January 3rd


hello
MY NAME IS

CARRIE

COBB

Accomplishments 2017

- Completed first model reviews via the RTF Market Analysis subcommittee
- Quantified impacts of non-res and res lighting over the 6th power plan
- Completed the SIS baseline study
- Re-designed webpage
- Kicked off 7th Plan period model development in hot water and HVAC
- Kicked off data collection projects in HVAC sales data with NEEA; Non-res lighting data with NEEA; OLSA and CC&S

TO BEST QUANTIFY THE IMPACTS OF ENERGY EFFICIENCY ON THE POWER SYSTEM, WE TRACK POWER CONSUMPTION

what was

We used to add up savings from efficient products. Because of how energy savings are calculated, this didn't always provide a comprehensive or accurate reflection of regional energy consumption changes.

what is

Now we track how total consumption changes over time, providing an understanding of how baseline efficiency impacts the grid as well as providing a more robust estimate of savings.

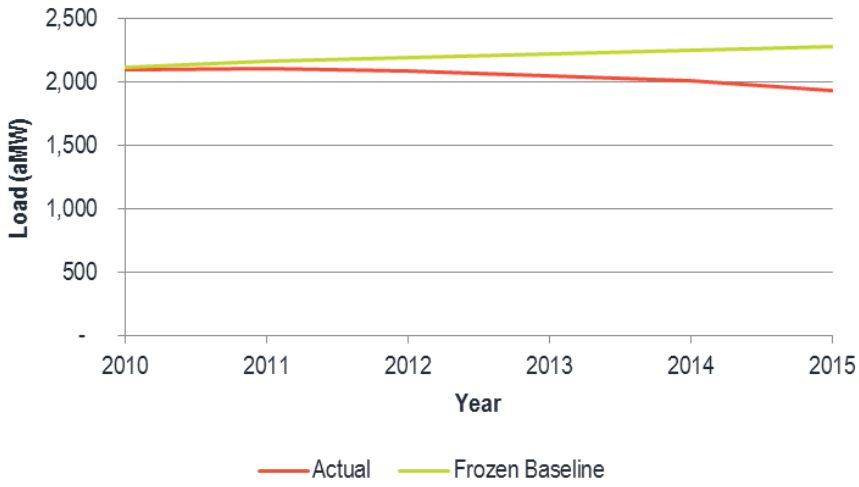
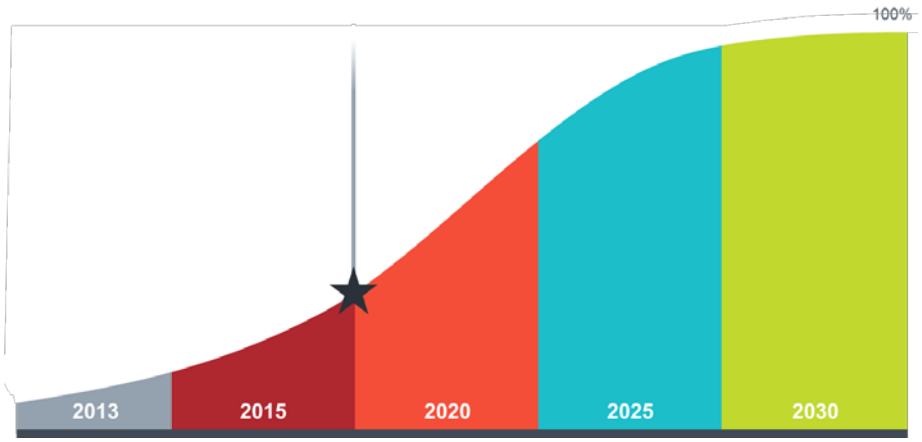


Fig 1: Non-residential lighting energy consumption, Northwest

WE PRIORITIZE MARKETS BASED ON TWO FACTORS.

A MARKET THAT IS CHANGING



We look to quantify changes in consumption only where we have evidence of a market shift. We test our assumptions on whether a market is shifting by qualitative market analysis before we begin a model build.

AN END-USE WITH HIGH ENERGY CONSUMPTION

We care most about end-uses that will make a difference in a load forecast. If it is small, we don't have the resources to estimate reliably.

WE WILL TRACK EFFICIENCY CHANGES IN ~41% OF REGIONAL LOAD

We are planning to estimate consumption changes in HVAC for all sectors, lighting for all sectors and water heating for residential. We are also exploring data centers for a possible model build.

