



**NORTH CAROLINA ENERGY POLICY COUNCIL
MEETING MINUTES
10:00 a.m., November 18, 2019
Archdale Building
Ground Floor Hearing Room
512 N. Salisbury Street, Raleigh, NC 27604**

Energy Policy Council Members Present:

Steven Walker
Sushma Masemore
Jenny Kelvington
Herb Eckerlin
Gus Simmons
Rachel Estes
Paolo Carollo
Rick Feathers
Scott Tew
Paul Worley
John Hardin

CALL TO ORDER

Mr. Steven Walker called the Energy Policy Council (EPC) meeting to order at 10:00 a.m. on Wednesday, November 18, 2019. After welcoming the Council members, staff and the public to the meeting, Mr. Walker asked for approval of the August 21, 2019 EPC meeting minutes. Mr. John Hardin moved for approval of the meeting minutes, Mr. Gus Simmons seconded the motion and the minutes were unanimously approved by the Council. Mr. Walker then reviewed the agenda and introduced the first presenter.

PRESENTATIONS

**Geothermal Technologies, Trends from a National Perspective
*Dr. Susan Hamm, Geothermal Technologies Office Director, USDOE***

Dr. Hamm provided an overview of the US DOE Geothermal Technologies Office, the GeoVision Analysis, geothermal nationally and geothermal in North Carolina. She discussed geothermal's role as a viable energy source because of its: untapped energy potential; security and flexibility; baseload power potential; energy sector job creation and growth; and nationwide availability. According to Dr. Hamm, the U.S. now has 3.8 GW of installed geothermal and the potential for 2.3 TW nationwide. She stated that the geothermal industry continues to grow because of its broad array of technology applications for both power generations and direct use.

Dr. Hamm's brief overview of the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy priorities revealed that it has already invested \$84 Million in geothermal energy. DOE's current priorities for renewable energy collaboration and innovation are: energy affordability; energy integration; and energy storage. She said that DOE's Geothermal Technologies Office (GTO), that supports early-stage research and development, aims to strengthen the geothermal knowledge base to help the industry accelerate the innovative geothermal energy technology development. The GTO recently completed a GeoVision Analysis that addressed



the geothermal industry, deployment barriers to geothermal, and both existing and improved geothermal technologies. The GeoVision report, a product of years of rigorous research and analysis, provides a roadmap with three key objectives: increased access to geothermal resources; reduced costs and improved economics for geothermal projects; and improved geothermal energy education and outreach through stakeholder collaboration. Dr. Hamm ended her presentation with a high-level update on geothermal's status of in NC, noting Mr. Ledford's presentation would provide more details.

During and after Dr. Hamm's presentation questions were asked by the Energy Policy Council members. Mr. Walker inquired about the geothermal systems estimated payback. Dr. Hamm answered that there is about a five to eight-year payback period depending on how much other fuels cost and on the soil where the system is being installed. Mr. Rick Feathers asked Dr. Hamm to give an agricultural example for geothermal application. She stated that farms can use geothermal for aquaculture/fish farming, green house climate control, and crop drying. Mrs. Sushma Masemore asked about low temperature usage and system efficiency for direct use. Dr. Hamm said that she did not have a good answer for the question, but shared that it depends where the system is installed and the type of pumping system. Dr. Hamm clarified, for Mrs. Masemore, that economic potential for geothermal systems references referred to its economic feasibility and not to the number of people who would adopt it.

Geothermal in North Carolina

Mr. Peter Ledford, General Counsel, N.C. Sustainable Energy Association

Mr. Ledford provided background information on the NC Sustainable Energy Association (NCSEA) and then shared the definition of geothermal along with information about its potential in NC. He stated that almost all of the state of NC is suitable for geothermal applications. Mr. Ledford defined ground source heat pumps (GSHP) and gave examples of how they are installed, their efficiency and their costs. GSHP's are 50% to 70% more efficient than comparable heating systems and 20% to 40% more efficient than comparable cooling systems. The average GSHP cost for residential installations is \$2,500 per ton for the system itself and offers a 5 to 10-year payback period.

Mr. Ledford said that from 2007 to 2018, over \$30 million has been invested in NC geothermal systems. The over 7,600 NC geothermal systems that were installed during that time period accounted for 49.8% of the renewable residential sector energy systems installed. According to NCSEA's 2018 Clean Energy Industry Census, the 225 geothermal industry companies operating in NC provide over 1,000 jobs and generate \$252 million in revenue. Mr. Ledford shared that NC's 35% renewable energy tax credit, that expired at the end of 2015, and the federal residential renewable energy tax credit of 30%, that expired at the end of 2016, contributed to the growth of GSHP installations in NC.

Mr. Walker inquired about the tax credit's explosive growth for solar installations, but not having a similar impact on geothermal system installation increases. Mr. Ledford responded that solar businesses figured out how to make money and that the cost of solar systems declined, however geothermal systems have not seen similar cost reductions. He added that the US DOE was working on strategies to help reduce geothermal costs. When Mr. John Hardin asked if there are sufficient contractors to do geothermal work, Mr. Ledford said yes, there are an adequate number of contractors. Mrs. Kelvington asked about the life of geothermal systems and Mr. Ledford said that it depends on the various components, but most last 15 – 20 years. Mr. Gus Simmons shared that the geothermal system at his home is much more efficient during the summer than in the winter.



SUBCOMMITTEE REPORTS

ENERGY ASSURANCE (EA)

Mr. Paul Worley reported that the EA subcommittee met on November 14, 2019. The focus of that meeting was on preparing a response and recommendation for the EA section of the 2020 Biennial EPC Report. Topics discussed at the meeting included electric grid and pipeline resilience and security, and petroleum supply and redundancy for motor fuels from the two pipelines serving NC.

ENERGY EFFICIENCY (EE)

Mr. Scott Tew reported for the EE subcommittee and shared that the subcommittee would meet immediately following the full EPC meeting to discuss the energy efficiency section of the 2020 EPC Report. He stated that he and the other subcommittee members were reviewing recommendations from the 2018 EPC Report for updates to the new report.

ENERGY INFRASTRUCTURE (EI)

Mr. Gus Simmons reported that the EI subcommittee met immediately following the full EPC Meeting in August. The subcommittee reviewed an outline to stream line the 2020 EPC Report and the contents within it. Mr. Simmons shared that there may be some overlap of topics in the Report between all three subcommittees and suggested a meeting between the Chairs of the three committees to discuss.

CLOSING COMMENTS

Mr. Steven Walker opened the floor for public comments. NCSEA's Mr. Ward Lenz, provided comments on the GridEX V tabletop exercise that was held at the NC Emergency Operations Center on November 13, 2019. The exercise covered national grid security and went through procedures for cyberattacks, natural explosions and pipeline safety. Mr. Lenz stated that the exercise trained the attendees on the grid system, the effects of cutting off natural gas, and other effects on the State when the pipeline is disrupted or there are attacks on the system. After Mr. Lenz gave his comments, Mr. Walker shared information about the success of the Coronal Mass Ejection Tabletop Exercise, and Electromagnetic Pulse Tabletop Exercises that were held in 2015 and 2016. Mr. Walker provided additional closing remarks and concluded the meeting. A motion to adjourn was made by Mr. Scott Tew and seconded by Mr. Paul Worley. The meeting adjourned at 11:20 a.m.

Approved by Energy Policy Members
On February 19, 2020
