Solar 3.0: How power producers, utilities and the state are preparing for the future of clean energy

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N.C. Department of Environmental Quality Secretary Michael Regan told more than a dozen representatives from E4 Carolinas that he and Gov. Roy Cooper see the state's Clean Energy Plan "is about making North Carolina globally competitive."

Speaking at a roundtable at UNC Charlotte's Energy Production and Infrastructure Center, Regan sought to assure the energy business leaders assembled that he and Cooper believe "environmental protection and economic development are not mutually exclusive."

He was looking for ideas that could create business while promoting the state's goals to make the transportation industry cleaner and reduce carbon emissions from the power industry by 60% or more by 2030 and eliminate them completely by 2050.

He got quite a few.

They ranged from focusing more on vendor businesses for electric vehicles — hitting a lot of singles rather than always swinging for the fences — to changing regulations to make it easier for utilities to decarbonize and expand the opportunities for entrepreneurial companies to help them.

"One thing you need to do is knock down the barriers to innovation," said Kevin Poet, vice president of operations at the Siemens Energy Hub.

Solar concerns

That brought an immediate response from several solar developers at the table who raised concerns that North Carolina is losing the opportunities that pushed it — in less than seven years — to second place in the nation for solar power on its grid.

Brian Bednar, founder of Charlotte's Birdseye Solar, says a big part of the problem is that the state is stuck in a traditional regulatory framework which holds back companies like his and prevents utilities like Duke Energy Corp. (NYSE: DUK) from making the most effective use of the growing amount solar power available to it.

"For solar, things are moving glacially slow," he says. "We have to, as a state, say to Duke, 'We will give you (regulatory) cover if you will move the ball more quickly.'"

Joel Olsen, CEO of O2 Energies in Cornelius, said North Carolina is not strong in developing solar breakthroughs, but it has been in the past very effective at deploying solar projects. He said companies and the state need to start thinking of solar in the same way tech companies think of iterations of software.

"We are in 'Solar 1.0' — when the sun shines, we sell power," he says. The phase that's starting now is what he calls "Solar 2.0," where, using available battery storage, there can be short-term shifts in which power is available to meet some peak-use needs.

But he said that the state, its utilities and solar companies need to be thinking about "Solar 3.0," where solar becomes a base-load power resource like nuclear or natural gas. That requires long-term storage and the ability to shift power from high-

production summer and spring seasons to the high-demand winter season. The key is figuring out, he said, “How we can we use power in the winter when you have short days and two solid weeks of rain.”

Storage issues

Diane Denton, Duke’s vice president for state energy policy, said the frustrations for solar and other renewable developers are understandable. She said Duke is working to move faster — for instance, looking at fairer, faster ways to get renewable project connected to the grid by doing interconnection reviews in batches rather than one at a time.

“We are going to need a lot more solar,” she said. "We are going to need wind and to figure out how we can wheel it into the state, and we need it offshore.”

Duke is also stepping up its deployment of battery storage in the state.

“But all of that requires investment, because all of the low-hanging fruit has been picked,” Denton said. “Duke wants to make those investments, and maybe we could — if we could be sure of cost recovery.”

From the storage side, Jim Hoelscher of LSIS Energy, Ian McCallum of Celgard and Mike Brandt of Ardent Edge suggested the state needs to broaden its understanding of what is involved in storage. Hoelscher’s company makes inverters and control systems for storage projects, Celgard makes separators that are needed in battery construction, and Ardent Edge designs and assembles battery systems from various technologies that are already in use on the PJM Interchange independent transmission system.

Hoelscher and Brandt said that safety, sustainability and end-of-life treatment for storage systems provide opportunities for North Carolina to develop and leverage market expertise in parts of the industry that have not received enough attention.

“I think we could lead in those areas,” he said.

McCallum pointed out that, although North Carolina has not succeeded in attracting a major car manufacturer, it could develop a lot of the vendor pipeline for EV equipment that will be needed to supply the Southeast’s automotive corridor as that industry turns increasingly to electric vehicles.

Patrick Wylie of Accelerate Solar suggested a North Carolina tax credit for commercial and industrial rooftop solar construction to develop a market that has been slow to take off in the state.

Regan told the group that he believes in markets and competition and that the state is trying to position itself to take advantage of those forces in its Clean Energy Plan as it seeks to address the environmental issues impacting climate change.

“We believe government should be agnostic as to technologies,” he said. “But the basic requirement is a level playing field, and we need to figure out how to get there together.”

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