Henry Lorenzen
Chair
Oregon

Bill Bradbury
Oregon

Guy Norman
Washington

Tom Karier
Washington

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

W. Bill Booth
Vice Chair
Idaho

James Yost
Idaho

Jennifer Anders
Montana

Tim Baker
Montana

July 5, 2017

MEMORANDUM

TO: **Council members**

FROM: **Elizabeth Osborne**

SUBJECT: **Presentation by Clark Public Utilities**

BACKGROUND:

Presenters:

- Larry Blaufus, Senior Manager, Large Industrial Customers/ Conservation Planning
- Tom Haymaker, Manager, Energy Planning and Operations
- Zeecha Van Hoose, Key Account Manager
  (Account management and energy efficiency programs)

Summary: Representatives of Clark Public Utilities will provide presentations on several issue areas. Larry Blaufus will present on energy efficiency, Tom Haymaker will talk about power supply, and Zeecha Van Hoose will discuss demand response.

Relevance: Clark Public Utility provides electric service to more than 193,000 customers with a service area of 628 square miles. Its peak load is around 1000 MW.

Background: Clark Public Utilities Final 2016 Integrated Resource Plan

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

Conservation at Clark Public Utilities

Presented to

The NW Power and Conservation Council

July 11-12 Council Meeting, Vancouver, WA

Clark Public Utilities

Customer-owned, customer-focused

Presented by

Larry Blaufus

Senior Manager, Conservation Planning

Albert Bierstadt – American Painter

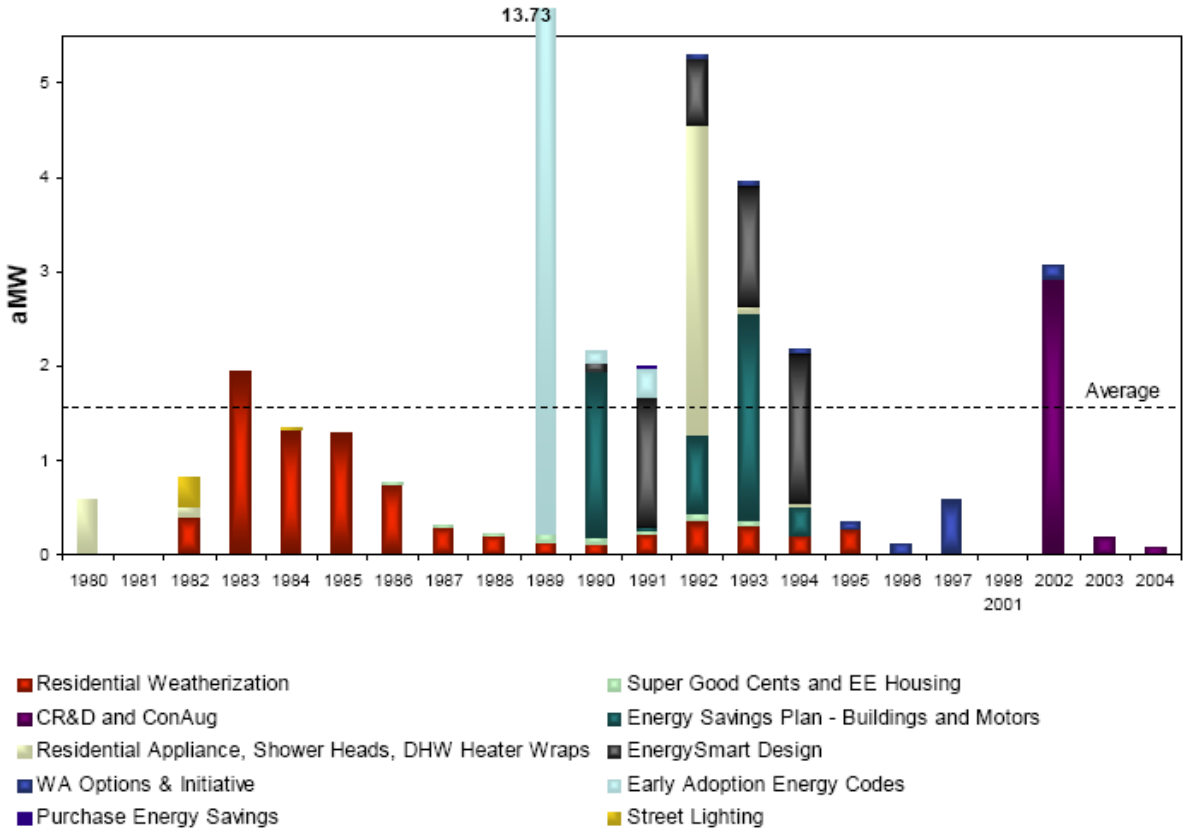
Mount Hood In Oregon is a painting by Albert Bierstadt which was uploaded on January 21st, 2014.

Glenn L. Jackson Memorial Bridge

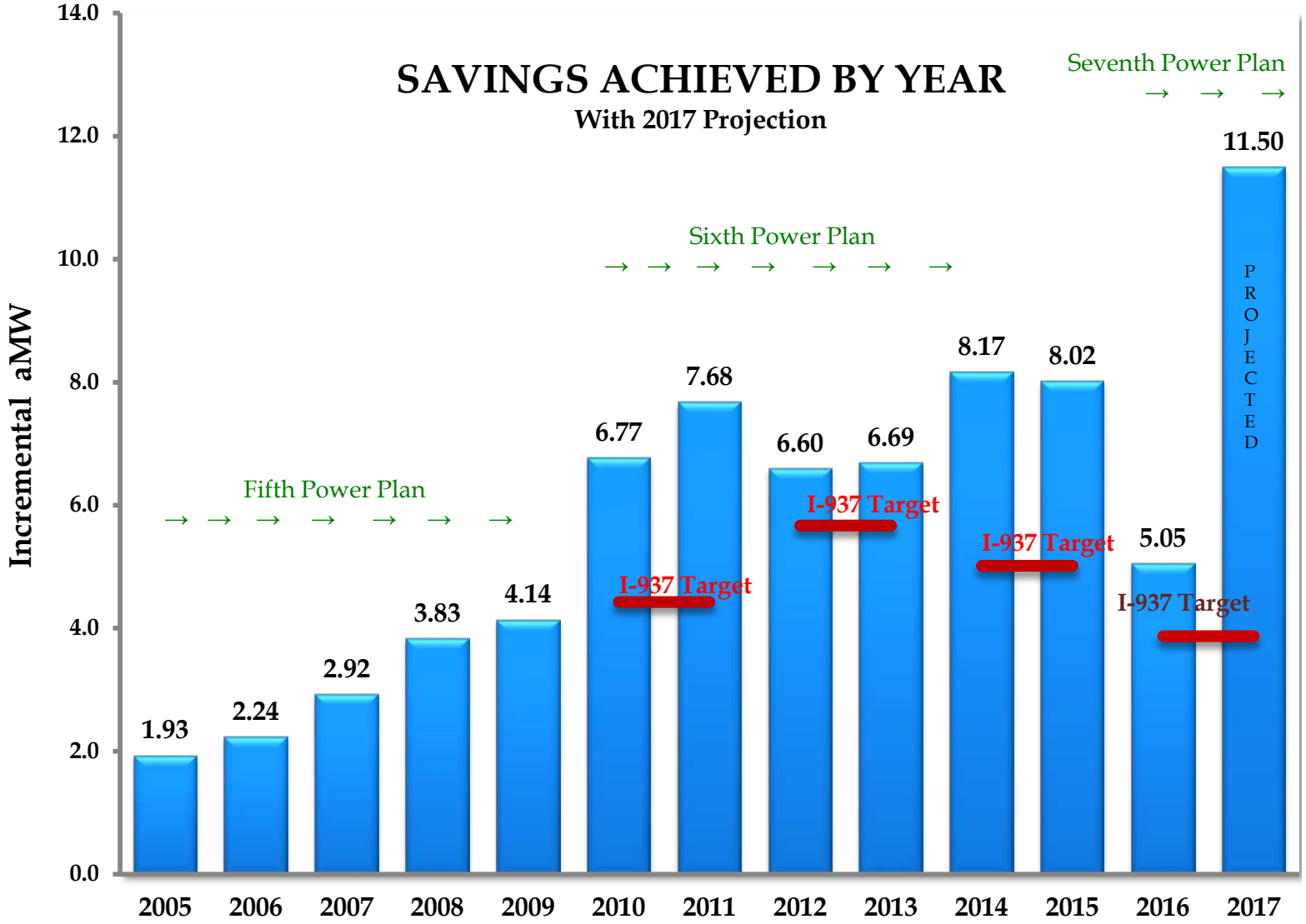
2015 Conservation Potential Assessment
2016 Integrated Resource Plan
2017 Conservation Potential Assessment Draft

