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April 2, 2013

## MEMORANDUM

**TO:** Council Members

**FROM:** Charlie Grist

**SUBJECT:** Presentation on implementation of energy efficiency

This briefing is part of an overview of how energy efficiency is implemented by various entities around the Northwest. Last month, the Council looked at a graphic of the efficiency implementation web. We also heard from NEEA on its market transformation work. At the Council meeting in April, two utilities, with service territories in eastern part of the region, will discuss the implementation of energy efficiency programs from their perspectives.

Bruce Folsom, Director, Energy Efficiency Policy will brief the Council from the perspective of Avista Utilities. Avista is a large investor-owned utility that serves both electric and gas customers in four states. It serves 340,000 electric customers and has annual revenues of about \$1.5 billion. The other perspective will be delivered by John Francisco, Manager of Energy Services at Inland Power and Light. Inland is a public power cooperative which serves 38,000 mostly residential and largely rural customers. Inland has revenues of about \$60 million and primarily buys power from the Bonneville Power Administration.

Between them, the two presenters represent two very different utilities. We have asked them both to touch on the successes and challenges of implementing energy efficiency programs in their service territories in the region.

**Attachments:**

Presenter Bios  
Avista Presentation  
Inland Presentation

## **Biographies of Bruce Folsom, Avista and John Francisco, Inland Power**

April 2, 2013

### **Bruce Folsom**

Bruce Folsom is Director of Energy Efficiency Policy for Avista Utilities. Folsom's career with Avista began in 1993 in the company's State and Federal Regulation Department. In 2006 he was asked to lead the growth of Avista's energy efficiency services before assuming his current position in August 2010. Prior to joining Avista, Folsom was employed by the Washington Utilities and Transportation Commission beginning in 1984, and then served as the Electric Program Manager from 1990 to February, 1993. From 1979 to 1983, he was the Pacific Northwest Regional Director of the Environmental Careers Organization, a national, private, not-for-profit organization. Folsom has testified as an expert witness in over two dozen formal cases in four jurisdictions and promotes mutual gain approaches through cooperative efforts with interested parties and stakeholders. Folsom has been recognized for his leadership in energy efficiency in North America, winning several national and regional awards. Folsom is a member of the Board of Directors of the Northwest Energy Efficiency Alliance and is a member of the Regional Technical Forum's Policy Advisory Committee. Folsom holds a Master of Business Administration degree from Seattle University and Bachelor of Arts and Bachelor of Science degrees from the University of Washington.

### **John Francisco**

John Francisco has been with Inland Power for 18 years. A licensed CPA, he began his career in the finance group. After five years he moved to IT, where he was tasked with building the one person IT department into a highly functioning business unit. He presently oversees the IT department, and it now numbers four staff and manages all the critical technical infrastructure of the utility. Beginning in 2007 John was asked to spearhead the construction of Inland's new headquarters campus with 50,000 square feet of office, warehouse and fleet maintenance facilities. In January of 2010, he took the reins of the conservation initiative, leading the change in conservation at Inland from a BPA funding conduit to an integrated resource for the utility.




# CONSERVATION IN A RURAL SETTING



## QUICK LOOK AT INLAND POWER & LIGHT

- Largest electric cooperative in Washington
- 39,000 residential, commercial and agricultural customers
- Large rural service territory
- 13 counties in Washington and Idaho
- 7,000 miles of distribution line
- 74% of load is residential

