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California's Statewide Pricing Pilot

Key Findings for Residential Customers

NARUC Winter Meetings
Committee On Energy Resources and the Environment
February 16, 2005

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California's Statewide Pricing Pilot (SPP)

- An outgrowth of the CPUC OIR on advanced metering and demand response
- The outcome of a six-month working group process involving a wide variety of stakeholders with diverse interests and opinions
- The first large-scale (\$18m+), scientific experiment focused on dynamic pricing for mass-market consumers
- Jointly managed and funded by California's three largest IOUs
 - Pacific Gas and Electric
 - Southern California Edison
 - San Diego Gas and Electric
- Jointly coordinated by California's two regulatory agencies
 - California Public Utilities Commission
 - California Energy Commission

The SPP was designed to answer several key policy questions

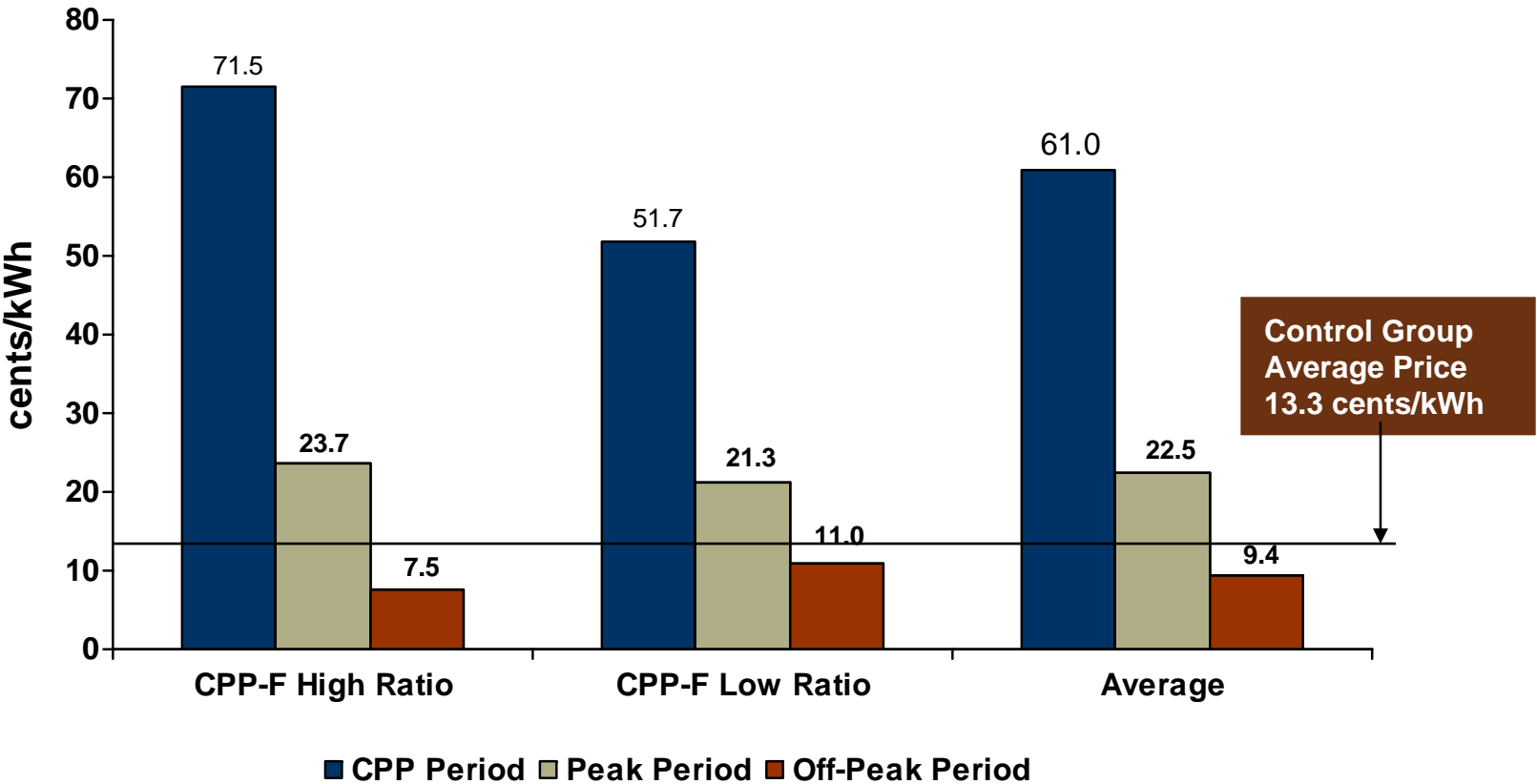
- Will customers shift or reduce load in response to time-varying price signals?
- What is the price elasticity of demand for electricity by time period?
- Does price responsiveness vary by rate type, climate zone and customer characteristics?
- Will customers accept time-varying and dynamic rates?
- Answers to these questions will provide input to the overriding policy question:
 - Are the benefits from reductions in energy use and coincident peak demand from more economically efficient pricing sufficiently large to off-set the metering, billing and other costs required to implement rate reform?

