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July 1, 2009

## MEMORANDUM

**TO:** Council Members

**FROM:** Tom Eckman and Charles Grist

**SUBJECT:** Update on Draft 6<sup>th</sup> Plan Conservation Targets

Staff has met with the Conservation Resource Advisory Committee (CRAC) twice since the Council meeting in Whitefish to discuss whether the proposed 1,200 average megawatt conservation target is realistically achievable over the 2010 - 2014 period and the conservation "action plan." The accompanying memo from staff to the CRAC provides a summary of the issues and concerns raised by members at its June 19<sup>th</sup> meeting. The memo also contains the staff's analysis and response to specific issues and recommendations made on behalf of a utility workgroup that spent considerable time and effort reviewing the conservation resource assessment and proposed regional conservation targets. This workgroup was comprised primarily of the region's public utilities.

At its June 24<sup>th</sup> meeting the CRAC discussed the draft "conservation action plan." CRAC members provided numerous suggestions that staff believe resulted in a much improved set of recommended actions to accelerated conservation deployment in the region. The revised action plan also accompanies this memo.

The CRAC has scheduled a third all day meeting July 2<sup>nd</sup> to continue its review and discussion of the regional conservation targets and the action plan. Staff will provide an update of the results of those discussions at the Council meeting.

# Update and Analysis of Issues Raised by CRAC

July 14, 2009



## Issues Raised by CRAC

- Impact of increased conservation investments on regional revenue requirements ignored cost savings from avoided market purchases
- Near-term potential for savings from EISA-covered CFLs in low-income, rental and rural households should be included in plan
- Near term ramp w/o EISA-covered CFLs may not be achievable in public utility service areas
- Achievability of staff's proposed 1200 MWa conservation target



# Estimated Impact on "Regional Revenue Requirements"

## ■ Assumptions:

- 2008 Regional Retail Electricity Sales Revenue = \$11.4 billion
- 2008 Conservation Investments in Retail Sales Revenue = ~ \$300 million (2.6%)
- Proposed 1200 aMW Achieved 2010-2014
- Conservation Avoids Market Purchases @ \$60/MWH
- Utility Share of New Conservation Cost = 65%
  - » Lost-Opportunity Resources = \$3.0 million/aMW
  - » Discretionary Resources = \$2.6 million/aMW

slide 3



# Impact on Regional "Revenue Requirement"



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## Estimated Cumulative Impact on Regional "Revenue Requirement" to Achieve Proposed Conservation Targets



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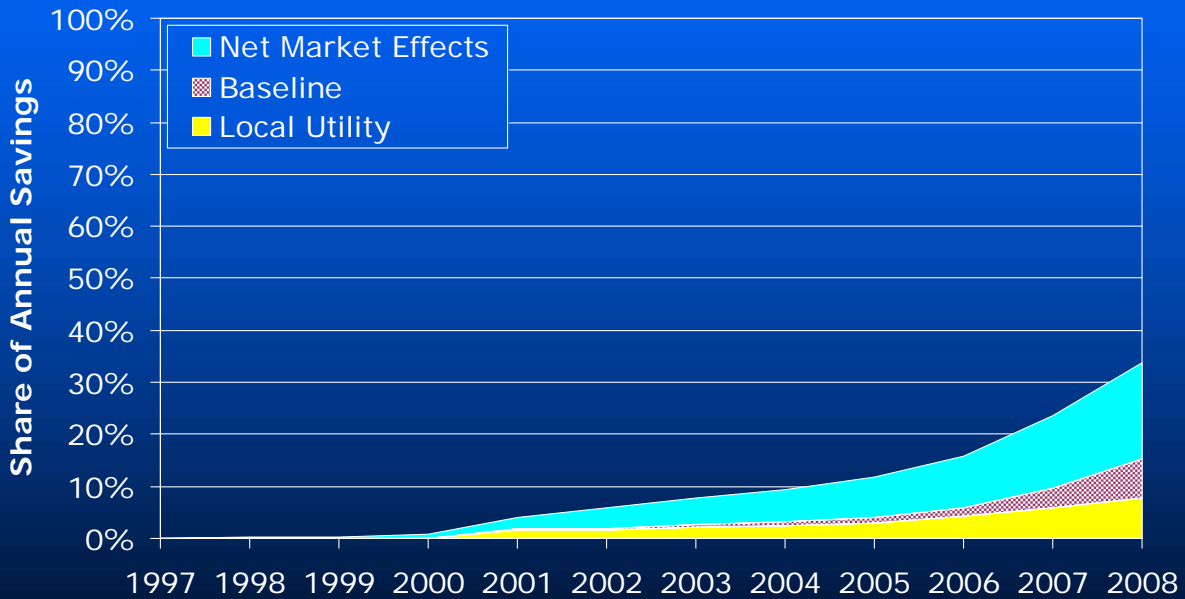
## CFL Issues

- Should EISA-covered CFLs savings from “niche markets”\* be considered “programmatic savings”?
  - Savings from all other CFLs are considered “naturally occurring” or “net market effects” from prior NEEA investments & excluded from targets\*\*
- How much overlap is there between low-income, rural and rental households (~50%)?
- Should the “niche markets” savings be added to the 5-year targets?

