Northwest **Power** and **Conservation** Council

October 3, 2017

MEMORANDUM

TO: **Council Members**

FROM: **Jennifer Light and Charlie Grist**

SUBJECT: **Regional Conservation Progress Report**

BACKGROUND:

Presenter: Jennifer Light and Charlie Grist

Summary: The Regional Conservation Progress (RCP) survey comprises data from Bonneville (on behalf of their public utilities), the region's investor owned utilities, Energy Trust of Oregon, and the Northwest Energy Efficiency Alliance. The data provides an understanding of the energy efficiency savings acquired in the region and the related expenditures for 2016. Staff will present the findings of this survey to the Council.

This will be the first look at progress against the Seventh Power Plan's conservation goals. Not only is this an opportunity to capture the region's progress on energy efficiency, it provides a glimpse into where the energy savings are being acquired. This includes a look at acquisition across different sectors (residential, commercial, industrial, and agricultural) and end uses (example: lighting, HVAC, or appliances).

Relevance: The Seventh Power Plan established a goal of 1400 aMW of conservation acquisition by the end of the six year Action Plan period (2021). This goal was broken into two year milestones:

	FY 2016-2017	FY 2018-2019	FY 2020-2021
Annual Energy (aMW)	370	460	570
Cumulative Energy (aMW)	370	830	1400

Per its charter, the Regional Technical Forum is responsible for tracking the region's progress against the plan goals.

Workplan: A.1.1. Coordinate with regional entities to ensure the regional goal for cost-effective conservation is achieved.

2016 Regional Conservation Progress Survey Results

October 11, 2017

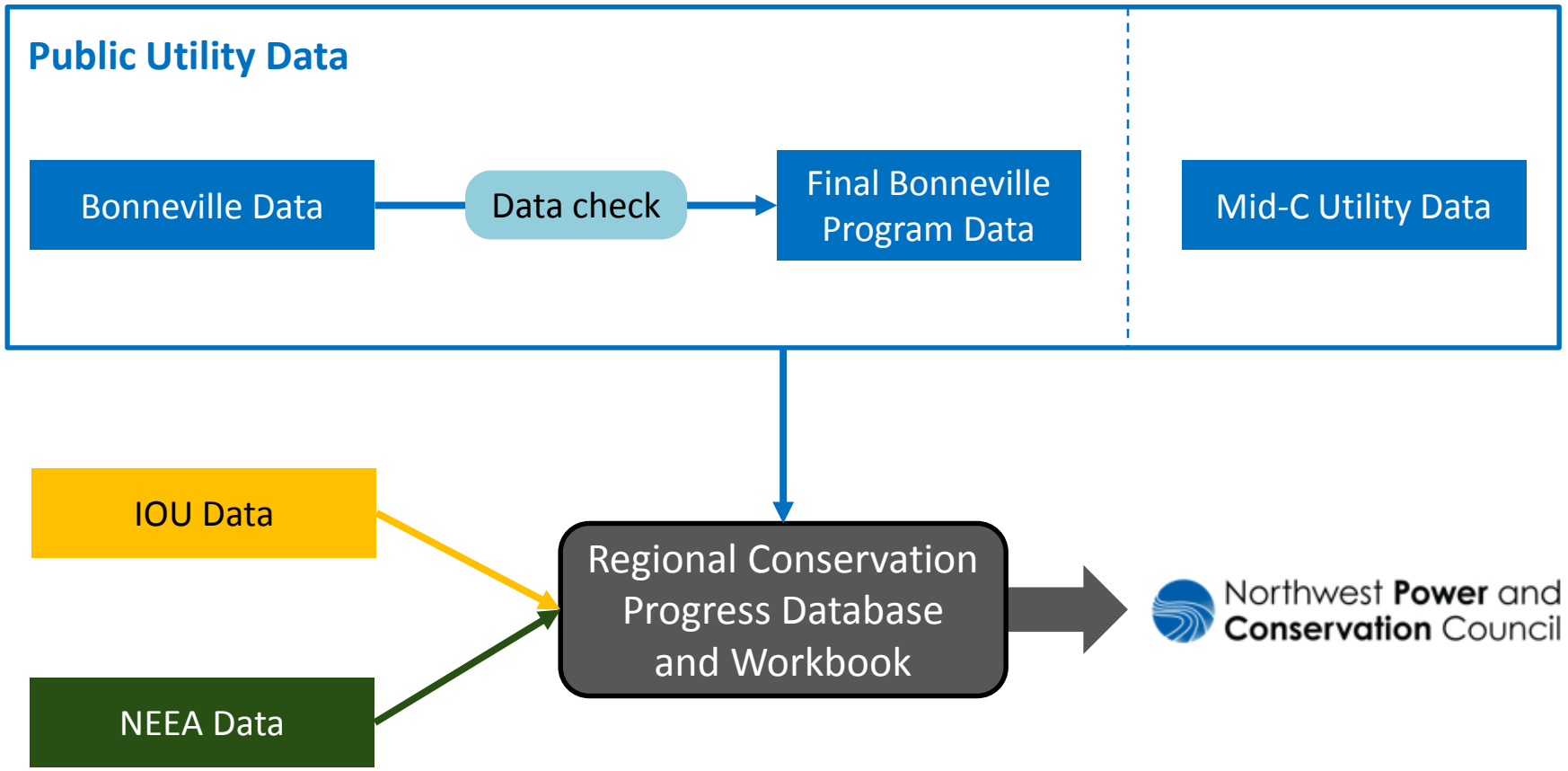
Council Meeting

Columbia Falls, Montana

Background

- Annual survey conducted by the RTF on behalf of the Council
- Requested energy efficiency savings and expenditures for 2016
  - Savings: Sought as much detail as possible
  - Expenditures: Sought to get total expenditures
- This is the first look at the how the region did against the Seventh Plan milestones!

Data and Analysis Process



Before the results, some caveats

Caveat 1: Baselines

Not all reported savings are from the same starting place

- Seventh Plan baseline assumes
  - Federal standards as of December 31, 2014
  - State codes as of December 31, 2014
  - Forecast penetration of LED as of 2016
- Program baselines are not likely aligned
  - Baselines were likely set for 2016 before plan was final
  - Not all utilities use the Plan or RTF baseline

RTF collected qualitative data on baselines for many programs, which may allow for some truing up for some measures

Caveat 2: Short-Term vs Long-Term Savings

Short-term savings do not always align with the Plan

- Seventh Plan analysis assumes
  - All lost opportunity measures are replaced on burnout
  - EISA 2020 baseline for residential lighting savings
- Programs often report "first year" savings
  - Some measures are replaced "early" and the short-term savings are generally greater than the long-term savings in the Plan
  - For residential lighting, this includes savings between now and 2020

For major markets, this can be trued up with measurement of total market savings, including codes, standards, and other market momentum

Early Replacement Example: Non-Residential Lighting

- Many non-residential lighting projects are done before the existing system requires replacement
- Savings are calculated for two periods