The SPP tested several pricing concepts

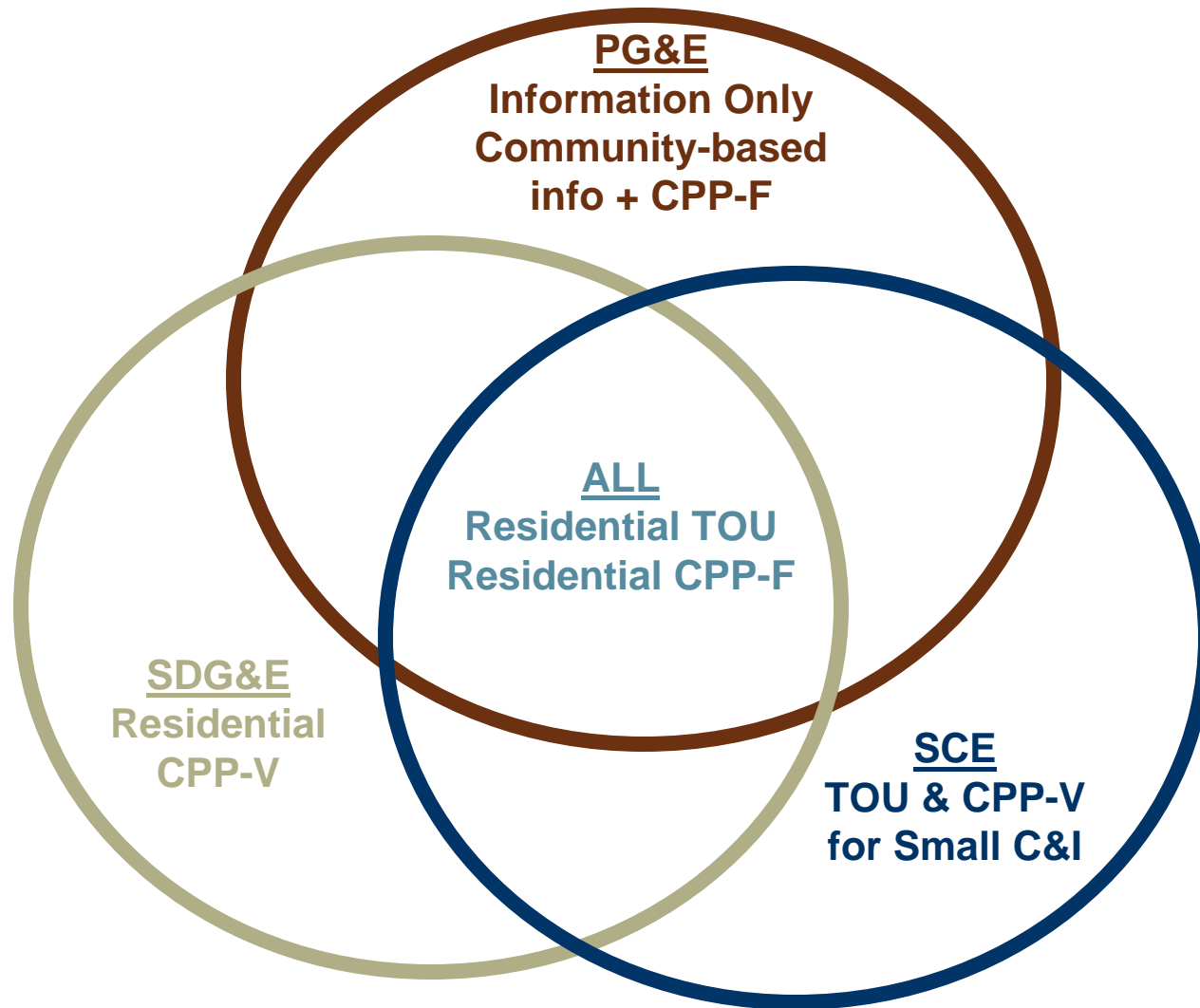
- Time-of-Use (TOU)
 - Traditional two-part TOU rate
 - Peak period from 2 pm to 7 pm
 - Rates vary seasonally
- Critical Peak Pricing-Fixed (CPP-F)
 - TOU rate 350 days a year
 - Much higher price during peak period on up to 15 days a year (referred to as CPP days), the timing of which is unknown
 - Day ahead notification
- Critical Peak Pricing-Variable (CPP-V)
 - Similar to CPP-F except notification can be as short as 4 hours ahead
 - Critical peak period can vary in length from 1 to 5 hours between 2 pm and 7 pm
 - Consumers are offered enabling technology to automate demand response
- The above prices are layered on top of very complex, five-tier, increasing block tariffs

