utilities to move to SMRs but requires them to answer question about costs, construction timeline, and risk assessment. Mr. Paul Worley asked for additional information about the efficiency of generating hydrogen from nuclear power. Mr. Nichol said that hydrogen from nuclear is cleaner and more efficient than when produced from the traditional electrolysis method. Ms. Kendall Bowman, commenting on the transition from coal to nuclear, asked and about nuclear reliability in ramping up and down based on fluctuating loads. Mr. Nichol stated that the MNRs work most efficiently at 100% load capacity but can be modified as needed and paired with other generation sources to meet grid requirements. Ms. Kendall Bowman then asked if the cost comparisons for wind were for on-shore or off-shore. Ms. Kendall Bowman said the comparison was for on-shore wind. Ms. Kendall Bowman also asked the cost comparisons related to generation or transmission. Mr. Nichol said the comparison was only for the generation component. Mr. Brian LiVecchi asked about the rationale for installing MNRs at existing coal generation sites. Mr. Nichol responded that doing so would take advantage of the existing transmission infrastructure on-site and that fewer employees were needed for MNRs than at coal plants. Mr. Brian LiVecchi then asked about the employee skill sets need at MNR plants. Mr. Nichol said that the MNR plant labor force consisted of only about 10% professionals and engineers while the most of the on-site employees were trained labor individuals such as pipefitters. Ms. Sushma Masemore asked about the individual sizes of MNRs and their required water intake. Mr. Nichol said that NMR units ranged from micro (1 to 5 megaWatts), to individual units (up to 60 megaWatts) and to combination units (1,000 megaWatts). He further stated that MNRs use less water than conventional nuclear unit and some are air-cooled, requiring no water intake. Mr. Gus Simmons asked about power requirements for air-cooled MNRs. Mr. Nichol said no additional power was required for the air-cooled MNRs. Ms. Jenny Kelvington asked if the cost comparisons included any cost subsidies. Mr. Nichol said that no government subsidies were included in the cost comparisons. Hearing additional questions from the Committee, Mr. Brian LiVecchi thanked Mr. Nichol for his presentation.

PRESENTATION: Existing and Advanced Nuclear Policy Trends

Mr. Spencer Nelson, Senior Research Director, ClearPath

Mr. Nelson stated that his presentation would focus on reducing emissions, stating that North Carolina's options for clean energy generation were somewhat limited but that nuclear was a viable option. He said that scaling up nuclear technology could address the power generation's "S curve" by utilizing reliable and affordable MNRs. The current advantages of Nuclear, he stated, include its decades of success, 20+ NMR demonstrations, fuel availability, and its ability to serve as an integrated energy system. He showed a U.S. map that identified various nuclear plants and support industries, noting that General Electric- Hitachi's nuclear operation is headquartered in Wilmington. The increased interest in nuclear power, he said, includes new technological deployments, passage of the Energy Act of 2020 and the siting of two commercial MNR projects in Wyoming and Idaho. Beneficial nuclear innovation goals, according to Mr. Nichol, rests on a three-legged stool of supported by DOE, the nuclear industry and the Nuclear Regulatory Commission. The role of existing nuclear could impact emissions expected to flat lining by 2025, increasing electric loads, and changes in generation sources between 2020 to 2025. He



mentioned the impact of nuclear on U.S. carbon reduction targets, its affordability in reducing emissions, and its interaction with dispatchable resources such as hydro power. Nuclear power, he stated, is closely aligned with the production hydrogen (H₂) since it is one of the cleanest options that produce H₂. He mentioned four large scale projects (Exelon, Energy Harbor, X-cel and Arizona Public Service) that address H₂ production by MNRs. Some current legislative nuclear initiatives, he said, include Congressional bills related to clean energy tax credits and H₂, regulatory reforms, and Congress' Infrastructure bill. The forward path of advanced nuclear, Mr. Nelson stated, depends on bipartisan support, Federal policies that spur innovation and deployment, existing and planned commercial MNR projects, and new ideas for integrating energy systems.

