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February 7, 2017

MEMORANDUM

TO: Council members

FROM: Jennifer Light, RTF Manager

SUBJECT: Deep dive into Sixth Plan conservation achievements

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 (IOU), Energy Trust of Oregon, and the Northwest Energy Efficiency Alliance (NEEA). The data collected in the RCP provides and understanding of the energy efficiency savings acquired in the region relative to the Plan target. In recent years, the RCP has collected data at a more granular level—down to the specific measure where possible—providing insight to better understand what conservation is occurring throughout the region.

Additionally, the Bonneville Power Administration conducts broad market studies to understand efficiency improvements across the region as a whole, including efficiency occurring outside of programs. To date, Bonneville has studied the residential and non-residential lighting markets, as well as the residential HVAC market.

Staff will present some of the more granular RCP data, as well as the results from Bonneville's residential lighting market analysis. Collectively, these data provide context for where the region is making great strides in

efficiency, as well as those measure categories that are challenging for programs to reach. The data also provide context for regional strategies that aim to improve the effectiveness of program activity and the focus of various emerging technology efforts.

Relevance: Two challenges of developing conservation supply curves are (1) developing appropriate ramp rates for how quickly the region can acquire a particular conservation resource and (2) sufficiently characterizing new emerging technologies. Reviewing more granular data about previous program accomplishments and broader market conservation achievements, provides insight to allow refinement of future ramp rates. It also provides an opportunity to identify markets where emerging technologies might need added focus.

Workplan: A.1.1 Coordinate with regional entities (e.g. NEEA, BPA, utilities, regulators) to ensure the regional goal for cost-effective conservation is achieved.

Background: The Council's Regional Technical Forum (RTF) is charged with conducting an annual survey to assess progress towards the Council Power Plan's conservation goals. Council staff, with the assistance of RTF contract analyst and an outside contractor (Cadmus), recently completed the 2015 survey. The high level finds were presented to the Council at its November 2016 meeting. This is an opportunity to dive a little deeper into the data.

Deep Dive into Conservation Achievements

February 14, 2017



Purpose of Today's Discussion



Last Month:
Setting the foundation
of what is energy
efficiency



Now:
Take a look back at
what the region has
accomplished in
energy efficiency



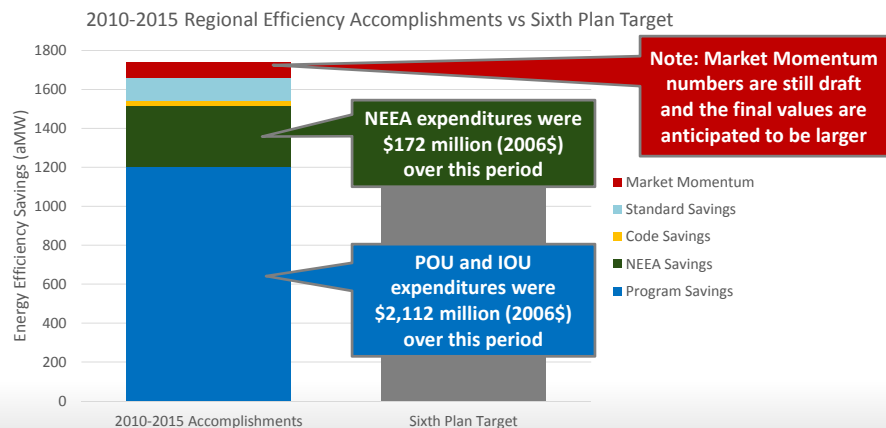
Next:
Series of presentations
on what is next for
energy efficiency,
starting with emerging
technologies