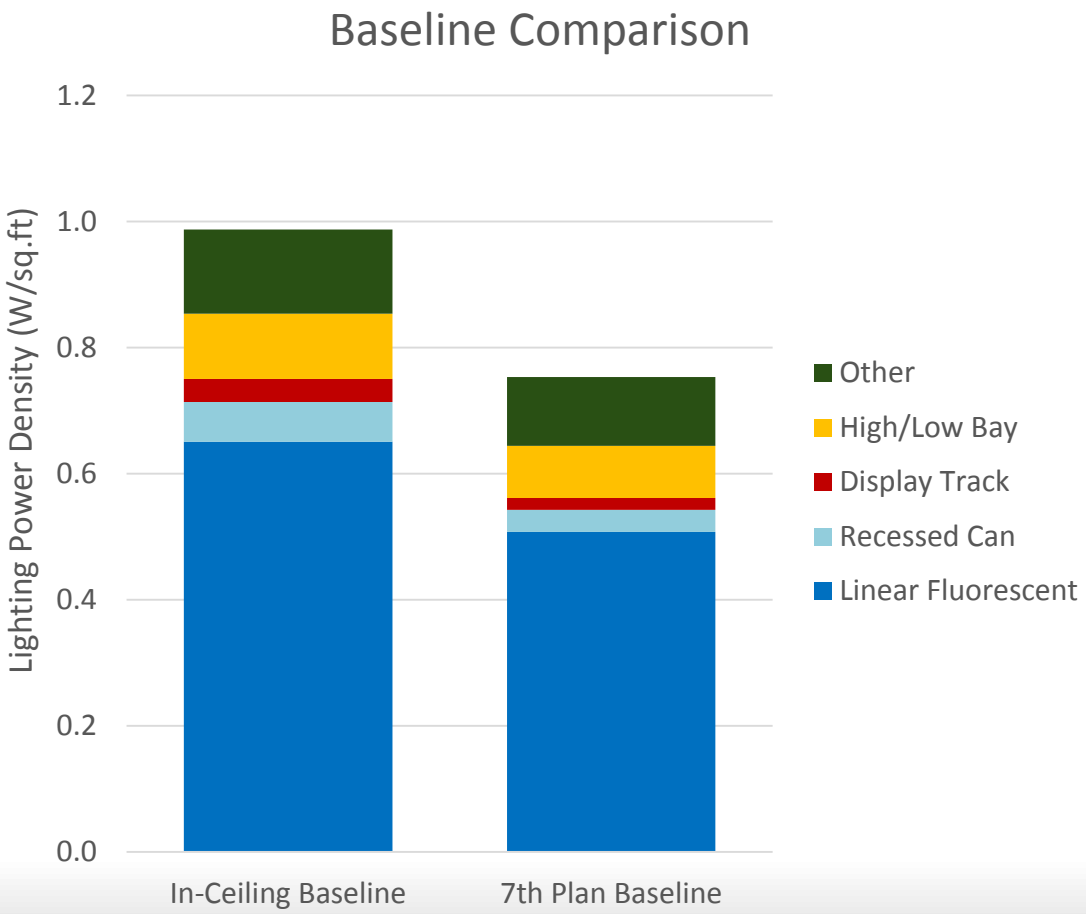
1. Short-term: Between the time of replacement and the expected failure of the system, savings are calculated based on what is in the ceiling

2. Long-term: Once the replaced system was expected to have failed and required replacement, savings are calculated from the current market practice including standards