The SPP tested multiple price levels for each rate type so that demand models could be developed and impacts estimated for price levels not included in the experiment

Residential Price For Consumer At Midpoint of Tier 3
(Weighted Average, Climate Zone 2)

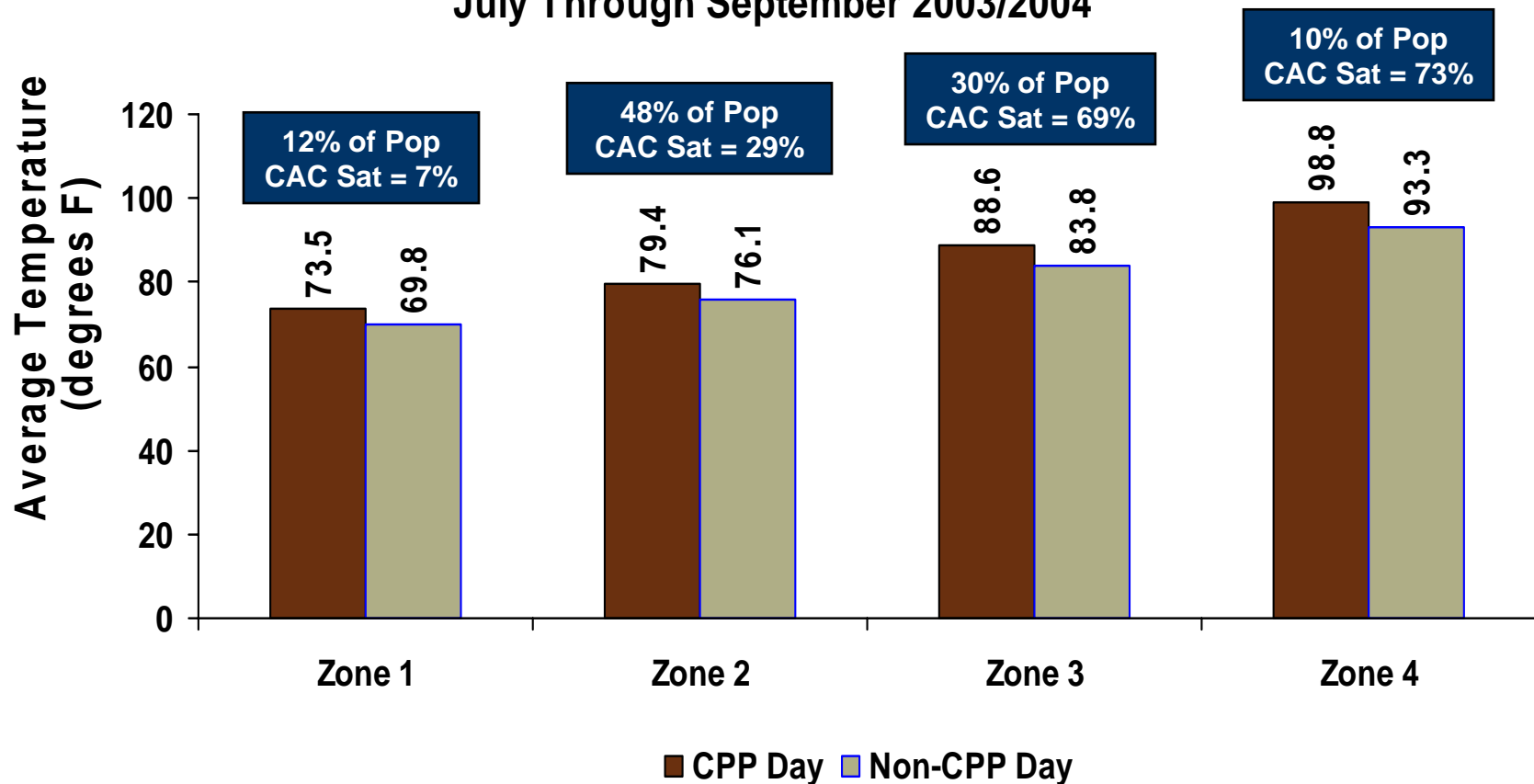


