



# ***myPower Pricing Pilot Program Final Evaluation Report***

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**EEl Eforum on Dynamic Pricing Pilots and Rollouts**

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# Today's Presentation

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- Pilot Overview
- Technical Assessment
- Operational and Customer Assessment
- Billing Assessment
- Impact Assessment
- Bill Impact Assessment
- Key Takeaways

# myPower Pricing Pilot Overview

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## Program Goals

- Understand how price signals can influence customers' energy usage patterns.
- Test customers' reaction to the opportunity to conserve and shift load when power is in peak demand.
- Assess the value of technology in supporting customers' ability in becoming more energy savvy.
- Improve understanding of system requirements, technology options and performance.

## Program Designed

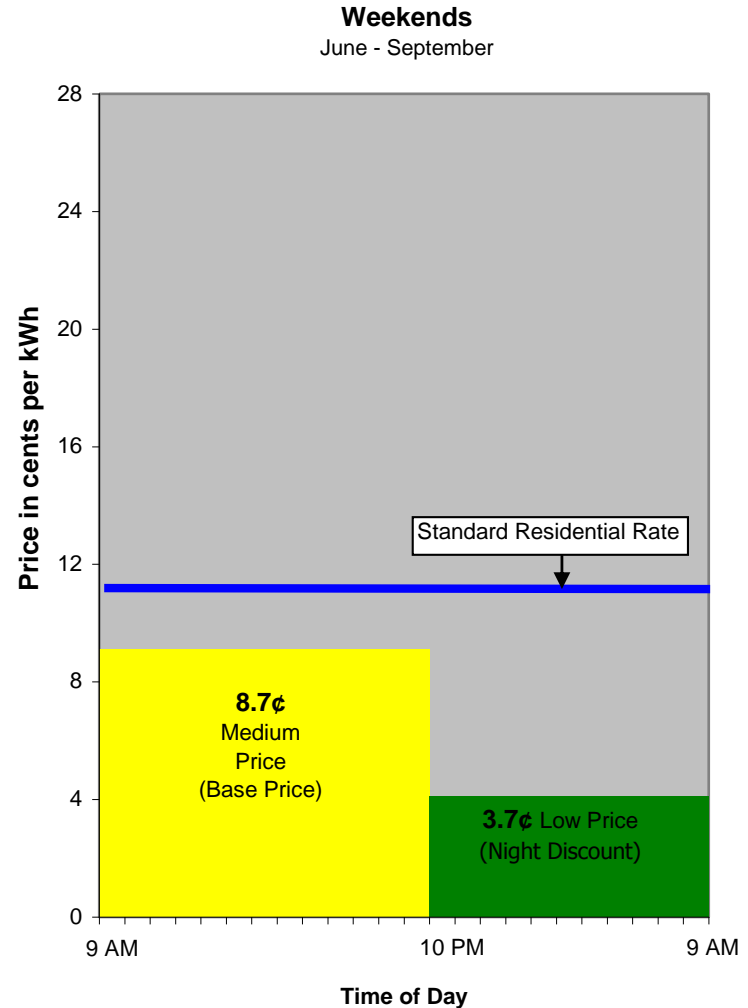
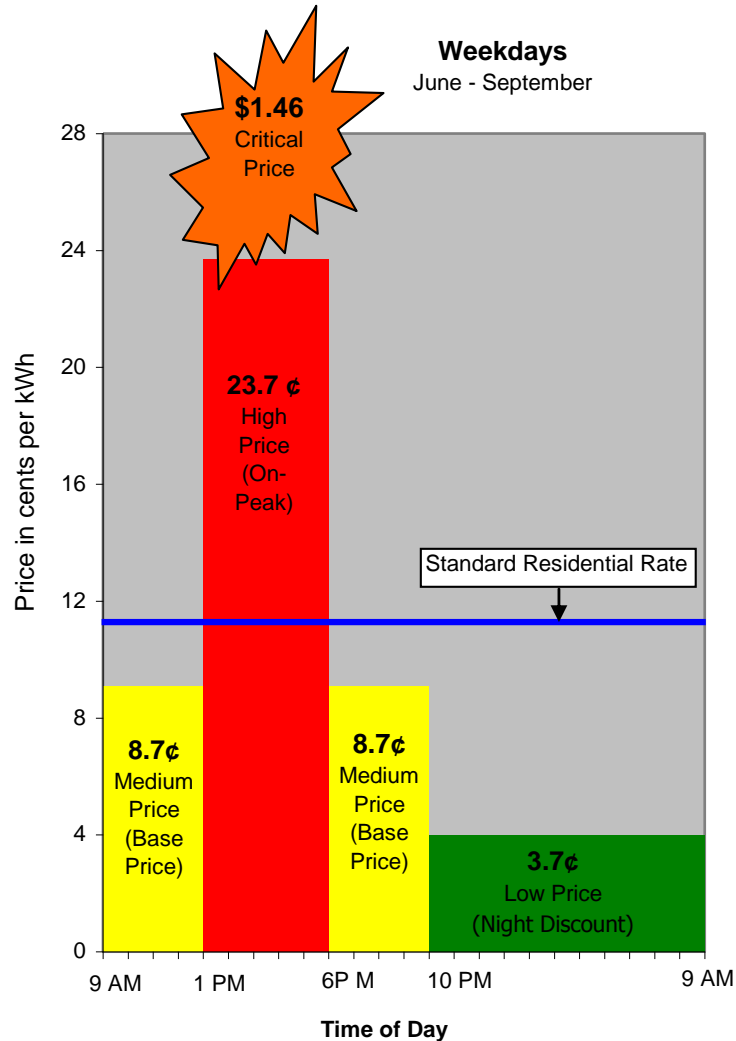
- To test participant response to variable TOU and CPP rates.
- To integrate testing of in-home technology and multiple two-way communications systems that transferred energy pricing and interval consumption data to and from the customer's meter.
- To try multiple technology solutions under real field conditions.

