

ENERGY

More Bang for their Buck

Massachusetts' Natural Gas Market Customer-wide Advantages

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October 31, 2017

Agenda

Background

- MA energy market actors
- Territories
- Our objectives
- Final reports

Customer Profile report

- Report objectives
- Example analyses: unweighted & weighted participation rates

New insights & opportunities for gas market

- Customer size comparison
- Contribution Ratio comparison
- Gas market advantages

Wrap-up

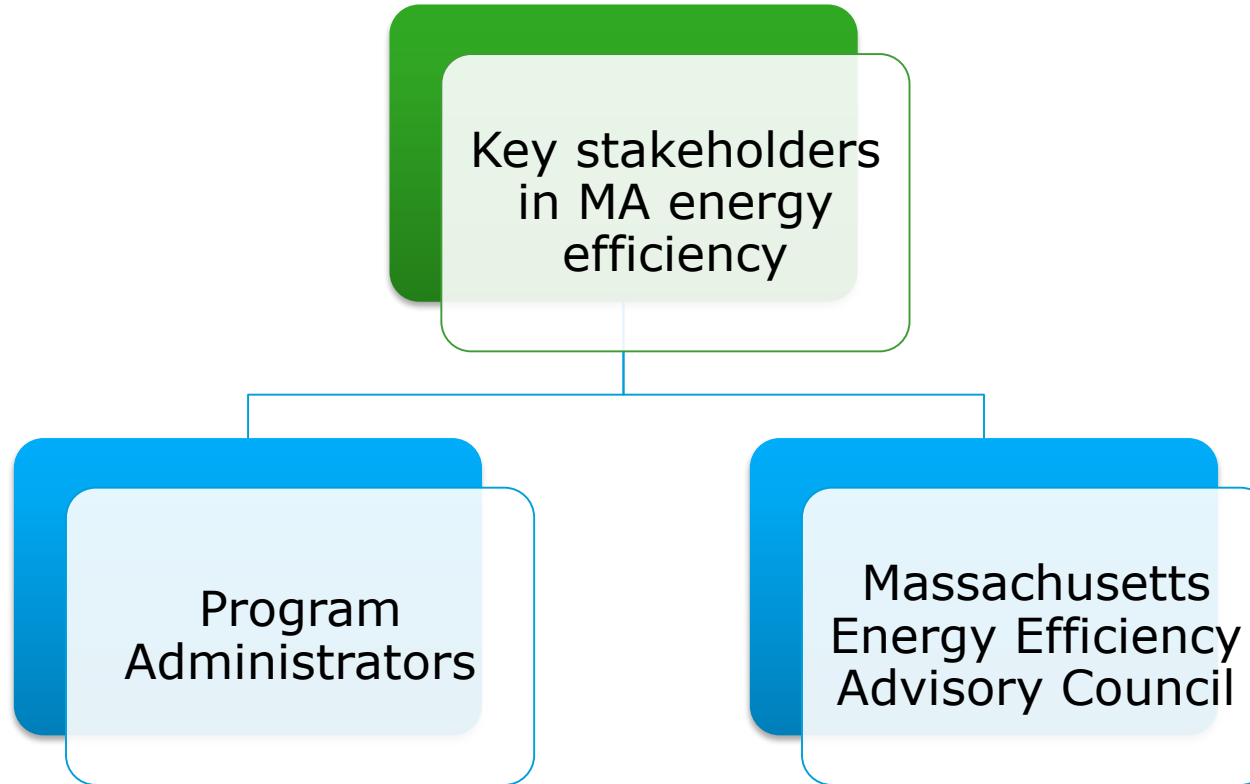
- Value
- Future implications
- Questions?



Background

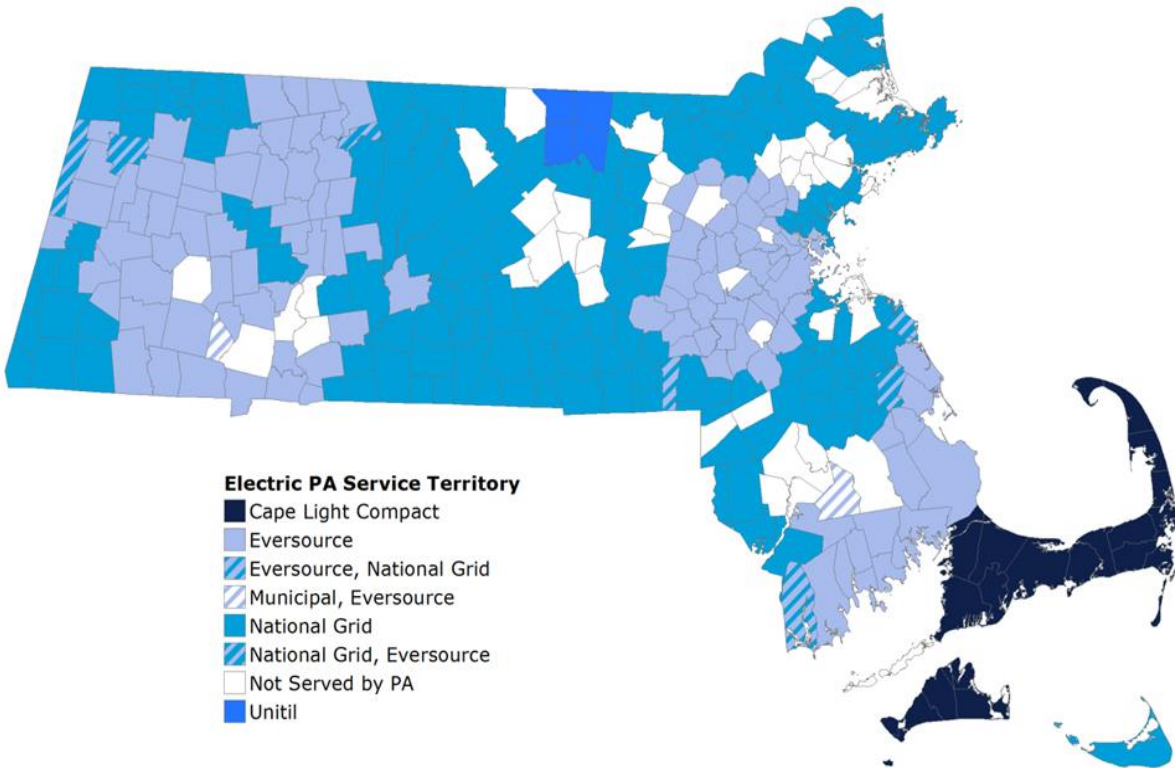
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MA market actors

