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The Brattle Group

BRINGING DYNAMIC PRICING TO THE MASS MARKET

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March 7, 2008

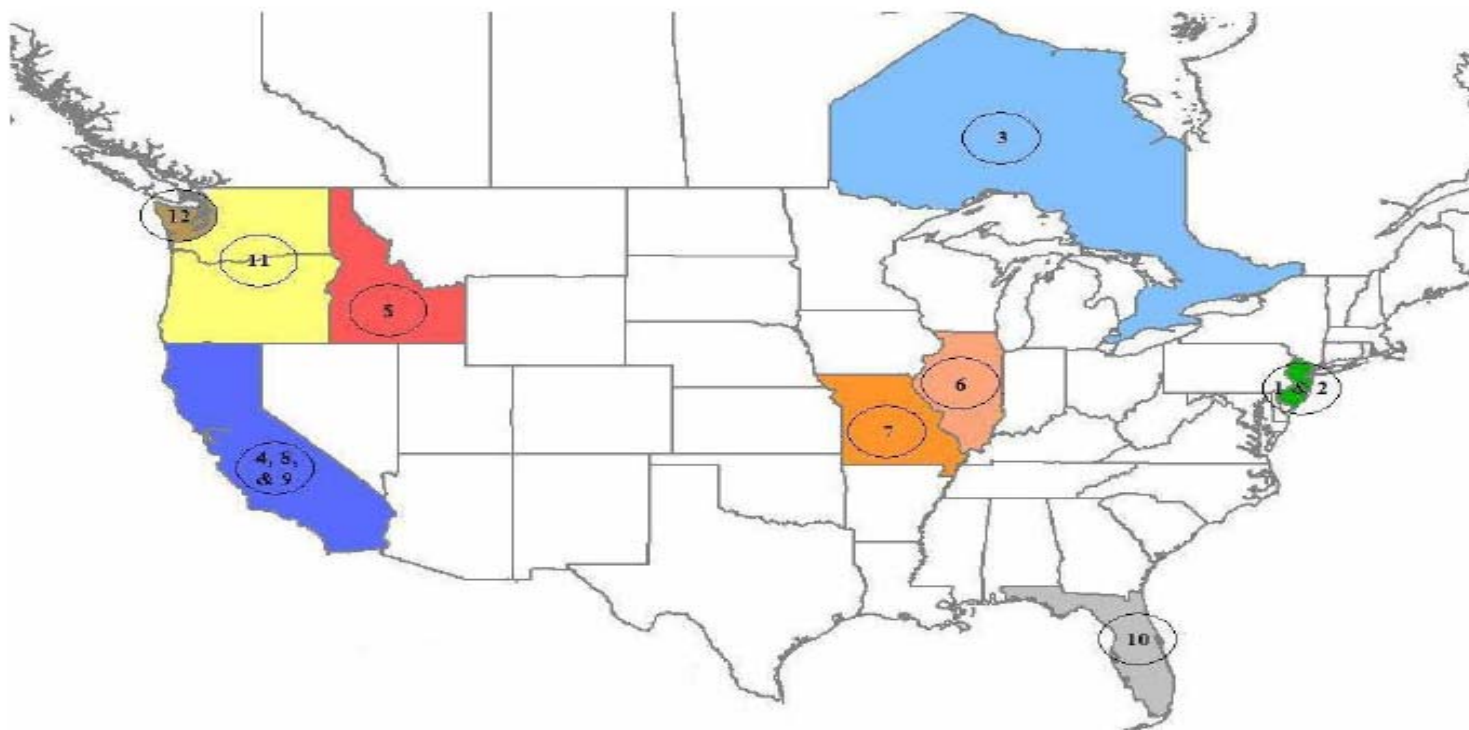
The demand response imperative

- NERC projects that capacity margins will fall below minimum levels in several areas in the next 2-3 years
- Electricity rates are likely to go up
 - Rising capacity costs
 - Rising fossil fuel prices
 - Climate Change
- We don't have time to build our way out of this problem
- Customers should be given the ability to control their usage, ensuring that the lights stay on and their bills come down
- AMI and dynamic pricing can help

However, not every customer is on AMI, nor is every AMI customer on dynamic pricing

- Regulators and utilities are concerned about AMI costs, the perceived “rate volatility” associated with dynamic pricing, and the threat of a backlash
- In attempts to ensure rate stability, regulators and utilities forgo the benefits that dynamic pricing can bring in the form of reducing customers’ energy bills
- In the eastern PJM region, a load drop of 3% in the top 100 hours of only 5 utilities is estimated to yield customer benefits of \$275 million per year
- But will customers respond?

