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Smart Rate Design

Smart Energy Consumer Collaborative Rate Design Webinar

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What does this rate design say?



Rate design should make the choices the customer makes to minimize their **own bill**

consistent with the choices they would make to minimize **system costs**

Smart Rate Design



For a Smart Future

Authors
**Jim Lazar and
Wilson Gonzalez**

July 2015

Result: Smart Rates

Connect To Grid

Customer Charge	\$/Month	\$4.00
Site Infrastructure	\$/kW	\$1.00

Usage

Off-Peak	\$/kWh	\$ 0.08
Mid-Peak	\$/kWh	\$ 0.14
On-Peak	\$/kWh	\$ 0.22
Critical	\$/kWh	\$ 0.75

Key Current Issues

- Monthly Fixed Charge
- Residential Demand Charges
- TOU and Critical Peak Rates

Fixed Charges

Comparison of Two Rate Approaches

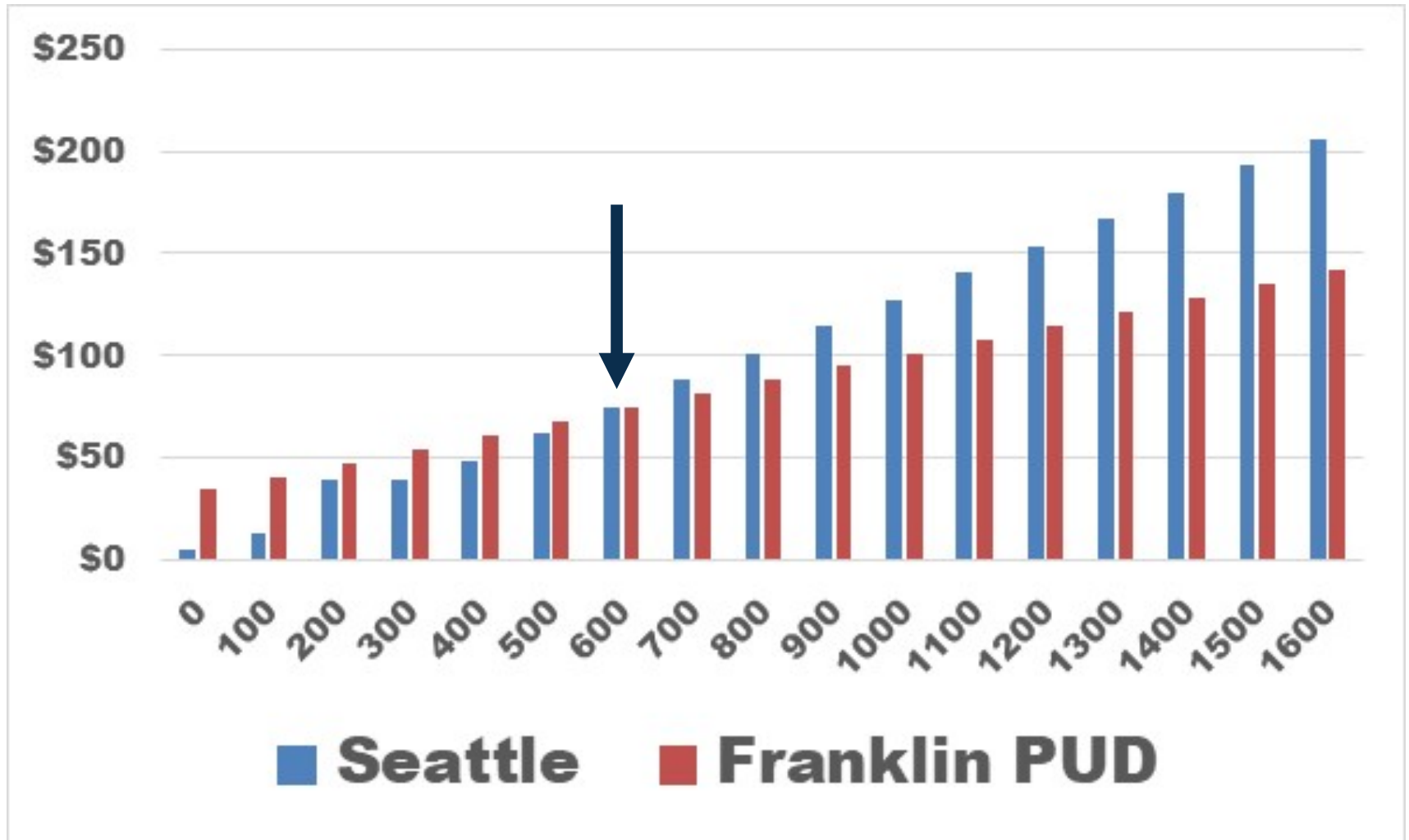
Seattle City Light

Fixed Charge:	\$4.98
First 480 kWh:	\$.077
Over 480 kWh:	\$.131

Franklin PUD

Fixed Charge:	\$34.00
All kWh:	\$.0673

Bill Comparison



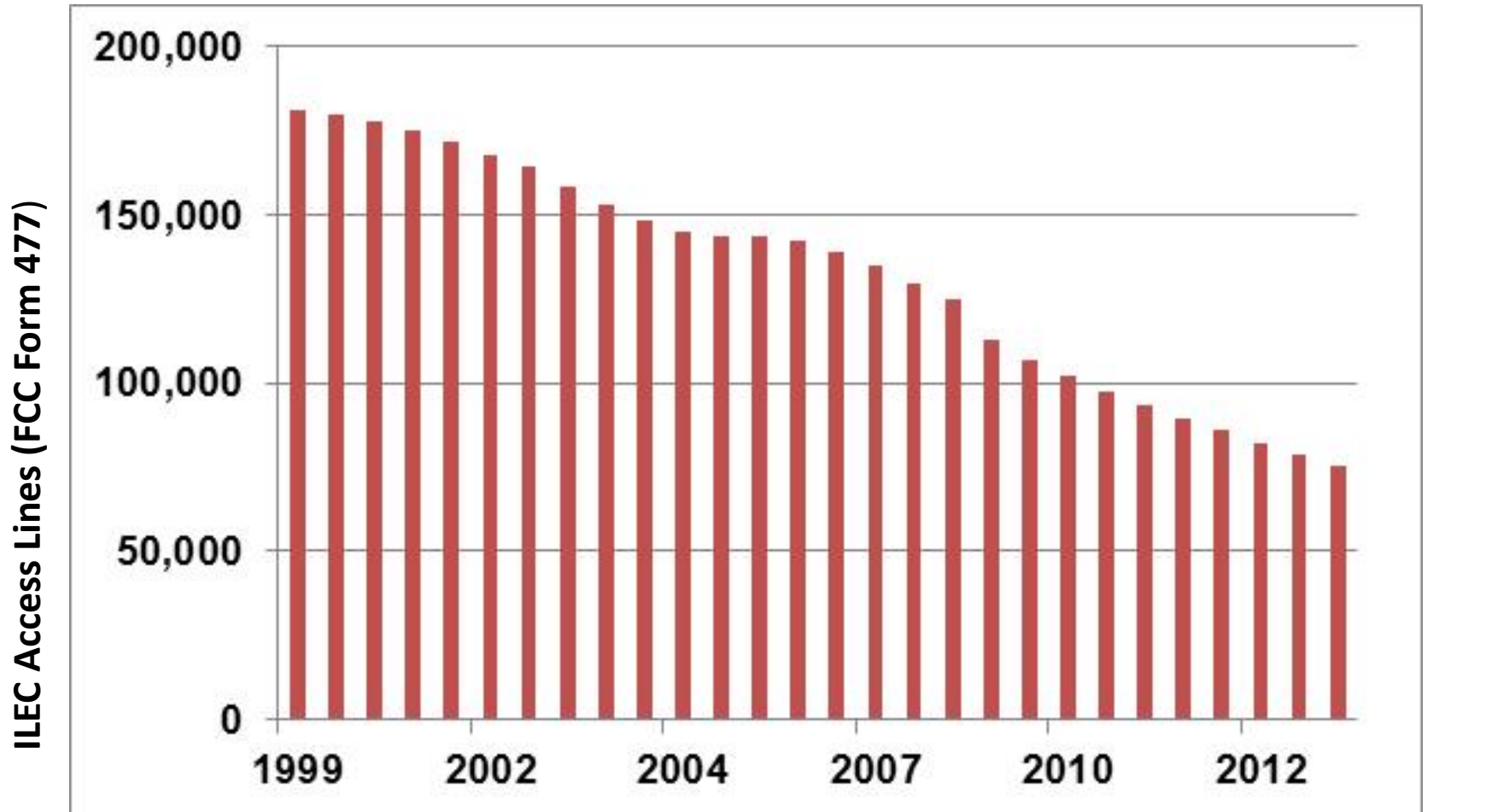
How do other industries recover fixed costs?



