

DOE Electricity Advisory Committee


Transmission-Distribution Interface Panel

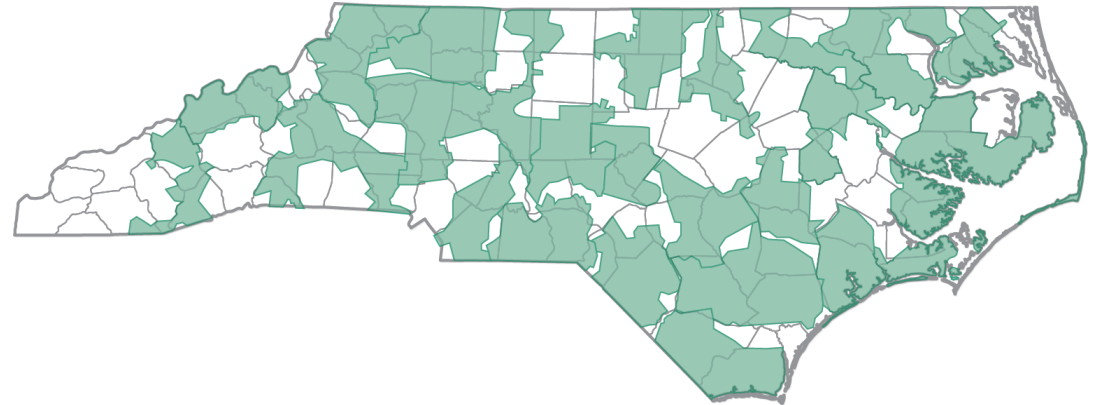
March 29, 2017

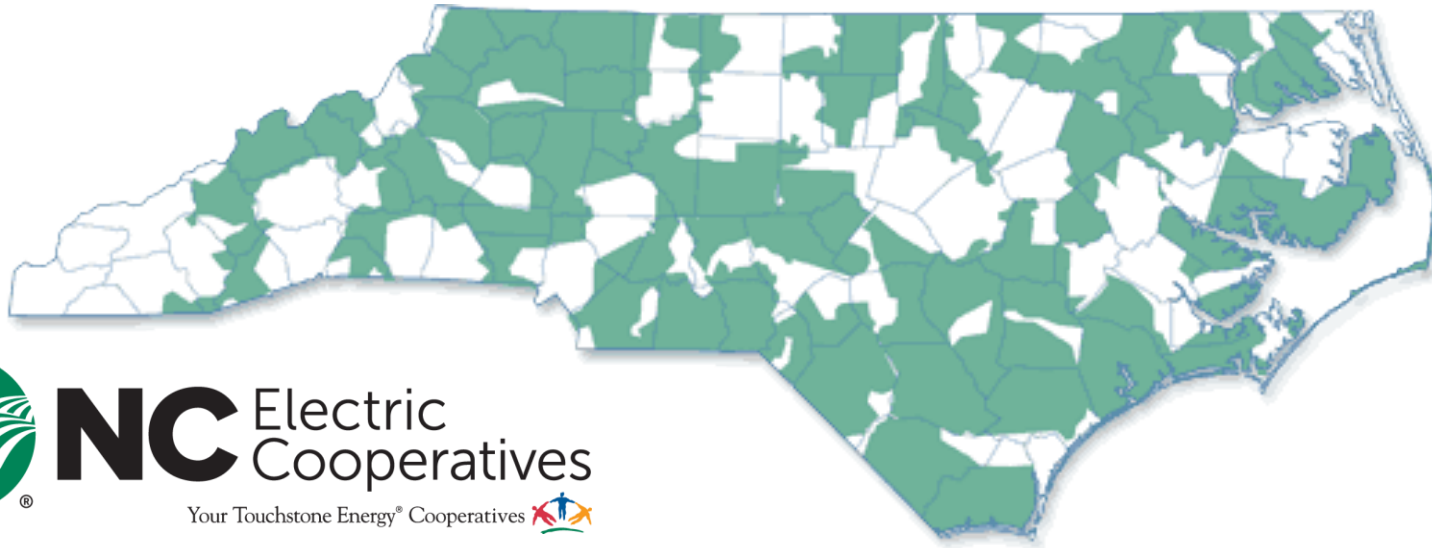
Joe Brannan
EVP and CEO, NCEMC



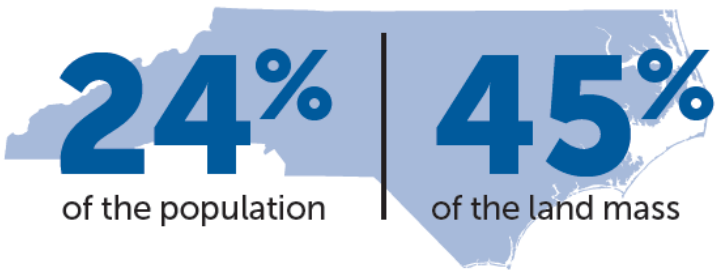
NC Electric
Cooperatives

Your Touchstone Energy® Cooperatives 





POWERING
EVERYDAY LIFE FOR
2.5 MILLION



Member-owned and governed

Electric co-ops are private, not-for-profit utilities owned by the people they serve. Members democratically elect a board of directors to represent their interests and conduct cooperative business.



Not for profit

