

The Smart Energy Pricing Evolution at BGE

for The 2011 National Town Meeting on Demand Response and Smart Grid



Wayne Harbaugh
VP – Pricing & Regulatory Services
July 14, 2011

Key Challenges and Opportunities for BGE

- Emergence of plug-in electric vehicles
- Significant investments needed in new and replacement infrastructure
- Tougher environmental regulations
- EmpowerMD goals: 15% electricity reduction by 2015
- Growing levels of intermittent, renewable energy. MD RPS Goal of 20% renewable by 2022
- Emergence of *Smart Appliances* that *shift* energy usage from one period to another

Smart Grid Addresses each of These...



Smart Grid: A Transformational Initiative Supported by a DOE \$200 Million Grant

New technologies enable energy efficiency and cost savings.

Dynamic Pricing is part of the Smart Grid business case!



Renewable Energy & Dist. Gen.

- Solar
- Wind
- Micro-Turbines



Electric Vehicles Smart Charging

- PHEV
- EV
- V2G



Energy Storage

- Batteries
- Fly Wheels
- Ice



AMI & Smart Energy Pricing

- Rebates earned for reducing peak demand
- Improved price signals and energy conservation



Demand Response

- Smart Thermostats
- Load Control Switches for HVAC, hot water heaters



Home Area Network

- ZigBee Network
- Smart Meters communicate to Smart Thermostats & Appliances
- In-Home Displays and Internet Portals track usage



Will Customers Understand?

Will customers respond to dynamic price signals?

Will Customer Save?

- Conducted 6 focus groups during week of July 9, 2007 with 49 residential customers
 1. Mixed
 2. Direct Load Control (CAC) participants
 3. Low income residential
 4. Retirees
 5. Working customer (non low income, non DLC)
 6. Same as Group 5
- Critical Peak Pricing rates tested
 - \$1.30 Critical Peak Price w/TOU peak rate \$0.14, off peak \$0.09
 - \$0.80 Critical Peak Price w/TOU peak rate \$0.18, off peak \$0.10

BGE Customers Responded

- Customers understood Critical Peak Pricing
 - “In the summer, when the weather is very hot and people are running their air conditioners... the cost of generating electricity is higher.”
- Customers liked certain features
 - Liked idea of off peak rate being lower than current rate
 - Did not see problem with \$1.30 CPP given low number of hours (12 events = 2% of hours at \$1.30)
 - Preferred the savings associated with the higher price of \$1.30/kWh as compared to \$0.80/kWh

BGE Customers Responded

- Customers wanted to understand what they had to do to save energy
 - Which technologies/appliances use most energy?
 - Is it OK to adjust your thermostat?
- Customers wanted feedback on how much they were saving
- Customers generally wanted to be “green” and save energy. Many customers were already doing this
- Customers expressed strong interest in finding ways to save on their bills and thought CPP would help them, but expressed concern that not everyone would understand and save. (This led us to consider other forms of dynamic pricing.)

BGE Planned Smart Energy Pricing Based on Feedback

- BGE decided to offer Peak Time Rebates as well as Dynamic Peak Pricing (DPP a.k.a. CPP) beginning in June 2008
 - 1,021 randomly selected customers from the entire BGE service territory
 - Day ahead notification of a peak event
 - Test groups included
 - Price incentive only
 - Price incentive with in-home display (Orb)
 - Price incentive with direct load control and Orb
 - Advanced meters were provided to collect 15-minute interval data

