

Smart Meters: the Consumer Experience

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eMeter Direct Consumer Experience

 **Anaheim Public Utilities** – First ever critical peak rebate program

PG&E - Smart meters for PG&E's customers above 200 kW representing \$3B annual revenue

California Large IOUs - Data management for the California Statewide Pricing Pilot

 **PowerCentsDC™** – Project design, implementation and operation for Washington D.C. smart meter/thermostat program

Ontario Smart Price Pilot – Project design, implementation, and operation for time-of-use and critical peak pricing/rebate pilot

Southern Company – Integrated AMI-distribution automation pilot



The Consumer's Perspective

"All the pieces are needed to make the smart grid work"

Segments

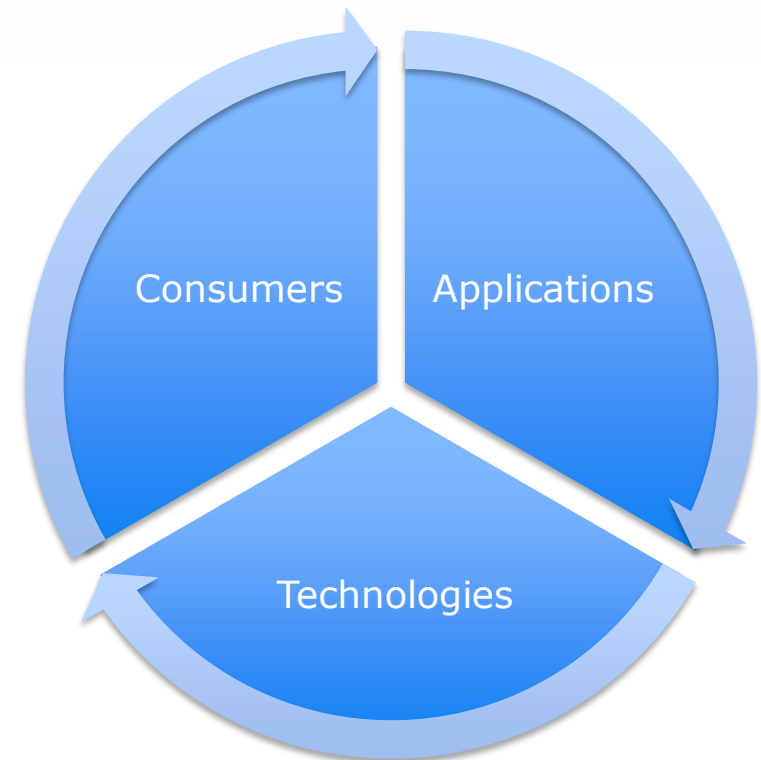
- Savers
- Sustainers
- Technophiles
- Ignorers