Co-ops exist to serve their members and communities. We provide electricity at cost, not for a profit. Revenue collected in excess of expenses is given back to members in the form of capital credits.



Committed to community

Keeping the lights on. Recruiting new industry. Educating the leaders of tomorrow. Electric co-ops take seriously our responsibility to improve lives in our communities.

\$7.5

BILLION in poles, wires, substations and other infrastructure

24

HUNDRED employees at the 26 co-ops across the state

\$187

MILLION in payroll and benefits for thousands of families

\$38

MILLION paid in taxes to support North Carolina communities

103

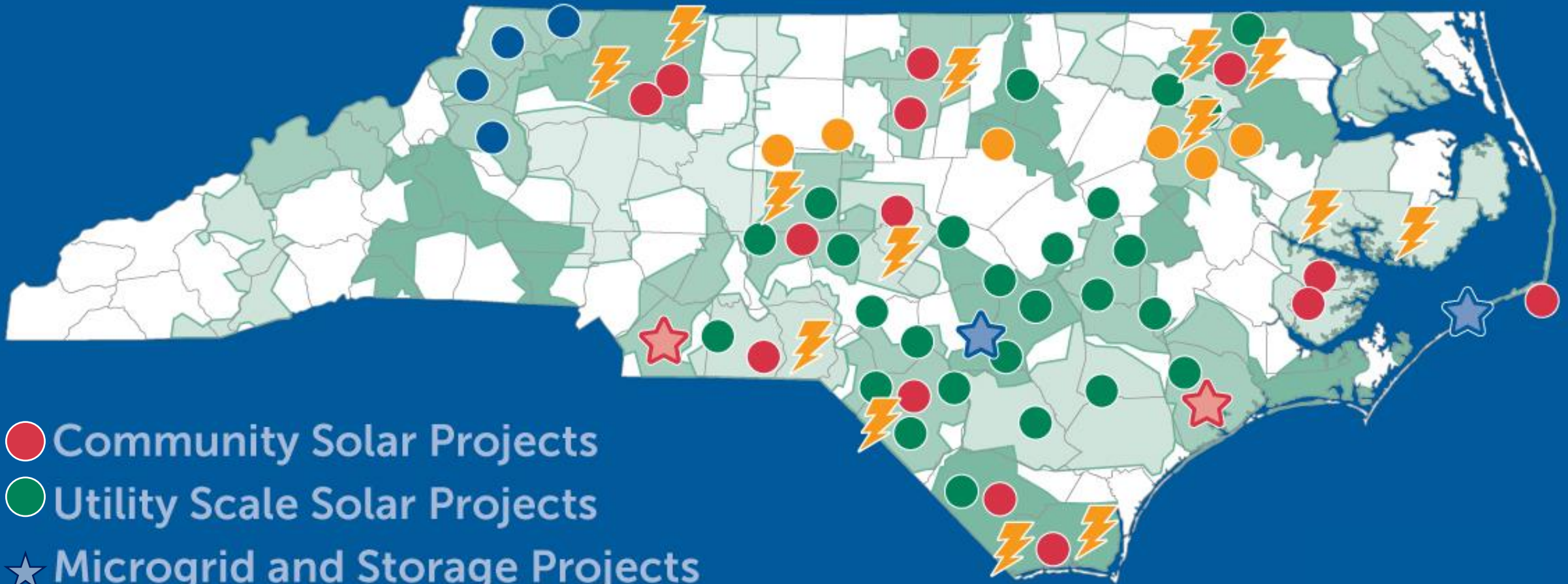
THOUSAND miles of line connecting rural and suburban North Carolina