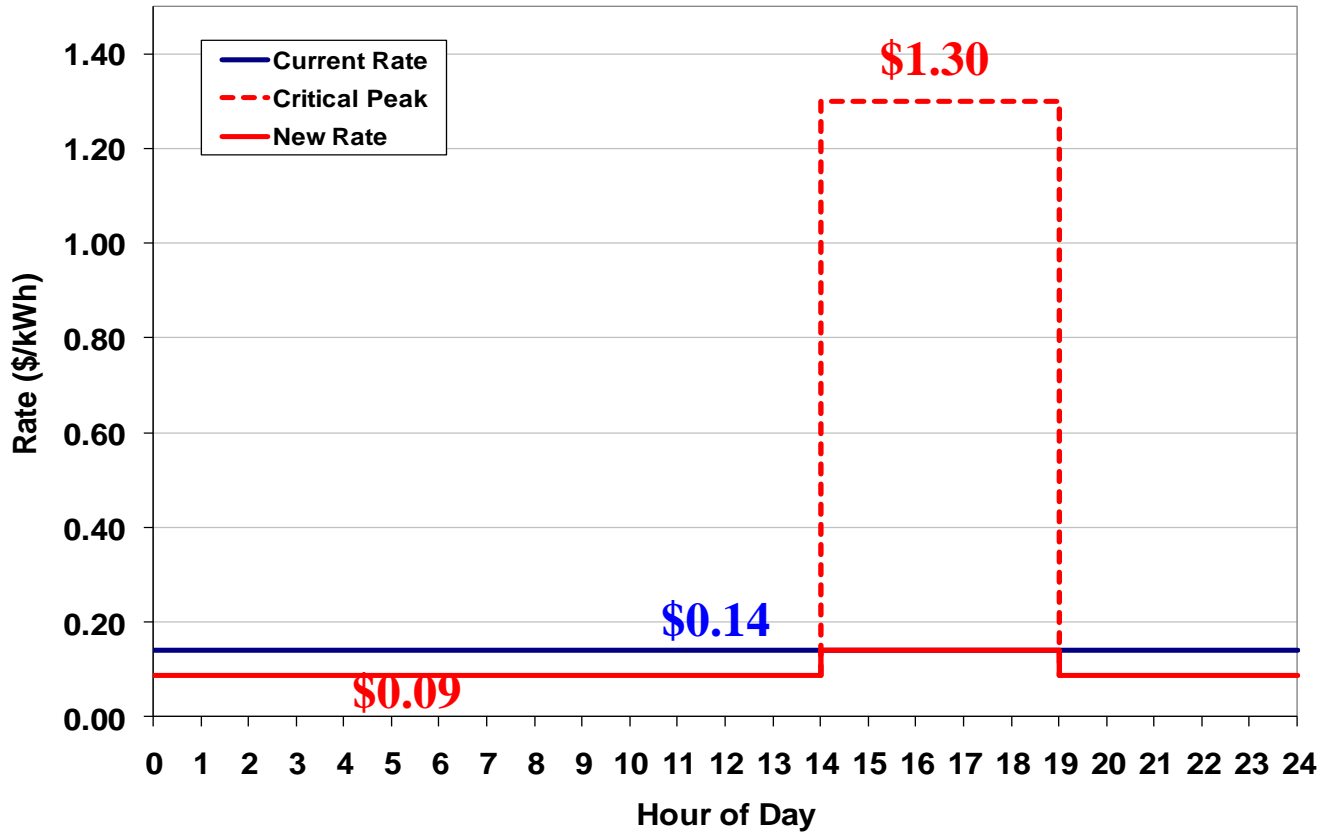


Smart Energy Pricing Pilot Design 2008

Group	Total	PTR Low Rebate	PTR High 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

BGE's SEP Pilot: 1,300 accounts, a statistically significant sample

Dynamic Peak Pricing (DPP aka CPP) Weekdays (excluding Holidays)



Pilot Pricing All-in Rate*

Critical:

\$1.30425

Peak:

\$0.14425

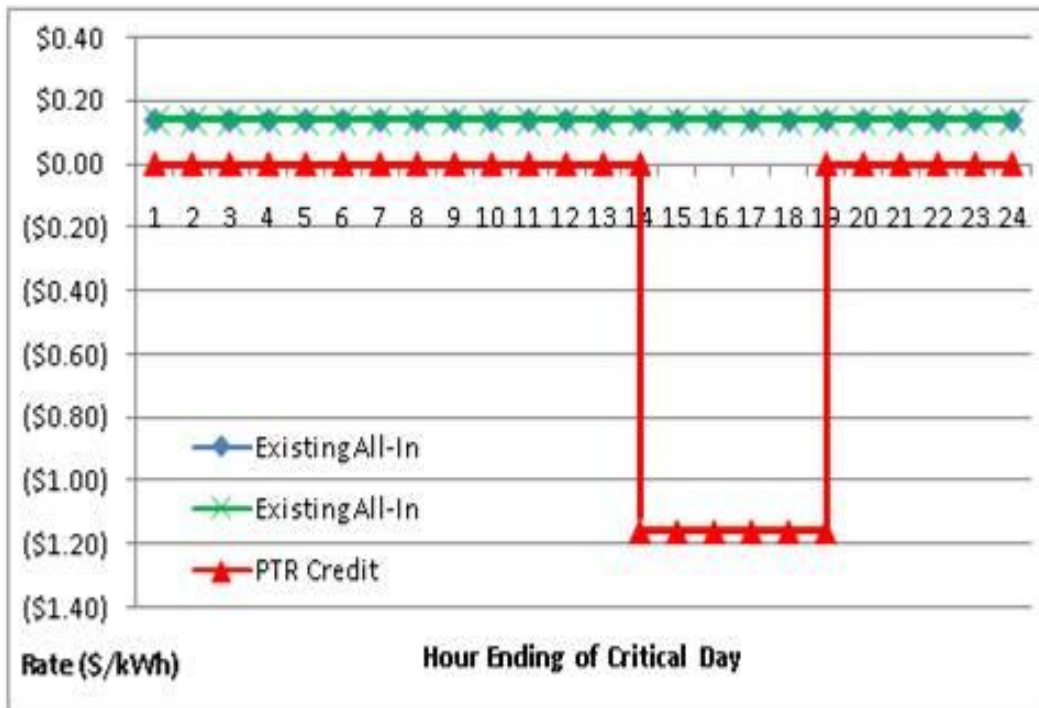
Off-Peak:

\$0.09425

* Includes generation, transmission and delivery

Peak Time Rebate: Weekdays (excluding Holidays)

- ***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 (2008)
 - \$1.16/kWh (2008)

Deployment: Customer Communication Is Key

To renew your enrollment for the 2010 pilot, call the Smart Energy Pricing Team at **1.866.570.7470** Monday – Friday 8 a.m. to 6 p.m. or Saturday 8 a.m. to 4 p.m. or email us at smartenergypricing@bge.com. The Smart Energy Pricing Pilot has a limited number of spaces available for participants. To improve your chances for enrollment, please call or email by **March 19, 2010**.

We thank you for your earlier participation and look forward to helping you save money and energy during the 2010 pilot.

Sincerely,

Joseph A. Saur
Smart Energy Pricing, Project Manager

FIRST CLASS
PRESORT
U.S. POSTAGE
PAID
BALTIMORE MD
PERMIT NO. 250



BGE

We're on it.

SAVE MONEY

This Summer!

