

# Funding Energy Efficiency

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# Introduction

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## Regulatory Assistance Project

RAP is a non-profit organization, formed in 1992, that provides workshops and education assistance to state government officials on electric utility regulation. RAP is funded by the Energy Foundation, US EPA & US DOE.

Richard Sedano was Commissioner of the Vermont Department of Public Service, 1991-2001 and represented VT on the NGA Natural Resources Staff Advisory Committee



# Who pays for energy efficiency?

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- Participants -- why don't we pay more for EE?
  - Financing -- make it easier
  - Cash Outlay -- influence through rates
- All utility customers
  - Embedded rates (no news here)
  - Wires charge (no news here)
  - Power and environmental markets value EE
- Investors via ESCOs (beyond scope)
- Taxpayers via incentives (beyond scope)



# Challenge: Increasing Energy Efficiency Savings

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- **Savings targets** are rising from up to **1%** of annual sales and peak toward **2%** and beyond
- Can rates absorb the costs associated with this level of increase?
  - Do they have to? Is that the best solution?
- Can participants **pay more** for savings and **increase** total savings with a less pressure on rates than one might expect?



# Energy Efficiency

## Maximizing participant payment

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- Participant funding is a key element in growing energy efficiency results
- Convenient financing makes it easier for participants to pay a greater share
  - On-bill financing, as with Pay As You Save
  - Specialized lenders with public mission
- Link to property financing, like Energy Efficient Mortgage or revolving loans



# Energy Efficiency

## Financing mechanisms

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### **Objectives of EE Financing Mechanisms**

- Boost in credit counseling for lower quality credit risks to minimize write-offs.
- Standard practices and aggregation to lower transaction costs.
- When linked to property transfer, speedy audit process to enable cost to get rolled into new mortgage.
- Public mission institutions or state authorities may act as useful gateways and partners to EE admin.



# Rate Design Can Promote Energy Efficiency

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- Average rates are popular, but convey no signal to customers about the varying costs to produce electricity -- no help to EE.
- Dynamic prices convey this information
  - Particularly effective at higher cost times
  - Theory with some supporting evidence: customers with dynamic prices are more aware of energy use and efficiency opportunities with dynamic prices -- a “conservation effect”



# How to Make the Change

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- Pilot
  - Develop public familiarity, gradually
- Comparative Billing
  - “Would I have saved money?”
- Opt in to dynamic rate
- Opt out forces the switch for most customers but leaves an “escape”



# Experiences with Dynamic Pricing

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- California
- Illinois
- Florida and Georgia
- New Jersey
- Idaho

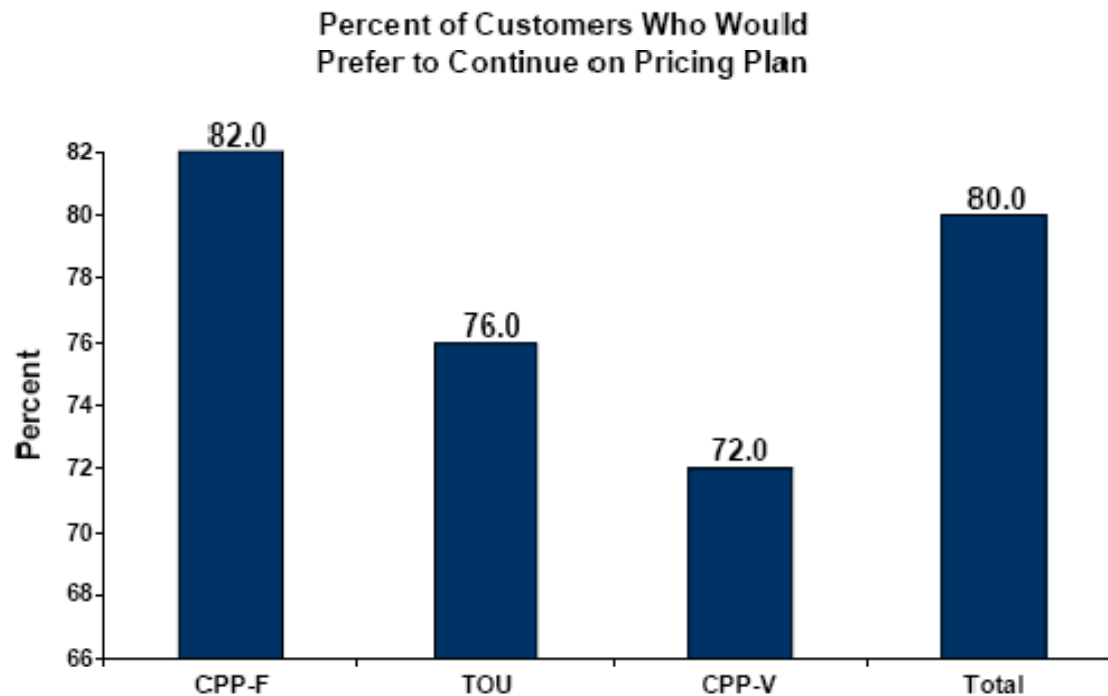
– MADRI website: [www.energetics.com/madri](http://www.energetics.com/madri)