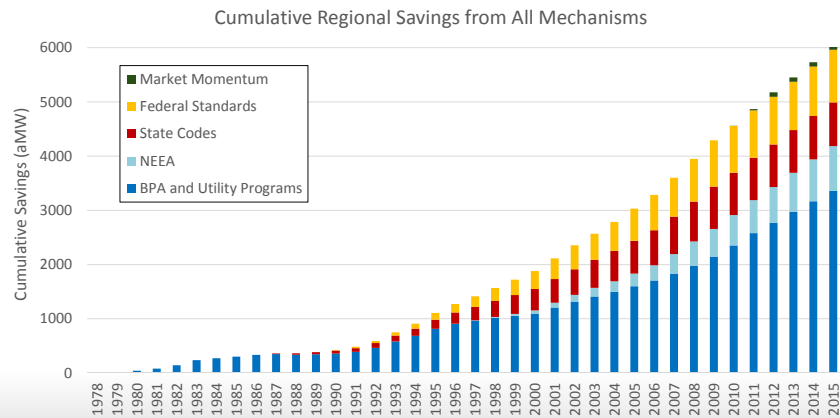
The Regional Conservation Progress (RCP) Survey

- Regional Technical Forum (RTF) tracks regional conservation progress against Power Plan targets
- Annual survey seeking data on:
 - Savings: Sought as much detail as possible
 - Expenditures: Sought to get total budget
- Data requested from BPA and NEEA on efficiency savings from outside utility-funded programs
- Staff presented high level results at November 2016 Council meeting

With codes, standards, and market momentum, the region surpassed the Sixth Plan targets



Region has achieved almost 6,000 aMW of conservation, making it the second largest resource behind hydro

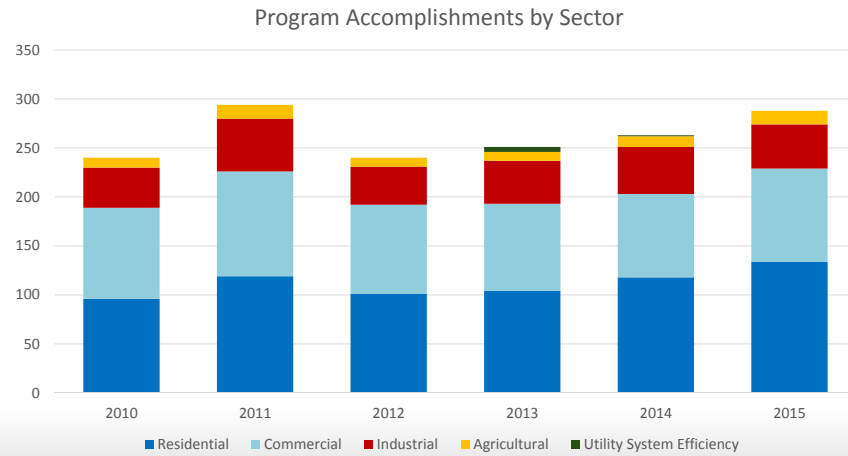


Taking a Deeper Dive into Accomplishments

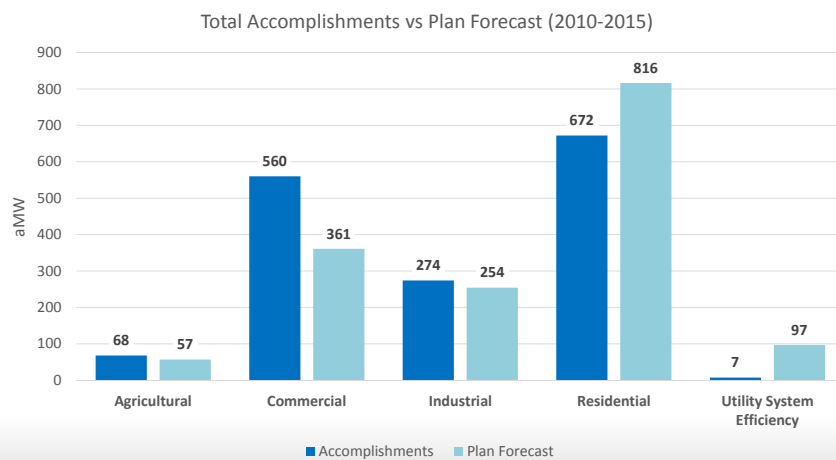
- Collecting more detailed program accomplishments data that can be roughly mapped to the Plan's cost-effective potential (or forecast) for specific measures
 - 2010-2013: Bonneville's Six Going on Seven project
 - 2014-2015: RCP
- Bonneville conducting market studies to understand full market accomplishments for key markets



