New Hampshire Electric Cooperative

Communications Systems Infrastructure/Advanced Metering Infrastructure

Scope of Work

The New Hampshire Electric Cooperative (NHEC) Communications Systems Infrastructure (CSI)/Advanced Metering Infrastructure (AMI) project involved the installation of two-way voice and data communications infrastructure to support improved communications in the field and smart metering systems for over 83,000 members located throughout New Hampshire.

Objectives

The aim was to help NHEC members manage electricity consumption and associated costs by providing them with detailed usage information and the option to participate in time-based rate programs. In addition, NHEC expected the new systems to improve outage detection and response time, provide tamper detection, and reduce operations and maintenance costs.

Deployed Smart Grid Technologies

- **Communications infrastructure:** NHEC deployed a radio frequency-based meter communications network with microwave and fiber optic backhaul systems to enable two-way communication between the meters, substations, other data collection points, and control systems in the operations center. NHEC also updated its land mobile radio (LMR) system to enhance the communications capabilities of field personnel and improve outage response time. The LMR system leverages the microwave and fiber optic network infrastructure as well as radio frequency-based communications.
- **Advanced metering infrastructure:** Through this project, the cooperative installed 82,444 meters, completing deployment to all NHEC members. AMI enables time-based rate programs and electric service options for members who elect to participate in the proposed programs.
- **Advanced electricity service options:** The project involved a pilot program for 343 members. Through the program, NHEC provided in-home displays to allow participants to view and manage their electricity usage. The system can also deliver messages to NHEC members about their accounts.
- **Time-based rate programs:** NHEC has implemented critical peak pricing and expanded existing time-of-use pricing for members receiving new smart meters. The cooperative tested the pricing program with AMI and in-home displays to encourage members to shift their consumption from on- to off-peak periods.

At-A-Glance

Recipient: New Hampshire Electric Cooperative

State: New Hampshire

NERC Region: Northeast Power Coordinating Council

Total Project Cost: $34,093,004

Total Federal Share: $15,210,656

Project Type: Advanced Metering Infrastructure/ Communications System Infrastructure

Equipment

- 83,595 Smart Meters
- AMI Communications Systems
  - Meter Communications Network (Radio Frequency)
  - Backhaul Communications (Microwave, Fiber)
- Meter Data Management System
- Land Mobile Radio System
- 343 In-Home Displays

Time-Based Rate Programs for 296 Members

- Critical Peak Pricing for 129 Members
- Time-of-Use Pricing for 167 Members

Key Benefits

- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Reduced Costs from Theft
- Increased Electric Service Reliability
- Reduced Truck Fleet Fuel Usage

New Hampshire Electric Cooperative *(continued)*

Benefits Realized

Benefits include lower operations costs from remote meter reading, improved outage response time, and a decrease in truck rolls.

- **Reduced operating and maintenance costs:** In the first full year of operations, the AMI/CSI improvements resulted in a 38% decrease in meter operations costs, including an 82% decrease in meter reading costs.
- **Improved outage response time:** Both the AMI and CSI systems, as well as LMR, have improved NHEC's ability to efficiently locate and respond to outages.
- **Reduced costs from theft:** In much the same way that the AMI system allows NHEC to detect outages, meter data also enables the detection of electricity theft and meter tampering.
- **Reduced truck fleet fuel usage:** Truck rolls for functions associated with reading, testing, and repair of meters decreased by 49%.

Lessons Learned

- Plan to spend a significant amount of time and budget on ensuring customers are thoroughly educated about the new technologies being deployed. Effective communication and outreach help build trust, counteract the negative effects of misinformation about the technologies, and are critical to project success.
- Be careful not to underestimate the resources required to manage multiple vendors working on the same project. If possible, plan for a dedicated vendor manager and hold routine coordination meetings to ensure alignment of priorities and effective issue resolution.

Contact Information

Dena Lee DeLucca
Vice President of Corporate & Member Services/Chief Financial Officer
New Hampshire Electric Cooperative
deluccad@nhec.com