Reported first year savings

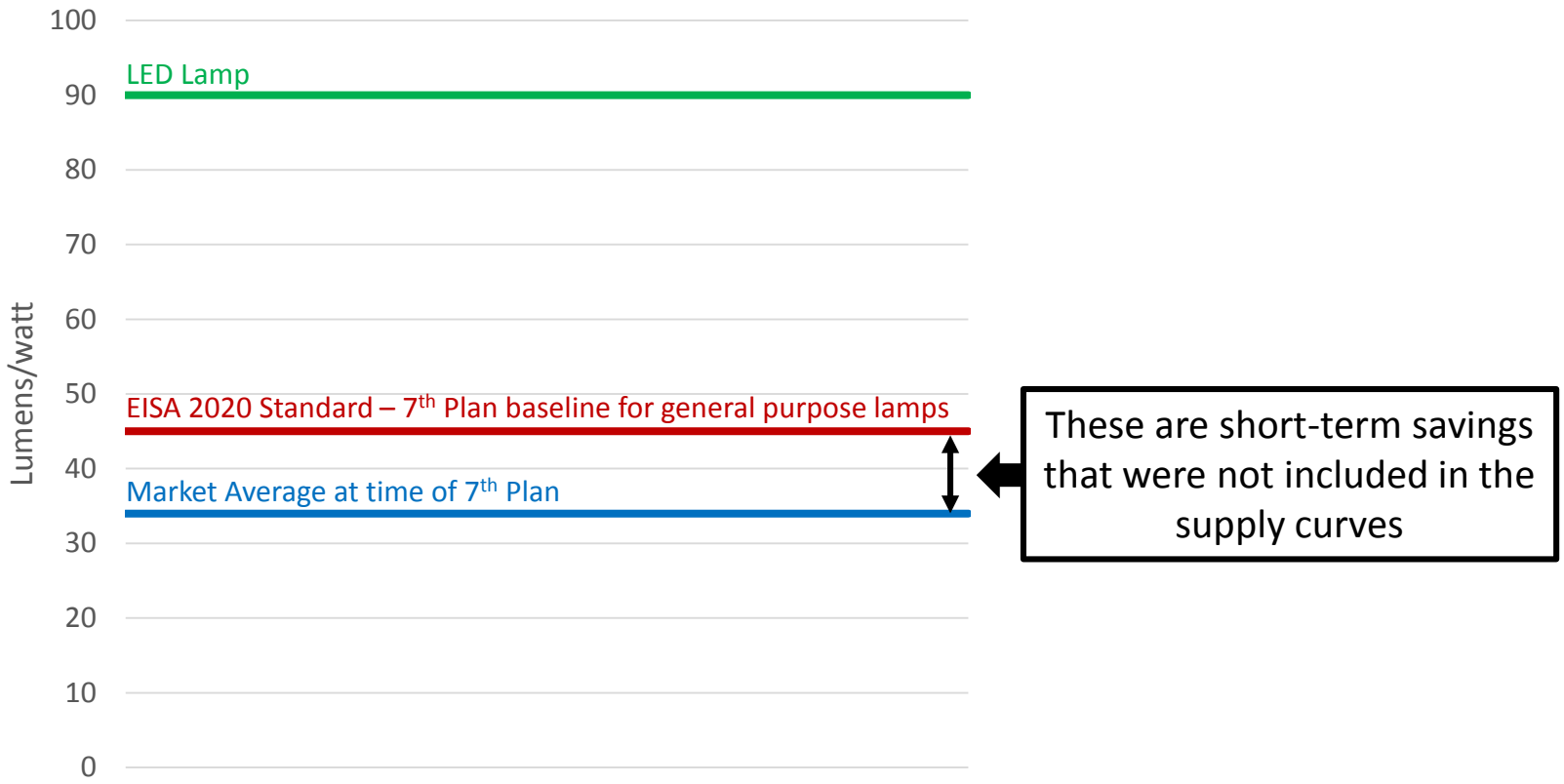
Savings potential captured in 7th Plan

Early Replacement Example: Non-Residential Lighting



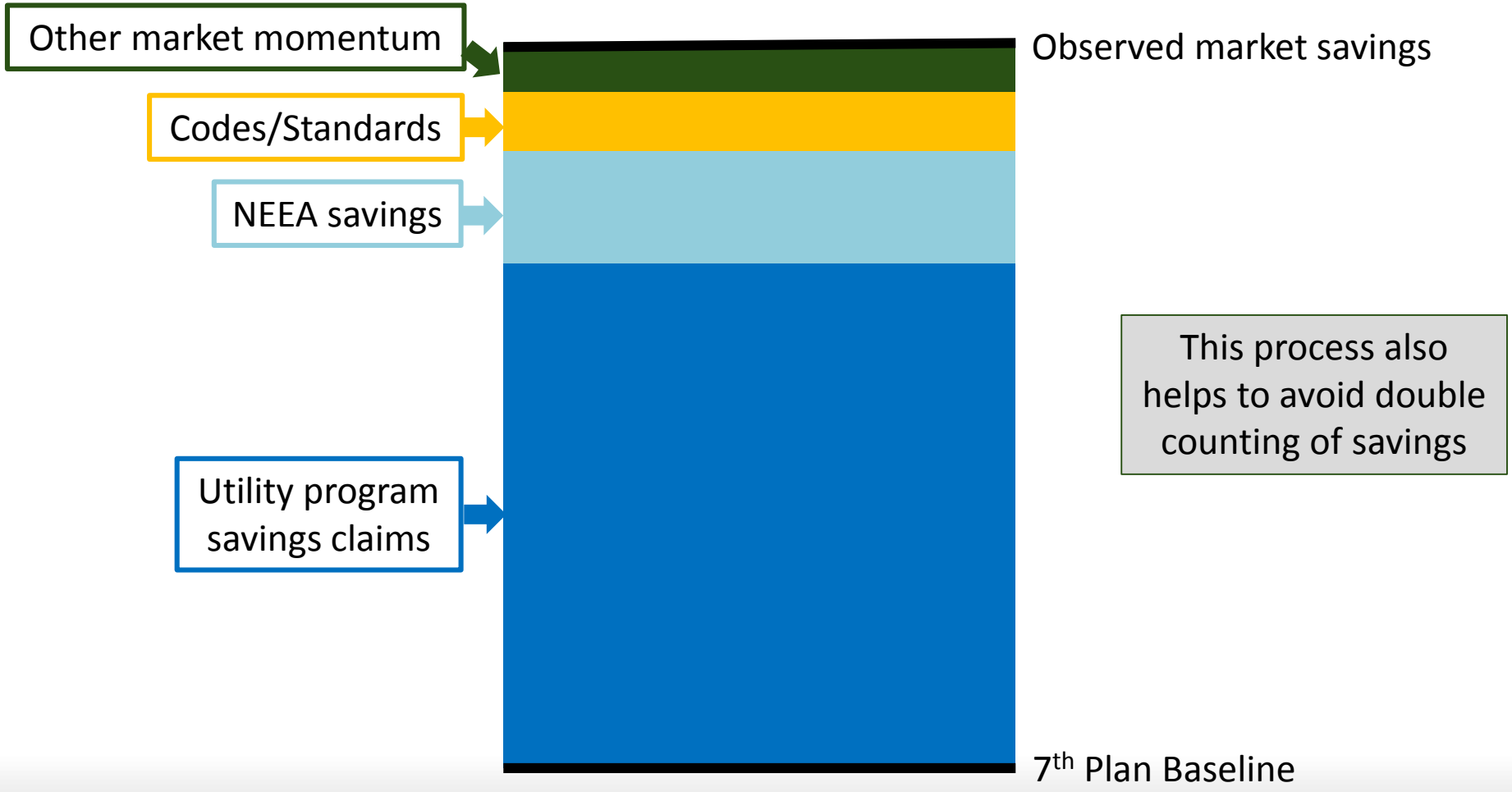
Using in-ceiling baseline overstates savings compared to the 7P baseline by about 25%

Short-Term Savings from Residential Lighting



Note: This only applies to general purpose lamps. The lumen/watts reflect the average lumen bin, not all lamps.

Future True-Up with Market Data



Other Caveats

- While Bonneville reports savings for the fiscal year, many others report on a calendar year
  - This might result in some mismatch in year 1, but gets smoothed out over multiple years
- Some types of savings, in particular industrial, are blocky and can vary significantly year by year

Reminder of the Seventh Plan Conservation Milestones

	FY 2016-2017	FY 2018-2019	FY 2020-2021
Annual Energy (aMW)	370	460	570
Cumulative Energy (aMW)	370	830	1400

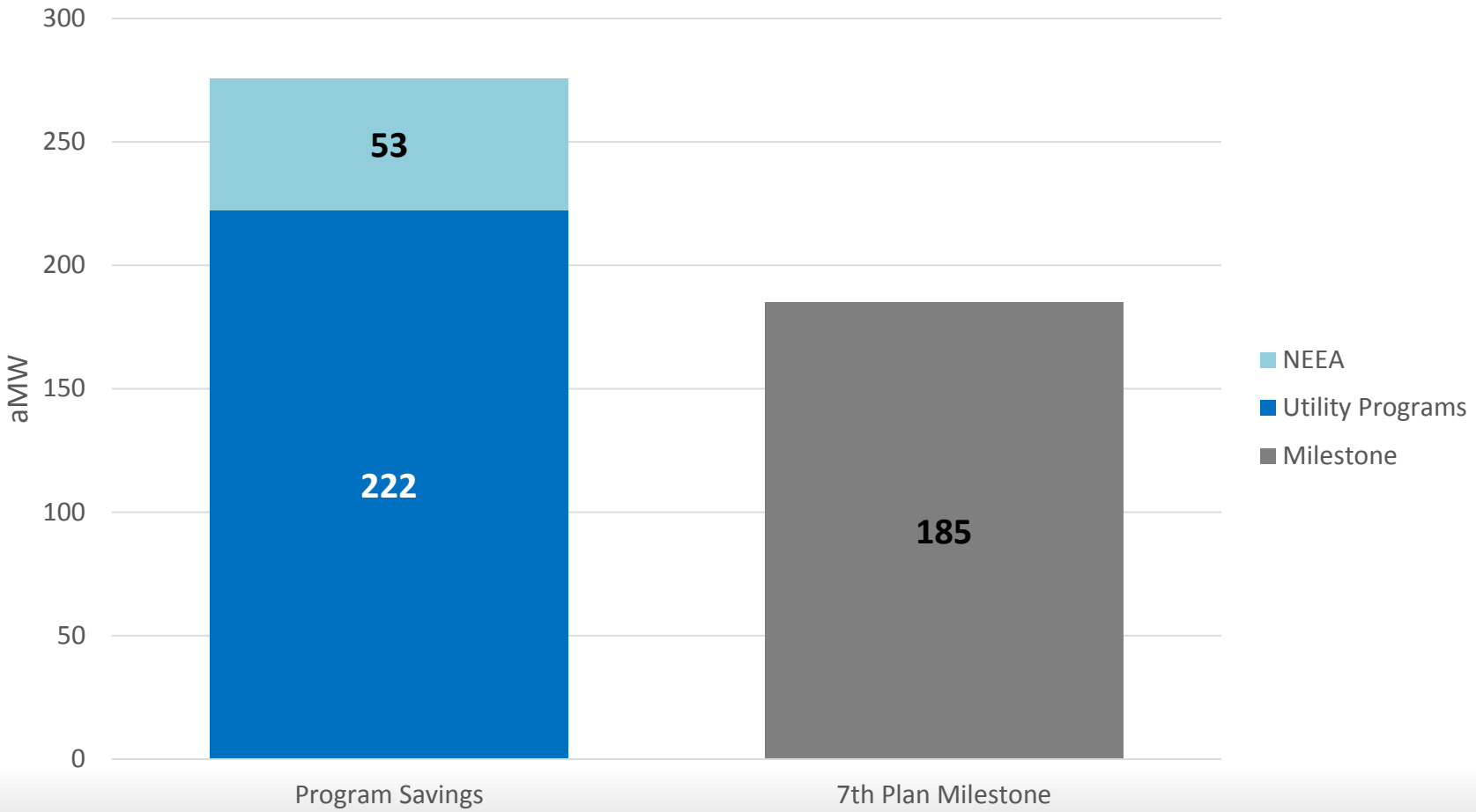
Because the plan included 2-year milestones, we are comparing 2016 savings against one half of the FY 2016-2017 milestone (185 aMW)

Now for the Results!