Dear BGE Customer,

The Smart Energy Pricing (SEP) Pilot Program will continue beginning June 1 and once again, you're invited to participate. Last year, the program received praise from numerous participants who saved on their electricity bill. The average participant's saving totaled over \$100 for the four-month program. Because of the overwhelming success, we have decided to continue the program in 2010, providing additional opportunities to save money.

We Sent Customized Welcome Packages



Each treatment group received different materials describing the pricing and technologies for that group

2010 SMART ENERGY PRICING PILOT WELCOME KIT

Dear Customer,

Thank you for participating in the BGE Smart Energy Pricing (SEP) pilot program. Your continued participation confirms that there is indeed a high interest in exploring innovative, energy and money saving programs. This welcome package will provide you with important information, including:

	<u>Page</u>
• 2010 Smart Energy Pricing Pilot Program Overview	2
• Smart Energy Pricing Savings	3
• Year Round Energy Saving Tips	4
• BGE Smart Energy Savers Program™ Overview	5
• Smart Energy Pricing FAQs	6

If you have questions about the content of this package, please call our Smart Energy Pricing Team at: 1-866-676-7470, Monday – Friday from 8 a.m. to 8 p.m., or Saturday from 8 a.m. to 4 p.m.

At the end of this summer, you will be invited again to participate in a survey to evaluate your experience with the pilot program. This valuable feedback will help us measure the success of this program and provide us with information for possible future expansion.

We look forward to another summer season!

Sincerely,



Joseph A. Saur
Project Manager, Smart Energy Pricing



We Thanked Our Customers and Provided Tips for Saving

We provided contact information for our Call Center and supplemented the Call Center with our Hotline

BGE SMART ENERGY PRICING
HOTLINE

1-866-570-7470

Monday through Friday
8 a.m. to 8 p.m.;
Saturdays 8 a.m. to 4 p.m.




SIMPLE ENERGY AND MONEY-SAVING TIPS

- 1 Lower water heater thermostat to 120°F.
- 2 Turn off lights when room is not occupied.
- 3 Thermostat setting: summer 78°F; winter 68°F

For year round energy tips, visit
www.bge.com/savemoney

BGE
We're on it.

We Provided Sample BGE Bills Showing Rebates



2010 PROGRAM OVERVIEW

- The Smart Energy Pricing pilot will run between June 1 and September 30, 2010.
- Throughout the pilot, BGE will identify certain days as Critical Peak Periods.
- The Critical Peak events are typically limited to the 2 p.m. through 7 p.m. time period on weekdays, but may include one or two weekend dates or times outside of the 2 p.m. to 7 p.m. window.
- Weekend Critical Peak events are often tied to unforeseen weather or BGE grid conditions and cannot be predicted.
- BGE will send you notification when a Critical Peak event will occur.
- Notification methods include email, telephone, and/or text message, whichever you prefer and have given us permission to use.
- Upon notification of a Critical Peak event, BGE will encourage you to voluntarily decrease electricity usage between the Critical Peak hours of 2 p.m. and 7 p.m., or shift usage to another time, for which you will earn rebates.
- BGE will calculate the reduction and apply rebates to your monthly bill during the summer pilot.

Unplanned Critical Peak Periods, due to unforeseen weather and grid conditions, cannot be predicted and can occur on any day at any time. Therefore, you may only receive as little as 10 minutes of advanced notice. You will also receive notification when an unplanned Critical Peak Period has ended. These unplanned events are not common and typically occur only once per summer.

"This is the 2nd year that I have participated in the Smart Energy Pricing program and I really enjoy the savings!!!"
Catherine, Sykesville

SMART ENERGY PRICING SAVINGS

BGE recognizes that conservation is the best way for customers to manage utility bills and as global energy prices rise, we want to provide customers with options to help them control their energy costs, save money and help protect the environment.

BGE
We're on it!

Summary	
Billing Date:	July 15, 2010
Payments Received	
- June 30, 2010:	\$147.02
BGE Outstanding Balance	\$1.00
Smart Energy Pricing - One Credit	(\$1.00)
Charge Due Period	
BGE Electric	\$175.00
Total Charges Due This Period	\$176.00
Total Amount Due by July 26, 2010	\$125.00
1st charge after July 15, 2010, and \$1.00	\$24.00

Also, a custom charge is applied to the unpaid balance of your BGE Electric. This charge is 1.25¢ per kWh that exceeds applicable energy use consent or smart rebates during the month, not to exceed \$1.00.

Important Information About Your Bill
For questions or more information, call 1-800-455-4555 or visit www.bge.com. The meter replacement affects the way your readings are used to calculate your energy bill for the next 30 days. Please see service use data.

The peak time rebate rate for the 2010 Smart Energy Pricing (SEP) pilot program will be \$1.25 per kilowatt hour.

Important Information About Your Bill (continued)
Billing 15 days in advance allows you to plan ahead for your energy use. You are responsible for payment of your present balance of your bill.

You will be notified the day prior to a Critical Peak Day, starting at 8 p.m. The rebates you earn will be shown as a credit on your bill, and applied by each Critical Peak event. Customers who can shift or reduce energy during Critical Peak hours will be able to save money and earn credits.

In this example a Critical Day event occurred on June 12, 2010 and June 17, 2010, from 2 p.m. to 7 p.m. Other than these possible credits, you will be billed as normal.

Next Scheduled Reading: August 10, 2010

Peak Time Rebate Details:

Month	Rate	Rebate
June 12, 2010	4 kWh x 1.25	\$1.25
June 17, 2010	10 kWh x 1.25	\$12.50

Critical Peak hours from 2 p.m. to 7 p.m. on Critical Peak Days.