Conservation Results 1980 - 2004

Figure 1
Clark Public Utilities Conservation 1980 to 2004

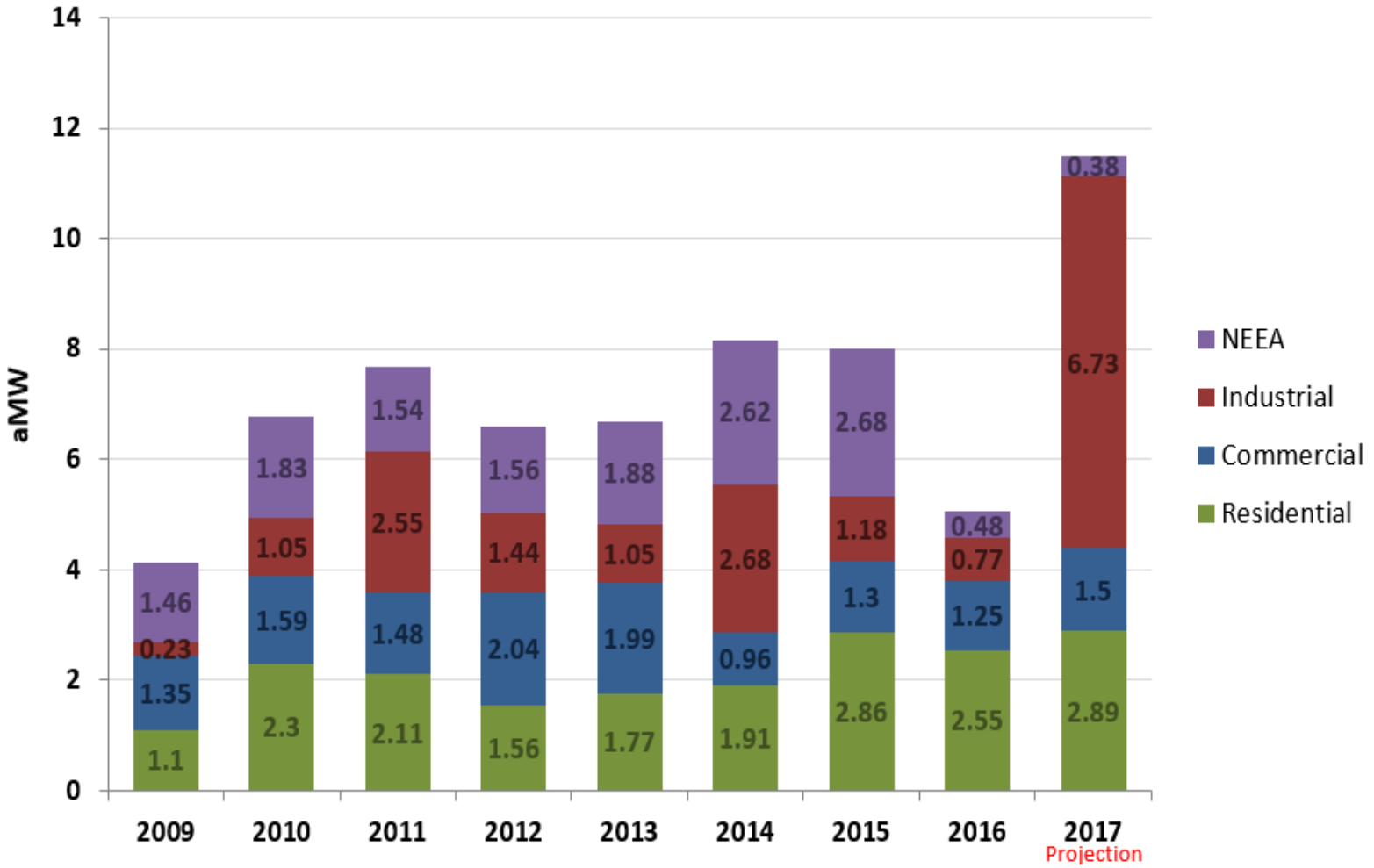


Conservation Savings 2005-2017



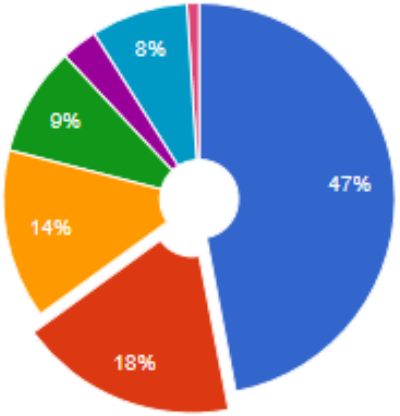
Conservation Results

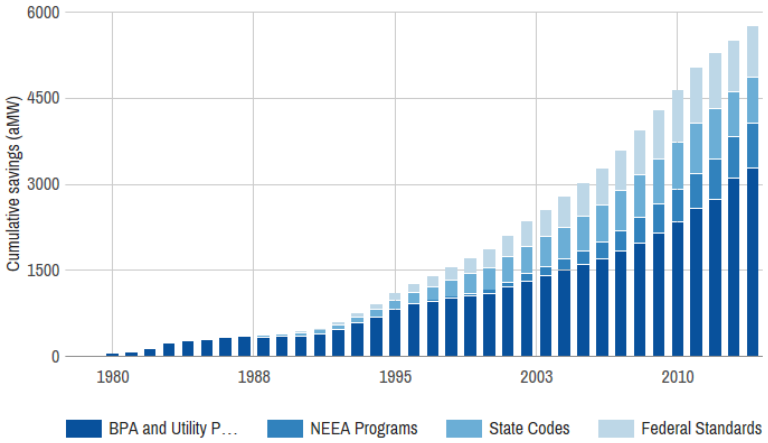
Clark Recent Conservation History by Sector



Energy Efficiency…is #2!

- "The Northwest Power Act defines it as an energy resource and makes it the region's top priority. Energy Efficiency is the Northwest's second largest resource after hydropower. Since 1978, efficiency has saved over 6,000 average megawatts. That's half the region's growth in demand for electricity, or enough power for five Seattle's"…*NW Council website.*

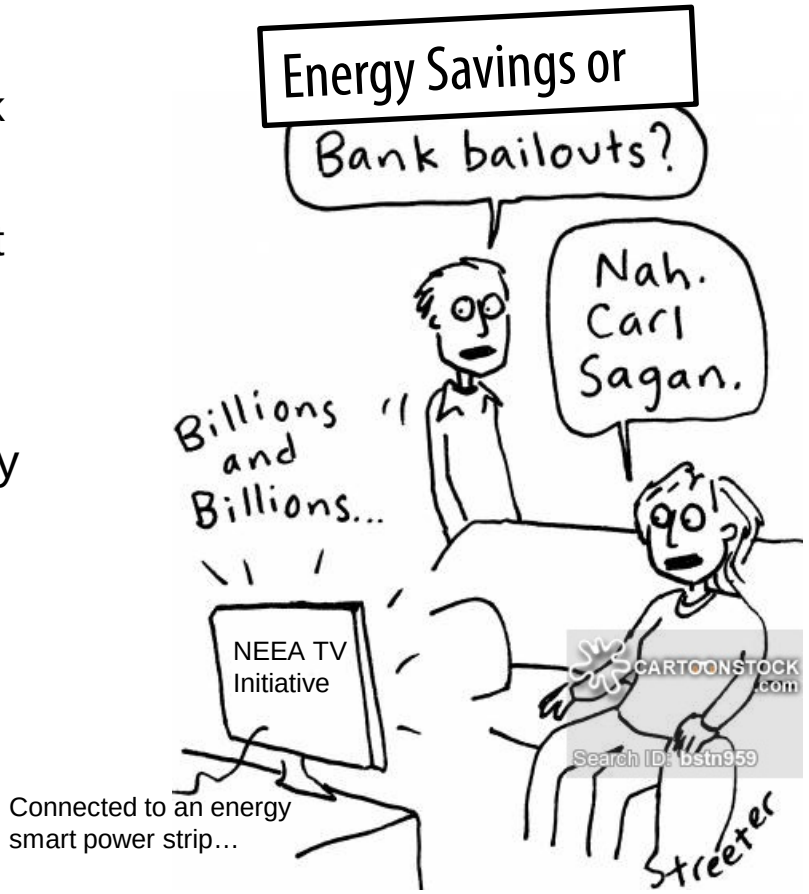




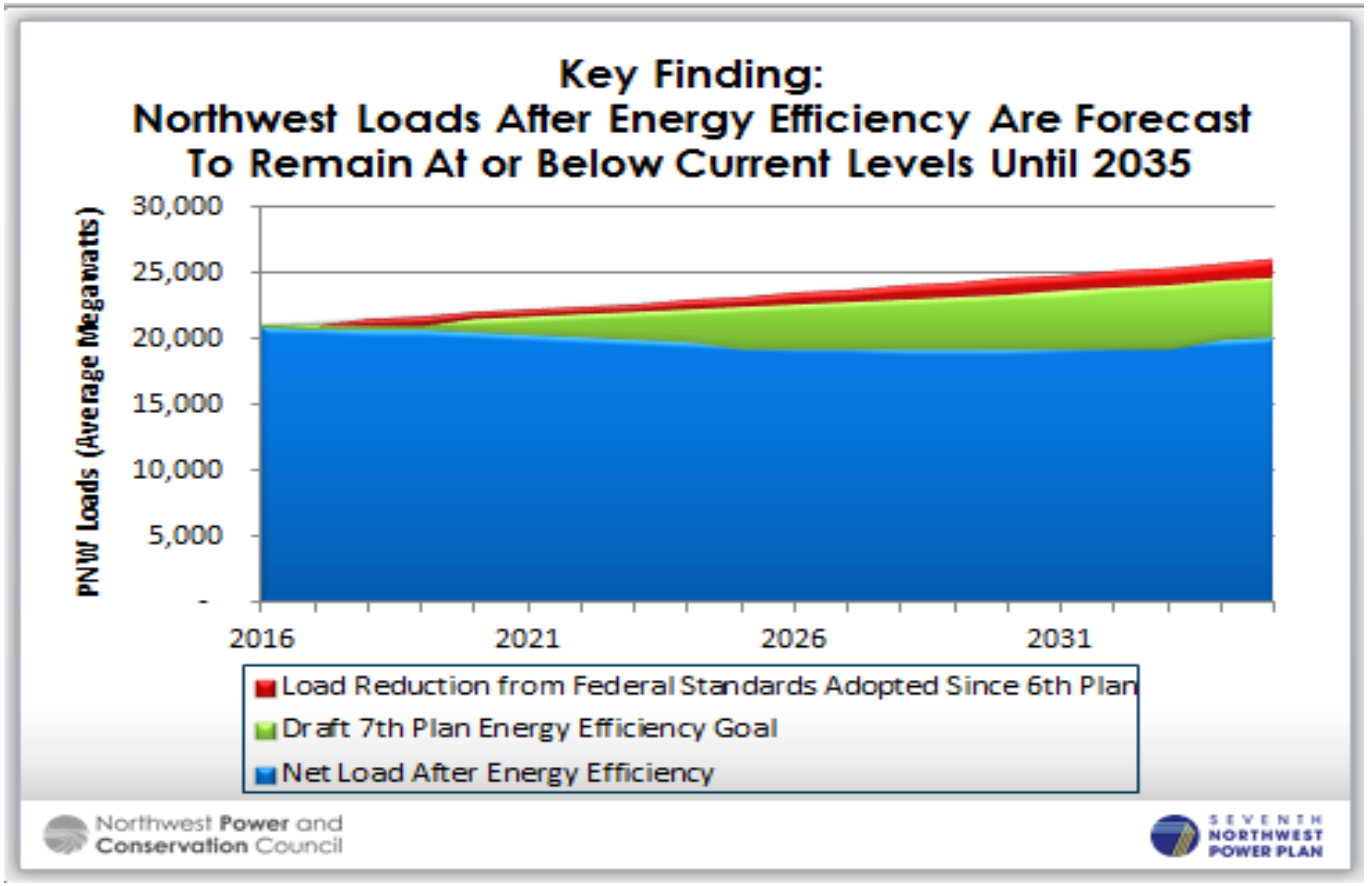
- *Clark Public Utilities share of the Region's Energy Efficiency Resource with total savings from 1980-2017 of 116 aMW (one billion kWh saved) or 2%.*

What does One Billion kWh of Savings get you?