# California Statewide Pricing Pilot

- Tested Time-of-use rate, Dynamic rates for two summers: 2003 and 2004
- On the dynamic rates, some had smart thermostats, some did not
- TOU response dropped to zero in 2004
- Dynamic rates without automation had sustained demand reduction of **16** percent
- With automation, Dynamic rates had demand reduction of **27** percent

# California Customers like Rates

The vast majority of customers said they would prefer to continue on the new rate after the pilot. Roughly 70% have stayed on even after the participation incentive was discontinued and even though they are now paying a monthly meter charge of \$3 to \$5.



Source: Stephen S. George and Ahmad Faruqi

# What is a well designed time-based rate?

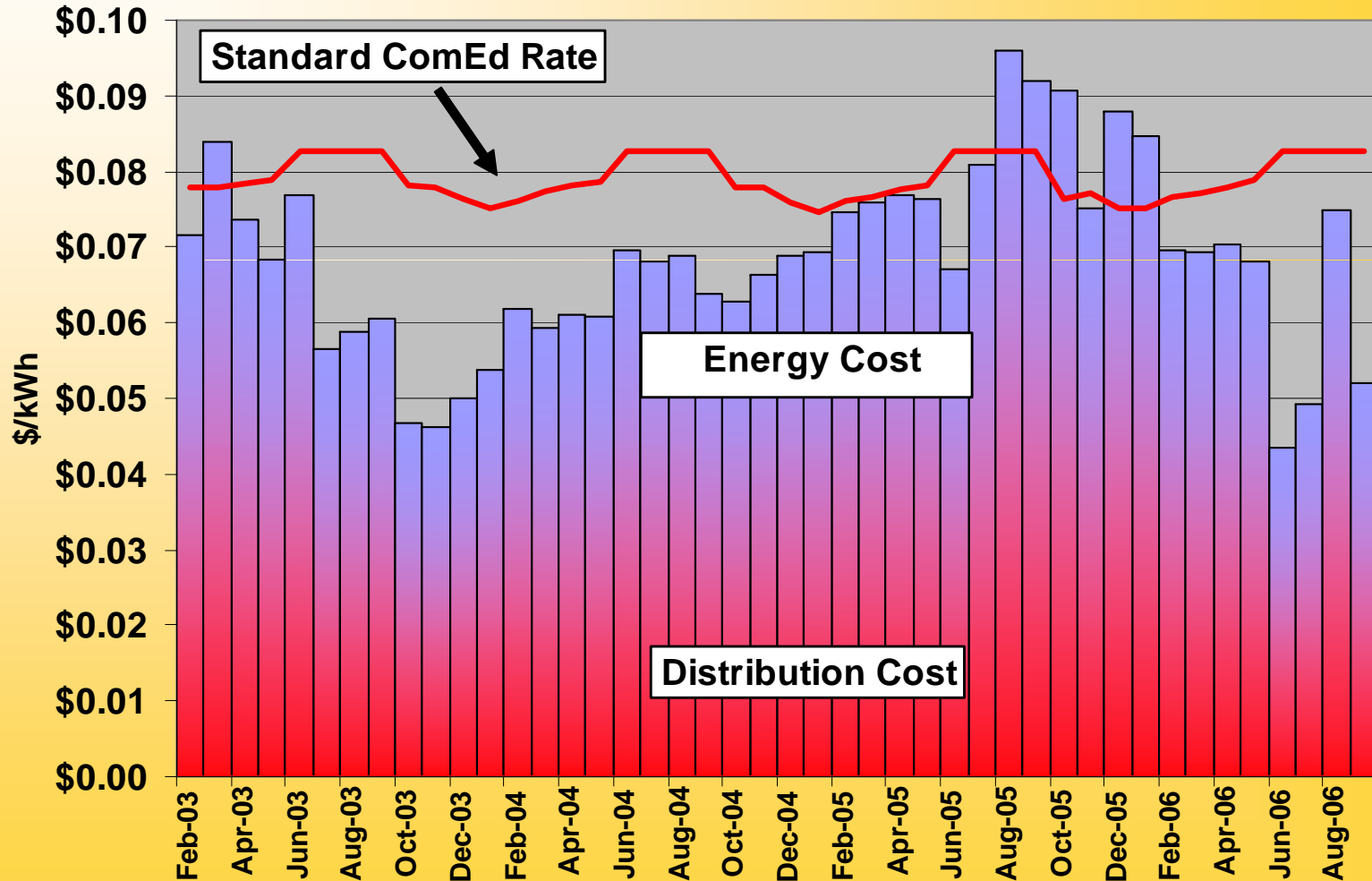
- From a customer point of view
  - ▲ They need to be able to save money
  - ▲ Rate design needs to make sense to customer
  - ▲ The customer should be considered a partner
- From a utility perspective
  - ▲ Customers reduce peak demand
  - ▲ Program has low churn rate
  - ▲ Program is relatively easy to administer
  - ▲ Utilities don't lose money by offering program

# Good versus bad rate designs

<b>Rate Element</b>	<b>Good</b>	<b>Poor</b>
<b>Length of top price tier</b>	<b>Four hours or less</b>	<b>7 am to 9 pm</b>
<b>Price differentials</b>	<b>At least 3 to 1</b>	<b>Hardly noticeable</b>
<b>Customer savings</b>	<b>Over 10 percent</b>	<b>Have to work to break even</b>
<b>Free riders</b>	<b>No such thing</b>	<b>Rate tries to prevent customers with "good profiles" from saving unless they change their profile to be even better</b>



# Average Energy Prices Paid 2003-2006





# People Like The Program

- In 2005, despite a very hot summer, and high power prices driven by natural gas costs, still a high retention rate

