



## SMUD's Small Business Summer Solutions Pilot:

### Behavioral response of small commercial customers to DR programs and PCTs

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|                |             |
|----------------|-------------|
| <b>DOCKET</b>  |             |
| <b>08-DR-1</b> |             |
| DATE           | JUL 10 2008 |
| RECD.          | JUL 25 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                                  |



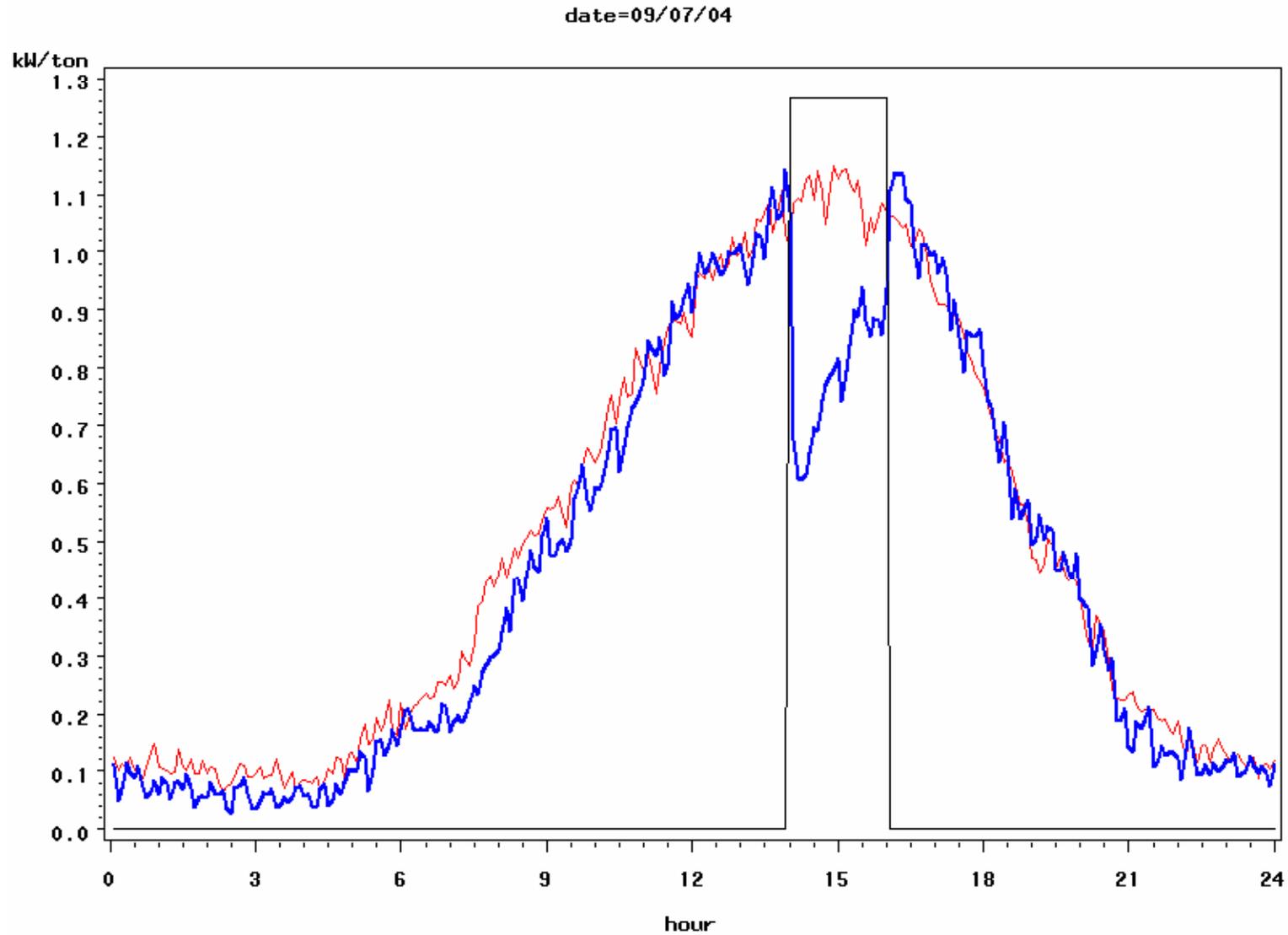


# Previous Research

- 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.®*





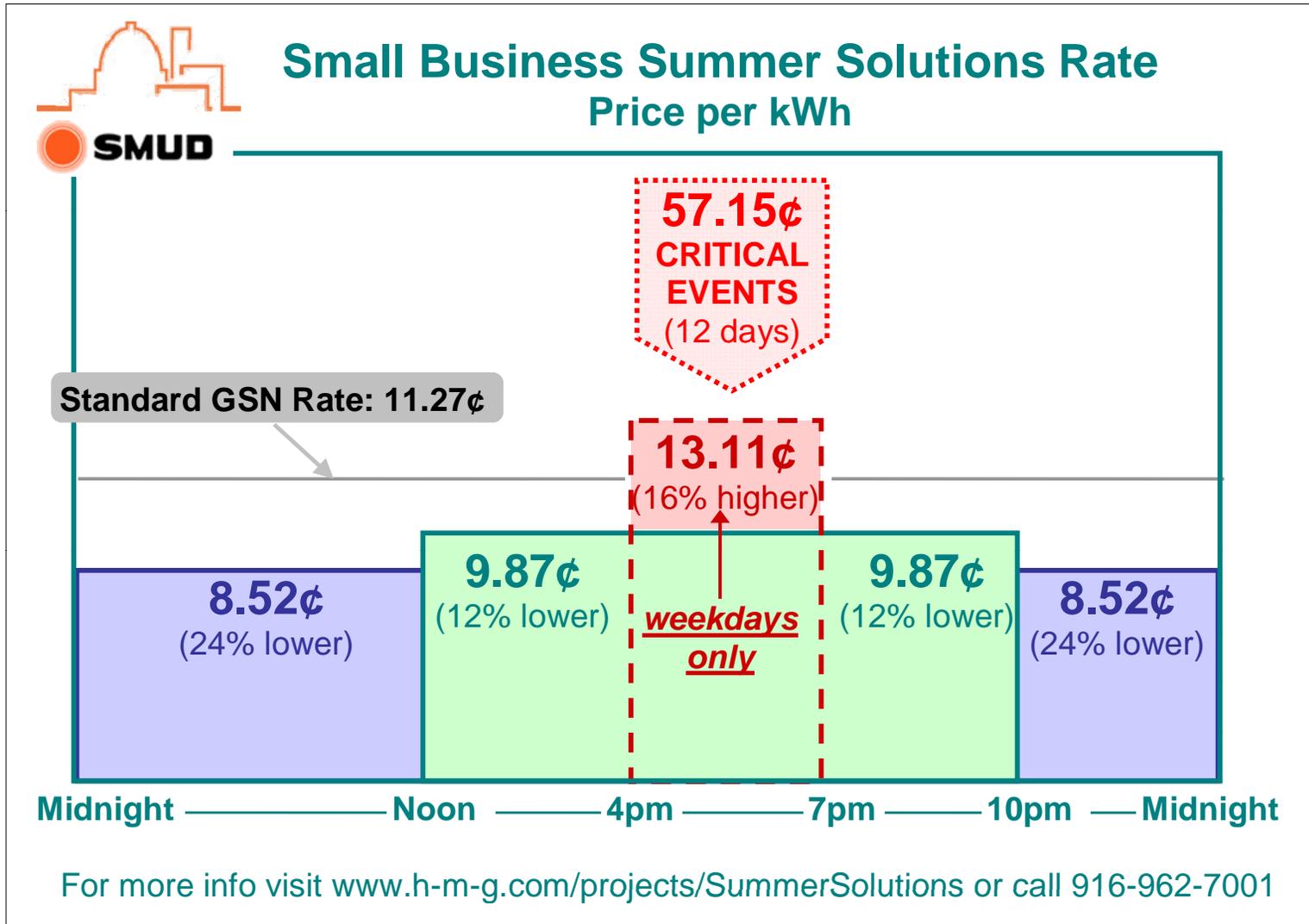
# Overview of Programs

- 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





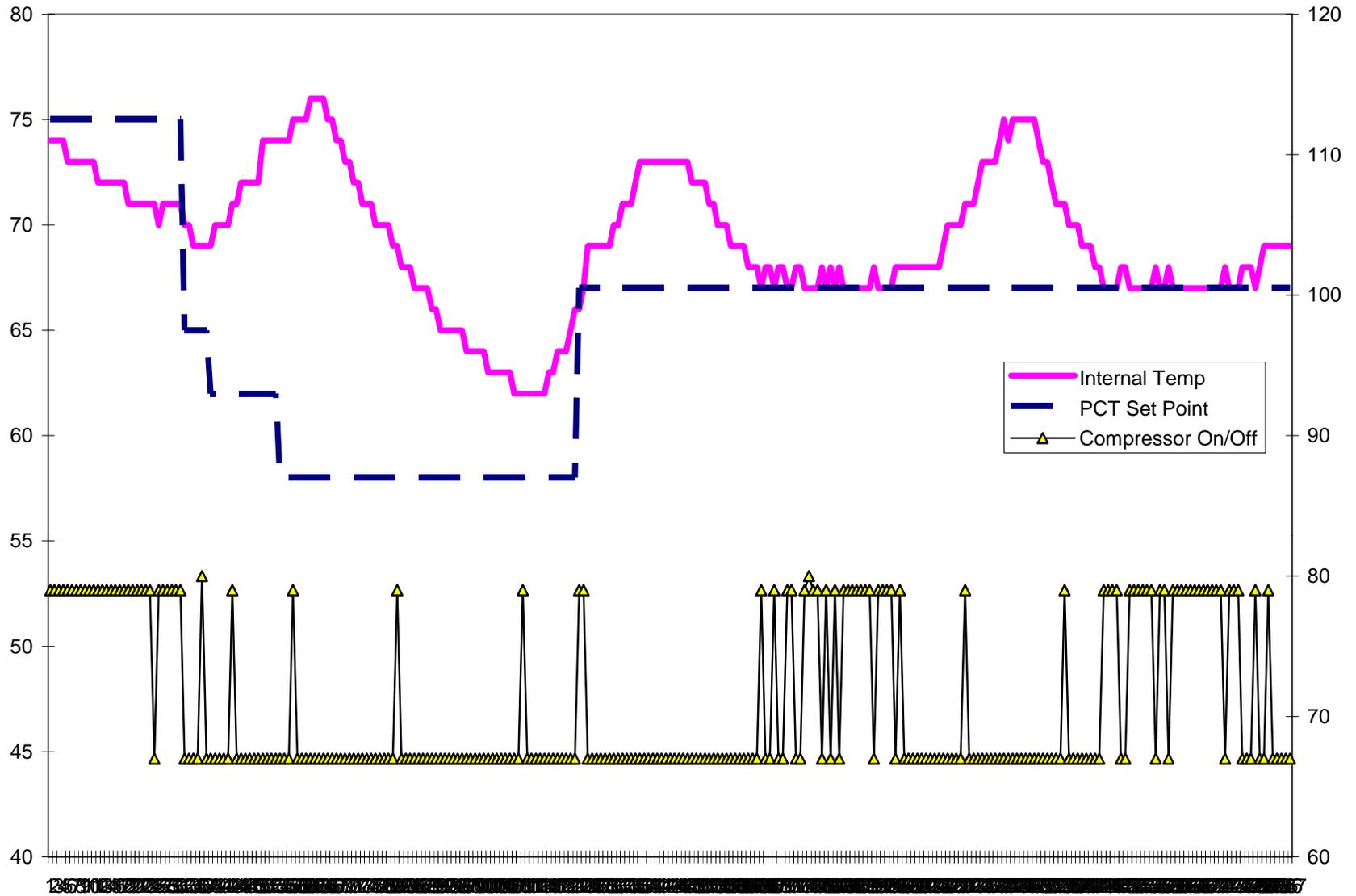
# Data Collection Plan

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- 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          | <b>36</b>    |
| Retail       | 20         | 3           | 7           | <b>30</b>    |
| Restaurant   | 8          | 3           | 1           | <b>12</b>    |
| <b>Total</b> | <b>52</b>  | <b>7</b>    | <b>19</b>   | <b>78</b>    |





# Field Test Status

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



# 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

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Read the PIER final project report due December 2008

-OR-

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