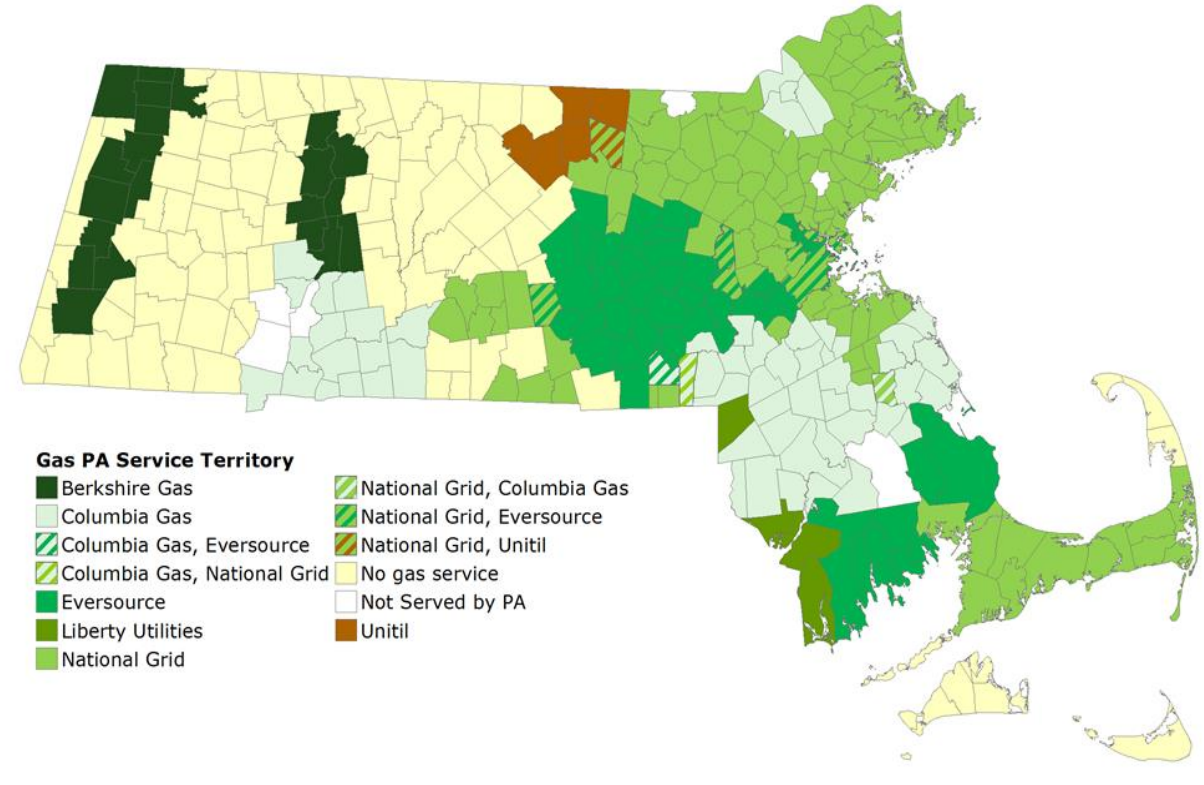


Service territories

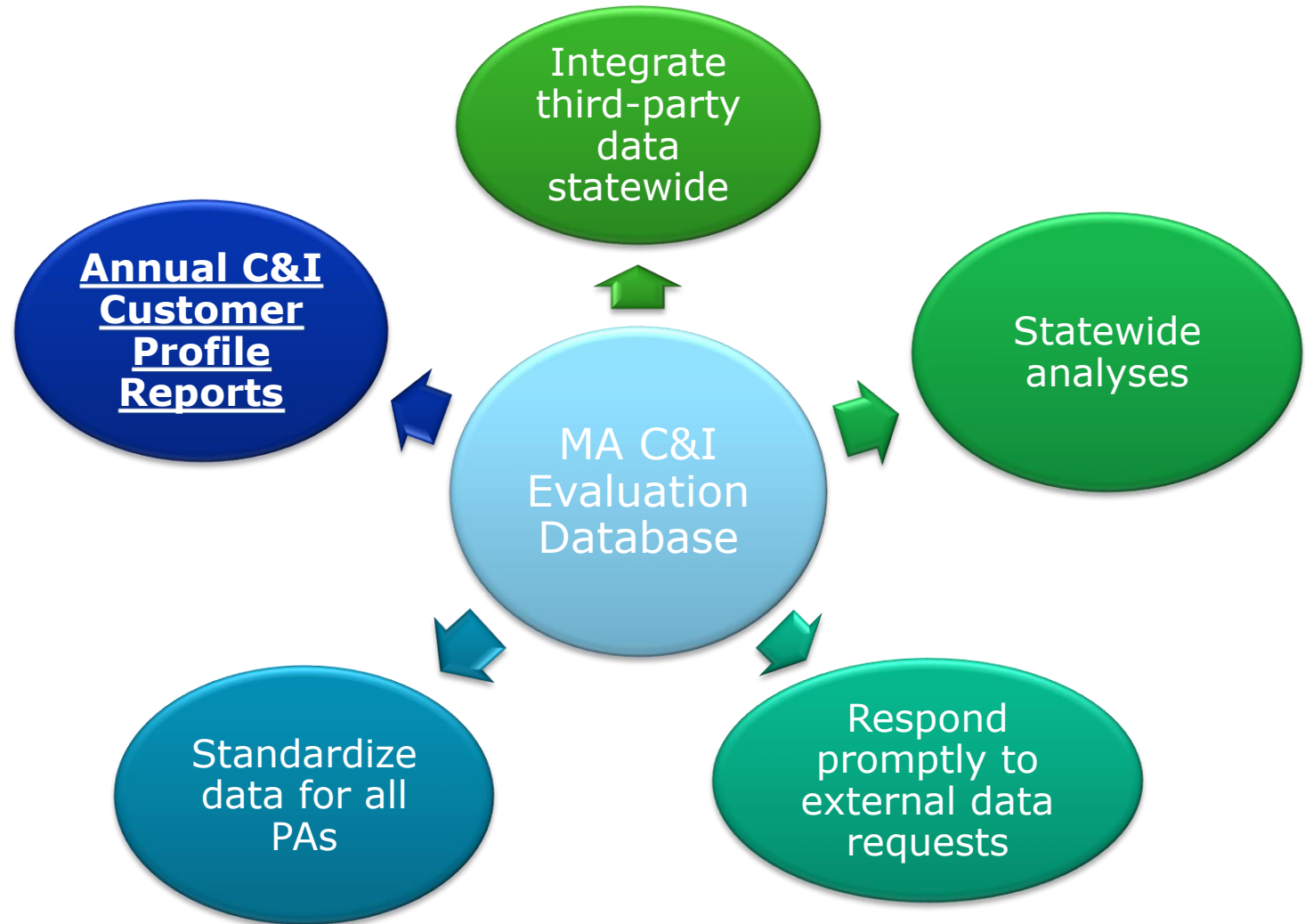
Electric



Gas



Objectives



Our cleaned, standardized database serves the PAs in a wide variety of ways.

Customer Profile Report

Ad
Hoc

Deep
Dive

Quick
Hit

Study



MA C&I Comprehensive Customer Profile

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Report objectives

Task 1:

Add 2016 C&I tracking and billing data to the MA C&I Evaluation Database:

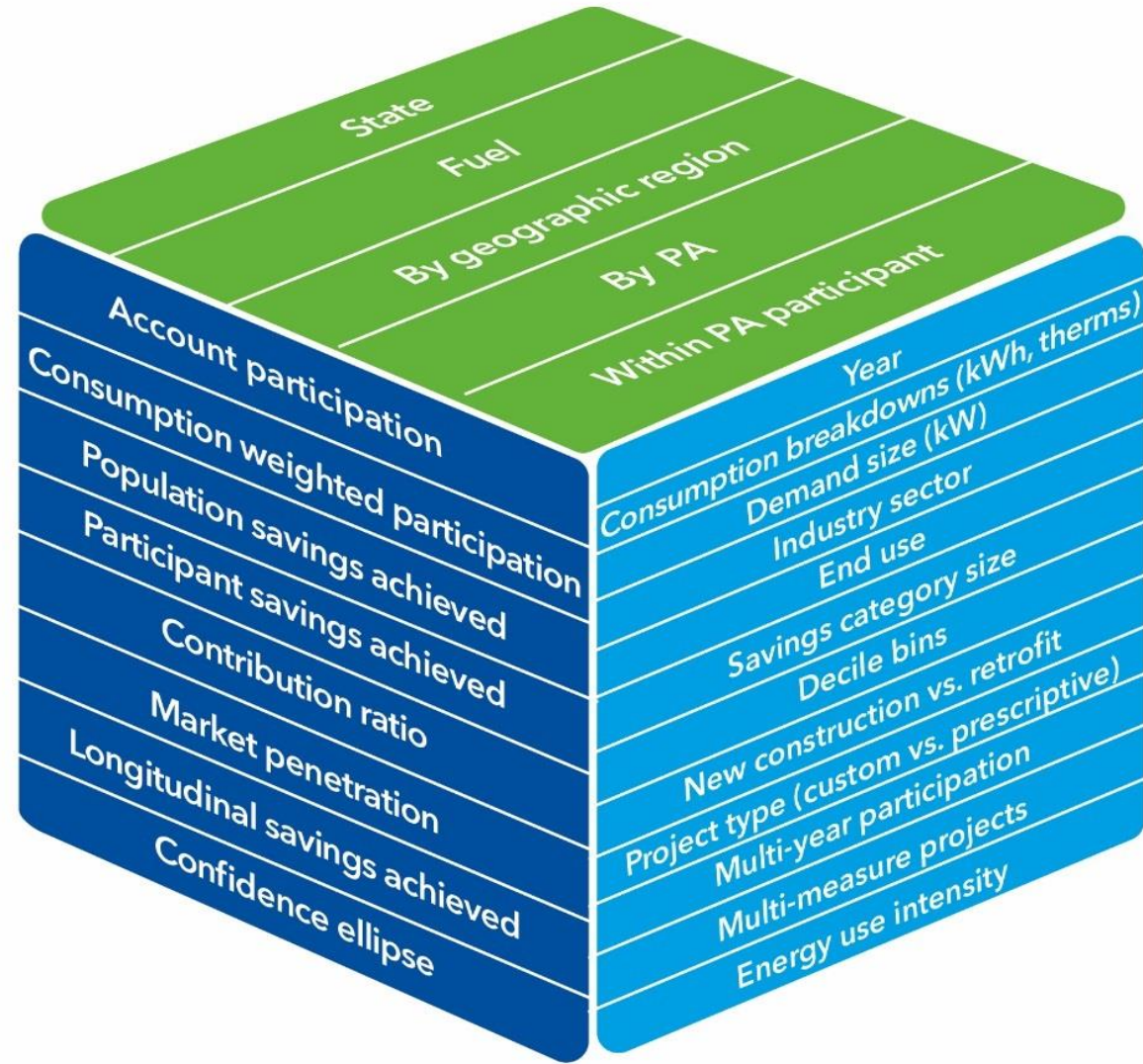
- Collect PA data
- Standardize and add to the MA C&I Evaluation Database
- Provide detailed documentation to the PAs

Task 2:

Analyze and report the 2016 data and historical trends:

- 2016 C&I Expedited Customer Profile analysis and report
- 2016 C&I Comprehensive Customer Profile analysis and report
- MA C&I Deep Dive reports

Customer Profile analysis cube



Statistics



Analysis Grains



Metrics

MA C&I prescriptive measure offerings

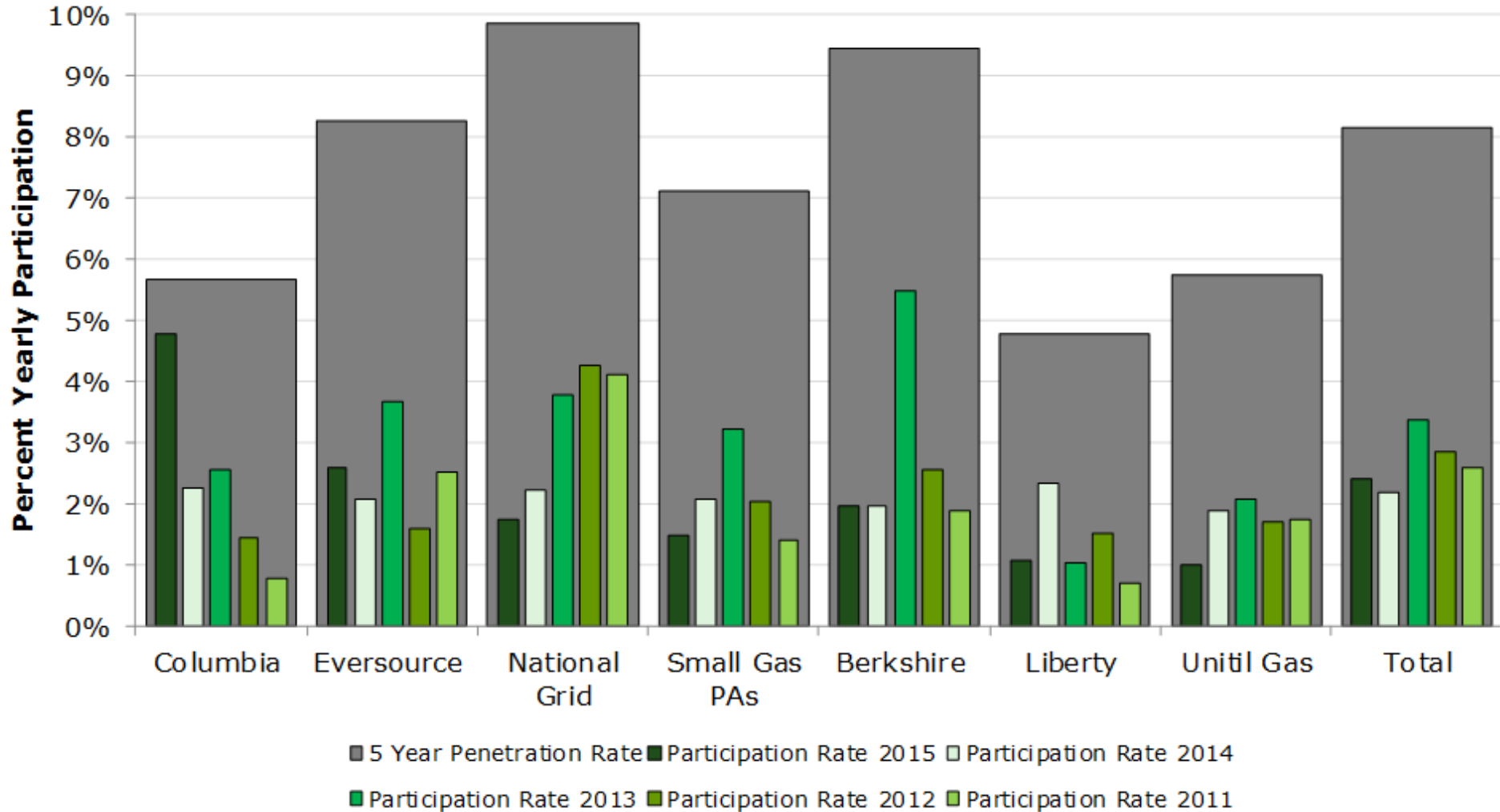
Electric measures

Lighting	(4)
HVAC	(9)
Refrigeration	(8)
Food service	(8)
Compressed air	(4)
Motors/drives	(2)