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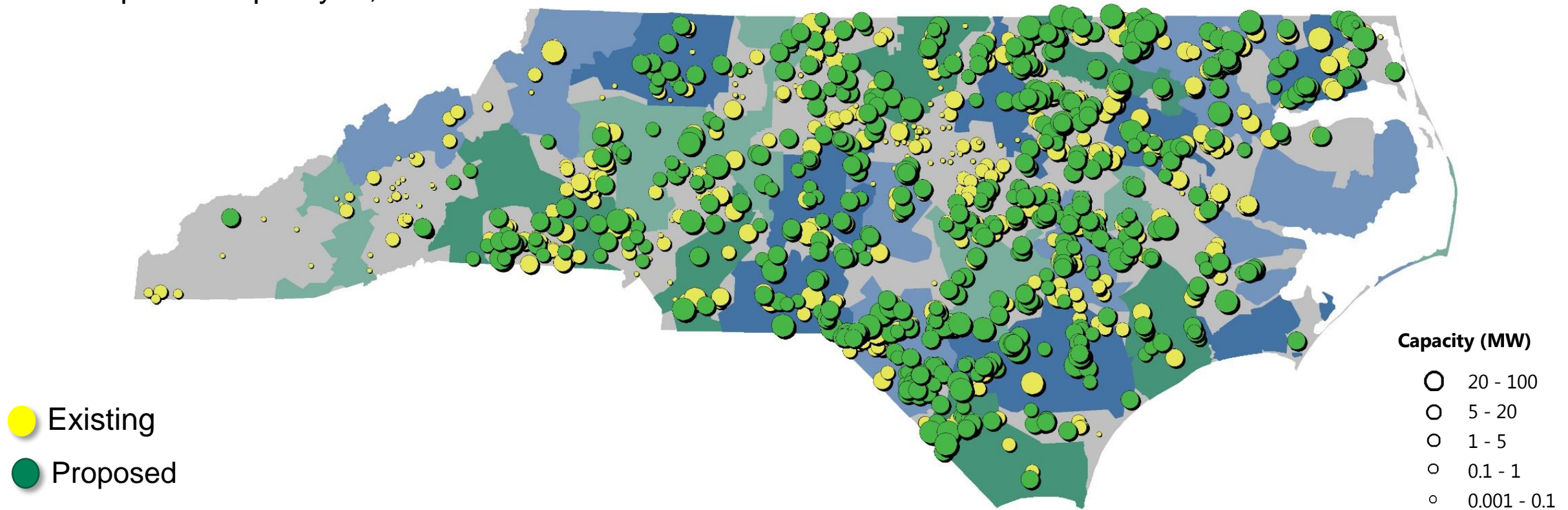
Innovation & Engagement



