




SYEMC

Surry-Yadkin Electric
Membership Corporation

A Touchstone Energy® Cooperative 

Smart Grid Deployment to support Rural-Focused Resiliency at a Small-Scale Electric Co-Op Project (Smart Grid Project)

Technological Summary

Update of an antiquated distribution equipment

- Upgrade of 17.6 miles of copper lines to three-phase aluminum
- Installation of 12 sets of three-phase solid-state sectionalizing devices, the replacement of 12 existing sets of three-phase hydraulic sectionalizing devices and the replacement of 25 hydraulic sectionalizing devices for critical business loads, installation of 53 single-phase solid-state sectionalized devices at 13 substations.

Enabling remote monitoring of (b) (4) substation transformers

Deployment of a FLISR system

- Upgrade of 193 (sets of multiphase) reclosers to solid-state sectionalizing devices and communications modules at downline locations on all 73 distribution feeders.
- Deployment of 187 single-phase solid-state sectionalizing devices and communications modules on single-phase branch lines feeding from their corresponding feeder.

Installation of comprehensive cybersecurity improvements required for FLISR installation


Technology's Impact/Grid Outcomes

- Reduce SYEMC maintenance costs by (b) (4) over the next 30 years.
- Increase system capacity by approximately 500% to support DERs
- Decrease duration, frequency, or impact of power disruption by 15%.
- Improve system resilience in the face of cyber-attacks and natural disasters.
- Increase capacity and grid visibility by 100% on downline sectionalizing devices.
- Provide fault location isolation technology.
- Reduce likelihood of environmental damage due to oil spills by 100%
- Reduce wildfires and related greenhouse gas emissions caused by downed power lines by 50-75% as a direct result of FLISR implementation.
- Support member-driven clean energy, including 100 additional EV's, 75 residential solar arrays, and 20 EV charging stations.
- Deploy automated fault isolation and service restoration measures.
- Enable comprehensive data collection, real-time monitoring, improved analytics, and improved controls integration.
- Leverage support for future benefits (e.g., fire detection) via bolt-on enhancements.
- Use of cellular infrastructure to facilitate replication in rural areas of North Carolina where broadband communications have been challenging.



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Proposed Project Goals

Goal #1: Position SYEMC to deliver a more flexible, reliable, and resilient electric power system to its service territory

Goal #2: Enhance the grid resilience of the SYEMC electric system

Goal #3: Prevent and lessen the impact of systemwide outages on rural communities

Project Benefits:

- More flexible, reliable, and resilient grid
- Remote monitoring and restoration
- Increased DER integration and access to clean power
- Safeguarded technology
- Attracting, training, and retaining workforce

Project's Key Ideas/Takeaways


Improving the reliability and resilience of the power grid in SYEMC's service territory will bring a new vitality to rural, underserved, and disadvantaged communities.

End of Project SMART Goal: To prevent and lessen the impact of systemwide outages on our rural communities by 45-50%.



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Project Information

Title: Smart Grid Deployment to support Rural-Focused Resiliency at a Small-Scale Electric Co-Op Project (Smart Grid Project)

Prime Recipient: Surry-Yadkin Electric Membership Corporation

Project Manager: Lee Bedsaul, LeeBedsaul@syemc.com, 336.356.5274

Key Personnel:

- Travis Bode, Project Administrator
- Lee Bedsaul, Project Manager
- Misty Utt, Financial Manager
- Anna Jones, Community Benefits Manager
- Susan Duncan, IT Manager
- William Hawkins, Construction Manager

Requested DOE Funds: \$7,486,808

Applicant Cost Share: \$7,700,738