SPP treatments varied across the state



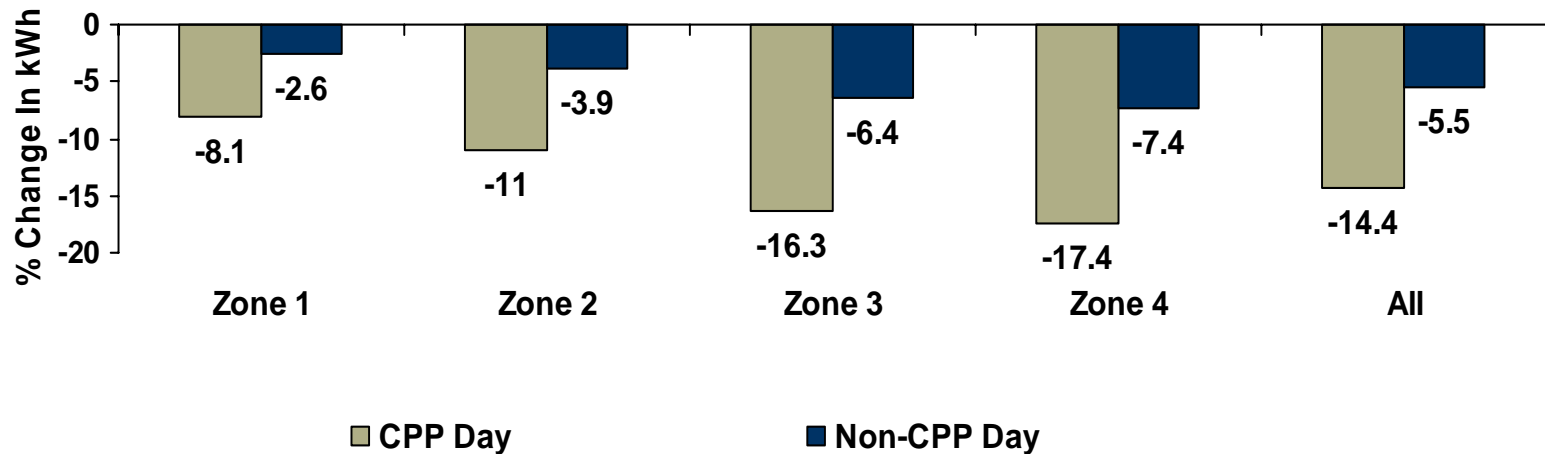
Population, central air conditioning (CAC) saturations, and weather vary significantly across California's diverse climate zones. The SPP sample was segmented across four climate zones.