Several pilots have addressed this burning question

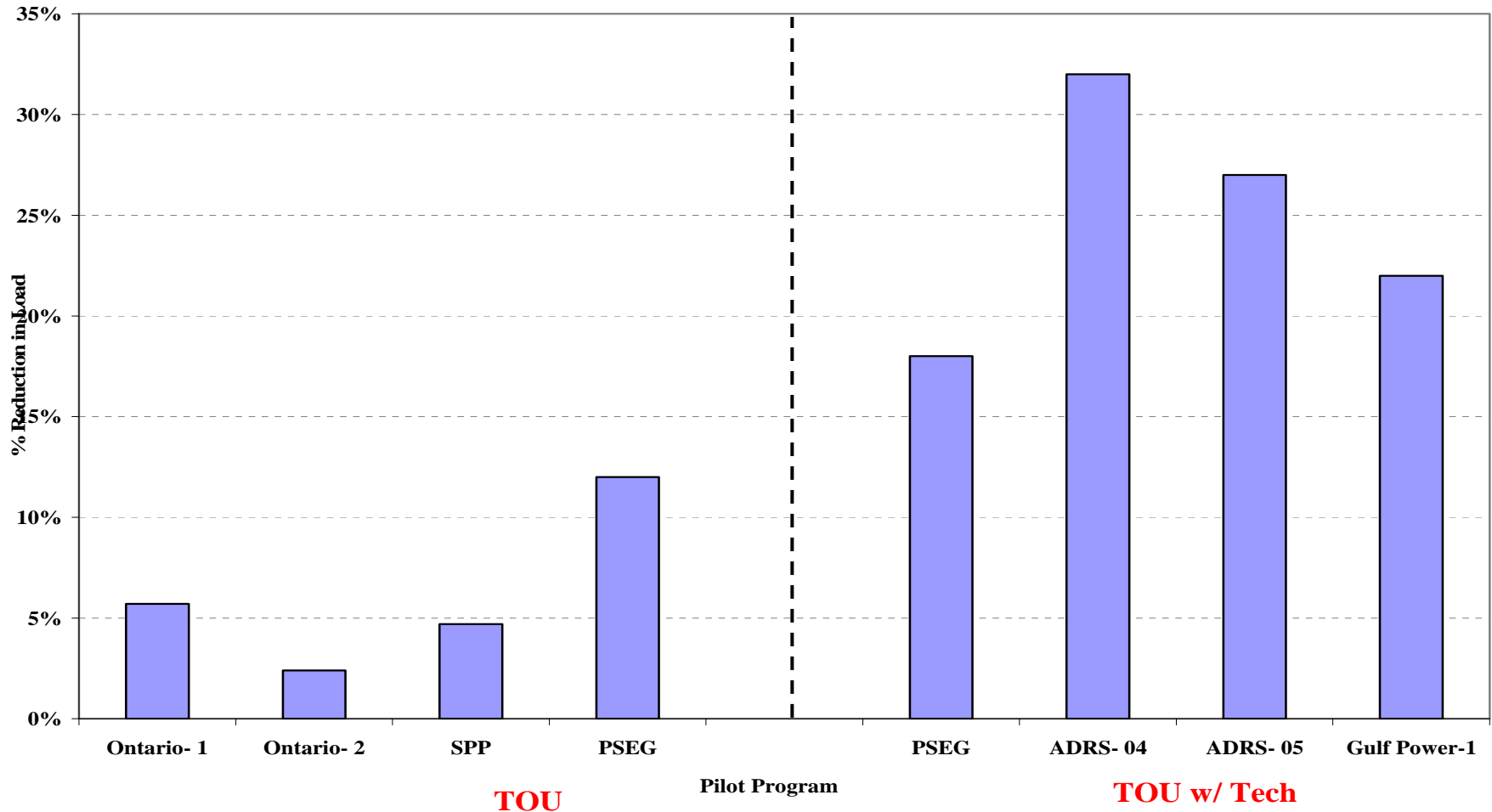


- 1- PSE&G Pilot Program
- 2- GPU Pilot Program
- 3- Ontario Energy Board Smart Price Pilot
- 4- Anaheim Critical Peak Pricing Experiment
- 5- Idaho Residential Pilot Program
- 6- Energy-Smart Pricing Plan

- 7- AmerenUE Residential TOU Pilot
- 8- ADRS Pilot
- 9- Statewide Pricing Pilot
- 10- The Gulf Power Select Program
- 11- Olympic Peninsula Project
- 12- PSE TOU Program