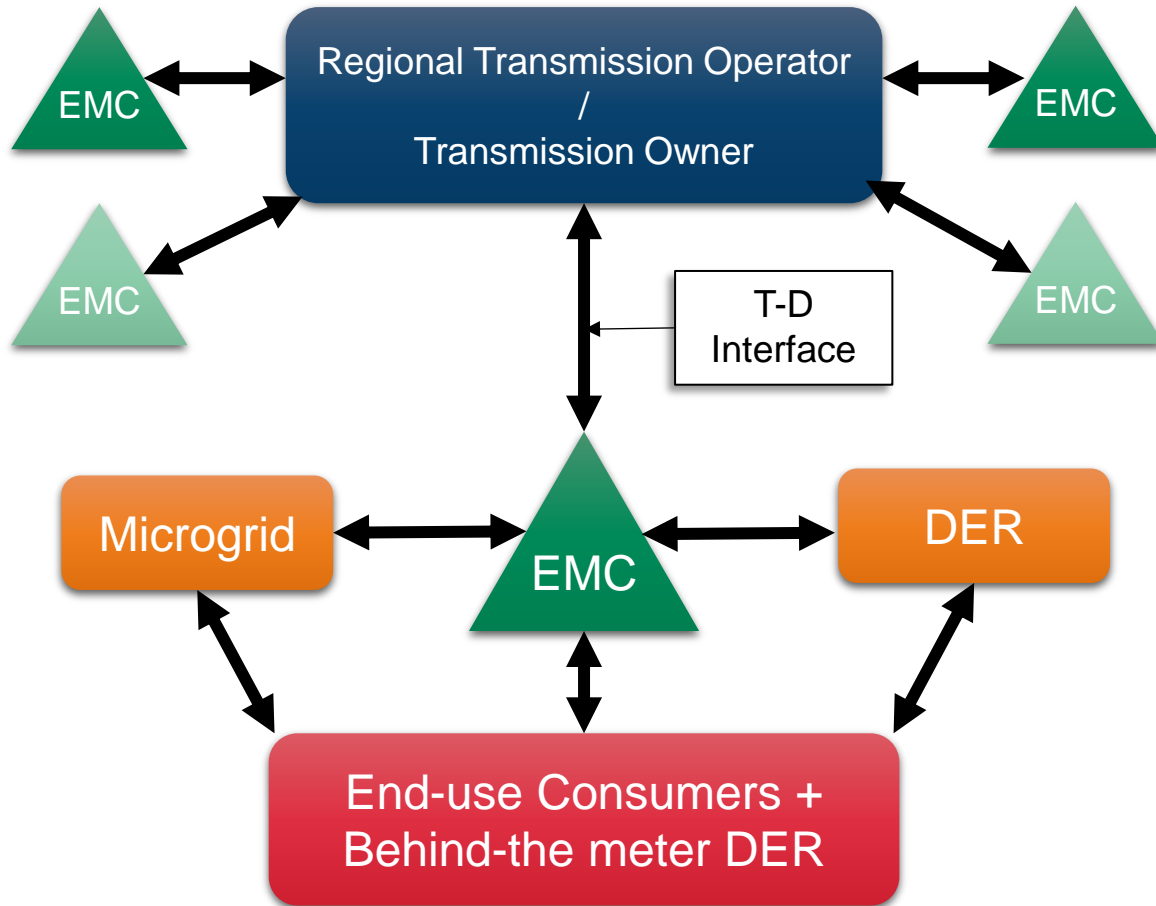
- ● Community Solar Projects
- ● Utility Scale Solar Projects
- ★ ★ Microgrid and Storage Projects
- ⚡ Energy Efficiency Projects

Solar in NC - Current and Proposed

Existing Capacity: 2,857 MW
Proposed Capacity: 5,841 MW



Integrated Coordination



- **Regional Transmission Operator**
 - Market activity of assets
 - Generation, DER or Demand Response
- **Transmission Owner**
 - Provide forecasts
 - Coordinate interconnections in transmission and distribution
 - Impacted by DER utilization
- **EMC (as Distribution System Operator)**
 - Manage consumer needs
 - Integrate DER utilization upstream
 - Manage assets for distribution stability and resiliency