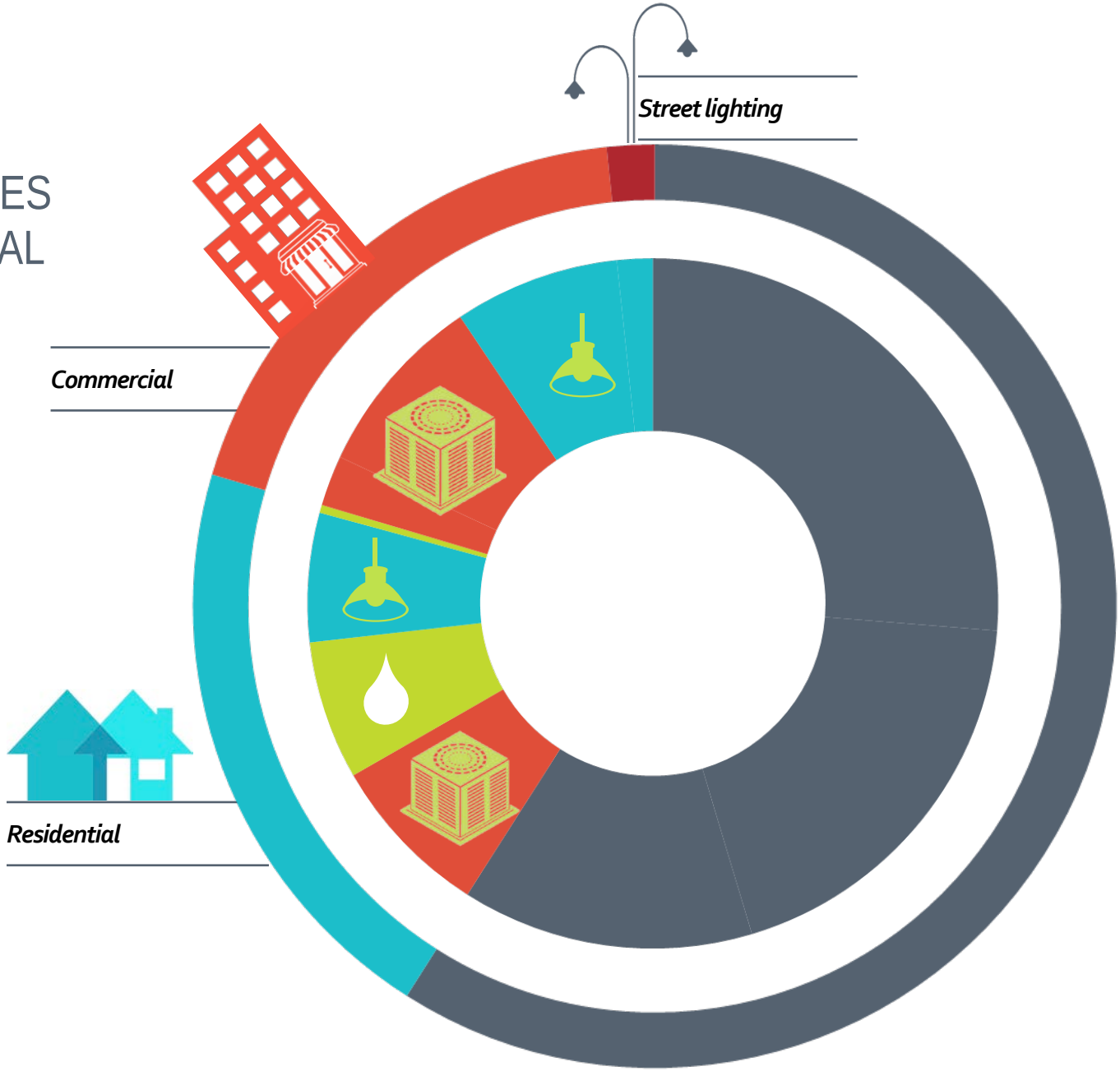
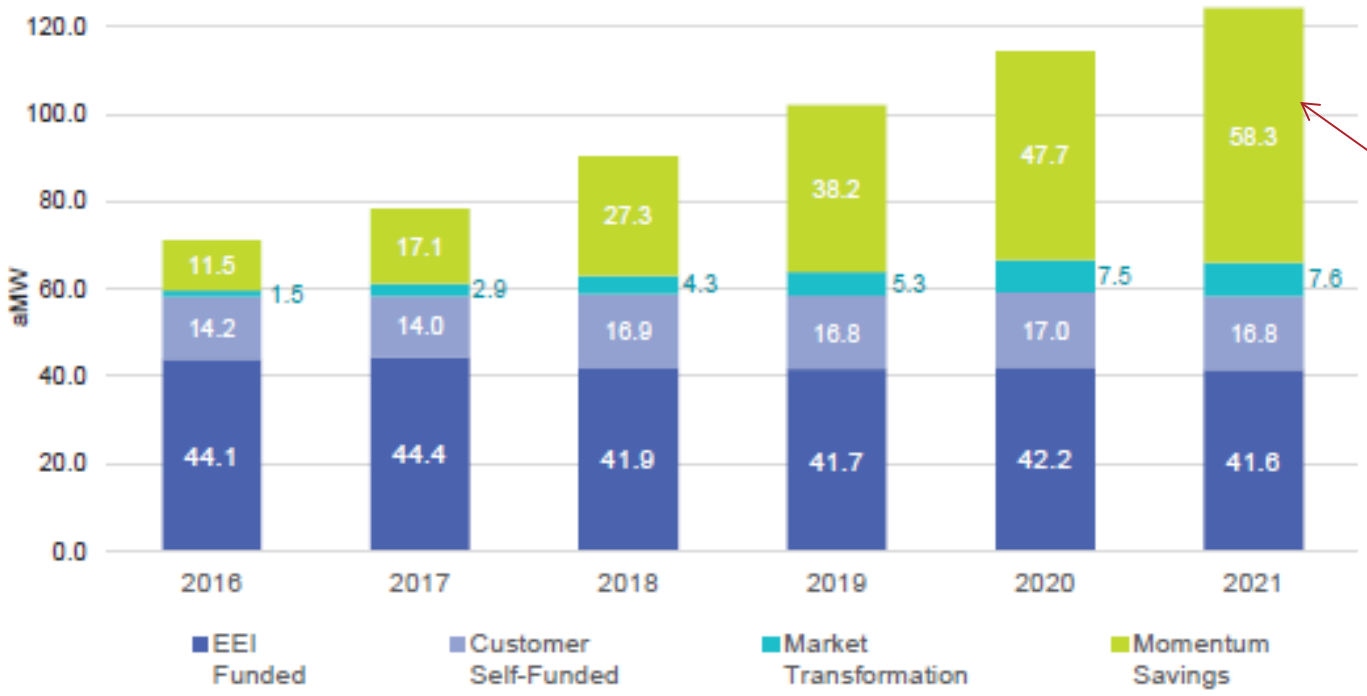