Important Information About Your Bill
The supply rate is the rate for generating the electricity you use and is listed on the back of your BGE bill as 'BGE Electric Supply'. There are other costs to deliver the electricity to your home, which are listed under the 'BGE Electric Delivery Service' section. These rates do NOT change as a result of your pilot participation.

"Anytime you can save money by reducing your peak energy use in today's economy it's just smart."
Richard, Baltimore

“This is the 2nd year that I have participated in the Smart Energy Pricing program and I really enjoy the savings!!!”

Verbatim from Catherine, Sykesville

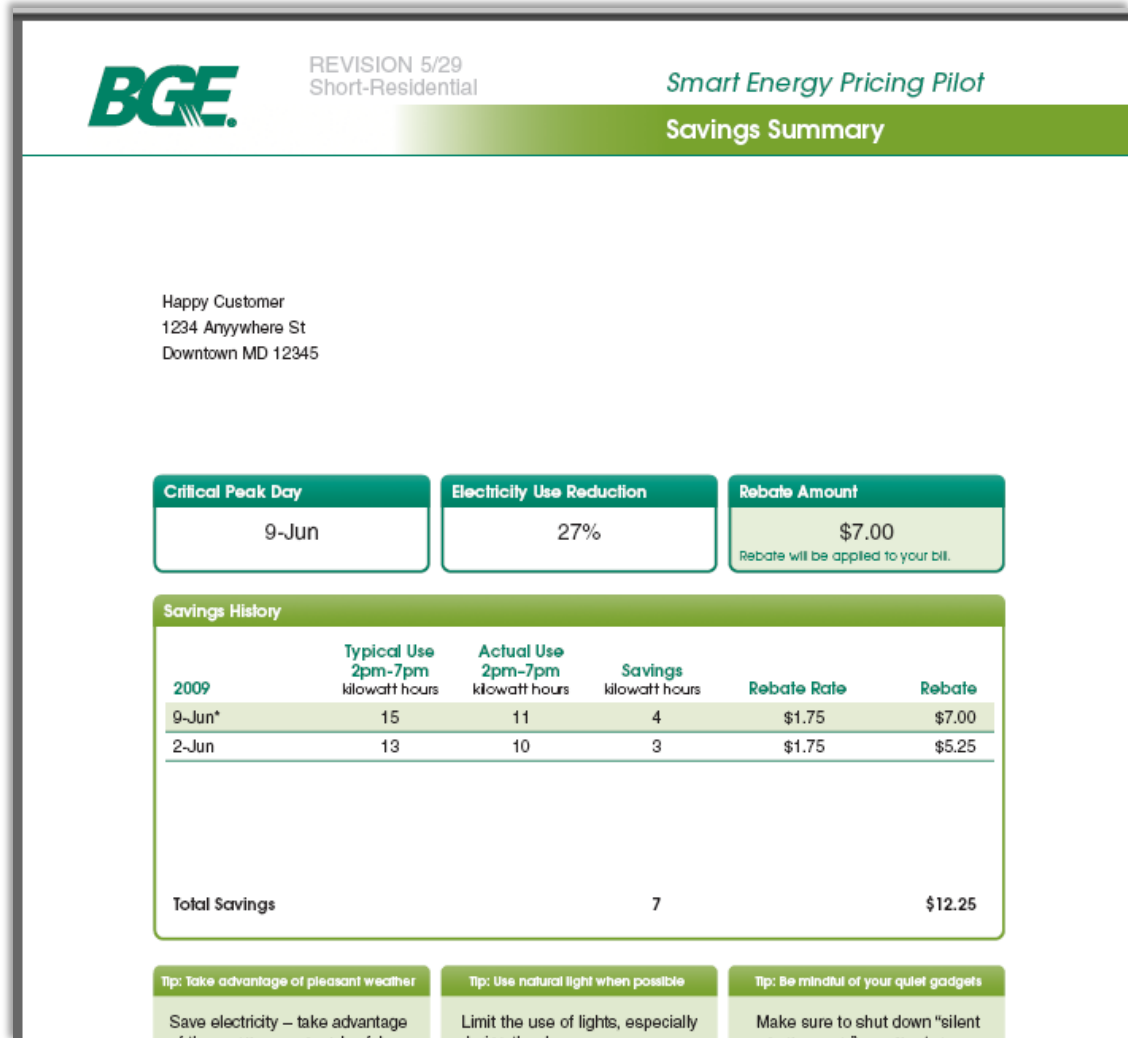
Peak Event Savings Reports Were Sent Soon after Each Event

Timely feedback on savings is essential to successful program.

Customers who save take notice, and will continue to perform on future events.

Future Idea: add localized comparisons of savings (“The average savings in your zip code were \$12 on the last event”)