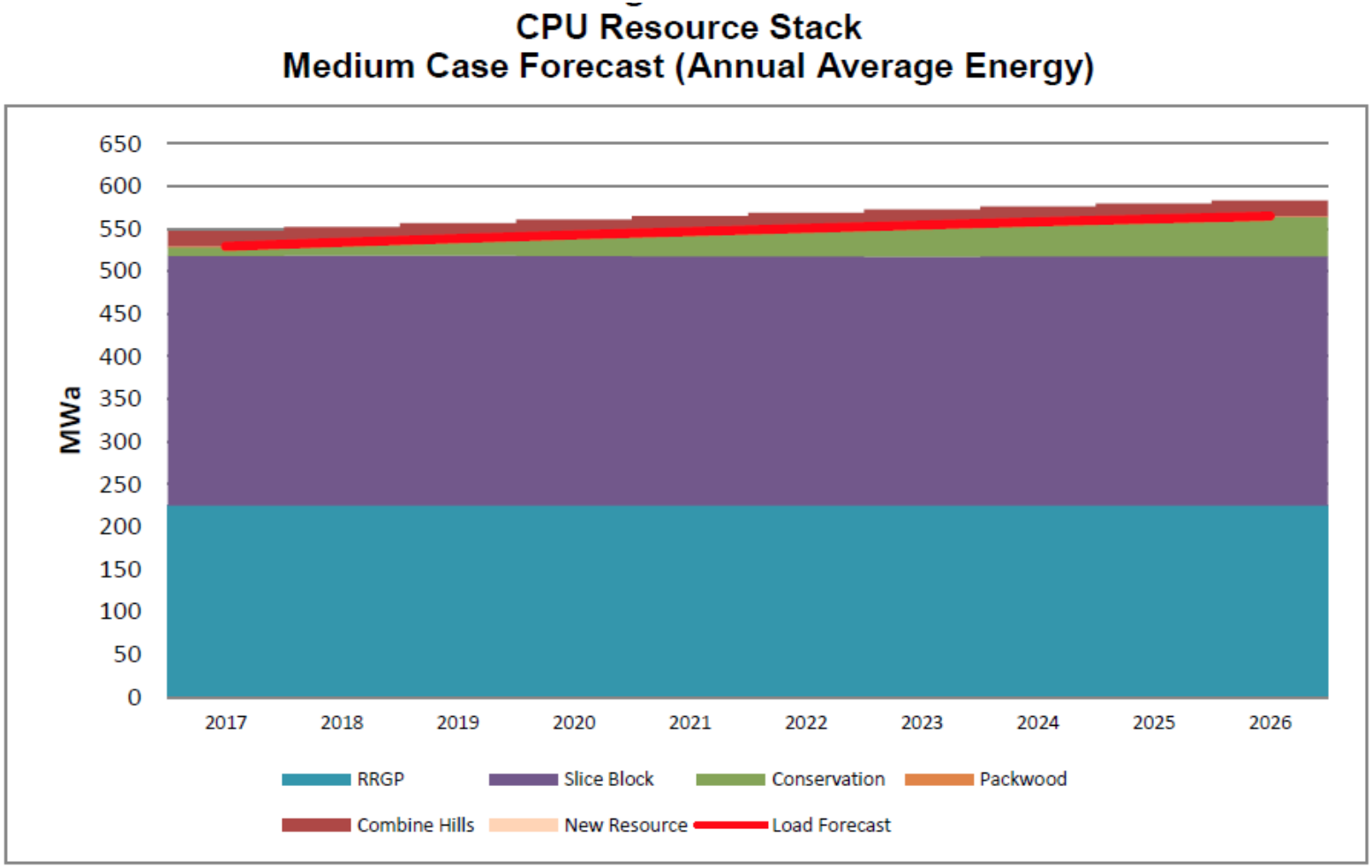
- 1,000 Gigawatt hours or 116 aMW:
  - Enough to power 79,060 Homes in Clark County or
  - 1.27 Billion pounds of carbon dioxide not created or
  - Planting 133,000 acres of trees
- Enough to power 20% of energy used by all of Clark's customers in 2015:
  - Or 50% of the 2015 residential load
  - Or 80% of the 2015 commercial load
  - Or 140% of the 2015 industrial load.



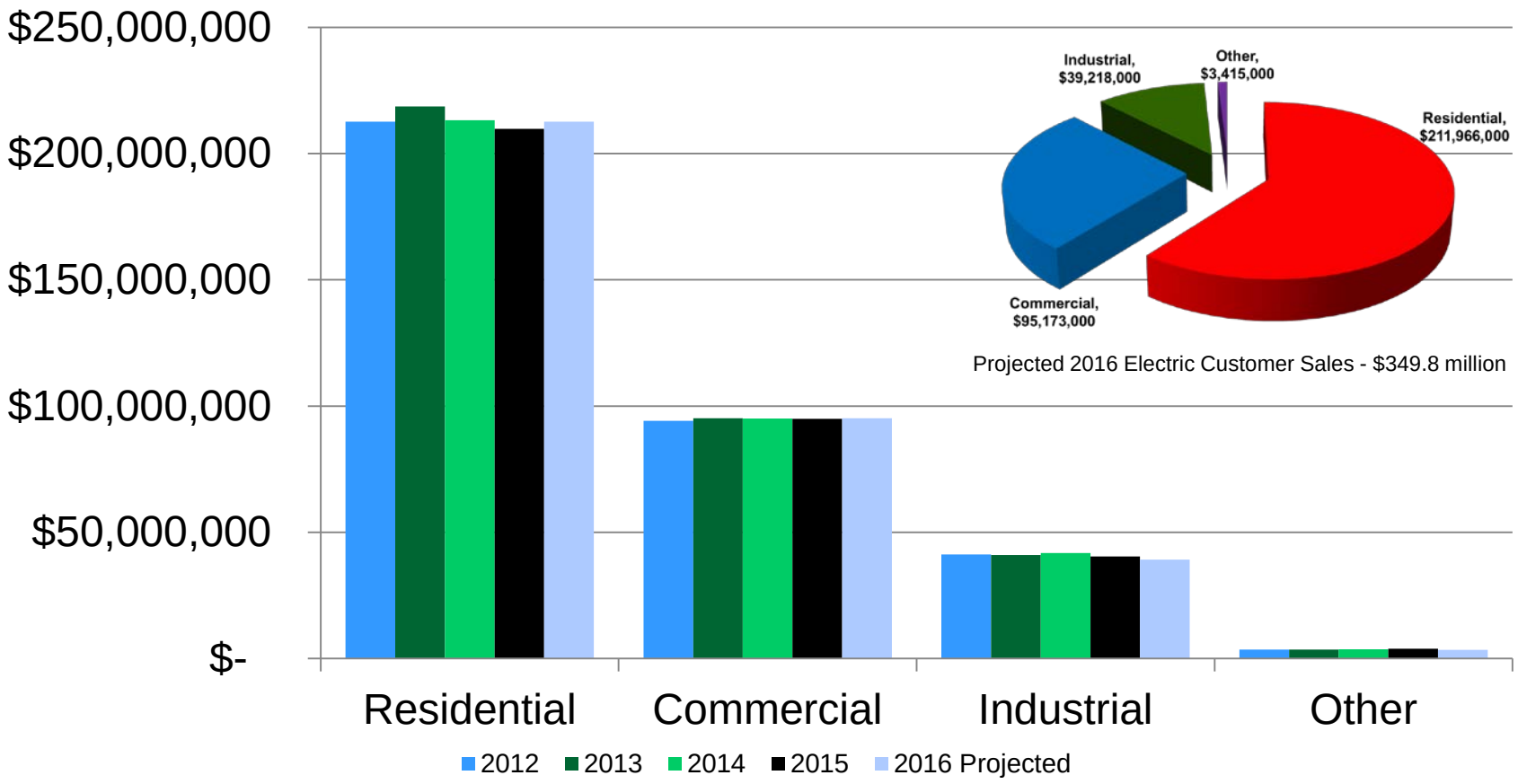
Council's 7th Plan Resource Plan



Resource Stack Bottom Up

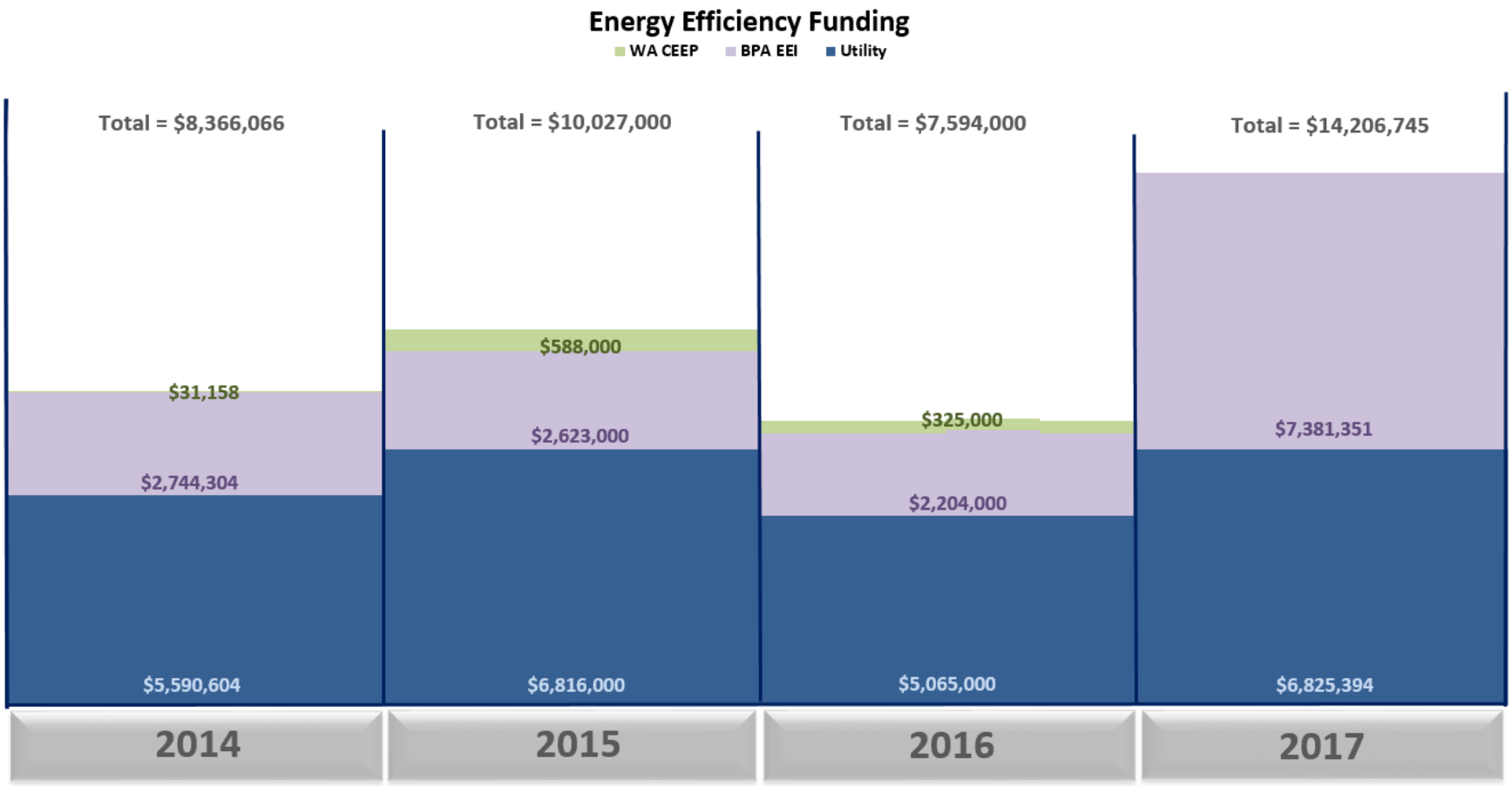


Electric Customer Sales



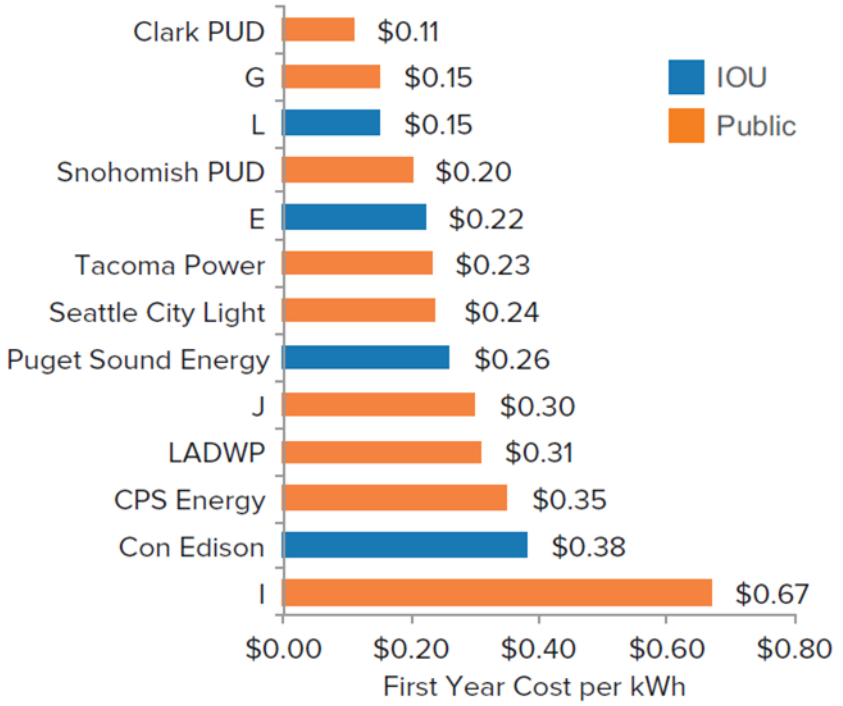
Projected 2016 Electric Customer Sales - $349.8 million