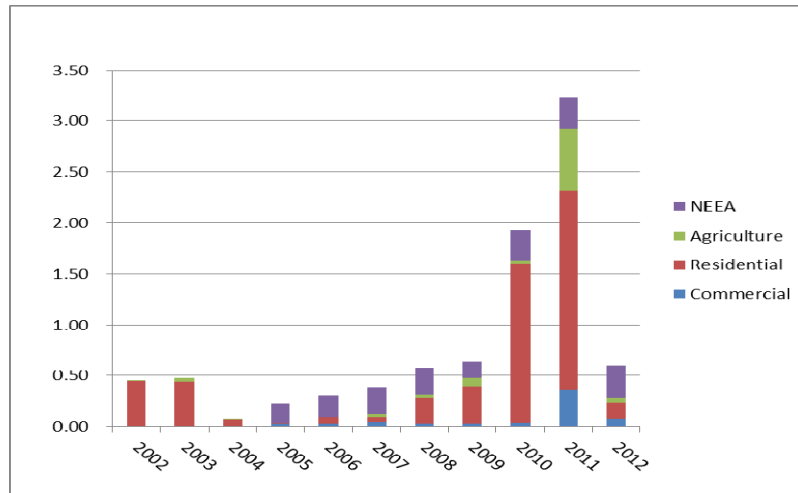


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INLAND POWER AND LIGHT



## ACHIEVEMENTS OVER THE LAST 10 YEARS



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INLAND POWER AND LIGHT

## WHAT HAS WORKED

- Broad offering of programs across all sectors
  - Residential
    - CFLs
    - Appliances
    - Duct Sealing
    - Heat pump conversions
    - Envelope measures – primarily windows
  - Agriculture
    - Sprinkler hardware
    - Pumping plant improvements
  - Commercial lighting
- Largely member driven programs where utility is responding to member demand and implementation requires minimal utility participation

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INLAND POWER AND LIGHT

## CHALLENGES

- Very remote service territory
  - Cost of delivery
    - Implementation
    - Administration
    - Inspection requirements
  - Limited participating contractors
- High ratio of low income members (42%)
- State RPS requirements not aligned with regional priorities and Power Plan
  - Conservation preferred to meet load growth yet renewables requirement not sensitive to slower load growth derived via conservation
- Increasing baselines and codes
  - WA energy code and appliance savings specifically
- Conservation delivery to low income and rental
- Very low market power rates impacting total resource cost

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INLAND POWER AND LIGHT

## WHERE IS INLAND HEADED

- Very supportive Board and CEO
- Increased staffing levels
  - Necessary to comply with increasingly strict specifications
  - Expand direct install
  - Outreach, education and awareness
    - High bill support
  - Identification of potential
    - Assessments and audits
- Facilitating low interest loans for energy efficiency
  - Buy-down arrangement with local lender
- Exploring conservation outside BPA umbrella
  - Non-reportable savings
- Efforts hampered by treatment of conservation under I-937

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INLAND POWER AND LIGHT

## AREAS OF COLLABORATION

- Strive to put conservation on equal footing with ALL resources
- Ensure planning assumptions consider the broad diversity in utility service territories
- Understand each increment of conservation is more expensive than the last
- BPA must formulate policies that are responsive to consumer business cycles and are practical and cost effective for utilities to implement



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INLAND POWER AND LIGHT

# Questions?



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INLAND POWER AND LIGHT



every little bit

## Perspectives on Energy Efficiency

*Bruce Folsom – Director, Energy Efficiency Policy*

*Jon Powell – Manager, Partnership Solutions*

April 10, 2013

### Background: About Avista

- 124 year old investor owned utility
- Rich history of innovation including start-up companies Itron, Avista Energy and Ecova
- Provide electric and natural gas service in four states
  - Eastern Washington
  - Northern Idaho
  - Oregon
  - Montana





## Background: Avista's Resource Profile

E. Washington, N. Idaho, W. Montana

- 360,000 electric customers
- Average hourly load: 1,046 aMW; Peak load: 1,660 MW
- Annual use per residential customer: 11,630 kWh

E. Washington, N. Idaho, and SW Oregon

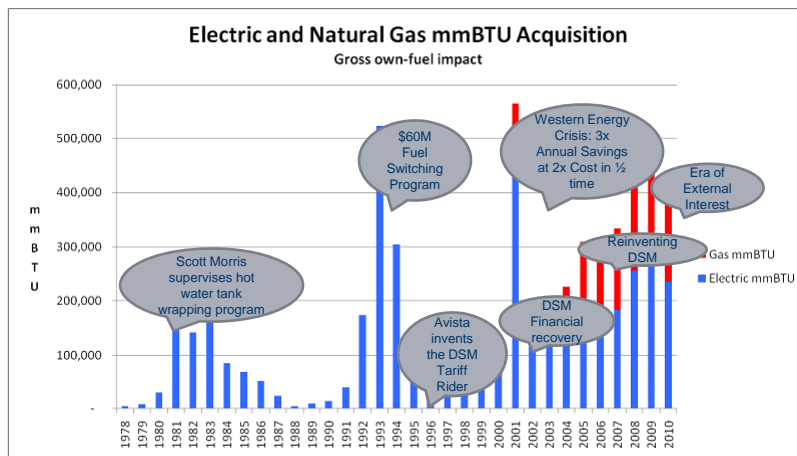
- 320,000 natural gas customers
- Annual use per residential customer: 752 therms