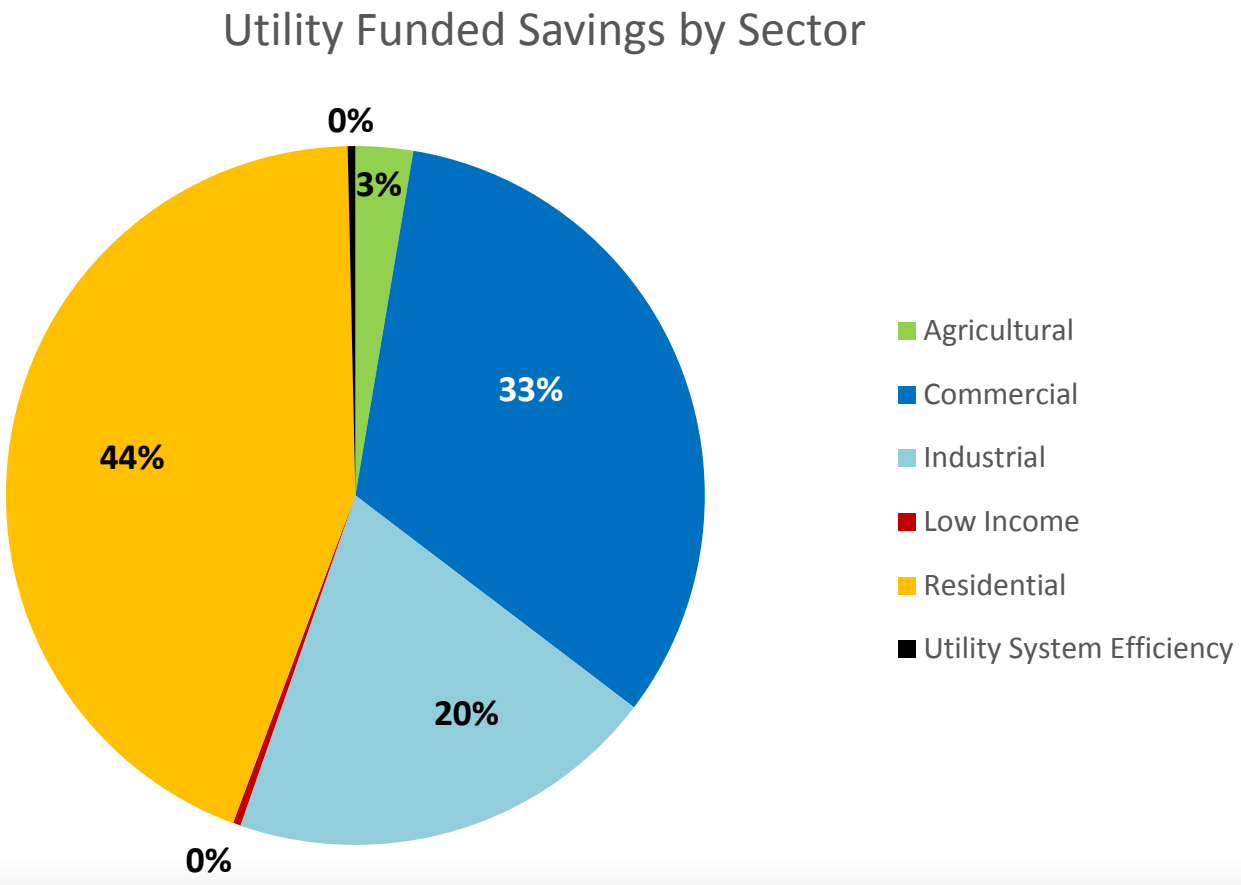
Thank You Respondents!

- Savings and expenditures data from 127 reporting utilities (essentially the whole region)

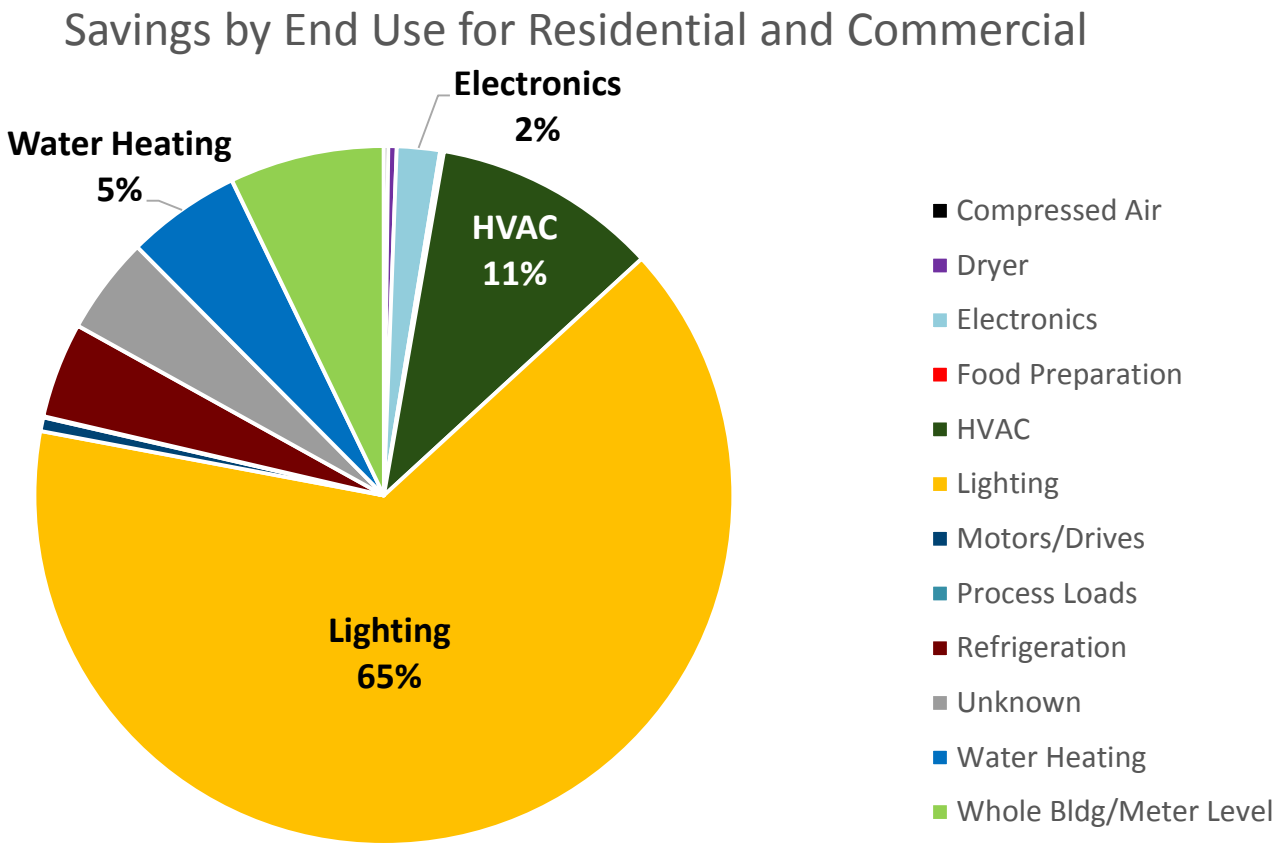
Utility funded programs surpassed the Plan's first year milestone



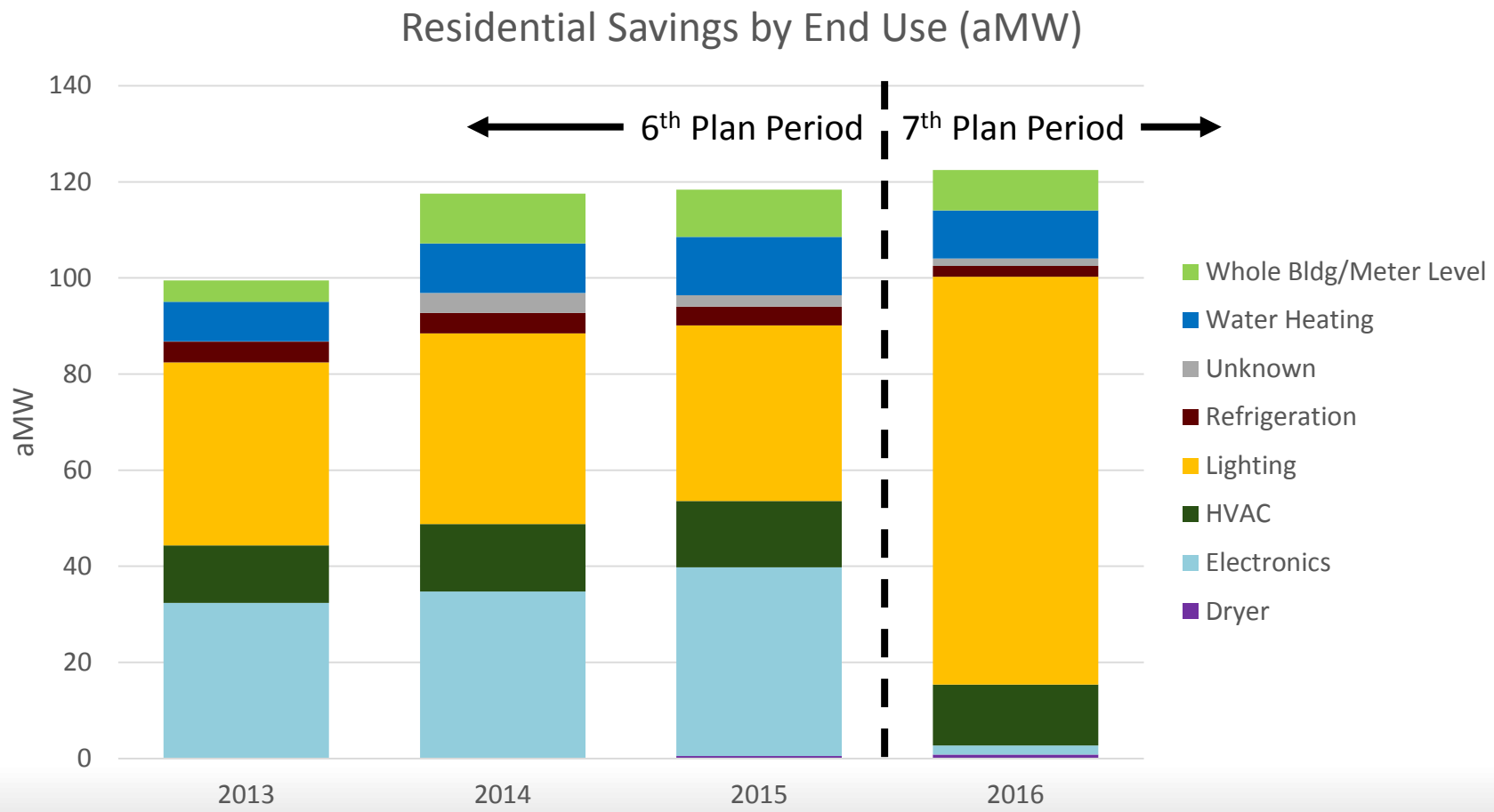
Most of the region's savings are coming from the residential sector



