BGE Smart Energy Pricing:
"Customers are making it work"

Institute for Regulatory Policy Studies Conference
April 29,2010
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BGE
We're on it.℠

Agenda

- BGE Smart Grid Background
- Smart Energy Pricing
- Pilot Results
- Conclusions and Questions

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SMART GRID BACKGROUND

Smart Grid History for BGE

- 2006 – Concerns raised over electric demand outstripping supply in eastern and southeastern MACC (PJM). MD importing 40% of electricity consumed from outside the state. Nearing transmission import capability limit.
- Jan ‘07 – BGE files Smart Energy Savers Program, including aggressive residential DRI program, new energy efficiency programs and new Smart Grid program.
- Mar ‘08 – MD legislature passes EmpowerMD legislation seeking 15% reduction in both electric use per customer and in peak demand by 2015 vs. a 2007 baseline. Utilities tasked with achieving 67% of use/customer goal and 100% of peak reduction goal.
- Summer ‘08 – BGE conducts both an AMI meter pilot (5,300 customers) with two vendors and a Smart Energy Pricing Pilot (SEP) with over 1,300 customers
- Summer ‘09 – Second year of residential SEP pilot; commercial SEP pilot started; In-home display evaluation
- July ‘09 – BGE files for approval of full roll-out of Smart Grid initiative and new SEP rate schedule
- Aug ‘09 – BGE files for DOE Smart Grid stimulus grant
- Oct ‘09 - BGE receives $200M ARRA grant for Smart Grid roll-out
- Nov ’09 – MD PSC Hearings on BGE’s Smart Grid proposal
- April ’10 – BGE signs DOE SGIG grant

Still awaiting Maryland PSC Ruling

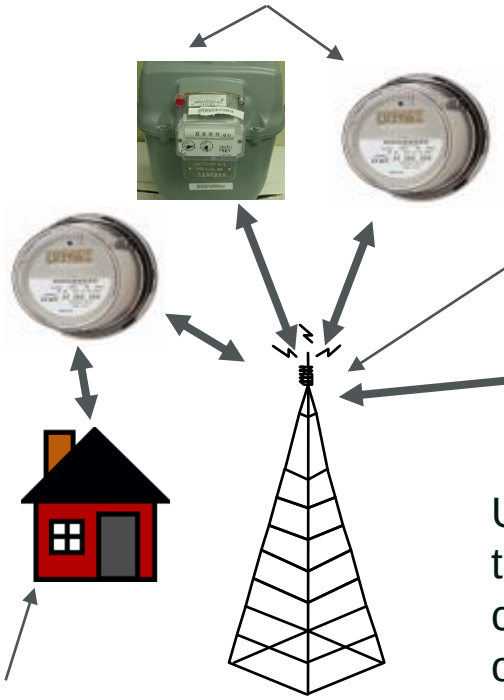
Smart Grid – Advanced Meter Infrastructure (AMI)

The Smart Grid Initiative is a 5-Year, $500M+ project that will . . .

Install 2.1M gas and electric advanced meters and modules

Install a Meter Data Management System to store the new meter data

Install radio based field devices to collect meter data



Utilize radio based technology to communicate between field collection devices and the back office (backhaul & head end)

Enable home area networks

Install a Customer Web Portal

Meter Data Mgmt System

Web Portal

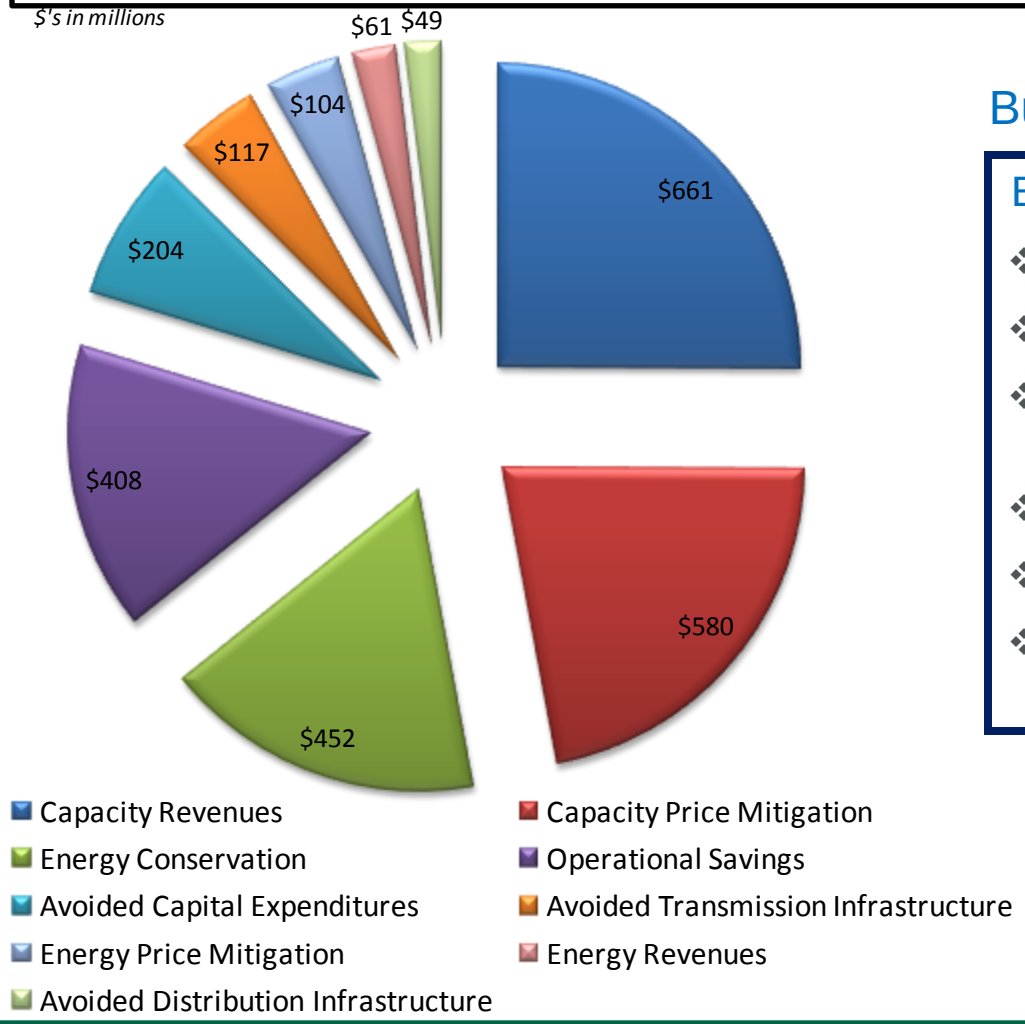
Utilize the data in numerous IT systems to enable a wide variety of customer and BGE benefits

- CC&B
- OMS
- TLM
- Synergee
- Retail Office
- Supplier Portal
- PI Historian

Enable **Smart Energy Pricing** programs

Customer Savings are the Greatest Benefit of Smart Grid

Life-cycle savings projected to exceed $2.6 billion – several times greater than project costs



Business Case Designed Conservatively

Benefits excluded from the business case:

- Potential conservation savings in excess of 1%
- Value of reduced carbon emissions
- Efficiency gains via voltage optimization, reduction in line losses of power delivery
- Benefits from PeakRewards℠ optimization
- Reduced Theft of Energy costs
- Additionally, demand reductions were conservatively projected at 30% less than pilot

Many of the savings categories apply equally to participating and non-participating customers

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SMART ENERGY PRICING

Focus Groups were the First Step

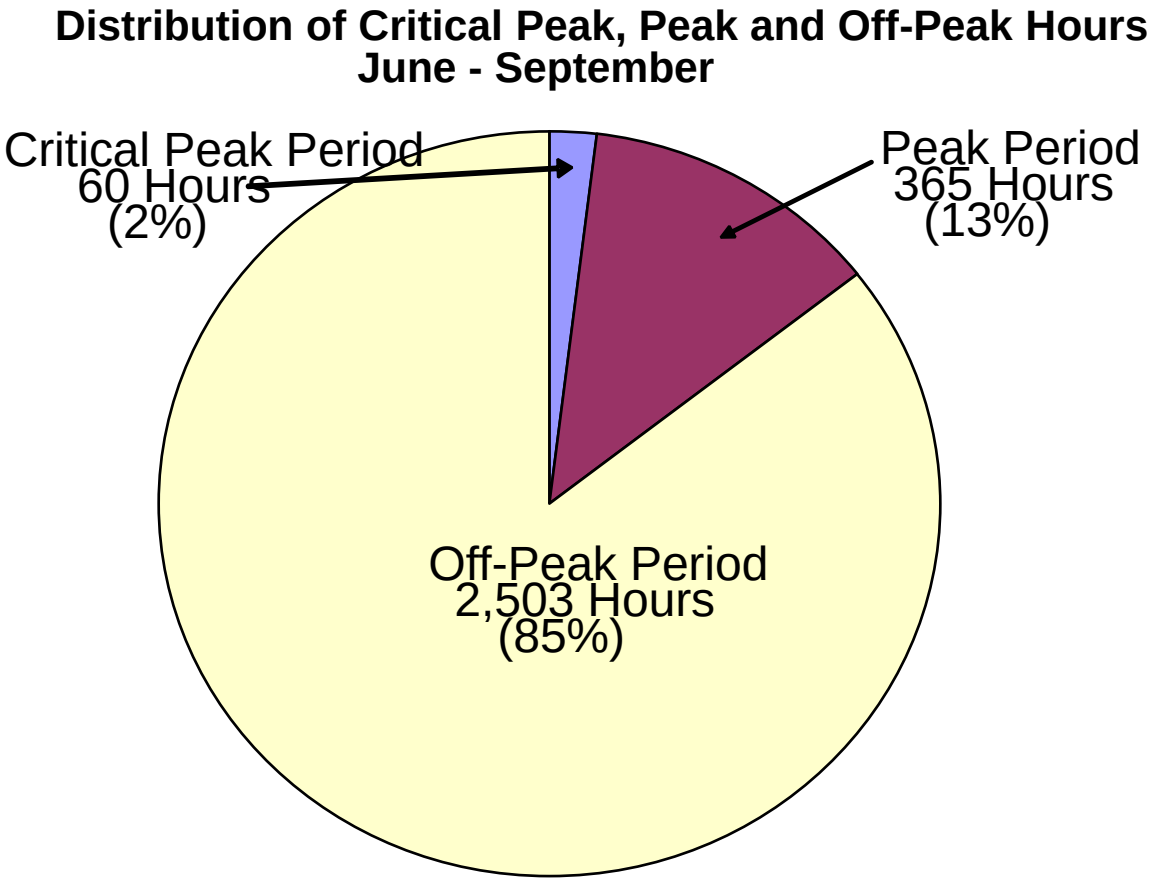
In 2007 BGE conducted focus groups with different segments of customers:

- Low-income Customers
- Educated Customers
- Energy Conscious Customers

Findings were essential to development of pilot program.

- Customers wanted to save only if savings were substantial, or “enough to buy to lunch.”
- More customer education was essential: “What’s a kilowatt?”
- Customers had to be notified of critical peak events well in advance in order to “plan and tell my children to not turn the lights on.”
- Some customers were wary of BGE, and thought they were being ripped off – “what's the catch?”

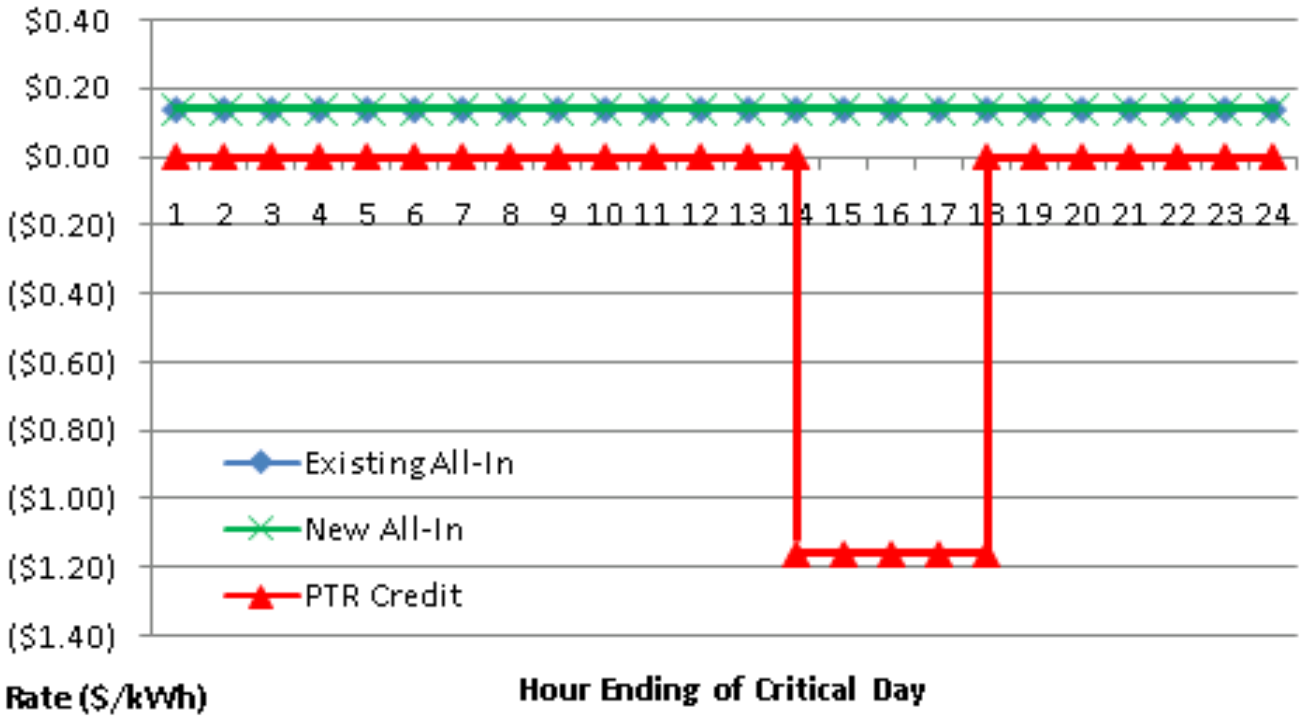
Distribution of Summer Hours for Price Signals