\*Niche Markets for CFLs include low-income, rental and rural households

\*\*NEEA Forecast 2010 – 2011 “Net Market Effects” and “Naturally Occurring/Baseline” Savings will generate ~ 200 aMW of CFL savings

# Historic Regional CFL Savings

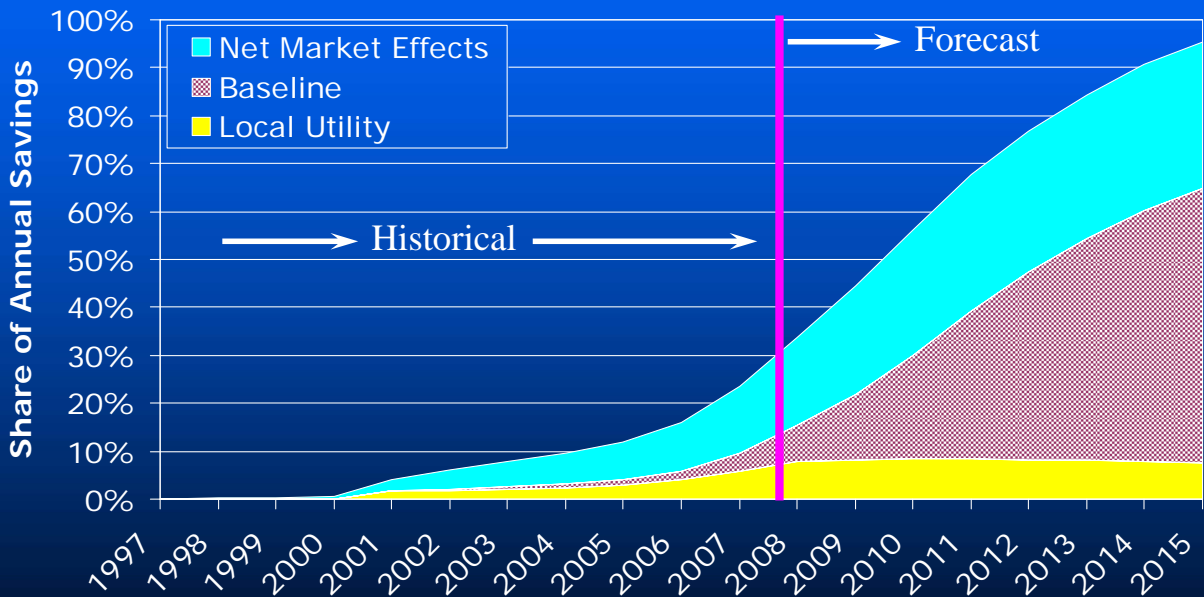


Source: NEEA Data and Projections

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# Historic & Projected Regional CFL Savings

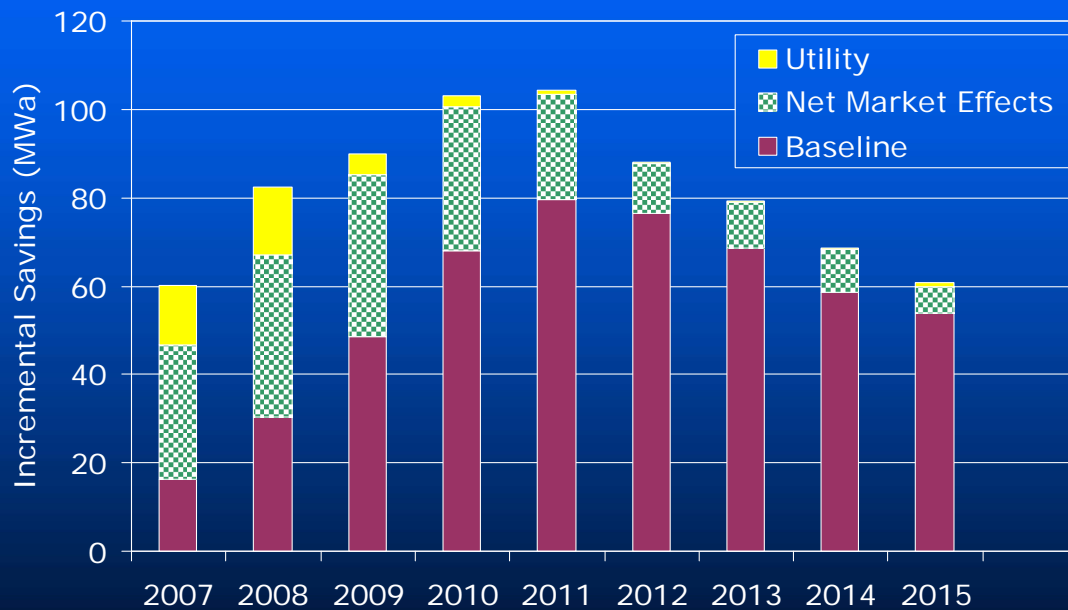


Source: NEEA Data and Projections

slide 8



# NEEA Regional Savings Estimate for CFLs



slide 9



## "Niche Market" Potential for CFLs Covered By EISA

### ■ Assumptions

- Busbar savings per lamp = 37 kWh/yr
- Census Bureau Estimates for 2007
  - » Rental Housing = 33% of all PNW households (~1.8 million)
  - » Low Income\* = 12% of all PNW households (~0.7 million)
- EIA Data for 2007
  - » Smallest 10% of utilities (by customer count) = ~263,000 residential customers (74 utilities)
- Two Year Achievable Potential – Increase average CFL saturation from "0" to 15 lamps/home in niche markets (~ 50 % saturation)