Electric resource mix

- 54% hydro
- 31% natural gas
- 12% coal
- 3% biomass



## 35-Year Commitment to Energy Efficiency Services



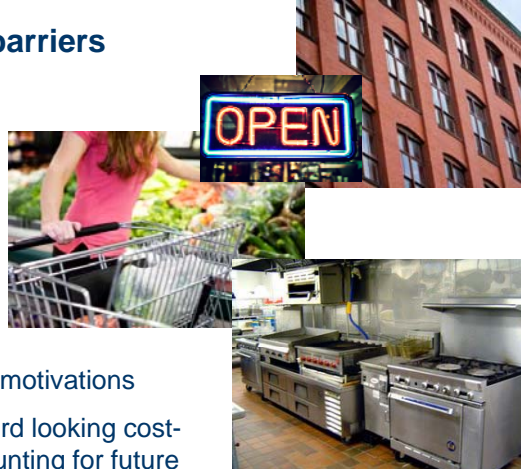
## A Paradigm for Addressing Energy Efficiency

### Traditional four barriers

- Information
- Capital
- Trust
- Time

### And Two More

- Tenants -- Or “split” motivations
- Temporal -- Backward looking cost-based rates not accounting for future scarcity



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## Designing Around the Paradigm

Pursue the best delivery mechanisms for the targeted market:

- Standard offers (“Prescriptive”) for residential & small commercial customers through mass marketing
- Custom (“Site Specific”) for C&I customers with one point of contact through our Account Executive Team
- Low Income through community action agencies
- Regional through the NW Energy Efficiency Alliance
- Special projects—RFPs, Pilot Programs, etc.
- Promotion of Codes and Standards



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# Programs

Over 250 DSM "measures"

## 2012 Results:

77.9 MWh; 156% of IRP Electric targets  
 840,000 therms; 34% WA/ID Gas IRP Goal  
 277,402 therms; 88% OR Gas IRP Goal

## Key numbers:

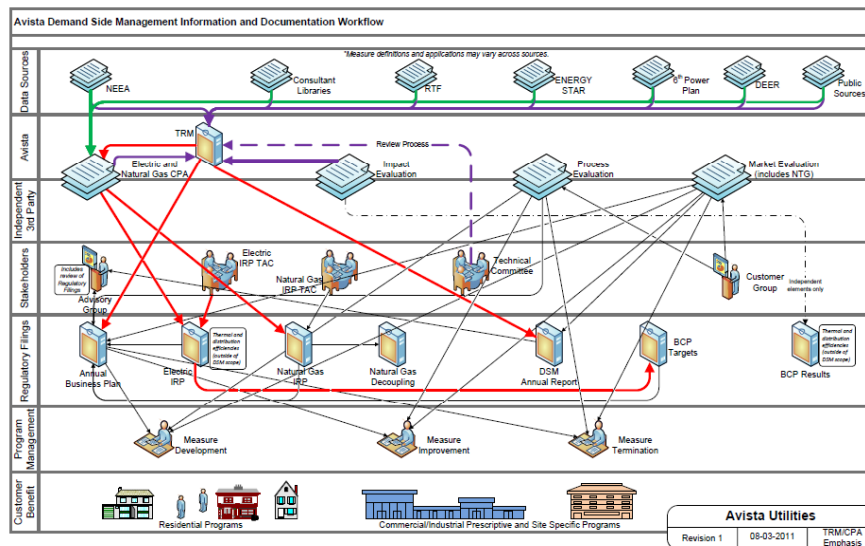
28 FTE spread over 42 people  
 2012 budgets of over \$27.5 million through revenue from our "DSM Tariff Riders"

## Items of Note:

EveryLittleBit; ARRA Home Energy Audits; CFL Program; SiteSpecific; Automated Rebates; NEEA



# Putting It Together...



## Historical Perspective on Energy Efficiency, was:

Acquire lower cost resources to benefit all customers (IRP implementation)

