



PACIFICORP

PacifiCorp is one of the lowest-cost electricity producers in the United States, serving more than 1.6 million customers in six western states. In 2006, PacifiCorp began a search for a better way to control the substantial irrigation load in their widespread service area.

Irrigation systems are significantly different than the typical Demand Side Management (DSM) loads in several ways:

- Equipment is located in widely separated and remote outdoor environments
- Large KW loads = significant opportunities for DSM
- High voltage equipment is involved, often 480 VAC
- High value crops require reliable operation and customer friendly operations to attract a high rate of participation

M2M Communications developed a new web-to-wireless product to address the specific needs of this project. There were several desired characteristics for the "ideal solution":

- Centralized control and access – from a secure Network Operations Center (NOC) and web site
- Two-way wireless communications – dual mode (GSM and CDMA digital) cellular communications to provide wide coverage in rural western areas. Optional satellite based modems for sites outside the cellular footprint
- All control commands and actions are acknowledged
- Remote monitoring providing 100% measurement & verification – Status reports upon request, status change, or on a time schedule
- Control on demand – of any selected unit or group of units
- Time scheduled controls – one time and repetitive control actions
- Customer notification of load shed events – via e-mail or phone (text-to-speech voice)
- A simple customer opt-out process
- A complete on-line database of all site related information, plus a detailed transaction history log, including the details of each load shed event
- Low cost operation – no master station to buy or maintain

The result was a new load control system field unit designed specifically for the job:

- Direct connect high voltage operation – for 120, 240, and 480 VAC
- Designed for an outdoor environment
- Wireless communication options that fit the rural location



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After an initial full summer of operation, the results were very positive.

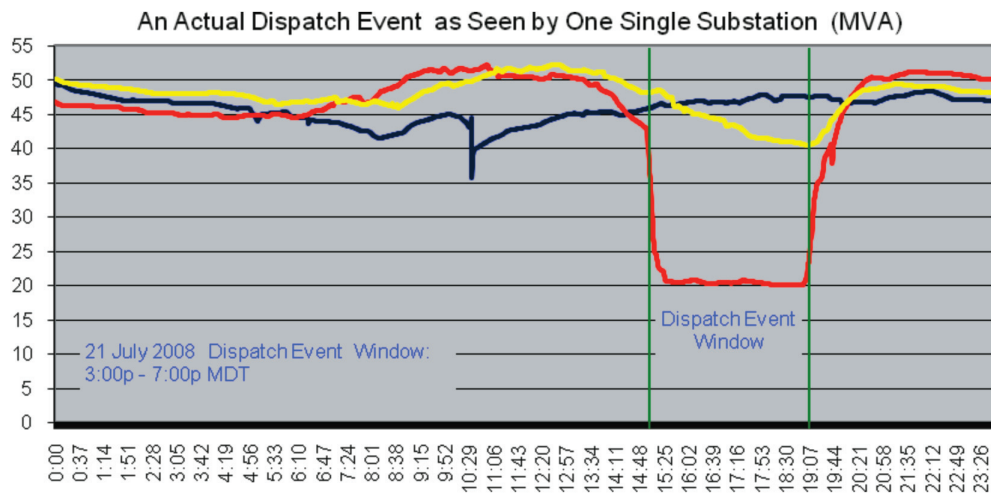
- Loads were shed when needed
- Improved reliability – no local time clocks to maintain
- No external transformers required to monitor high voltages
- Full M&V reporting and ACKs of all commands
- Increased customer participation with advance notification of all load shed events

2007

Based on the success of the initial load control pilot program, PacifiCorp implemented a full scale dispatch solution.

2008

Based on the success in Idaho and very high customer participation, the program was expanded into other states served by the utility. By the end of the summer, PacifiCorp was controlling 219MW.



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