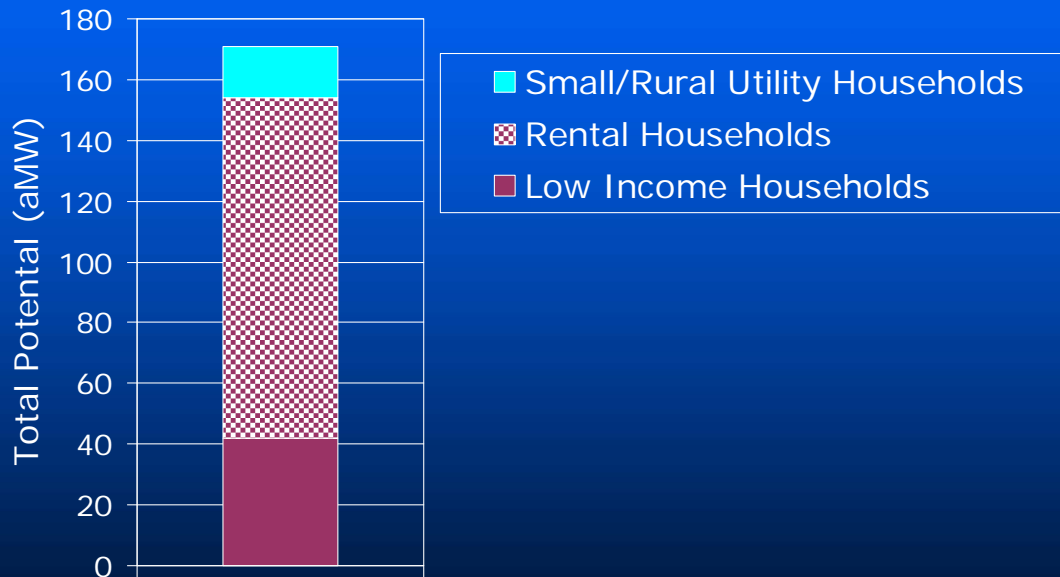
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\*Household's with income below federal poverty level



# Niche Market CFL Potential Savings

Assumes No Overlap Between Renters, Low-Income & Rural Households

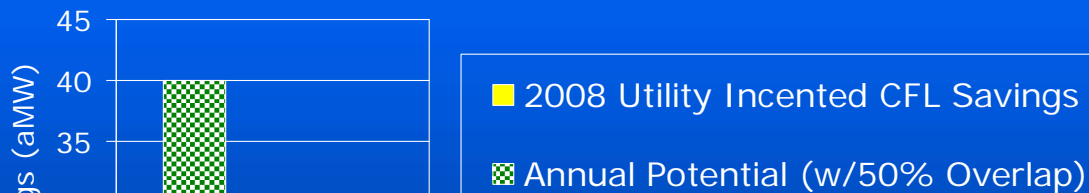


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# Niche Market CFL Potential

Annual Savings If Captured Over Two Years  
Assumes 50% Overlap Between Renters, Low-Income & Rural Households



Assuming 50% overlap, maximum annual EISA-covered CFLs savings potential from niche market would be between 40–45 MWa if all of it were captured in two years.

This is three times higher than “net savings” from utility incented CFLs in 2008. So alternative program delivery would be needed to ensure ~10 million CFLs/yr are installed in “new sockets” in the low-penetration niche markets

slide 12



# Opinions on CFLs

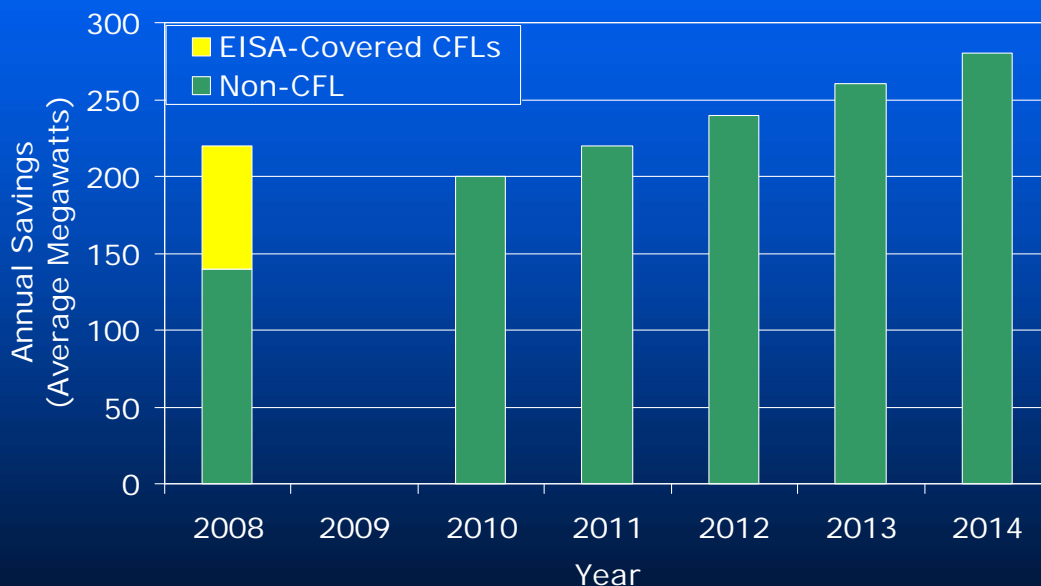
- Staff assessment included niche market CFLs in the load forecast, at the pace of federal standards
  - Savings captured by 2020
- CRAC & staff agree there is value to develop niche market CFLs in advance of standards
  - Low-cost savings are valuable early
- CRAC is divided on whether niche market CFL savings should be added to 5-year target
  - Some utilities see niche CFLs as near-term option to help transition to higher targets
  - Others believe counting niche CFLs double counts the savings unless the regional conservation target is increased & will reduce needed efforts in other areas

slide 13



# Proposed Targets

Five year total: 1,200 MWa



slide 14





# One Scenario of Meeting Proposed Targets

Five year total: 1,200 MWa (965 MWa Non CFL, 150 MWa Specialty CFL, & 85 MWa Efficient Showerheads and other non-ESIA CFLs deployed to meet target)

