



SMUD's Small Business Summer Solutions Pilot:

Behavioral response of small commercial customers to DR programs and PCTs

Karen Herter, Ph.D.
Heschong Mahone Group
Karen.Herter@h-m-g.com

July 10, 2008





Schedule

When...	...to do What
May 2007	Start
September 2007	SMUD Small Commercial Market Characterization
October 2007	Focus Groups
Spring 2008	Recruitment & installation
June-Sept 2008	Field study
December 2008	Final Report



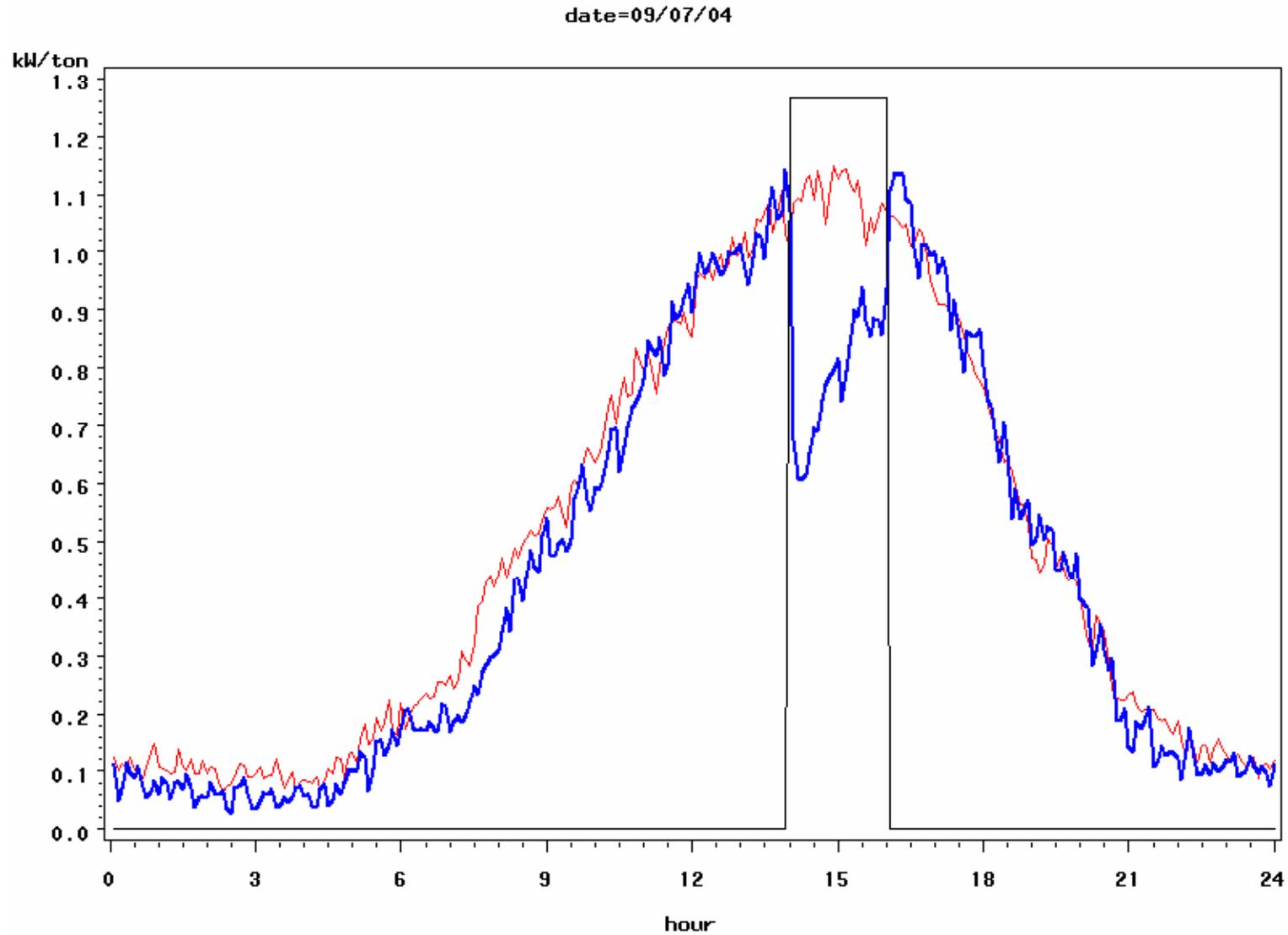


Previous Research

- Previous studies of PCTs in the small commercial sector
 - CA Statewide Pricing Pilot CPP
 - 13% reduction with PCTs
 - 23% reduction with more advanced controls
 - Southern California Edison load control study
 - 0.5 kW per rated ton AC
- Some shortcomings to address in this pilot
 - No distinction between different business types
 - Main focus on load drop, not customers