2014 – 2017 Energy Efficiency Funding



NOTE 1: *ETO FUNDING AND CONSERVATION LOANS ARE INCLUDED IN UTILITY FUNDS*

Energy Efficiency Cost of Acquisition $/KWH



KPI

Energy efficiency cost of acquisition

Metric

2014 total energy efficiency costs
2014 total kWh energy savings

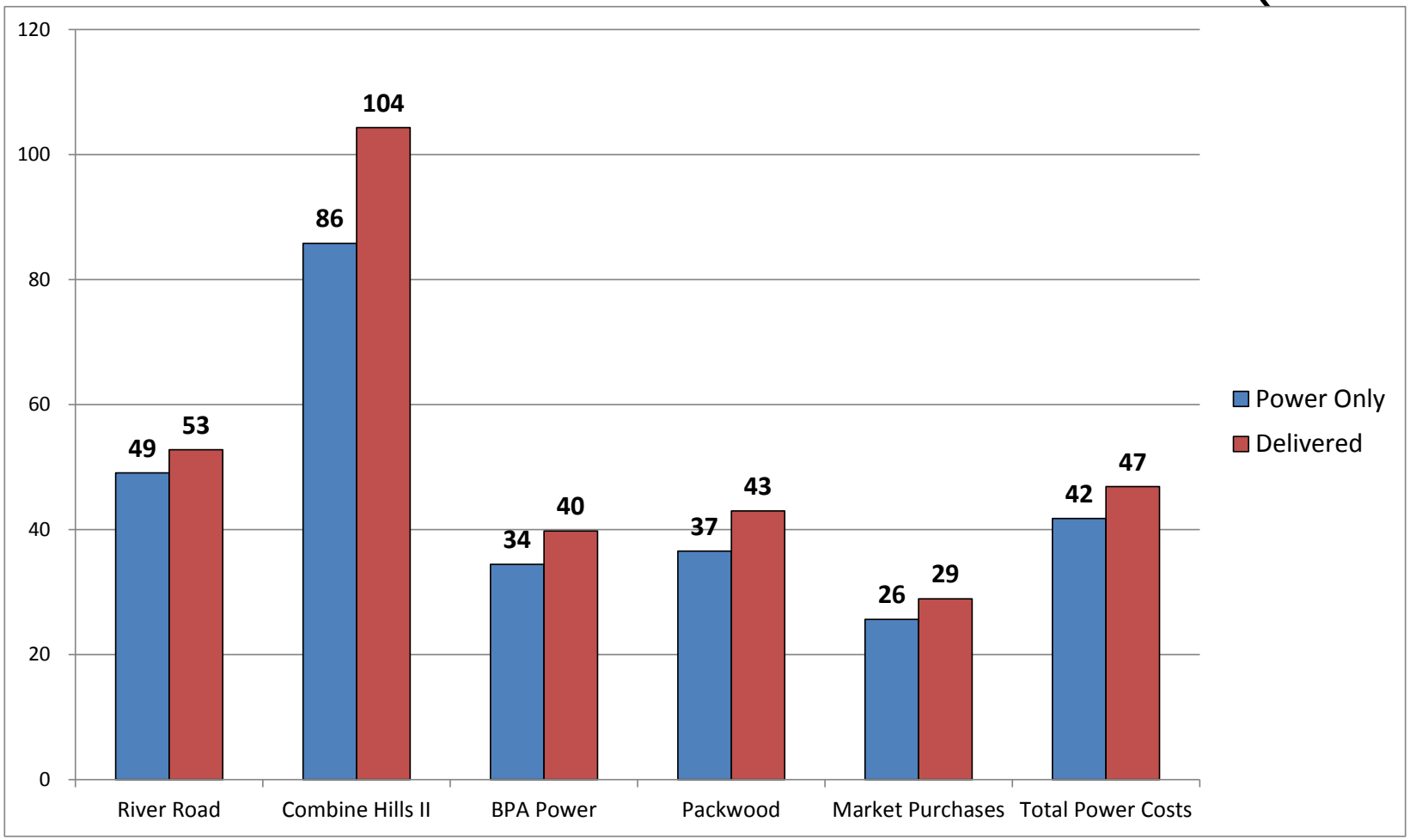
Sample Mean

$0.28/kWh

Sample Median

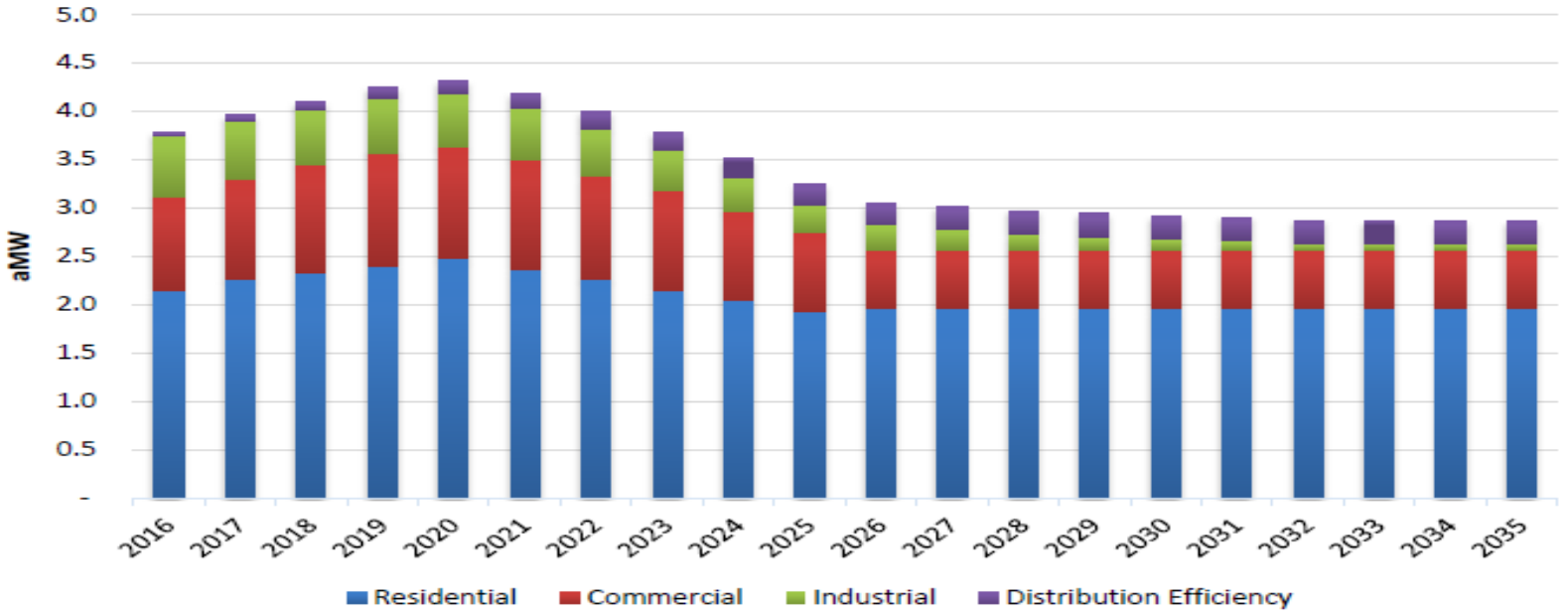
$0.24/kWh

Electric System Power Supply Resource Costs ($/MWh)



2015 CPA 20 Year Conservation Potential

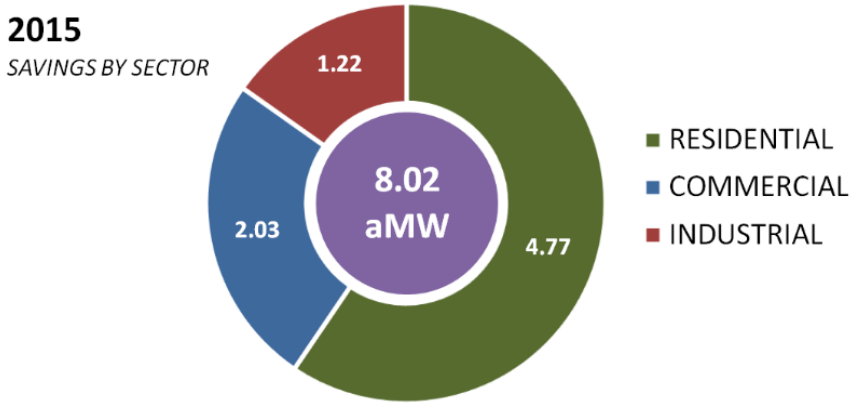
Figure ES-1
Annual Base Case Energy Efficiency Potential Estimates

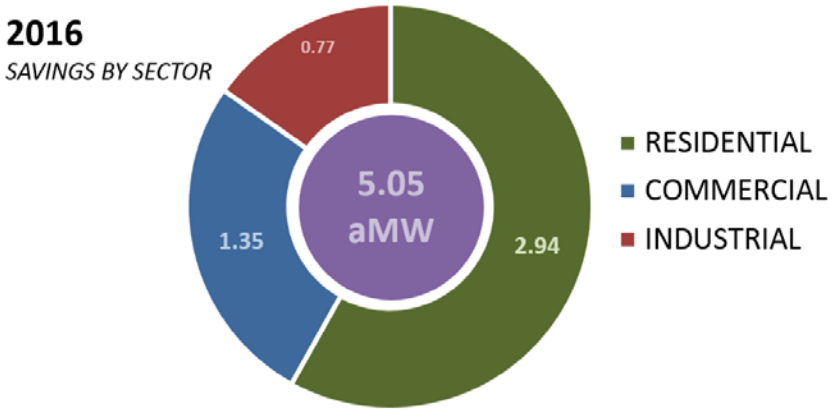


The majority of the potential is in the residential sector. The distribution of residential sector conservation among measure end uses is similar to CPU's 2013 residential conservation profile. The notable areas for achievement include:

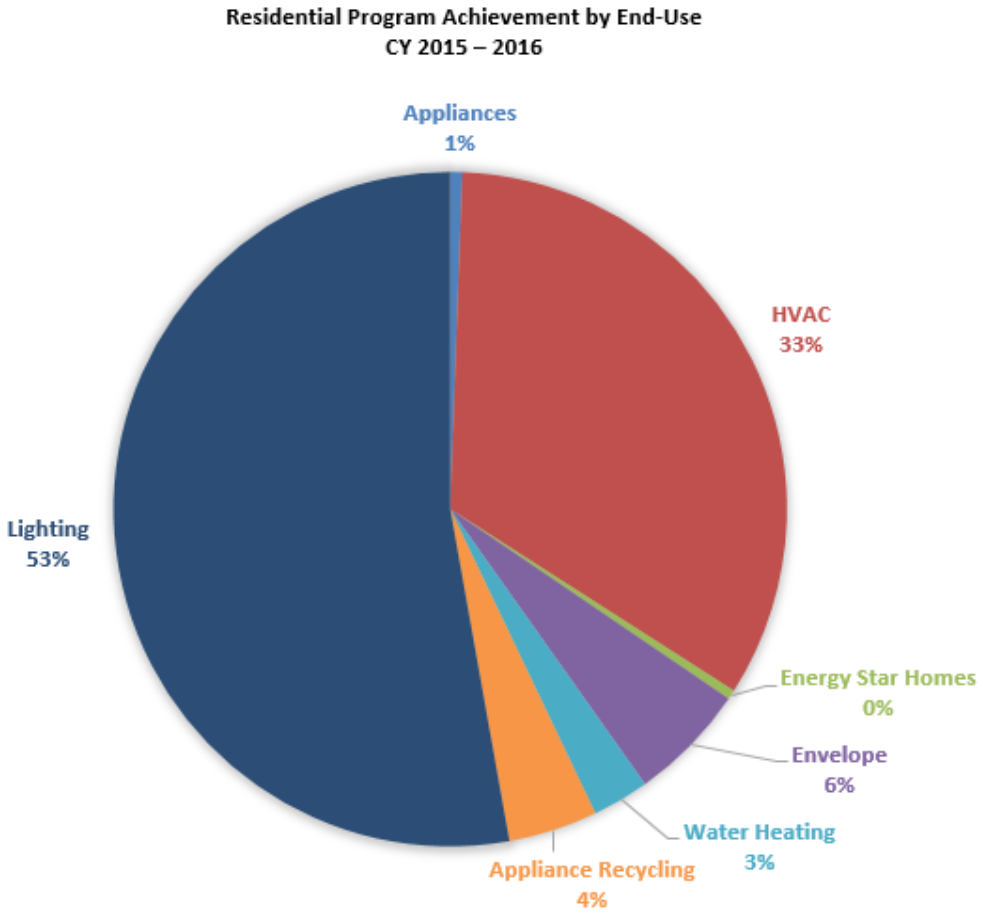
- Water Heating – Including heat pump water heaters and showerheads
- Consumer electronics – including desktop computers and advanced power strips
- LED lighting in existing homes
- Heat pump and ductless heat pump upgrades, conversions and supplements

2015 – 2016 Conservation Results by Sector

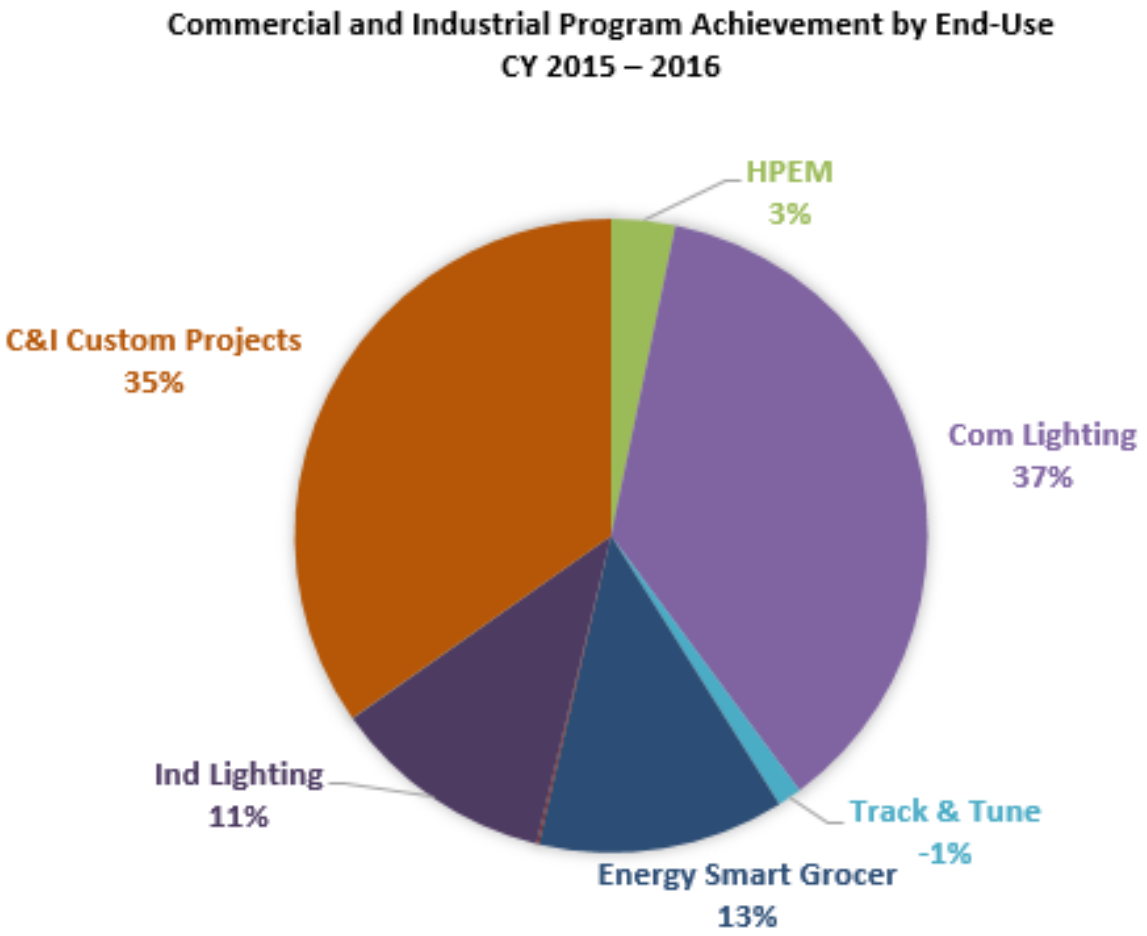




2015 – 2016 Residential Savings by End-Use

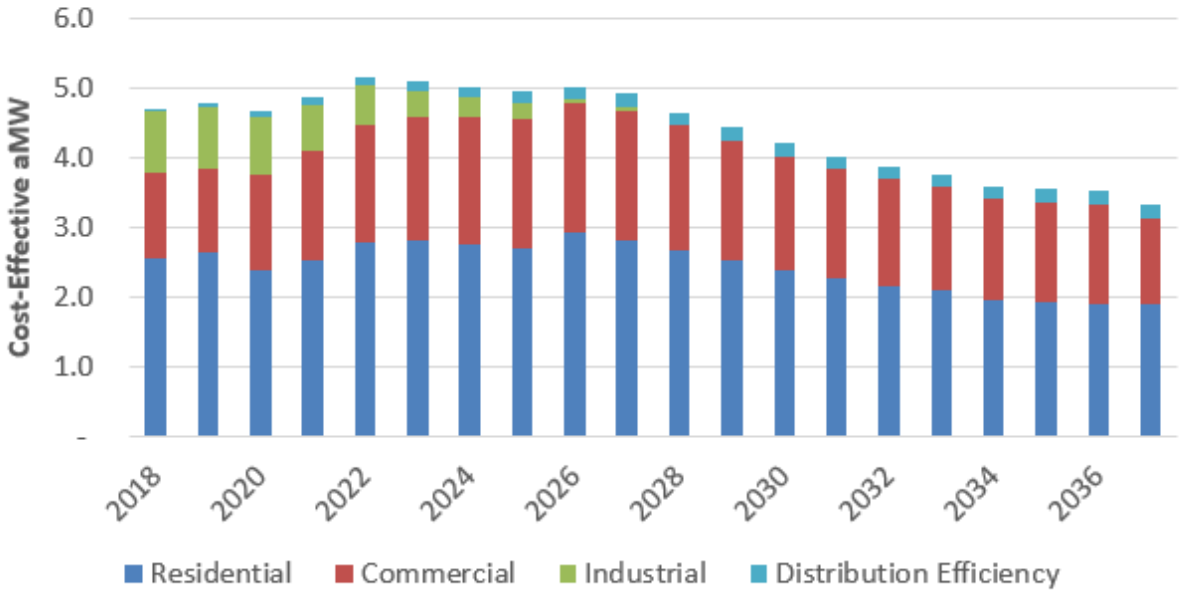


2015 – 2016 C&I Savings by End-Use



Sneak Peak at the 2017 Draft CPA

Figure ES-1
Annual Base Case Energy Efficiency Potential Estimates



Much of the potential is in the residential sector. The distribution of residential sector conservation among measure end uses falls along the main areas of residential energy consumption. The notable areas for achievement include:

- LED Lighting
- HVAC-related measures, including ductless heat pumps and weatherization
- Water heating measures like heat pump water heaters and low-flow showerheads

The End

Thanks for coming to
Vancouver USA!