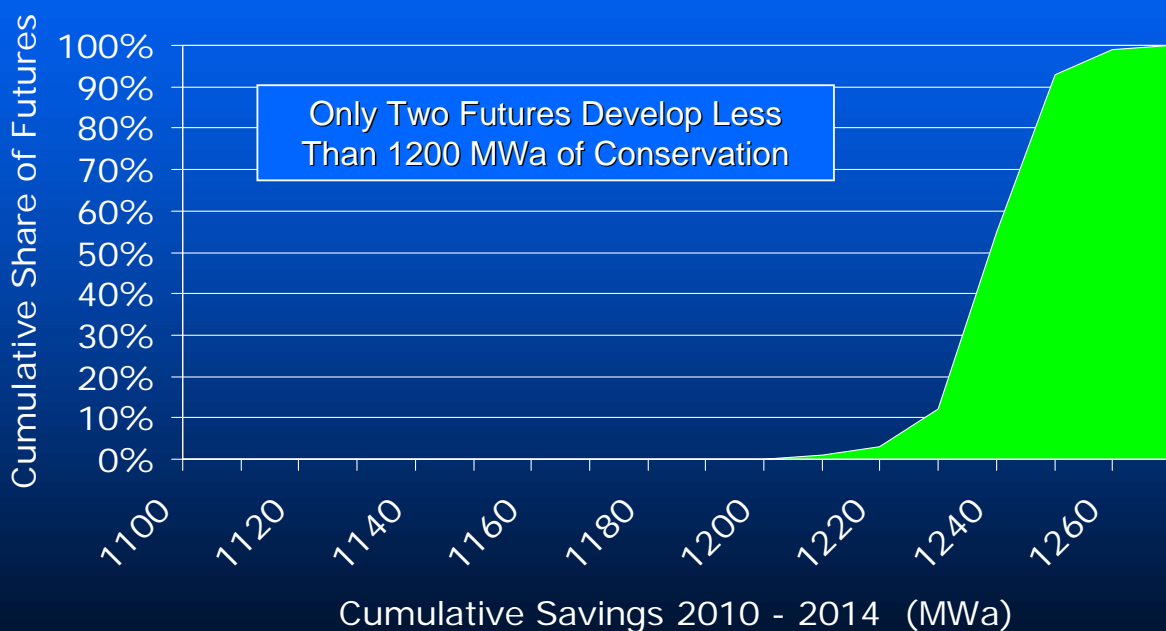


slide 15



# Base Case Portfolio Conservation Resource Development 2010-2014

Distribution of Cumulative Savings Across Futures

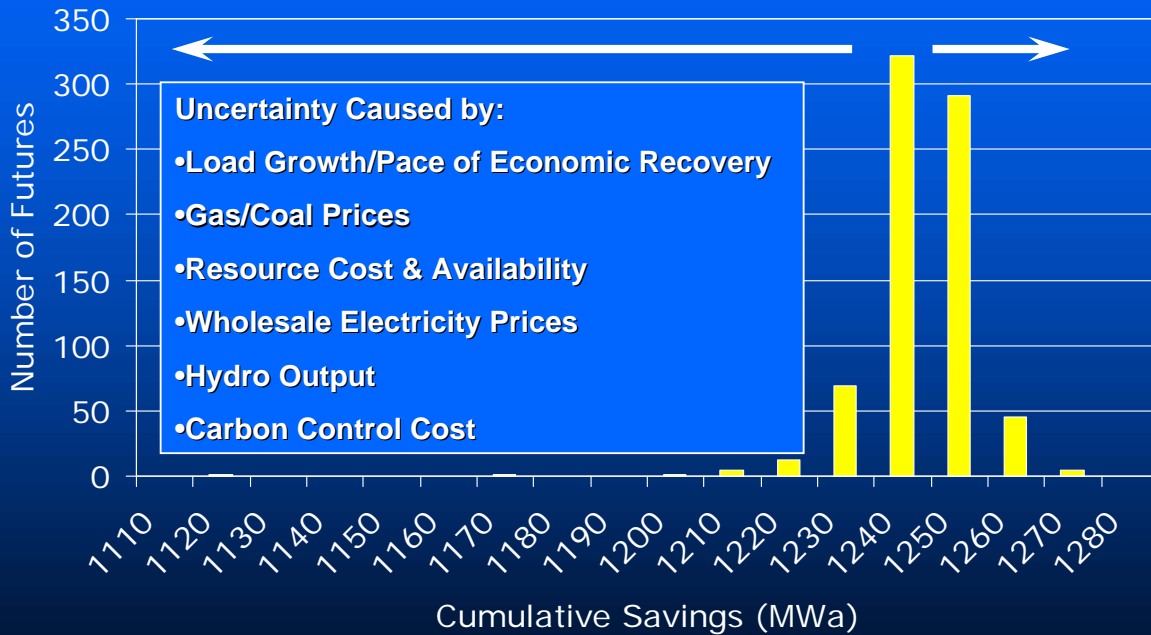


slide 16



# Base Case Portfolio Conservation Resource Development 2010-2014

## Distribution of Cumulative Savings Across Futures



slide 17



## Conservation "Achievability" Uncertainty Is Not Captured in RPM

- Examples of Sources of Conservation Uncertainty
  - Program Participation (e.g., recession increases program participation due to "workforce" availability)
  - Technological (e.g., Ductless heat pumps fail to provide anticipated savings, OLED lighting develops faster than anticipated)
  - Supply Chain (e.g., Heat pump water heater manufacturers fail to meet announced product availability schedule)
  - Marketing Transformation (e.g., "green/sustainability" drives consumer electronics market faster than anticipated, industrial business practices adopted slower than forecast)
  - Codes and Standards (e.g., heat pump water heater adopted as minimum standard)

