



# The Challenges of Implementing Direct Load Control Programs in Rural Areas

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# Agenda

- Context
  - Bonneville Power Administration (BPA)
  - Kootenai Electric Cooperative (KEC)
- Pilot Program Overview
- Evaluation Findings
- Recommendations



# Context: Bonneville Power Administration

- Federal agency within U.S. Department of Energy
- Markets wholesale electrical power
  - Supplies 30% of electric power in the Northwest through approximately 150 utilities
- In 2008, released a request for proposals inviting utilities to conduct residential demand response (DR) pilot programs

# Context: Kootenai Electric Cooperative

- Member-owned electric utility
- 22,000 accounts in four counties in Northern Idaho and Washington
- Largely rural service area, with direct load control (DLC) participation focused in Hayden, Idaho
- Advanced metering infrastructure
- Selected as first utility to implement DR pilot



# Peak Project Overview



- Two-way communication Aclara AMI systems with direct load control of water heater and programmable thermostat
- 78 single-family homes in Hayden, Idaho
- Five winter and three summer events
  - Three hours in duration
  - Thermostat setback or increase
  - Water heater cycled off



# Evaluation Methods: Staff Interviews

- Interviewed three program staff members (two KEC, one BPA) in spring and two (one KEC, one BPA) in fall
- Asked questions regarding:
  - Program design, goals, history
  - Implementation
    - Marketing, recruitment, customer feedback
    - Equipment selection and installation
  - Program administration, communication
  - Future of the program

# Evaluation Methods: Participant Surveys

- Surveyed 40 of the 92 participants in September 2011
  - 34 had thermostats
  - 18 had heat pumps
- Asked questions regarding:
  - Reasons for participation
  - Comfort during events
  - Satisfaction with the program

# Findings: Recruitment Challenges

- Recruitment challenges
  - 40% of KEC residential homes have electric water heaters and electric space heat
  - Heating system incompatibility with DLC thermostat
  - Customer reluctance to allow utility to control thermostat
  - Some customer concern about government controlling or monitoring their electricity use
- Reduced participant recruitment goal from 400 to 200
  - Ultimately successfully enrolled 92 participants



# Findings: Reasons for Participation

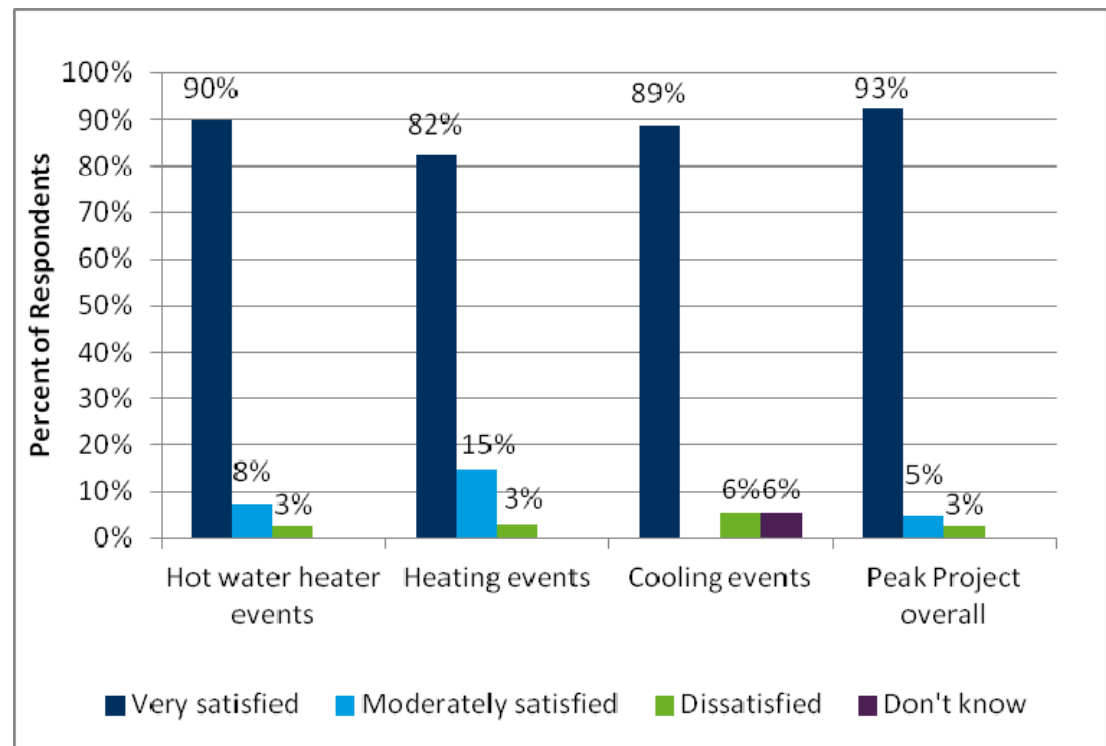
Response	Frequency (n=40)
Conserve energy	25
Save money by lowering my energy bill	10
Help the utility manage demand for electricity	4
KEC incentives (energy audit, energy credit contests, etc.)	4
Help the environment	1
Keep utility rates lower in the future	1
"It was a good idea"	1
Don't know	2

# Findings: Program Administration

- KEC staff was satisfied with staffing level
- KEC program manager was responsible for numerous elements
  - Providing customer service
  - Managing contracts
  - Performing home energy audits
  - Overseeing installations
- BPA staff suggested a third-party program manager
  - KEC noted that this could contribute to customer concerns about rate increases and government involvement

# Findings: Participant Satisfaction

- Participant comfort was largely unaffected during the events
  - No participants ran out of hot water during an event
  - Only two reported overriding the thermostat
- Participants were satisfied with the program overall



# Recommendations

- Avoid underestimating the resources required for educating customers about demand response
- Assess the impact on program cost and savings of excluding DLC thermostats
- Consider hiring third-party program implementer, provided this does not adversely impact participation



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13

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