Average Peak-Period Temperature
July Through September 2003/2004



Statewide, the residential CPP-F rate reduces peak period demand on CPP days by more than 14 percent. The impact is twice as large in the hotter climate zones compared with the cooler zones

Percent Change In Residential Peak Energy Use for the Inner Summer Months of July through September (Avg CPP-F Prices and Avg 2003/2004 Weather)*



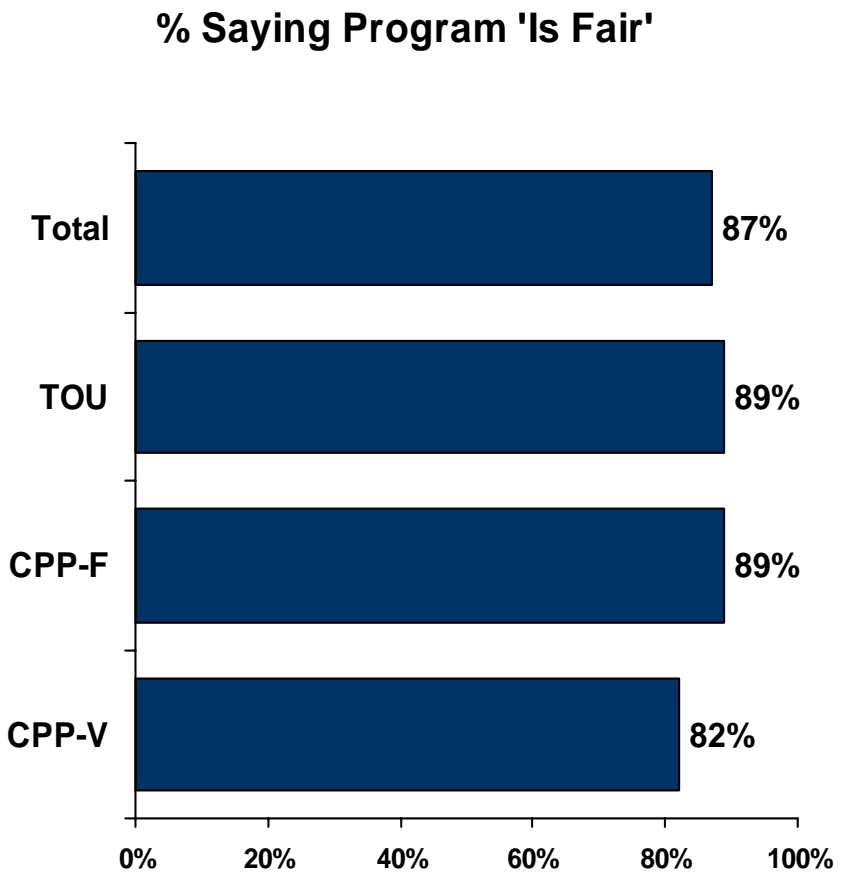
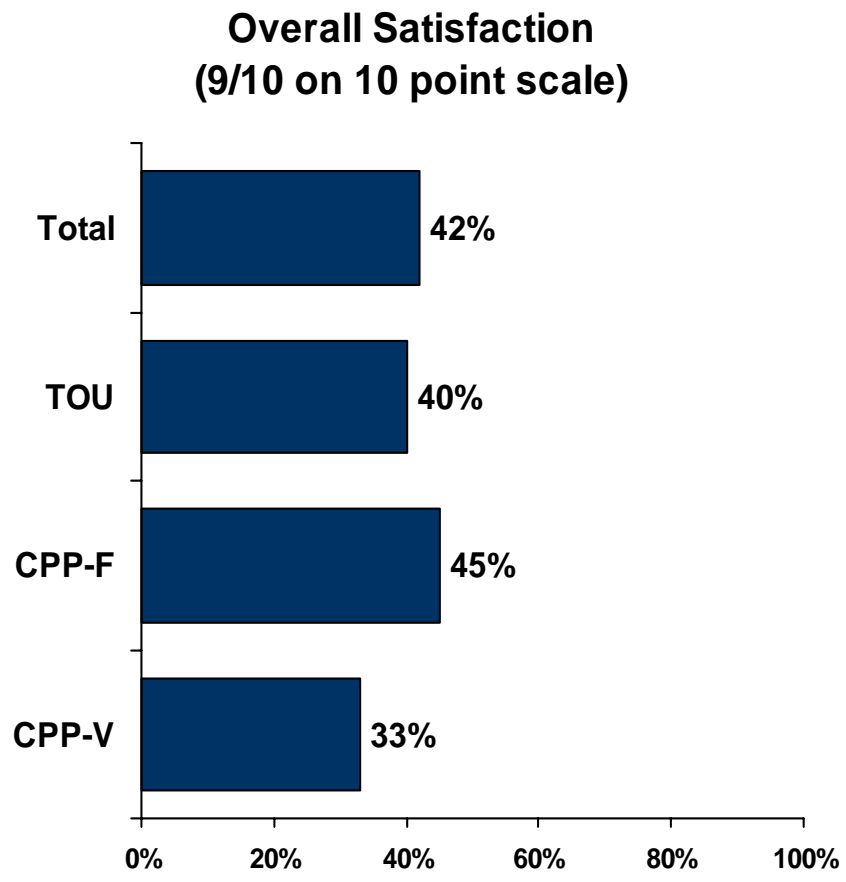
Other key findings about the residential CPP-F rate include

