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# Smart Energy Pricing Pilot at BGE

Neel Gulhar – Program Manager  
Tom McMahon – Honeywell

April 29, 2009

# Agenda

- ❑ What's the Problem?
- ❑ Pilot Design
  - Critical Events
  - Peak Time Rebate
  - Dynamic Peak Pricing
  - BGE pilot design
- ❑ Pilot Execution
  - Honeywell and BGE Team
  - Summer Peak Events
- ❑ Impact Analysis and Survey Results
- ❑ Pilot in 2009
- ❑ Q&A with Neel and Tom

# What's the Problem?

- Capacity constraints could plague BGE as early as 2012, and be forced to implement rolling black outs in the absence of any demand response and/or major transmission build out
- Rising capacity and energy prices in the PJM market are enabling demand response programs to make economical sense
- While AMI is a costly capital project, it enables innovative rate programs that can save customers money, and reduce peak demand
- EmPOWER Maryland Act charges Utilities in Maryland to reduce per capita consumption and demand by 15% by the year 2015

# Smart Energy Pricing Pilot Objectives

- Determine customers' acceptance and satisfaction with new pricing programs
- Confirm peak load reductions resulting from two flavors of innovative rate programs (PTR and DPP), with and without enabling technology
- Develop statistically valid data to support monetizing SEP load reductions in PJM Capacity and Energy markets
- Support Smart Grid business case using impact analysis, and deriving net benefit of Smart Energy Pricing programs

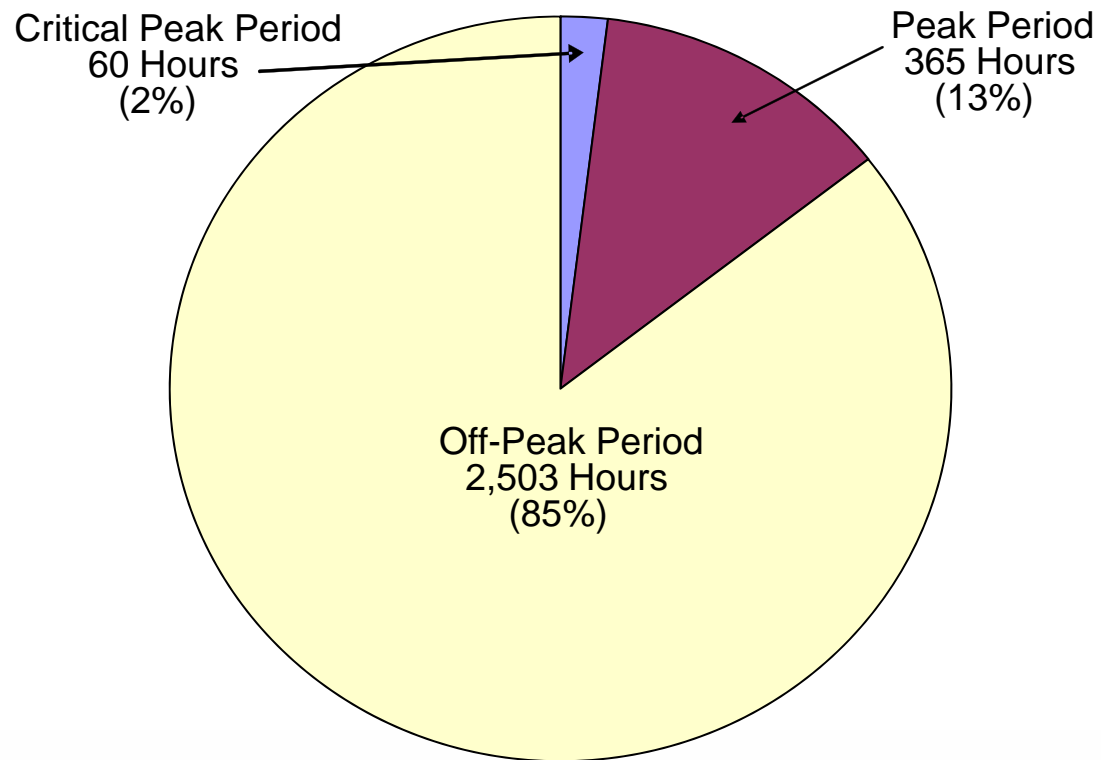
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Smart Energy Pricing