Applications

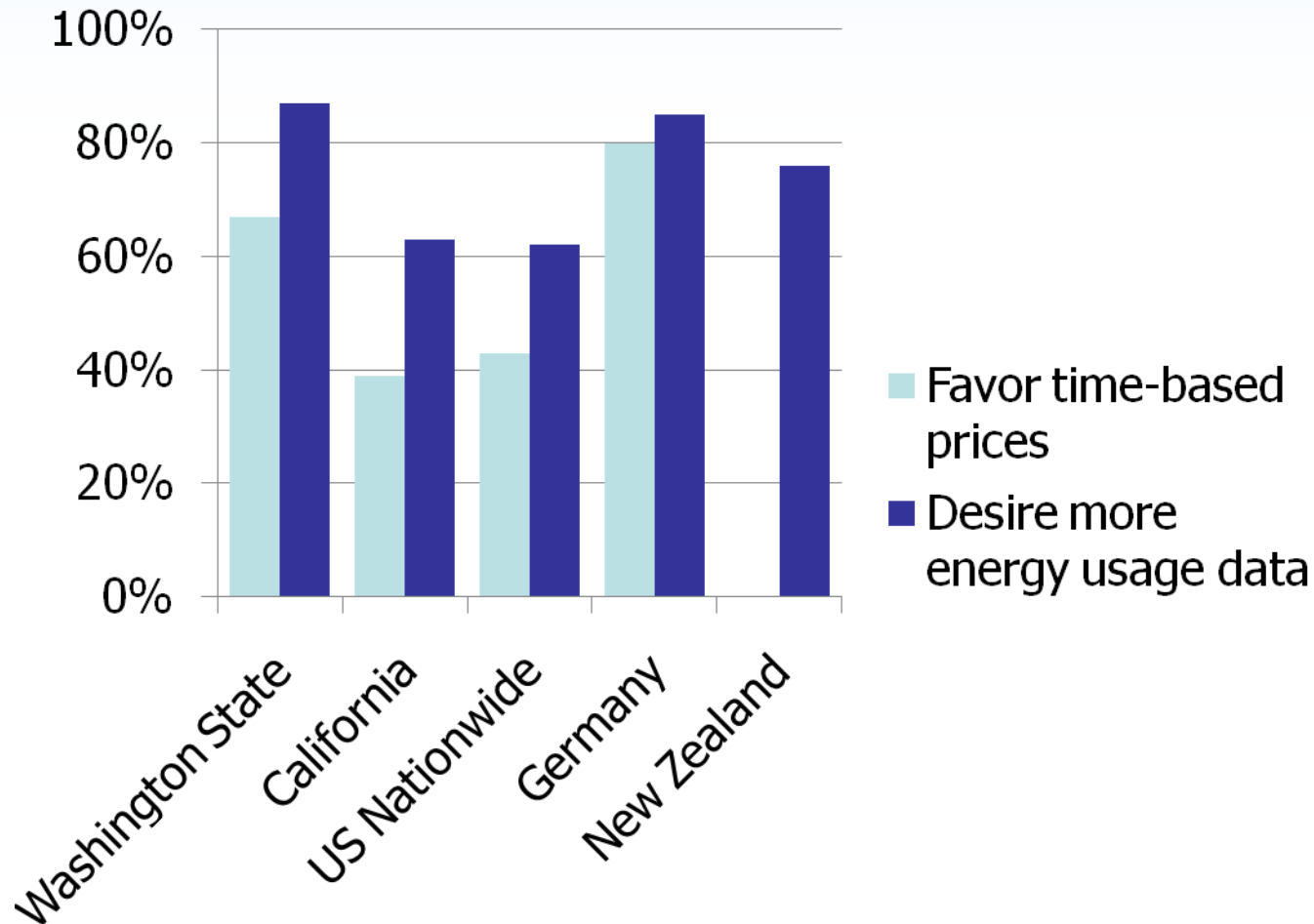
- Energy information
- Pricing choices
- Convenience of automation

Technologies

- Smart meters and communications
- Smart thermostats, lighting, appliances, equipment
- Software



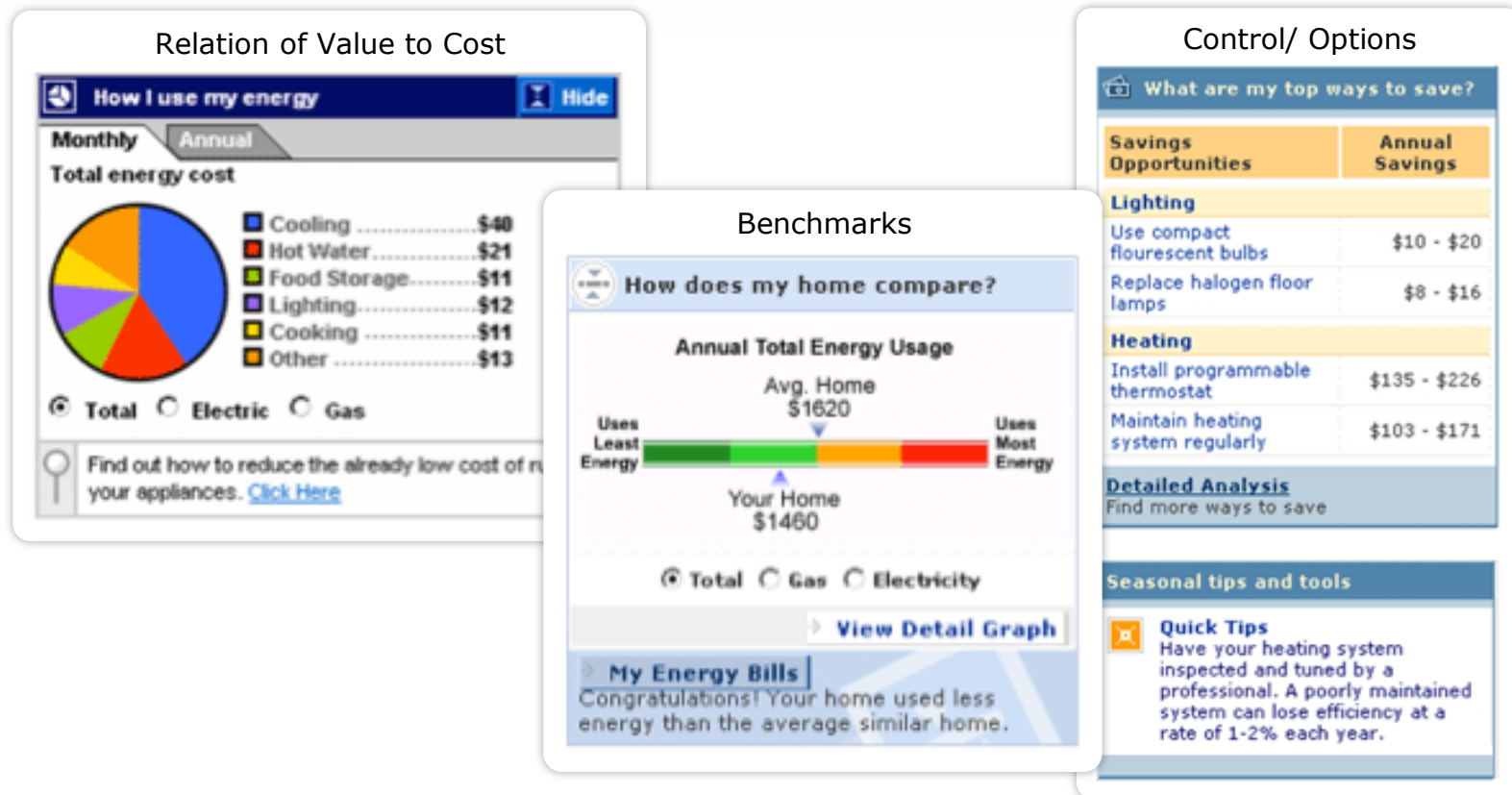
Do consumers want information and pricing choices?