We Pay For Other “Grids” In Volumetric Prices



Customers Served By Incumbent Local Exchange Carriers



Residential Demand Charges



Residential Demand Charges

- Monthly fee based on the single highest rate of usage (1 hour or even 15 minutes) in a month
- Common for larger commercial and industrial consumers
- Seldom used for residential or small commercial
- Being sought as a way to get distribution cost recovery from solar customers under net-metering

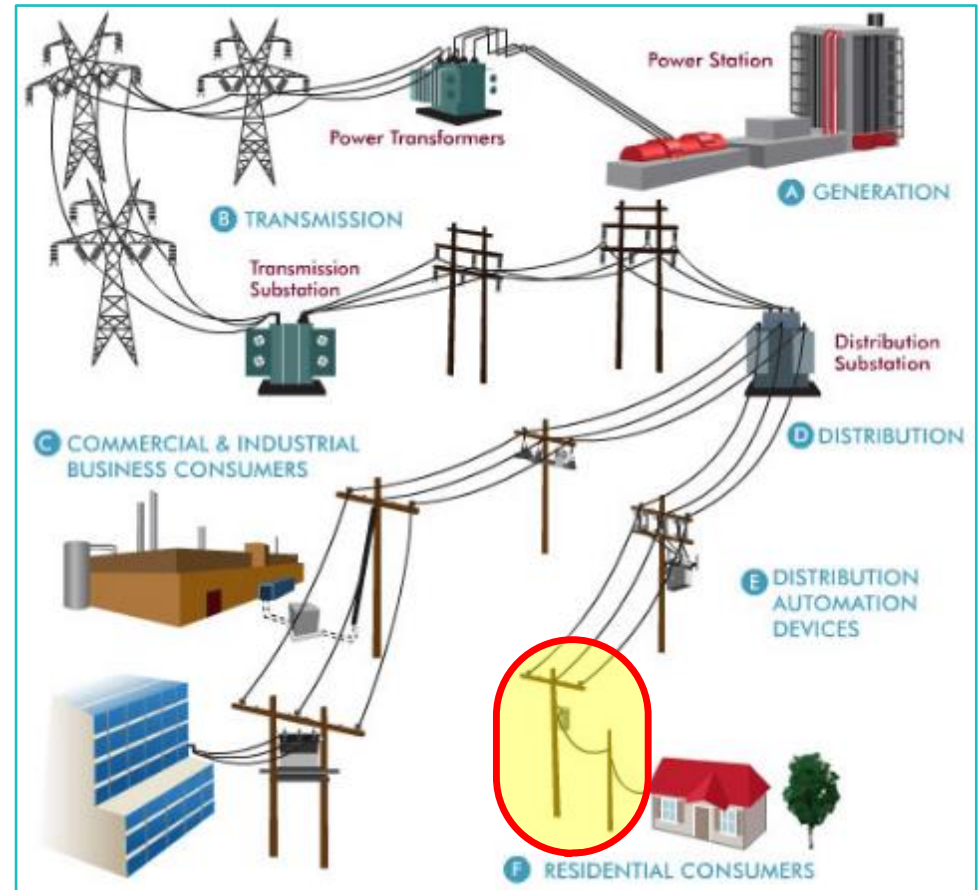
Illustrative Residential NCP Demand Charge Rate

Customer Charge	\$/Month	\$5.00
Demand Charge	\$/kW/Month	\$10.00
Energy Charge	\$/kWh	\$.10