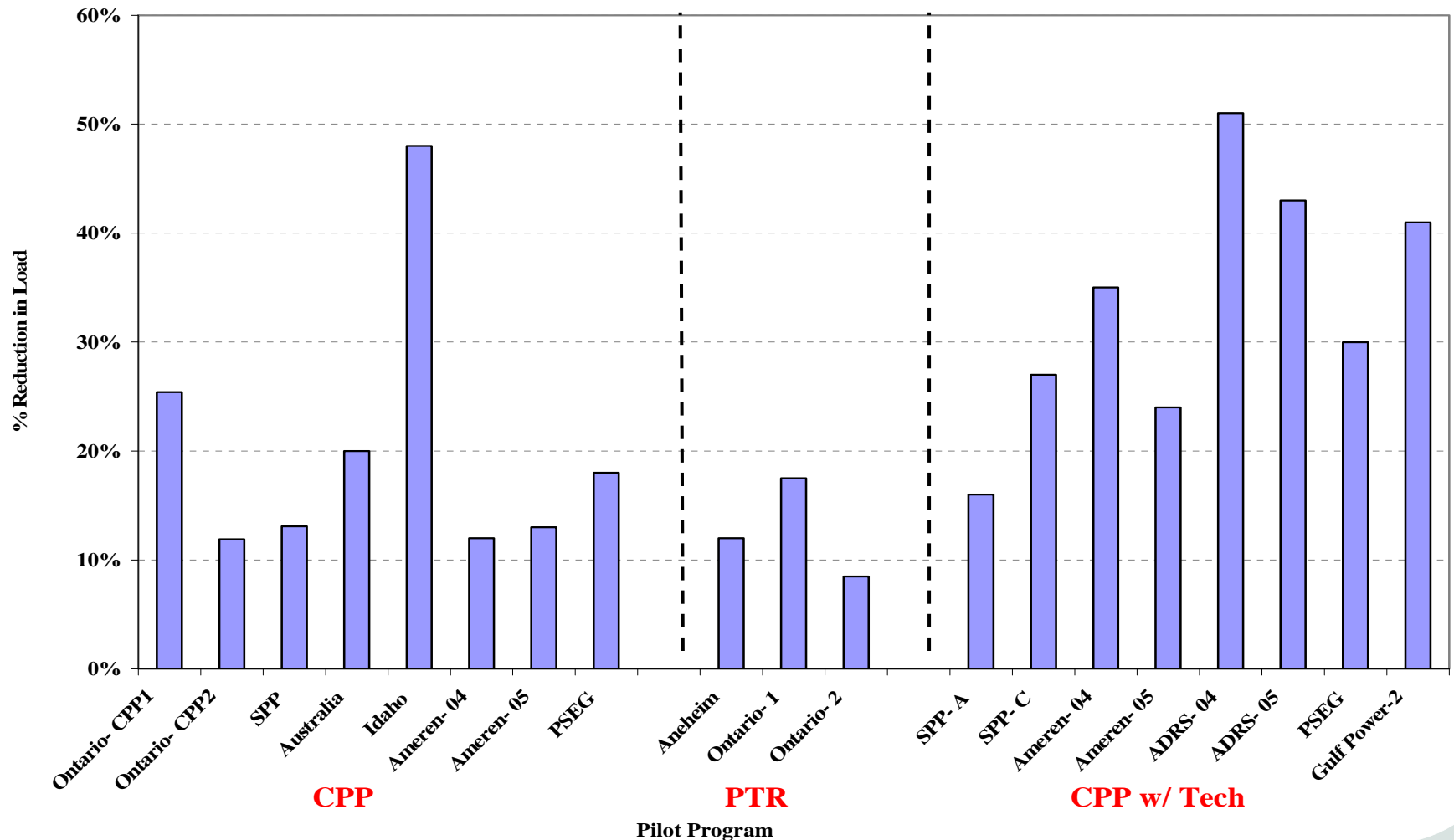
Across these pilots, there is compelling evidence of demand response

Percentage Reduction Estimates from Reviewed TOU Pilot Programs



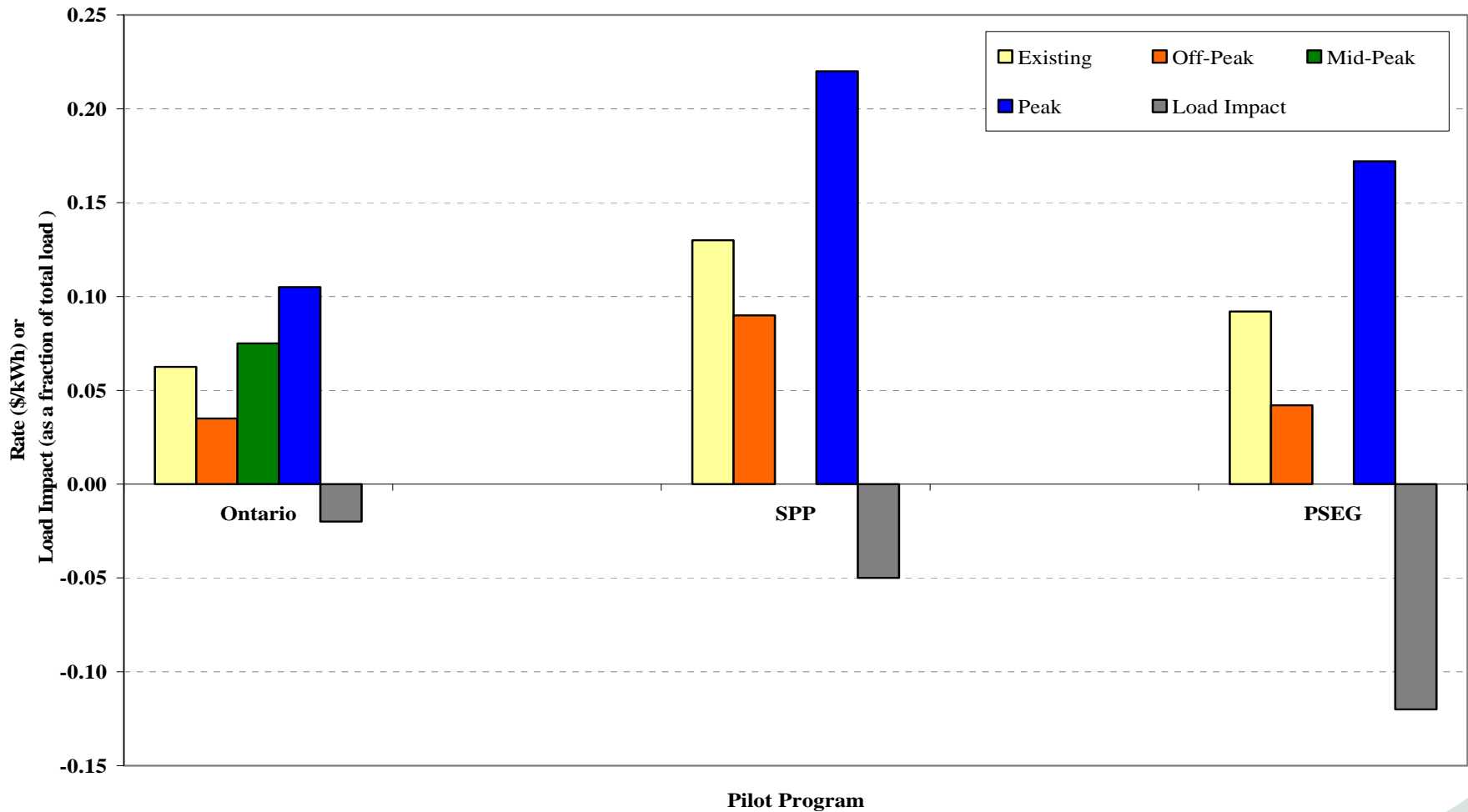
Higher impacts are observed for dynamic pricing rates than for TOU rates