Year	Percent Renewing
2003	99%
2004	99%
2005	87%

Does not include participants who moved during the year

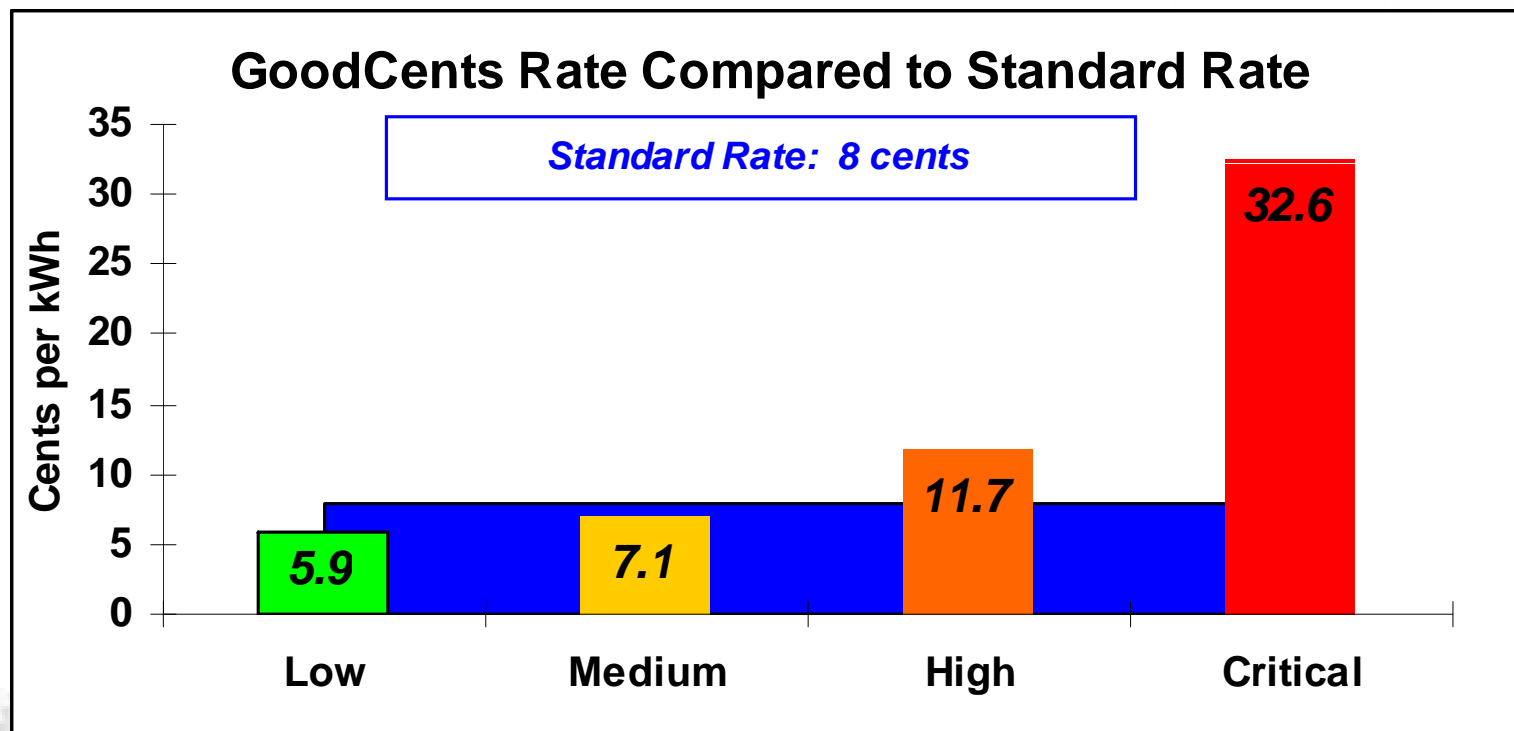


# Gulf Power – Well designed program

- Gulf Power GoodCents Program
  - ▲ Critical Peak Pricing Rate – short CPP periods
  - ▲ 8500 Participants – Not a small program
  - ▲ **94% Customer satisfaction and 5% churn rate**
  - ▲ Program uses automation
    - A/C and Central heat
    - Water heater
    - Pool pumps
  - ▲ Peak reductions of over 2 kW in Winter and Summer
  - ▲ Annual customer savings approximately 15 percent