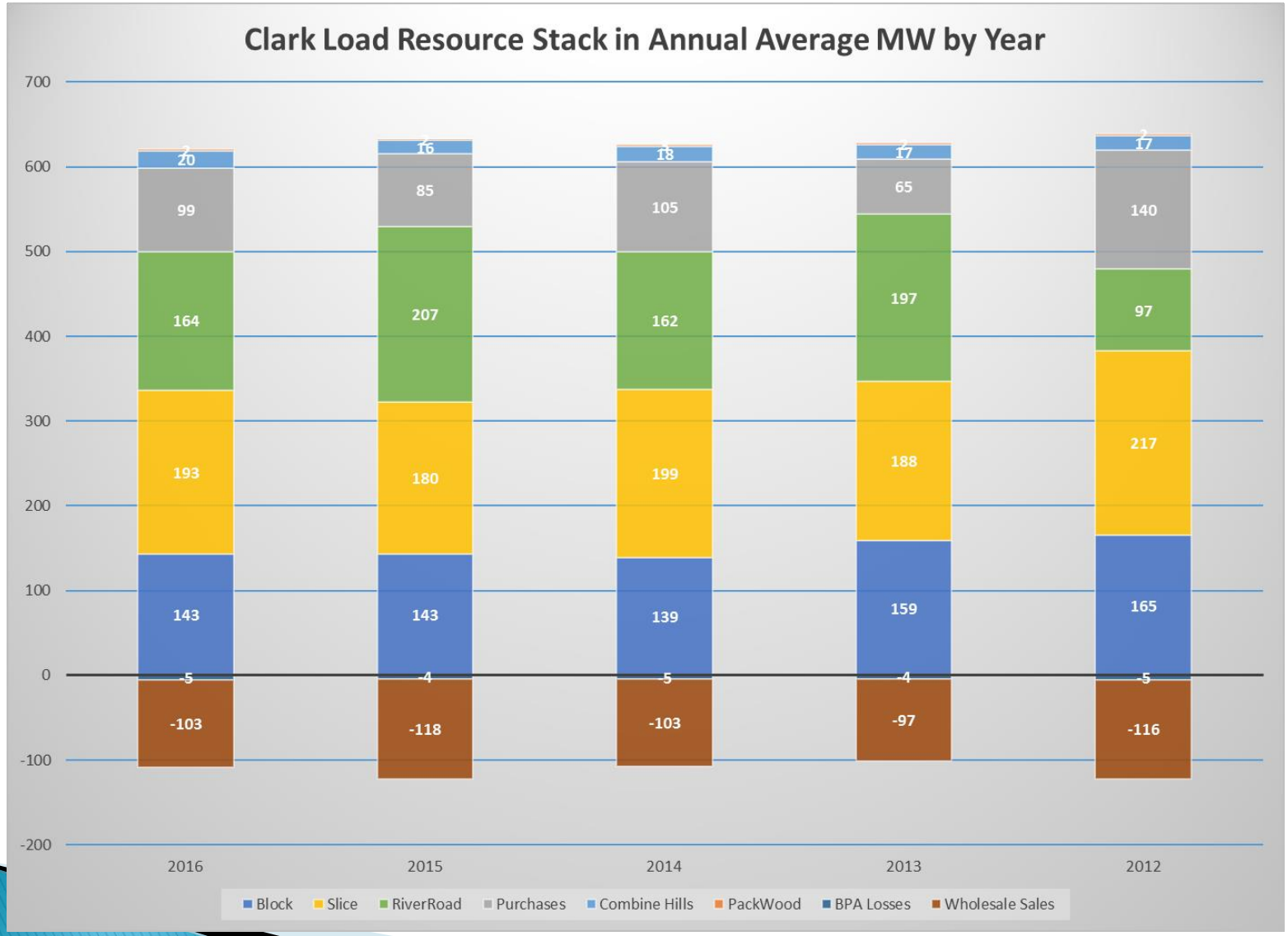
Washington State Clean Air Rule

- Clark Public Utilities' Loads
  - 520 MWa, 950 MW Peak (P50), 1115 MW system peak
  - Roughly 5% of electricity consumption in WA State
  - 5th largest utility in WA state by peak hour (2nd lowest all-in rate of these 5)
  - 10% below the average all-in rate for the state

Clark Public Utilities' Resources

- 248 MW River Road Generating Plant, Combined Cycle Natural Gas Combustion Turbine
- ~508 MW BPA Slice/Block Contract (2011 – 2028)
  - Block comprised of equal hourly schedules within a month that changes by month
  - Slice comprised of 2.19% "virtual" slice of the Federal system with all its capacity, run-off, plant restrictions, nuke plant, etc…
- 5 MW Packwood Hydro
  - 18% of 27.5 MW run-of-river plant, average energy across the year is about 2 MW
- 75 to 240 MW BPA Capacity Product (2011 – 2017)
  - A daily pre-schedule option to buy power from BPA, amounts vary by month
- 0-400 MW Market Purchases
  - Arranged as needs arise in Forward and Daily Markets
- 0-63 MW Combine Hills Wind Generation Purchased Power Agreement
  - Power not delivered to load for various reasons
- Distribution Resources, seen as reduced load
  - Community Solar (0.3 MW)
  - Rooftop Solar and other various net meter resources (4.5MW)

Clark Public Utilities Resources



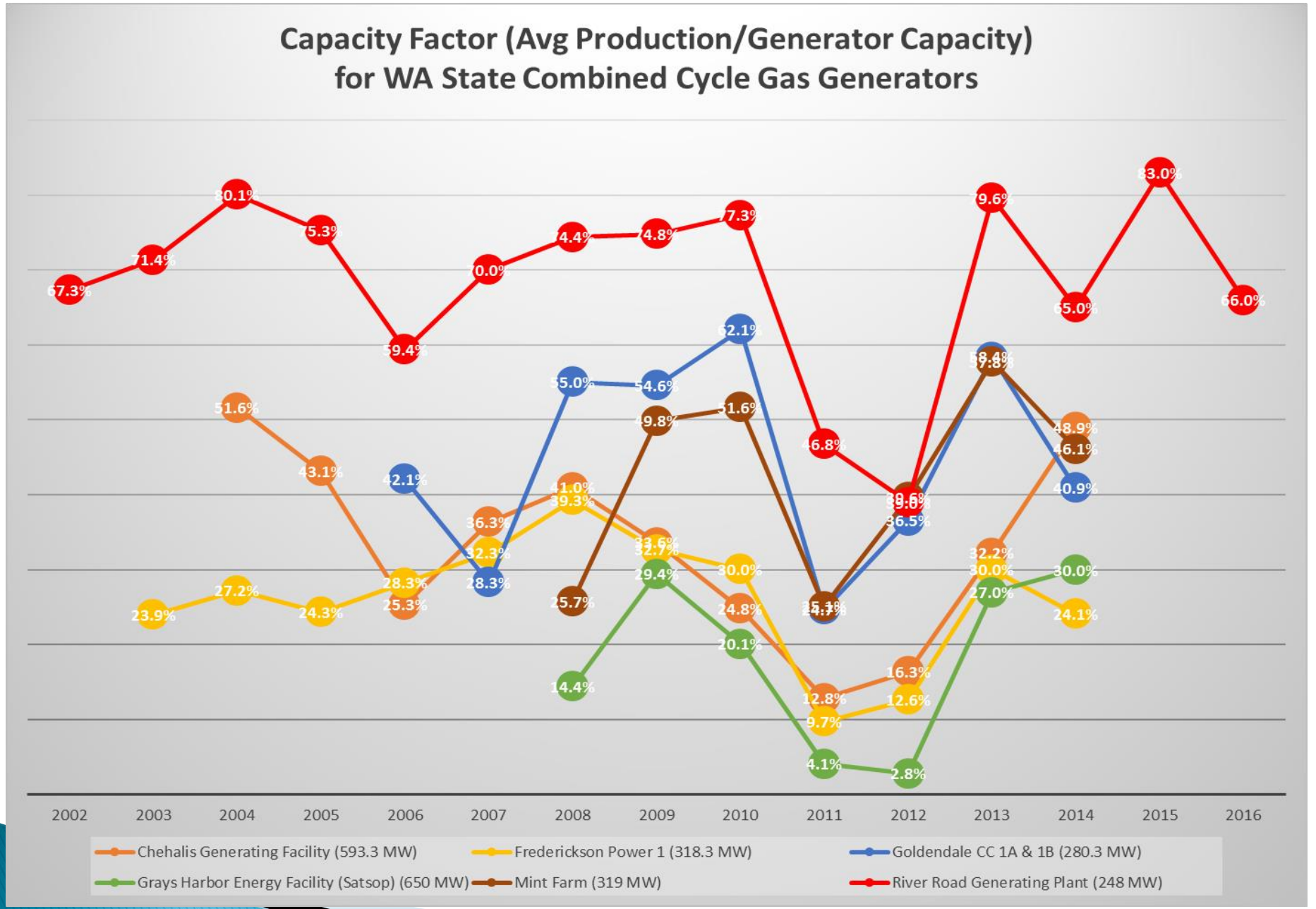
Current Environmentally Related Requirements

- Existing State and Federal air and water quality requirements
- WA State Renewable Portfolio Standards established in the Energy Independence Act resulting from Initiative-937
  - 15% of load met with electricity produced from "new" renewable energy or meeting certain spending limits compared to total revenues
- Clean Air Rule
  - Promulgated by the Department of Ecology
  - All electricity from gas-fired plants must reduce carbon output by ~30% when compared to a 2012-2016 baseline. Can exceed this limit only through means of reducing carbon elsewhere or spending money on state approved programs.

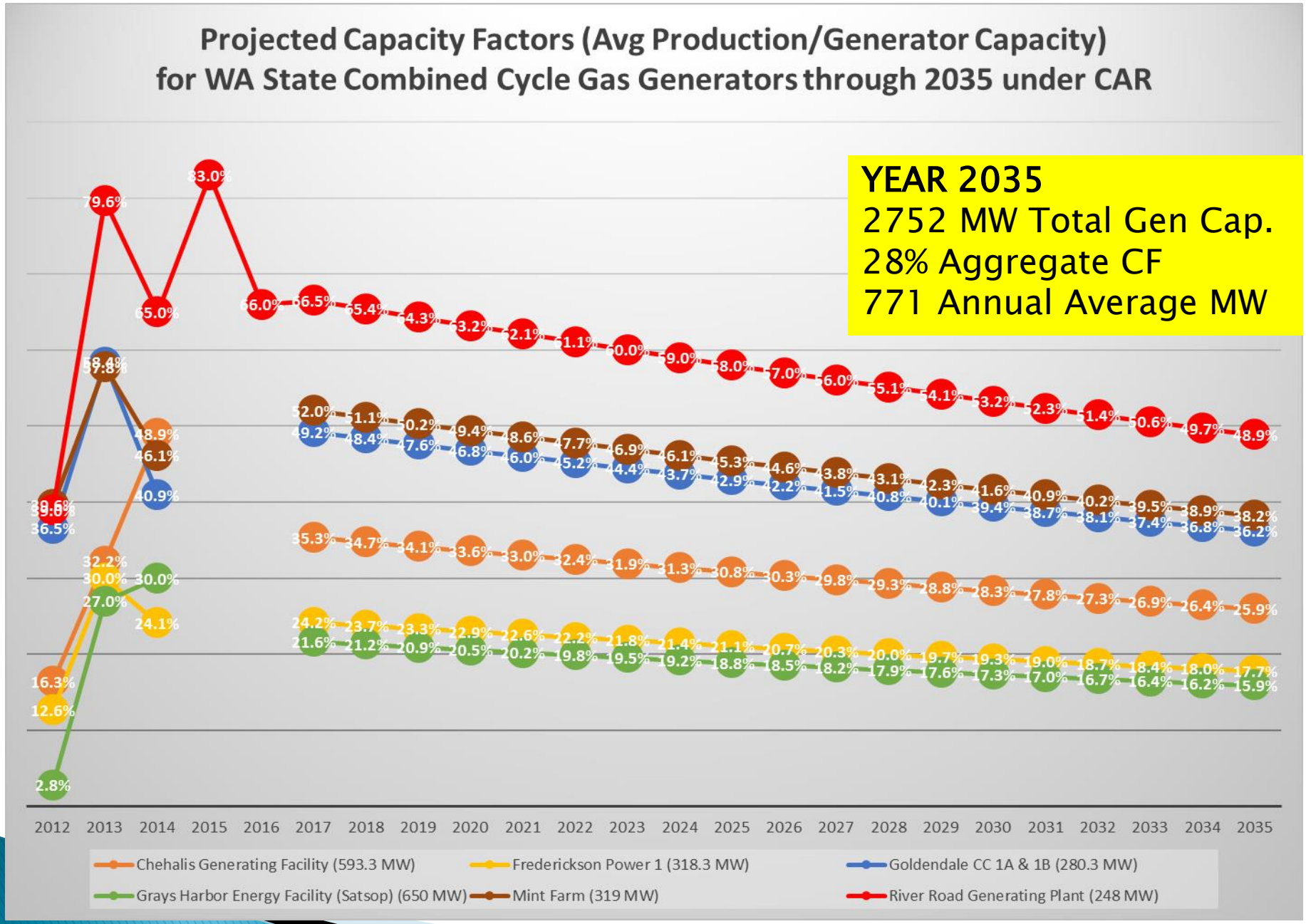
- Washington State Clear Air Rule applied to Clark
  - A emissions baseline is calculated from actual data of 2012-2016. This becomes emissions reduction requirement in year 2017
  - Each year thereafter, the emission reduction requirement is reduced by 1.7% from the previous year's number through 2035
  - Emissions from the plant is then compared to the emission reduction requirement and tested over 3 year compliance periods
  - Any emissions greater than the emissions reduction requirement will necessitate either the purchase of ERUs to comply or pay a hefty fine of $10,000 per MT
  - If actual emissions are less than the emissions reduction requirement, then the difference can be counted as ERUs
  - Can apparently comply by displacing our River Road Generation Plant with electricity imported from out of state produced by any kind of fuel source

- Washington State Clear Air Rule applied to Clark
  - ERUs or Emission Reduction Units
    - Allowances from certain cap and trade markets can be used as ERUs. Use of Allowances are ramped down to a maximum of 5% of compliance obligation for 2035 and thereafter.
    - Activities or programs that are real, specific, identifiable, and quantifiable that prove to reduce GHG emissions in a permanent and verifiable way.
    - Unused RECs can be used as ERUs at the rate of one ERU per 2.25 RECs.
    - Exceeding conservation targets can create ERUs at the same rate as RECs.
    - ERUs are bankable for 10 years.

