



# National Rural Electric Cooperative Association Enhanced Demand and Distribution Management Regional Demonstration

## Project Description

National Rural Electric Cooperative Association (NRECA) is demonstrating Smart Grid technologies with 27 cooperatives in 11 states across multiple utilities, geographies, climates, and applications including low density areas, low consumer income areas, and service areas prone to natural disasters. NRECA will conduct studies in advanced volt/volt-ampere reactive for total demand; generation and transmission-wide (G&T) demand response over advanced metering infrastructure (AMI); critical peak pricing over AMI; water heater and air conditioning load control over AMI; advanced water heater control and thermal storage; consumer Internet energy usage portal pilots; consumer in-home energy display pilots; time-sensitive rates pilots; multiple AMI integration at G&T co-ops; distribution co-op meter data management system applications; and self-healing feeders for improved reliability. Installations will be implemented in four successive tranches, each of four months' duration. A study will be conducted at the conclusion of each tranche to improve the study plan, alter the type of data collected if necessary, and to assess the type of equipment installed and its configuration. This information will be shared across the co-op community.

## Goals/Objectives

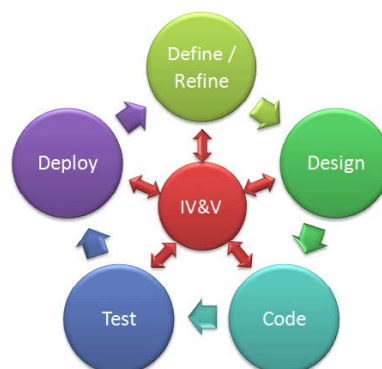
- Install 131,720 smart meter modules; 18,480 demand response switches; 3,958 in-home displays/smart thermostats; 2,825 ZigBee gateways; 169 volt sensors; and 247 fault detectors
- \$641,000 annual savings using two-way AMI
- \$400,000 annual savings implementing conservation voltage reduction

## Key Milestones

- Design and Engineering Plan Completed (September 2010)
- Cyber Security Plan Completed (December 2010)
- Study Data Systems Design Completed (January 2011)
- Asset Tracking System Online (March 2011)
- MultiSpeak Interfaces completed (December 2011)
- Multi-tenant MDM study completed (October 2013)
- Advanced Volt/Var study completed (October 2013)
- Final Technical Project Report (August 2014)

## Benefits

- Electricity costs reduced
- Power quality improved
- Greenhouse gases reduced 1.5-2 percent
- System reliability improved 5-7 percent
- Energy security strengthened



## CONTACTS

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## PARTNERS

SAIC  
Power System Engineering Inc.  
Cigital Inc.

## PROJECT DURATION

1/1/2010 –8/31/2014

## BUDGET

### Total Project Value

\$67,864,292

### DOE/Non-DOE Share

\$33,932,146/\$33,932,146

## EQUIPMENT

Smart Meters  
Distribution fault locators  
Distribution capacitor banks with controllers  
Enterprise SCADA hardware

## DEMONSTRATION STATES

Georgia, Hawaii, Illinois, Iowa, Kentucky, Louisiana, New York, Wisconsin, North Carolina, Colorado, Alaska, Minnesota

CID: OE0000222

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