The Basic Issue: Very Few Costs Are Related to Customer-Specific Demand

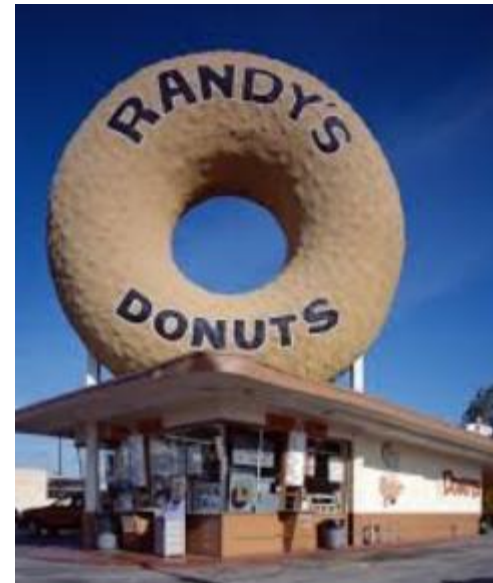
Most of the distribution system is shared, and sized to the group **coincident** demand.

Only the connection to the system is sized based on customer **non-coincident** demand.



Lower Load-Factor Customers Can Share Capacity

- Morning loads
- Evening loads
- 24/7 loads
- Both CP and NCP rates unfair to shared demand customers



High School Stadium Lighting: The Caricature of the Problem



The Stadium Power Bill

Stadium Lighting With Demand Charge
(10 Hours Per Month)

50 kW @ \$10/kW **\$ 500**

500 kWh @ \$.10/kWh **\$ 50**

Total Bill: **\$550**

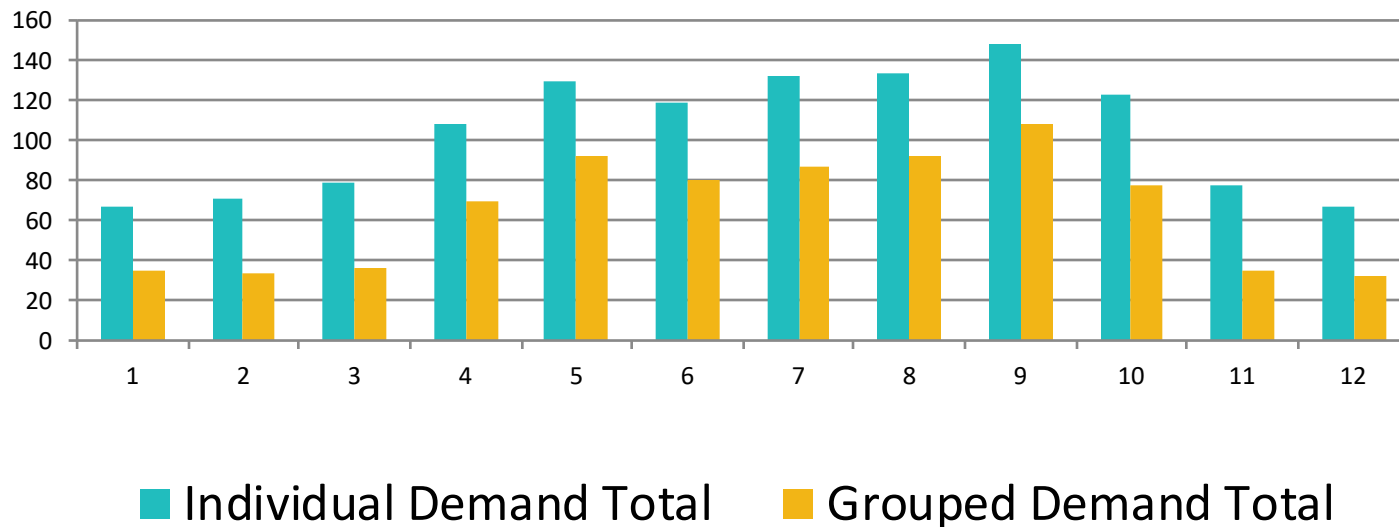
Average cost /kWh: **\$1.10**

Apartments: The Achilles Heel of Bad Rate Design



Demand Charges Particularly Unfair to Apartments

- Little diversity behind the meter
- Lots of diversity at the point of interconnection
- Utility only serves the combined load