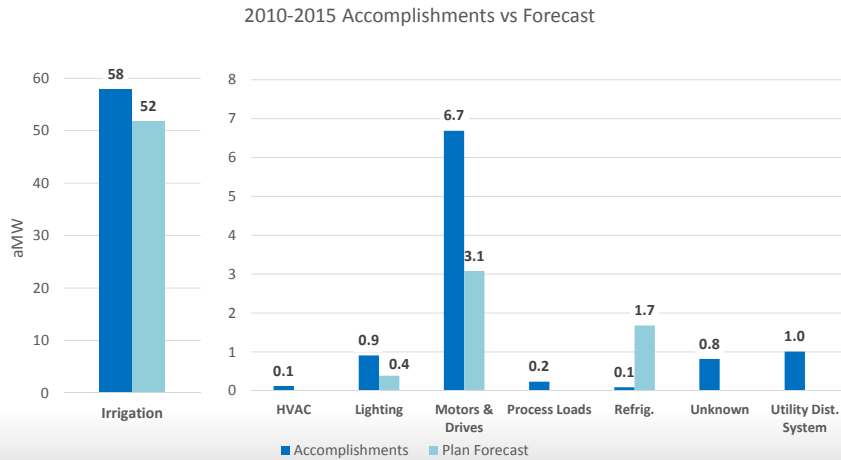
Residential and commercial showed the greatest accomplishments



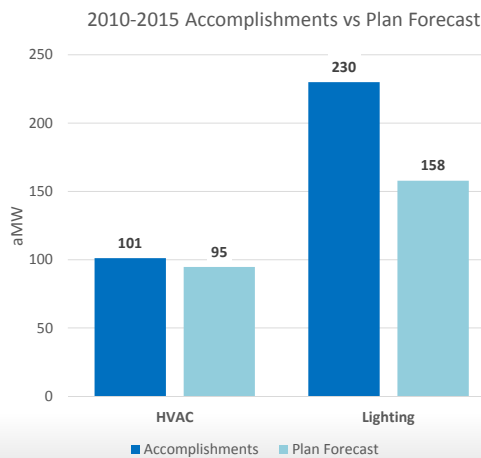
A new story emerges when comparing accomplishments to Plan forecast