Significant savings in residential and commercial come from lighting



Lighting savings increased significantly in 2016



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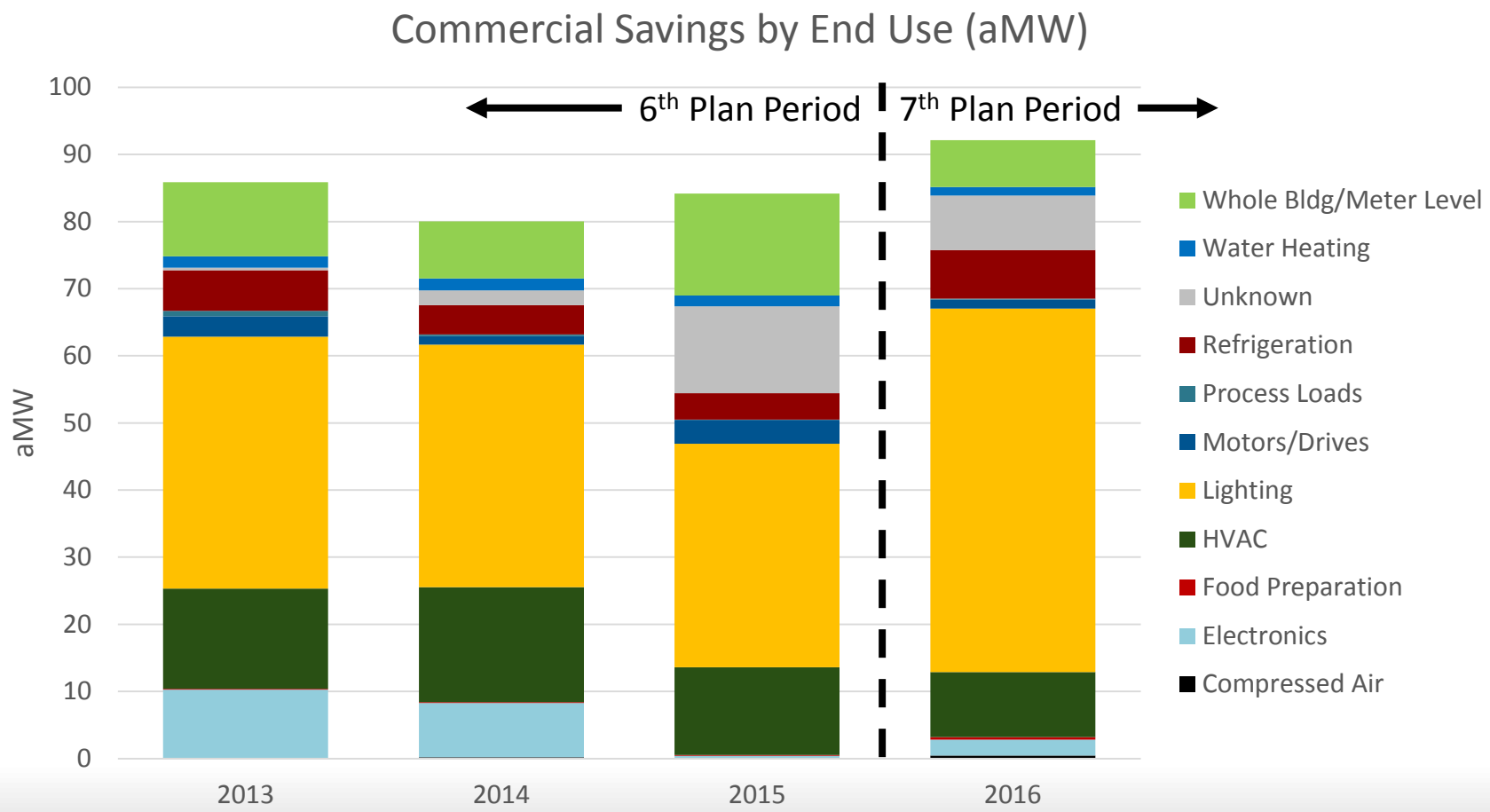
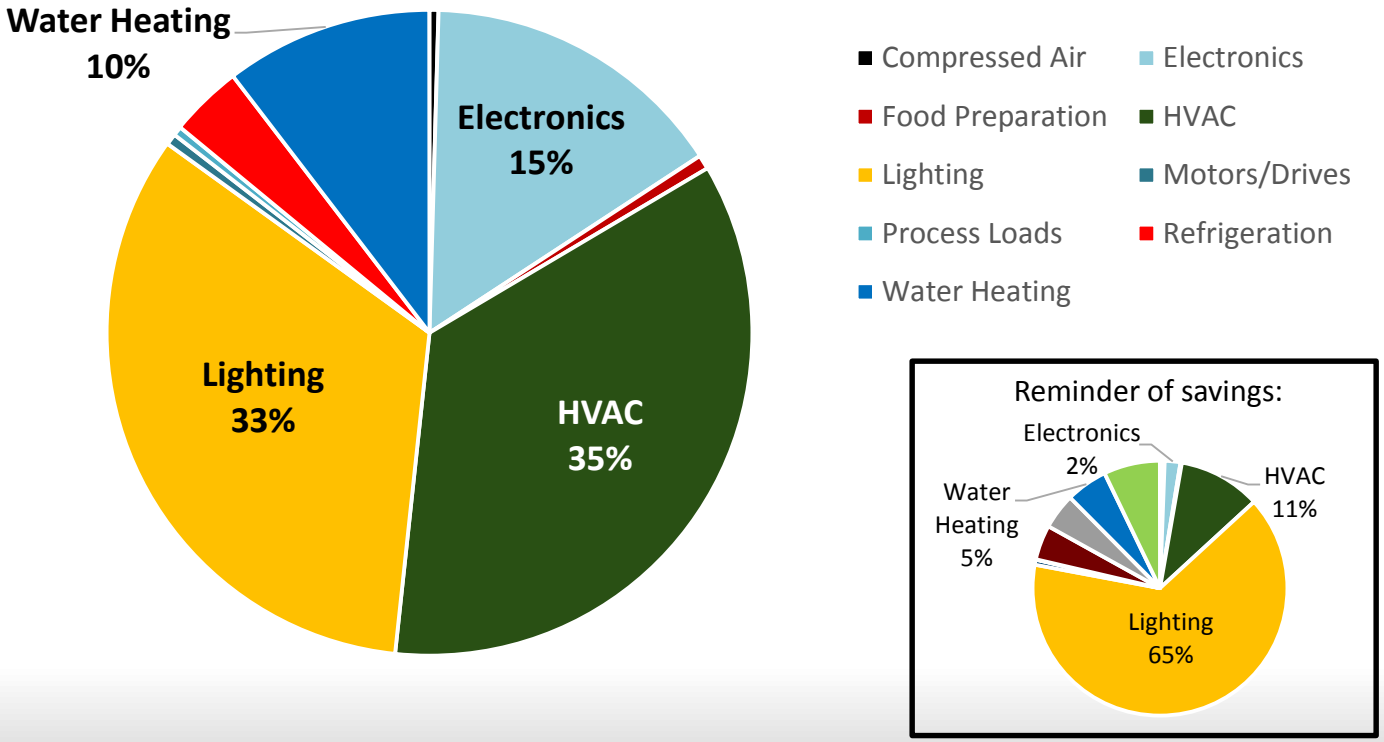
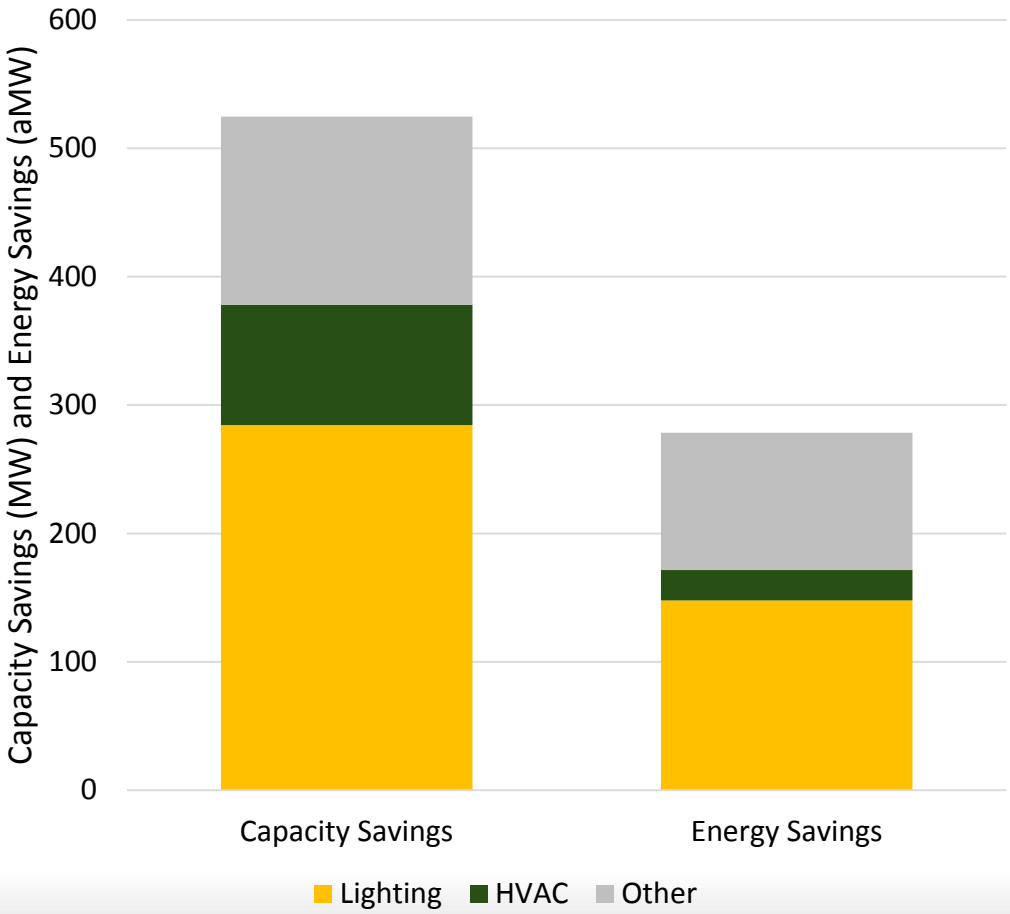