Gas measures

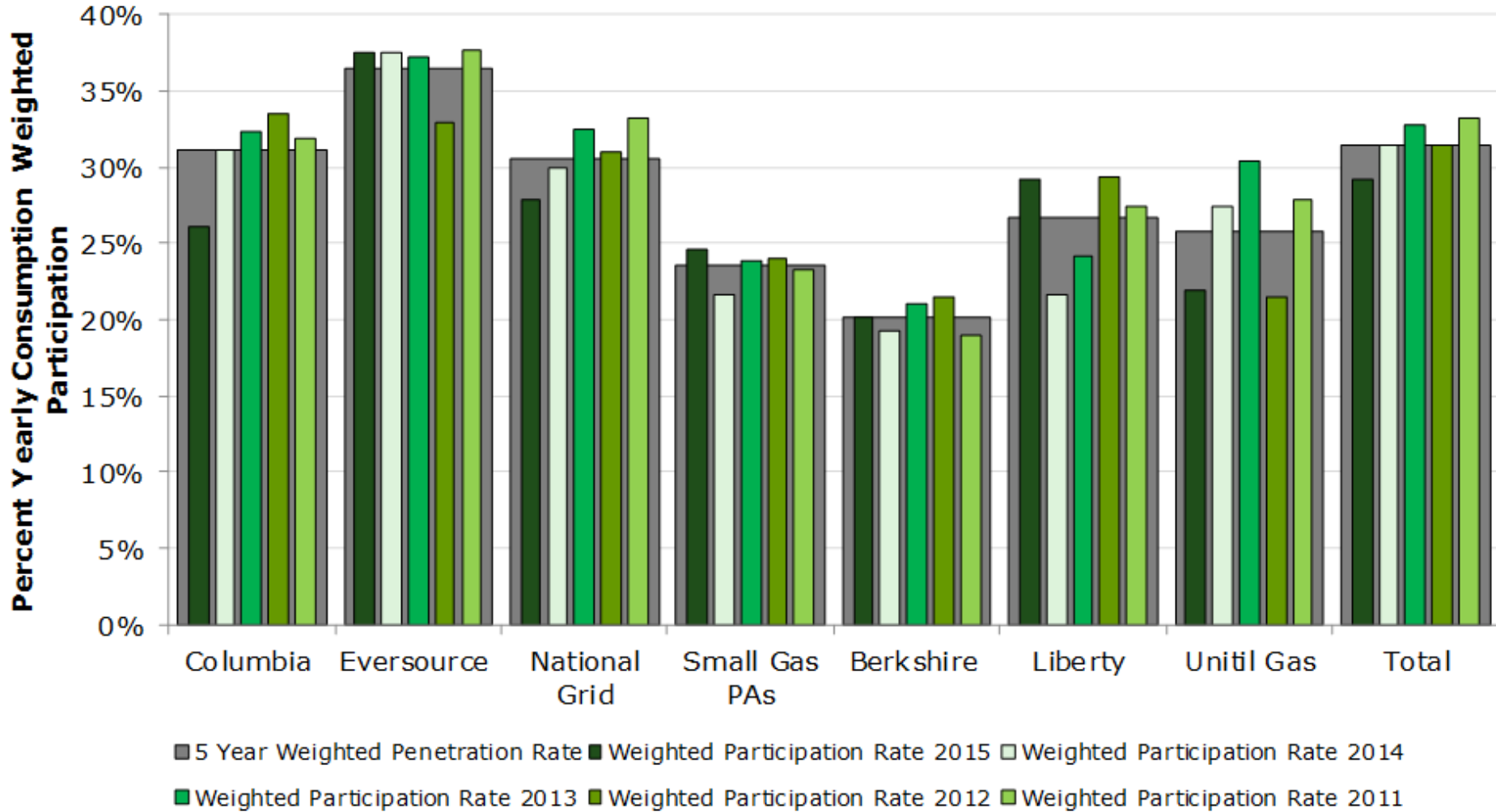
Food service	(4)
HVAC	(9)
Process	(1)
Water heating	(8)

Account participation - unweighted



Overall gas participation for all PAs is variable across years and does not appear to impact much of the market.

Account Participation - weighted



Weighting participation based on size tells a very different story.



Advanced analysis:

New insights & opportunities for the gas market

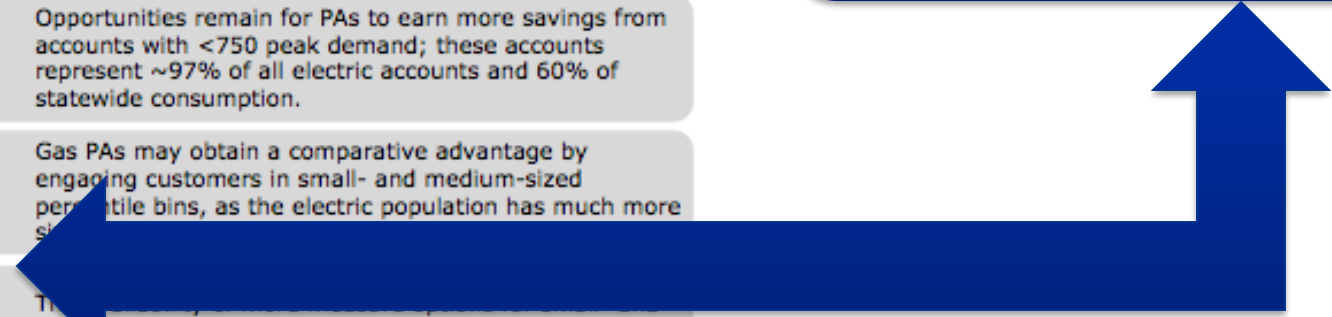
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Key findings

REPORT KEY FINDINGS	POTENTIAL IMPLICATIONS
1 Upstream lighting continues to impact electric participation and savings ratios, particularly for smaller customers.	Obtaining account numbers from upstream projects would allow for more comprehensive analysis exploring the impact of the upstream measure on participation and individual account savings.
2 Custom projects continue to make up a large proportion of savings for electric and gas PAs.	A potential key driver of outcome differences between PAs is custom projects and savings, which may warrant deeper analysis.
3 Overall, more than 50% of the consumption-weighted electric population has been engaged over the past five years.	Large customers are the primary drivers of high consumption-weighted participation, and remain key drivers of annual savings. A targeted study may be beneficial in identifying opportunities for future engagement.
4 Large electric accounts (25-50 GWh) provide disproportionately large savings achieved over time.	The majority of the largest electric participants have been engaged in at least 3 years since 2011. Their participation remains prominent in 2015. The sustainability of this trend is currently unknown.
5 Savings achieved from electric accounts in demand bins <750 kW has, on average, increased over the past five years.	Opportunities remain for PAs to earn more savings from accounts with <750 peak demand; these accounts represent ~97% of all electric accounts and 60% of statewide consumption.
6 Gas account sizes remain similar up to the 80 th percentile size bin.	Gas PAs may obtain a comparative advantage by engaging customers in small- and medium-sized percentile bins, as the electric population has much more savings opportunities among this population.
7 Statewide, gas PAs have larger contribution ratios in the bottom 30% of their population than electric PAs.	The engagement of medium-sized gas customers creates more savings opportunities among this population.