Source: PSE, Accenture Power Perceptions, Genesis

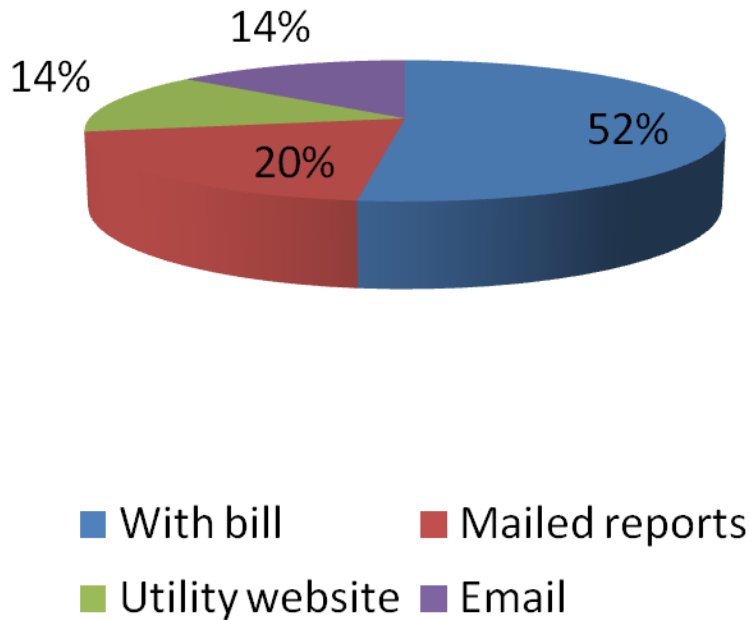
Information Empowers Choice

Enhanced information has been shown to help customers manage energy with knowledge of the cost implications of their choices.