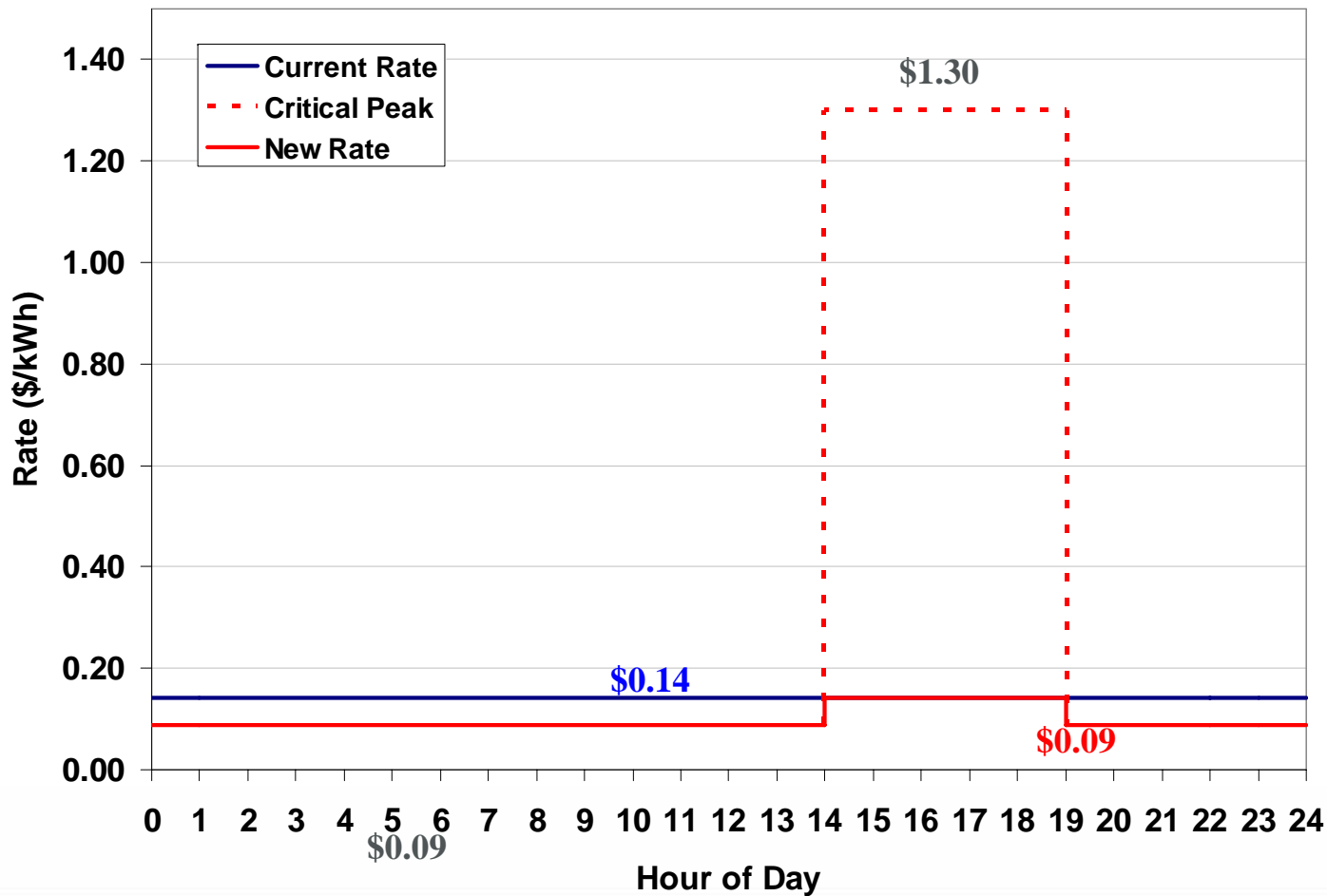
# PILOT DESIGN

# Distribution of Summer Hours

**Distribution of Critical Peak, Peak and Off-Peak Hours  
June - September**



# Dynamic Peak Pricing - Overview



**Pilot Pricing  
All – in Rate\***

Critical	\$1.30425
Peak	\$0.14425
Off-Peak	\$0.09425

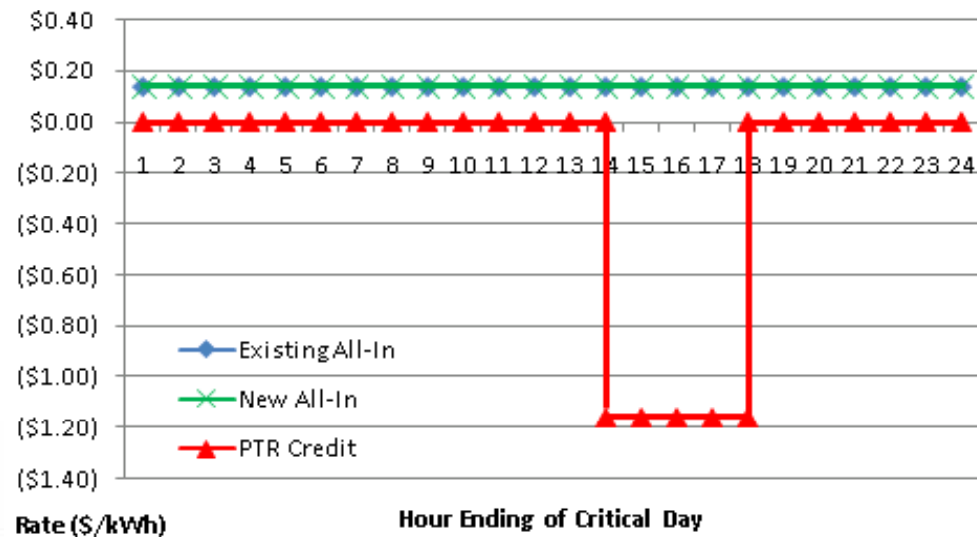
\* Includes generation, transmission and delivery

# Peak Time Rebate - Overview

## A Mirror Image of the DPP Rate

- Schedule R summer rates are \$0.14 / kWh for all summer hours
- Up to 12 critical peak days will be called by 6 p.m. the prior day
- Customers who use less during the critical period (2 – 7 p.m.) on any critical peak day will receive a rebate. Two levels being tested:

- \$1.75/kWh
- \$1.16/kWh






# Summer 2008 Pilot

## Dispatch Notification of Critical Peak Event

- Customers choose to be notified by up to 15 total methods
  - Recorded Telephonic Message (up to 5 phone numbers)
  - E-mail (up to 5 addresses)
  - SMS Text Messages (up to 5 cell phones)
- Subset of customers were given Energy Orb
  - For DPP customers, Orb would indicate time period (OFF, ON and CRITICAL) through color signals of green, yellow and red
  - For PTR customers, Orb would signal upcoming Critical Events by pulsating before an event, and turning red during the event
- In a full deployment scenario, BGE also plans to alert the mass media of critical peak events



## Summer 2008 Pilot Participant Segmentation

Group	Total	PTR Low (\$1.16/kWh)	PTR High (\$1.75/kWh)	Critical Peak Pricing	Control Group
Without Enabling Technology	675	125	125	125	300
With Orb Technology 	250	125	125	0	0
With Orb and AC Switch Technologies	375	125	125	125	0
<b>Total</b>	1300	375	375	250	300

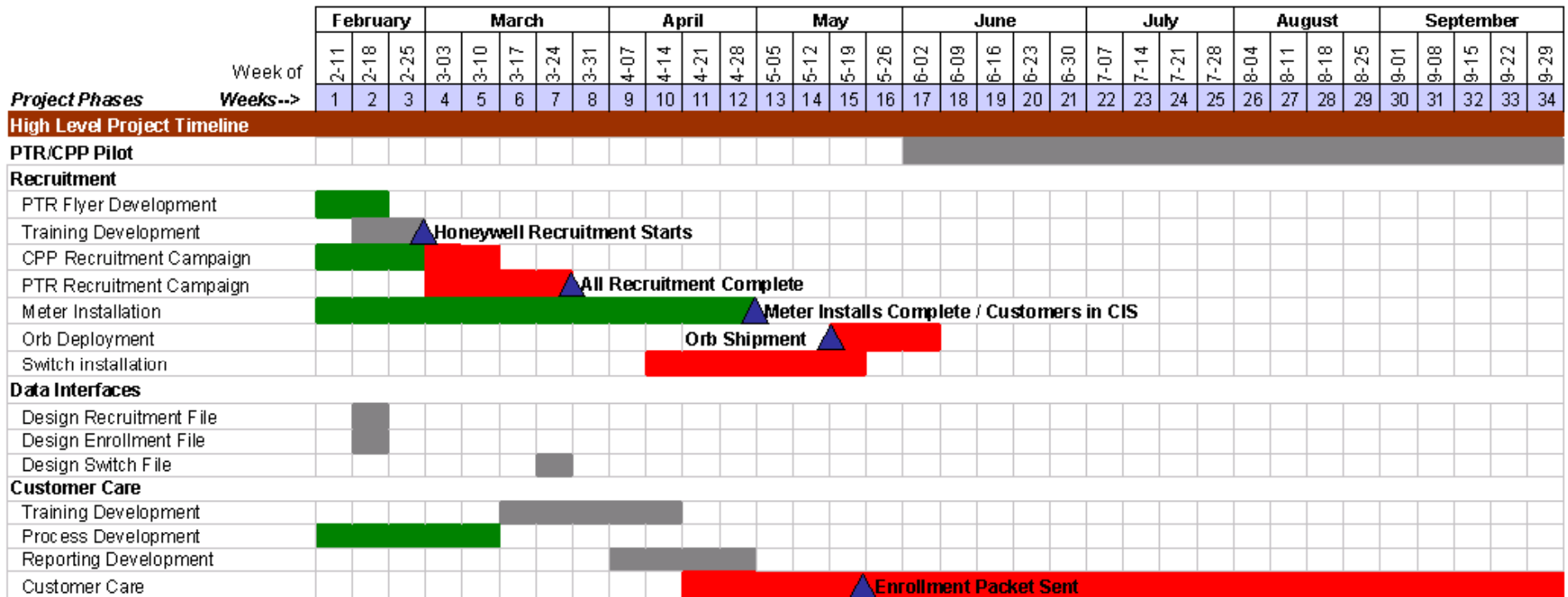
*1,300 accounts is a sample size that produces statistically reliable results*