slide 18



## Staff Proposal for Addressing Uncertainty in Conservation "Achievability"

- Set Range of Conservation Targets to reflect uncertainty
  - "Expected Value" = 1200 MWa
  - Low Case = 1100 MWa
  - High Case = 1400 MWa
- Develop & Size to Achieve "Expected Value" Targets
  - Programs, Budgets & Capability Building
- Count EISA-covered CFLs, delivered by utility programs, towards first two years of targets
  - Prior to federal standards
- Convene Mid-Term "Check-in" on Progress Towards Targets and Capability Building
  - Identify progress metrics for key areas, both MWa & Milestones
  - Adjust Targets as needed (up or down) for remainder of period

slide 19



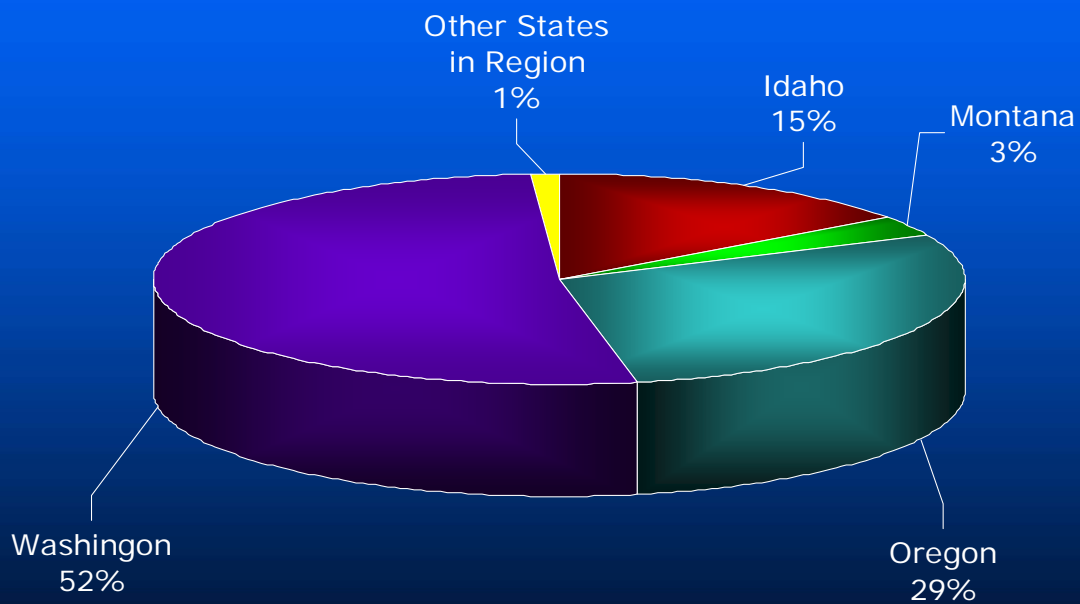
## Why Target 1200 MWa As Basis for Setting Goals for 2010 - 2011?

- We've Done It Before
  - The savings goals for 2010 and 2011 are at or equal to savings achieved in 2007, 2008 (and probably 2009)
- Supplemental Funding is Available
  - ARRA funds are available for energy efficiency and will clearly increase near savings
- Public Utilities have more incentive to accelerate conservation
  - Bonneville's "tiered rates" take effect in 2012
  - The first I-937 reports are due in 2012

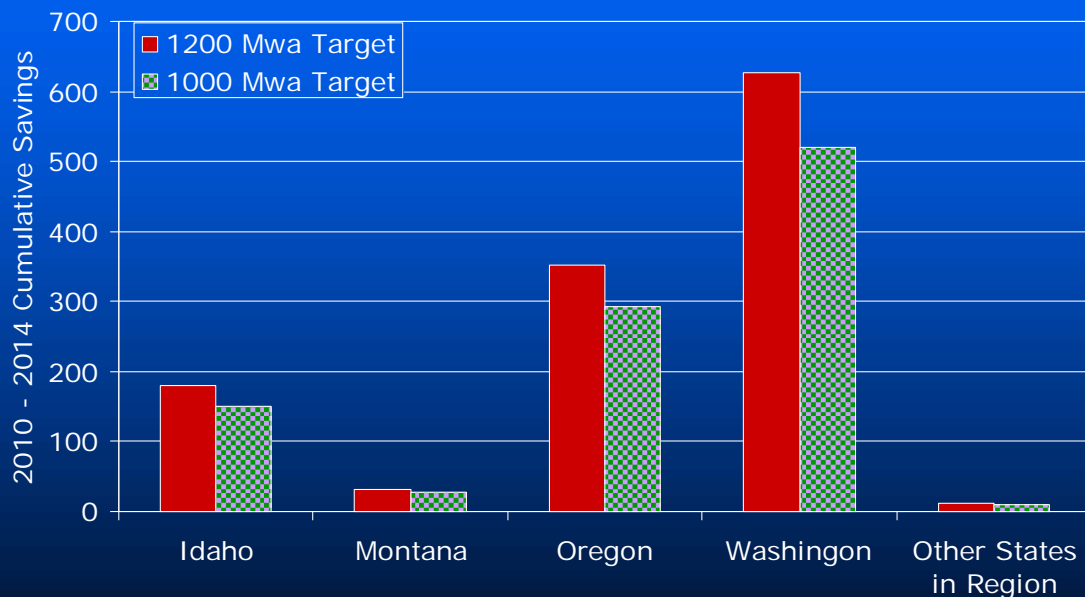
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## State Level Share of Savings Goals (Regardless of Target)