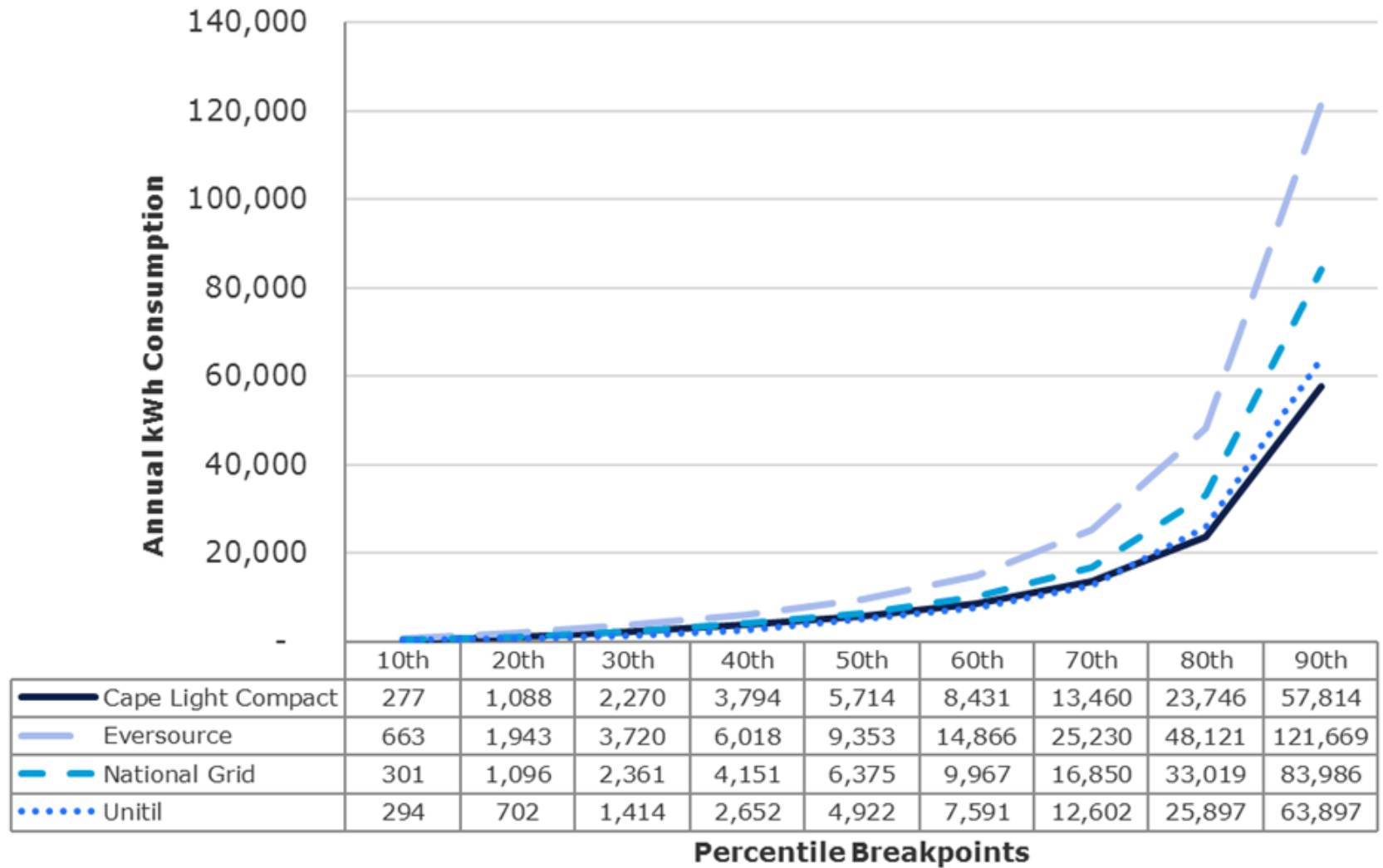
★ Gas account sizes remain similar up to the 80th percentile size bin.

★ Statewide, gas PAs have larger contribution ratios in the bottom 30% of their population compared to electric PAs.

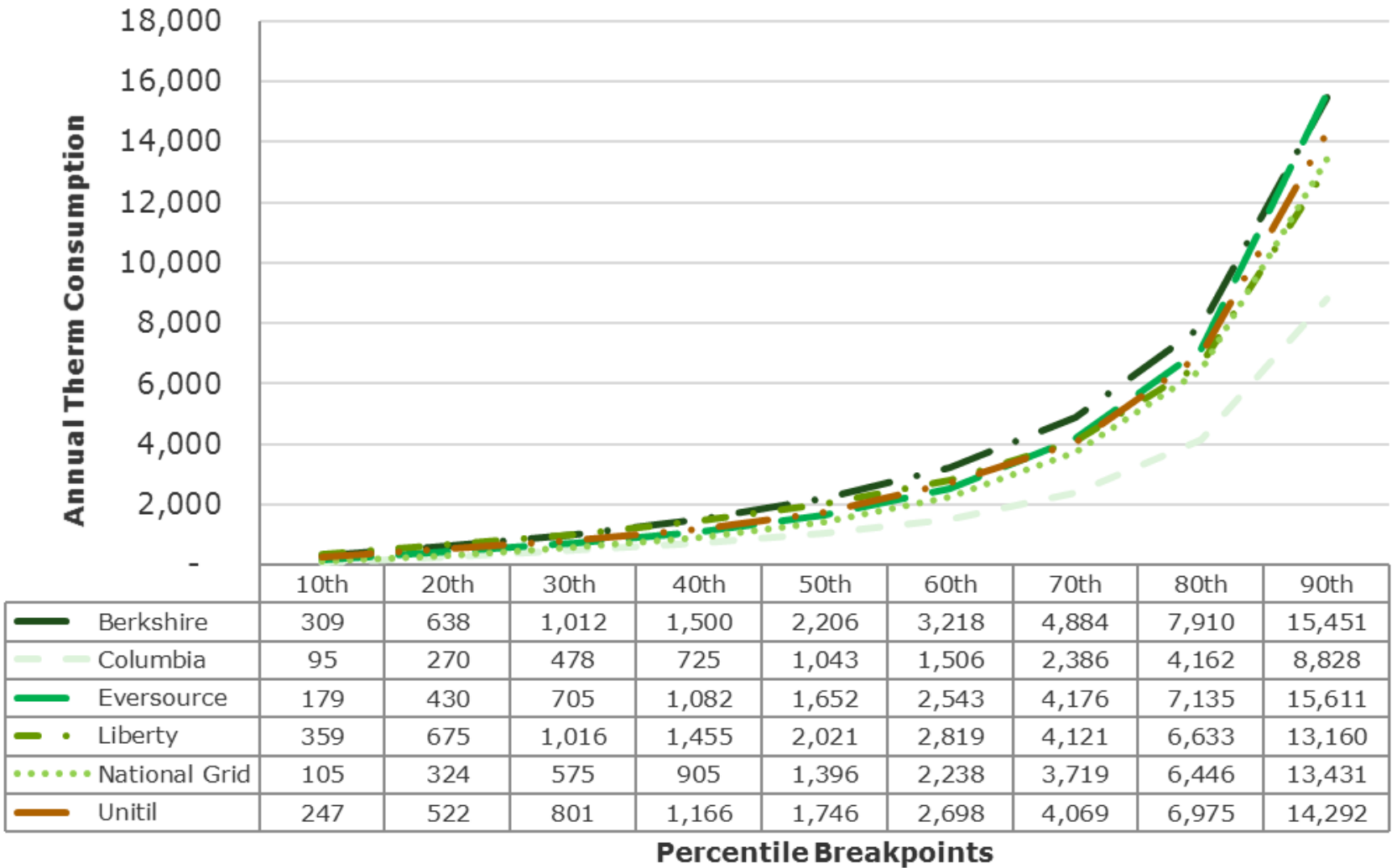


Electric percentile size bin breakpoints (kWh)

Electric's customer sizes, based on kWh consumption, span wide ranges from each size bin to the next.