Challenges and Opportunities

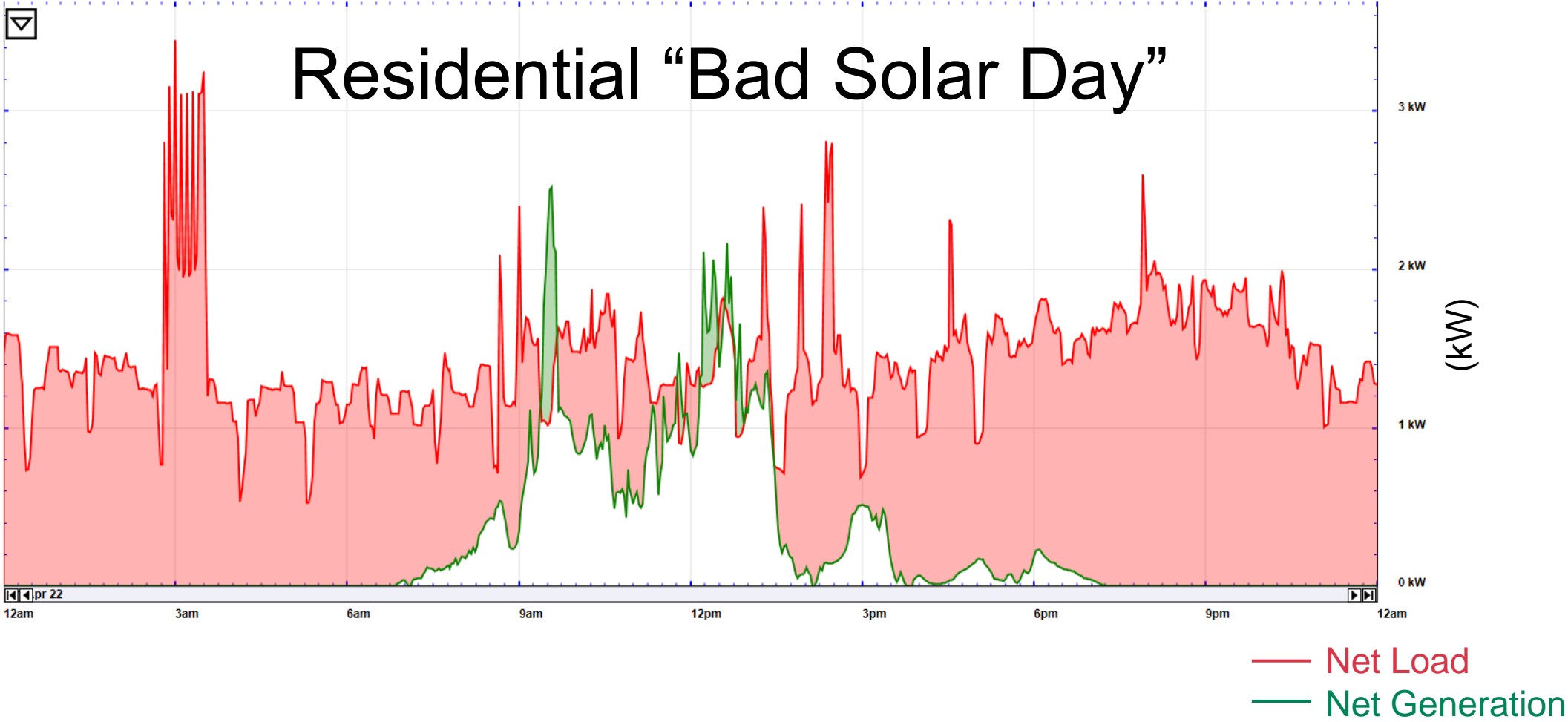
Challenges

- Load forecasting and system modeling
- Intermittency and Voltage/power quality
- Affected system coordination

Opportunities

- Improve reliability through microgrid integration
- Demand response

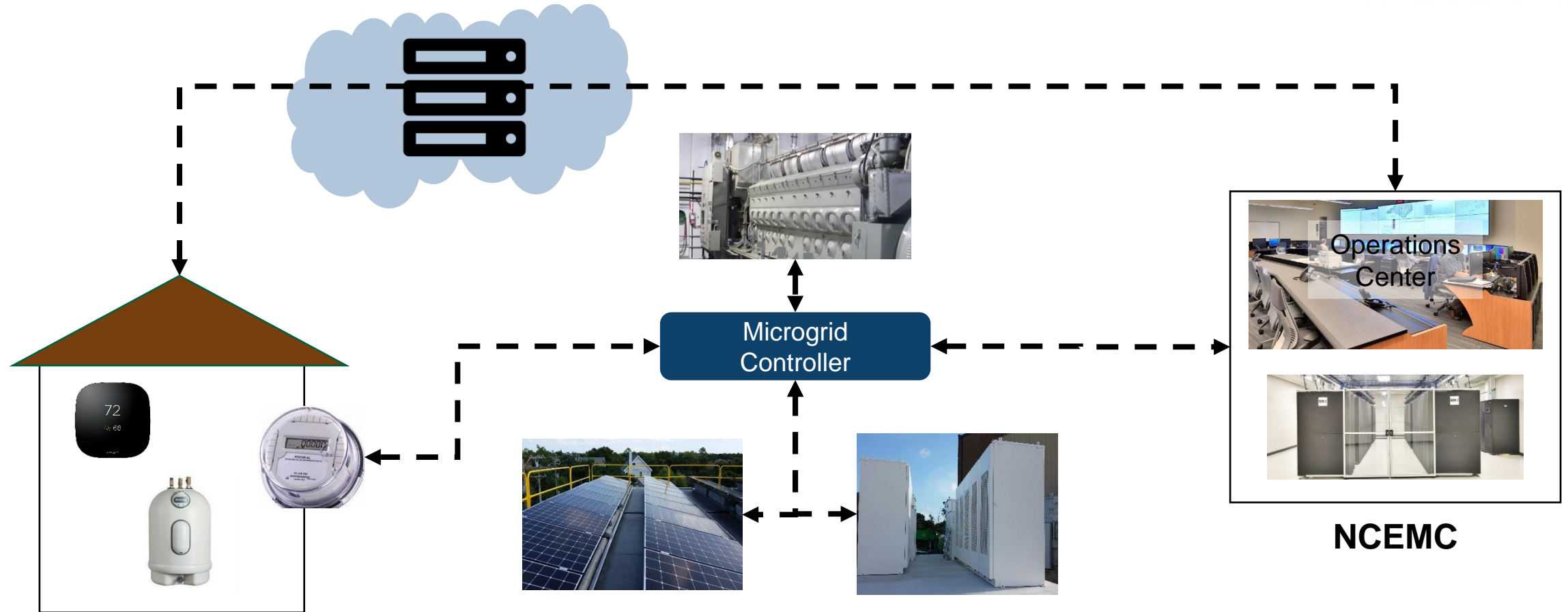
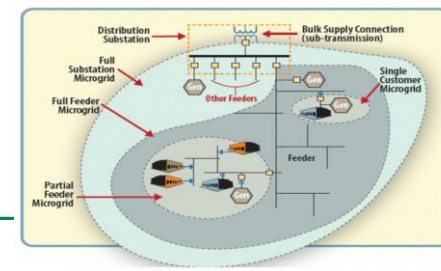
Challenge – Intermittency