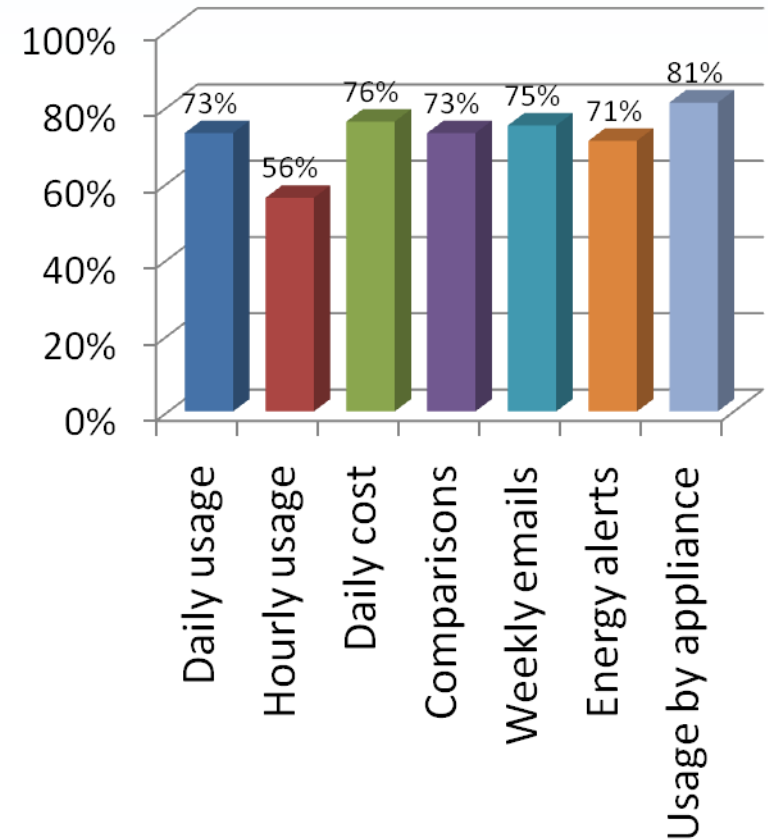


PowerCentsDC Smart Grid Pilot Survey

Consumers Want Data Pushed to Them



Highest Interest is Usage by Appliance



Source: Smart Meter Pilot Program, Inc.

Information Feedback Results

Results from 42 programs of different mechanisms, including in-home displays, websites, bill inserts, and mailed reports.

Direct Feedback Programs	Indirect Feedback Programs	Total Programs	Savings
3		3	20%
	1	1	20% of peak, weekdays
2	1	3	15-19%, Mon-Sat
8	6	14	10-14%
11	3	14	5-9%
4	3	7	0-4%
Weighted average savings			9.4%

Source: eMeter Strategic Consulting

Consumer Pricing Choices

Standard rate

- Two tiers
- Higher price for more usage

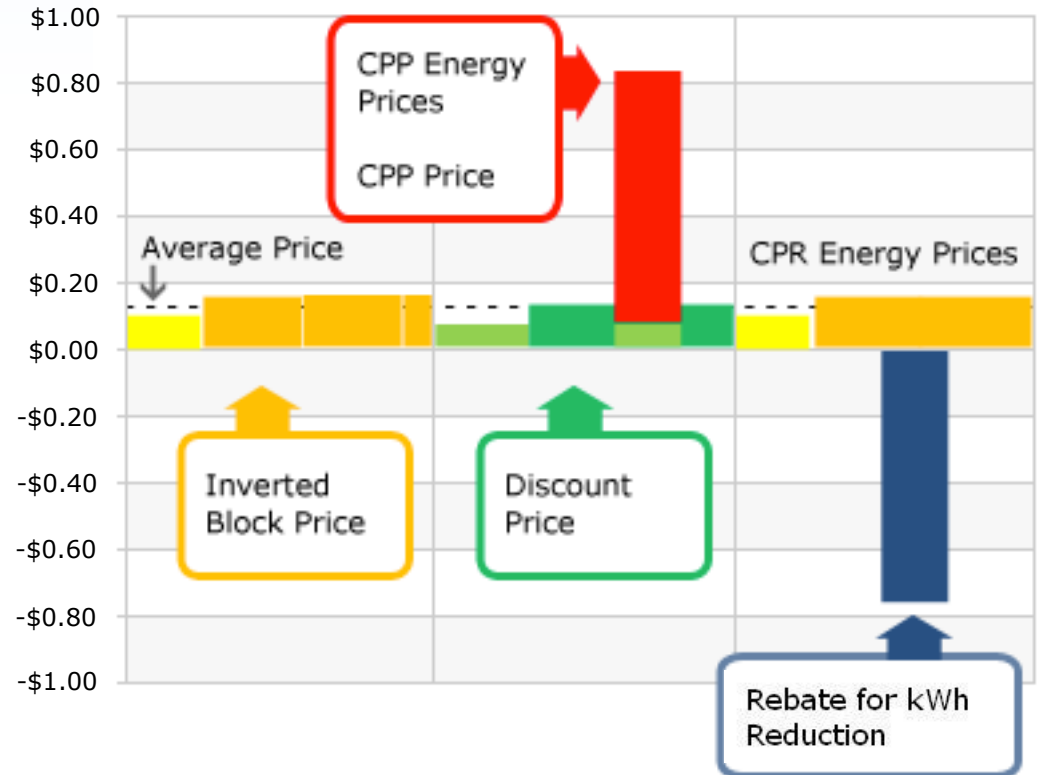
Critical peak price/peak day pricing

- Slight discount during most hours
- Much higher price during 60 critical peak hours per year
- 15 events, 4 hours each
- Day-ahead notification