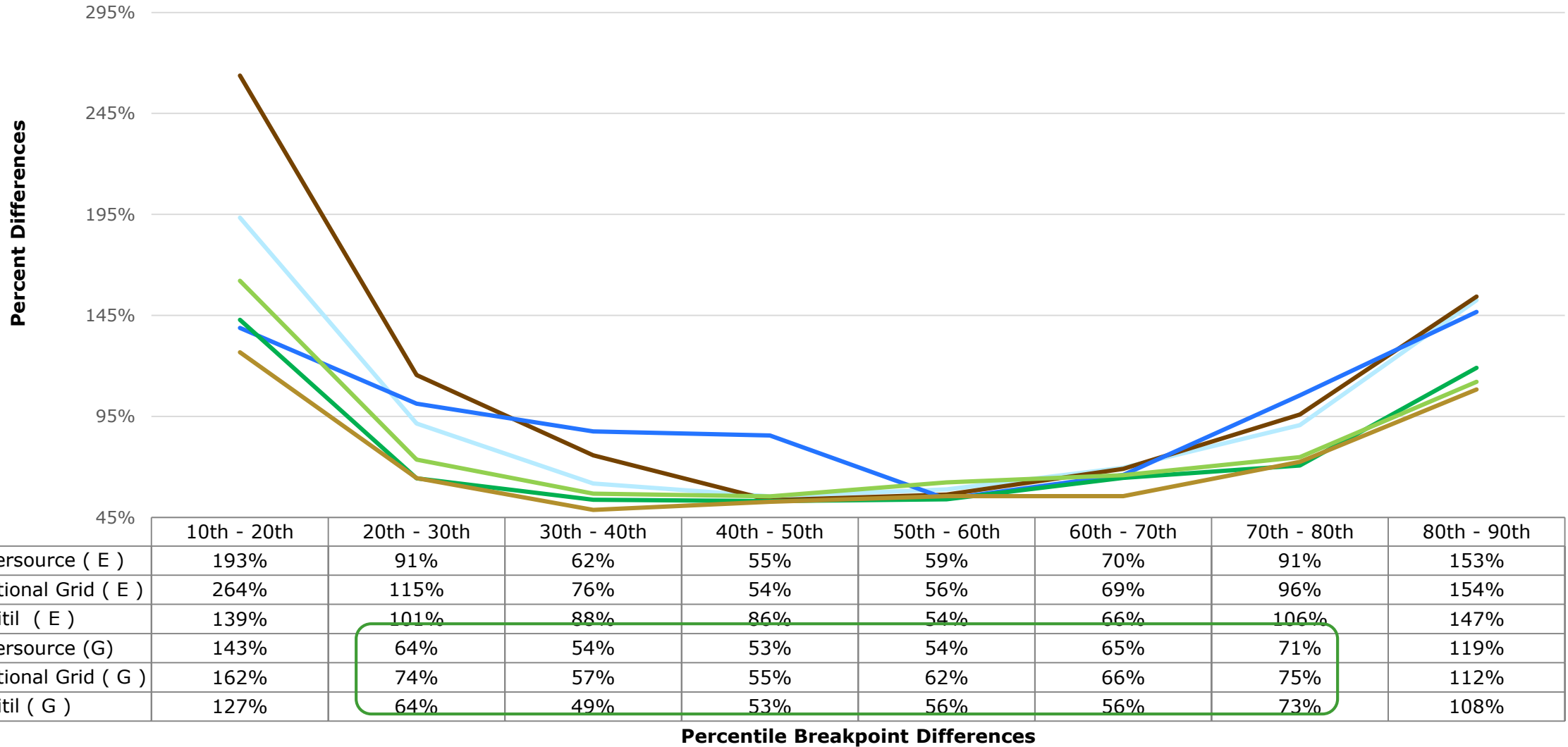


Percentile bin breakpoints in therms



This similarity in size for gas customers allows gas PAs to engage most of their population equally

Percentile size bin comparison (cont.)



Consumption ratio fuel comparisons

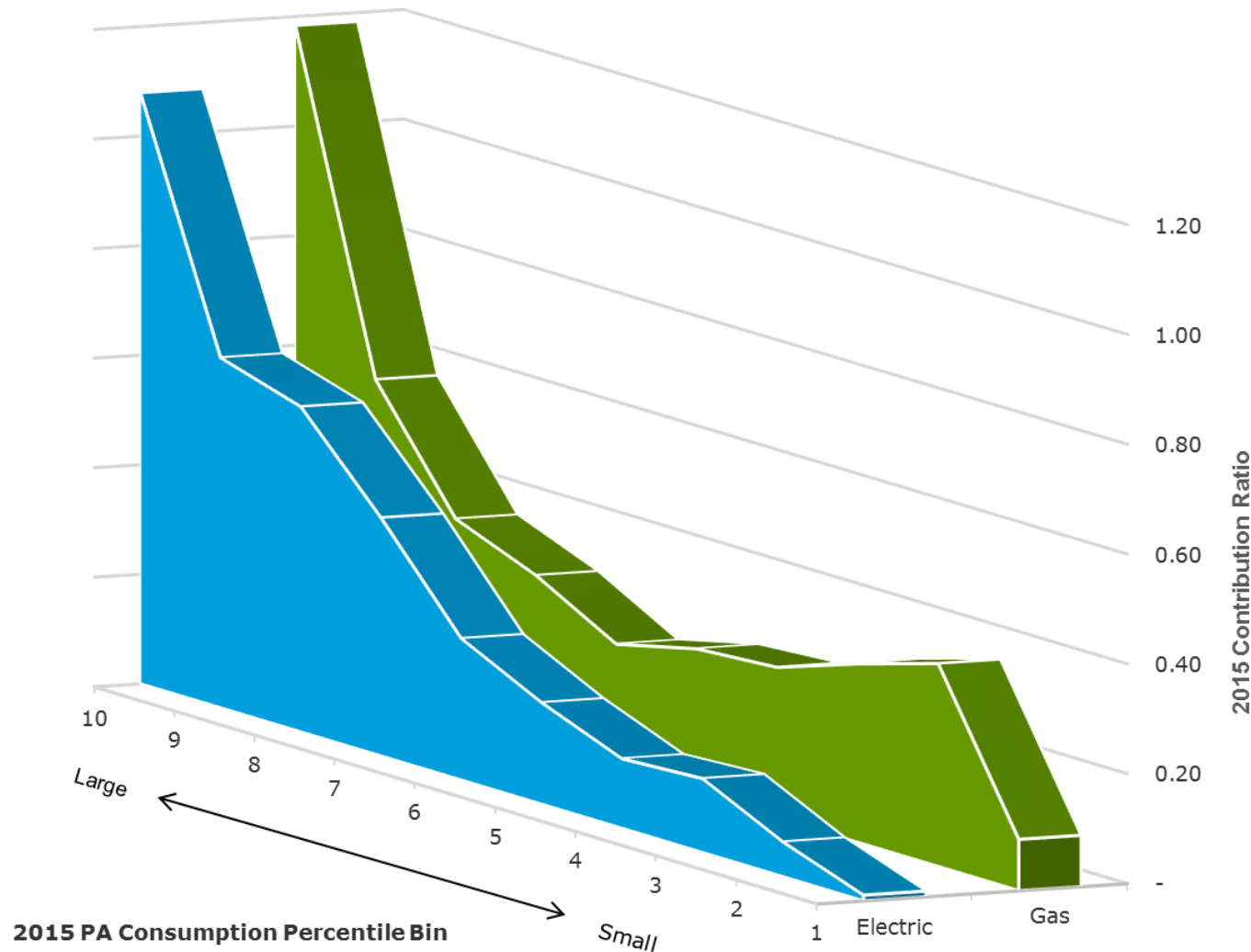
Contribution ratio:

$$\frac{\left(\frac{Savings_{bin(x)}}{Savings_{allbins}} \right)}{\left(\frac{Consumption_{bin(x)}}{Consumption_{allbins}} \right)}$$

<1: bin contributes less savings than it does consumption.

