August 7, 2018

MEMORANDUM

TO: **Council Members**

FROM: **Jennifer Light**

SUBJECT: **2017 Regional Conservation Progress Report**

BACKGROUND:

Presenter: Jennifer Light and Garrett Herndon

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 report also includes data on total market savings, capturing additional savings occurring outside of direct program touch. The data provides an understanding of the energy efficiency savings acquired in the region and the related expenditures for 2016 and 2017. Staff will present the findings of this survey to the Council, which will be the second look at progress against the Council's Seventh Power Plan conservation goals.

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 was broken into two-year milestones:

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

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

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.

2017 Regional Conservation Progress Survey Results

August 14, 2018

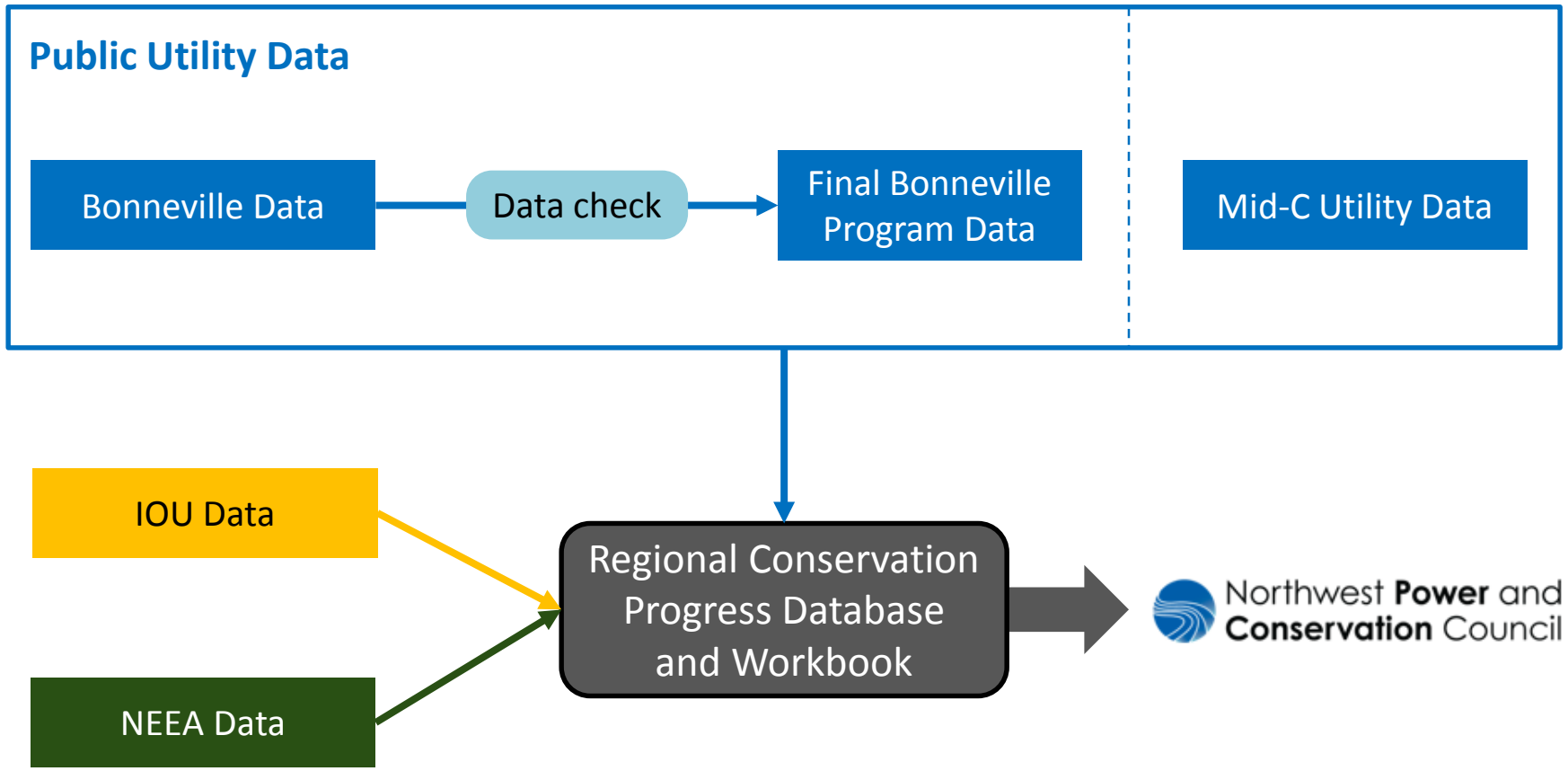
Council Meeting

Portland, Oregon

Background

- Annual survey conducted by the RTF on behalf of the Council
- Requested energy efficiency savings and expenditures for 2017 and corrections/updates to 2016
  - Savings: Sought as much detail as possible, to the end-use
  - Expenditures: Sought to get total expenditures
  - Projections: Estimates for 2018-2019 to inform Midterm Assessment
- This is the second look at the how the region is doing against the Seventh Plan milestones

Data and Analysis Process



Types of Savings in the RCP

Total Regional Savings	Represents the total savings in the region relative to the Power Plan baseline. A look at the whole market (efficient and inefficient). **These savings are most comparable to the Plan goals.**
Program Savings	Savings claimed by utilities, BPA, and Energy Trust of Oregon for specific measures that they have incentivized. Either calculated per site or estimated from a unit energy savings.
NEEA Alliance Savings	Savings reported by NEEA that represent efficiency not claimed by programs. Determined by estimating savings from all efficient units in the market and subtracting Program Savings.
Momentum Savings	Additional savings calculated by taking the Total Regional Savings and subtracting out other reported savings. This adjustment to Total Regional Savings can either be positive or negative.
Codes and Standards Savings	Savings from new buildings or equipment that meet a new code or standard not captured in the Power Plan baseline. Plan assumes codes and standards known at time of development.

Preference for Total Regional Savings

Where possible, RCP represents Total Regional Savings

- For 2016 and 2017, Total Regional Savings were included for the following residential markets:
  - Lighting
  - Ductless Heat Pumps
  - Refrigerators
  - Heat Pump Water Heaters
  - Clothes Washers

These markets represent ~10% of the first two-year cost-effective potential from the Plan

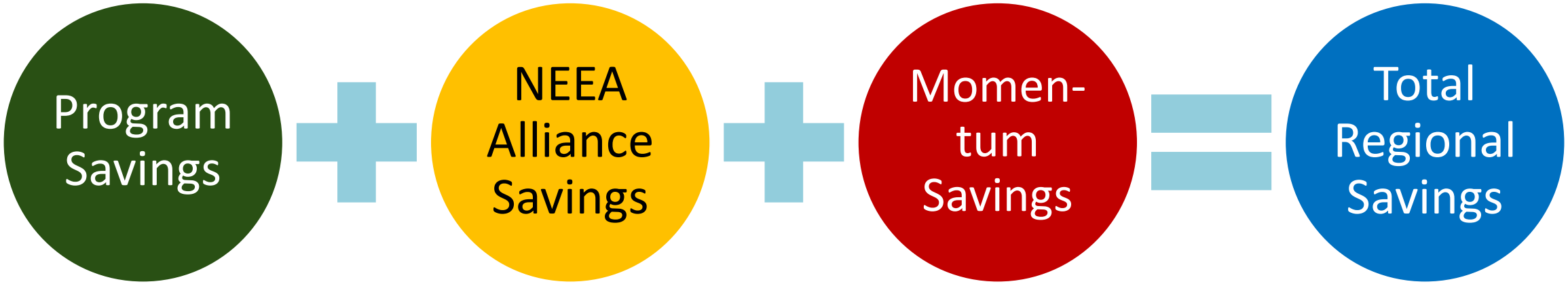
- For all other markets, RCP represents reported Program, NEEA Alliance, and Codes/Standards savings

Stacking Savings Components

When reporting savings, we seek to avoid double counting (or undercounting) savings

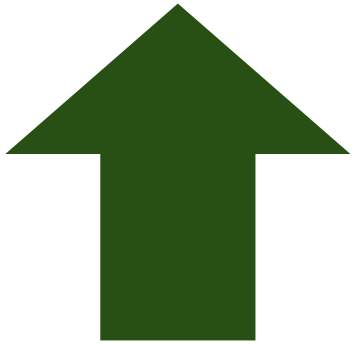
Stacking Savings Components

Momentum Savings are a way of accounting for, and truing up to, Total Regional Savings