Peak time rebate/critical peak rebate

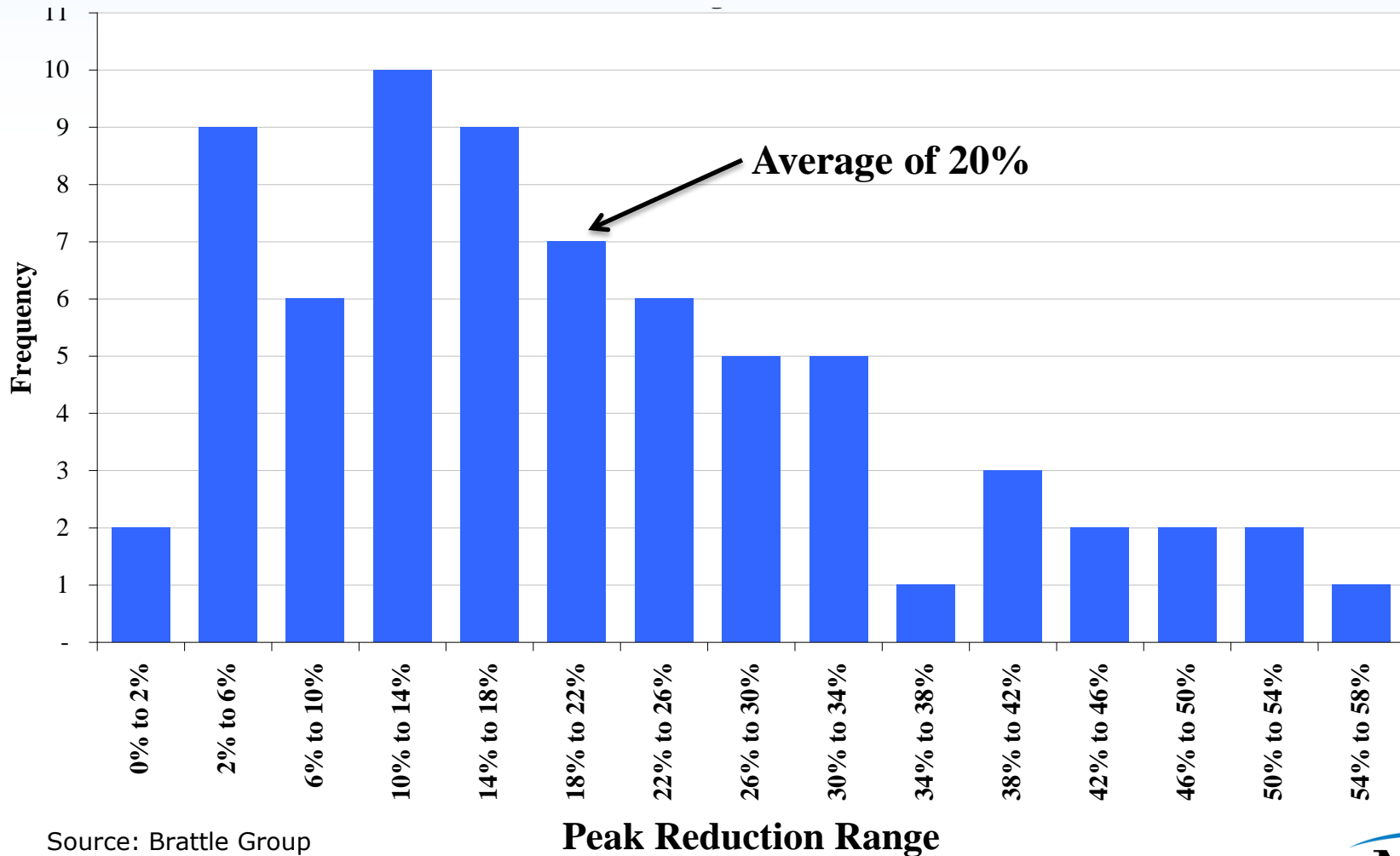
- Stay on standard rate
- Rebate for reductions during critical peak hours