Fig 2: Total Regional Load, 7th Plan

Gray represents load we are not tracking

EE PLAN: MOMENTUM SAVINGS EQUAL 200 AMW OVER SIX YEARS

Figure 4: BPA Savings Forecast by Source and Year (aMW): 2016-2021



Some are from NEEA initiatives and might be classified different in future

Note: Due to rounding, numbers may not add to the total.
Source: BPA analysis, 2016

6th Plan Momentum Savings were 248 aMW

WHAT HAS CHANGED SINCE THE EE PLAN

1. We assumed savings from appliance standards, based on analysis done of standards nearly complete under Obama Administration

2. Lighting programs are claiming a higher number of savings than assumed

3. NEEA savings are larger than forecasted

Lighting

- Non-residential lighting is the single largest area of market change anticipated for the 7th Plan
- Our forecast shows 287 aMW for the region, assuming program savings of 30 aMW annually
  - This feels high, but it is consistent with other forecasts of LED saturation from DOE
  - For planning purposes, we assume it will be lower

Stock aMW Savings Relative To Frozen Baseline
(aMW)

Summary: This table summarizes the annual energy savings of all lamp stock in the market in each scenario over time relative to the frozen baseline.

Savings Type	2016	2017	2018	2019	2020	2021
Market Savings	35	64	83	95	96	*96*
Program and NEEA Savings	30	30	30	30	30	*30*
Momentum Savings	4	34	53	65	66	*66*

2016 sales data looks consistent with 2016 forecast

Models in progress and expected completion

	expected finish	status in subcommittee	Data available
Res HVAC	Q1 2019	about to start	sales data should be complete; installation data in progress
Hot Water	Q1 2019	started	Estimates through RBSA; will decide if we collect more data
Non-residential lighting	Q1 2019	will start in summer	Sales data will be complete through 2017; OLSA will not be complete yet

Caveats:

1. Under the sprint structure, might be shorter or longer
2. Incorporating data might change numbers
3. HVAC might be draft until field study is complete

New markets

- Data Centers: close to completion of Phase 1, which will inform a go/no-go decision.
- Consumer Electronics: This has been on the back burner for a long time, but EIA via Navigant has done interesting work on these loads and if we have budget/bandwidth we'd like to work on this

BONNIE

WATSON

Hot Water Project Updates

Current Hot Water Projects

1

Methodology & Model Prep

2

Model Building

Hot Water Methodology & Model Prep

Objective

Build a methodology to:

- Understand how total residential hot water energy consumption is changing over the 7th PP
- Calculate momentum savings for the 7th PP