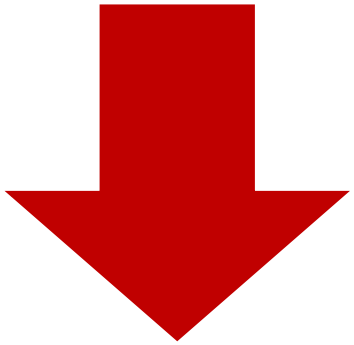


Adjusting to Total Regional Savings

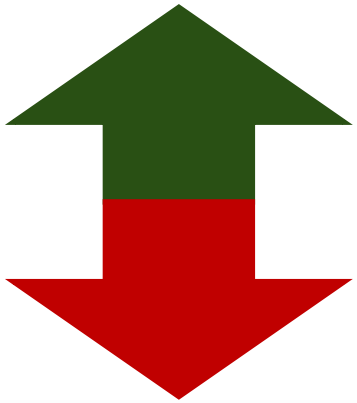
Efficiency is occurring outside of Program and NEEA Alliance Savings and do relate to the Plan goal



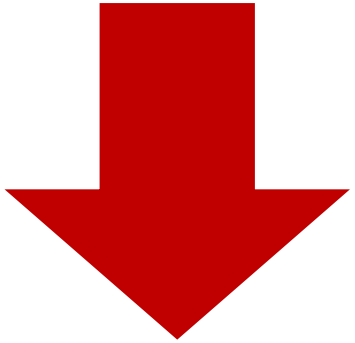
Program and NEEA Alliance Savings represent only efficient units, while the Plan looks at all units



Program Savings baselines may be different than the Plan baseline, and change throughout Plan period



Program savings represent short-term savings, while the Plan represents long-term savings

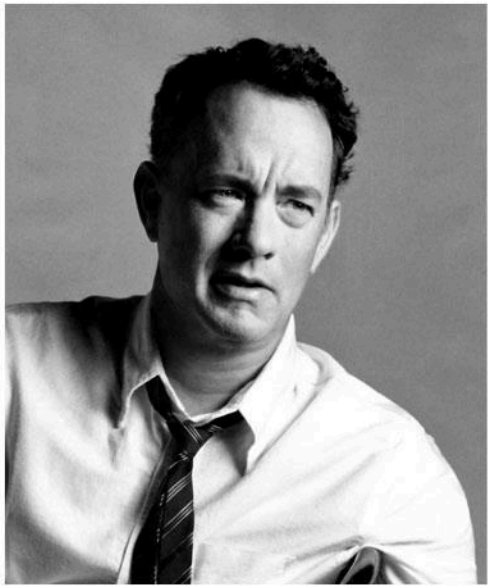


Other Caveats

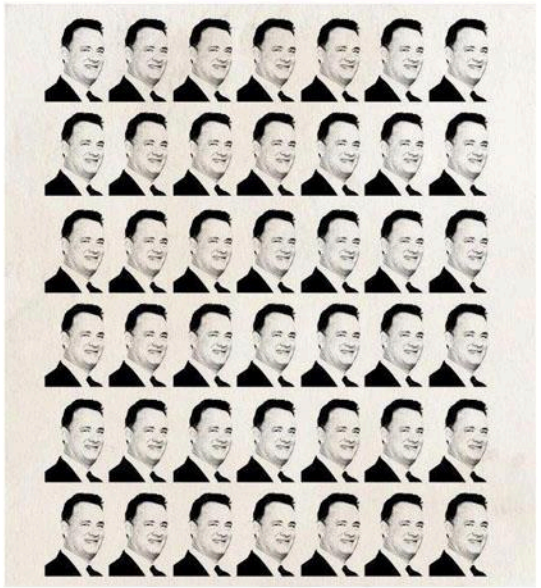
- While Bonneville reports savings for the fiscal year, many others report on a calendar year
  - This will be smoothed out over multiple years of 7th Plan reporting
- Some types of savings, in particular industrial, are blocky and can vary significantly year by year
- Reporting entities vary year-by-year, which means some years are more inclusive

Thank You Respondents!

- Savings and expenditures data from 136 reporting entities (essentially the whole region)



T.HANKS

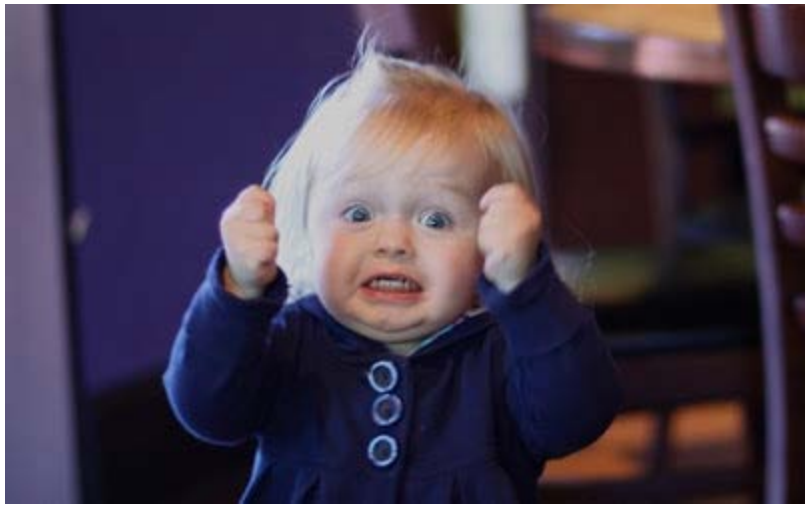


T.hanks a lot

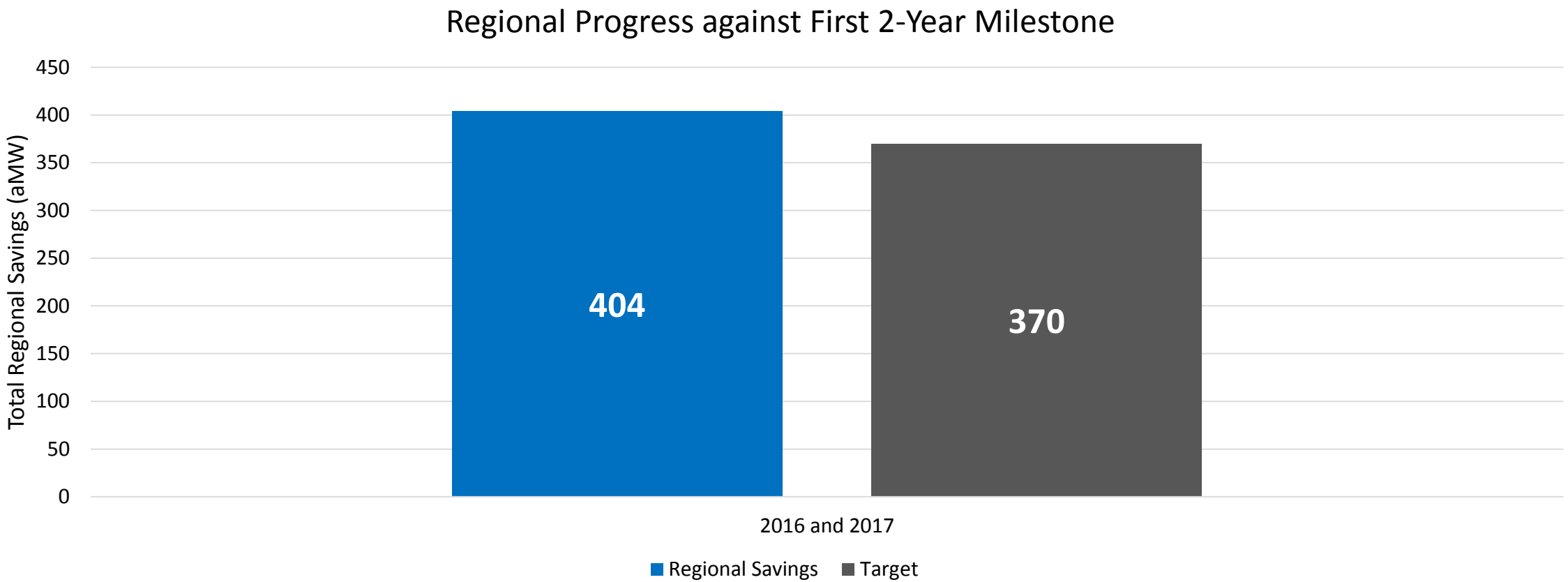
Reminder of the Seventh Plan Conservation Milestones

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

Now for the 2017 Results!