## myPower Pricing Pilot Overview

	<b>Control Group</b>	<b>myPower Sense</b>	<b>myPower Connection</b>
<b>Customers</b>	<b>450 Residential</b>	<b>379 Residential</b>	<b>319 Residential</b>
<b>Rate*</b>	<b>RS</b>	<b>TOU-CPP (RSP)</b>	<b>TOU-CPP (RSP)</b>
<b>Equipment</b>	<b>Electric interval meter</b>	<b>Electric interval meter</b>	<b>Electric interval meter Programmable thermostat Two-way communications infrastructure - PLC, RF, Hybrid</b>
<b>Customer Education and Communication</b>	<b>N/A</b>	<b>Mail E-mail Telephone</b>	<b>Mail E-mail Telephone Signal to thermostat</b>
<b>Usage and Billing Information</b>	<b>N/A</b>	<b>Internet</b>	<b>Internet</b>

\* RS = Residential Service, TOU-CPP = Time-of-Use, Critical Peak Pricing

# myPower Time-of-Use – Critical Peak Pricing (TOU-CPP) Summer 2007 Pricing Plan



## Technical Assessment

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- myPower pilot utilized two-way communications to transfer energy pricing and interval consumption data and allowed PSE&G to test customer response to various pricing signals.
- Three equipment manufacturers provided equipment for Control Group and Pricing Segments.
  - DCSI's Two-Way Automated Customer System (TWACS) system that utilized a powerline carrier communication (PLC) technology.
  - Itron equipment that utilized a fixed network radio frequency communication technology.
  - Comverge's Maingate product provided two-way communication via a paging system and customer phone lines.
- In-market technology has changed since the pilot inception and equipment used in the trial has been modified or replaced and would not be available for future use. However, this trial identified key technology and network issues that will be key inputs in future technology selection processes.

## Operational Assessment - Participation

### myPower Pricing Target and Actual Participants

Segment	Segment Size Goal	Beginning Segment Size	Segment Size (11/3/06)	Segment Size (9/30/07)
Control Group	450	450	450	450
myPower Sense – TOU/CPP Educate Only	550	536	459	379
myPower Connection – TOU/CPP Technology Enabled	400	424	377	319
<b>Totals</b>	<b>1,400</b>	<b>1,410</b>	<b>1,286</b>	<b>1,148</b>

- Segment sizes varied throughout the pilot as some participants had to be removed from myPower.
- Incompatible technology due to changes in the customer's home, incompatibility with other PSE&G programs, and customers who moved caused majority of removals.