Result: Smart Rates

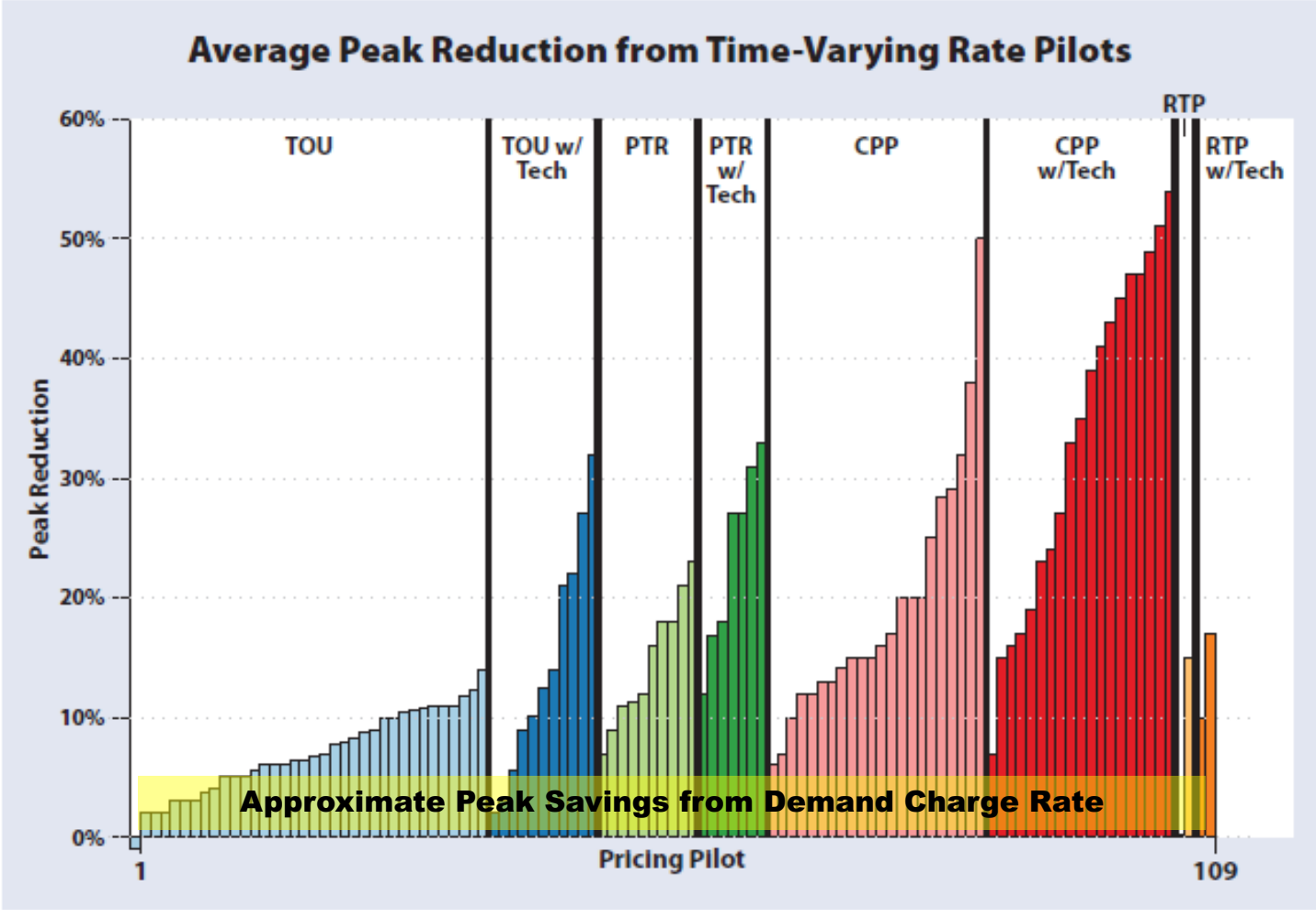
Connect To Grid