# Good Cents Rate at Gulf Power

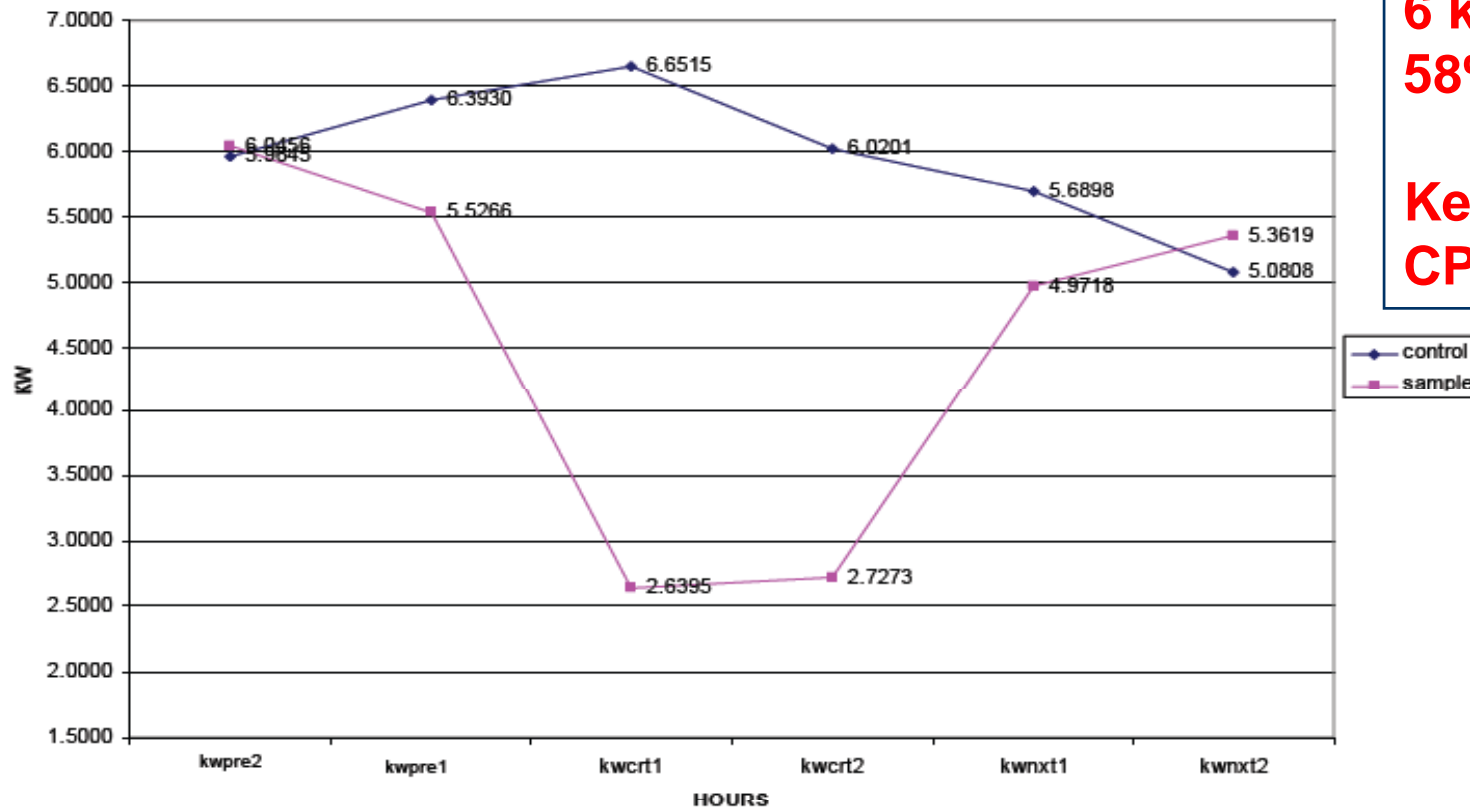
## Critical Peak Pricing Rate Underlying Time-of-Use rate



Source: Based on information from Gulf Power website

# Gulf Power Winter CPP Event Response

AVG HOURLY DEMAND ON JAN 24 AT HOUR 7 AND 8, 2003



Note demand reduced from 6 kW to 2.5 kW, 58% reduction.

Key is short CPP period.

