

Group Work for May 22 Workshop
Due June 14

Grid resiliency enhancements	<i>How can we strengthen the resilience and flexibility of the grid while ensuring affordability for customers?</i>
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Prepare a memo with the answers to the following questions. The memo should include clear recommendations from the group.

Questions to answer in memo:

1. Briefly describe the nature of this policy tension/question - What is happening?

Our workgroup was tasked with examining how we can strengthen the resilience and flexibility of the grid while ensuring affordability for customers. We understand that the electric grid needs to be resilient in the face of disasters including but not limited to the impact of weather events, cyber and physical attacks, and solar storms. The electric grid also needs to be flexible to address rapid advancements in renewable and DER technology, rapid advancements in grid technology, and changing customer expectations. Because grid flexibility is being dealt with in another workgroup, we focused our efforts on grid resilience.

In discussing grid resilience, it is important to start with a definition of resilience. Generally, the definition of resiliency is the ability to withstand or recover from infrequent yet highly critical major events. There is a difference between reliability and resiliency, with reliability meaning maintenance of energy service in normal day-to-day conditions, but there is a great deal of overlap. In general, both hardening the grid against disasters and providing redundant systems will improve both reliability and resiliency.

Addressing the needs of resiliency calls for investments, which should be determined through cost effectiveness, analysis of data on outages and detailed risk assessments. Just as the insurance industry which has a great deal of experience in valuing the impact of uncertain risks, grid regulators must understand how to assess and prioritize grid investments based on risk assessments and/or CBAs. In addition, there is tension about how investments will be funded.

2. To what extent does this policy tension exist in NC, if so, why is it relevant to the state?

The need to strengthen grid resilience certainly exists in North Carolina, perhaps even more so than in other states across the country. NC has seen significant hurricanes and other major storms for the past several years and utilities currently anticipate an increase in outages because of these major events. The risk of cyber and physical attacks is very real. New grid technology and other investments can improve both reliability and resilience due to these threats. Duke Energy has shared Grid

Improvement Plans to strengthen the resilience of the grid, and is exploring the fundamental tension revolving around funding for the investments.

3. What policy or regulatory action might be required to address the tradeoffs you see? What entity would need to take the action you've identified?

Consideration of the appropriately affordable level of grid investment to strengthen the grid will ultimately fall to the NC Utilities Commission (NCUC) or cooperative/municipal utilities. The NCUC could open a proceeding to determine the proper framework for assessing the appropriate level of investment to strengthen the grid, how to measure the investment over time, and appropriate incentives for electric utilities to make those investments in the grid. As part of that framework determination, there needs to be additional work on the meaning of resiliency versus reliability. Until this issue is more fully addressed, utilities nationwide will struggle investing in grid resiliency. There should also be some consideration of co-benefits (such as societal or industry impacts and costs of outages) and not simply a focus on direct cost benefit analyses alone.

4. How are people in other places responding to this tension? What are the most innovative and promising solutions? Do they seem feasible in NC?

Many states have annual reporting and/or cost recovery proceedings to monitor and encourage grid investment to address resilience needs. While this workgroup does not take a position in support or opposition to any specific legislation, it is worth noting the existence of Senate Bill 559, which is currently pending before the NC legislature. This enabling legislation would permit the North Carolina Utility Commission (NCUC) to consider using ratemaking tools for utilities to recover costs that could include grid resiliency investments. Those ratemaking tools are already in use by other utility commissions across the country.

5. Are there ways you think NC should consider responding to this tension? What entity would need to take the action you've identified?

1. Update the State Energy Assurance Plan to reflect current conditions.

- 1.1. As part of this update, review existing reporting requirements (federal/state/local/etc) to see if there can be some synergies and a concomitant reduction of paperwork.

- 1.2. Both cybersecurity and data access are key; data sharing and harmonization of publicly shareable data will help stakeholders make decisions.

2. Develop an active Resilience Planning Resource to assist local governments.
 - 2.1. The planning resource should be either:
 - 2.1.1. Staffed by a new full-time state employee (e.g., this is their only job function)
 - 2.1.2. Or Technical Assistance efforts managed by an existing state employee
 - 2.2. Provide resources to support grant development and project execution capabilities and data gathering.
 - 2.3. Carry out community-level resilience analyses to determine the impact of a loss of electrical service to critical infrastructure and vulnerable populations.
 - 2.4. Carry out a benchmarking investigation to determine what communities are leaders in resilience implementation--- and then learn from them...
 - 2.5. Look for best practices for incorporating regional feedback that would support a robust Integrated Resource Plan for NC.
3. The North Carolina State Government should encourage DER and community energy solutions that enhance the regions, potentially balancing the costs of grid enhancements. The North Carolina State Government should pilot micro-grids at appropriate state facilities and should encourage the development of micro-grids to serve other non-state critical infrastructure.
 - 3.1. Examples of candidate facilities include universities and local schools. Unique regional features or attributes should be included in the planning.
 - 3.2. Investigate other pilot programs and leverage lessons from other states or countries.
 - 3.3. Implement pilot programs that can serve as a template for communities to use as templates to address various features and attributes. Conduct workshops to support community adoption of proven templates. Drive faster govt approval processes around verified templates.
4. Develop a system that formalizes how to quantify the human costs (lost productivity, etc.) of power outages.
5. Use defense in depth or a layered grid approach to increase reliability and improve resilience.