Significant potential remains for other end uses

Percent of Residential and Commercial Cost-Effective Potential for the First Six Years of the Plan



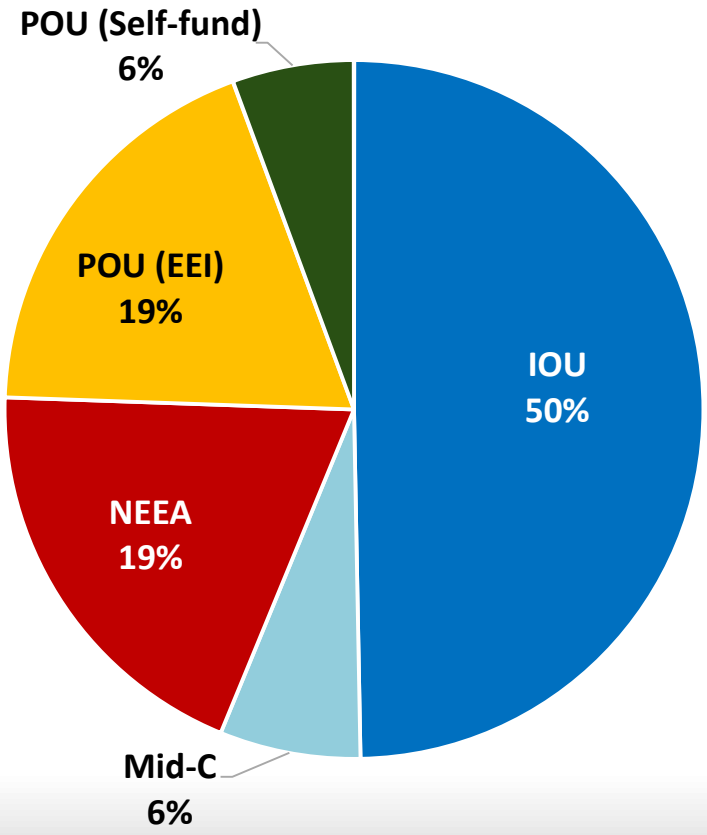
Utility funded efficiency provides 524 MW of winter capacity



- Represents approximately 1.6% reduction on last year's winter peak
- Lighting contributes significantly to capacity savings
- Deeper savings in HVAC will have a greater impact on capacity savings

Savings from IOUs and ETO account for half of the region's energy savings

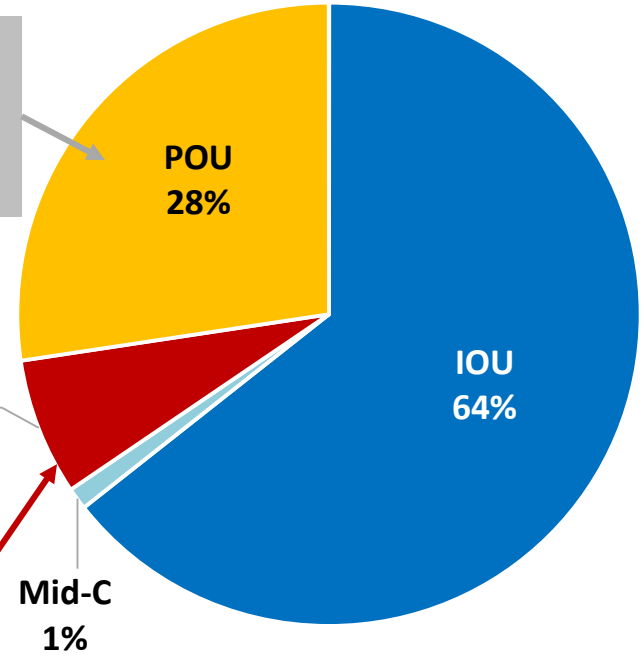
Share of Energy Savings by Org Type and Funding Mechanism