# myPower (PSEG in NJ) Rates

## Summer Months (June to September)

Period	Charge	Applicable
Base Price	6.233¢ per kWh	All Hours
Night Discount	-3¢ per kWh	10 PM to 9 AM Daily
On-Peak Adder	9¢ per kWh	1 PM to 6 PM Weekdays
Critical Peak Adder	80¢ per kWh	1 PM to 6 PM Weekdays. When called, replaces the On-Peak Adder

## Non –Summer Months (October to May)

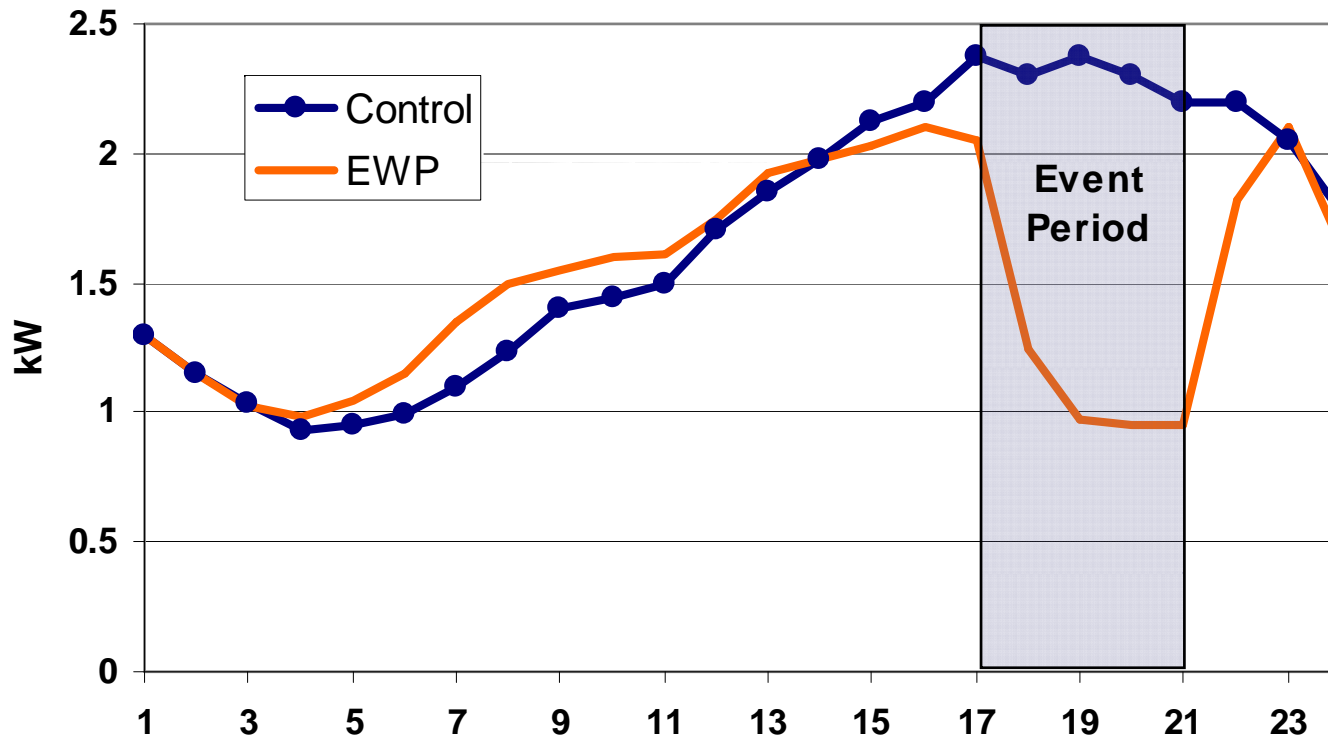
Period	Charge	Applicable
Base Price	6.9445¢ per kWh	All Hours
Night Discount	-3¢ per kWh	10 PM to 6 AM Daily
On-Peak Adder	3¢ per kWh	5 PM to 9 PM Weekdays, November to March
Critical Peak Adder	19¢ per kWh	5 PM to 9 PM When called, replaces On-Peak Adder, November to March; 1PM to 6PM When called, replaces the On-Peak adder, October, April and May