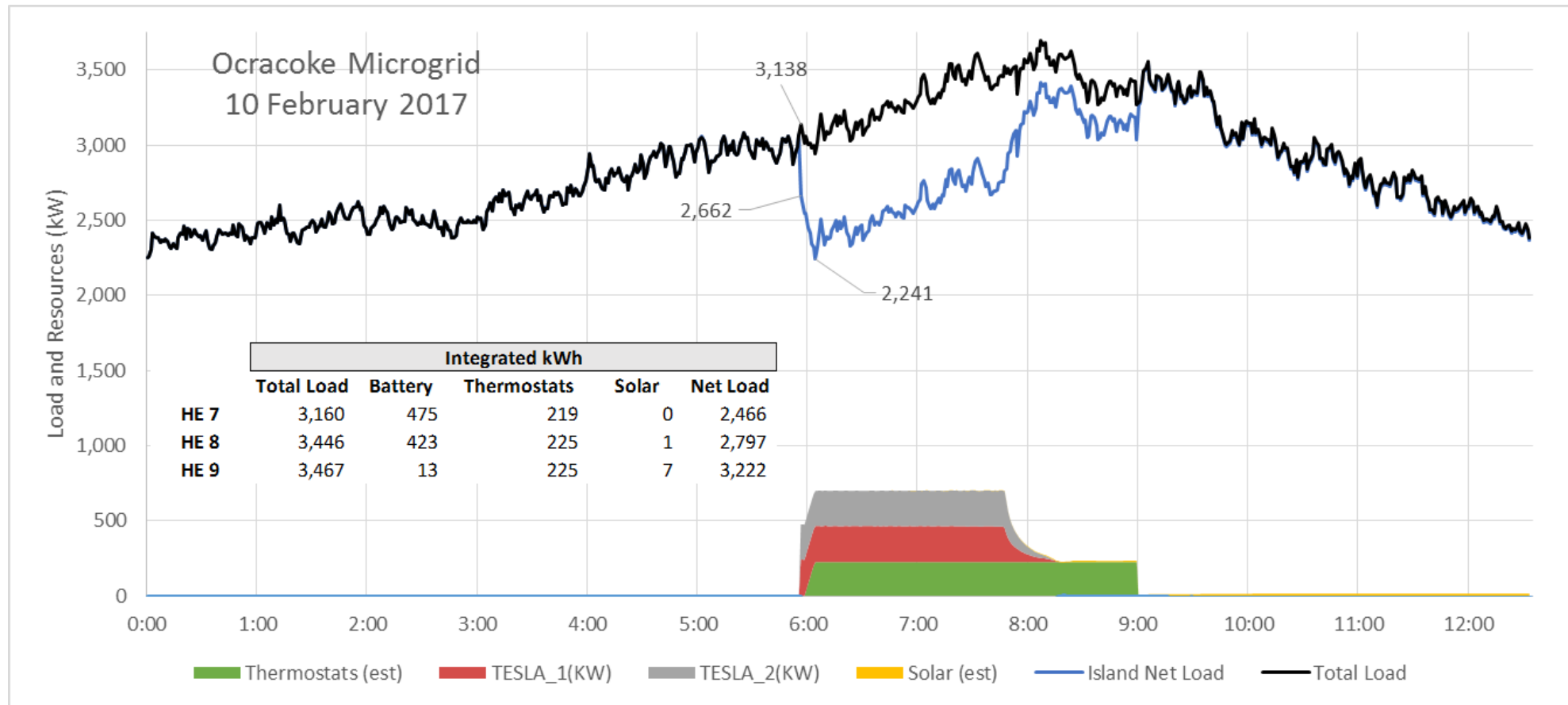
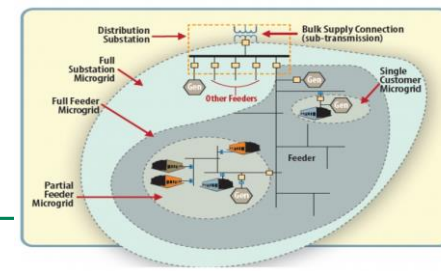
Challenge – Affected System Coordination