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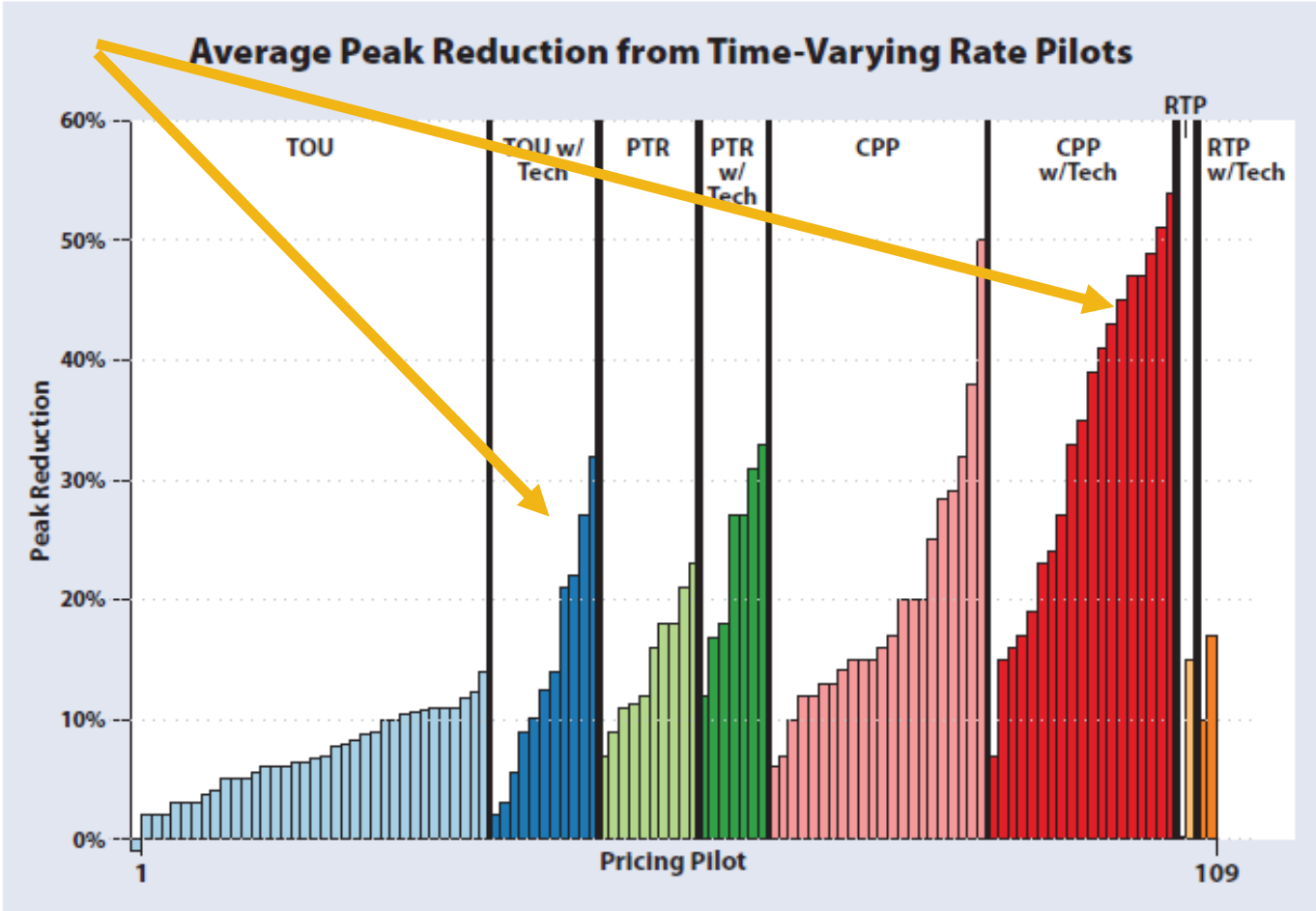
TOU & Critical Peak Pricing Work