# Idaho Power Energy Watch Program

- Another good program
- Pilot Program for summers of 2005-2006
  - ▲ 76 Participants (single family homes a bit more likely)
  - ▲ 3.5% response rate and 2.3% churn rate
  - ▲ Customers saved 4.7% on their summer energy bills
- Used “pure” CPP rate (shown on next slide)
- Nine events called between June 15<sup>th</sup> and August 15<sup>th</sup>
  - ▲ Customers notified by telephone and email
- CPP periods were 5 pm to 9 pm – note 4 hour CPP period

# Energy Watch Program Results

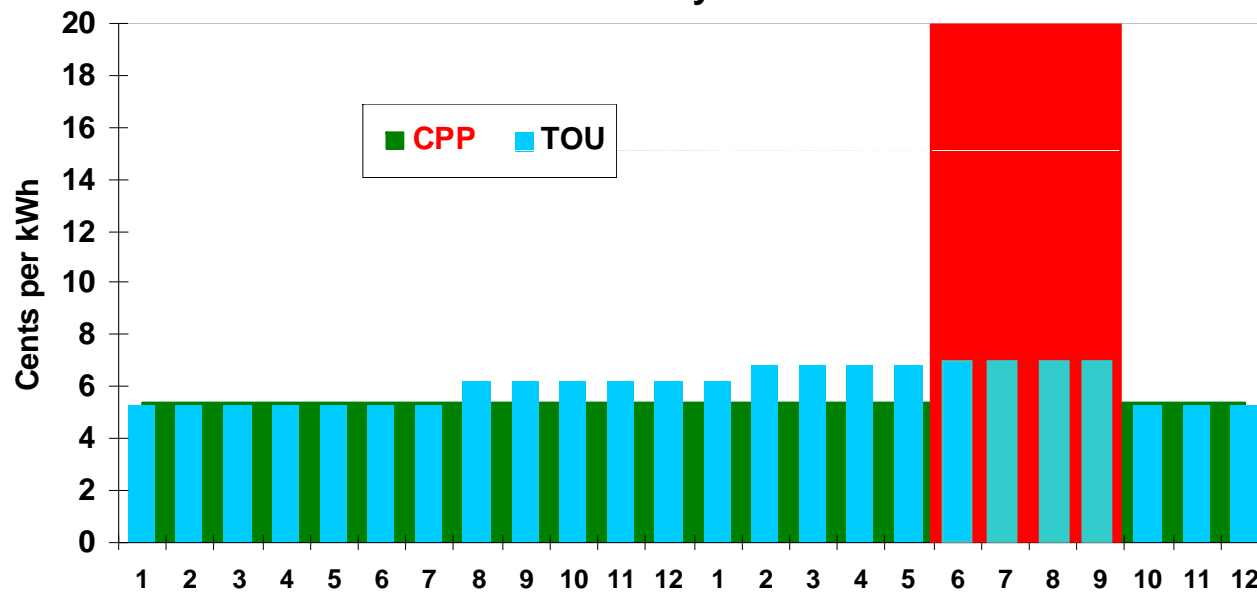
## Energy Watch Program - Average Impacts 57 Percent Demand Reduction



Source: Based on chart by RLW Analytics

# Compare from viewpoint of customer

Compare TOU to CPP  
for Idaho Power  
CPP Day



1. TOU price differentials very small compared to CPP price differentials.
2. Customers see higher prices for 41% of the summer hours compared to standard rate.
3. On CPP rate, customers higher prices for 1.6% of the summer hours.



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# Markets Recognizing and Paying for Energy Efficiency Value

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## ➤ Power Markets

- Paying for capacity value of energy efficiency

## ➤ Carbon Markets

- Recognizing that efficiency is key to any carbon mitigation strategy
- Channeling funds from carbon markets to pay for energy efficiency



# Regional Greenhouse Gas Initiative (RGGI)

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- Generators required to have carbon emission allowances
- Allowances allocated to states
  - States planning to sell all or most allowances, rather than simply assigning them to in-state generators
- States committing to use some or all auction proceeds for efficiency and clean energy



# Thanks for your attention

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