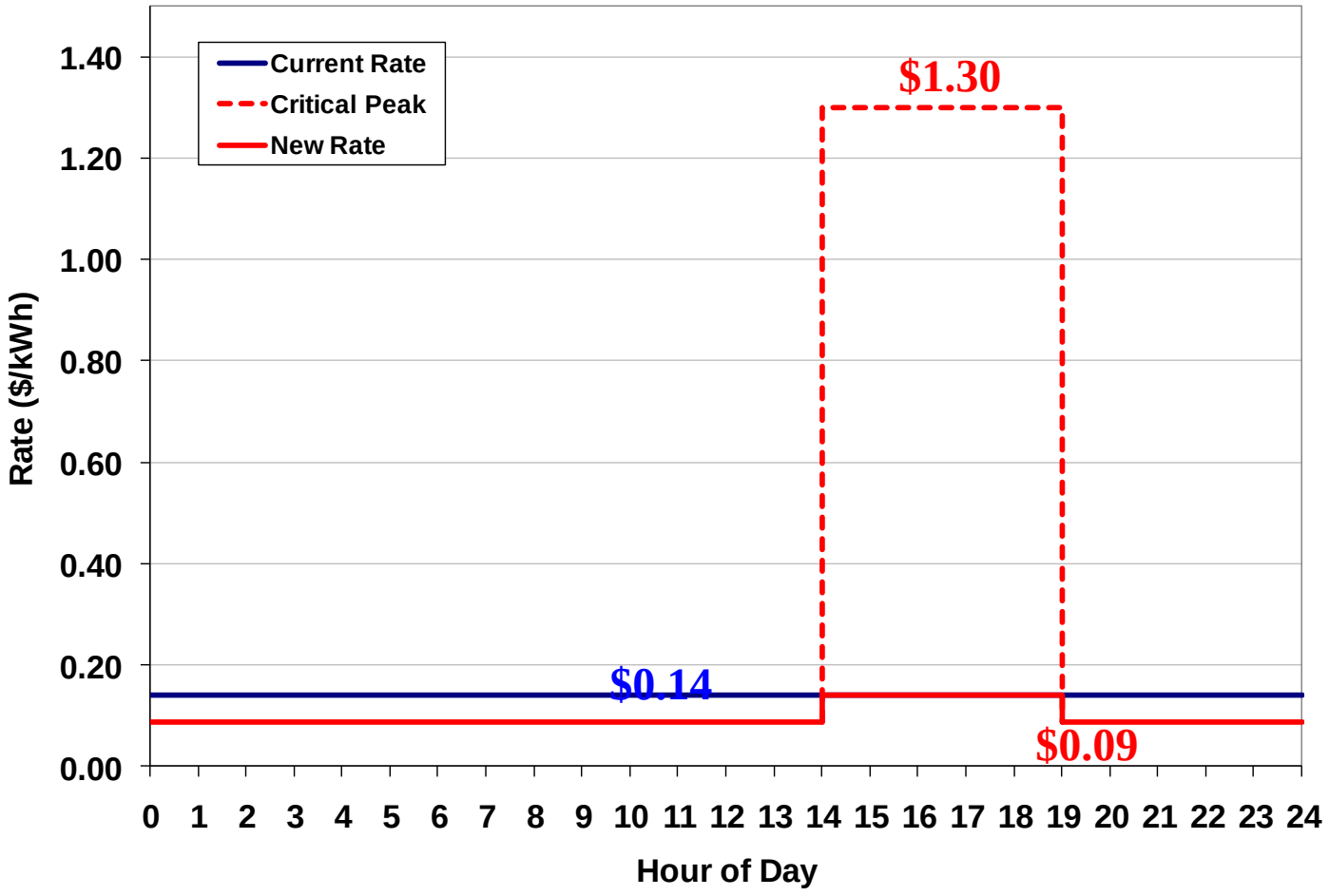
Peak Time Rebate - Overview

A Mirror Image of the DPP Rate

- Schedule R summer rates were ~$0.14 / kWh for all summer hours
- Rebate offered on up to 12 critical peak days (2-7PM)



Dynamic Peak Pricing: Weekdays (excluding Holidays)



