

Project Title: Enhancing Utility Resilience in America's Most Forested State

- **Technology Summary:** CMP will deploy catalyzing technology solutions that increase the flexibility, efficiency, reliability, and resilience of the electric power system. The proposed project will implement Smart Grid technologies including Advanced Grid Restoration (AGR) and Sequential Reclosing (SR), innovative “self-healing” technology implemented and designed to reduce the frequency and impact of outages to the communities served and maximize benefits to disadvantaged communities (DACs)
- **Technology Impacts:** 1) Enhance Company’s ability to redirect or shut off power to minimize blackouts and avoid further damage, 2) Mitigate the impacts of extreme weather or natural disaster on grid resiliency and increase the ability to redirect or shut of power to minimize blackouts, prevent wildfires, and avoid further damage, 3) Improve the visibility of the electrical system to grid operators, to help quickly rebalance the electrical system with autonomous controls, through data analytics, software, and sensors. As described above, the addition of recloser technologies coupled with modes of operation Sequential Reclosing, AGR and wireless communications enhances the visibility of the real time grid performance. Operators can make more anticipatory decisions using data provided from technologies. Circuit Sensing technologies add to the ability of Grid Operators with cost-effective, real-time data, decisions can be made to complete unscheduled maintenance or inspections, with the backup of AGR helping the grid operators monitor, able to make decisions absent grid operators, 4) Aggregate and integrate distributed energy resources, these technologies will also help integrate clean distributed energy resources (DERs), electric vehicles, and other beneficial electrification applications. An example is that reclosers and switches will provide benefits by connecting and disconnecting portions of a distribution circuit to an upstream power source. Strategically placed reclosers and switches help isolate faulted parts of a distribution feeder and reduce the number of customers that lose power when a fault occurs. Automating reclosers and switches enable remote control by sophisticated automatic switching schemes, 5) Other “grid-edge” devices to provide system benefits, such as renewable energy resources, electric vehicle charging infrastructure, and vehicle-to-grid technologies. Noted above, Sensing technologies and AGR will provide valuable data for the implementation of EV Charging station technologies and DER penetration, as AGR Self- Healing technologies are compatible with DERs due to load sensing capabilities, 6) Increase the capability of the transmission system to reliably transfer increased amounts of electric energy, 7) Prevent faults that may lead to wildfires or other system disturbances; and 8) Integrate variable renewable energy resources at the transmission and distribution level.

- **Project Goals:** Specific objectives are: 1) Implement Distribution Automation Programming to incorporate “self-healing” technologies resulting in a reduction of both the quantity of customers that experience outages and the duration those customers lose power, 2) Comprehensive area studies to increase the capacity of transmission facilities or the capability of the transmission system to reliably transfer increased amounts of electric energy and allow for integration of renewable energy resources at the transmission and distribution levels, 3) Substation studies to facilitate the aggregation and integration of electric vehicles and other grid-edge devices or electrified loads; and 4) Addition of Transmission Supervisory Control and Data Acquisition (SCADA) Switch Program to prevent faults that may lead to wildfires or other system disturbances.
- **Key Takeaway:** The proposed technology solutions will increase the flexibility, efficiency, reliability, and resilience of the electric power system
- **Prime Applicant: Central Maine Power**
- **Project Manager: Philip Gagnon, PE, PMP, Director - Distribution Line Projects, CMP**
- **Key Personnel: Michael Bartczak**
Electricore: Deborah Jelen
- **DOE Funding Request:** \$30,306,795
- **Cost Share:** \$30,306,795 (50%)
- **Total Cost:** \$60,613,591