Percentage Reduction Estimates from Reviewed CPP/PTR Pilot Programs



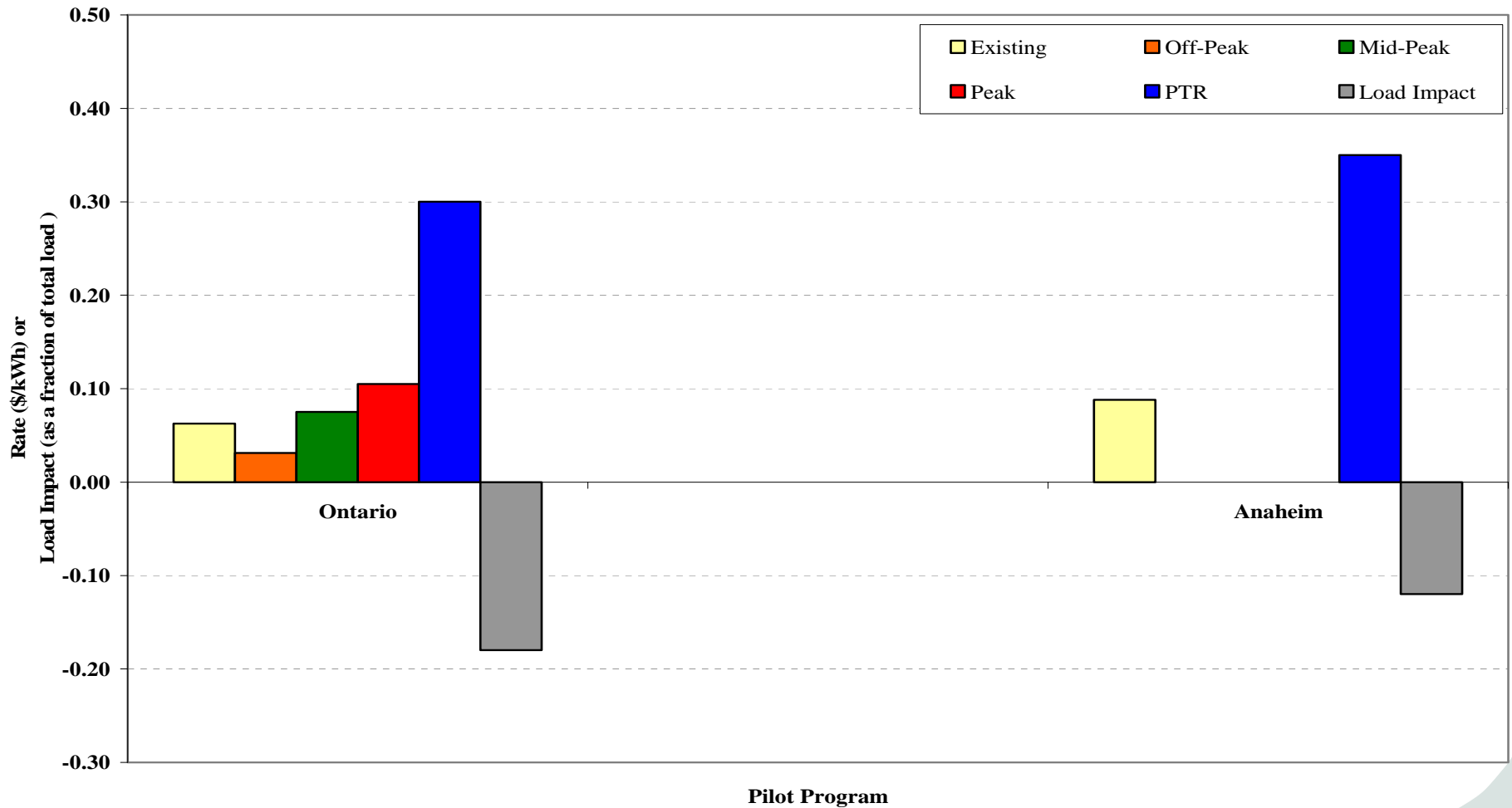
Time-of-use (TOU) pricing programs provide a modest amount of demand response