Price Comparison on Critical Peak Days



Pricing Program Results

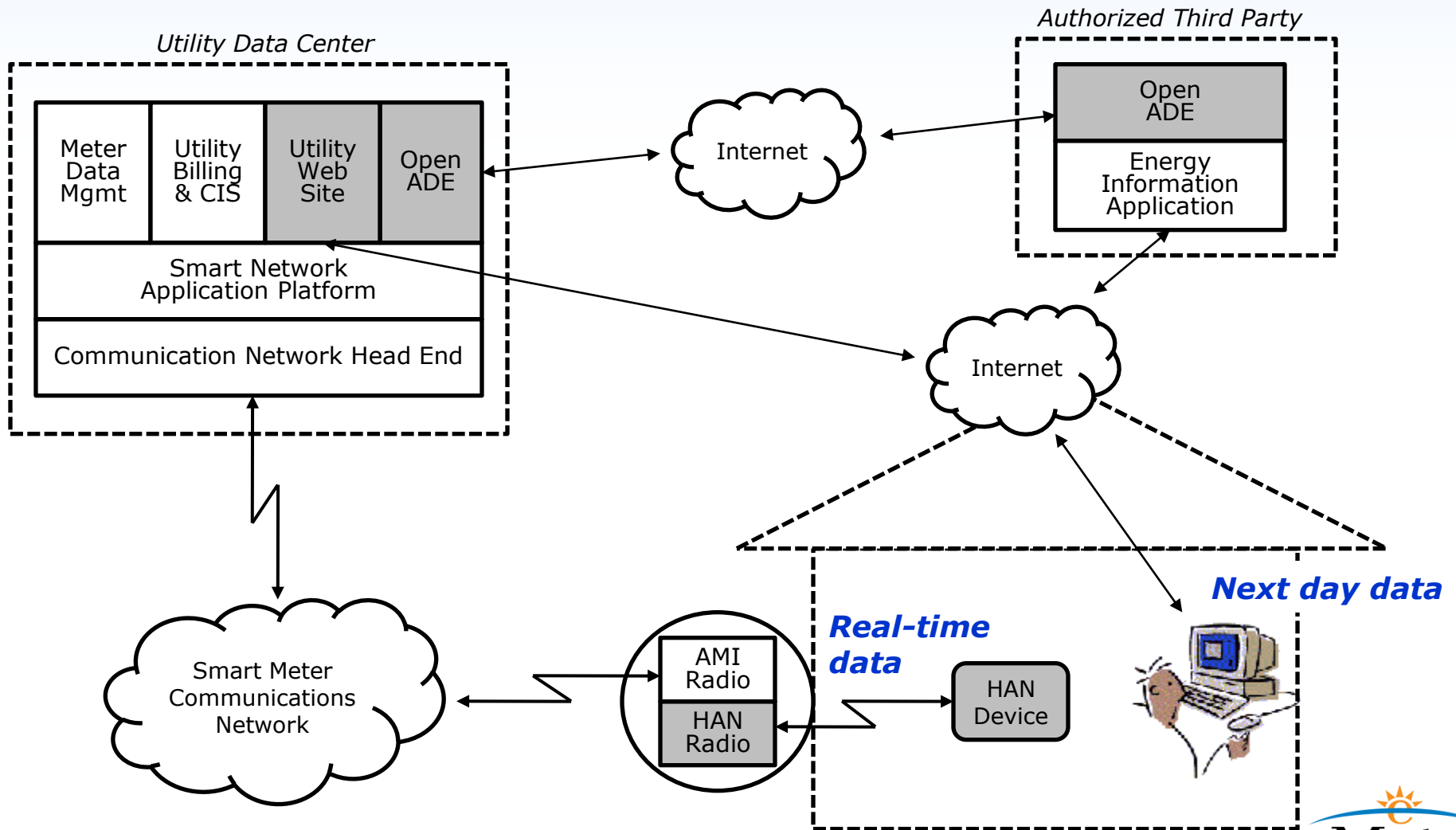
Weighted average reduction of 14.3% in 70 programs.



Source: Brattle Group

Peak Reduction Range

Enabling Technology: OpenADE & HAN Interfaces



Bringing it all together: EV charging

- Price and/or control signals sent from EVM application
- EV owner sets charging parameters on home computer
- EVSE manages charger based on prices and/or control signals
- EVM also disconnects power at meter in outage to allow use of PEV as backup power!