### Customer assistance

- Reduction in participating customers' bills
- Allows customers to have some control in a higher energy cost environment

Regulatory obligation and sensibility

Reduced pressure on, or alternatives for, the capital budget

Carbon reduction and environmental focus

## Now includes an RE and EE Requirement:

### I-937 is not only "about wind"

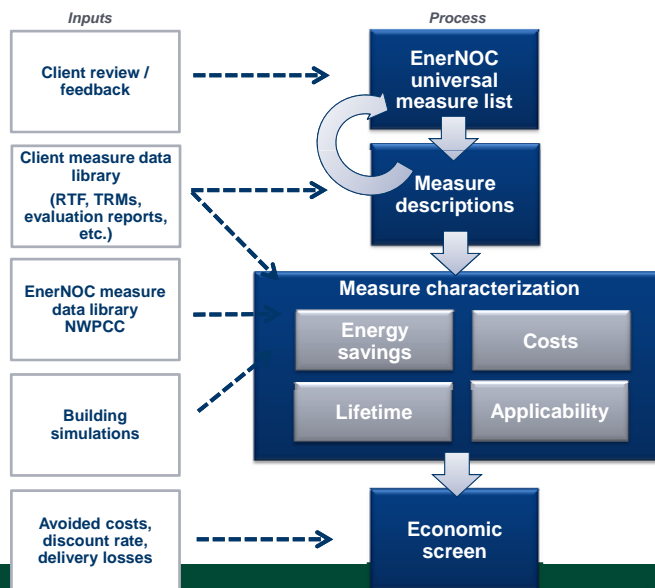
"Each qualifying utility shall pursue all available conservation that is cost-effective, reliable, and feasible."

"Beginning January 1, 2010..."

"...shall pay an administrative penalty to the state of Washington in the amount of fifty dollars for each megawatt-hour of shortfall."

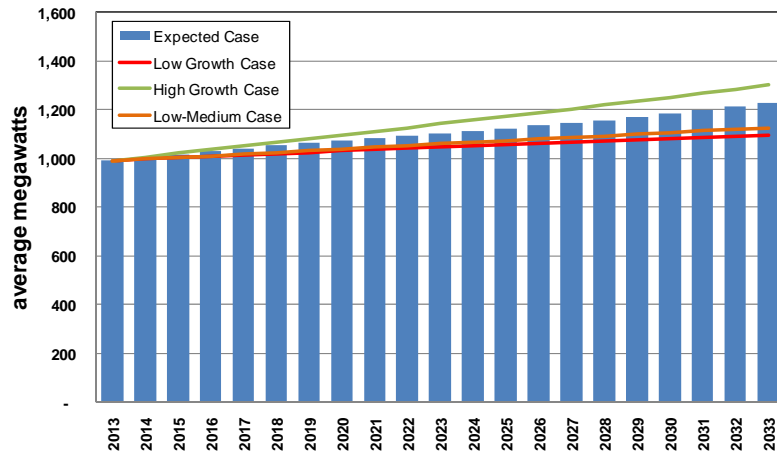
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## Conservation Measure Assessment Approach



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## Load Forecast Scenarios



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## Consistency with Council Methodology

- End-use model — bottom-up
  - Building characteristics
  - Fuel and equipment saturations
  - Stock accounting based on measure life
  - Codes and standards
  - Existing and new vintage
  - Lost- and non-lost opportunities
  - Measure saturation and applicability
  - Measure savings, including HVAC interactions and contribution to peak
  - Ramp rates to model market acceptance and program implementation



## Consistency with Council Methodology (cont.)

- Measures
  - Include nearly all in Sixth Power Plan
  - Plus others. e.g., conversion of electric water heaters / furnaces to gas
  - Sources for measure characterization
    - RTF measure workbooks
    - Avista Technical Reference Manual (TRM )
    - EnerNOC databases, which draw upon same sources used by RTF
- Economic potential, total resource cost (TRC) test
  - Considers non-energy benefits
  - Considers interactive effects
  - Include 10% credit based on Conservation Act
- Achievable potential – ramp rates
  - Based on Council Sixth Power Plan ramps rates
  - Modified to reflect Avista program history