Comparison of Time of Use (TOU) Tariffs and Resulting Impacts



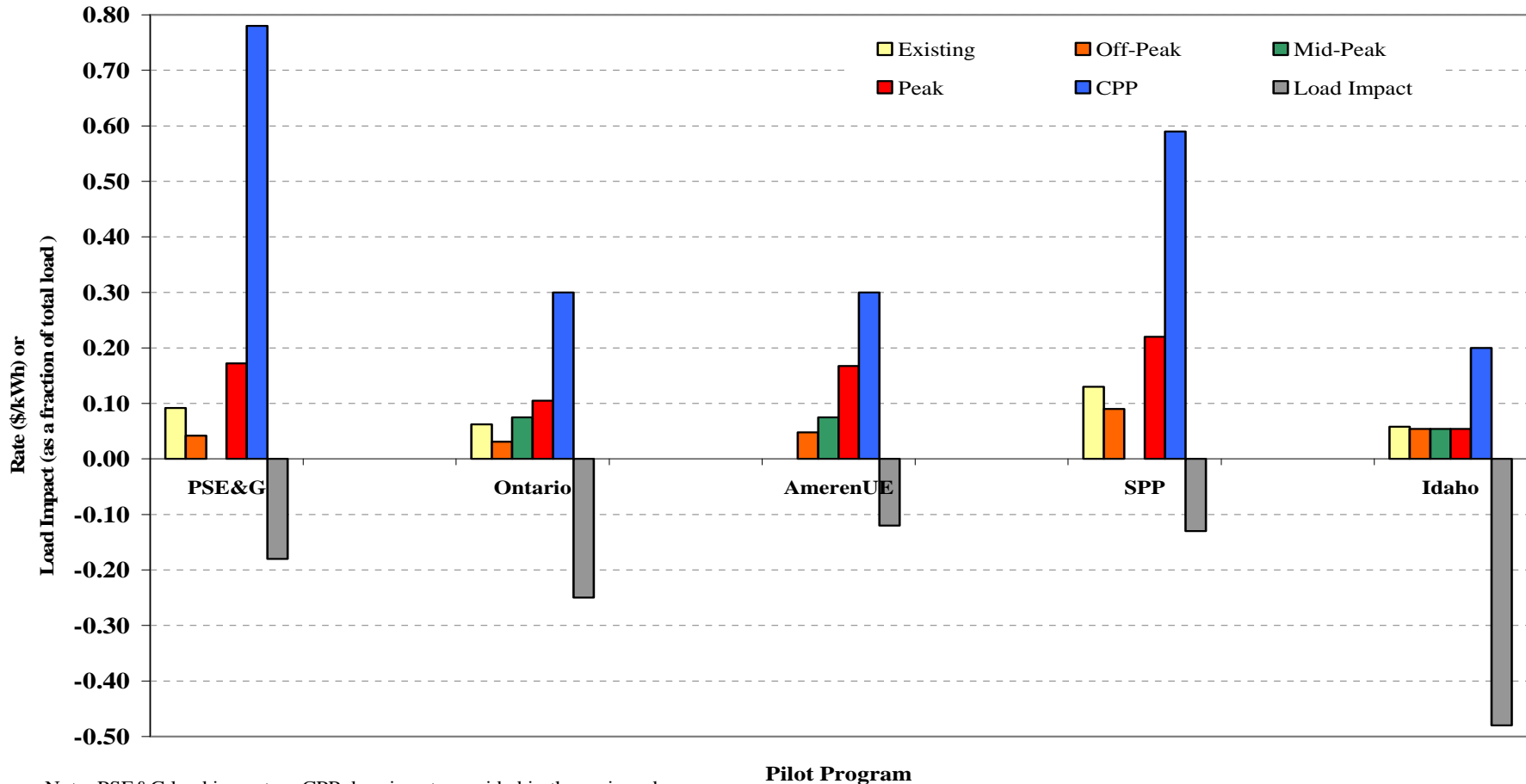
The PTR rate has achieved demand response but the evidence is limited to two pilots

Comparison of Peak Time Rebate (PTR) Program Tariffs and Resulting Impacts



Different CPP tariffs induce different load impacts during the peak hours of critical event days