Agriculture: Irrigation represents 86% of program accomplishments

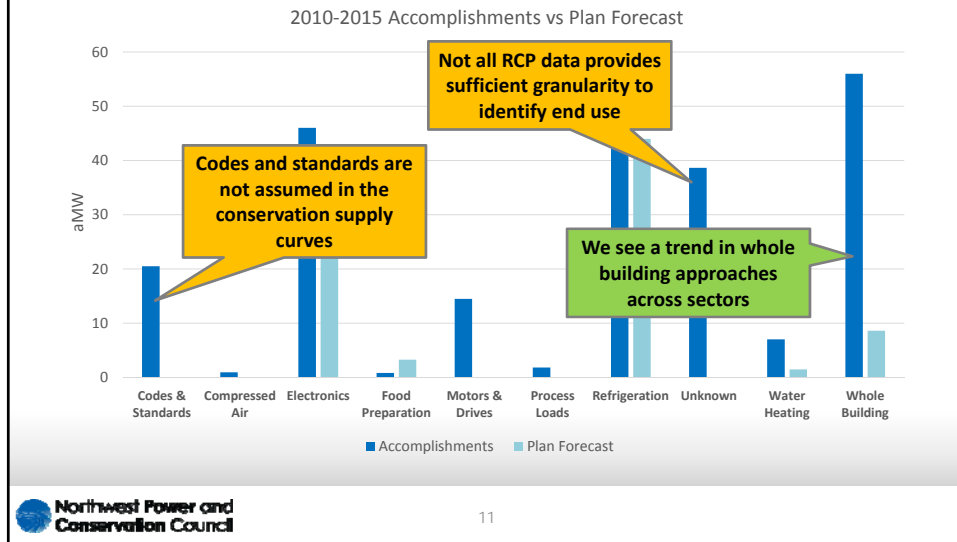


Commercial: Lighting and HVAC represent 59% of accomplishments

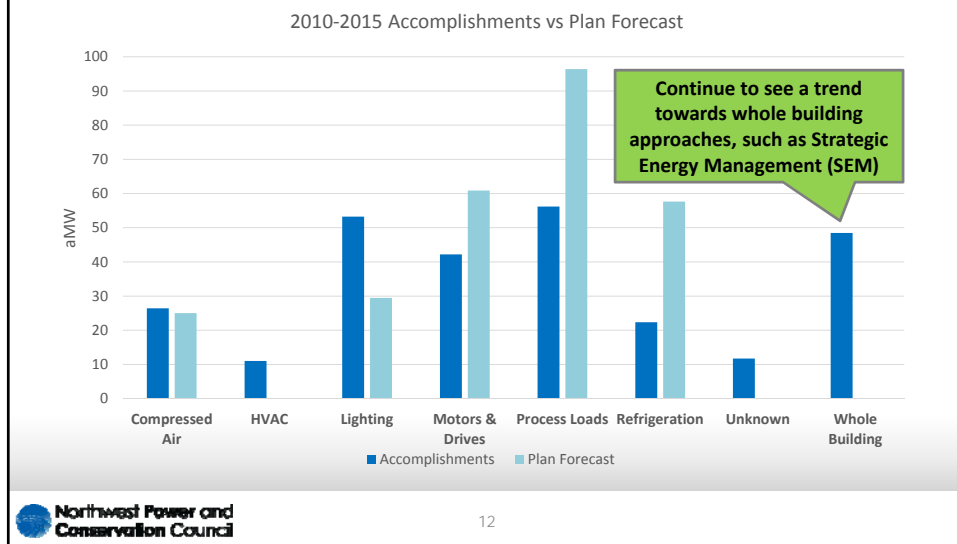


- Lighting claims represent ~40%
- Of Lighting about 40% reported as LED in 2015 – up from 30% in 2014
- HVAC two-thirds is from system improvements and one-third controls

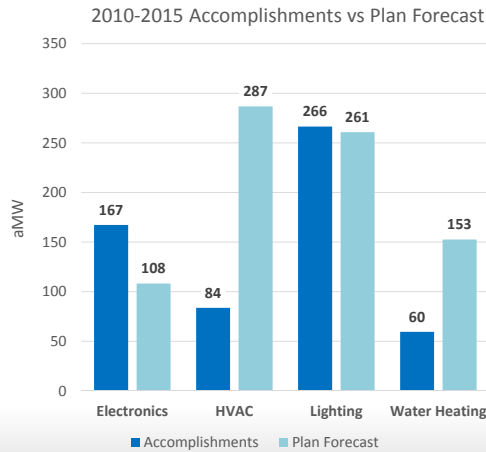
Remaining commercial accomplishments represents a variety