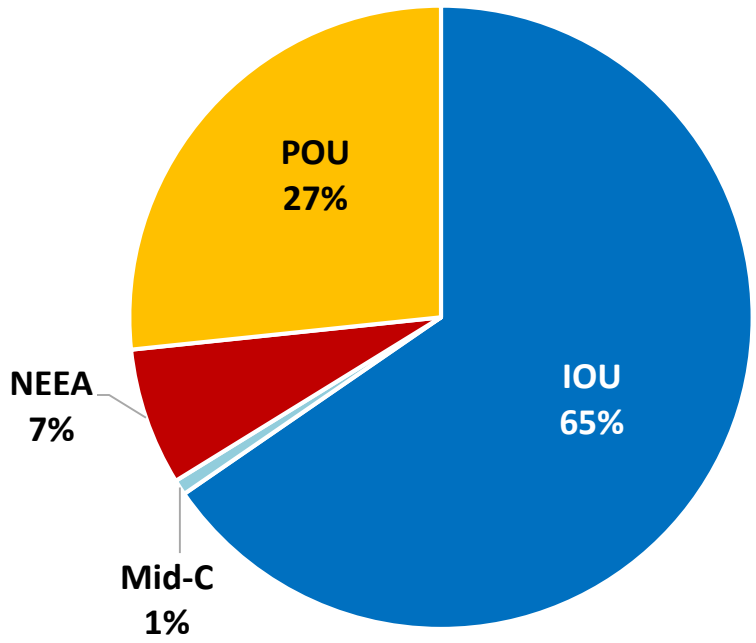
Region is on Track with Council Plan



- Accounts for total regional savings; where available
- Additional total regional savings data may adjust this up or down

Total Utility-Funded Expenditures were $512 Million in 2017

Share of Utility-Funded Expenditures (including NEEA) by Source

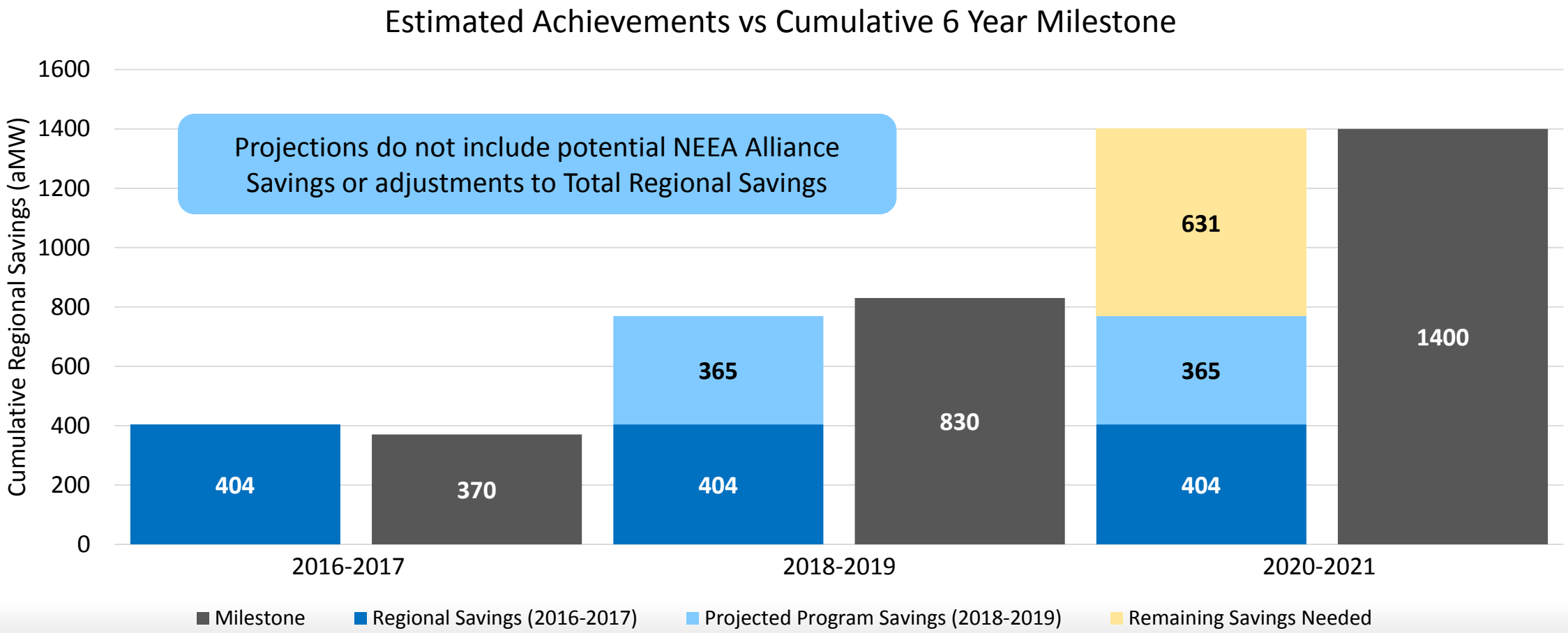


But, a few important notes of caution

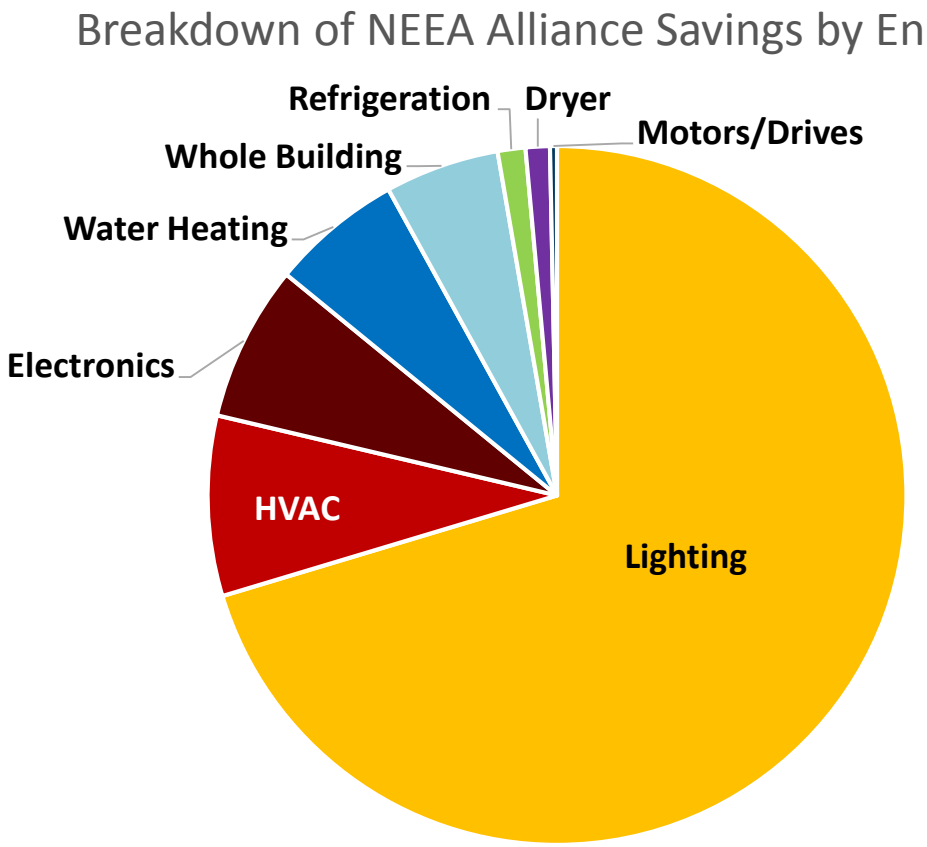
While the region is currently on track, it is possible it will not meet the six year goal

- Milestones grow, but program budgets and savings are flat (or declining)
- Achieving the goal will require significant savings outside of programs, but this is an area of large uncertainty
- Bonneville appears to be falling behind in its share of the target

However, there is uncertainty in whether the region will meet the six year milestone