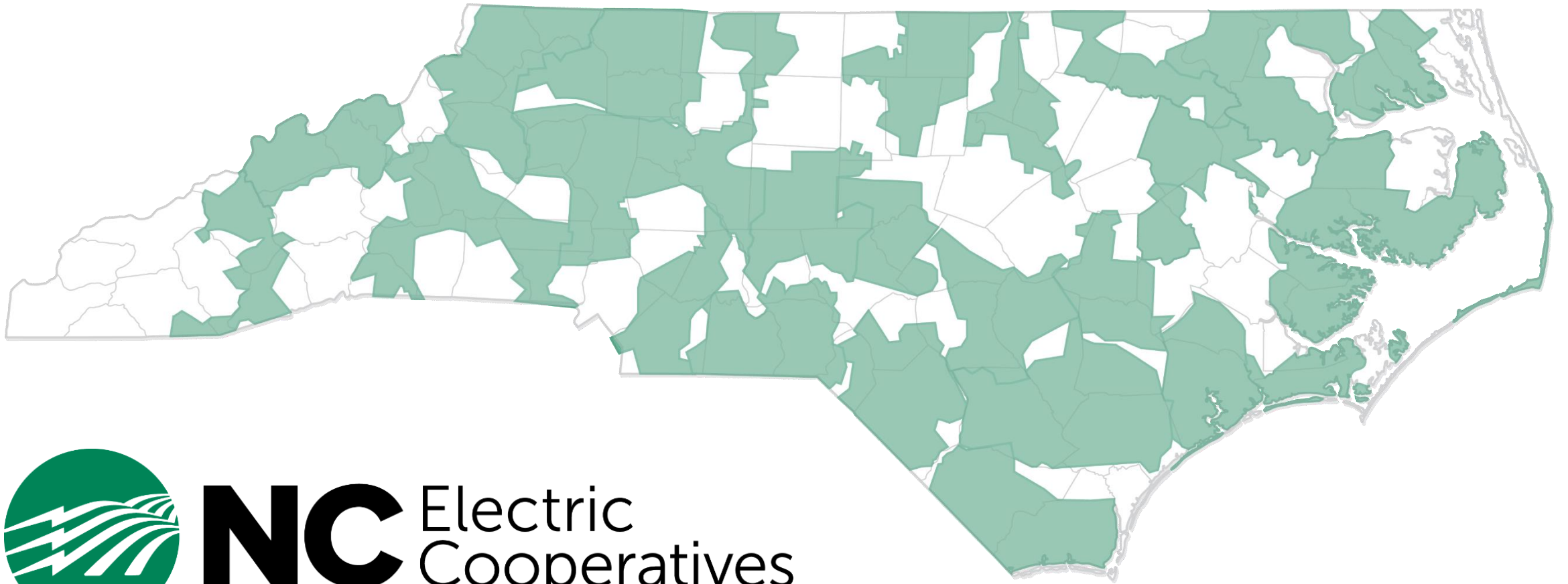
- Interconnection may impact other systems
- Clear processes and schedules are needed
 - Ensure adequate review and coordination
 - Relay settings
 - Protection devices
 - System modeling and contingency analysis

Opportunity – Utility Microgrid



Opportunity – DR Performance





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