Total Utility-Funded Expenditures were $475 Million in 2016

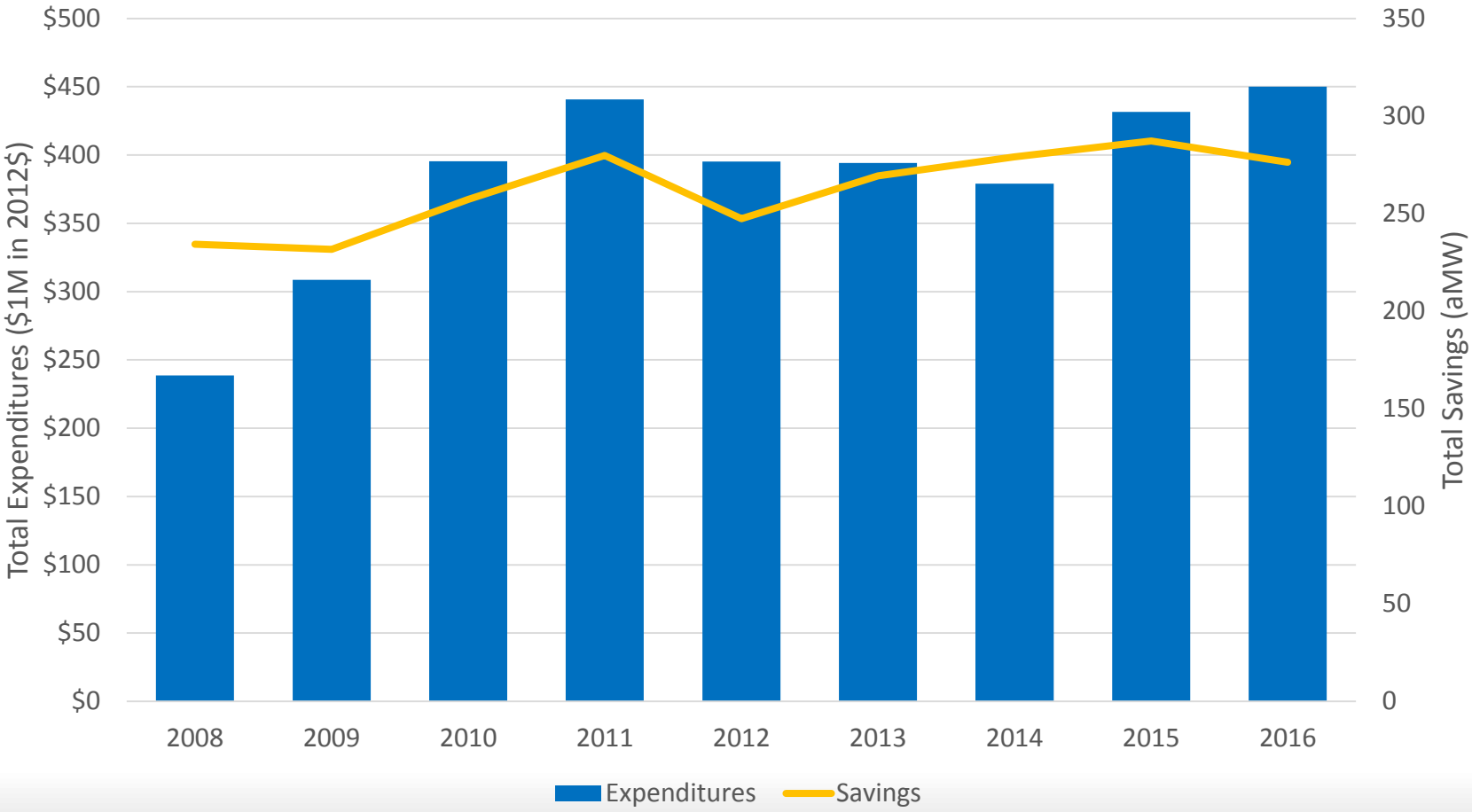
Share of Utility-Funded Expenditures by Source

Note: BPA provided data does not include non-incentive costs, while most other respondents did provide those data

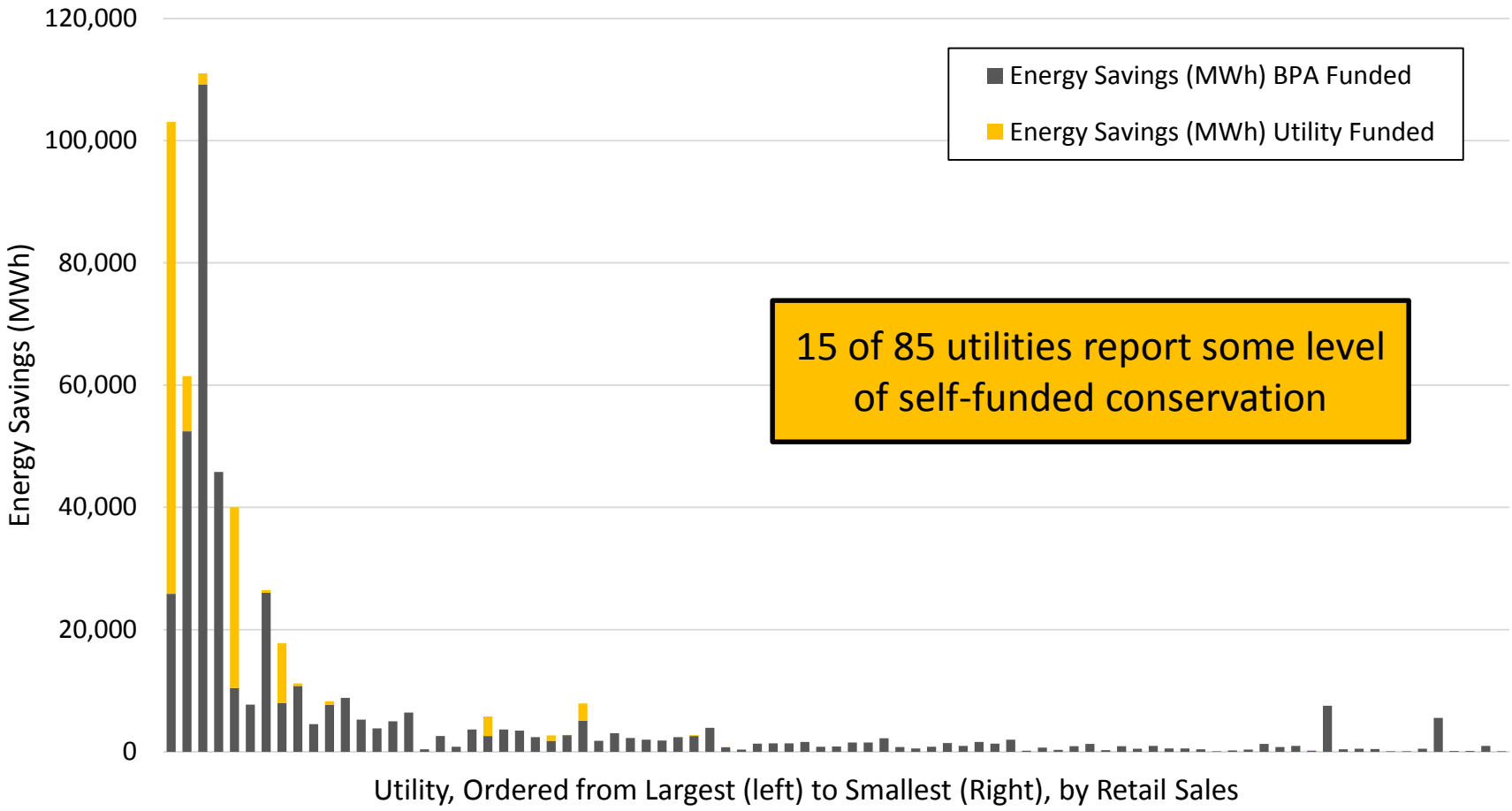


NEEA achieves significant savings for the region (19%) given its level of investment