Industrial: Lighting and whole building contribute more than forecast



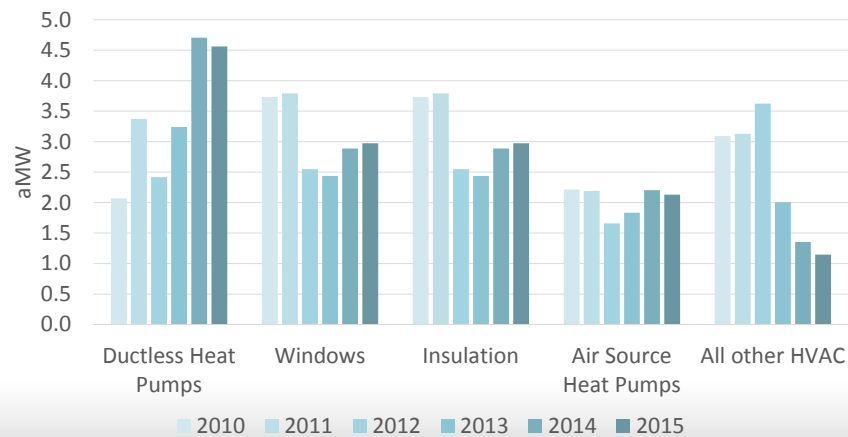
Residential: Lighting and electronics represent 65% of accomplishments

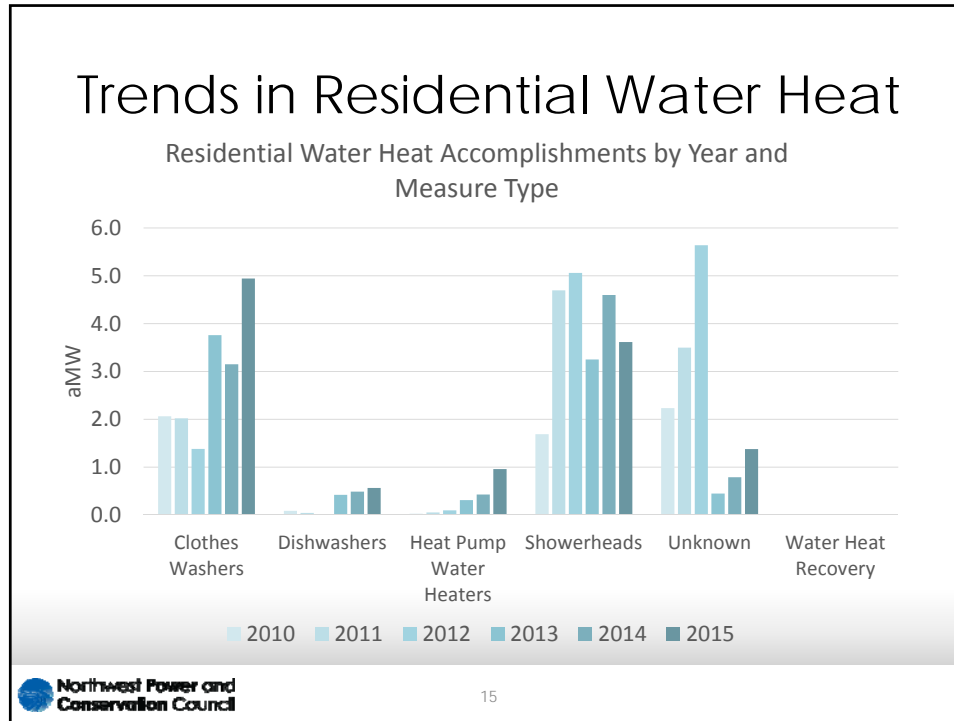


- Electronics savings primarily come from televisions and computers
- Residential HVAC and Water Heating underperformed relative to the Plan forecast
 - Lagging 6P targets in all major HVAC & Water Heat
- More on lighting later ...