## Operational Assessment - Continued

### myPower Pricing Plan Customers Removed

Reasons	myPower Sense	myPower Connection
Technology Issues	22	28
Billing or Incompatible Program	33	18
Customer Moved	42	17
Special Circumstance	1	3
<b>Totals</b>	<b>98</b>	<b>66</b>

Technology Issues includes – Installation related problem, Installing Solar/Net Metering, Installed new 2-stage HVAC, New HVAC System, Changed to VOIP, Technology Incompatible, Communication Issues; Billing or Incompatible Program includes – USF, Auto Pay, Equal Payment Plan, Cannot bill un-metered services; Customer Moved – Moved, Not Primary Residence; Special Circumstance (Illness, Death in Family)

### myPower Pricing Plan Customers Dropouts

Reasons	myPower Sense	myPower Connection
Technology Issues	NA	24
Billing	23	13
Miscellaneous	21	17
<b>Totals</b>	<b>44</b>	<b>54</b>

Technology Issues includes – Did not like T-Stat, Did not like technology; Billing includes – Did Not Like Pricing Plan, Did Not Like Billing, Not Saving; Miscellaneous includes - Changed mind, No reason given, Not happy with program, Unable to shift usage into low cost periods

**At program's end only 8% of myPower Sense and 13% of myPower Connection participants had asked to drop out of the program.**

## Operational Assessment - Customer

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### Customer Response

- Customers were recruited through a direct mail campaign with a 4% response rate, supplemented by telemarketing with a 16% response rate.
- Incentives were used to drive customer interest and participation (\$25 upfront incentive and \$75 at completion of pilot).

### Customer Screening

- Potential customers screened over the phone for in-home attributes such as central A/C, electric house heating, broadband Internet, type of HVAC system, in-home phone lines, etc.

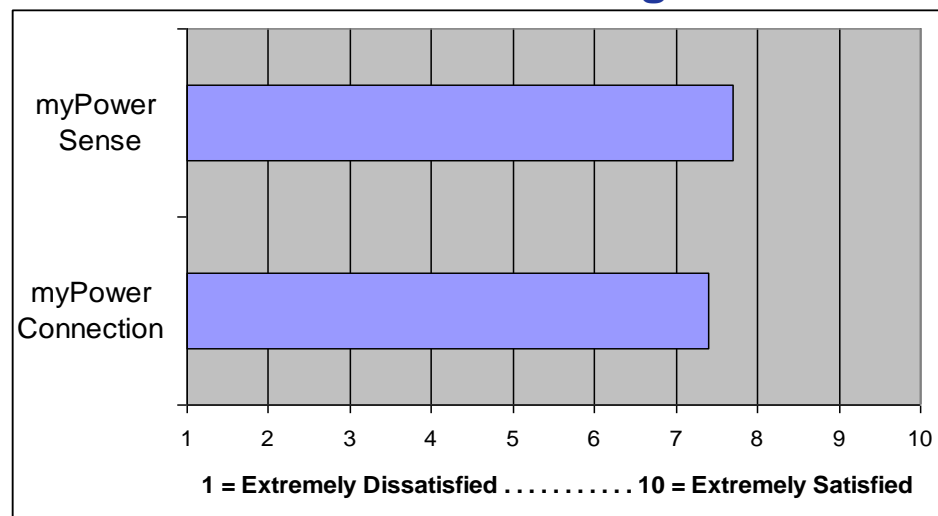
### Customer Education and Communication

- In-depth educational materials customized by segment included pricing plan information, thermostat programming guides, Energy Savers Guide, energy conservation information and tips, myPower FAQ's, etc.
- Notified customers of CPP events using two methods chosen by the customer – home/office/cell phone and/or e-mail. Delivered customized telephone notices using an automated outbound dialer.
- Pilot website enabled customers to view energy usage and bills online, compare savings to the standard residential rate (RS) and access energy savings information.

## Customer Assessment

### Overall, customers were satisfied with myPower

#### Satisfaction with Program



- 91% of myPower Connection and 85% of myPower Sense participants agreed PSE&G should offer more programs similar to myPower to customers.
- Roughly eight out of ten myPower Connection (77%) and myPower Sense (81%) participants would recommend myPower to a friend or relative.
- 78% of myPower Connection and 83% of myPower Sense participants thought program participation should be voluntary.
- The majority of myPower Connection (84%) and myPower Sense (83%) participants believed programs such as myPower benefit the environment.
- 71% of both myPower Connection and myPower Sense participants believed they saved money.