Activities

1. Model Inputs Review
2. Methodology Working Session
3. RTF M.A. Subcommittee Review
4. Methodology Memo & Presentation

Upcoming Dates

Methodology Memo:

January 2018

Methodology Presentation:
February 2018

Project End:
March 2018

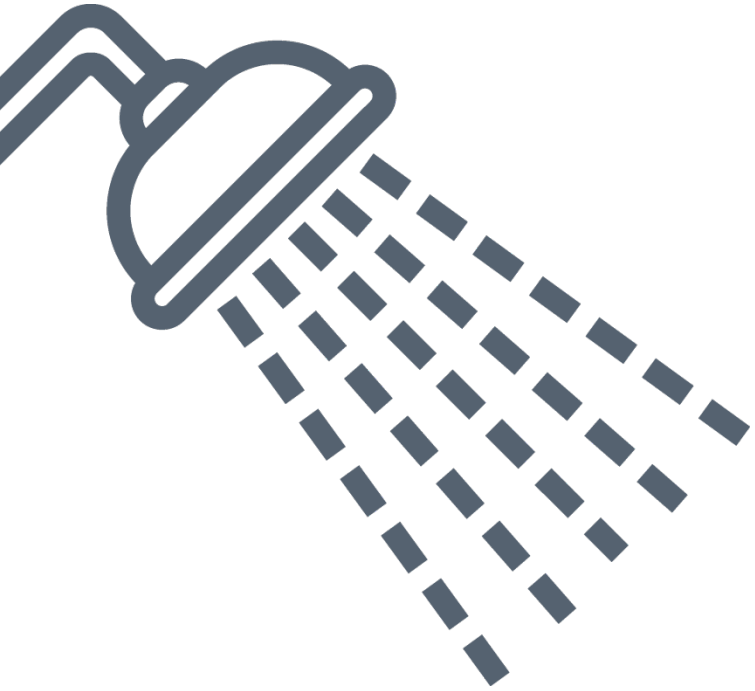
Hot Water Methodology & Model Prep

Our Current Thinking

How to determine market size for showerheads and aerators without sales data?

- Stock-to-stock comparison using RBSA 2011 and RBSA 2016
- Lose granularity about what is happening in terms of market size and efficiency mix in between years
- **Has anyone tried to collect full-category data?**

Hot Water Model Building



Objective

- Build a residential market model based on method
- Refine method as we go

Activities

1. Sprint Plan
2. Model Sprints
3. Final Model and Methodology Memo

Outcomes

1. Momentum Savings Market Model
2. Methodology

Upcoming Dates

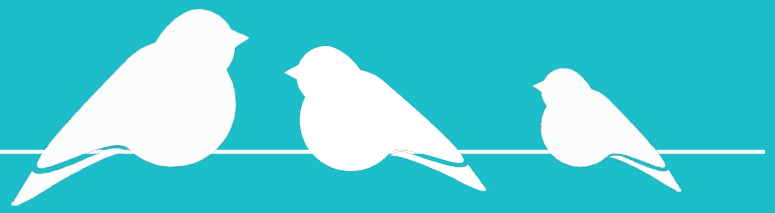
Sprint Plan:
January 2017

Sprinting:
Begins February 2018

Final Model and Methodology Memo:

Before April 2019

End:
April 2019 (at latest)



Contact

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HVAC Trade Show

2018 AHR Expo

Objectives

- Observe new market trends
- Better modeling assumptions by filling information gaps

Activities

1. Manufacturer interviews
2. Booth tours

Outcomes

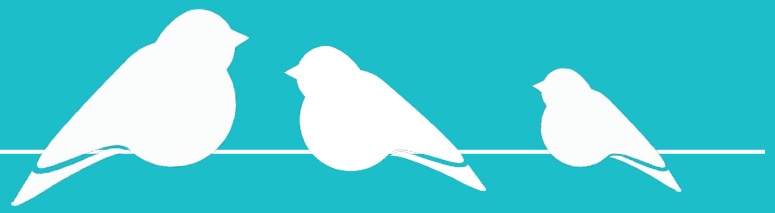
- Presentation of findings (March)

A few topics we plan to cover…

- Difference between new construction and retrofit markets
- Smart controls: technology availability and functionality
- How manufacturers view installation issues and if/how it drives design
- Presence of continued growth of VRF—especially res
- Key drivers in the manufactured home HVAC market

Who we're talking to

1. Daikin
2. Mitsubishi
3. Trane
4. Rheem
5. Greenheck
6. Ventacity
7. Johnson Controls
8. TPI Corporation
9. York
10. Ruud
11. Williams Comfort Products
12. Nortek (Frigidaire/Miller AC)



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THX!

See you February 7th!