NEEA Alliance Savings are 63 aMW in the first two-year period



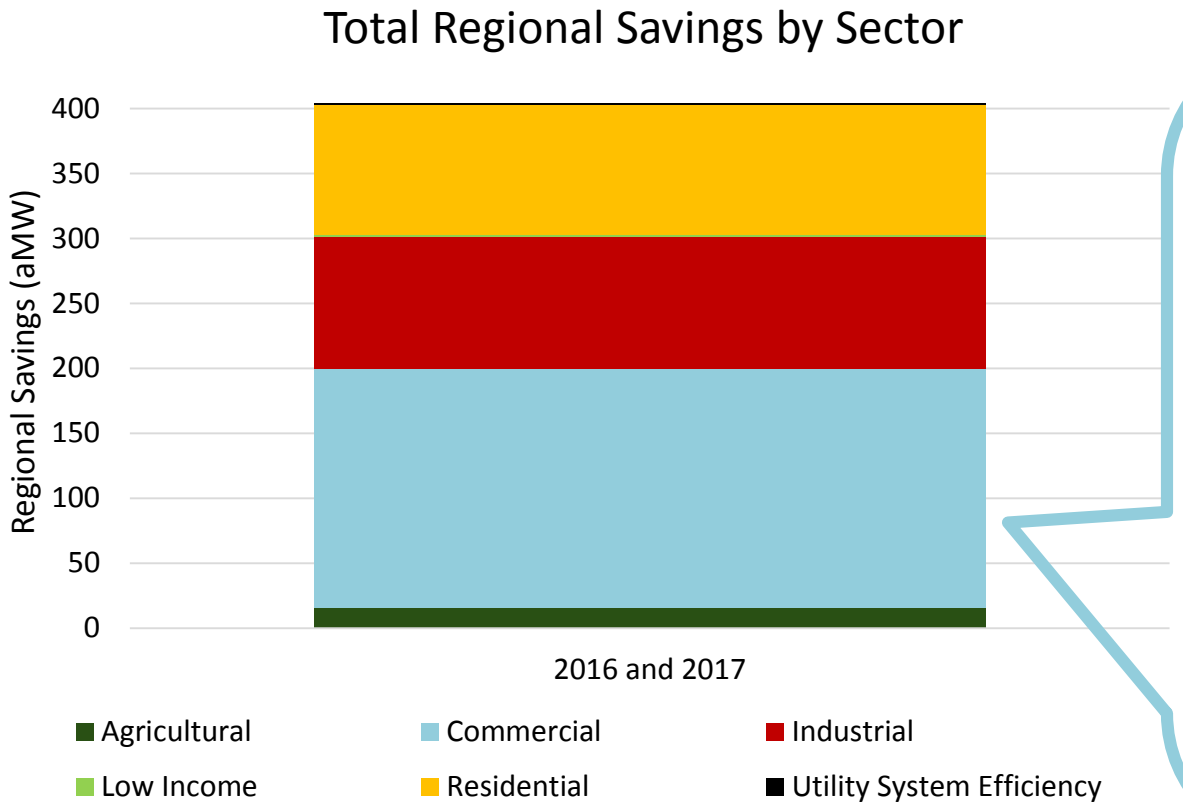
NEEA forecasts an additional 60 aMW of NEEA Alliance Savings in 2018-2019

Uncertainty is in Total Regional Savings

- Adjusting to Total Regional Savings for 2016 and 2017 resulted in a **reduction of savings by 95 aMW**
  - Additional market data has the potential to either further reduce or increase the Total Regional Savings
- Expect total market data for:
  - Commercial lighting
  - Residential HVAC (beyond DHPs)
  - Residential Water Heating (beyond HPWHs)
  - Commercial HVAC

This is likely to have the largest effect on final savings, with the potential to further reduce the 404 aMW in the near term

Commercial savings likely to change when adjusted to Total Regional Savings



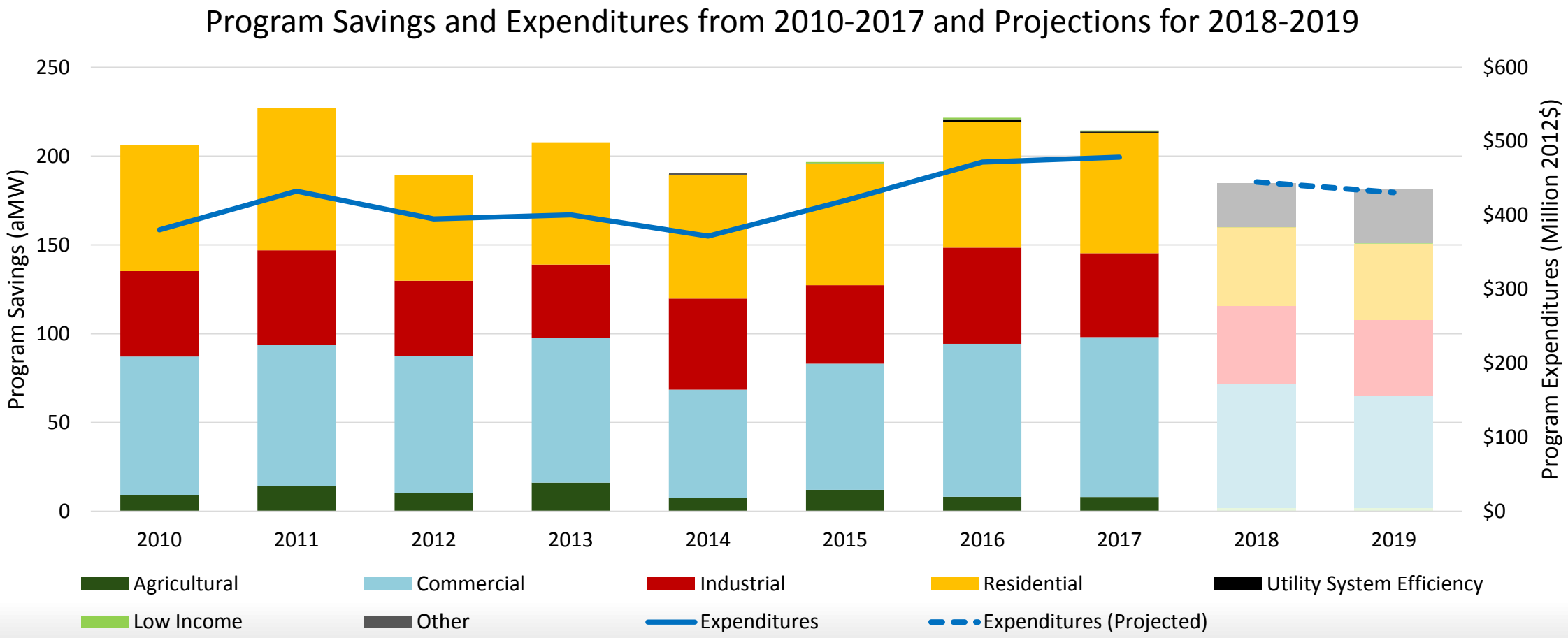
62% of commercial savings are in lighting. Most utilities use an "in-ceiling" baseline, which is less efficient than the Plan. This adjustment to the in-ceiling baseline has the potential to decrease savings by approximately 30 aMW.

Adjusting to Total Regional Savings could:

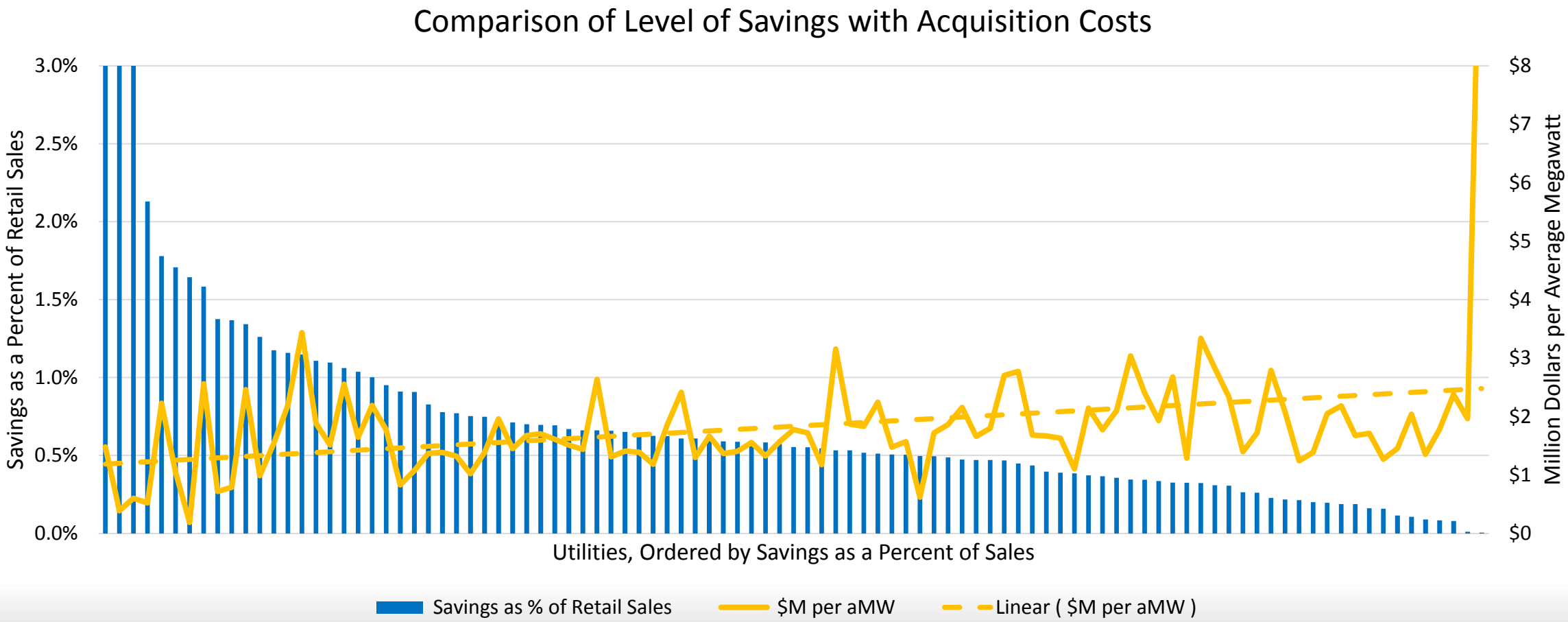
- **Increase Savings:** If there is a lot of efficiency occurring outside of programs; sufficient to offset the baseline adjustment
- **Decrease Savings:** If the adjustment to the baseline is greater than any savings occurring outside of programs