**Customers like programs such as myPower, see benefits to the environment, and would recommend the program to others. Most would prefer to have these as voluntary programs.**

## Billing Assessment

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- Created billing system specifically for the myPower pilot as an adjunct to the legacy PSE&G Customer Information System (CIS).
- Diverted customer bills from CIS billing process and forwarded to dedicated myPower billing staff to prepare monthly statements.
- Established daily billing validation process to identify and document all database and system conflicts requiring additional investigation to support accurate billing.
- In wide scale program deployment, these functions would need to be integrated into a standard billing system that:
  - Supports an efficient process for mass bill production for TOU rates using multiple data sources
  - Supports multiple programs that require special billing design such as Auto-Pay, EPP, TPS, etc.

**Billing lessons learned are key to understanding operational and customer needs when implementing larger systems.**

## myPower Pricing Impact Results

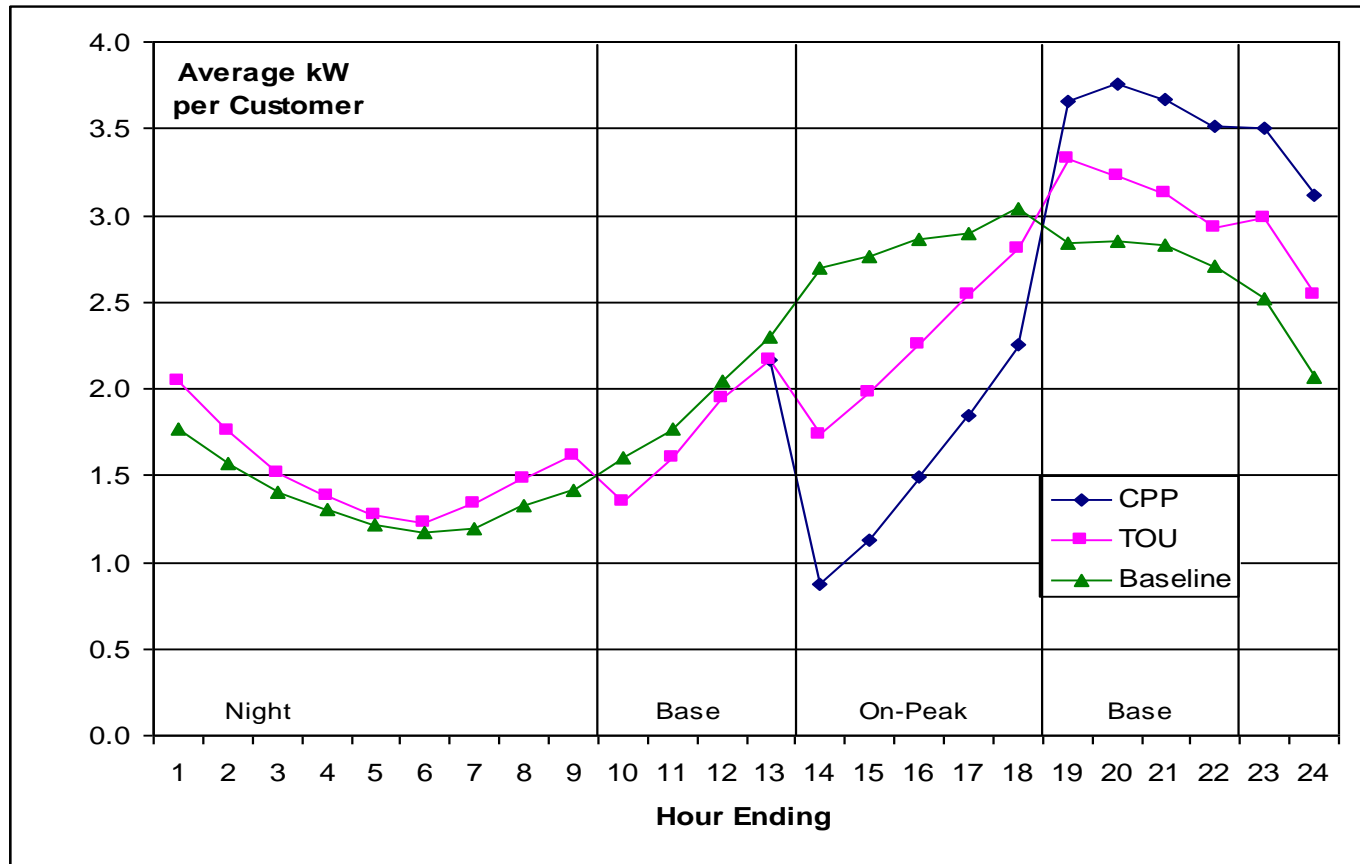
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- Participants in the myPower Pilot reduced peak demand
  - Time-of-Use Impacts – shifting from High price periods to Low and Medium price periods
  - CPP Impacts – reduction in peak demand on critical peak days
- Participants in the myPower Pilot saved energy
  - Energy conservation effect - difference in energy use between Control Group and myPower participants

