

NV Energy

NV Energize

Abstract

NV Energy's NV Energize project includes deployment of smart meters and communications infrastructure for all residential and commercial customers and pilot programs for time-based rates, advanced customer service options, and electric vehicle monitoring. The project also includes a new meter data management system (MDMS) that integrates all the smart meter data for use in system management, operations, and billing activities. An advanced demand response management system (DRMS) integrates the utility's portfolio of demand response programs and provides a link to customer service, control operations, system operations, and other functions. An energy management system links the control of the electric transmission, distribution, and generation facilities with the two distinct northern and southern Nevada balancing areas, thereby consolidating transmission and balancing operations statewide across all of NV Energy's generation fleet and grid interface points. The associated operations improvements results in reduced operations costs, fewer truck rolls, and associated reductions in emissions.

Smart Grid Features

Communications infrastructure includes a set of interoperable and cyber-secure components linking the advanced metering infrastructure (AMI), MDMS, and DRMS together. The AMI system uses a FCC-licensed two-way communications system from the Tower Gateway Base station collectors to meters and modules. The backhaul communications network will use existing NV Energy telecommunications infrastructure or third-party public communications to link collector data to the head-end system.

Advanced metering infrastructure includes smart meters and a radio frequency communications network for all NV Energy customers. All 1,293,450 residential and commercial customer sites will receive new meters. Communication devices in these meters send consumption data, in real-time, to grid operators. The AMI deployment allows for time-based rate programs and electric service options based on time-specific consumption metering. NV Energy reduces meter reading and theft costs as a result of the new meters. The new meters feature remote outage and restoration notification, which NV Energy is integrating with its outage management system software to respond to outages and customer requests more rapidly. This contributes to improved electric service reliability and power quality.

At-A-Glance

Recipient: NV Energy

State: Nevada

NERC Region: Western Electricity Coordinating Council

Total Budget: \$277,755,812

Federal Share: \$138,877,906

Project Type: Advanced Metering Infrastructure and Customers Systems

Equipment

- 1,293,450 Smart Meters
- AMI Communication Systems
 - Meter Communications Network
 - Backhaul Communications
- Customer Web Portal Access for 1,293,450 Customers
- In-Home Displays
- Programmable Communicating Thermostats

Time-based Rate Programs Targeting 16,350 Customers

- Time of Use
- Critical Peak Pricing

Key Targeted Benefits

- Reduced Electricity Costs for Customers
- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Reduced Costs from Equipment Failures and Theft
- Improved Electric Service Reliability and Power Quality
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

NV Energy (continued)

Advanced electricity service options include a Web portal, in-home energy displays, and programmable communicating thermostats. The Web portal provides all 1,293,450 NV Energy customers with access to precise consumption data from their own smart meters. The utility is also seeking to enroll 56,000 customers in a pilot of home energy management technologies. In-home displays provide another form of access to home electric consumption data, and are expected by NV Energy to facilitate two-way information feedback between grid operators and customers. Programmable communicating thermostats enable customers to use a Web interface to program home heating and cooling settings so that they are responsive to peak demand events and electricity prices. NV Energy targets these options to provide residential customers with information feedback and control options to reduce electric costs. The utility expects these customer service options to reduce distribution system peak demand by enabling customers to voluntarily and automatically reduce their demand. NV Energy expects reduction of overall peak demand to reduce the costs and emissions of ancillary services and peaking generation.

Time-based rate programs offered through this project include time-of-use rate and critical peak pricing. Refer to the “Consumer Behavior Study” section for more details on these programs.

Electric vehicle pilot program allows the utility to select up to 12 customers within the NV Energy service territory to work with and closely track electric consumption data from the charging and usage of their vehicles. In addition, NV Energy is seeking out customers already using electric vehicles and will collect detailed consumption tracking data on the charging of these preexistent vehicles. NV Energy will use this load data to plan grid development and operations for the expected future expansion of electric vehicles in the utility’s service territory. NV Energy is targeting the use of low- or zero-gasoline-use vehicles to reduce gasoline use and air emissions in the transportation sector.

Consumer Behavior Study

This effort involves an assessment of how different types of customers (single-family, multi-family and small commercial) respond to more time-differentiated pricing (time of use vs. time of use with a critical peak pricing overlay) on an opt-in basis. In addition, the study will test if a bill guarantee provided only for the first half (12 months) of the study will minimize attrition and affect response. This study will also look at the differential effects on acceptance and performance associated with alternative education material and/or joint use of information and control technologies.

Timeline

Key Milestones	Target Dates
Communications infrastructure deployment start	Q3 2010
AMI infrastructure deployment start	Q4 2010
Communications infrastructure deployment complete	Q3 2012
AMI deployment complete	Q4 2012
Electric vehicle monitoring complete	Q4 2012
Nevada Dynamic Pricing Trial complete	Q4 2014

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