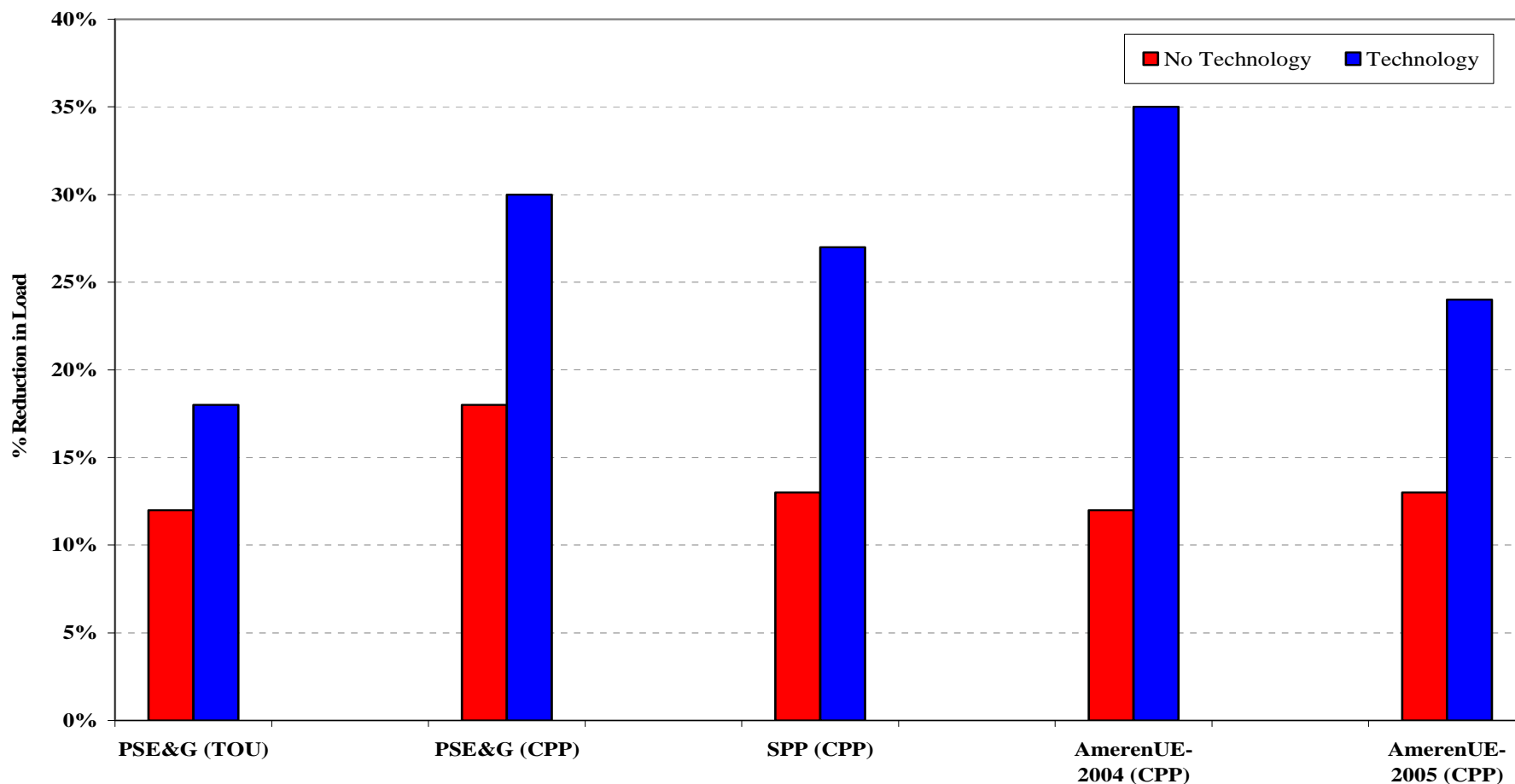
Comparison of Critical Peak Pricing (CPP) Program Tariffs and Resulting Impacts



Note: PSE&G load impact on CPP days is not provided in the reviewed study. The load impact is calculated using the reported kWh reductions and an estimate of consumption during peak on CPP days.