## Cumulative Difference in Savings for 1000 and 1200 Mwa Targets by State



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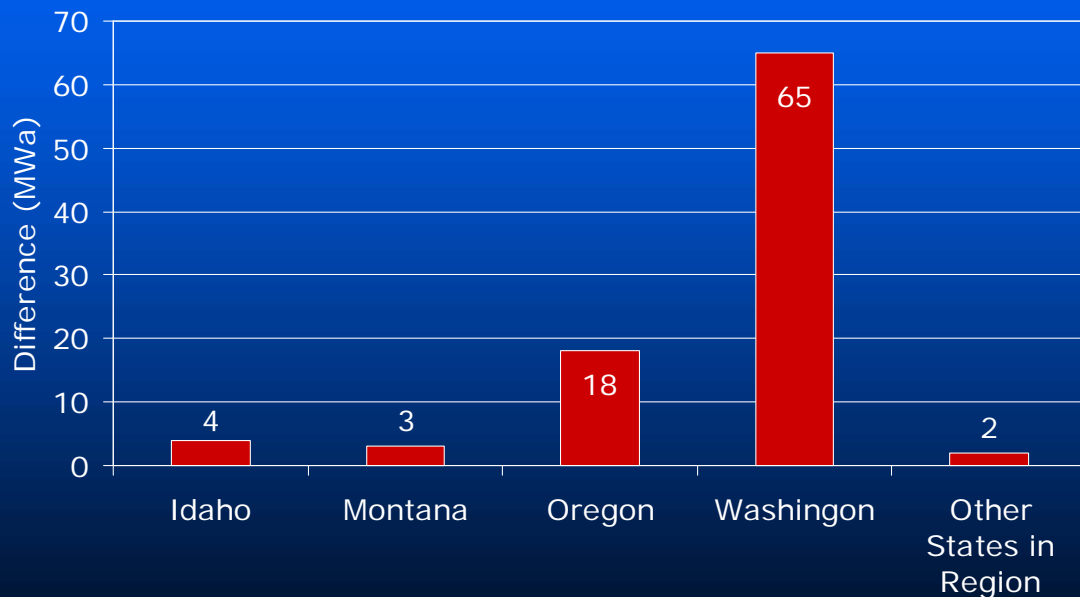
## The "Public System" Target

- Some Public Utilities advocated for 20% lower regional conservation target than recommended by staff
- Based on 2007 Energy Information Administration Retail Sales Data, "Public System" represents 46% of regional load
- "Public System" Five Year Targets
  - @ 1200 MWa= 552 MWa
  - @ 1000 MWa= 460 MWa
- Difference = 92 MWa over 5 yrs or ~ 18.4 MWa/yr

slide 24



## Difference in 2010 – 2014 Cumulative Savings Targets for Public Utilities Between 1200 and 1000 MWa Targets by State



slide 25



## Example: How the “Public System” Could Acquire an Additional 18 MWa/yr

- If 18 MWa/Year savings were achieved proportional to regional load, the share down would be:
  - 50% (~ 9.2 MWa) from the five largest utilities
    - » (EWEB is the smallest of these w/87,000 customers)
  - 30% (~ 5.5 MWa) from the next 24 largest utilities
    - » (Douglas County PUD is the smallest w/18,000 customers)
  - 10% (~1.8 MWa) from the next 18 largest utilities
    - » (Lakeview Light & Power is the smallest w/11,000 customers)
  - 10% (~1.8 MWa) from the 74 utilities smaller than Lakeview
- OR -
- The 30 largest might increase conservation by 10 %

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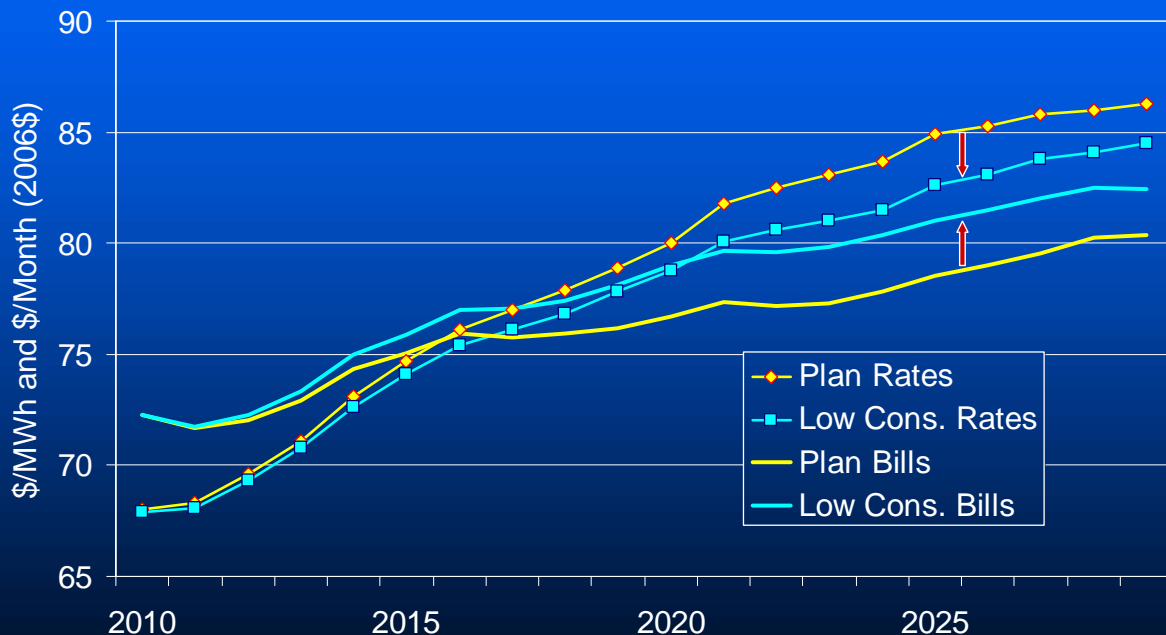
# How Could The Smallest Utilities Meet 1.8 MWa/yr Target?