# myPower Connection Customers

## Time-of-Use and Critical Peak Impacts

### TOU and CPP Impacts on Summer Peak Days

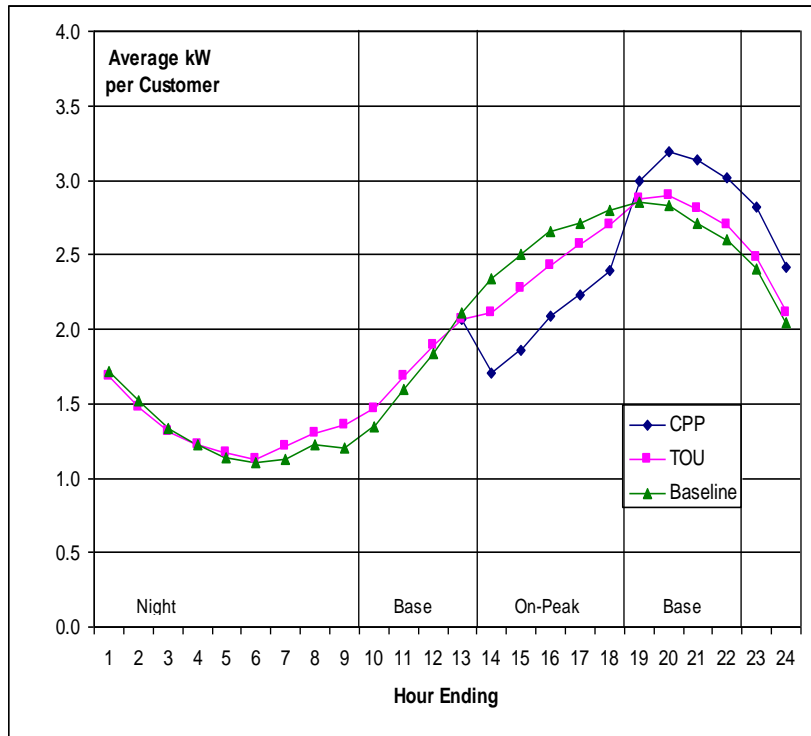


**Customers with in-home technology reduced On-Peak period demand by 47% (1.33 kW) on critical peak days.**

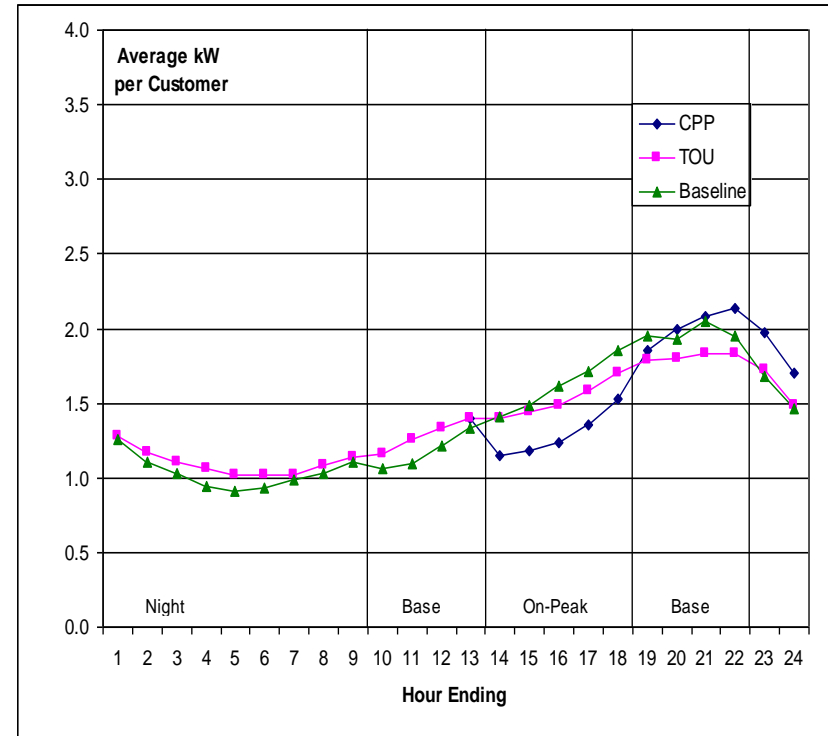
# myPower Sense Customers

## Time-of-Use and Critical Peak Impacts

### With Central AC on Summer Peak Days



### Without Central AC on Summer Peak Days



**Customers who received no in-home technology were able to reduce On-Peak period demand on critical peak days by up to 20%, even if they do not have Central AC.**

# Impact Assessment

## myPower TOU and CPP Demand Reduction on Summer Peak Days

Segment	Baseline Avg On Peak kW	TOU Only		CPP		Total	
		kW	%	kW	%	kW	%
myPower Connection	2.85	-0.59	-21%	-0.74	-26%	-1.33	-47%
myPower Sense with Central AC	2.60	-0.07	-3%	-0.36	-14%	-0.43	-17%
myPower Sense without Central AC	1.61	-0.09	-6%	-0.23	-14%	-0.32	-20%

- All segments reduced demand during the On-Peak period of 1:00 p.m. to 6:00 p.m. throughout the summer.
- The “technology-enabled” segment performed significantly better than those who received education only.
- Among customers who received education only, both customers with Central AC and those without Central AC were able to reduce demand in the range of 17% to 20%.