Technology Can Help



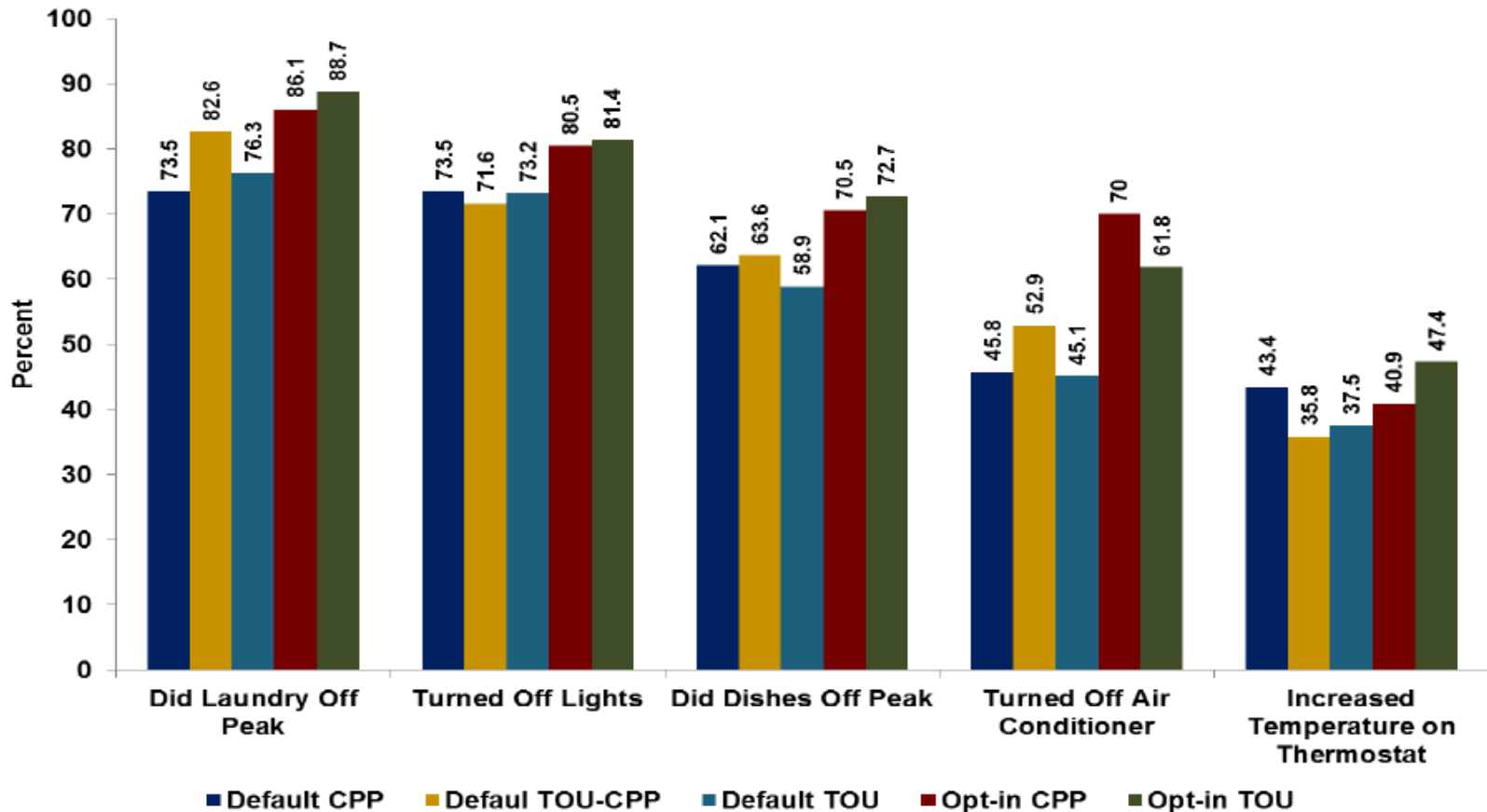
Technology Can Help



Real-World Results

Sacramento Municipal Utility District

Figure 11-6: Behavioral Actions Taken to Reduce Load Between 4 and 7 PM



Real-World Action Fort Collins, Colorado

	Summer	Winter
Customer Charge	\$6.16	\$6.16
Off-Peak	\$.066	\$.065
On-Peak	\$.235	\$.211
Tier Charge All Usage Over 700 kWh	+\$0.017	+\$0.017



About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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