Accounts for total regional savings; where available in residential sector
BPA 2017 low income not yet available

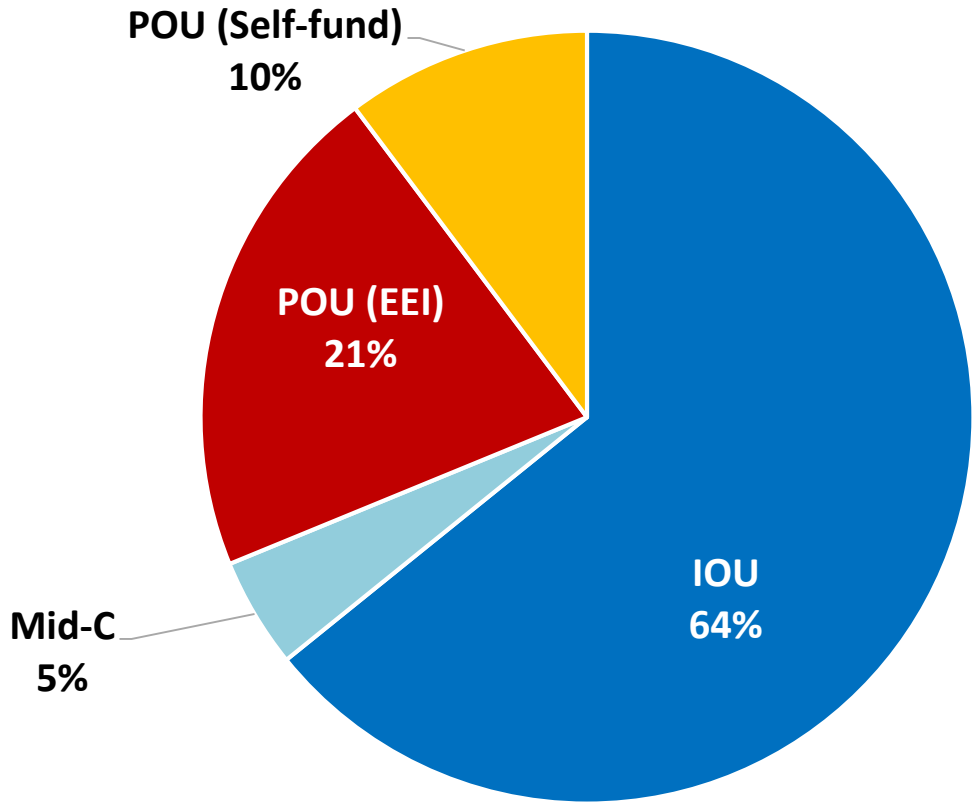
Projected Program Savings and expenditures are relatively flat



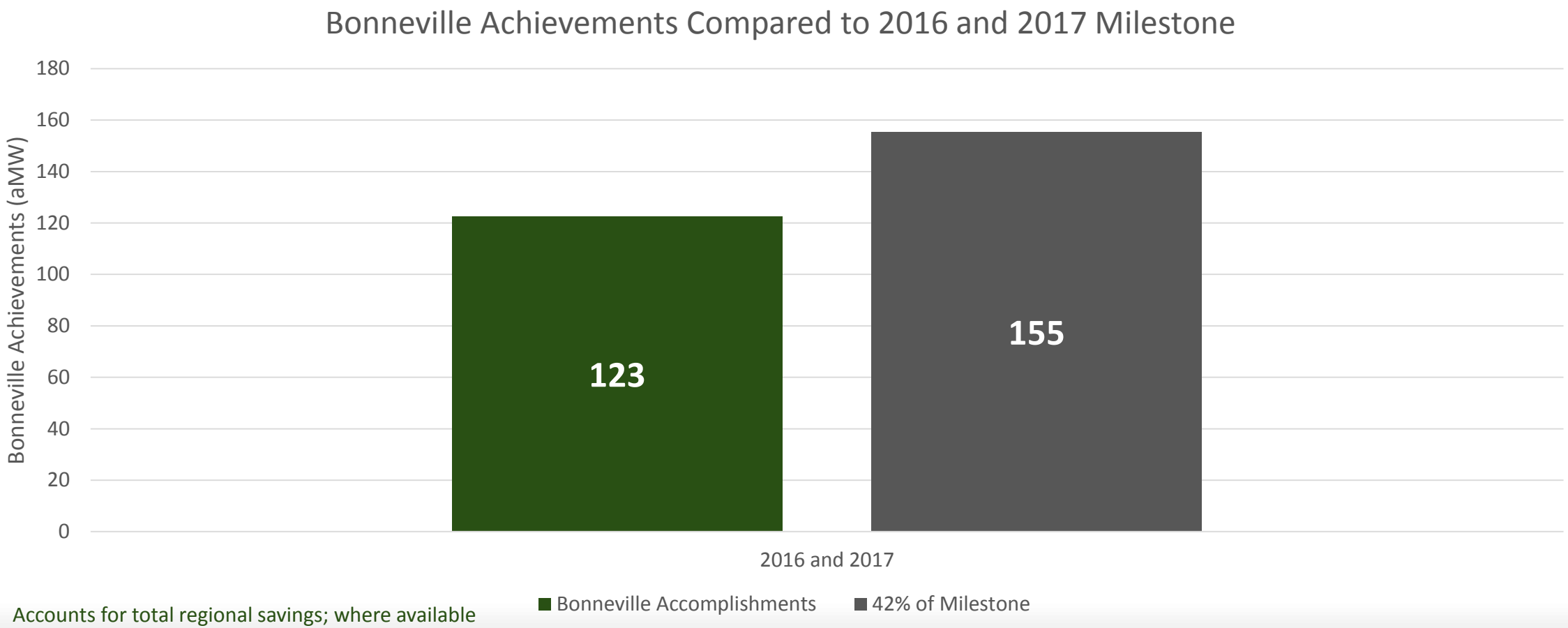
Generally, the less you save, the more expensive your savings are



Program Savings by Organization Type 2016 and 2017

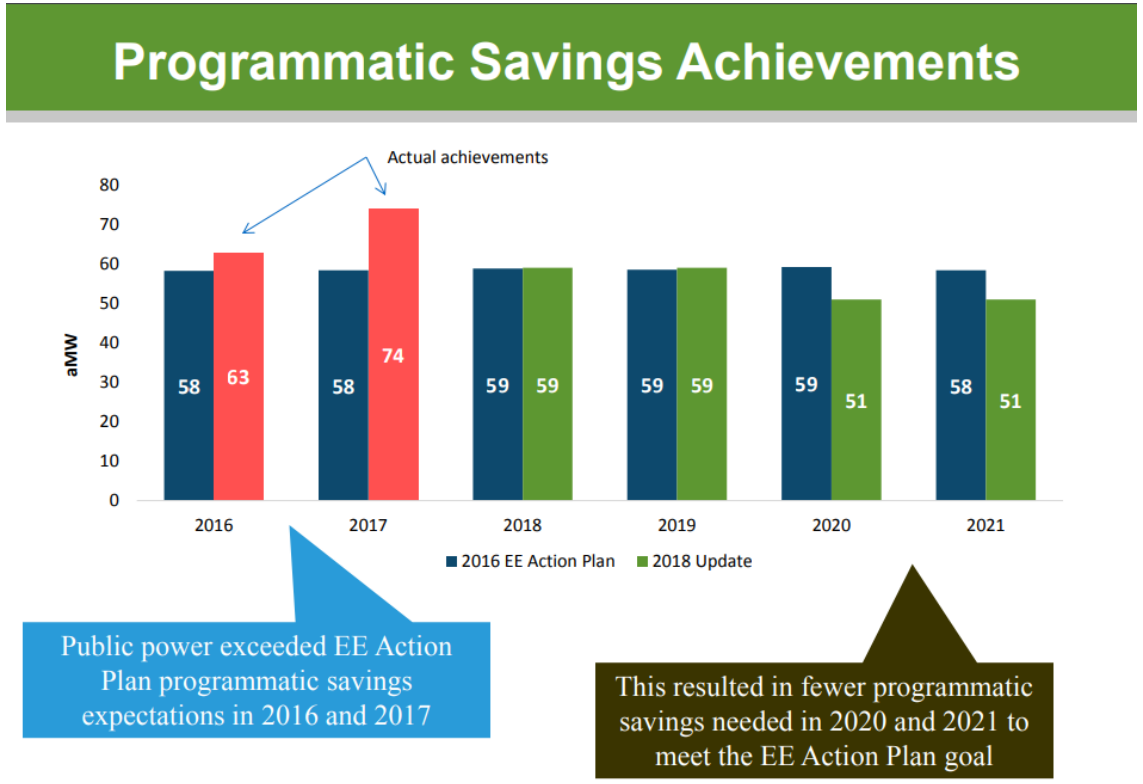


Bonneville's Progress Towards Milestone



Accounts for total regional savings; where available
Additional total regional savings data may adjust this up or down