- Clark's River Road Generating Plant
  - First produced power in 1997
  - Only continuously operated and maintained Gas CT owned by a Consumer Owned Utility in Washington State
  - Its development reduced BPA's obligation to serve Clark by roughly half
  - RRGP is a dedicated resource under the BPA contract and has 5(b) and 9(c) obligations under the Regional Power Act
  - RRGP is a linchpin to voltage support and reliability in the Portland/Vancouver area.
  - When running, RRGP pays roughly $300,000 per month in state and local taxes
  - Under today's markets, saves Clark's ratepayers roughly $12 Million per year (roughly 4% rate increase)
  - RRGP obviated the need to look for additional resources in our own service territory.


Capacity Factor (Avg Production/Generator Capacity)
for WA State Combined Cycle Gas Generators
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Chehalis Generating Facility (593.3 MW)
Frederickson Power 1 (318.3 MW)
Goldendale CC 1A & 1B (280.3 MW)
Grays Harbor Energy Facility (Satsop) (650 MW)
Mint Farm (319 MW)
River Road Generating Plant (248 MW)

Projected Capacity Factors (Avg Production/Generator Capacity) for WA State Combined Cycle Gas Generators through 2035 under CAR



- What does the future hold?
  - CAR is in the courts now with two lawsuits pending
    - Employer Groups challenge the Department of Ecology's authority to implement among other arguments
    - Natural Gas Distributors claim violation of Commerce Clause
  - Despite defeat of Carbon Tax Initiative in November 2016
    - 8 different proposed carbon taxes in 2017 WA State legislative session, none passed.
    - 3 new carbon tax initiatives already filed for 2017 election cycle, unconfirmed word is that none will be on the ballot.

- What are we doing to manage our exposure to the CAR and any future Carbon Tax burdens?
  - Keep ourselves informed, without being over-reactive.
  - Keep all of our customers in mind as we inform and/or advocate.
  - Look for “no regrets” opportunities. More aggressive about unit displacement and require more value to start the unit back up.
  - Fret over capacity planning for the future. Current regulatory environment provides no certainty for development of any dependable and dispatchable resources.
  - Protect BPA resources for BPA users. Continually remind folks that California’s inability to plan should not constitute a crisis on our part.
  - Serious revamp of our 2018 integrated resource plan.

Demand Response at Clark Public Utilities

Presented to

The NW Power and Conservation Council

July 11-12 Council Meeting, Vancouver, WA

Clark Public Utilities

Customer-owned, customer-focused

Presented by

Zeecha Van Hoose

Industrial Key Accounts and Programs

What is DR

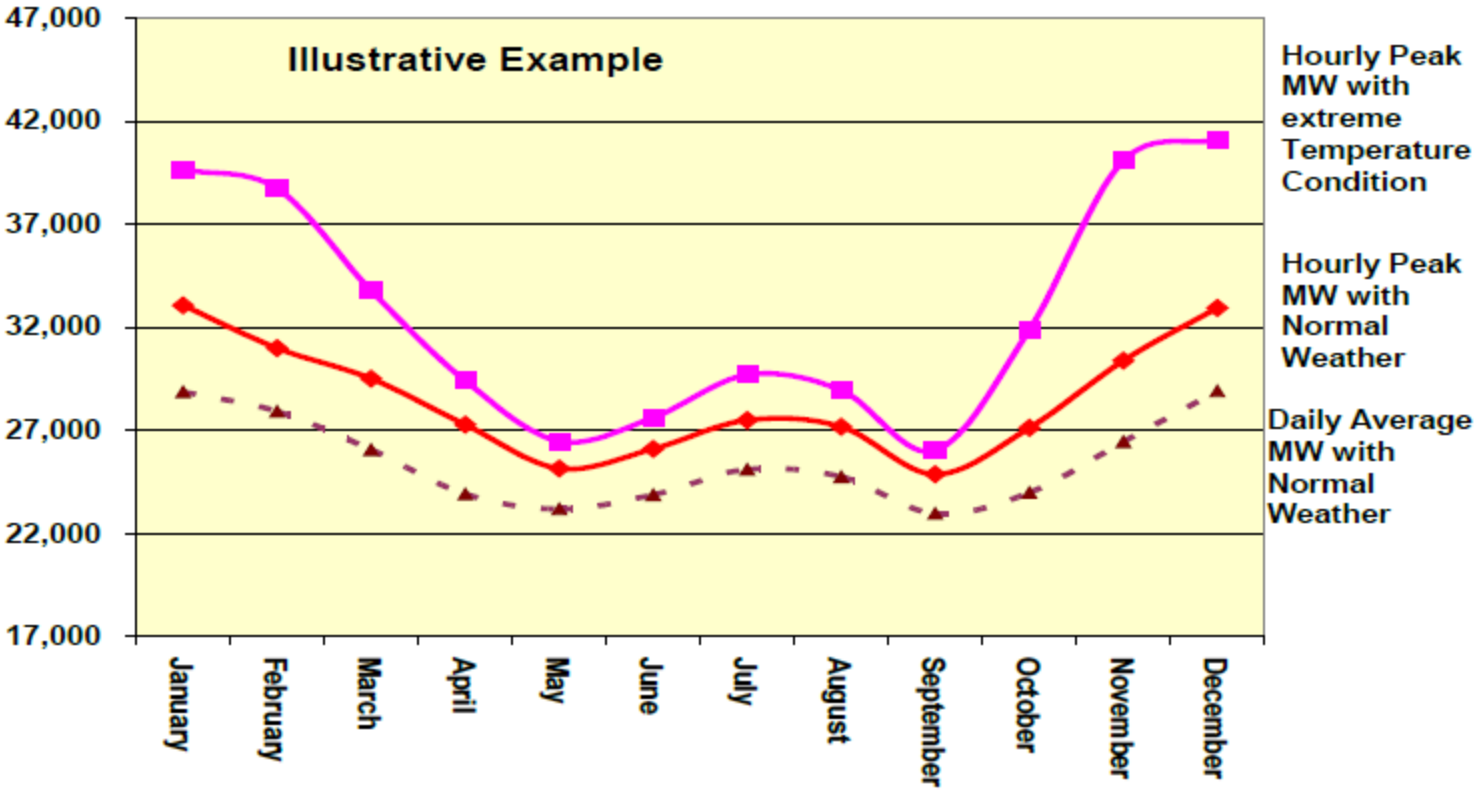
"Demand response resources are voluntary reductions in customer electricity use during periods of high demand and limited resource availability."

* 7th Power Plan



Importance of DR

Figure E - 28: Range of Variation in Load

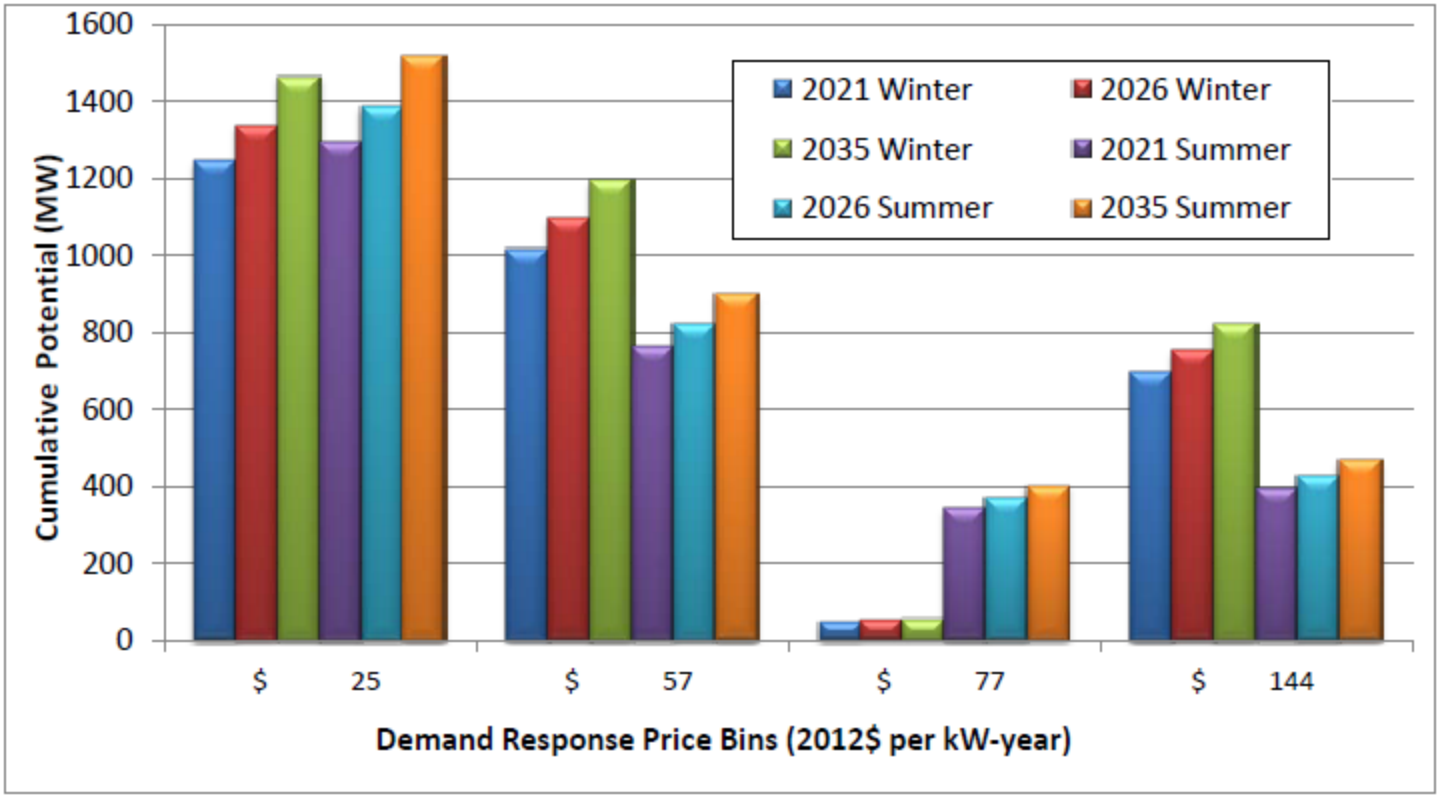


History

- Western Energy Crisis
- BPA Pilot Commercial Program
  - EnerNOC Delivered
  - 3 Participants
- BPA Pilot Hot Water Heater Program
  - 600 Participants
  - Radio signal activated