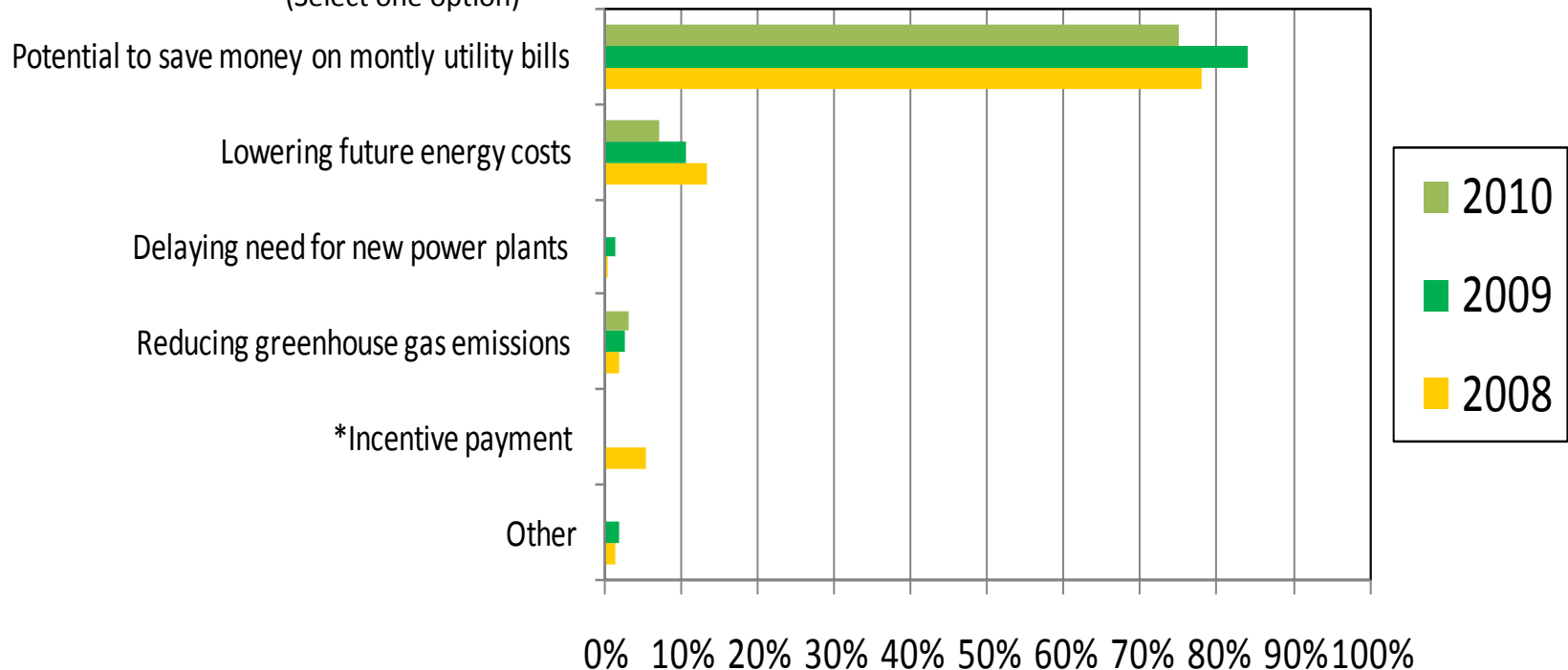
Push this report to customers at first, and let them realize the value



Reasons to Participate in Smart Energy Pricing

- The *potential to save money on monthly utility bills* continues to be the primary motivation behind customers' participation in the Smart Energy Pricing Pilot, with selection of this response at 78% in 2008, 84% in 2009 and 75% in 2010.

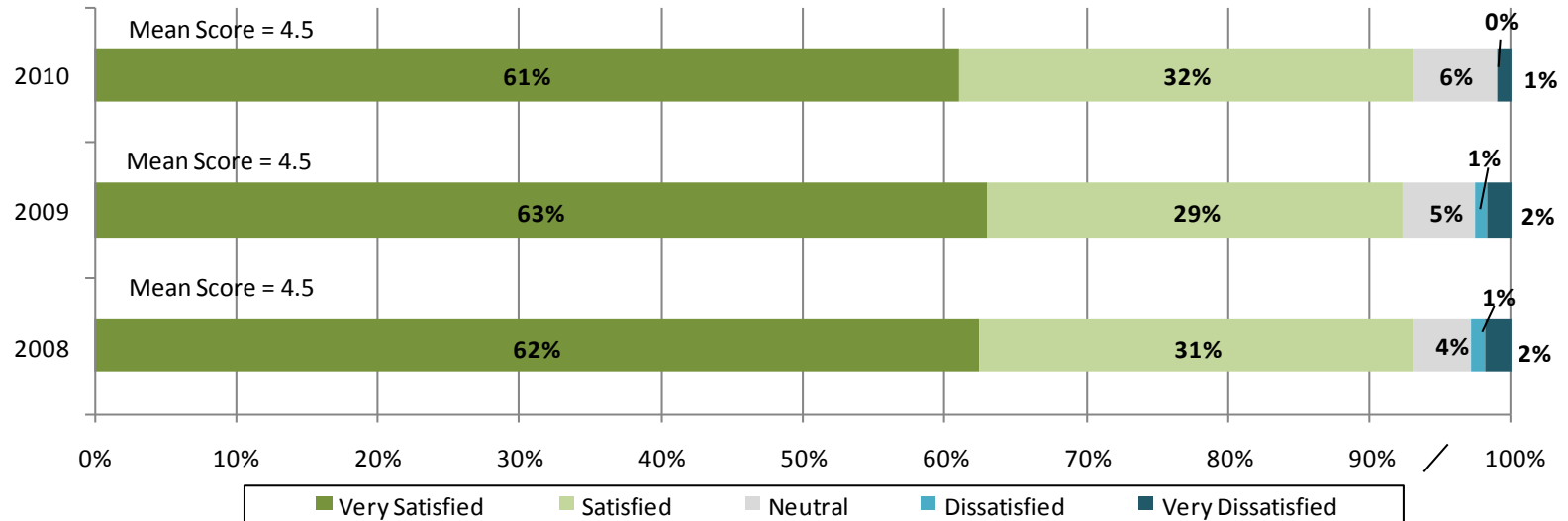
Q 1. What was the most important reason for your participation in the 2009 Smart Energy Pricing Pilot?
(Select one option)



Program Satisfaction

- Satisfaction with the SEP Pilot Program remained consistently high, with two thirds of the participants (63% in 2009 and 62% in 2008) claiming to be ‘Very Satisfied’ with the pilot program, and nine out of ten participants stating they are at least ‘Satisfied’ (92% in 2009 and 93% in 2008).
- Results for 2010 indicated 61% were very satisfied and 32% were satisfied.