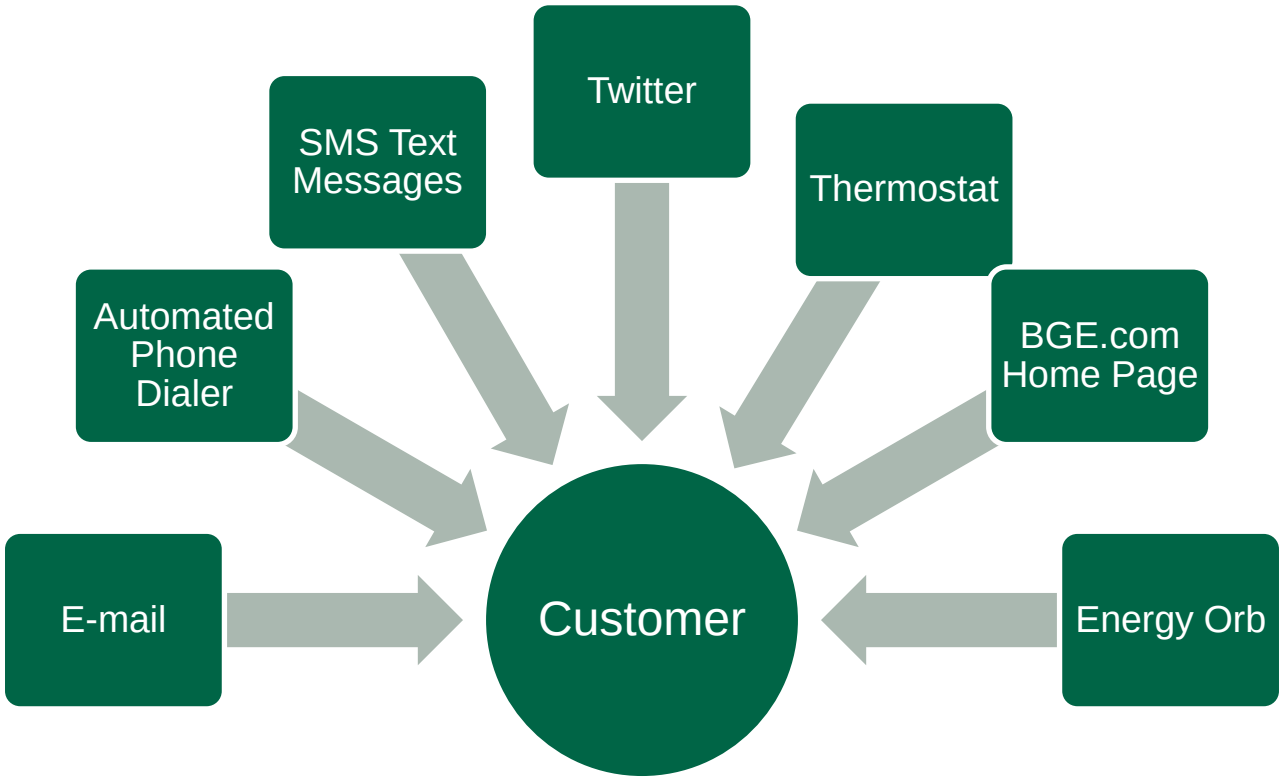
Pilot Pricing
All – in Rate*

Critical
$1.30425
Peak
$0.14425
Off-Peak
$0.09425

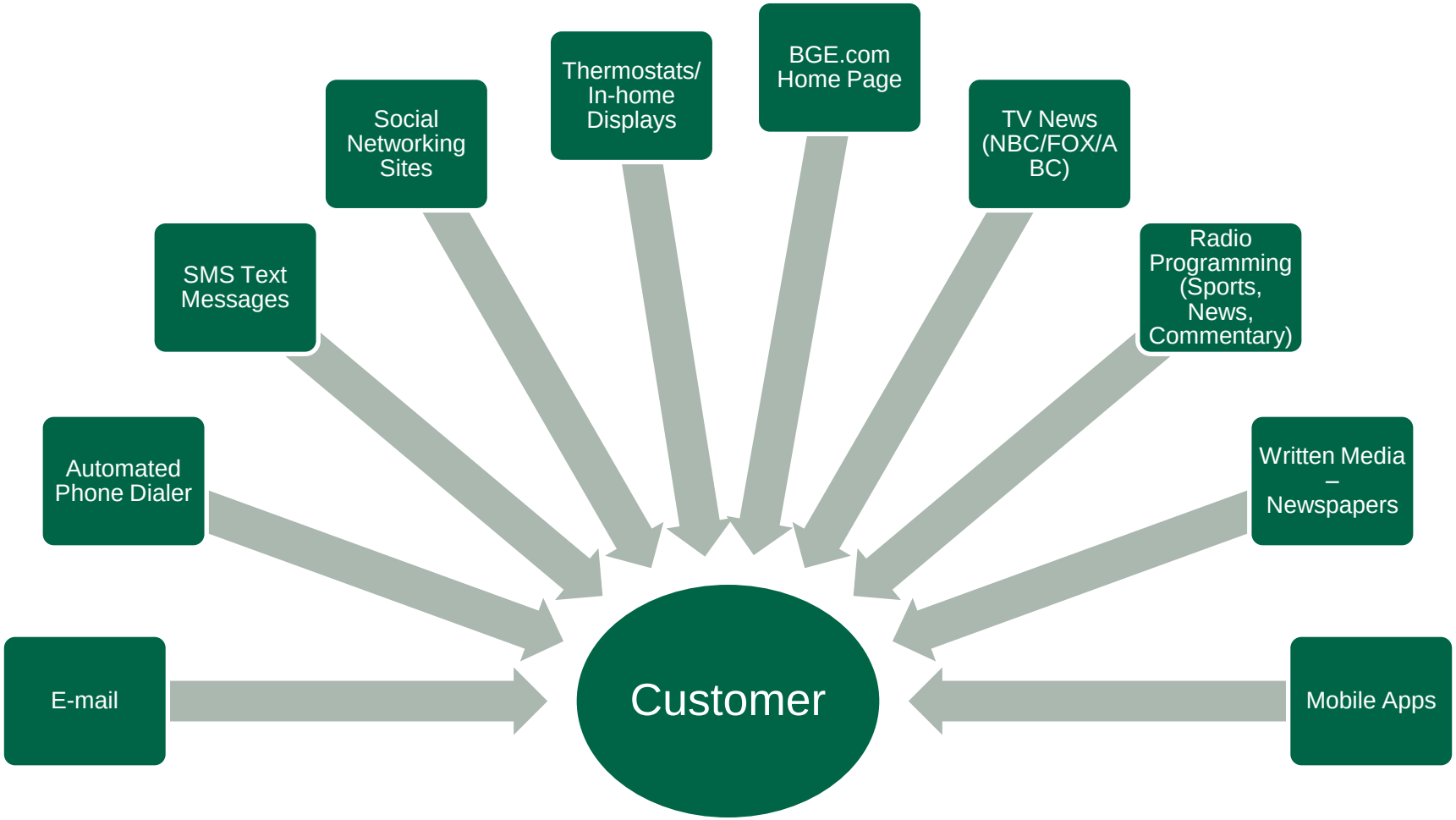
*** Includes generation, transmission and delivery**

Critical Event Notifications During Pilots

Notifications occurred the day before starting at 6PM



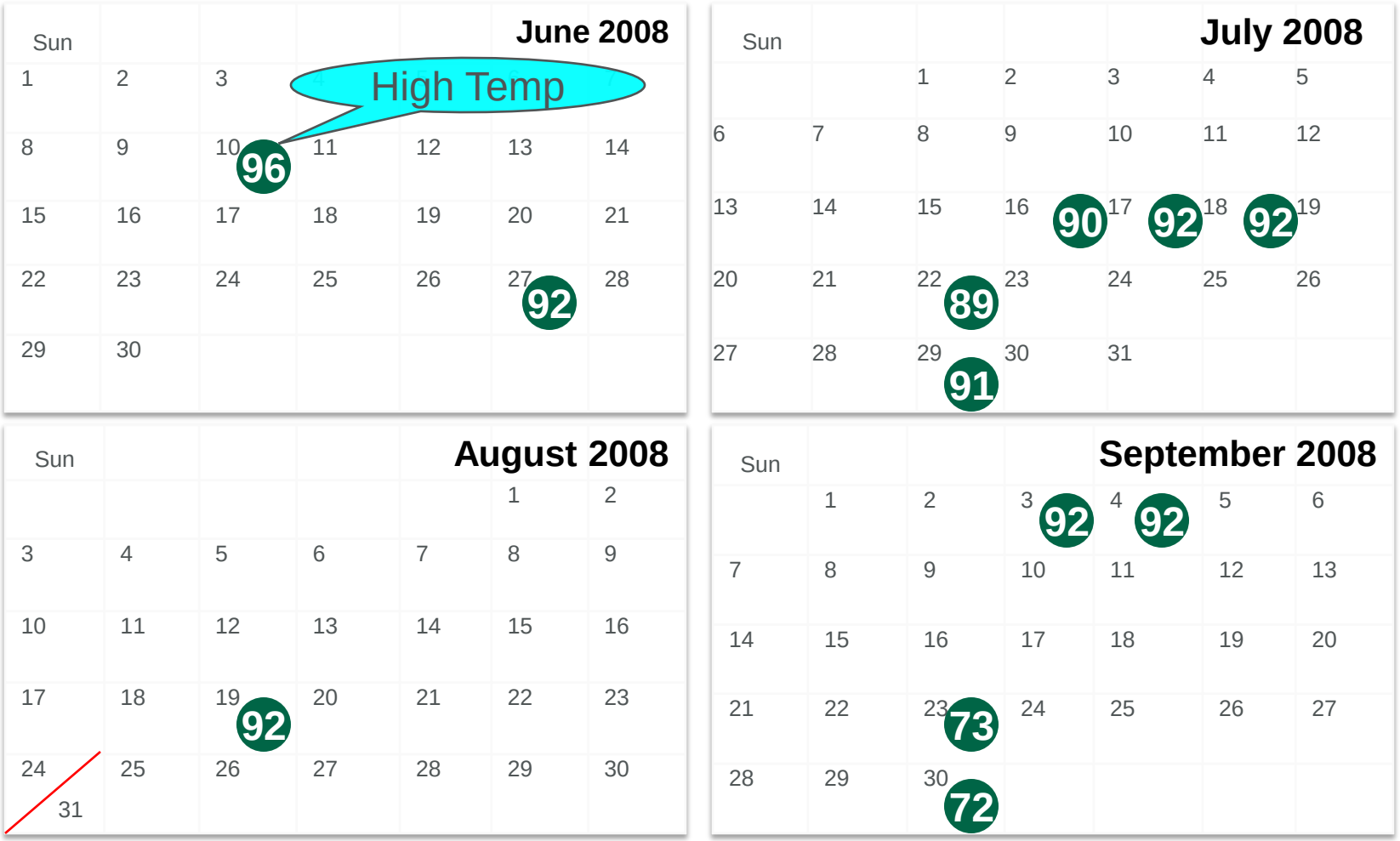
Critical Event Notifications – Future State



