

## Mason County Smart Grid Pilot Project

In September 2010, Mason County PUD No. 3 began to control and monitor water heaters in 100 homes in Mason County and two batteries utilizing Renewable Demand Response™. Renewable Demand Response™, a real-time automated demand response management protocol developed by GridMobility to maximize the efficiency of renewable energy by preferentially deploying renewable energy on-demand provided the solution platform.

The PUD 3 pilot program, designed to assist utilities and grid operators to better manage demand and renewable energy supply fluctuations on a real-time scale, demonstrated a scalable technology solution to improve power generation efficiency and serve consumer preferences.

Client	Mason County Smart Grid Pilot Project	
Country	USA	PUD
Year	2010	PUBLIC UTILITY DISTRICT

## **PSC Services**

PSC provided project management and technical consulting services for the Mason County Smart Grid Pilot Project in the Bonneville Power Administration service territory. This 12 month project involved control of 100 water heaters and two batteries based on renewable energy, load and other operating conditions.

PSC assisted with:

- implementation of an automated demand response system to selectively manage demand in direct correlation with the availability of intermittent renewable resources
- validation of the optimal control and charging strategies for intermittent renewable energy, power outages, and control system peaking events
- confirmation of the economic and socio-economic factors that influence customer participation that will impact wide-scale renewable demand response deployment
- specialist expertise in wind integration, demand response program definition and strategy, storage integration, data analysis, and reporting.

## **Project solution**

The project solution allowed Mason County residents to connect their water heaters to a signal that would heat the water when renewable energy was being produced, and shut off when renewable energy was not being produced - in effect, implementing a generation following scheme. The solution also tracked the charge status of the water tanks and would heat the water off peak if renewable energy was not available for prolonged periods. The system also avoided charging during the morning and afternoon peaks to help with load shifting. Signals could be sent over cellular data networks or via the homeowners' Wi-Fi network. Customers had access to a portal allowing them to define a schedule of their hot water needs. The portal also displayed the charge status and recent history.



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## Outcome

This program solved the problem of renewable resource output intermittency by harnessing wind power to heat water based on wind availability. Mason County PUD saw a 36% energy efficiency improvement, and a 75% increase in renewable energy utilization, with 80% peak load reduction.

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