SCE Small Commercial AC Load Control





Small Business Focus Groups

- Liked new thermostats
 - Liked getting info from SMUD
 - Concerned about SMUD taking info from them
- Liked proposed DR programs
 - All wanted some economic benefit
 - CPP overwhelmingly preferred to payment for offset
- Wanted help and info from SMUD
 - Options for audits, efficiency recommendations
 - Business recognition
- How to contact small businesses
 - Ignored bill inserts
 - Suggested separate letters





Small Business Summer Solutions Pilot

- Goal: Quantify behavior & perception differences
 - Between DR program types
 - Between small business customer types
- Method: Offer choice of DR programs
 - Critical Peak Pricing (one-way PCT optional)
 - Temperature Offset of 2 or 4 degrees (PCT required)
- Sample: ~100 participants
 - <20 kW small commercial
 - 3 sectors: Retail, Restaurants, Offices



Participant Benefits

- \$120 cash
- a free digital thermostat - a \$200 value (optional for CPP)
- personal help with efficiency and load reduction strategies
- the opportunity to save/earn money on 2008 summer electricity bill
- SMUD rebate and program information
- Official display placards from SMUD



Display Placards

SMUD's Small Business Summer Solutions Partner

We're Doing Our Part to Save Energy

**Using less electricity between 4-7 p.m.
on hot summer days**

*Helping the Community
and Protecting the Environment*



SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT
The Power To Do More.®





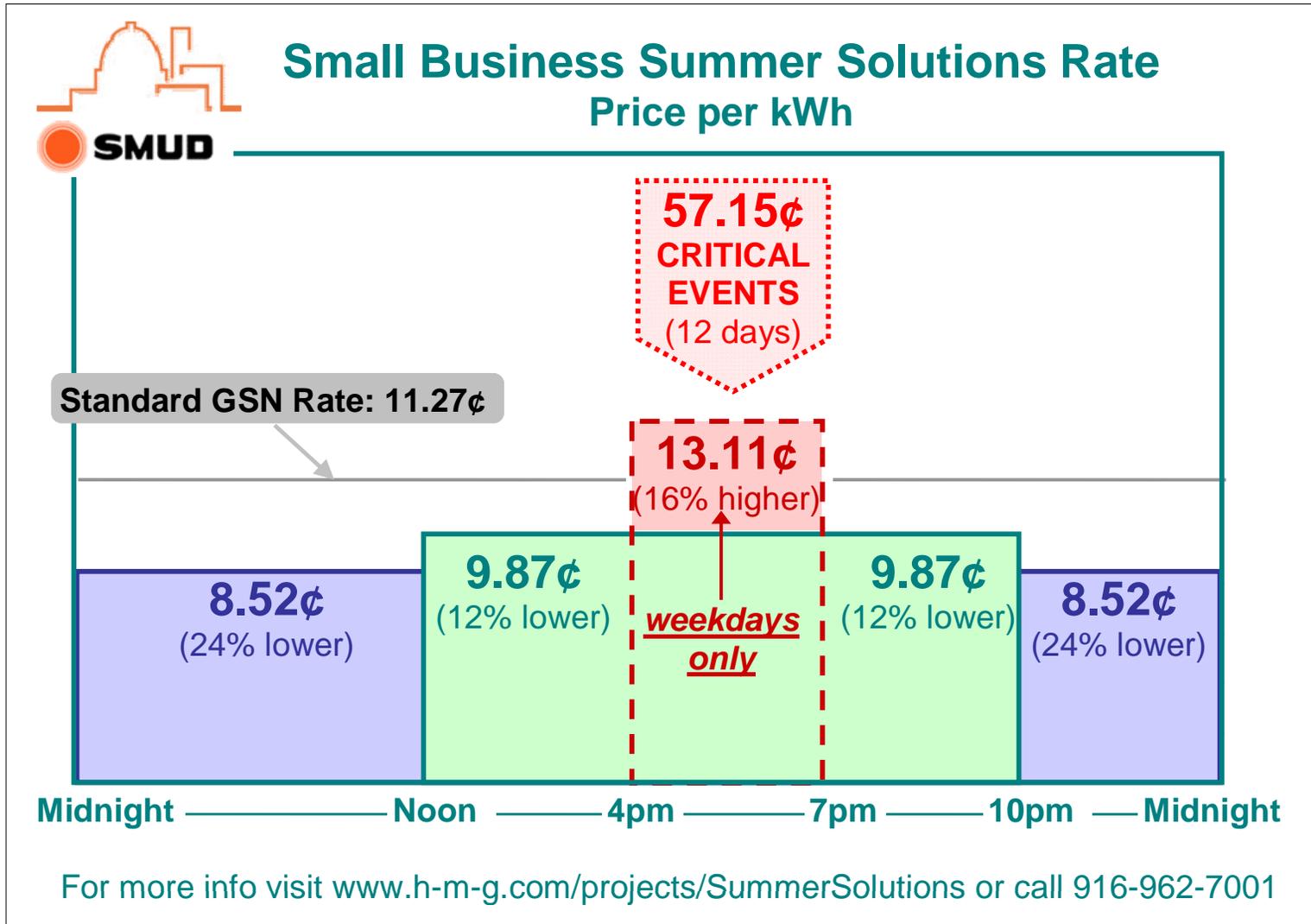
Overview of Programs

- Critical Peak Pricing (CPP)
 - Discounted TOU rate + high prices during 12 critical events
 - Rates applies to all appliance use, not just AC
 - PCTs can pre-cool and/or float during events (or not)
 - PCT settings can be changed on-site by customer at any time
 - Bill shows change in bill relative to standard rate
- Temperature Offset Program (TOP)
 - Payment equivalent to CPP savings for similar actions
 - \$5 per month for 2-degree AC offset
 - \$10 per month for 4-degree AC offset
 - PCTs can pre-cool
 - No incentive to reduce lighting, etc.