=1: bin contributes equally towards total savings and consumption.

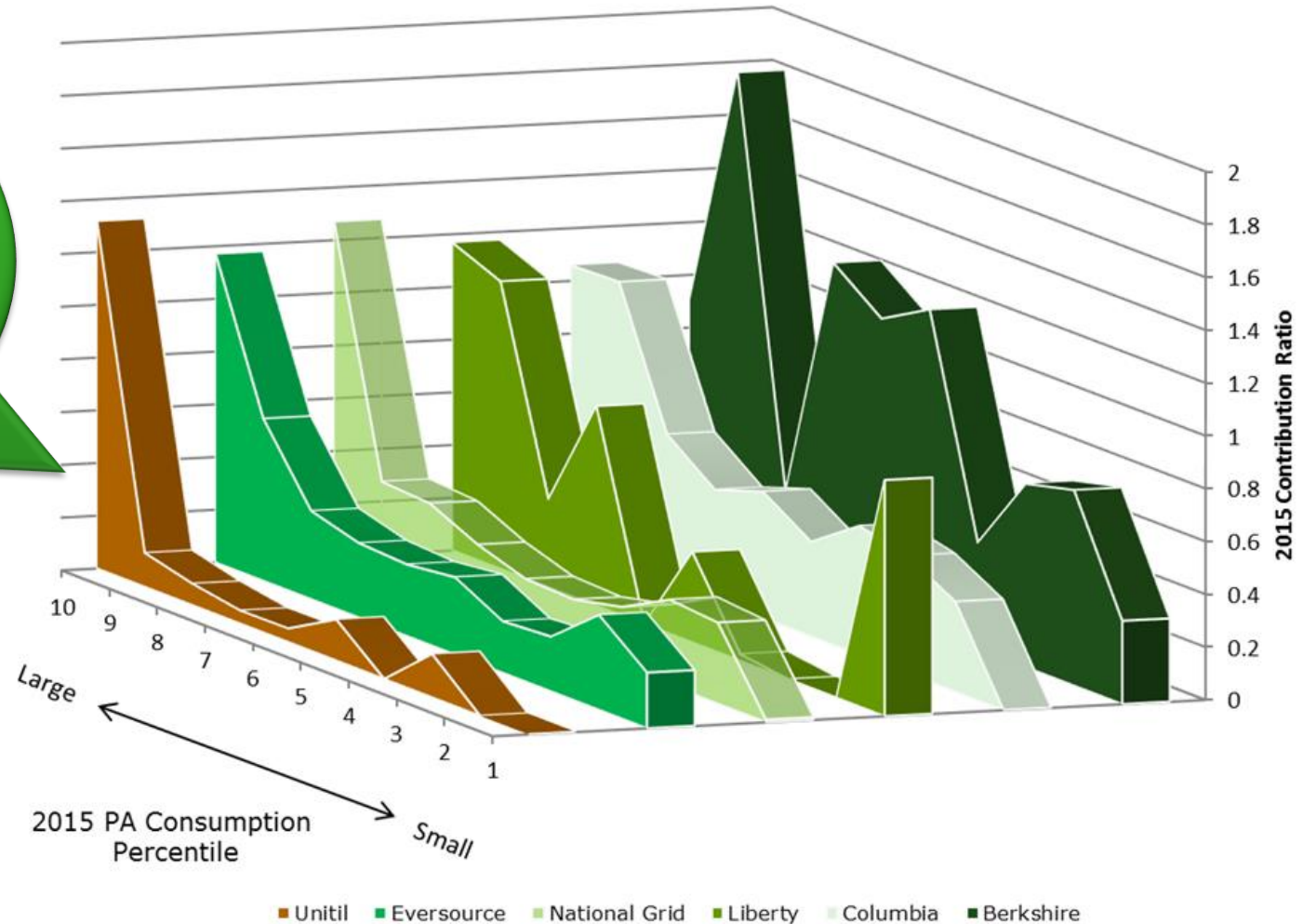
>1: bin contributes more savings than consumption.



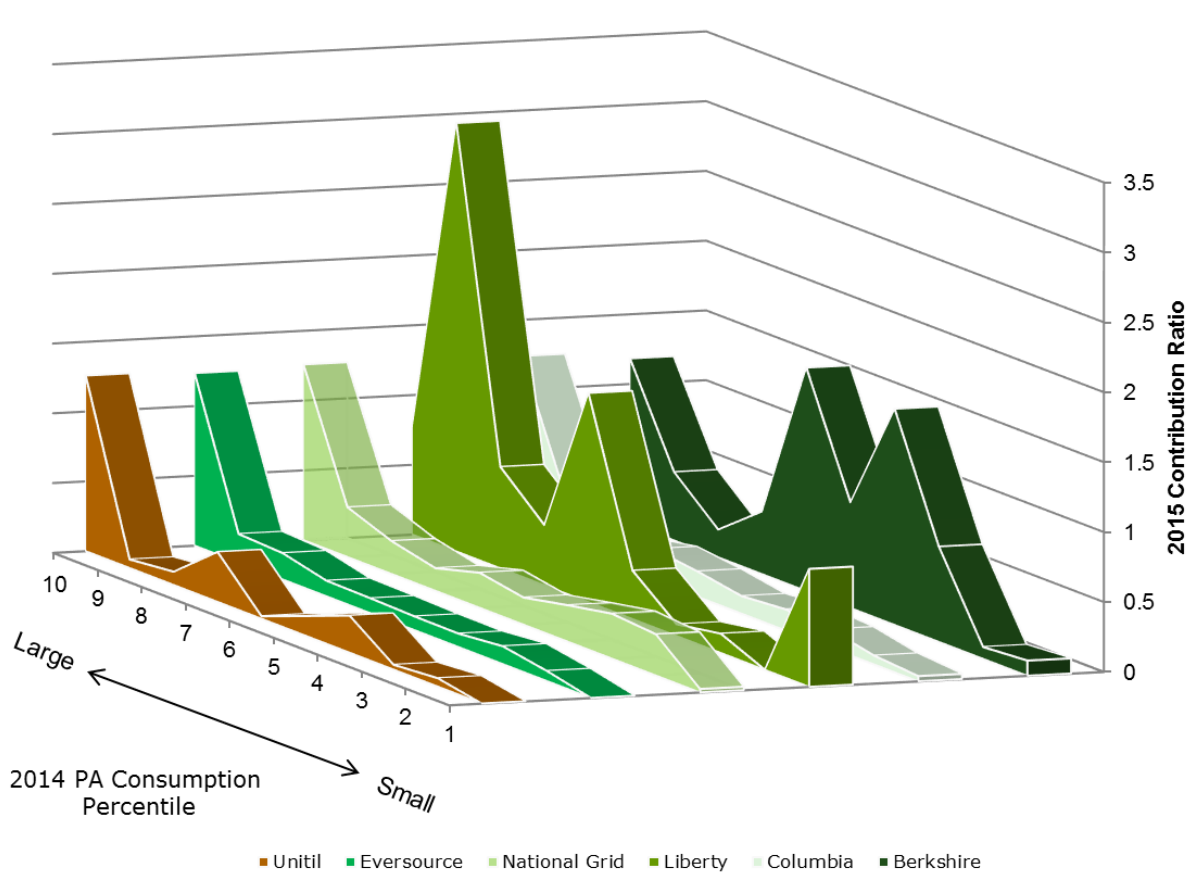
Contribution ratio analysis – gas (2015)

The overall gas market has more variability in savings potential for customers across its entire population.