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Smart Energy Pricing

# PILOT EXECUTION

# Execution: High Level Timeline



Legend for Primary Responsibility	
Honeywell	Red
BGE	Green
Both	Grey

## Execution (and development) of Pilot

- Project began on December 1, 2007 and the team had 7 months to develop and deploy a fully functional pricing program to 1000 test participants
- BGE had a number of partners
  - Honeywell for program support services (New Jersey Call Center)
  - Honeywell for installation of DLC devices (Baltimore field team)
  - Cannon for DLC hardware and software
  - Ambient for in-home display hardware and software
  - Brattle Group for impact analysis and final report

# Recruitment Process

## Phase 1 Mail

- Created Robust Program Information Flyers and post cards that could be returned by mail
- Designed, compiled and printed by BGE

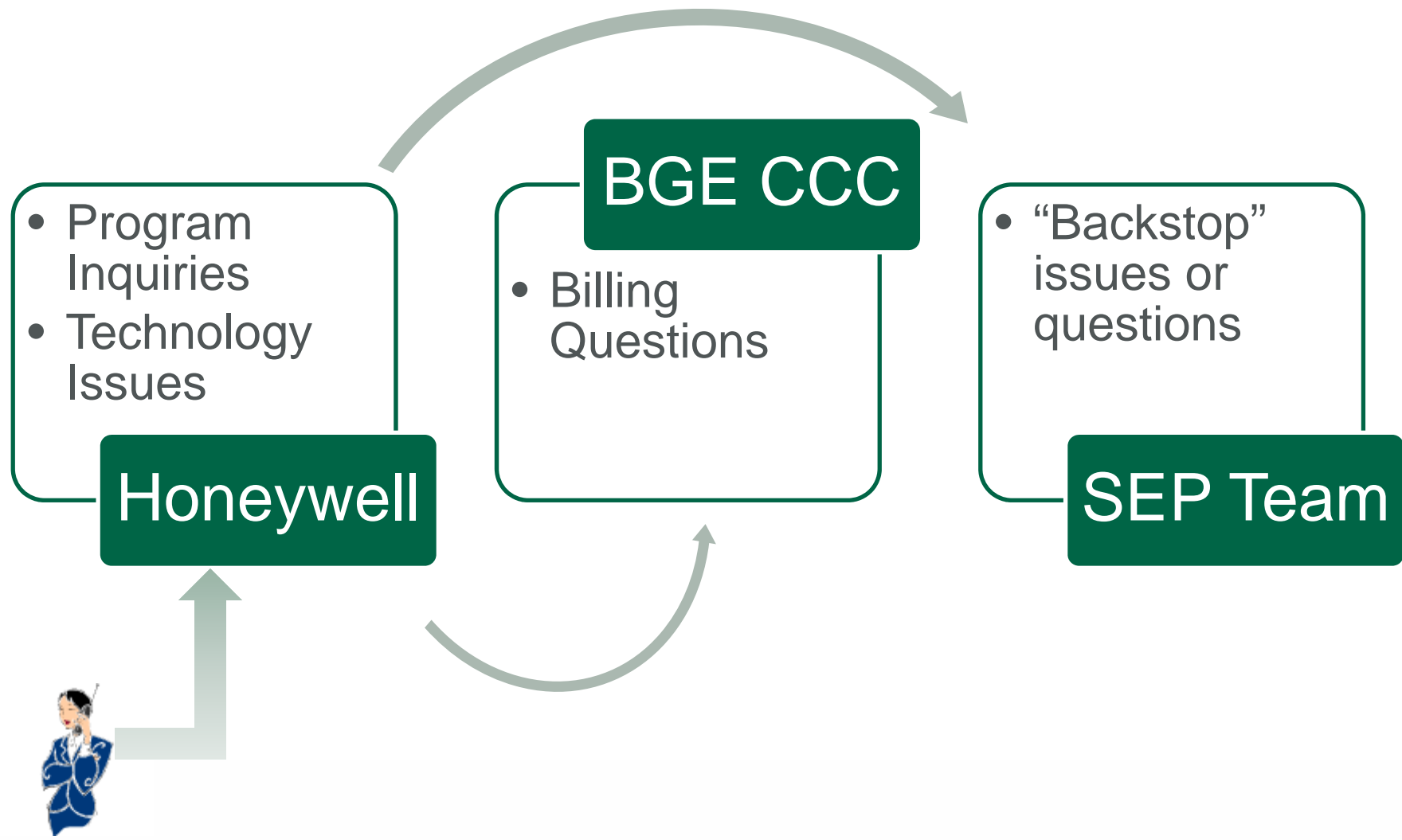
## Phase 2 Incoming Calls

- Incoming Customer Calls taken by Honeywell
- Scripts developed jointly by BGE and Honeywell

## Phase 3 Outbound Calling

- Outbound calling by Honeywell was the most effective recruitment strategy
- Scripts developed jointly by BGE and Honeywell

# Customer Call Support



# Smart Energy Pricing 2008 Critical Events

June 2008						
Sun						
1	2	3				
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