- Smallest 74 public utilities have 263,000 residential customers
- Average 1.2 showerheads per home w/savings 130 kWh/yr
- Average 7 CFLs not covered by federal standards w/savings 37 kWh/yr per lamp
- Total Potential = 12.4 MWa total
  - or 2.5 MWa/yr over 5 yrs
  - or 1.8 MWa/yr over 7 yrs

slide 27



# Reduced Conservation Lowers Rate But Increases Consumers' Bills



slide 28



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July 1, 2009

## MEMORANDUM

**TO:** CRAC Members and Interested Parties

**FROM:** Tom Eckman, Chair  
Charles Grist, Vice-Chair

**SUBJECT:** Summary of June 19 and June 24 Meeting and Staff Response

### **Summary of June 19, 2009 Conservation Resources Advisory Committee Meeting**

Council staff opened the meeting by expressing its appreciation for all of the time and effort that Bonneville, utility and staff from other organizations and consulting firms have dedicated to the review of its regional conservation resource assessment. Council staff believes this work will pay large dividends as the region accelerates its conservation acquisition programs.

Staff then turned to the issue of the difference between its assessment of the contribution of CFLs to total regional savings and that presented by PCC and PNUCC at the Council meeting in Whitefish, MT. Staff presented a revised estimate of the savings from CFLs and non-CFL activities for 2007 and 2008. At the Whitefish Council meeting staff stated that its preliminary estimate of conservation savings from non-CFL measures was 150 MWa in 2007 and 160 MWa in 2008. Based on more in-depth discussions with NEEA staff, the Council staff's current estimates are that non-CFL savings were about 140 MWa in both 2007 and 2008. The primary reason for the revision was that NEEA reduces both the savings it claims as well as those reported to it by its utility partners to account for CFL sales that replaced previously-installed CFLs. This and a small adjustment to correct a data base error resulted in an 10 MWa reduction in total regional savings in 2007 and a 15 MWa reduction in 2008 regional savings from CFLs. Staff concluded from its review of the data that Bonneville and the public utilities have had a substantially higher reliance on CFLs than the Energy Trust of Oregon (ETO) and the regions investor owned utilities. Bonneville's representative on the CRAC agreed with this assessment.

Following the discussion of CFLs, the meeting was devoted to reviewing analysis prepared by Bonneville, two consultants and about 20 public utilities (Workgroup). The Workgroup presented analysis of the Council staff's conservation assessment and proposed 5-year conservation targets. The Conservation Resources Advisory Committee (CRAC) listened to the



presentations and offered initial reactions and comments on some aspects of the Workgroup's presentation and concepts. The meeting ended with a Council staff presentation of its analysis and recommendations on 5-year conservation targets. The staff presentation was an amended version of the presentation that staff made to the Council in June at the meeting in Whitefish, MT.

At the close of the meeting several Workgroup members felt that inadequate time had been available for sufficient dialogue on the issues they had raised. Other CRAC members asked if there would be a formal response to the Workgroup from staff. In response to the desire to continue dialogue on the issues raised at the meeting an additional CRAC meeting was scheduled. The meeting was held on June 24<sup>th</sup> to discuss the draft conservation Action Plan. At the June 24<sup>th</sup> meeting it was agreed to hold another CRAC meeting on July 2<sup>nd</sup> to continue the dialogue on technical issues raised by the Workgroup and to allow the staff to present its response.

The remainder of this memo is an attempt to summarize the concepts and analysis presented by the Workgroup, summarize reactions of the CRAC and provide formal responses from Council staff. Minutes of the meeting will be available at: <http://www.nwcouncil.org/energy/crac/Default.htm> after they are approved by the CRAC. The presentations of the Workgroup and staff are available at <http://www.nwcouncil.org/energy/crac/meetings/2009/06/Default.htm>.

### **Workgroup Presentation 1: Technical Considerations. Rich Arneson, Tacoma.**

Rich Arneson raised technical issues regarding three measures on the Council's conservation assessment; Heat Pump Water Heaters (HPWH), Residential Lighting (CFLs) and Industrial Energy Management measures.

**HPWH:** Arneson recommended moving the HPWH to an emerging technology watch list, rather than a conservation target. Arneson identified key reservations to this technology in the supply curves for deployment 2010-1014.

- The HPWH was not "available" during the development of the 6<sup>th</sup> Plan
- The RTF has not vetted the 6<sup>th</sup> Plan HPWH assumptions
- The Council over estimates regional applicability due to water heater location
- Substandard first-hour recovery ratings of HPWH
- Poor climate suitability in the PNW which would lower performance assumptions
- Council installation costs are too low
- Historic performance is suspect and there have been no successful programs

CRAC Comments Summarized:

Ken Keating asked staff to clarify its assumptions on exhaust ventilation and cost. Tom Eckman identified that the bulk of the savings from HPWH come from the replacement of existing electric water heaters when they fail. The estimated costs are incremental over a high-efficiency (EF-0.94) new electric resistance water heater. Jeff Harris acknowledged there is some uncertainty regarding whether or not HPWH products to be offered this fall will be appropriate for the PNW climate. But the savings potential is huge and low cost and can not be ignored. He has more issues with market delivery than with the technology. Ken Eklund

identified that large tank size or exhaust air can alleviate potential ambient temperature problems. Karen Meadows said that the issue is how the Plan should treat measures with uncertainty. Mary Smith said the issue is how to treat uncertain measures in the targets.