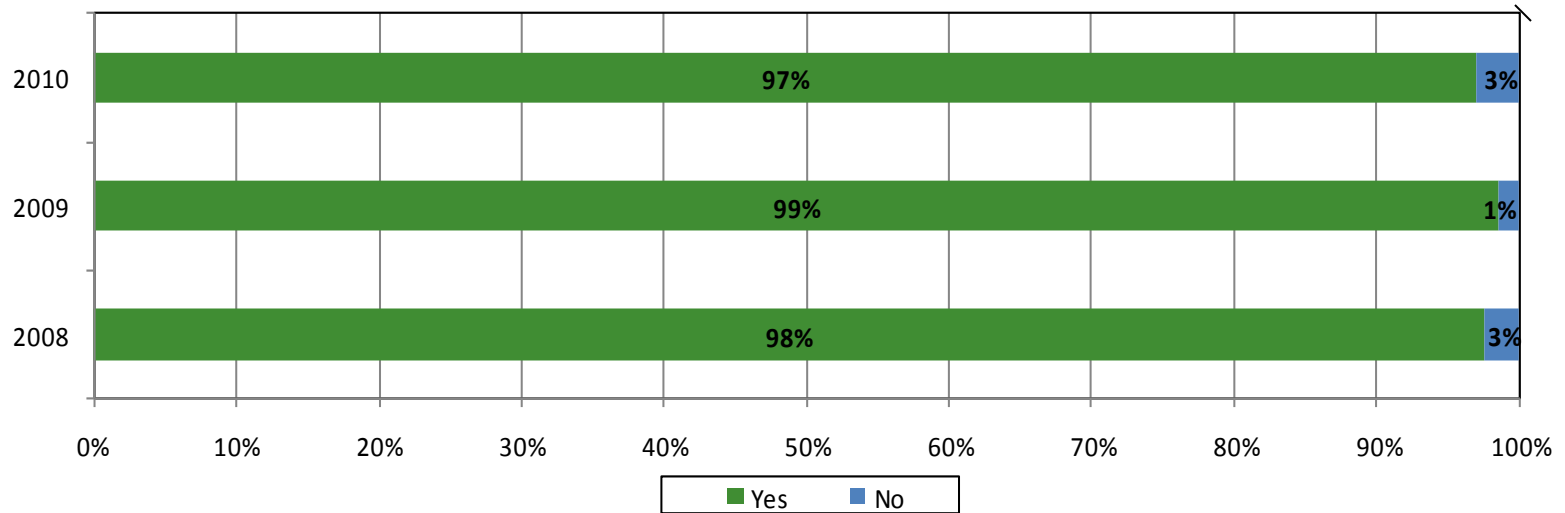
Q 2a). On a scale of 1 to 5, where 1 is "Very Dissatisfied" and 5 is "Very Satisfied", please rate your overall experience with the Smart Energy Pricing pilot program.



Program Participation and Satisfaction (cont)

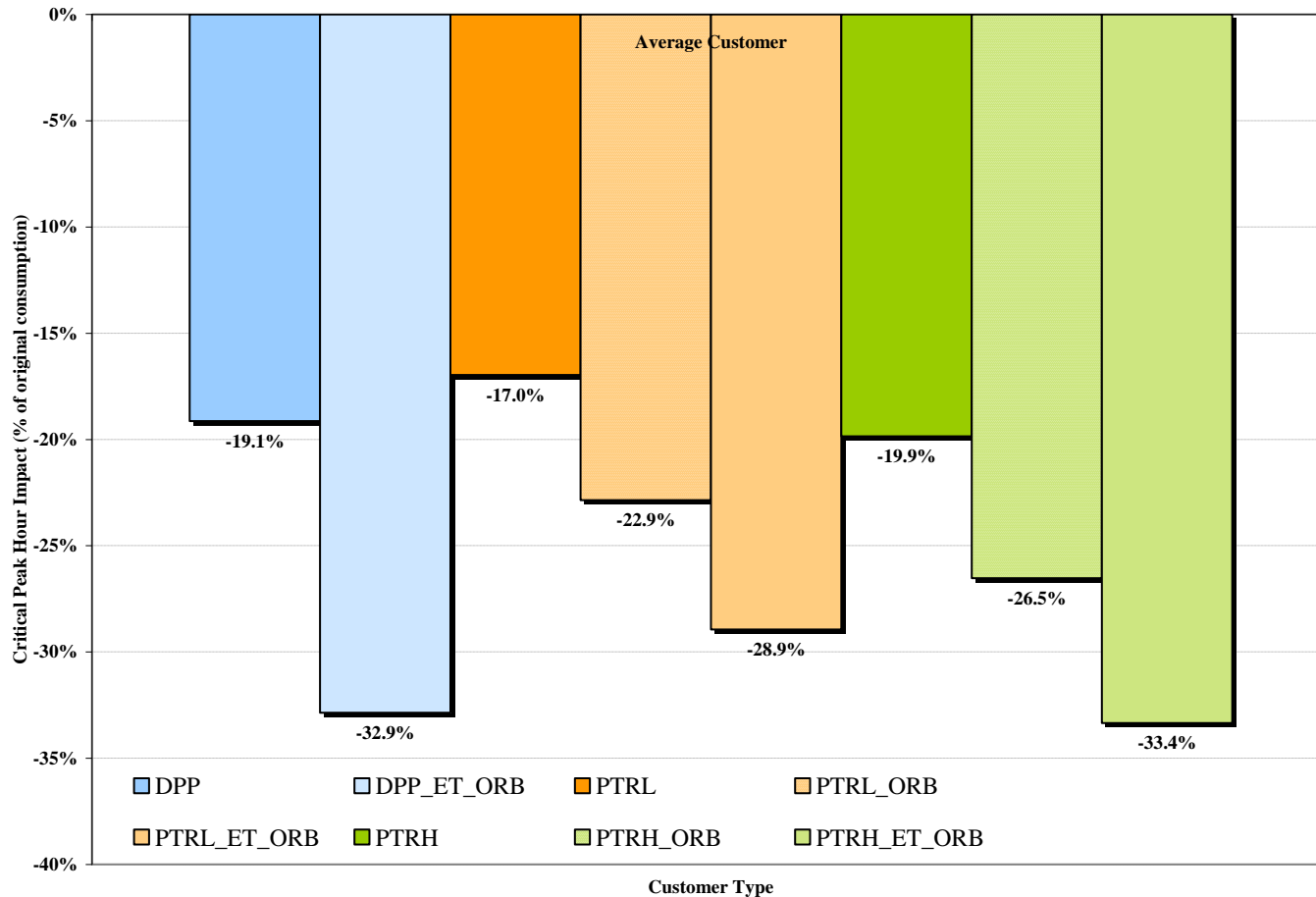
- Participants in each year's SEP Pilot Program: 97% in 2010, 99% in 2009, and 98% in 2008 – were overwhelmingly interested in returning to a similar pricing structure the following summer.
- Further, 93% of 2009 study participants believe the opportunity to earn rebates for reducing energy usage during Critical Peak periods should be standard for all BGE customers.