### Notes:

- Average demand reduction during On-Peak period 1:00 p.m. – 6:00 p.m.
- Compared to average on peak kW for the same period
- Results were statistically significant

## myPower Connection and myPower Sense Customers Summer Period Energy Savings Estimates

Variable	Control Group Change in Use		Participant Group Change in Use		Summer Energy Savings from TOU (Percent)		Total Summer Energy Savings from TOU (kWh per Cust)
myPower Connection	5.2%	-	1.9%	=	3.3%		139
myPower Sense with Central AC	5.2%	-	1.5%	=	3.7%		144
myPower Sense without Central AC	6.4%	-	2.1%	=	4.3%		127

- Both the myPower participant and the Control Group customers showed increases in summer usage compared to prior years
- The increase in usage in the myPower participants' segments was significantly smaller than the Control Group.
- An overall energy savings estimate is developed by examining the difference between the Control Group's and participant groups' increase in energy use.

**Customers who participated in myPower achieved summer period energy savings in the range of 3-4%.**

Source: myPower Pricing Pilot results based on 2006 and 2007 data through September 30, 2007

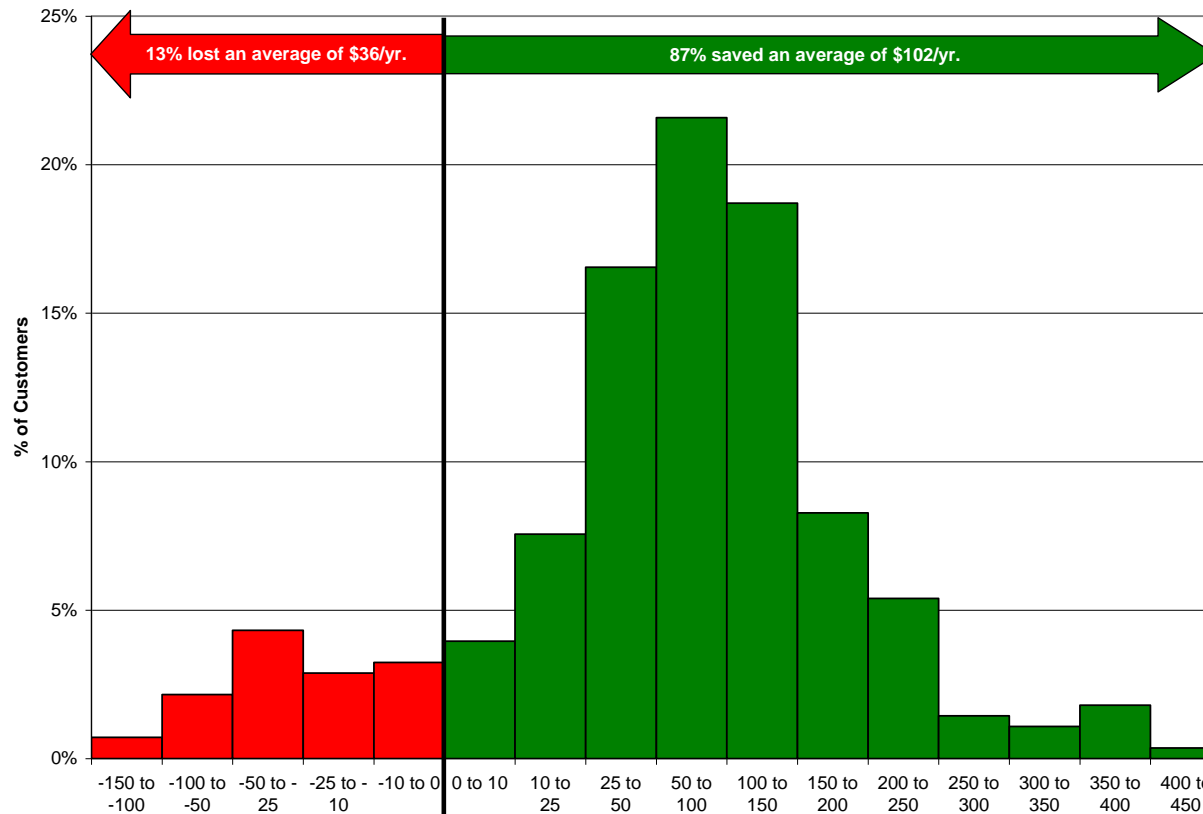
## myPower Connection and myPower Sense Customers Winter and Shoulder Month Impacts