High Temp

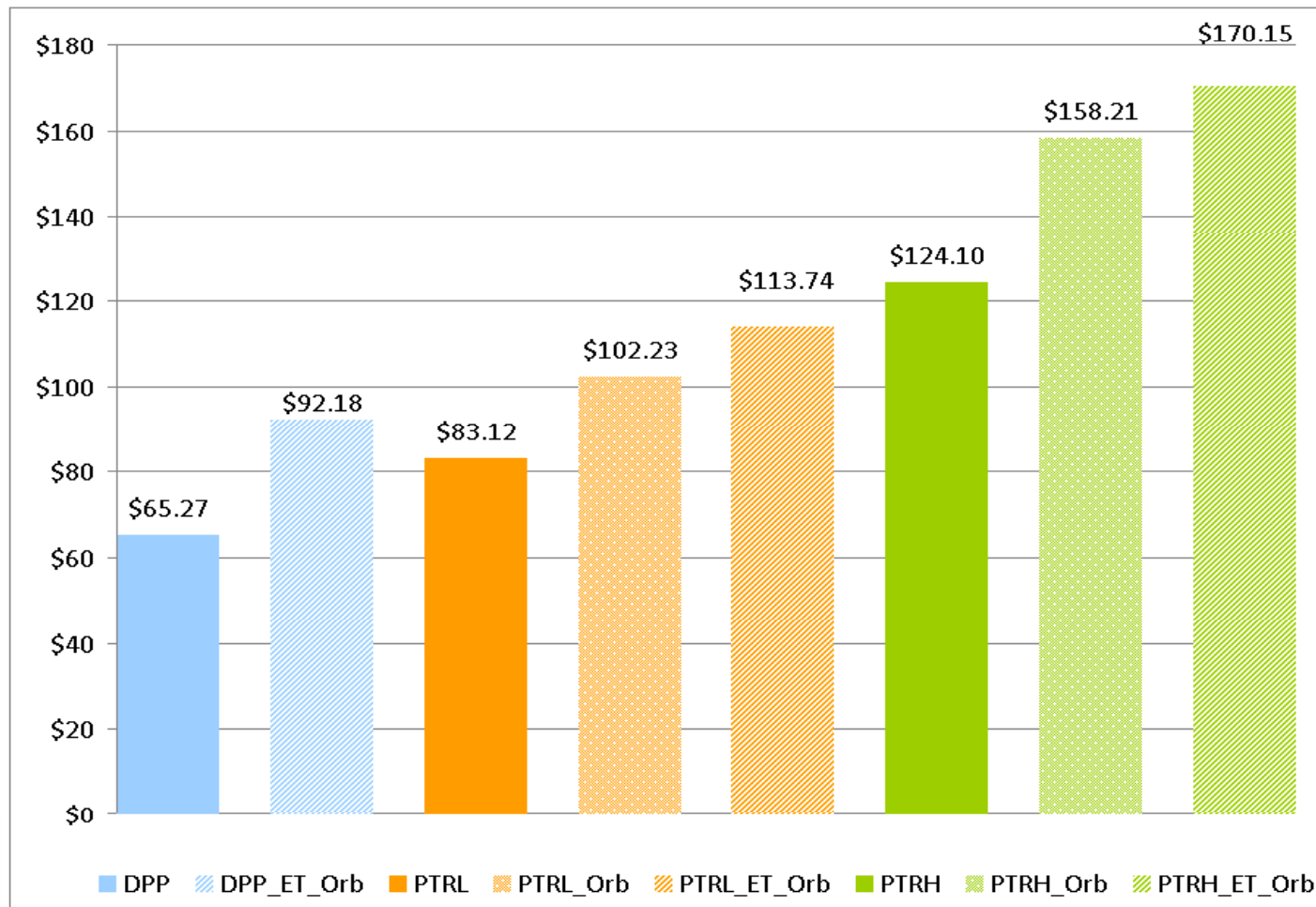
July 2008						
Sun						
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August 2008						
Sun						
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

September 2008						
Sun						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				



# Smart Energy Pricing - Summary of Bill Savings



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Smart Energy Pricing

# IMPACTS AND RESULTS

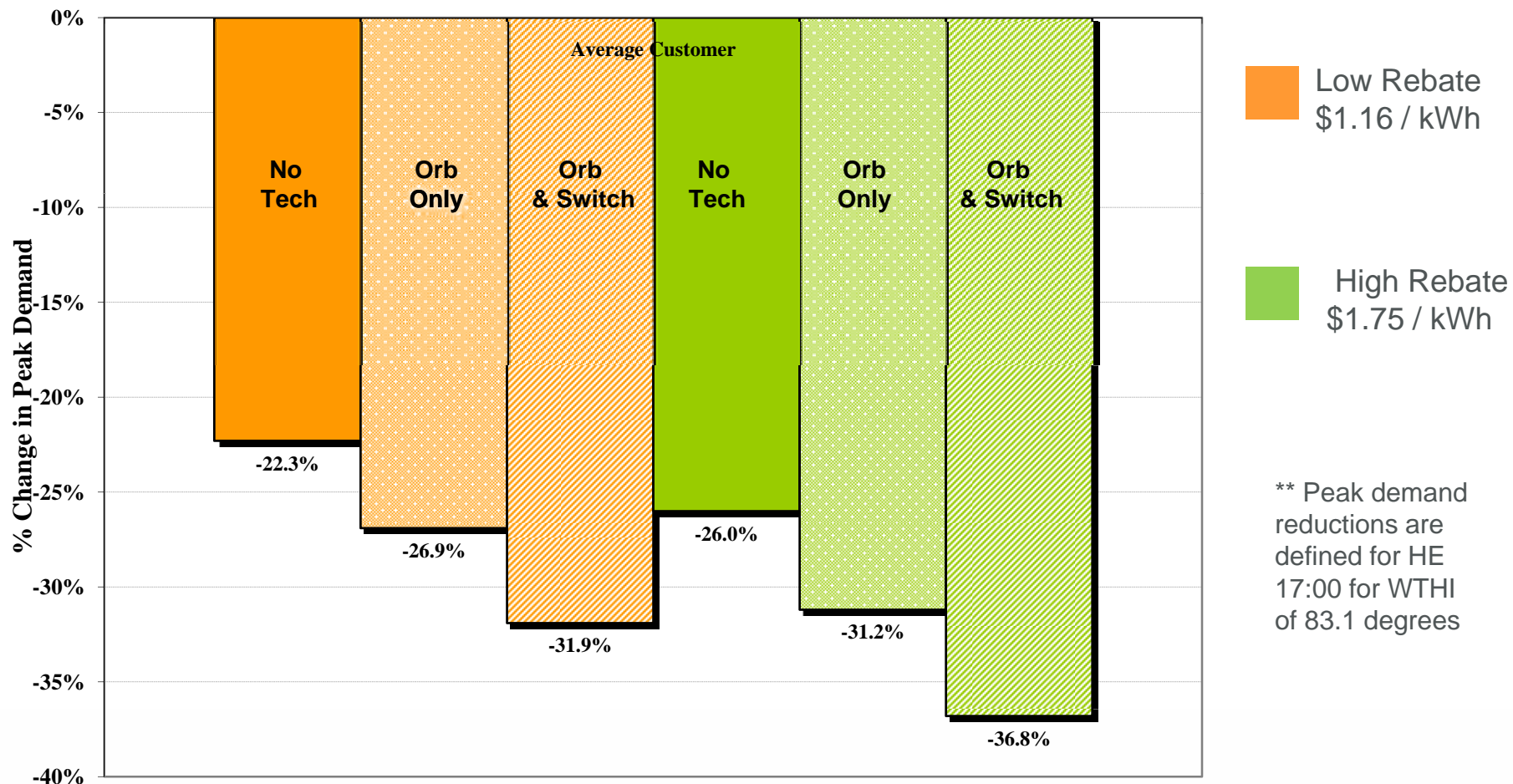
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## Summer 2008 Pilot