Enabling technologies magnify demand response

Role of Technology on Pilot Program Impacts

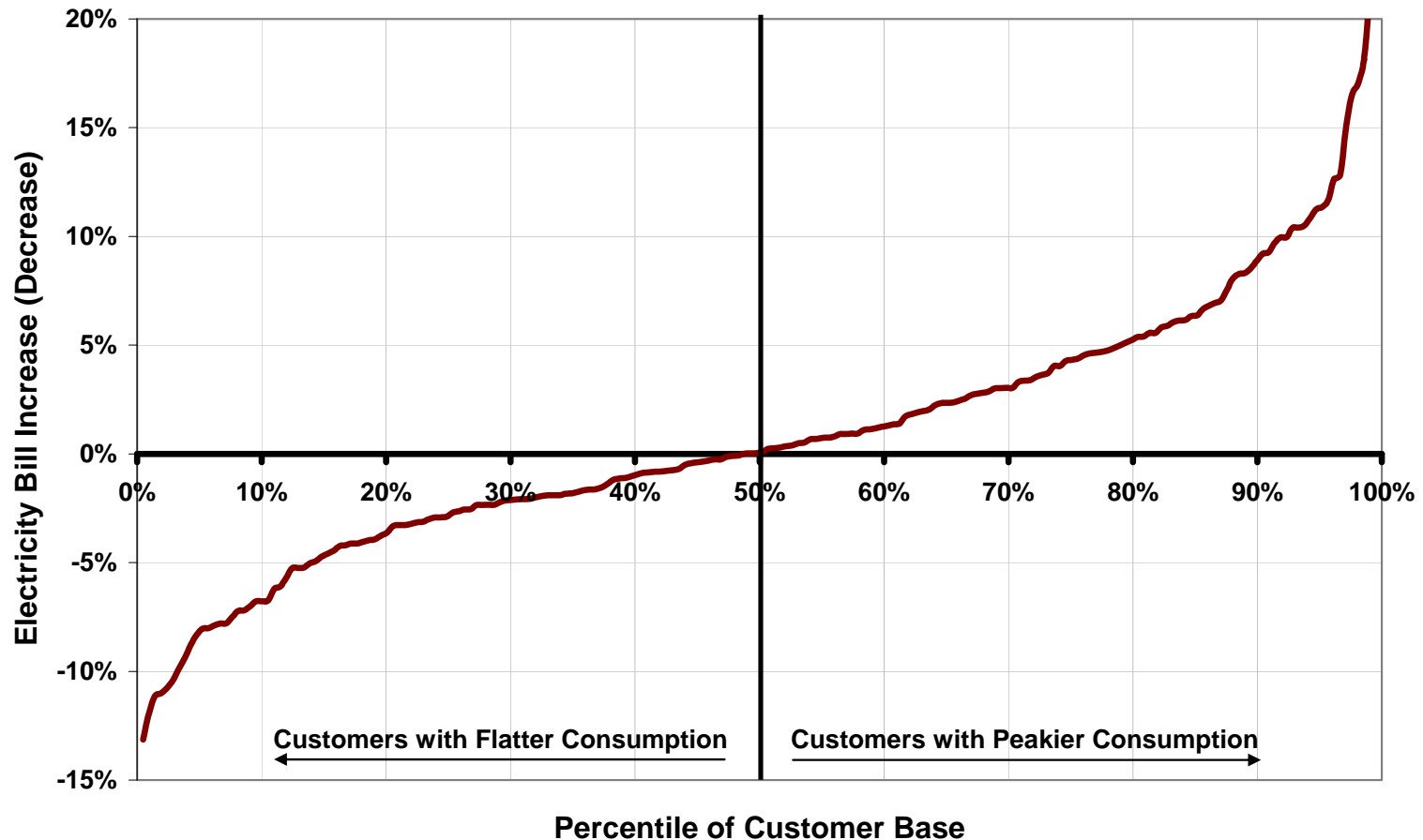


Note: PSE&G load impacts on CPP days are not provided in the reviewed study. The load impacts are calculated using the reported kWh reductions and an estimate of consumption during peak on CPP days.

Pilot Program

But there is another problem: Bills will rise for 50% of the customers who choose dynamic pricing