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- Customers responded to price signals on winter peak days and shifted usage out of the on-peak period.
  - Average on-peak winter kW impacts were -0.41 kW for myPower Connection
  - Winter kW impacts were lower than summer kW impacts (-1.33 kW) due to less electric load being used in residential households during winter.
- myPower Sense with Central AC group showed a 1.65% reduction in energy use during the winter months, which was significant at the 90% confidence level.
- Otherwise there was little overall kWh shifting or conservation for any of the customer groups during winter and shoulder months.

# Bill Impact Assessment – myPower Connection

Bill amount based on actual energy consumption on myPower rates compared to standard residential rate



**Savings do not include:**

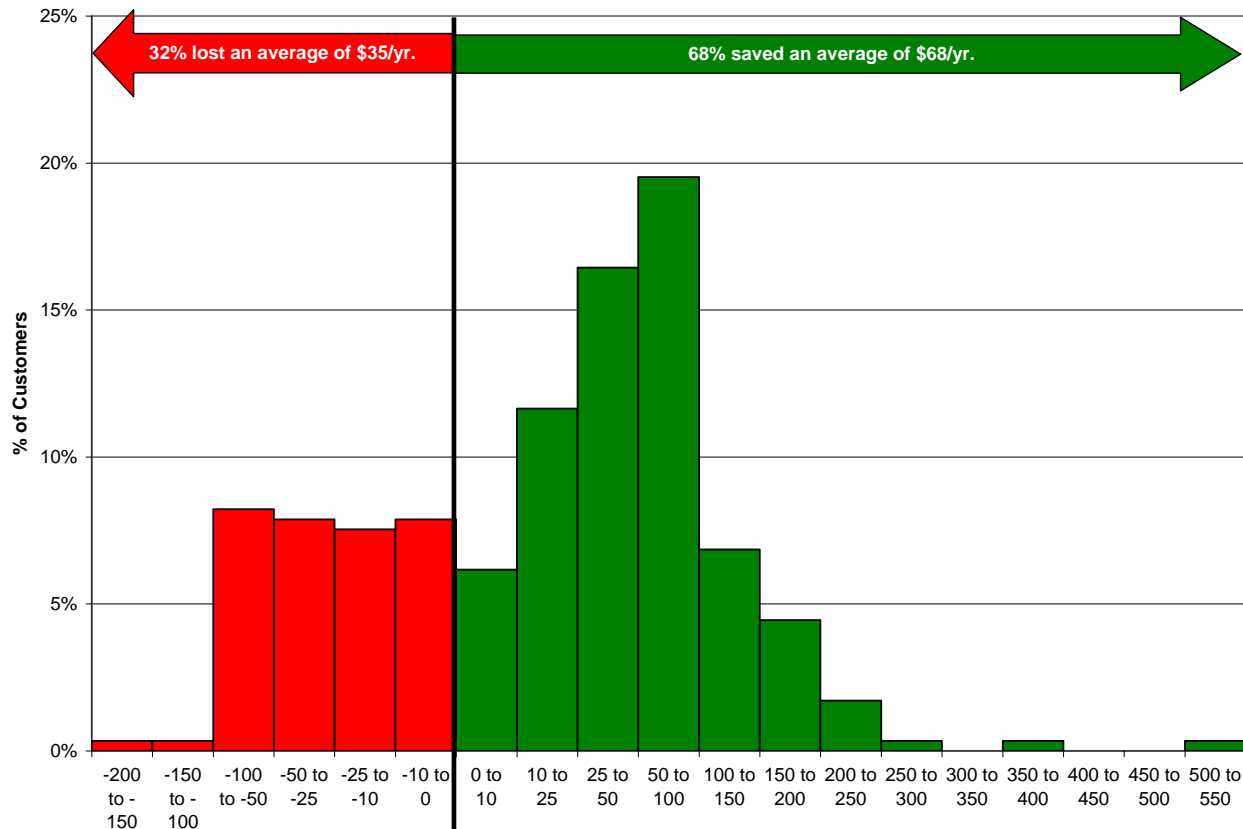
- Lower energy bills due to conservation
- Effects of lower peak demands on future energy prices