Smart Energy Pricing (2008) Pilot Design

Group	Total	PTR $1.16 Rebate	PTR $1.75 Rebate	Dynamic 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
Total	1300	375	375	250	300

Smart Energy Pricing 2008 Critical Events



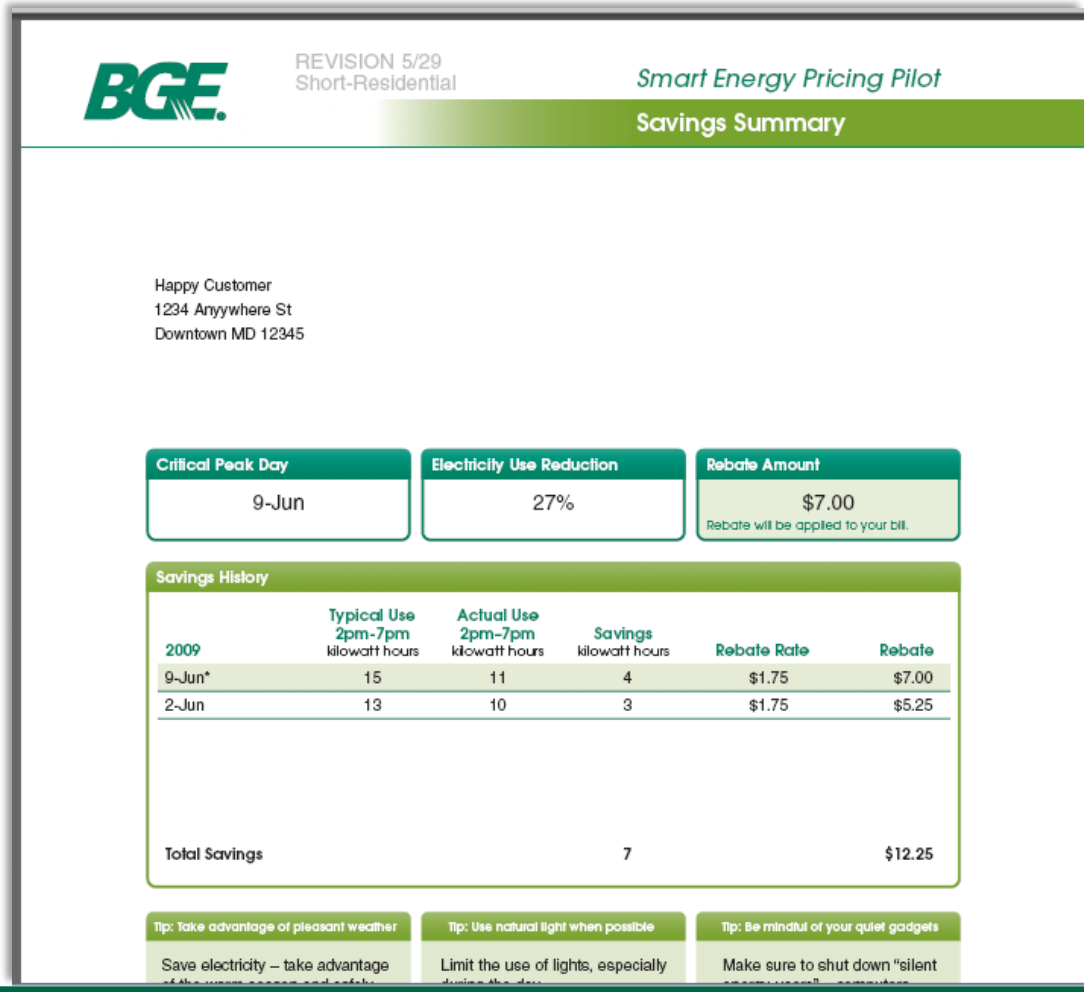
Critical Event Savings Reports

-Customers who saved a lot took notice, and continued to perform on future events.

- Customers who did not save, needed to be made aware of the opportunity cost.

- *Future Idea: add localized comparisons of savings ("The average savings of customers like you was $12 on the last event)*

- Push this report to customers at first, and let them realize the value



BGE

REVISION 5/29
Short-Residential

Smart Energy Pricing Pilot

Savings Summary

Happy Customer
1234 Anyywhere St
Downtown MD 12345

Critical Peak Day	Electricity Use Reduction	Rebate Amount
9-Jun	27%	$7.00 Rebate will be applied to your bill.

Savings History

2009	Typical Use 2pm-7pm kilowatt hours	Actual Use 2pm-7pm kilowatt hours	Savings kilowatt hours	Rebate Rate	Rebate
9-Jun*	15	11	4	$1.75	$7.00
2-Jun	13	10	3	$1.75	$5.25
Total Savings			7		$12.25

Tip: Take advantage of pleasant weather	Tip: Use natural light when possible	Tip: Be mindful of your quiet gadgets
Save electricity – take advantage	Limit the use of lights, especially	Make sure to shut down "silent