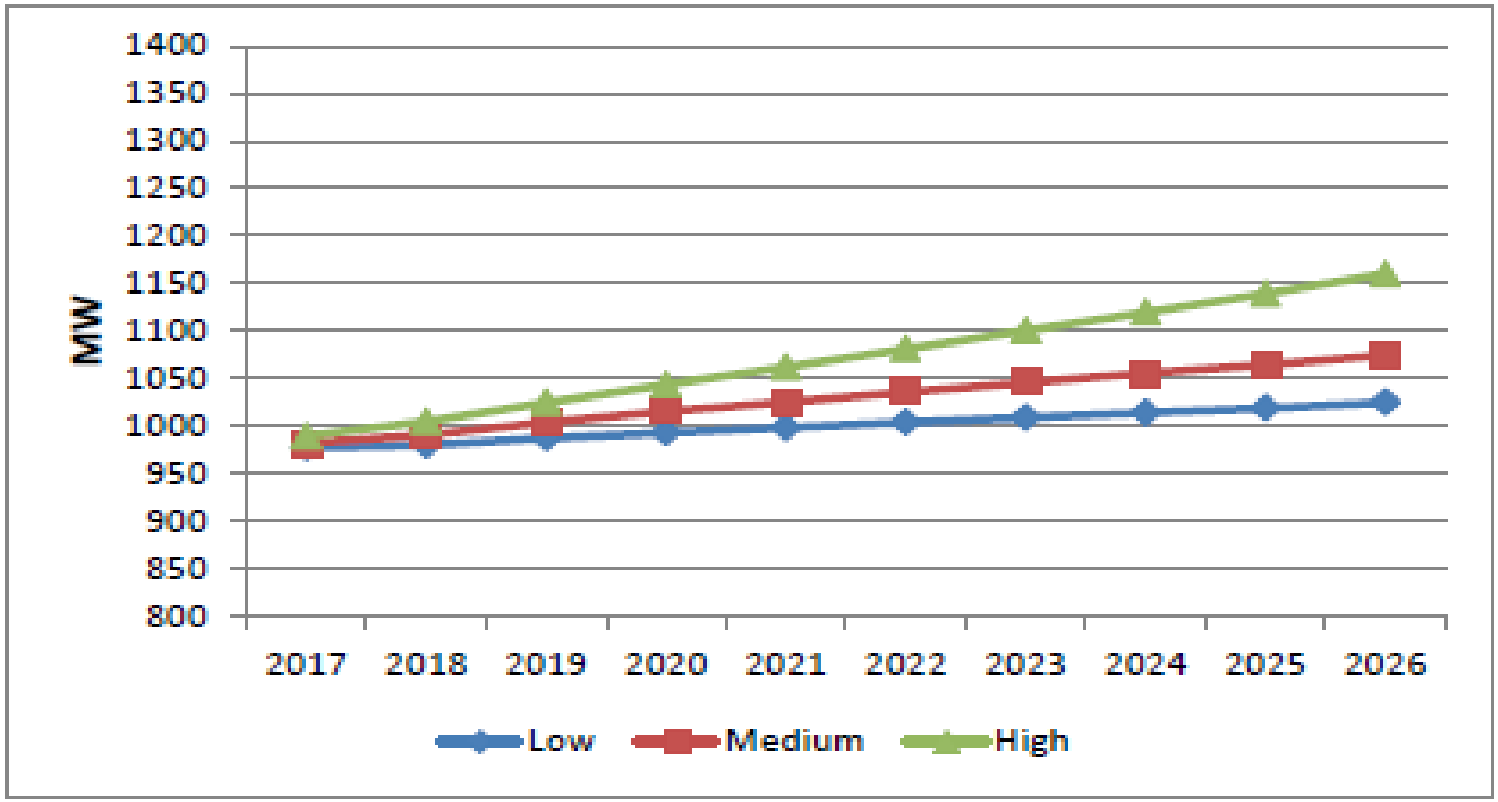
Barriers

Figure 3 - 7: Demand Response Resource Supply Curve



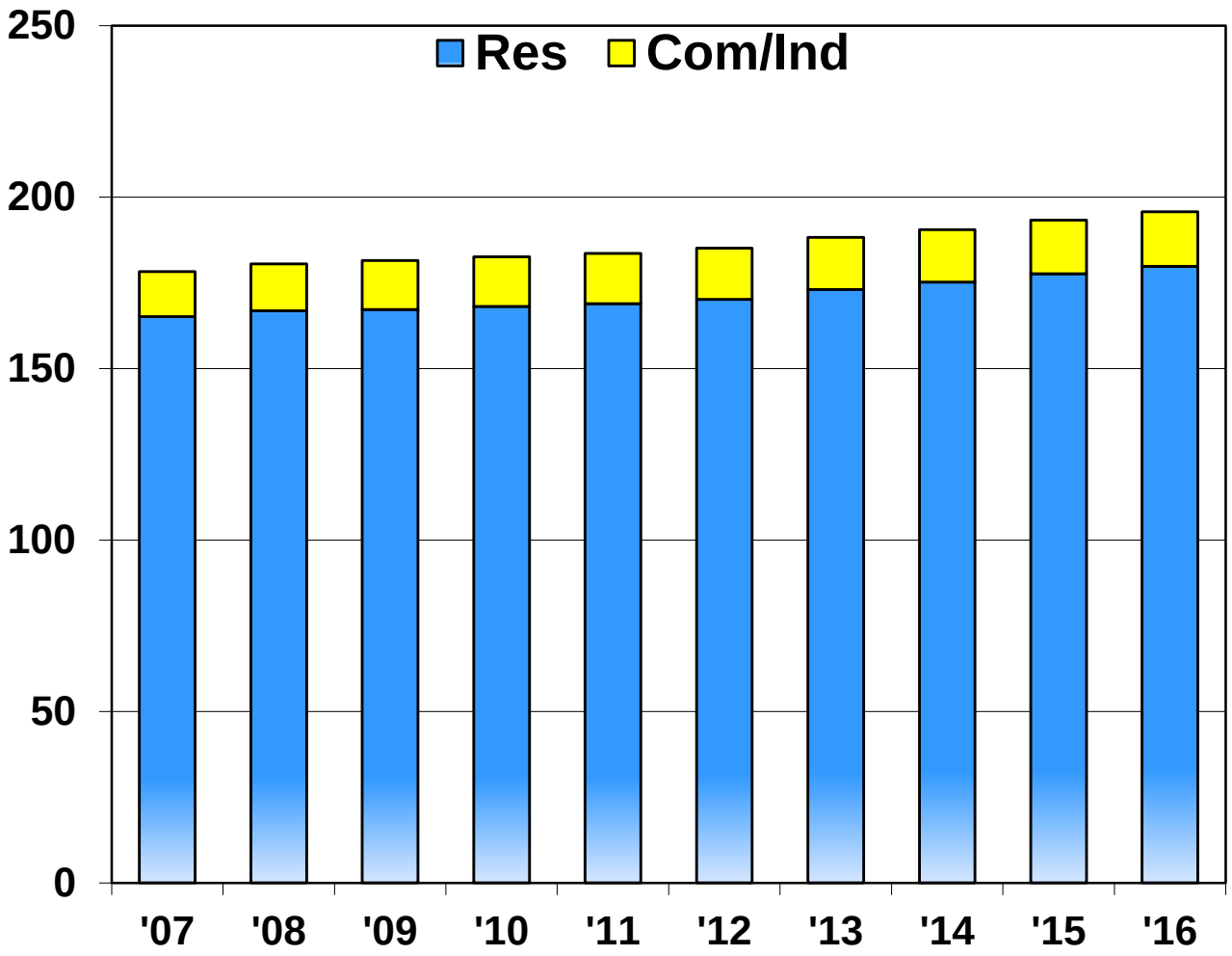
1-Hour Peak Load Growth Forecast

Figure ES.2
Load Forecast Scenarios – Annual Peak



Electric Customers/Meters Growth

(000's)



Year End

Customers/Meters

2016 est – 197,153

2015 est – 195,464

2014 – 192,584

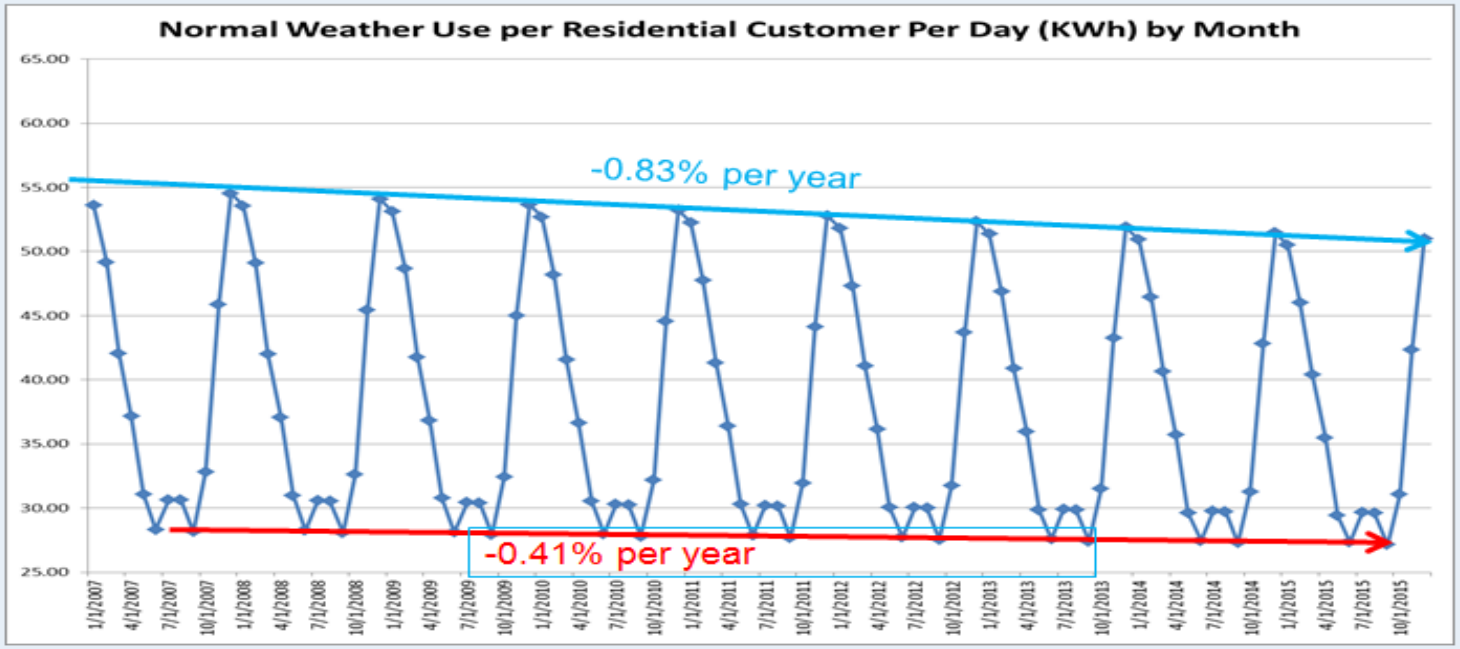
Estimated Increase – 1.6%

More Customers, Using Less Kwh per person

But first, how about those loads over the years in winter and summer?

Clark Public Utilities

- Question posed about underlying trends in customer use over years in summer and winter. Any differences?



Summary

- Support regional programs
- Continue to evaluate value
  - Utility value
  - Customer value

The End

Thanks for coming to
Vancouver USA!