While fairly steady, expenditures have increased over the last couple of years



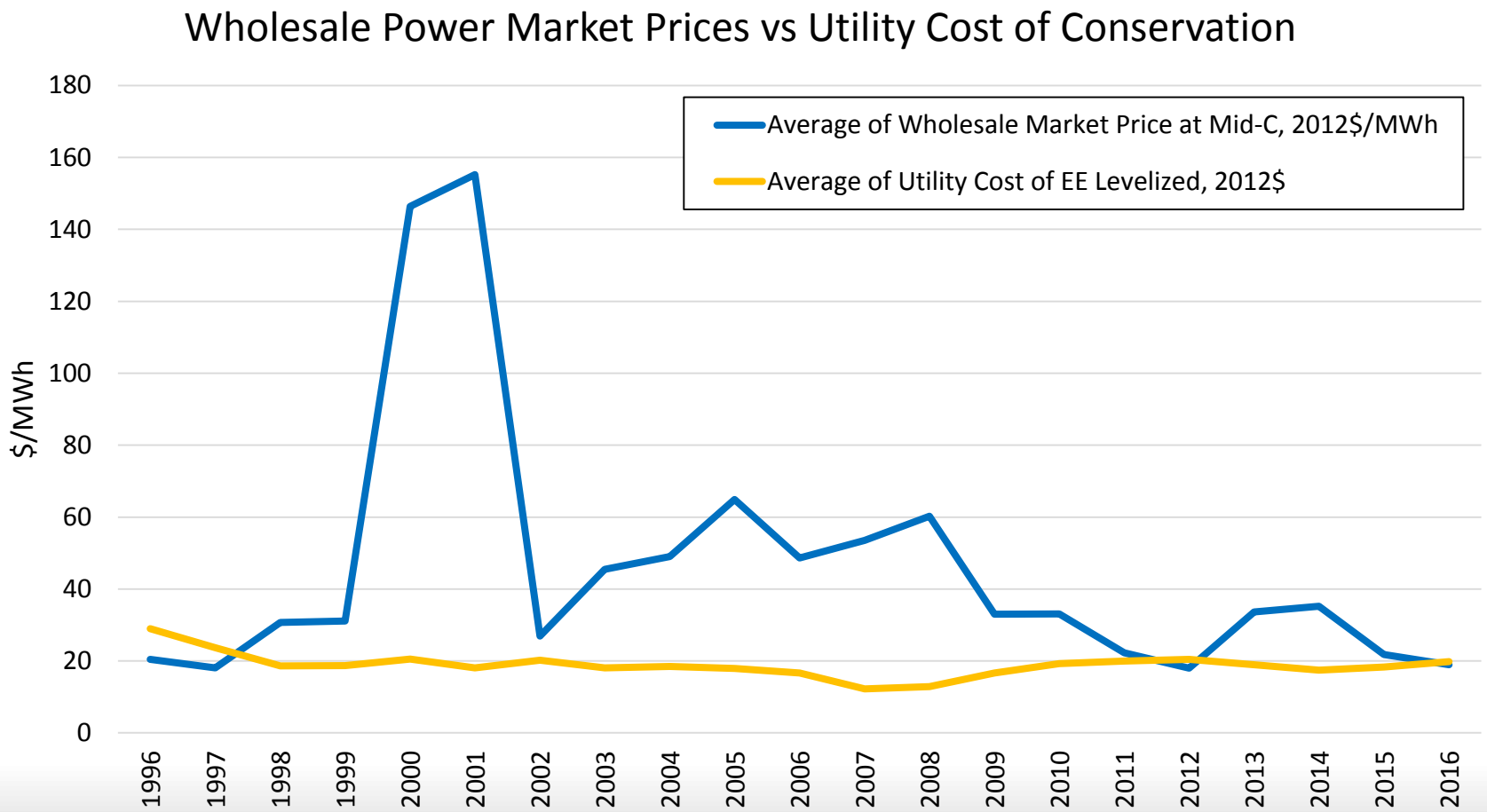
A handful of BPA utilities provide most of the self-funded conservation



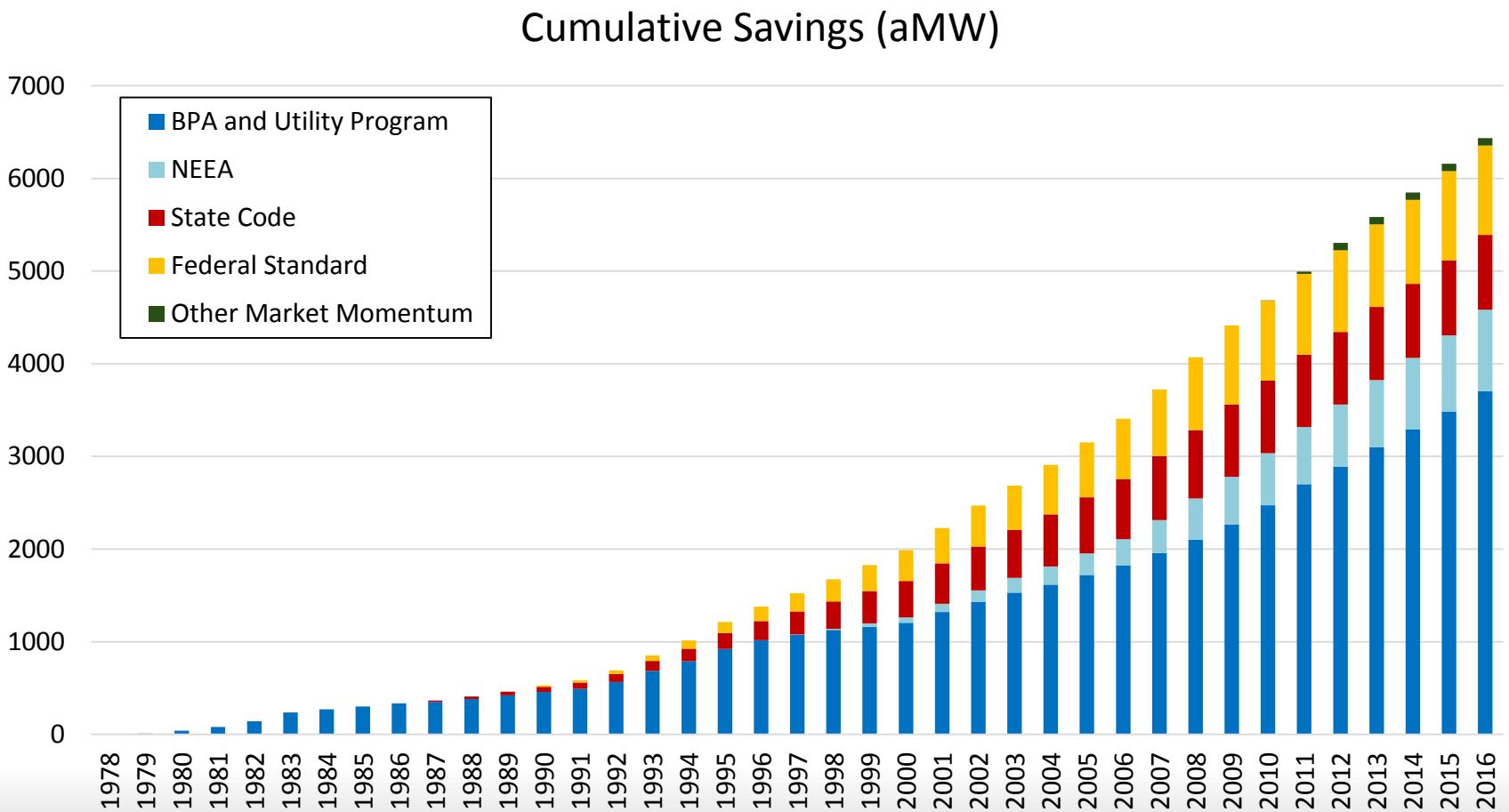
Utility Savings as a percent of Retail Sales

*Note: Average represents total regional savings as a percent of total regional sales
**Source: ACEEE 2016 State Energy Efficiency Scorecard

Energy efficiency provides a reliably low cost resource relative to market prices



Region has achieved over 6300 aMW of Savings since 1978



What does 6,300 aMW of energy efficiency mean to the region?

- Generation:
  - Approximately two and a half Grand Coulee Dams
  - Approximately 26 combined cycle gas plants
- End Use Consumption:
  - Equivalent to approximately 2700 large sawmills
  - Represents 2 times the NW industrial sector
  - About the consumption of 75% of households in the NW
- Represents enough energy savings to save the region's electricity consumers $5 billion in 2016

How does that translate to reductions in CO2 emissions?

- 6300 aMW saved is the equivalent of saving 24.7 million metric tons of CO2
- This is equivalent to taking 5.28 million cars off the road for one year

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