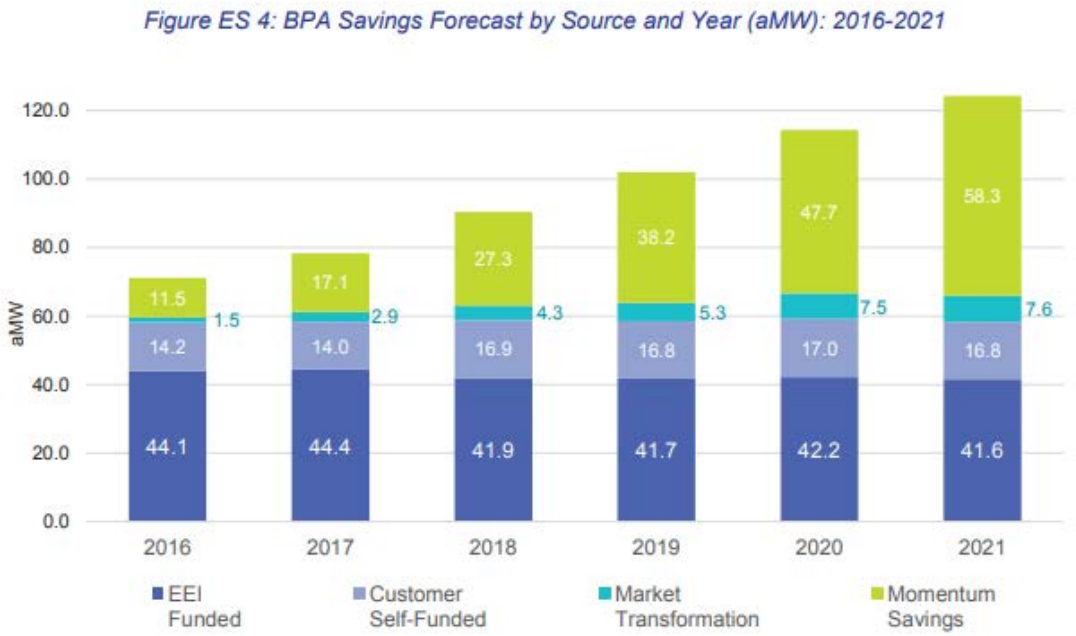
Bonneville's Perspective



Source: BPA Presentation on Bonneville's Energy Efficiency Goals and Integrated Program Review process to Council on June 12

- Bonneville's Program Savings represent an overachievement to what they planned for in their Action Plan
  - This overachievement allowed for a reduction in planned Program Savings for 2020-2021
- Bonneville is confident in their forecast of NEEA Alliance and Momentum Savings as a means of meeting their share of the regional goal

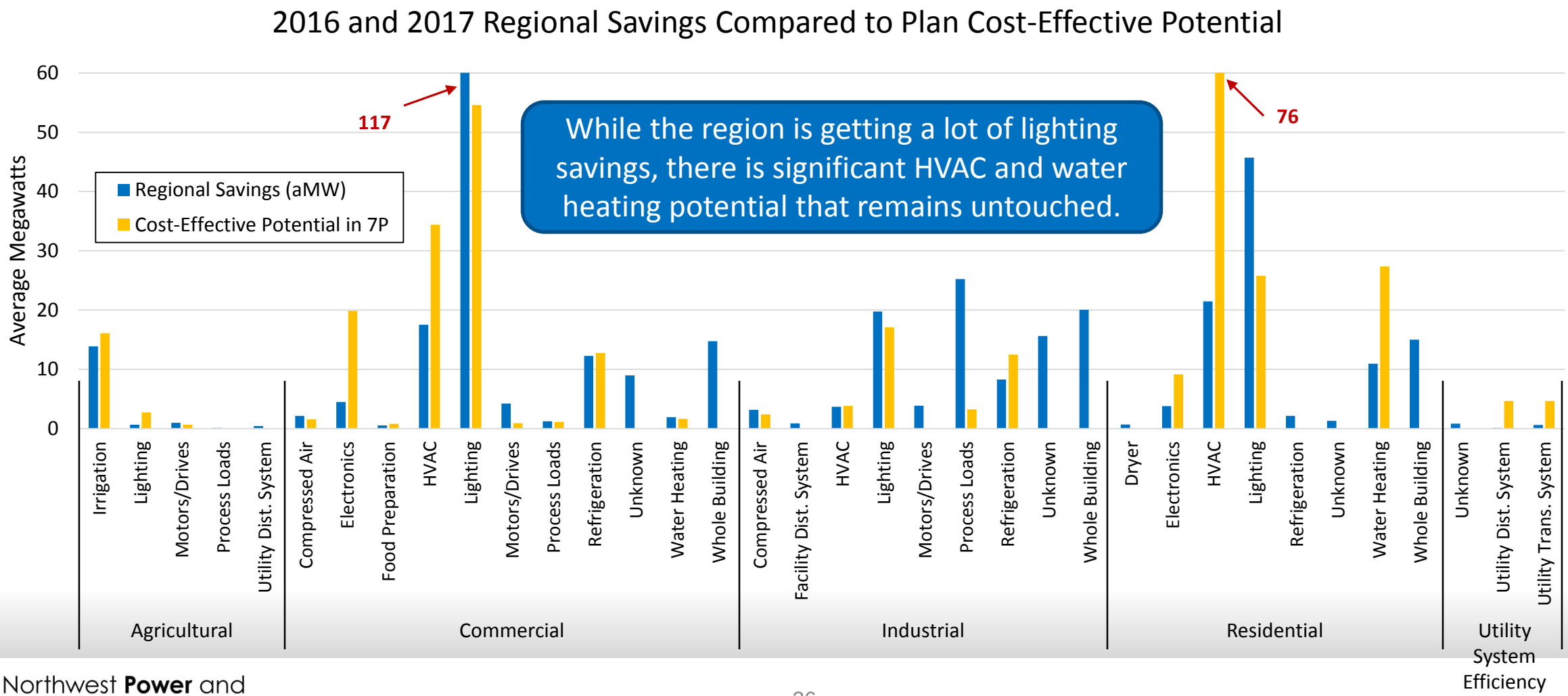
As with regional goal, uncertainty lies in the adjustment to Total Regional Savings



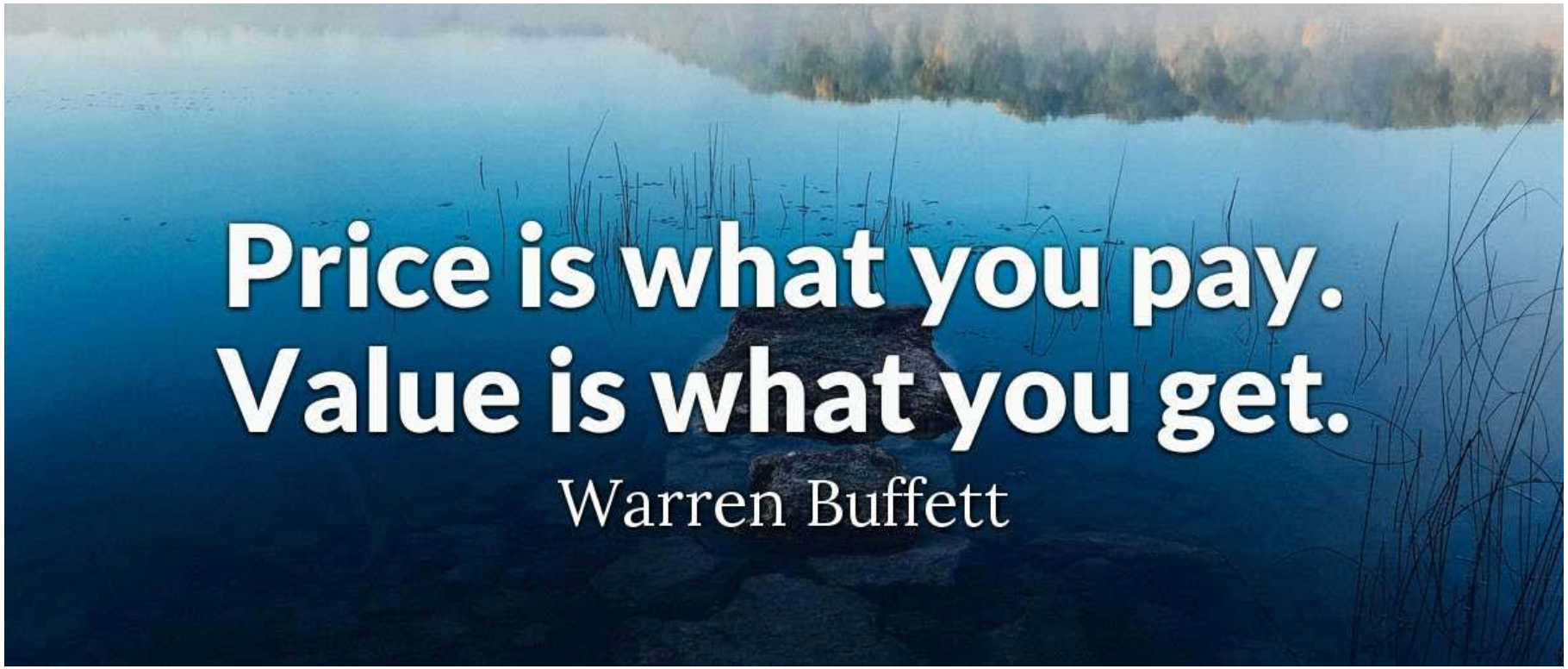
Source: BPA Energy Efficiency Action Plan