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)



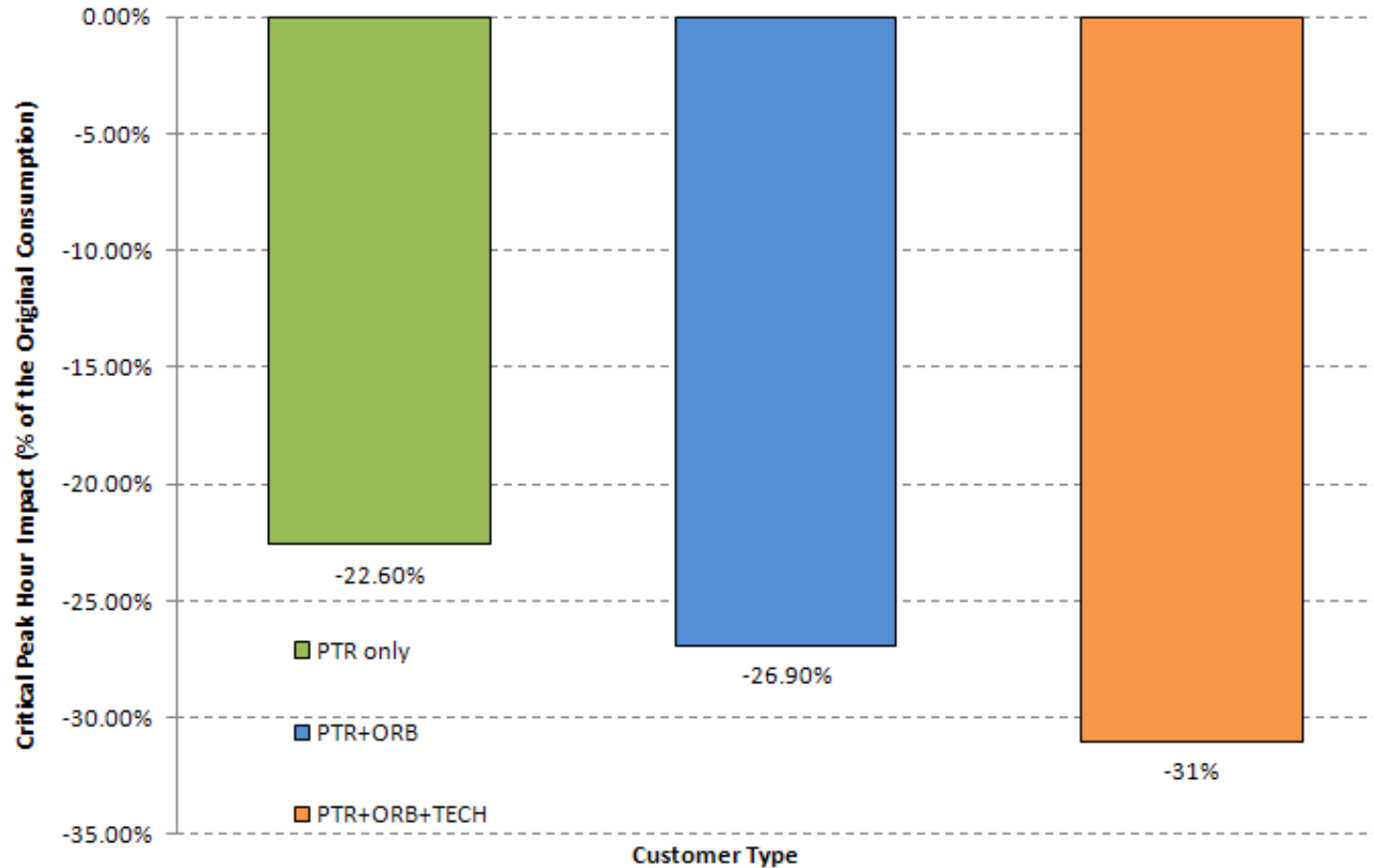
2008 Demand Response Impact Summary

Comparison of the demand response impact across all SEP treatments



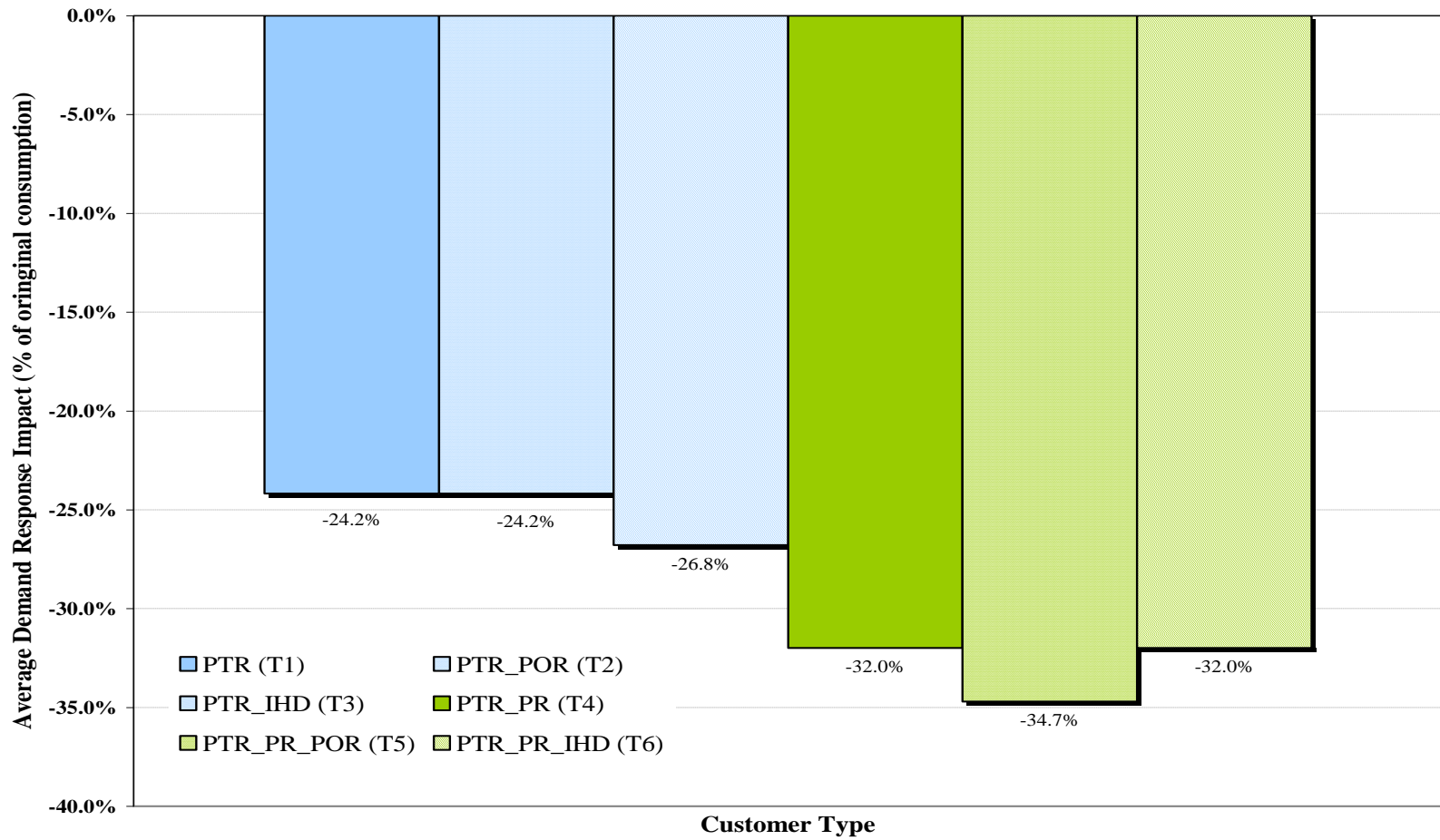
2009 Demand Response Impact Summary

Comparison of the demand response impact across all SEP treatments



2010 Demand Response Impact Summary

Comparison of the demand response impact across all SEP treatments



2008 – 2010 Impact Summary

- Results of The Brattle Group Evaluations found statistically significant, persistent savings over the 3 summer periods

Savings	2008	2009	2010
Peak Conditions	22 - 37%	28 - 38%	26 - 36%
Average Savings	18 - 33%	23 - 31%	24 - 35%
Rebates	\$1.16 or \$1.75	\$1.50	\$1.25

Customer verbatim remarks:

“ We realized significant savings. I absolutely want to do it again next year.”

“I liked the savings, and it is something we can fit into our lifestyle to save on energy costs.”

In Conclusion

DYNAMIC PRICING WORKS

IF *IT IS IMPLEMENTED THOUGHTFULLY BY*

- Understanding participants' understanding of energy
- Developing simple program design
- Engaging and educating participants
- Providing robust pricing signals

THEN

- Providing timely feedback, showing value to participants
- Obtaining feedback from participants