



## City of Fort Collins Research Development and Demonstration of Peak Load Reduction on Distribution Feeders Using Distributed Energy Resources for the City of Fort Collins

### Project Description

The primary aim of the project is to demonstrate the monitoring, aggregation, distribution system integration, dispatch, and verification of distributed generation, renewable energy, and demand response resources (collectively, Distributed Energy Resources or DER) for reducing peak loading on two feeders within Fort Collins Utilities electric distribution network by at least 15% (target goal is in the 20% to 30% range). Over 3.5 megawatts (MW) of DER from approximately 5 different participant locations were aggregated to demonstrate technical feasibility and the benefits of DER to asset owners and distribution network operations. Distributed generation sources (including renewable generation sources) that will be part of the demonstration include photovoltaic, micro-turbines, dual fuel CHP systems using process-generated methane, reciprocating engines, conventional backup generators, wind turbine simulator, plug-in hybrid electric in a vehicle-to-grid configuration, and fuel cells. Demand response capabilities will be aggregated from a mix of heating and air conditioning loads, process loads, and thermal storage. Energy efficiency upgrades will also contribute toward long-term reduction of loads on the selected feeders.

### Goals/Objectives

- Reduce Peak Loading 20-30%
- Demonstrate import/export capabilities of intentional islanding
- Demonstrate benefits of aggregating DER from participating locations

### Key Milestones

- Sufficient Load-Shedding to Meet Project Goal of 15% Reduced Peak Load (April 2008)
- 10x Improvement in Power Reading Rate at DER Units (April 2009)
- Load Management System Application Successfully Released (October 2010)
- Peak Control Period Demonstration completed (August 2011)
- Islanding Demonstration (August 2013)

### Benefits

- Demonstrate capabilities of partnering locations
- Showcases microgrid abilities
- Data collection for renewable generation
- Lower energy costs

### CONTACTS

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### PARTNERS

Fort Collins Utilities  
Colorado State University  
Advanced Energy  
Brendle Group  
Eaton Corporation  
InteGrid Laboratory  
New Belgium Brewing  
Spirae, Inc.  
Woodward Governor Company  
Larimer County  
Eaton

### PROJECT DURATION

10/01/08–9/30/13

### COST

**Total Project Value**  
\$11,797,949  
**DOE/Non-DOE Share**  
\$6,695,880/\$5,102,069

### DEMONSTRATION STATES

Colorado

CID: NT02876

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