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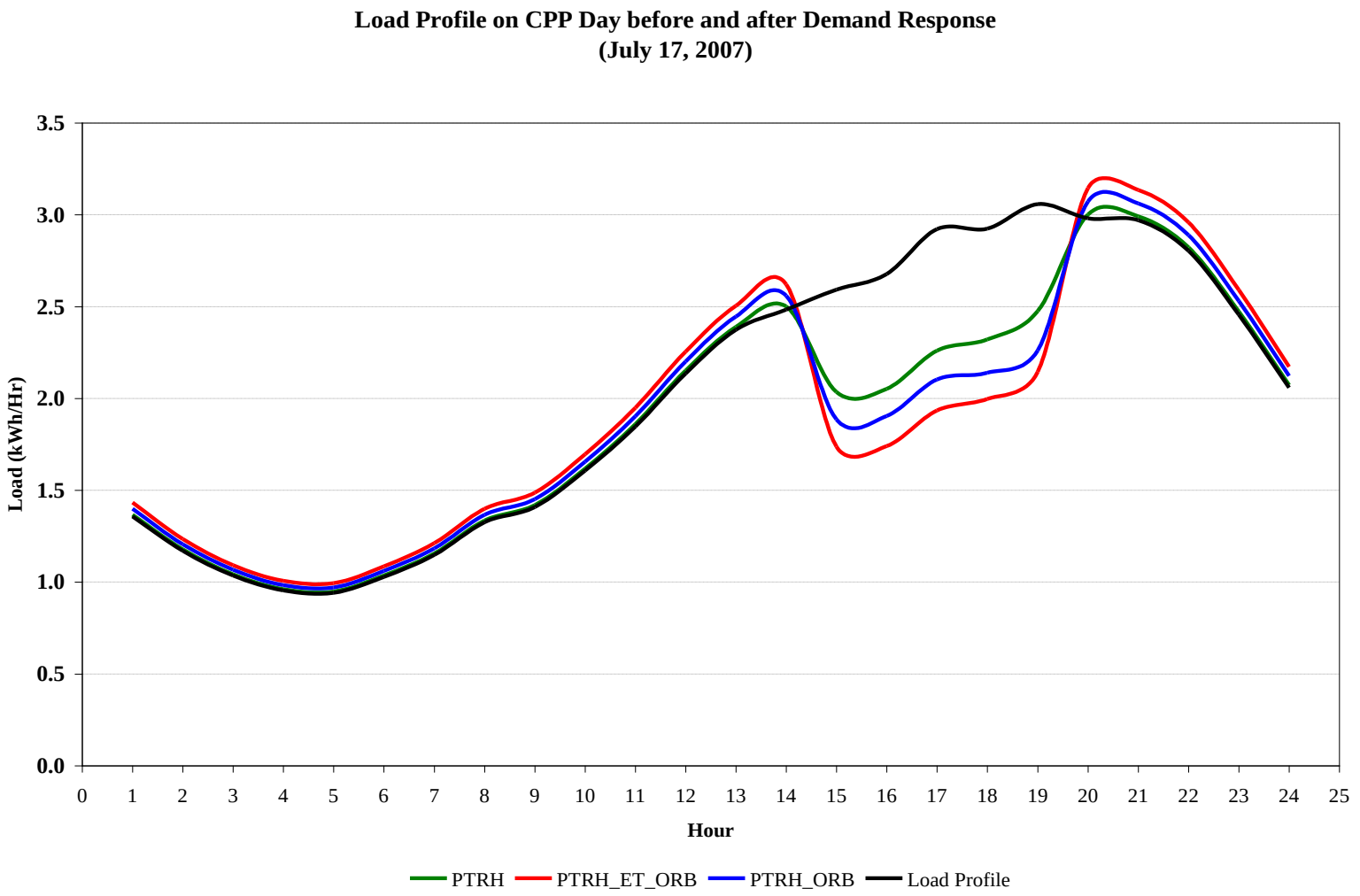
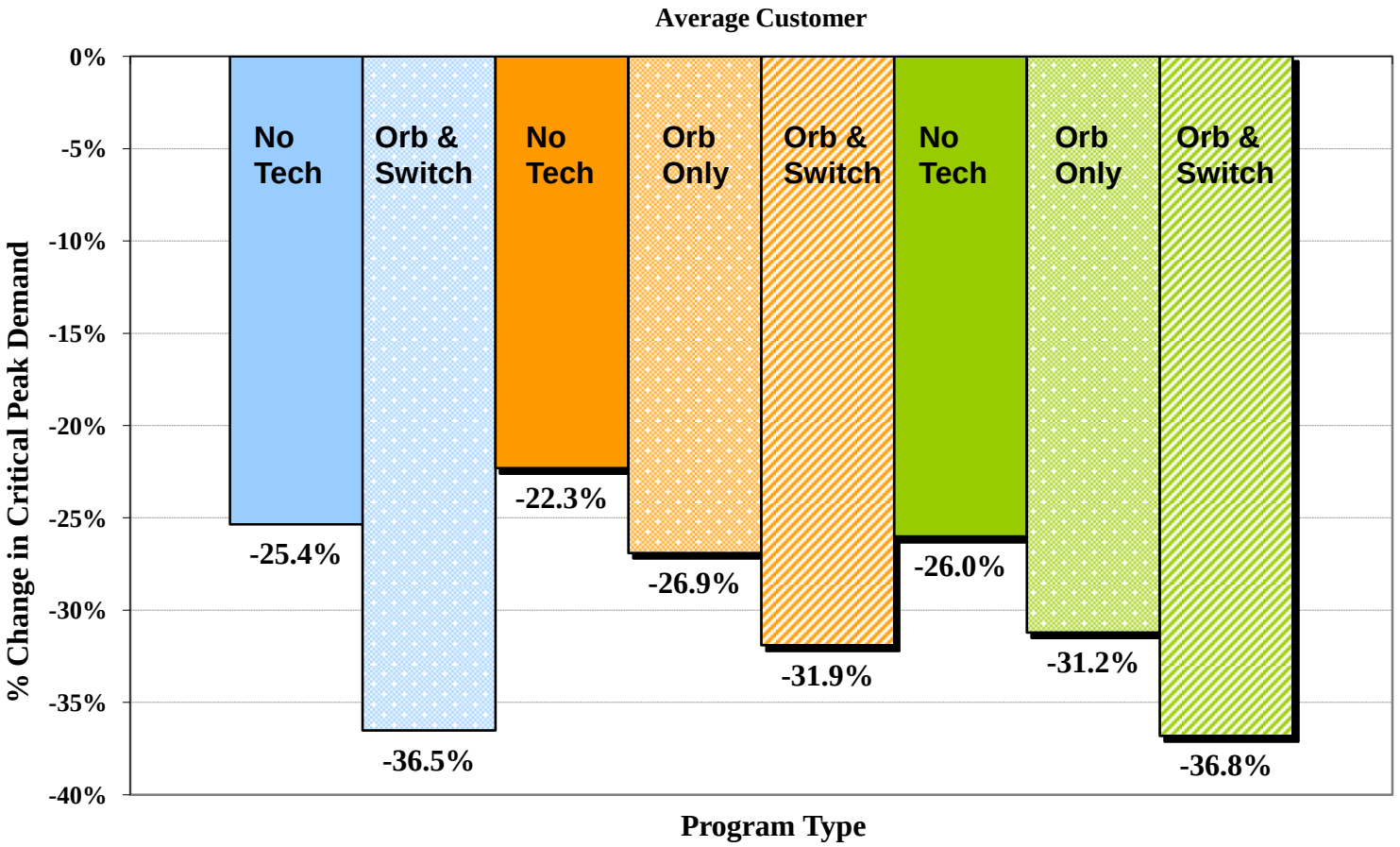
PILOT RESULTS