### *The Brattle Group* Load Impact Analysis

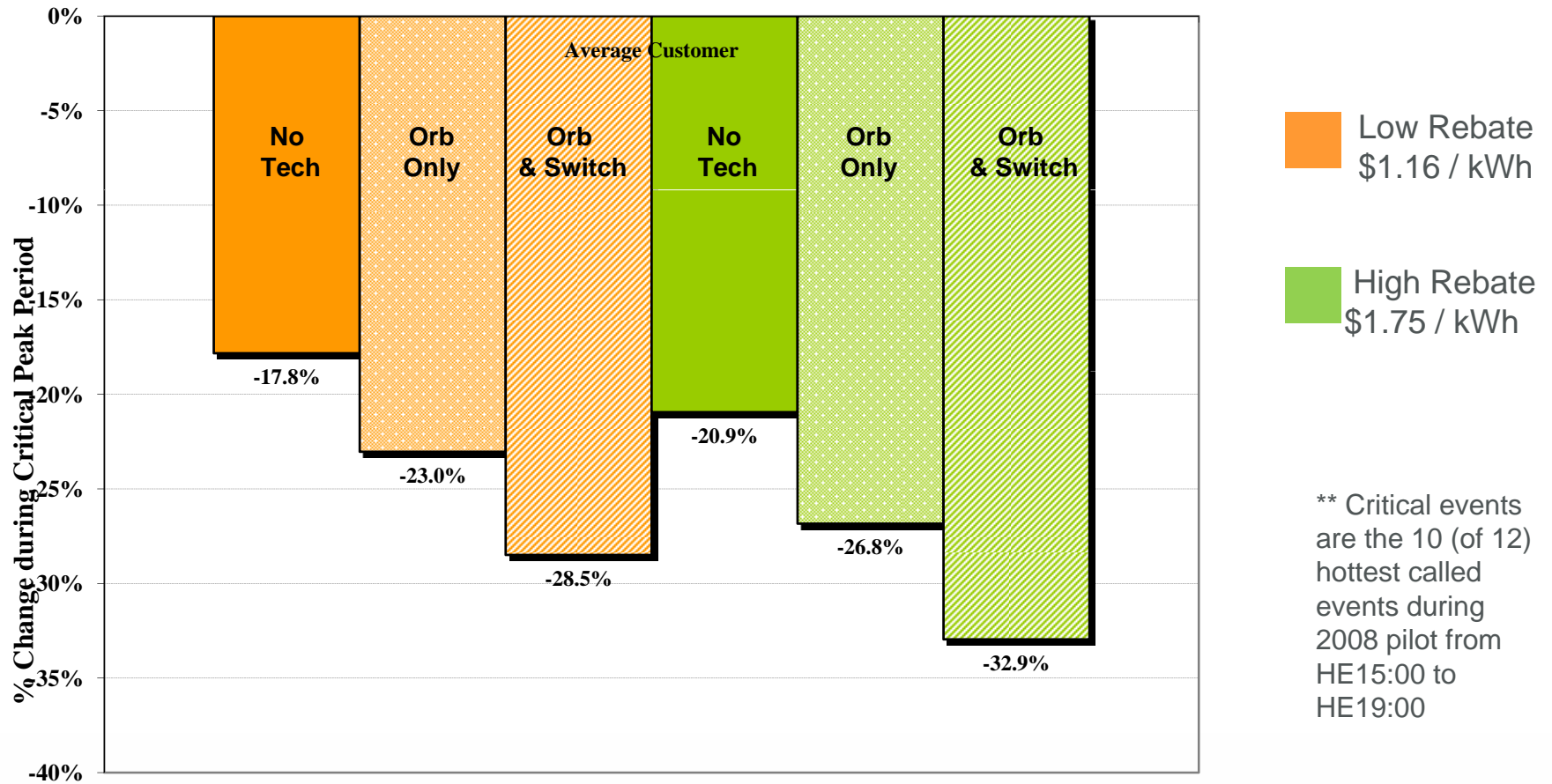
- *Brattle Group* final report delivered to BGE on April 13, 2009
- *The Brattle Group* simulated customer response to BGE's eight program types at the customer level
- Final Metrics included:
  - Peak demand reductions at PJM peak conditions
  - Percent change in peak and off-peak consumption on days when critical peak events were dispatched
  - Percent change in peak and off-peak consumption on days when critical peak events were not dispatched
  - Percent change in total monthly consumption