Following Mr. Nelson's presentation, the Committee asked questions for clarification. Mr. Bruce Barkley asked how the U.S. nuclear situation compared to other its adoption in other countries. Mr. Nelson said that our greatest competition was from China and Russia who are further along than us. But, he said, the U.S. is close behind them even though China is building many nuclear plants including small nuclear reactors and molten metal reactors. Canada and the United Kingdom are moving forward with modern nuclear development. Mr. Brian Livecchi asked how MNRs compare with the units that have powered the Navy's submarines for many years. Mr. Nelson said that the submarine reactors were water cooled (light-water reactors), use highly-enriched fuel while MNRs use low-enriched fuel, and that they were built in the 1970s using different technologies than MNRs. Mr. Brian Livecchi thanked both Mr. Spencer and Mr. Nichol for thier presentations. He then continued with the agenda, asking for the Sub-Committee reports.

SUB-COMMITTEE REPORTS

Energy Assurance (EA) Committee, Mr. Paul Worley, EA Committee Chair

Mr. Worley discussed areas covered the two previous EA Committee meetings on July 28 and August 12. For a better understanding about tabletop exercises, the July 28 Committee meeting heard a Tabletop "101" Exercise presentation from NC Emergency Management's (NCEM) Exercise Officer, Mr. Derrick Morris at its. Mr. Worley announced at the Committee's August 12 meeting that the EA Committee's recommended Petroleum Disruption Tabletop Exercise (TTX) would be held in late September. The TTX is being developed and executed by the NC Public Safety Department's Division of Emergency Management with assistance from the State Energy Office (SEO) and it will be virtual. It will address cybersecurity threats to the petroleum supply pipeline and, in addition, investigate the cascading impacts of a hurricane during the cybersecurity incident. Two groups, participants and observers, will be involved in the TTX. Participants will include petroleum industry experts (NC Petroleum Institute, Colonial Pipeline, etc.), NC state agencies (NCEM, NCDEQ, NCDOT, etc.), and others well-versed in the TTX topic. The observers will include EPC members, NC government officials, and the general public.

Mr. Worley reported that the EA Committee inquired about including natural gas in this TTX but discussions with NCEM revealed that because of the required planning, preparation and specific industry participants required for Natural Gas, that it could not be included in the upcoming Petroleum Disruption TTX. However, NCEM has agreed to develop a Natural Gas-specific TTX to be held at a later date, most likely in early 2022. Mr. Worley commented that the experience of an initial, separate TTX on petroleum/motor fuel disruption would be helpful in planning a Natural Gas-specific TTX at a later date.



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Energy Efficiency (EE) Committee, Mr. Scott Tew, EE Committee Chair

Mr. Tew reported that the Energy Efficiency (EE) Committee and the Energy Infrastructure (EI) Committee held a joint meeting on August 10 to discuss how they could best collaborate on efficiency and infrastructure. He said that the two Committees agreed to propose four topic presentations for the November EPC meeting. The agenda items recommended include: a presentation from an organization that had adopted a zero energy vehicle (ZEV) transportation fleet; a trade association entity that had purchased a large fleet of ZEVs; a Volkswagen Settlement update from the Department of Transportation and the Department of Environmental Quality; and an update on electric vehicle (EV) adoptions from electric utilities (municipals, Co-ops, and Duke Energy) including an overview of Duke Energy's EV filing at the NC Utilities Commission (NCUC).

Energy Infrastructure (EI) Committee, Mr. Gus Simmons, EI Committee Chair

Mr. Simmons concurred with Mr. Tew's EE report. He stated that the two Committees desired to learn more from organizations who had adopted ZEVs and that they were looking forward to gaining additional insight on the successful approaches taken by those who moved to ZEV fleets. Mr. Simmons added that it was good to have had a joint meeting of the two Committees and he felt that their collaboration was helpful for both groups. Ms. Kendal Bowman volunteered that Duke Energy would be happy to discuss their EV Phase 1 and Phase 2 NCUC filings at the November EPC meeting.

PUBLIC COMMENT

Mr. Brian LiVecchi asked for public comments and there were none.

CLOSING COMMENTS

Mr. Brian LiVecchi thanked the presenters and the EPC members for their active participation and work. He closed by saying that energy options exist that can help North Carolina start a revolution in energy efficiency.

A motion to adjourn was made by Mr. Worley and seconded by Mr. Tew. The meeting adjourned at 11:51 p.m.

Approved by Energy Policy Council
Members on November 17, 2021.