- BPA's EE Plan assumes 33 aMW of NEEA and Momentum Savings in 2016 and 2017
  - Total of 229 aMW over the 6 years
- Current adjustments to Total Regional Savings resulted in a **reduction of 13 aMW** of savings for BPA this period
- Additional markets are still being studied and may shift this result

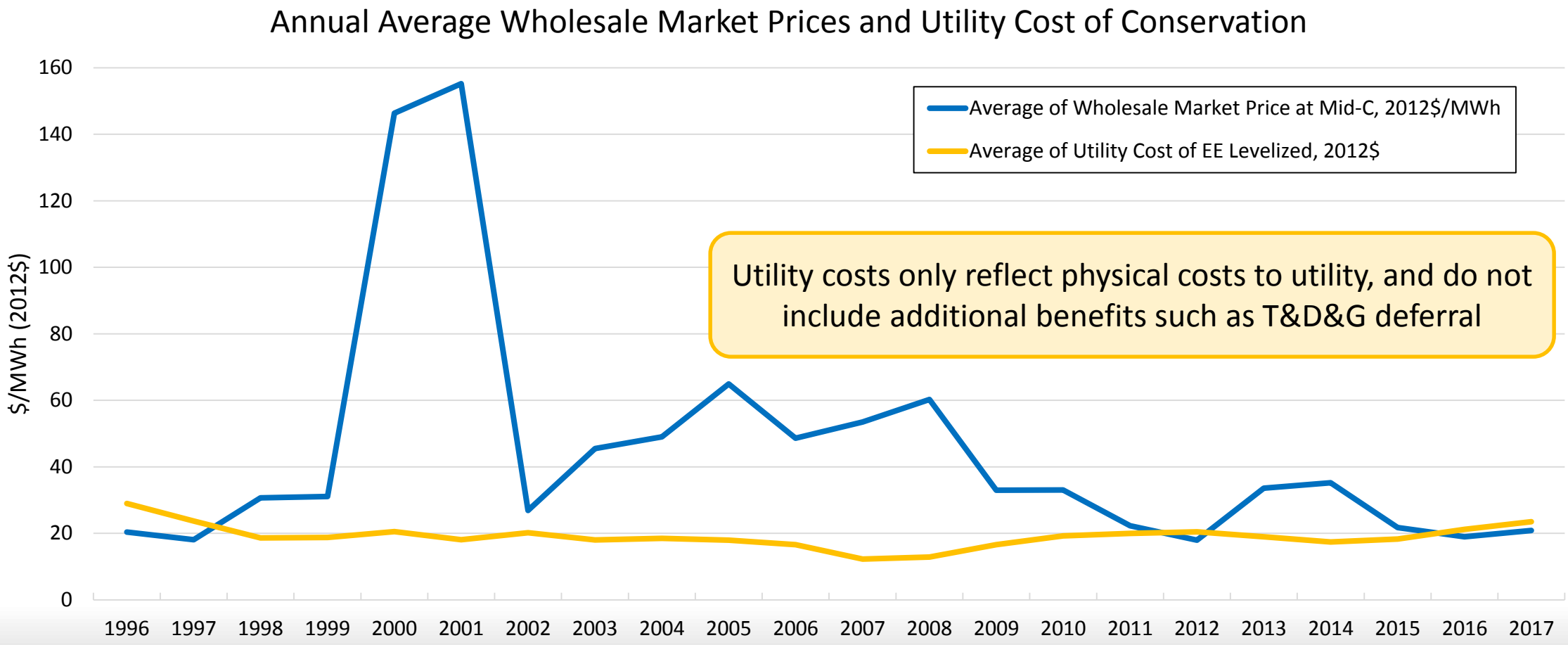
Some markets continue to have significant cost-effective potential



Efficiency continues to provide significant value to the region

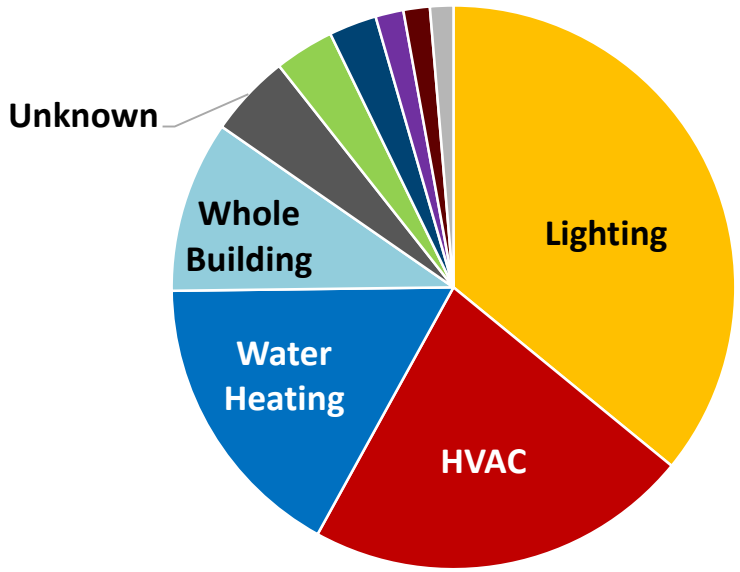


Energy efficiency provides a reliably low cost resource relative to market prices