# Summer 2008 Pilot Peak Time Rebate - Peak Demand Reductions \*\*

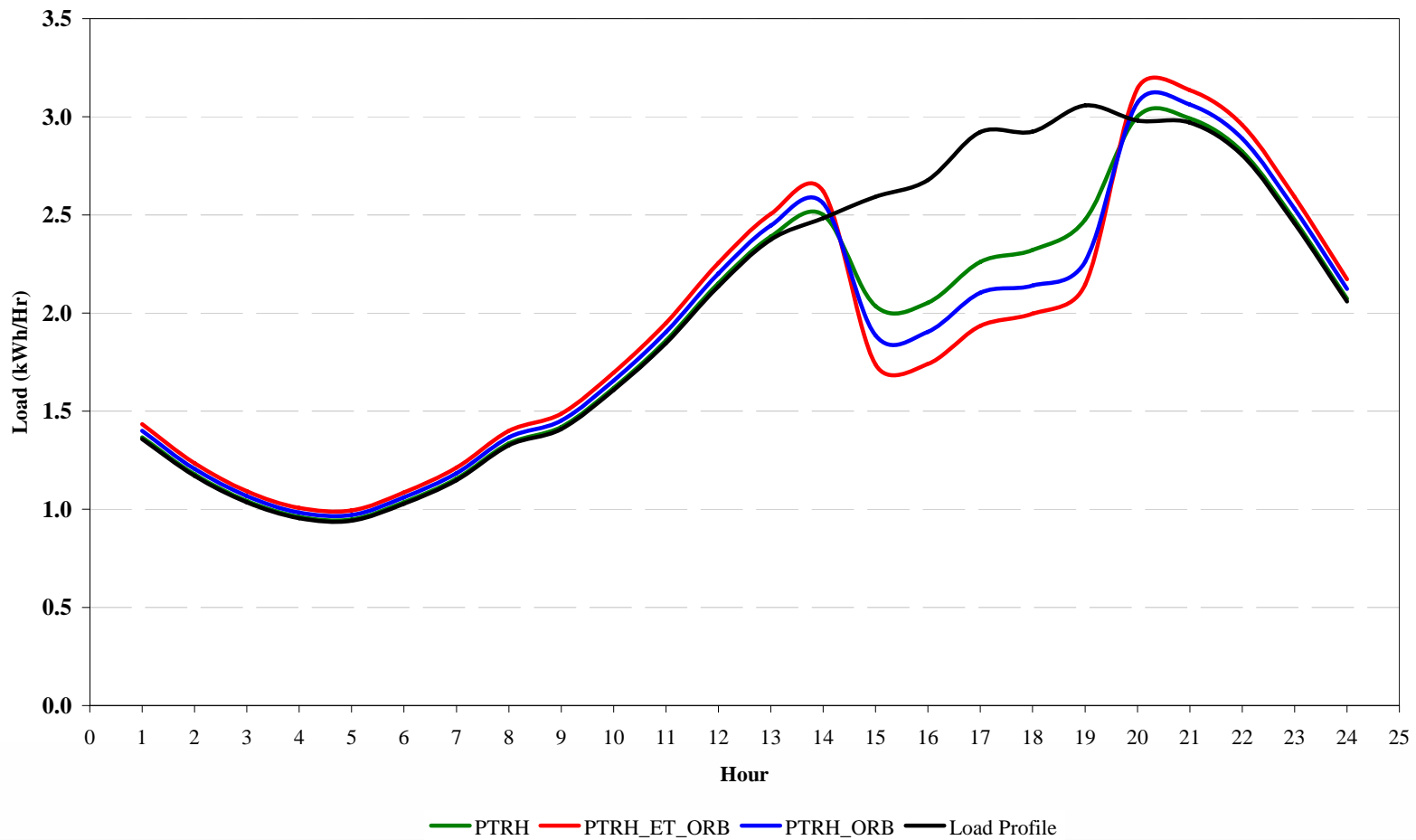


\*\* Peak demand reductions are defined for HE 17:00 for WTHI of 83.1 degrees

# Summer 2008 Pilot Average Energy Savings over Critical Events \*\*

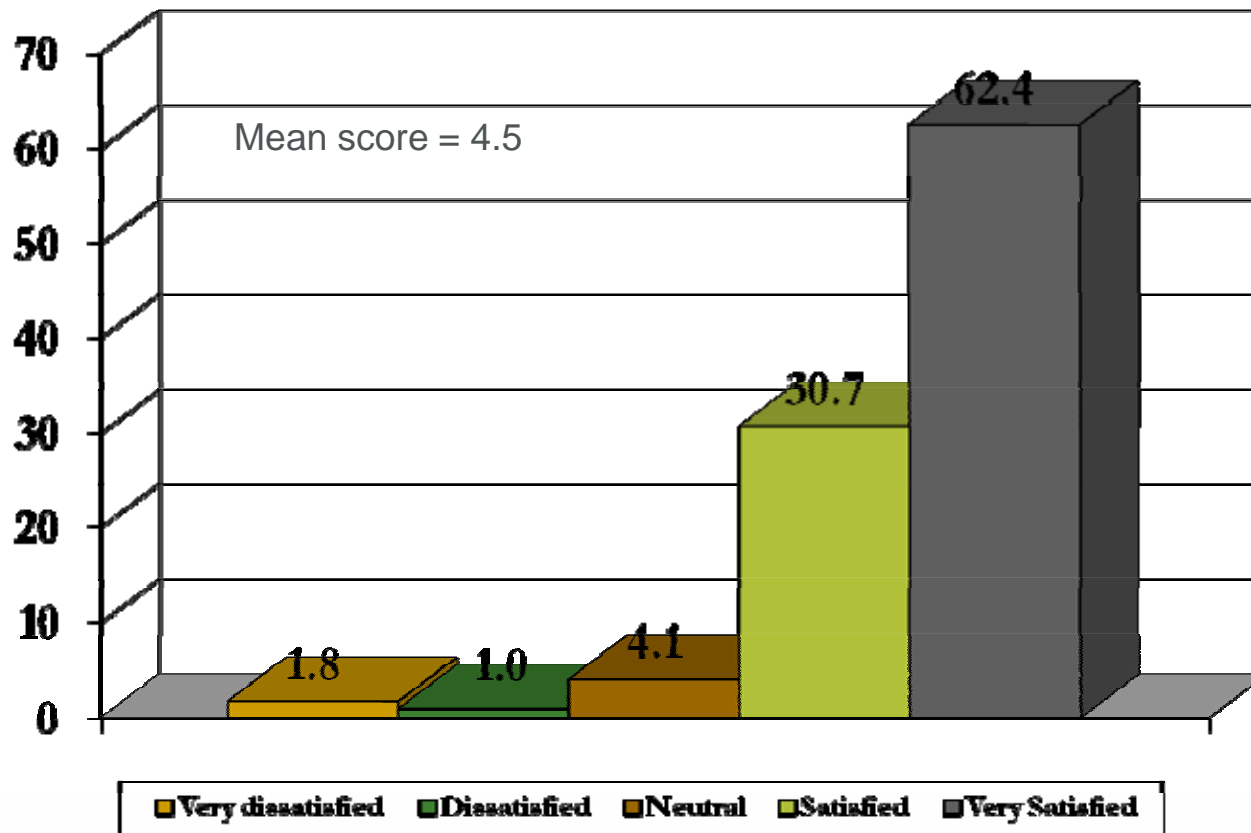