## Avista-specific Items

- Avista customer characteristics
  - Calibrated to Avista 2009 sales by sector
  - Average use per customer based on actual billing data
  - Equipment saturations and unit energy consumption calibrated to match usage
  - Updated with newly available NW Residential Building Stock Assessment data, e.g., information on measure saturation
- Building codes and appliance standards updated as of 2012
- Avista-specific customer growth forecasts
- Avista retail rate and avoided cost forecasts
- Ramp rates adjusted to match Avista program history



## Measure reconciliation

Develop comprehensive measure list using

- Avista existing programs and business plan
- RTF Unit Energy Savings workbooks
- Sixth Power Plan
- Previous Avista CPA
- Recent EnerNOC studies

Water heating measures
Conventional (EF 0.95)
Heat pump water heater (EF 2.3)
Solar water heater
Low-flow showerheads
Timer / Thermostat setback
Tank blanket
Drain water heat recovery



## Avoided Cost Calculation

For 1 MW Measure with Flat Delivery

Item	\$/MWh
Energy Price	44.63
Capacity Savings	13.33
Risk Premium	0.29
<b>Subtotal</b>	<b>58.26</b>

← Converts \$107/kW-yr to \$/MWh

Avoided Cost:  
**\$68.05**  
 per  
 MWh

2011 IRP was \$104.39/MWh

Item	\$/MWh
10% Preference	6.19
Distribution Capacity Savings	0.88
T&D losses	2.72
<b>Subtotal</b>	<b>9.79</b>

Analysis based on earlier draft of Market Prices



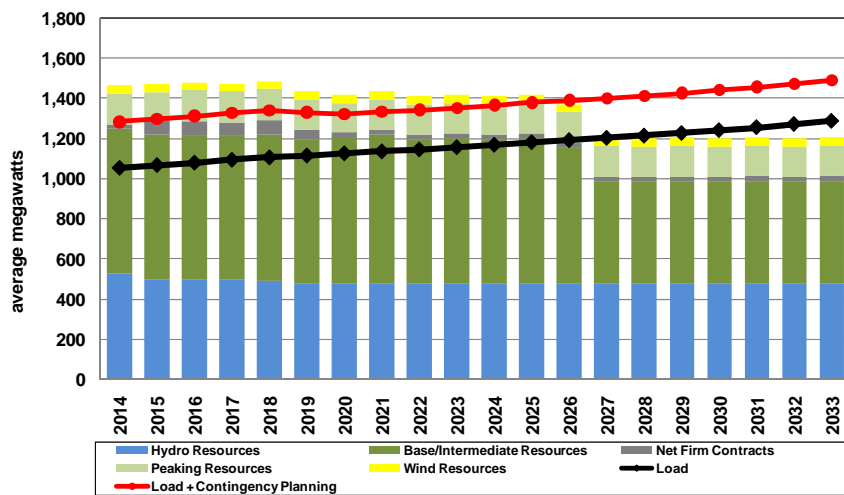
## Draft 2013 Preferred Resource Strategy

Resource	By the End of Year	Winter Peak (MW)	Energy Capability (aMW)
SCCT	2019	88	69
Rathdrum CT Upgrade	2021	2	6
SCCT	2023	46	40
SCCT	2026	78	62
CCCT	2026	281	245
SCCT	2029-32	79	69
<b>Generation Total</b>		<b>574</b>	<b>491</b>
Conservation	2014-33	199	147
Demand Response	2022-30	20	0
Distribution Efficiencies	2014-16	<1	<1