Trends in Residential HVAC

Residential HVAC Accomplishments by Year and Measure Type





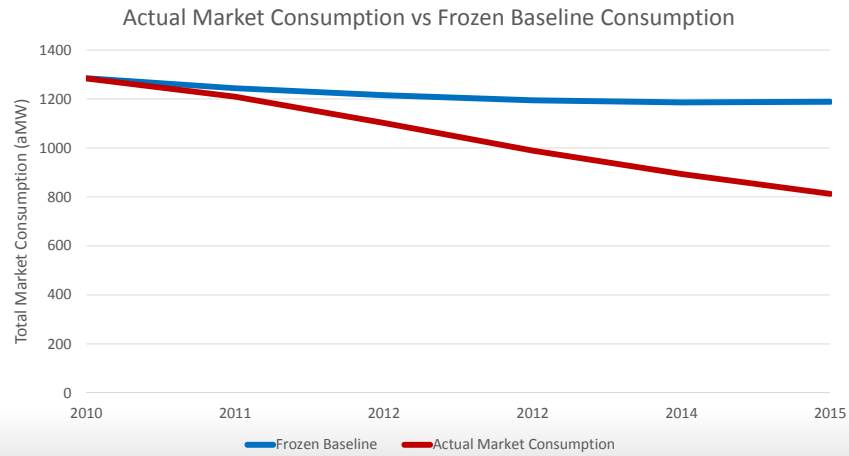
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Residential Lighting: A Closer Look

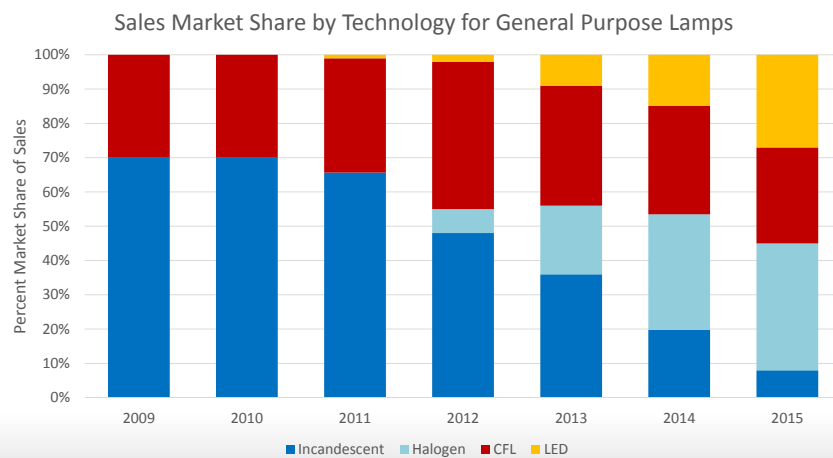


- Bonneville conducts market studies to understand what is happening across the region (not just focusing on programs)
- Key markets studied to date:
 - Residential lighting
 - Non-residential lighting (*in progress*)
 - Residential HVAC (*in progress*)
- RTF created a Market Analysis Subcommittee to provide review of data representation and analysis

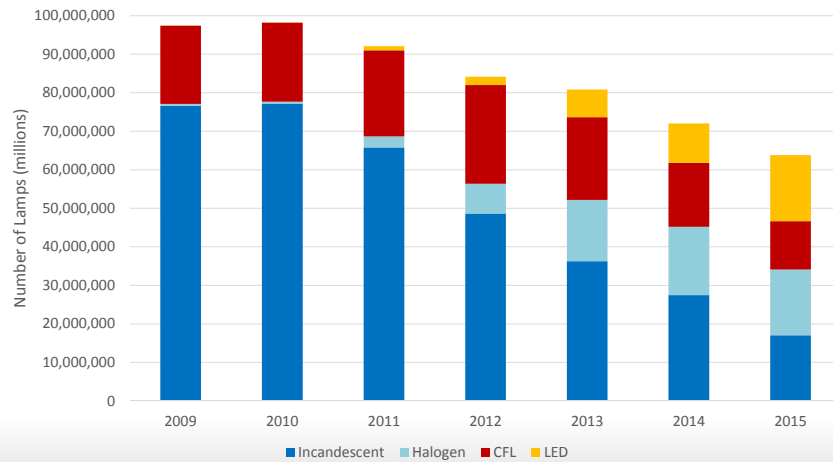
Residential lighting consumption decreased by 37% from 2010-2015



Efficient lamps are quickly increasing their market share



Lamp sales decreased as more efficient, longer life lamps are purchased



All Sectors: Lighting accomplishments are more than double any other end use

2010-2015 End Use Accomplishments vs Forecast for All Sectors