# Summer 2008 Pilot Actual Load Shapes for Participants and Control Group on July 17, 2008 Critical Peak Event



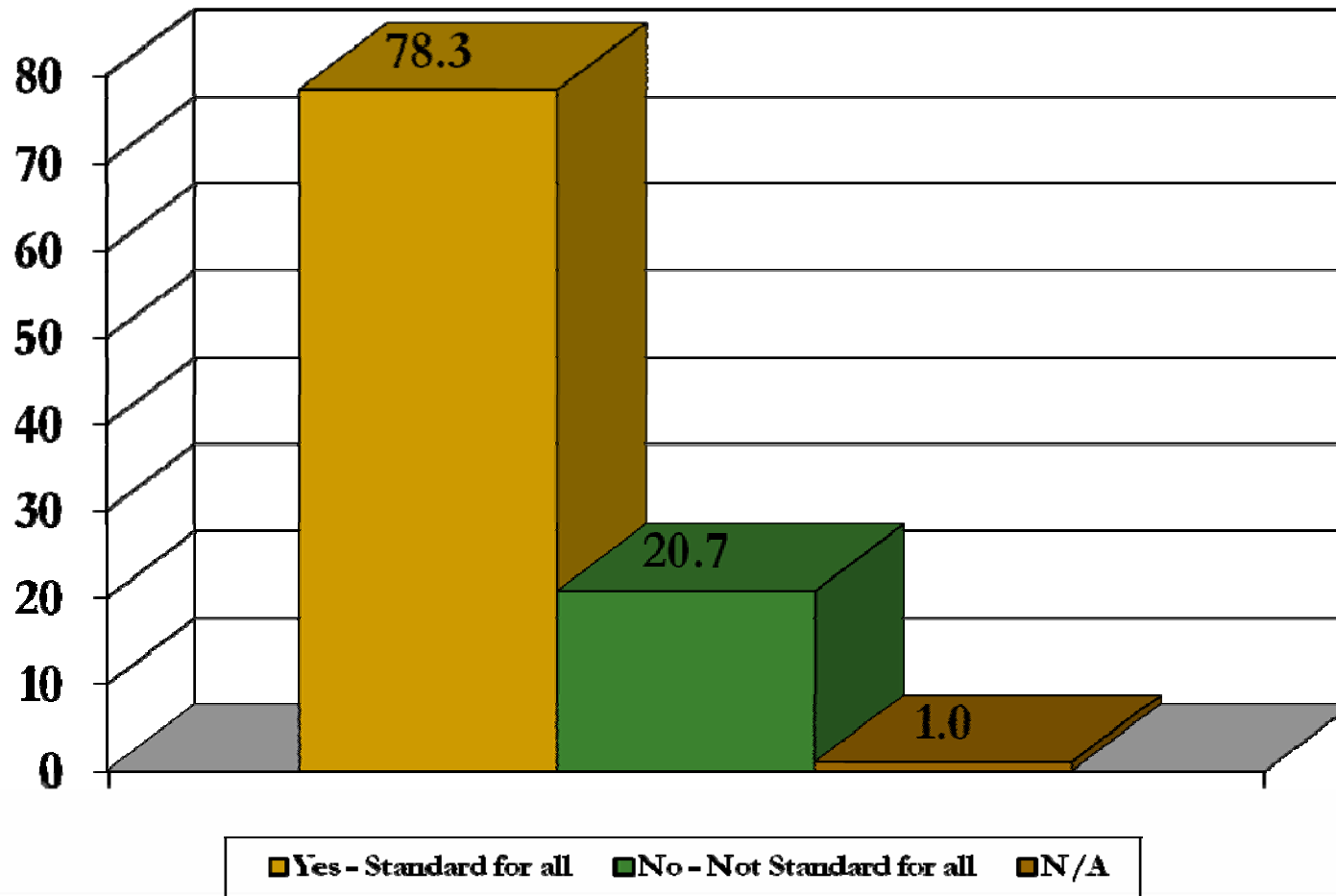
# SEP Customer Survey (782 out of 1000 respondents)

“Rate your overall experience...”



# SEP – Customer Survey

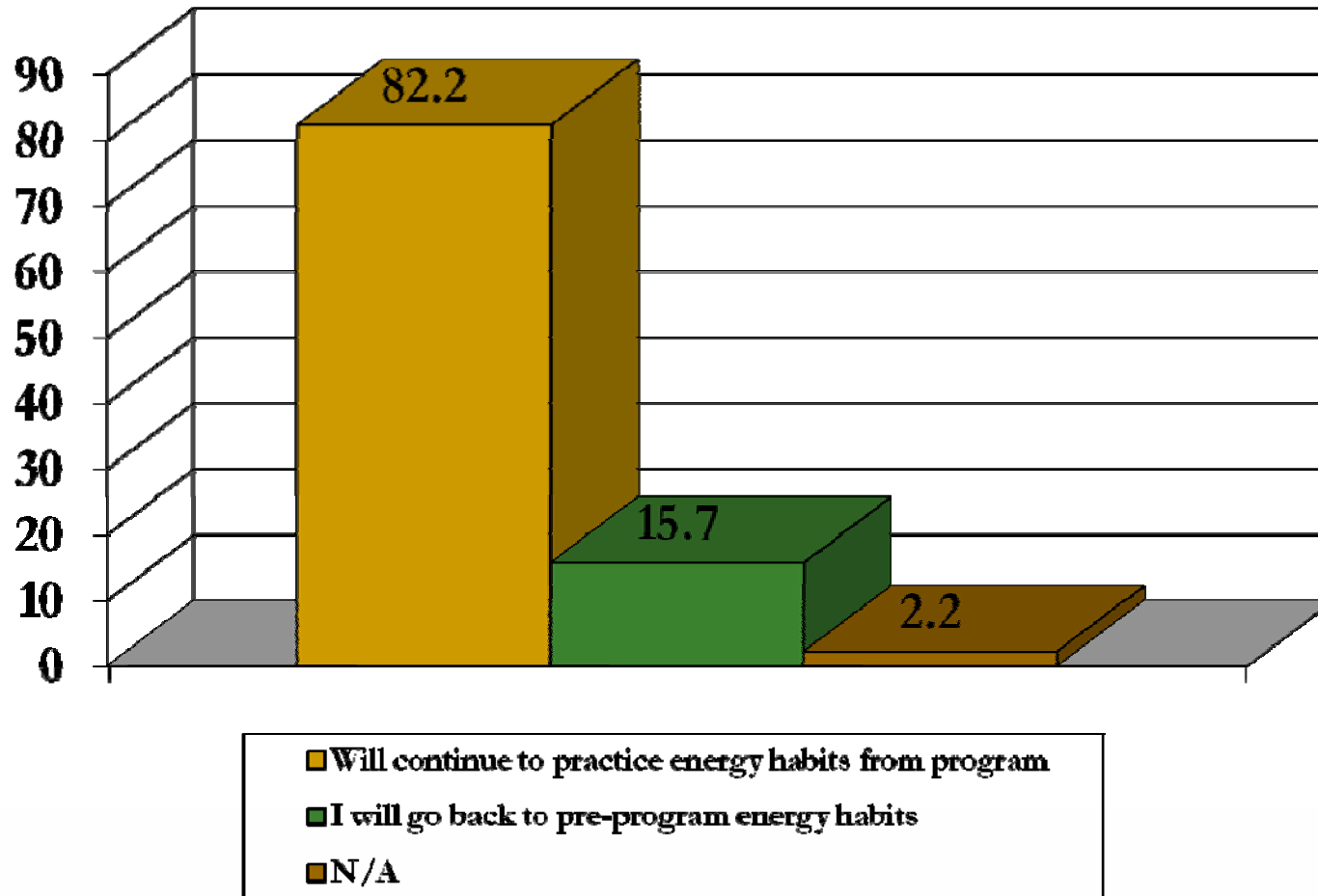
“Should variable rates be default for all customers?”