Critical Peak Pricing Rate



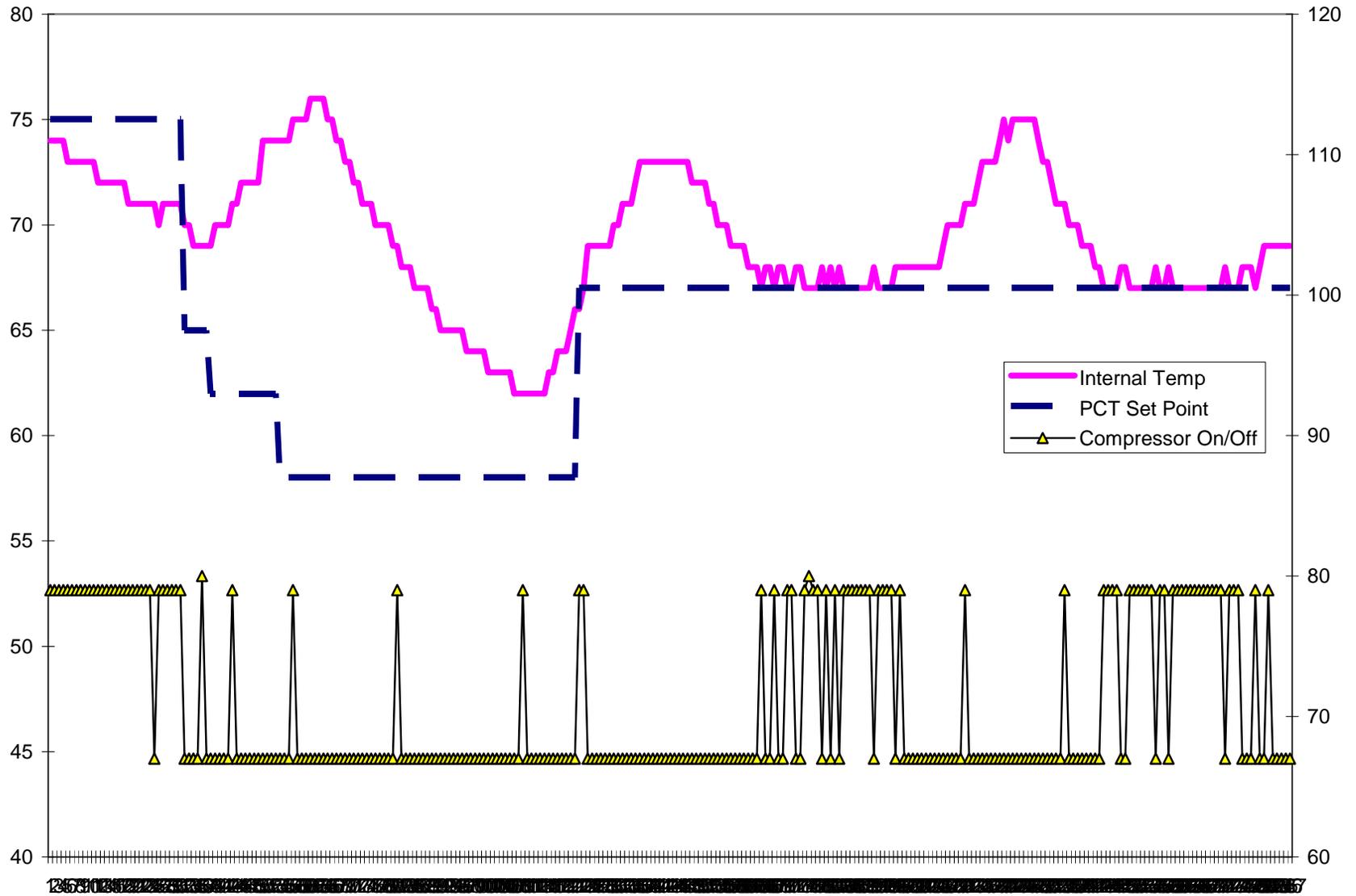


Data Collection Plan

- Surveys
 - Pre-experiment, Post-event (12), Post-experiment
- Thermostat data: 15-minute
 - Temperature, default setpoints, real-time setpoint, event notification, unit status
- Load data (kWh): 15-minute
 - Interval meters donated and installed by SMUD



Example PCT logger data





Recruitment Process

- Targeted Zip Codes with higher than average bills
 - To get their attention in the letter (i.e. “your bills are high”)
- Sent out ~1900 recruitment letters in February 2008
 - Allowed response by phone, postcard or website
 - Received contact info from over 150 interested customers
- As expected, lack of interest from restaurants necessitated face-to-face recruitment efforts



Participant Breakdown

	<u>CPP</u>	<u>TOP2</u>	<u>TOP4</u>	<u>Total</u>
Office	24	1	11	36
Retail	20	3	7	30
Restaurant	8	3	1	12
Total	52	7	19	78





Field Test Status

- Test messages and events completed early June
- First real event was June 26
- Events called on July 8th and 9th



June 26 post-event survey (N=26)

- Actions taken?
 - Precooled: 12 - with PCTs (8) or windows (4)
 - Reduced AC usage: 21
 - Reduced lighting: 13
 - Closed business early: 3
- Comfort levels?
 - Comfortable enough: 16
 - Event not noticeable: 10
- Customer comments?
 - None: 21
 - Positive: 1 – applauded conservation efforts
 - Negative: 2 – hot (1) and thought store was closed (1)



Research Team

- Project Lead
 - Karen Herter, Heschong Mahone Group
- Funding and project support
 - Demand Response Research Center (DRRC)
 - Sacramento Municipal Utility District (SMUD) + Vikki Wood
- Research design partners
 - Roger Levy
 - Mithra Moezzi
- Thermostats & Communications
 - Residential Control Systems (RCS): PCTs
 - eRadio: RDS communications infrastructure



For more information

Read the PIER final project report due December 2008

-OR-

Contact Karen Herter at:
Karen.Herter@h-m-g.com
(916) 962-7001 x32