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



Summer 2008 Pilot- Peak Demand Reductions*



DPP Tariff

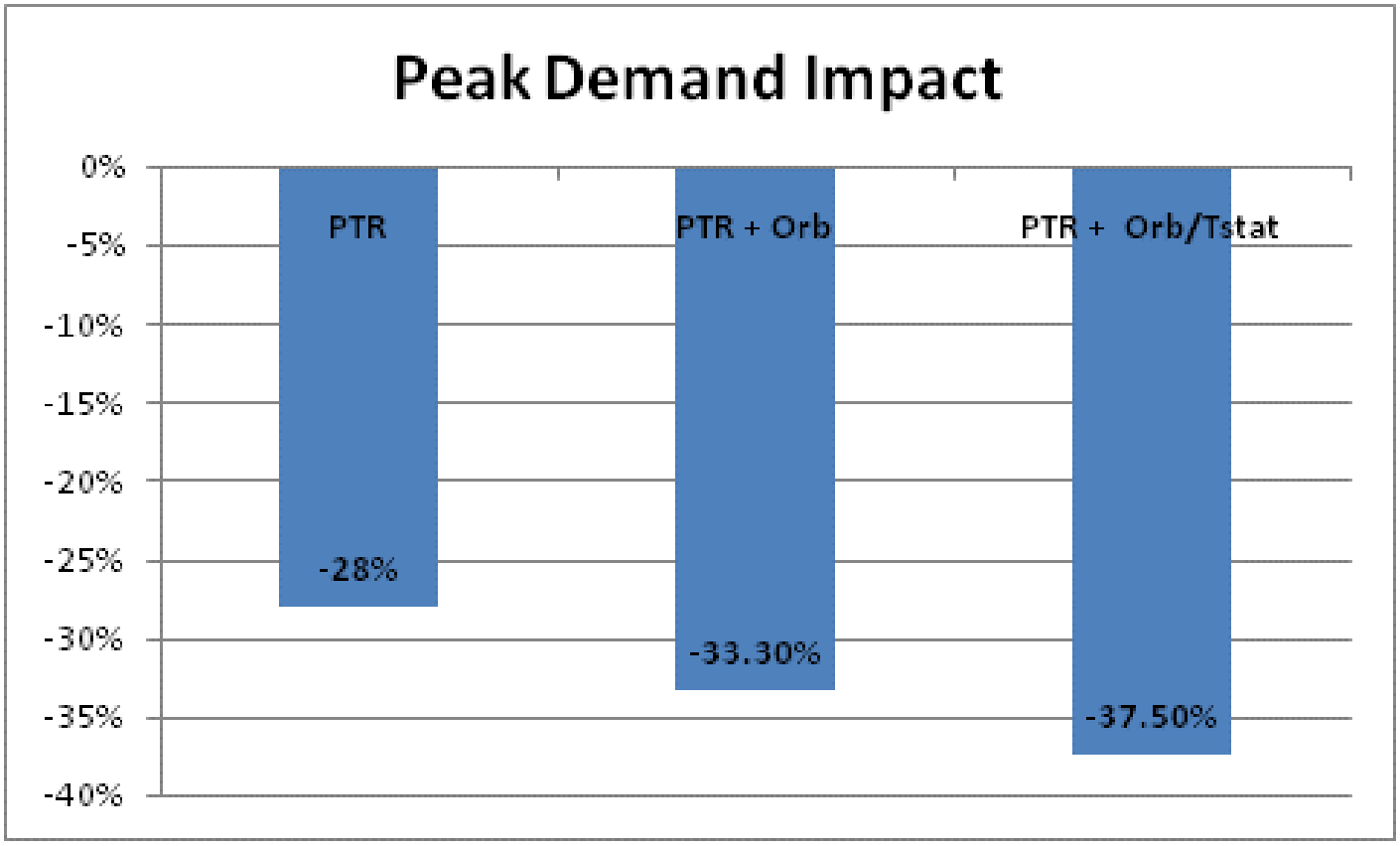
Low Rebate $1.16 / kWh

High Rebate $1.75 / kWh

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

SEP 2009 Pilot - Peak Demand Reductions

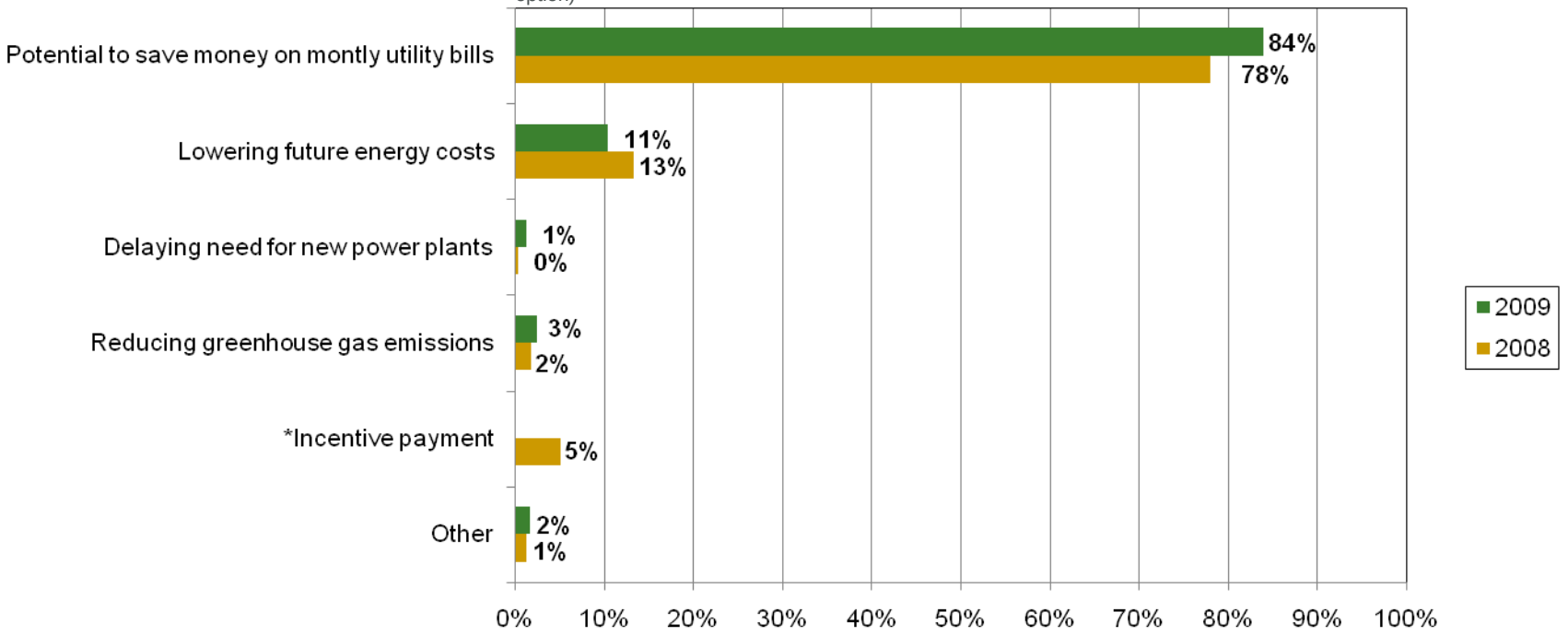
- Demand impacts for residential PTR ($1.50/kWh) in 2009 pilot range from 28%-38%
- Overall results show persistency and increase in impacts from 2008



Program Participation and Satisfaction

The *potential to save money on monthly utility bills* was the primary motivation behind customers' participation in the Smart Energy Pricing Pilot.