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## Annual Energy Position

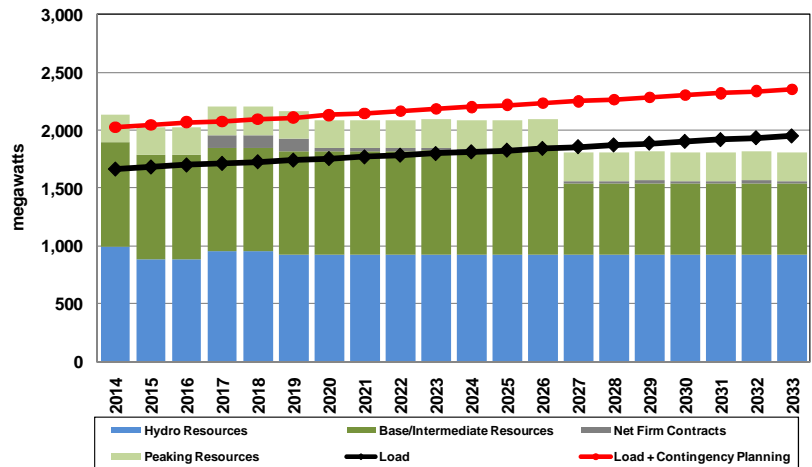


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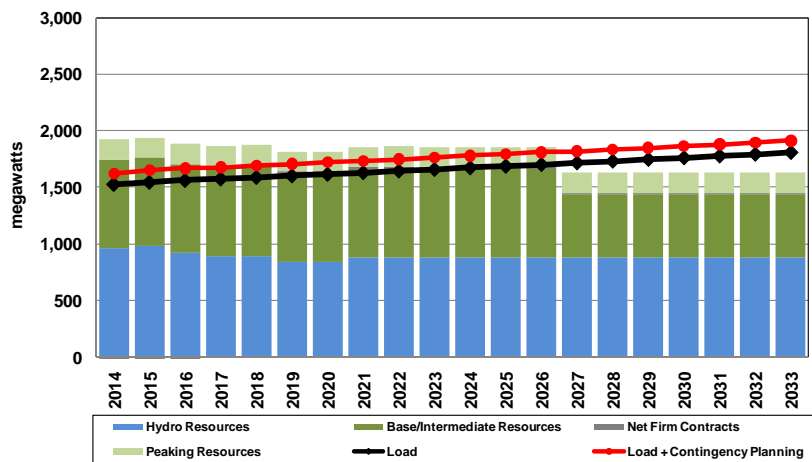
## Winter Single Hour Peak Position



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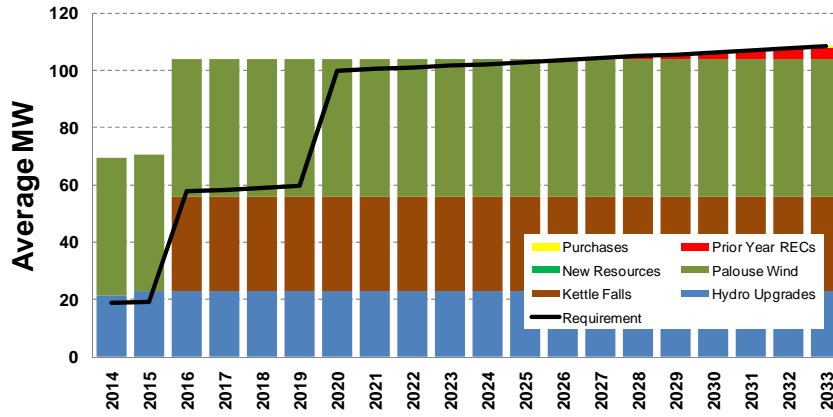
## Summer Single Hour Peak Position



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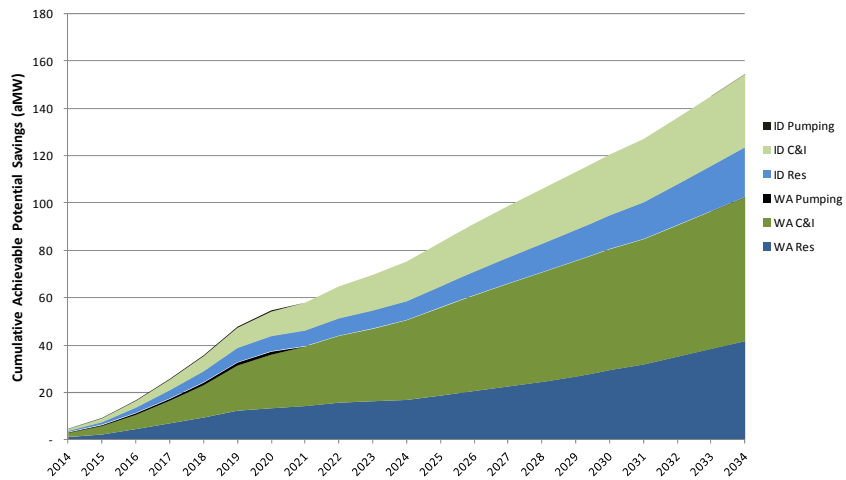