**A majority of customers with in-home technology achieved bill savings; 87% of customers saved an average of \$102/year, while 13% of customers lost an average of \$36/year.**

Note: Limited to those customers with 12 months of billing data available, ending September 2007.

## Bill Impact Assessment – myPower Sense

Bill amount based on actual energy consumption on myPower rates compared to standard residential rate



**Savings do not include:**

- Lower energy bills due to conservation
- Effects of lower peak demands on future energy prices

**Customers without in-home technology also achieved bill savings; 68% of customers saved an average of \$68/year, while 32% of customers lost an average of \$35/year.**

## Key Takeaways

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- myPower Pricing participants consistently lowered their energy use in response to price signals across two summers (peak demand reduction of 1.33 kW for myPower Connection, and 0.32 to 0.43 kW for myPower Sense).
  - During the summer there were daily reductions in energy use from 1:00 p.m. to 6:00 p.m. due to on-peak prices in the TOU rate.
  - During Critical Peak Price events, customers increased their load reductions during the 1:00 p.m. to 6:00 p.m. period.
  - Participants achieved summer period energy savings of 3-4% when compared to the Control Group.
- Technology-enabled customers produced greater reductions in energy use in response to the TOU rates and the CPP events.
- Majority of participants achieved bill savings: 87% of myPower Connection and 68% of myPower Sense saved.
- myPower Pricing participants would recommend the program to a friend or relative, believe they saved money, believe the program is good for the environment and that PSE&G should offer more programs similar to myPower.

## Beyond *myPower*

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- NJ's Draft Energy Master Plan
  - Smart grid technologies such as AMI are an essential part of the State's plan to meet its EMP goals in energy efficiency and demand response (20% each by the year 2020)
  - EMP Implementation Plan lists a number Performance Metrics to be investigated in a new AMI Pilot. Some metrics were already studied in myPower.
- PSE&G's Two-Step Approach
  - Step One - Technology Evaluation
    - Technical evaluation of the strengths and weaknesses of several AMI technologies
    - Determine the technology best suited for PSE&G's service territory
    - Start in September 2008 for one-year. In municipalities of Wayne, Paterson and Totowa deploy 15,000 meter points. Activity has been suspended.

## Beyond *myPower*

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- PSE&G's Two-Step Approach
  - Step Two – Convene an educational stakeholder forum to address the societal, operational and financial aspects of deploying AMI in the PSE&G service territory.
    - AMI is the gateway necessary to proceed with future “Smart Grid” and demand response programs which will be needed to achieve the EMP goal to reduce electric demand by 5700 MW by 2020.
    - Educational stakeholder forum will allow interested parties to help PSE&G and the BPU refine the strategic and policy goals through consideration of participant inputs.
    - PSE&G will submit a final stakeholder report to the BPU for its information and consideration in the BPU's evaluation of an appropriate AMI strategy for PSE&G and its customers.
  - PSE&G will seek BPU approval prior to deploying AMI or Smart Grid Technology Statewide