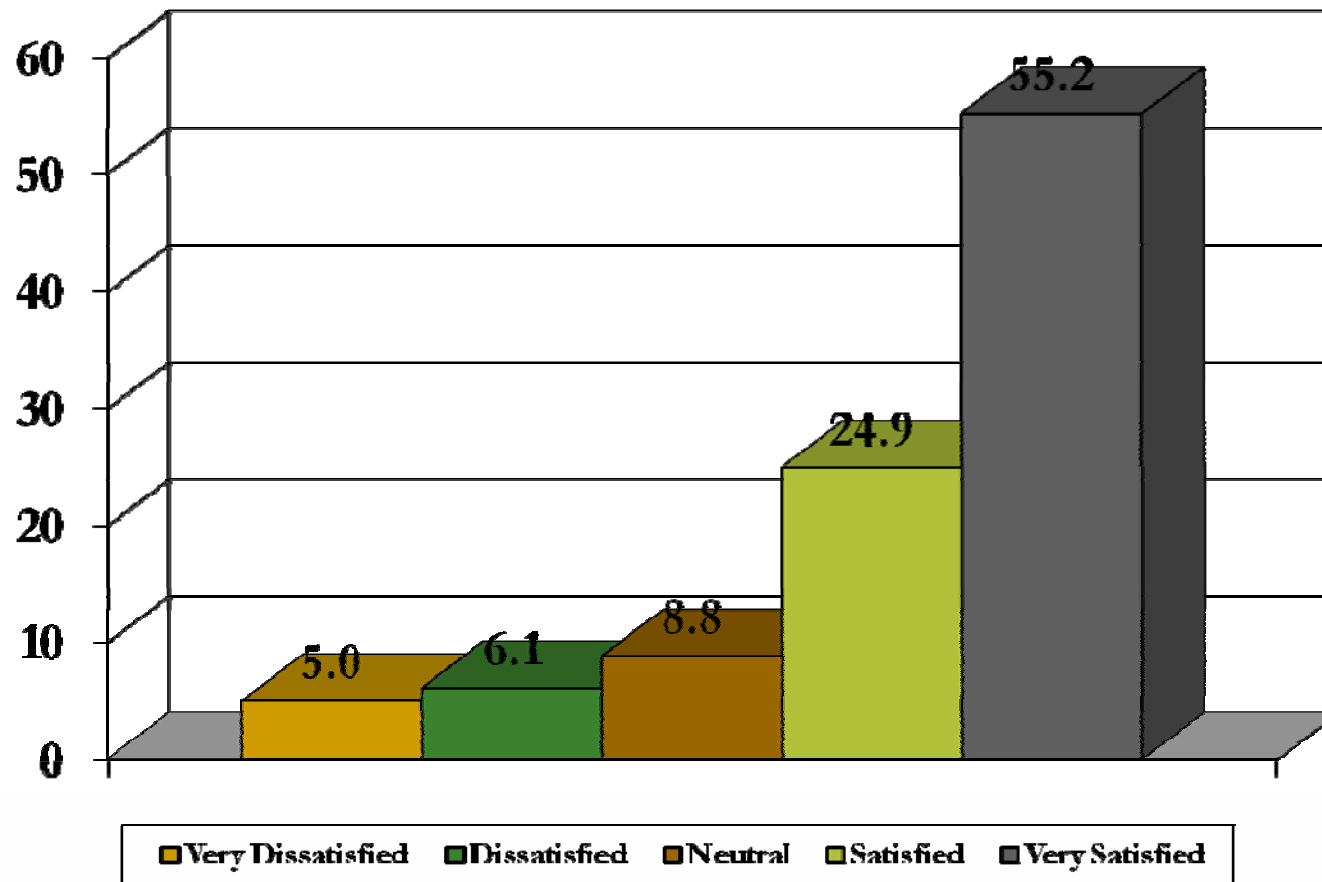
# SEP – Customer Survey

“Will you change your behavior..?”



# SEP – Customer Survey

“Rate your satisfaction with Customer Support Team”



# Summer 2009 Pilot

## Second Season to Supplement 2008 Pilot Data

- Testing Peak Time Rebate only
  - Further prove impact sustainability
  - Gain understanding of impacts during extreme weather temperatures
  - Test small commercial customers
  - Increase conservation awareness
- Testing Home Area Networking (HAN) Technologies
  - In Home Display (IHD) to show customers real time usage
  - Smart devices and appliances that communicate with utility and provide cost of usage to customer
  - 2-way communication direct load control devices

# Questions?

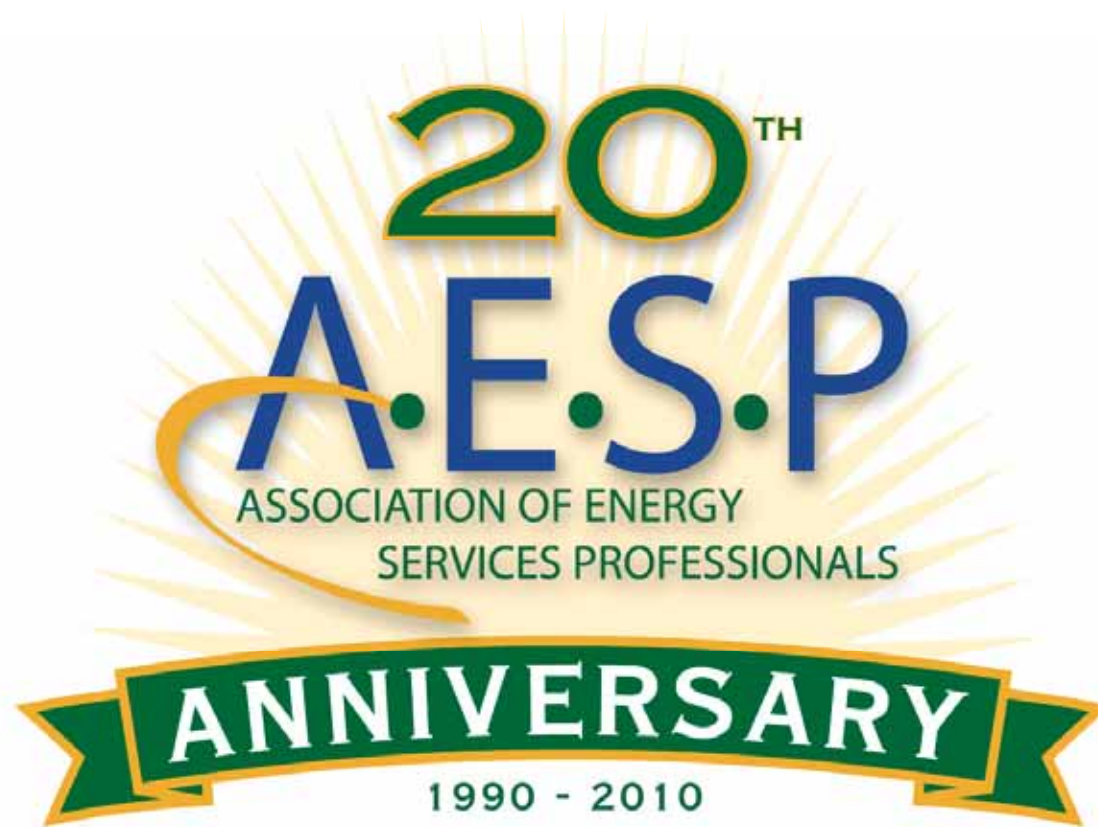
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