- Impacts stayed largely constant across the two summers
- Impacts did not drop on the second or third days of multi-day CPP events (such as might occur during a heat wave)
- Impacts were greater during the hot summer months of July through September than during the cooler months of May, June and October
- Households with central air conditioning produced greater load reductions and were more price responsive than households without air conditioning
- Demand response was less in the winter than in the summer, and less during the shoulder months than during the inner winter months of December, January and February
- Appealing for load reductions on CPP days in the absence of price incentives did not result in sustainable demand response

The SPP also provided estimates of the impact of TOU and CPP-V rates

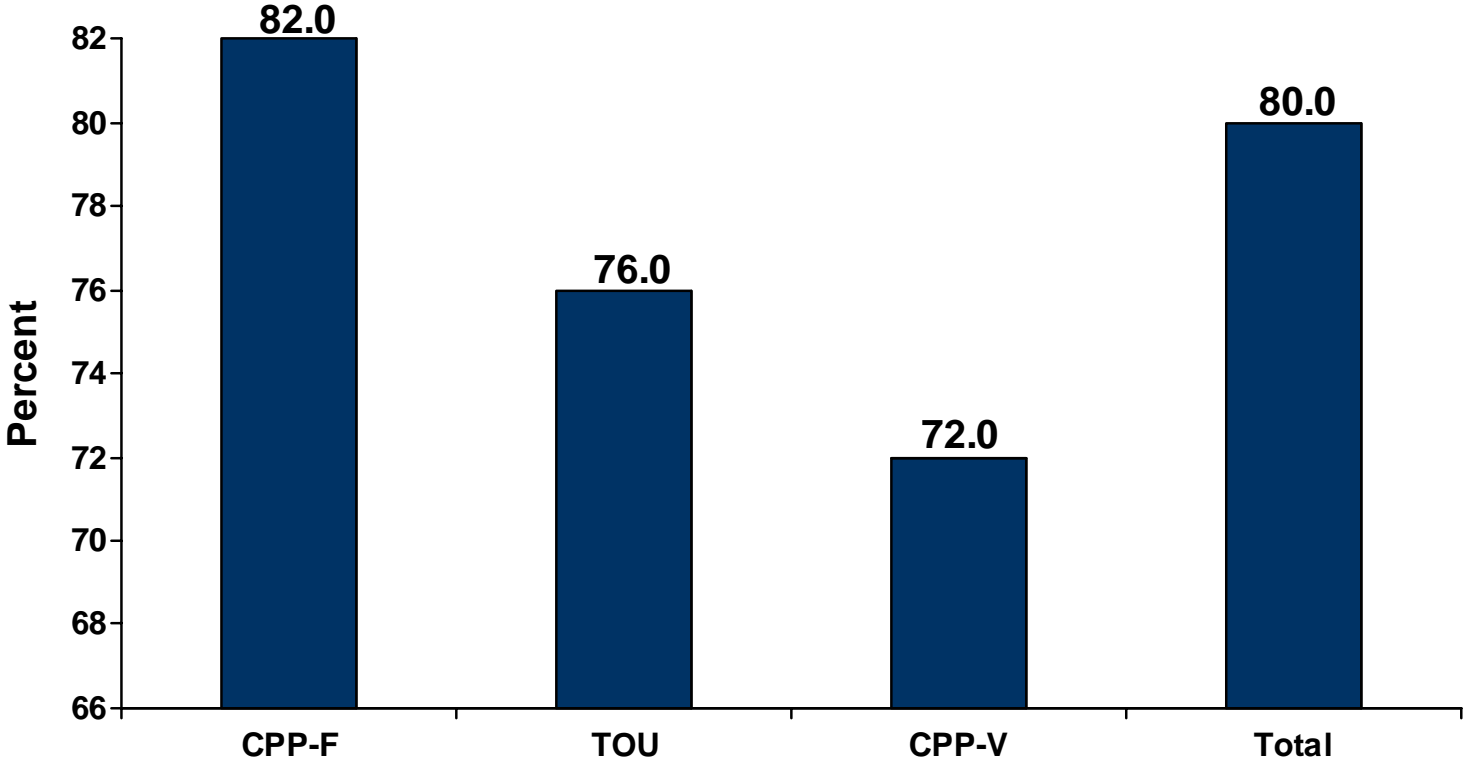
- The TOU rate produced a statewide reduction in peak-period demand of around 6 percent in 2003
 - In 2004, the TOU rate impact dropped to near 0
 - That is, TOU customers failed to sustain their demand response behavior across the two summer periods
- The CPP-V rate was tested among two groups of customers
 - About 80% of Track A customers had central air conditioners and about two-thirds had some form of automated control technology
 - All Track C customers had CAC and all had smart thermostats
 - Peak-period reductions for Track A customers on CPP days were around 15 percent
 - Peak-period reductions for Track C customers were around 27 percent
 - Roughly two-thirds of the Track C reductions can be attributed to the smart thermostat technology, the remainder to behavioral changes

Satisfaction among SPP participants was high and nearly all customers felt that the rates were "fair"



The vast majority of customers said they would prefer to continue on the new rate after the pilot. Roughly 75% have stayed on even after the participation incentive was discontinued and even though they are now paying a monthly meter charge.

Percent of Customers Who Would Prefer to Continue on Pricing Plan



What have we learned from the SPP?

- Residential consumers can and will respond to time varying rates generally and dynamic rates specifically
 - 15% reductions are possible with high price signals on CPP days
 - 5% reductions are possible with more modest TOU prices, but are they sustainable?
- The magnitude of customer response varies with rate type, price ratios, climate and customer characteristics
- If asked before hand, most consumers will say they don't like time-varying or dynamic rates. If placed on such rates, most consumers are satisfied and say they would prefer to stay on the rate
 - Opt-in programs may not attract many customers
 - Opt-out programs are unlikely to cause a consumer revolt and most consumers will stay if given a choice