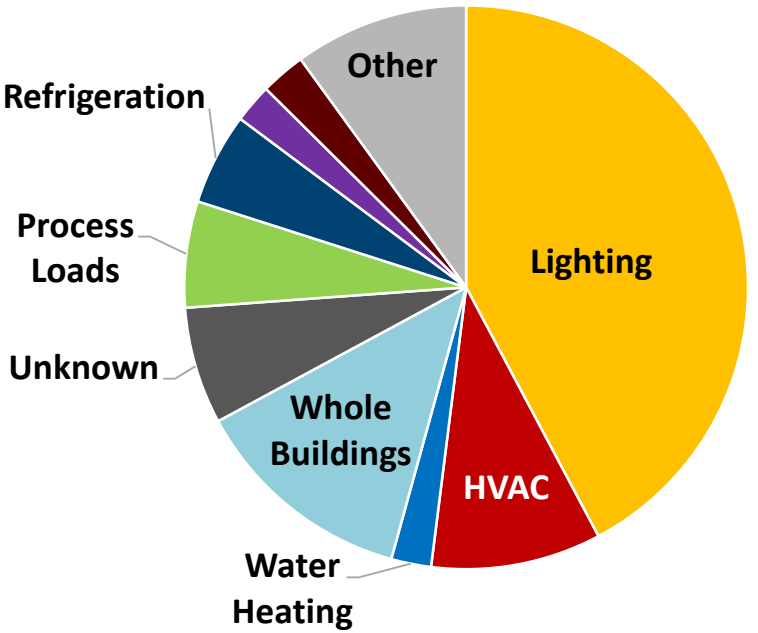


Efficiency continues to contribute significant capacity savings to the region

Winter Savings: 865 MW

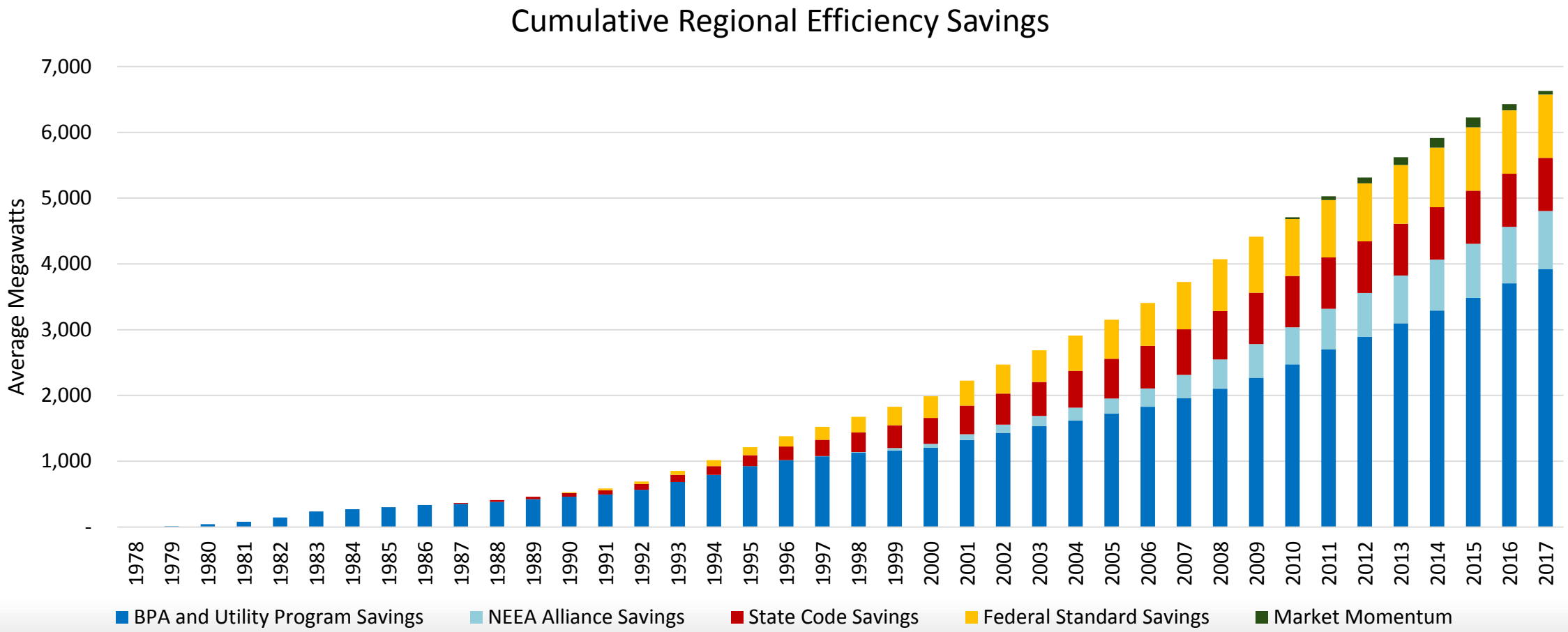


Summer Savings: 499 MW

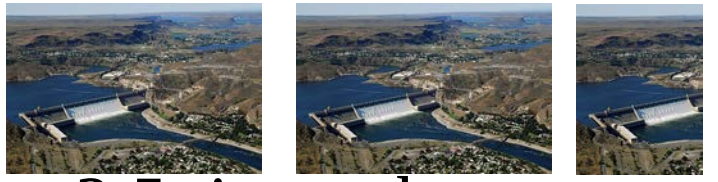


Lighting HVAC Water Heating Whole Building Unknown Process Loads Refrigeration Electronics Motors/Drives Other

Region has achieved over 6,600 aMW of Savings since 1978



What does 6,600 aMW of energy efficiency mean to the Northwest?

- Generation:  or 
  - Equivalent to 2.5 times the power produced by Grand Coulee annually or 60% of the output of Itaipu Binacional (Paraguay/Brazil) the world's highest output dam
- End Use Consumption: 
  - Equivalent to the annual energy consumption of nearly 5.4 million households, about two times the households in the whole state of Washington
- Represents enough energy savings to save the region's electricity consumers $4.8 billion in 2017

CO2 emissions?

- 6,600 aMW saved is the equivalent of saving 35.6 million metric tons of CO2
- This is equivalent to burning 4 billion gallons of gasoline, about how much gas it would take to drive a 1997 Ford Explorer the length of the Oregon Trail ~130,000 times

Conclusions

- Region appears to be on track for the first two-year milestone based on reported savings to date
  - These results are not yet final, as not all markets have been measured
- There is uncertainty as to whether the region will meet the six-year goals
  - Conservation goals increase over the six-year period
  - Budgets, and projected savings, for 2018-2019 are remaining relatively flat
  - Bonneville is reducing its 2020-2021 spending by 10%
- Meeting the six-year goal is likely to depend on the size (and direction) of account for Total Regional Savings

Questions?

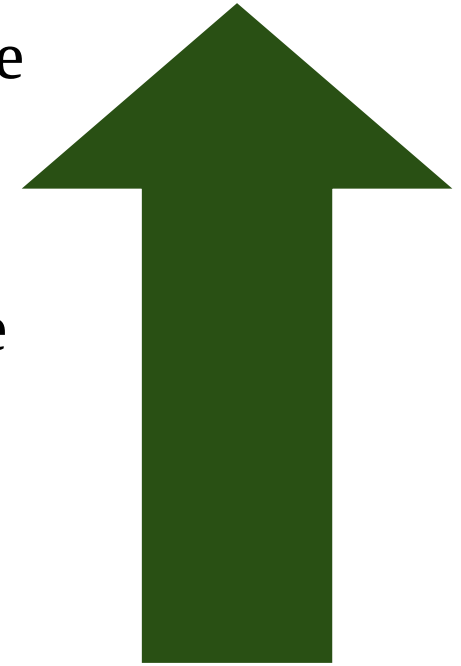
ADDITIONAL SLIDES

Adjusting to Total Regional Savings

1. Efficiency is occurring outside of Program and NEEA tracking

- Seventh Plan counts the entire market for, both in the baseline and in the cost-effective potential
- Program Savings only account for efficient units they touch
- NEEA Alliance Savings only account for efficiency in initiative areas
- Savings do occur outside of program touch and NEEA tracking, which are real and do relate to the Plan goal

Accounting for this increases savings

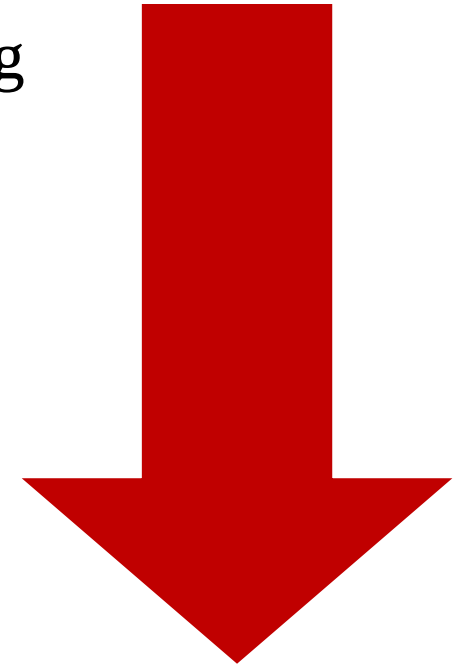


Adjusting to Total Regional Savings

2. Program and NEEA Alliance savings have a different perspective from the Plan perspective

- Total Regional Savings looks at total market change (including both efficient and inefficient units)
  - Savings is the difference in consumption of all units in the baseline market and today's market
  - For many measures, baseline market includes some efficiency, and inefficient products sold today use more energy than the baseline
  - Result is "negative savings" for those inefficient products are included in the Total Regional Savings
- Program and NEEA Alliance Savings only track efficient units

Accounting for this reduces savings

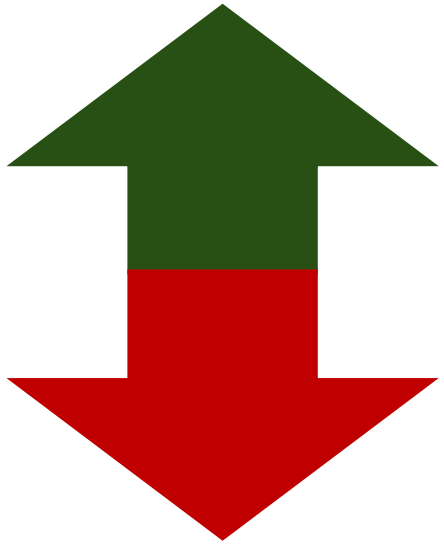


Adjusting to Total Regional Savings

3. Program Savings baselines may be different from the Plan baseline

- Seventh Plan assumes consumption of existing stock, codes and standards, and market efficiency known at the start of the Plan
  - These assumption are "frozen" through the Plan horizon
- Program baselines are updated more frequently and may represent different assumptions

Accounting for this results in a savings increase when Program baselines are **more efficient**…



… and a decrease when program baselines are **less efficient**

Adjusting to Total Regional Savings

4. Program savings represent short-term savings

- Seventh Plan focuses on long-term efficiency potential
  - Analysis assumes measures are replaced on burnout, and baseline represents the market mix (including some efficient units)
  - Residential lighting assumes 2020 Federal standard for baseline
- Programs report "first year" savings
  - Measures replaced early have first year savings that are generally estimated from a baseline less efficient than the Plan
  - Program Savings and NEEA Alliance Savings includes residential lighting savings from today's market (not 2020 standard), which is less efficient baseline

Accounting for this reduces savings