Q 1. What was the most important reason for your participation in the 2009 Smart Energy Pricing Pilot? (Select one option)

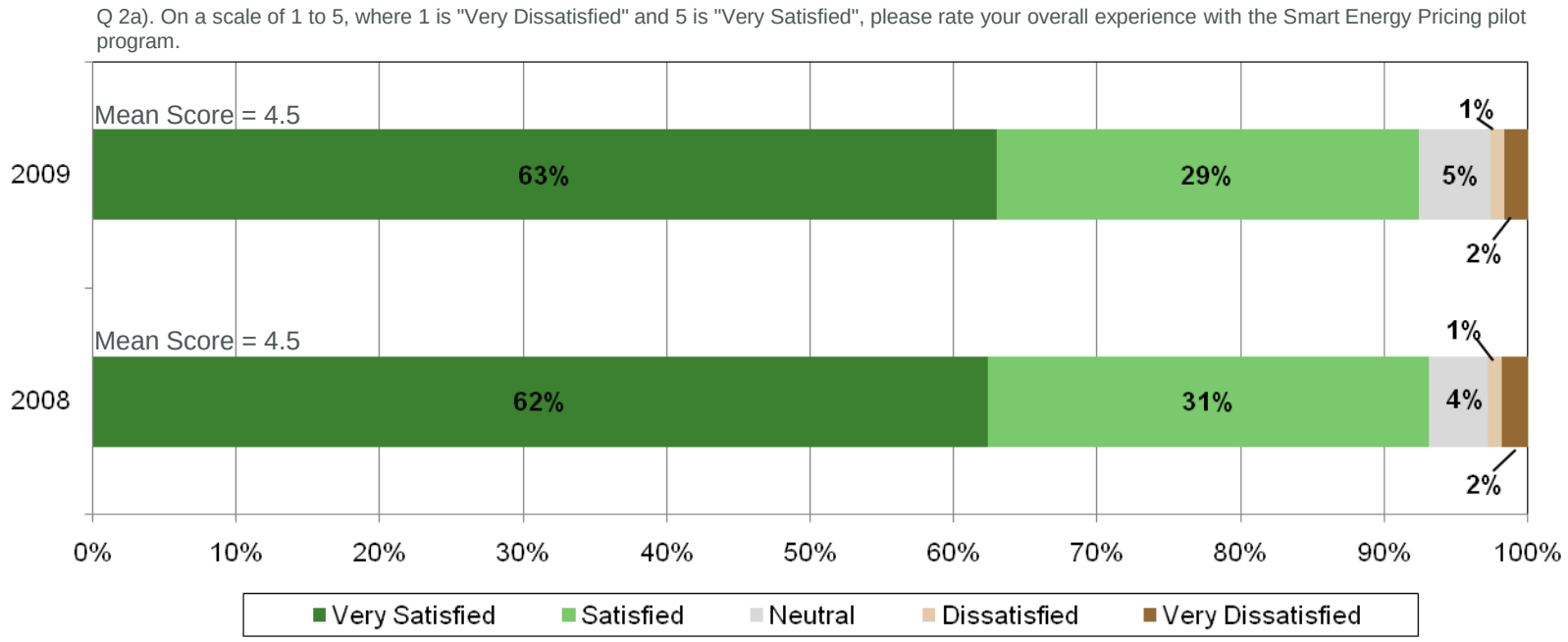


* Response option not provided in 2009 survey.

Program Participation and Satisfaction (cont)

Satisfaction with the SEP Pilot Program remained consistently high, with two thirds of the participants claiming to be ‘Very Satisfied’ with the pilot program, and nine out of ten participants stating they are at least ‘Satisfied’.

The mean score was a 4.5 out of a 5 point scale during both summers.

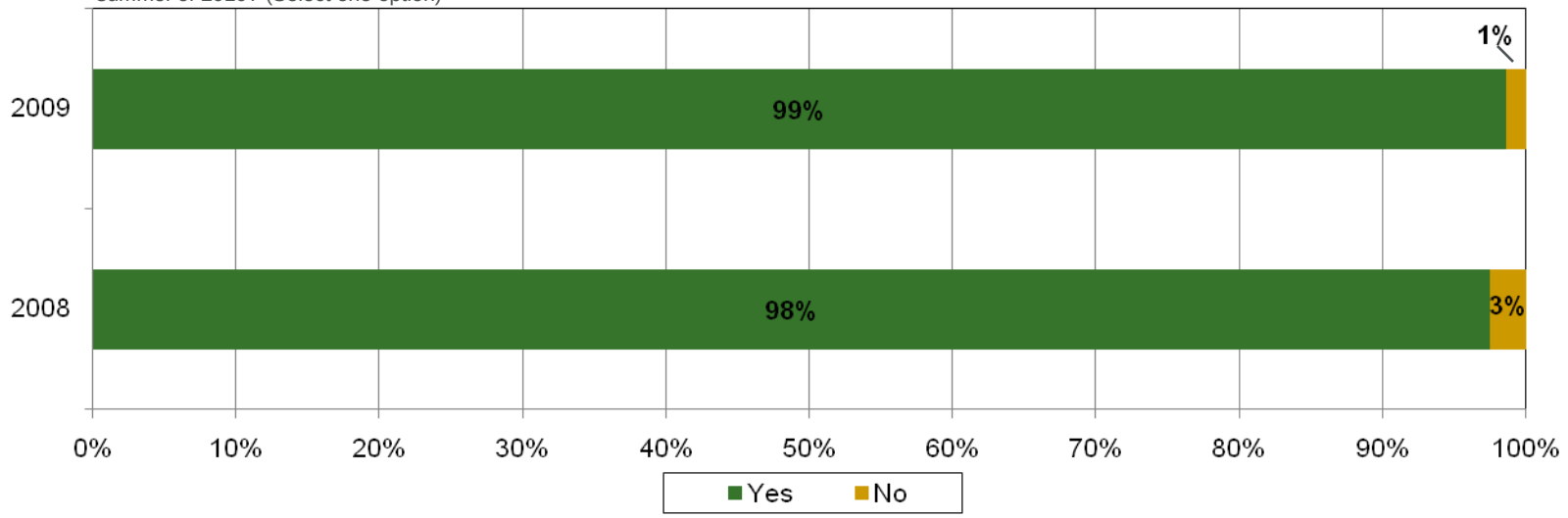


Program Participation and Satisfaction (cont)

Participants in each year's SEP Pilot Program – 99% in 2009 and 98% in 2008 – were overwhelmingly interested in returning to a similar pricing structure the following summer.

Further, 93% of 2009 study participants believe the opportunity to earn rebates for reducing energy usage during Critical Peak periods should be standard for all BGE customers . Similarly, 80% of 2008 study participants believe a variable rate program should be standard for all BGE customers who reduce energy use during critical times.

Q 4. The Smart Energy Pricing Pilot program has ended and all participants who received special rebate credit opportunities have returned to the normal billing structure. Would you be interested in returning to similar billing program structure as you experienced during the 2009 summer pilot program for the summer of 2010? (Select one option)



* Questions were asked too dissimilarly for direct comparisons to be made.

Conclusions

DOES PRICE RESPONSIVE DEMAND WORK?

Yes, but only if implemented properly:

- Simple program at the expense of imperfect rate design is OK
- Customer education must be a top priority
- PUSH timely feedback and information to customers – they will realize the value and start PULLING it on their own.

SMART ENERGY PRICING: “Customers are making it work!”

QUESTIONS?