UNLV
Decreasing the Peak Demand in the Desert Southwest

Project Description

This project demonstrates dramatic peak demand reduction in residential new construction through distributed generation, distributed energy storage, energy efficiency, direct load control and price-responsive load control. In cooperation with a nationally recognized home builder, a green field development of 185 homes has been built in which each home was designed for optimal energy efficiency and electrically metered with the most advanced technology available. Efficiency improvement over conventionally designed homes has exceeded 45% and the goal of 65% efficiency is expected when storage batteries are adopted by home owners. The multi-faceted approach to effective and efficient electricity use includes solar photovoltaic systems, direct and price-responsive load control and peak load reduction strategies. Most importantly, UNLV is directing this development along with the local utility with cutting edge metering and communication technologies to assess the cooperative behavior of residences in the goal of electricity conservation. An "Intelligent Agent" software system has been developed to integrate Internet and communications with home owners that weaves customer preferences into the energy savings strategy in a way to that is intended to excite and engage residential customers in the demand management process.

Goals/Objectives

- 65% decrease in peak demand on electric feeder into low energy housing development compared to code-built houses
- Optimized grid management of distributed assets
- Development of intelligent agents within consumer gateway connected to advanced meter infrastructure

Key Milestones

- All homes constructed/monitored (Fall 2013)
- Intelligent Agent System Operational (Summer 2013)
- Storage Battery Installations (pending utility performance acceptance and home-owner acceptance)

Benefits

- Lessons learned regarding customer recruitment
- Residential demand reduction, with accompanying reduced emissions
- Lessons learned from the development of advanced load control approaches based on home owner thermo-comfort preference

CONTACTS

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PARTNERS

Pulte Homes Las Vegas Division
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PROJECT DURATION

9/30/2008-6/30/2015

BUDGET

Total Project Value
$15,170,856
DOE/Non-DOE Share
$6,948,278/8,222,578

EQUIPMENT/SOFTWARE

Intelligent Agent System
Two-way communication thermostat communication gateway
Advance meter infrastructure (AMI)
Intelligent agent/web/database servers

Apps on Homeowner Devices
Sensus Icon residential meters
Energy Star Appliances
Low-E Windows
Tankless water heater
High SEER air conditioning systems

DEMONSTRATION STATES

Nevada

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