Distribution of Bill Impacts

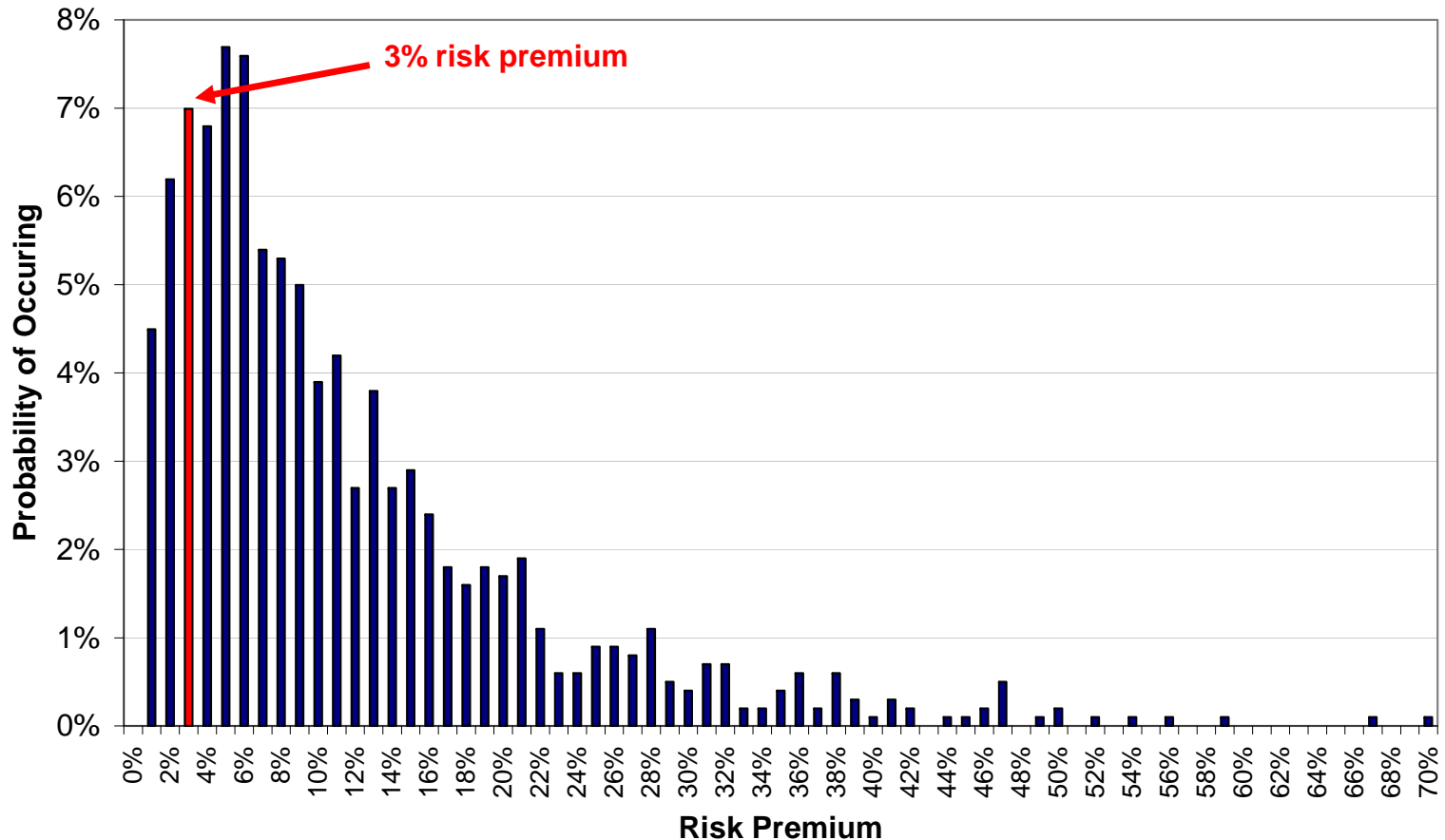


That fear may keep customers from even trying out the new rates

- And *fear of that fear* may keep us from even offering dynamic pricing to customers, since we are anxious to “protect the customers from themselves”
- How do we break out of this bubble?

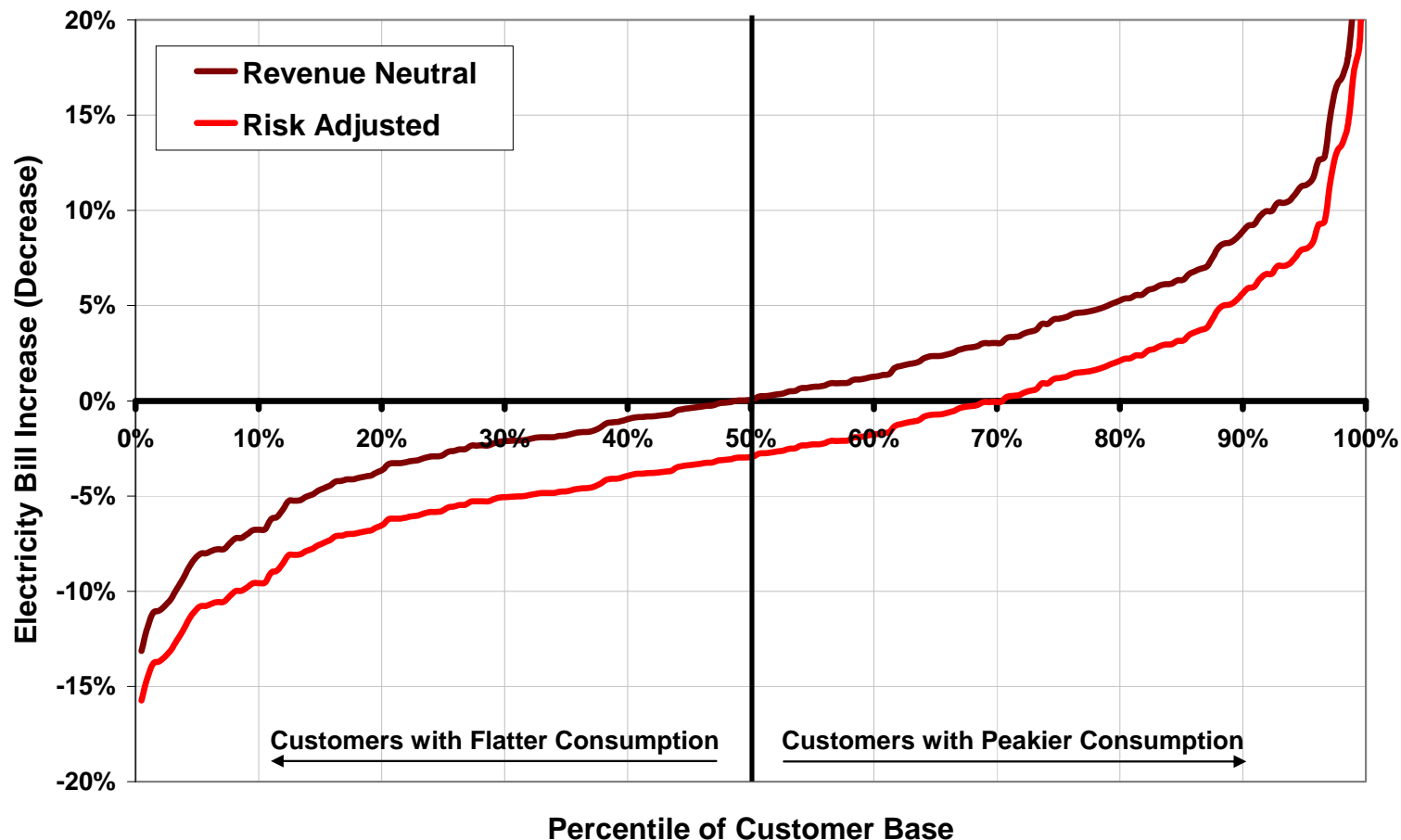
Flat rates embody an *implicit* but very real risk premium that insures customers against price volatility

Probability Distribution of Risk Premium



By crediting customers for the risk premium, dynamic pricing rates become attractive for 70% of customers

Distribution of Bill Impacts



With demand response, dynamic pricing becomes attractive to over 95% of customers

Distribution of Bill Impacts