## Washington Energy Independence Act Compliance



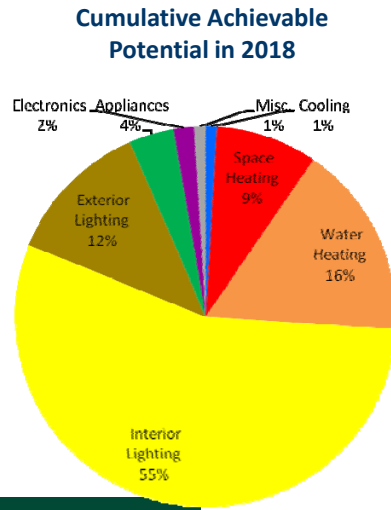
Assumes conservative estimate of Kettle Falls with 75 percent capacity factor

## All Sectors Potential



## Residential Conservation Potential – Top Measures

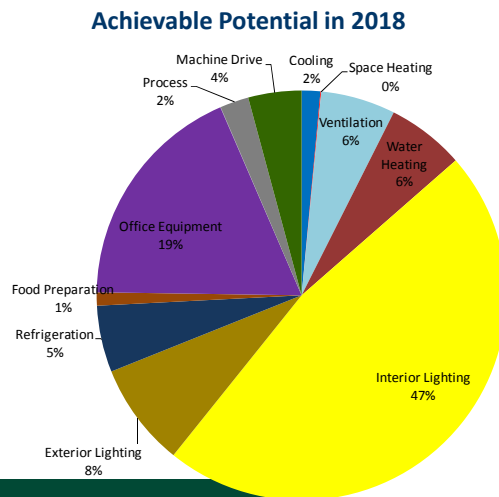
- Lighting – largely CFLs (including specialty lamps), with LEDs starting to pass the cost-effectiveness test in 2015
- Space heating savings from conversion to gas and ductless heat pumps as well as new programs for duct sealing and shell/infiltration measures
- Water heating savings from conversion to gas; also low-flow fixtures, tank/pipe insulation
- Refrigerator and freezer recycling
- Programmable thermostats
- ENERGY STAR homes and new construction efficiency



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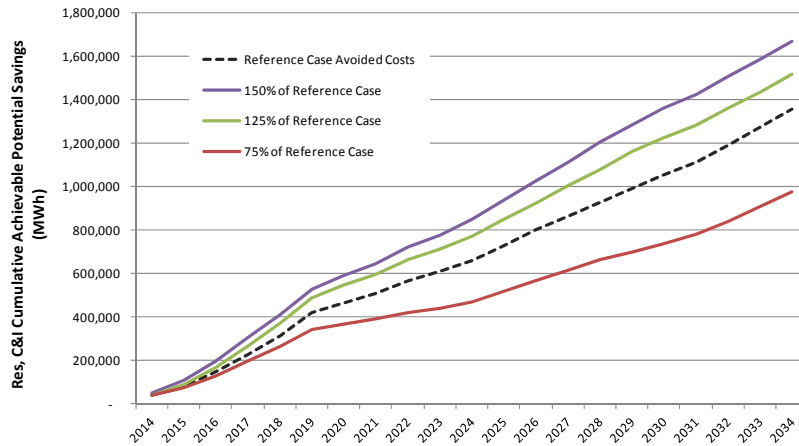
## C&I Conservation Potential – Top Measures

- Lighting – mix of lamps including LEDs, various controls
- HVAC – controls, economizers, variable air volume (VAV) ventilation
- Machine drive and process – 6% from various measures for air compressors, fans, and pumps
- Also low-flow fixtures, tank/pipe insulation
- Office equipment – efficient servers, desktop computers, and printers