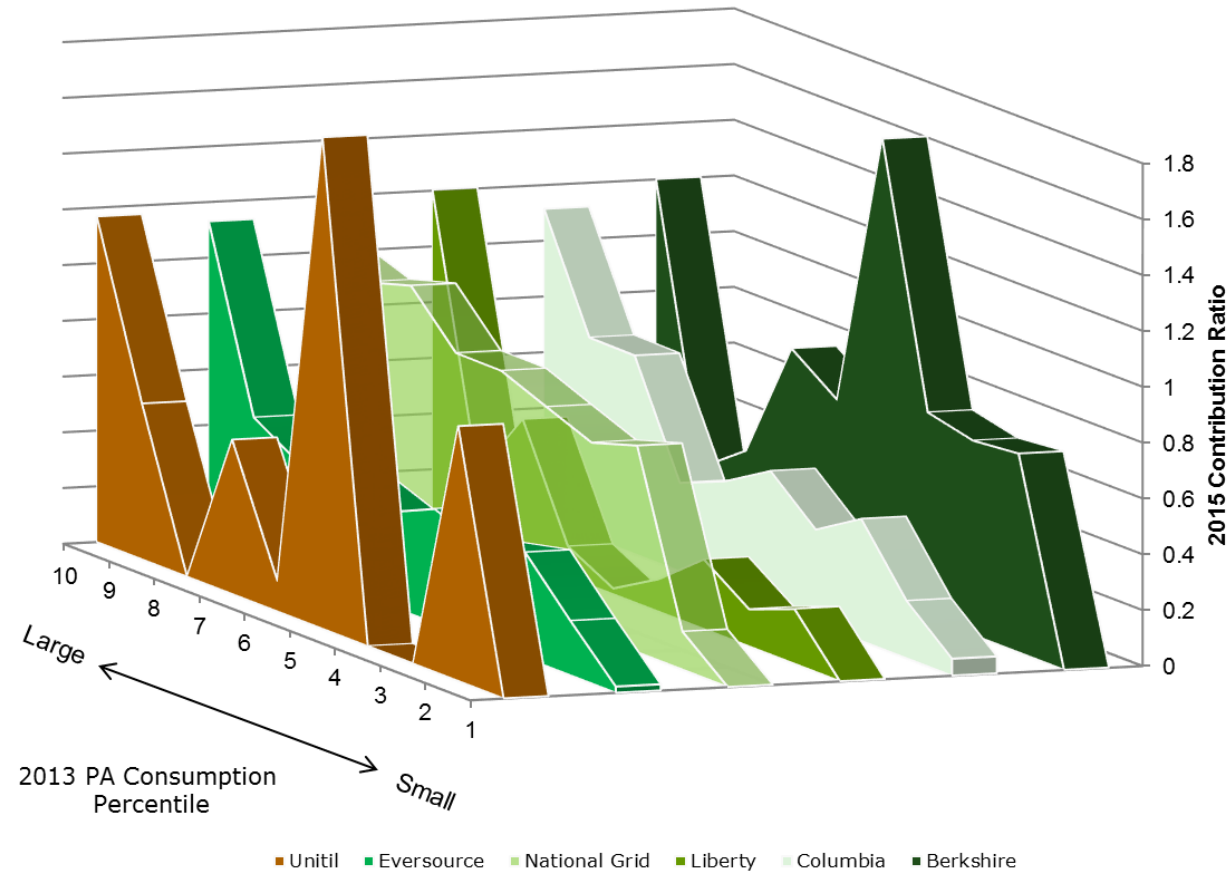
★ This is particularly beneficial for small- and medium-sized customer engagement.



Contribution ratio analysis - historic



2014



2013

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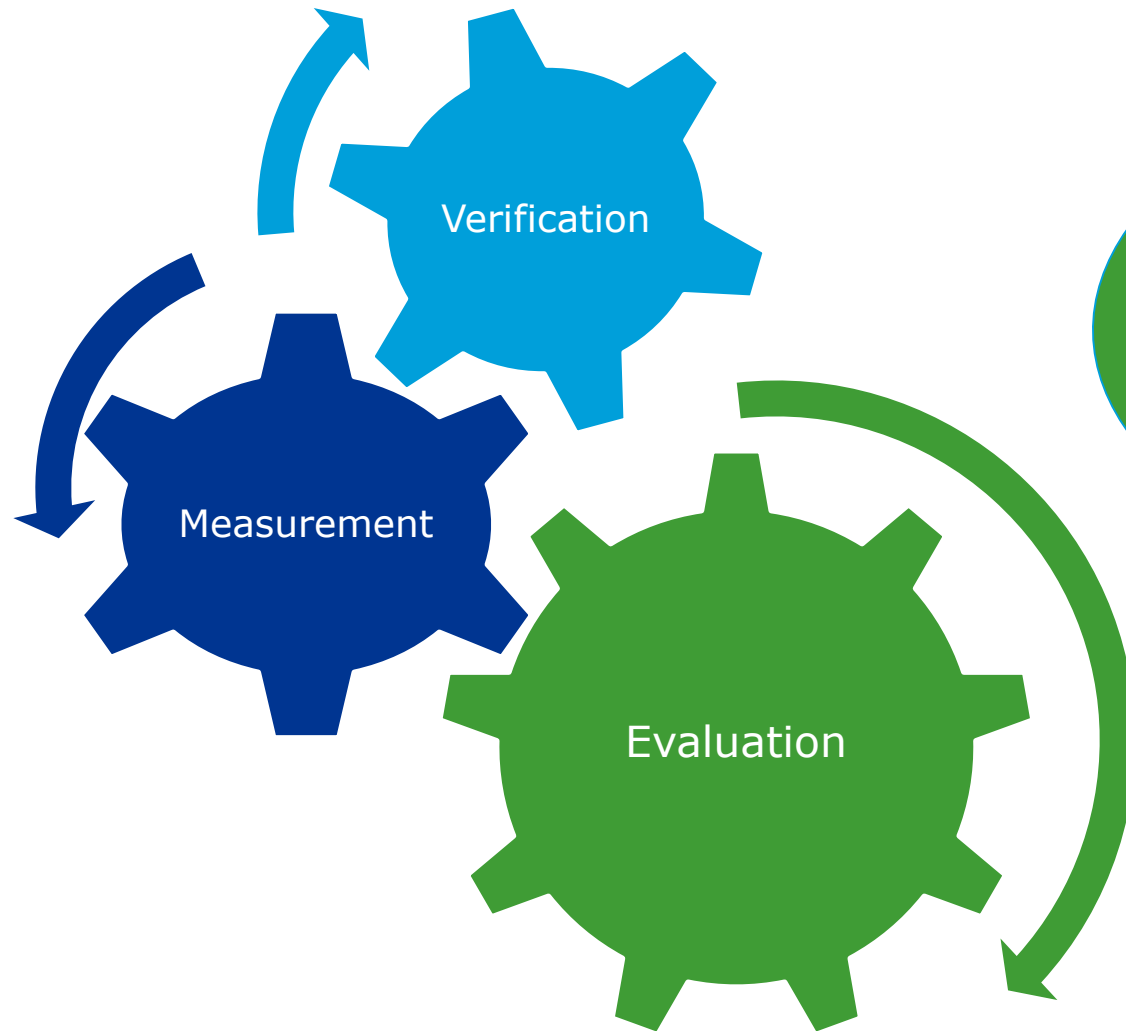


$$S(x) = \frac{1}{1+e^{-x}} = \frac{e^x}{e^x+1}$$

Wrap-up

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Future implications



Customer insights such as this will be critical in a transitioning energy efficiency market, where knowing your customers is becoming vital to achieving high energy savings.

Thank you.

Questions?

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SAFER, SMARTER, GREENER

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