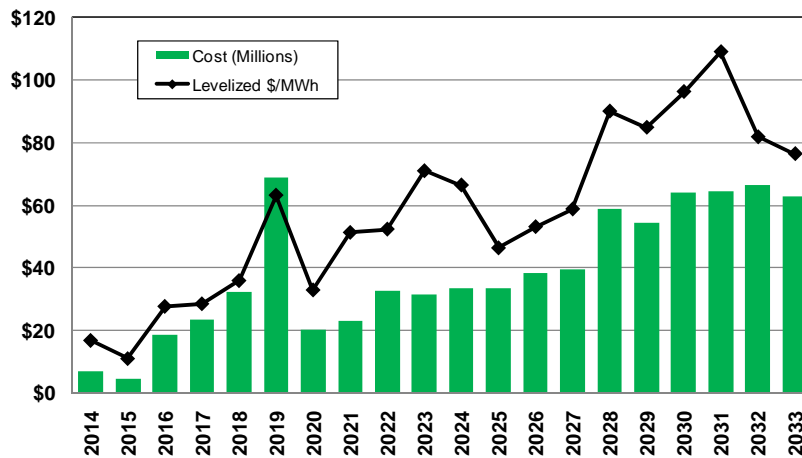


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## Conservation Potential – Sensitivity to Avoided Costs



## Cost of Conservation



## EM&V 2013 Plan (and 2013 DSM Annual Plan)

### EM&V Framework

- Primary document that lays out EM&V principles, metrics, allowable approaches, net versus gross savings issues, reporting requirements, schedules, and the roles and responsibilities of various entities.
- *This is perhaps the principle document that all stakeholders can focus on and provide high level input – the “forest versus the trees” of EM&V.*

### Annual Portfolio EM&V Plan

### Evaluation Activity-Specific Detailed Research Plans

### Site Specific M&V Plans



## Third Party Engagement

Third party consultants can be important if Stakeholders see value in the added cost

- Cons. Potential Assessment (Global Energy Partners)
- EM&V (The Cadmus Group)
- Independent facilitation (Milepost Consulting)

“Outside eyes” (e.g., a guiding consultant) can anticipate future issues if brought into the process early (Steve Schiller and Chris Ann Dickerson)

Established entities such as the Pacific Northwest’s Regional Technical Forum



## Avista Advisory Group

Non-binding oversight, policy & technical advisory committee

Meets (in-person or by Webinar) at least once per quarter

Regular reporting & Periodic Newsletters



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## Conclusions re EM&V

Meaningful story for every kWh and therm saved by measure and program...with transparent and accessible documentation

- All stakeholders satisfied that the EM&V policy and technical (i.e., quantitative methods) components are appropriately planned for company implementation and reporting

Having more effective EM&V allows Avista to provide more consistent and effective:

- Regulatory compliance through documented benefits
- Program planning through feedback
- Energy resource planning through documented savings projections
- Customer service and satisfaction through providing effective efficiency measures and documenting customer value

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## The Trade-off's We Are All Facing ...

Innovation versus risk

- How much of a risk of failure can we take to explore new opportunities?

Cost versus work product

- What quantity of resources do we devote towards EM&V at the expense of resource delivery activities, as a cost to customers and as a cost-effectiveness burden to our portfolio?

Complexity versus transparency

- At what point does our desire to represent our work in a highly accurate manner create an undue degree of transparency?
  - Technical: IRP, CPA, TRC, PACT, Incentives, IPMVP, EM&V, Program Design, TAC, BCP, RTF, NEEA, Council, Market Segmentation, Messaging
  - Policy: Discrimination, Persistence, PUC expectations

Ultimately...

...it is all about delivering cost-effective resources to our customers in a responsible manner.



## How Can We Continue to Innovate into the Future ...

- Make use of opportunities for experimentation
  - Even if it comes at the risk of the need for additional evaluation and deviance from statewide or region-wide desires for uniformity.
- One size does NOT fit all.
  - Geography, customer base, delivery infrastructure all create the need for customized approaches. View these as opportunities for exploration that benefit the entire region.
- Encourage such opportunities
  - Even when it means deviating from RTF defined measures.
  - Even when it means the need for the apply of a different UES.



## What Is the Council's Role in Moving Towards this Future?

Reward the courage for prudent experimentation and customization.

- Accept that some investor-owned utilities will utilize their flexibility to offer delivery methods that may differ from those associated with those defined by the RTF.
- Wise experimentation by these utilities bring value to the region.

Accept the need for additional evaluation and revisions to existing evaluations in recognition diversity.

- A broader diversity of programs will create the need for more evaluation of programs.
- View these as learning opportunities, even if the results don't fit precisely into the RTF mold.