#### Staff Analysis and Response HPWH:

Concern: The HPWH was not “available” during the development of the 6<sup>th</sup> Plan

Staff Response: First, the Plan does not prescribe the measures that utilities use to achieve its conservation target. However, assuming this were the case, HPWH would have to save a cumulative total of 12.2 MWh by the end of 2014 or about one percent of the staff’s proposed 1200 MWh target. Nevertheless, while HPWH are expected to contribute a very small fraction towards meeting the region’s near term conservation targets they are expected to play a much larger role post-2014. While a concern has been raised that this technology is not currently available for sale, the Act’s requires that any resource included in the Plan to be “*reliable and similarly available within the time it is needed.*” The Act does not require that the resource be available at the time the Plan is adopted. For example, the draft Plan will also include both geothermal and wind resources. These resources and the transmission lines necessary to connect them to the regional power grid have yet to be sited, licensed and built.

In developing its regional assessment of the potential savings available from HPWH staff relied heavily on data and analysis prepared for the US Department of Energy’s (DOE) rulemaking process on water heating. Before DOE promulgates any standard it carries out detailed analysis of the costs and benefits associated with the options for improving the efficiency of the appliance or equipment under review. At the very outset of this process, DOE conducts a “screening analysis” to determine whether a particular measure or technology will be considered.<sup>1</sup> DOE’s review of HPWH found that this technology satisfies all of its screening criteria, which include 1) Technological feasibility, 2) Practicability to manufacture, install and service on a scale necessary to serve the relevant market at the time the standard takes effect and 3) Impact on the performance of the product for consumers. The DOE is required to publish a final rule amending energy conservation standards for residential water heaters no later than March 31, 2010. Under the federal law governing DOE standards setting, these standards will take effect five years from their adoption, in this case, no later than March 31, 2014. Staff viewed DOE’s decision to consider HPWH as a minimum federal standard within five years as evidence their “technological and market readiness.”

Concern: The RTF has not vetted the 6<sup>th</sup> Plan HPWH assumptions.

Staff Response: The primary issue raised at the meeting was that the RTF did not review the assumptions used to determine the regional potential (e.g., number of applicable units) and ramp rates. Staff agrees that this is indeed the case. However, staff does not agree that this should be viewed with concern. The RTF was not asked to review input assumptions of this type for any measure included in the Council’s conservation supply curves. The RTF’s role has historically focused on establishing measure cost and savings or evaluation protocols.

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<sup>1</sup> Procedures for Consideration of New or Revised Energy Conservation Standards for Consumer Products; Final Rule. 10 CFR Part 430, Section 4.

The vetting of assumptions used to determine the aggregate conservation potential for measures is one of the primary functions of the CRAC. One it is carrying out with great vigor and thoroughness. Moreover, in addition to soliciting the CRAC's review of these assumptions, staff held two full-day stakeholder meetings to explain all of the inputs to the Council's conservation resource assessment. Staff's analysis, and updates have been was posted on the web for review by interested parties since February 2009.

Concerns: The Council over estimated regional applicability of HPWHs. Their application is much more limited due to the location of most water heaters, poor climate suitability and an underestimate of their installed cost.

Staff Response and Analysis: Staff assumed that HPWHs could be installed in one-half of the single family and manufactured homes with electric water heat in the region over the next 20 years. Staff assumed that the HPWH, if located inside the home would vent its exhaust air to the home's exterior. If the HPWH was located outside the home, it would receive its supply air from inside the home. Installing HPWH in these configurations ensures that the air supplied to the HPWH is nearly always at or above 60 degrees F and the cooled exhaust air does not increase the heating load of the home. These configurations eliminate the "low temperature" performance impact and permit HPWHs to be installed in all areas of the region since their performance is independent of local climatic conditions.

However, staff agrees that the installed cost of some HPWH in the region were understated. The DOE analysis of HPWH installation cost assumes an average of \$560 for a typical 50 gallon unit compared to \$457 for a standard resistance water heater (2007\$). Staff used this average incremental installation cost for all units. This "average" represents a mix of new and existing units installed indoors and outdoors in vented and unvented configurations. The DOE estimated that the incremental installation cost for units in the "vented" configuration assumed by staff were similar to cost of installing a condensing gas water heater, or about \$425. DOE also assumed that these installations might require an addition \$100 to cover the cost of a booster fan, venting kit and weatherproof duct termination.<sup>2</sup>

Using the values for all HPHW in the region increases their total installation cost by \$145 from \$560 to \$706 (2007\$). Staff updated its analysis of HPW cost effectiveness assuming this higher installation cost. The revised assumption reduces the Total Resource Cost Benefit-to-Cost ratio from 2.2 to 1.8 and increases the Total Resource levelized cost from just under \$20 MWH to \$26 MWH. Even with the higher average installation cost HPWHs remains highly cost-effective.

Concern: HPWH have substandard first-hour recovery ratings

Staff Response and Analysis: All of the manufacturers who have announced their intention to supply HPWHs provide electric resistance backup in their units. As a result, staff assumed that

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<sup>2</sup> US Department of Energy. Preliminary Technical Support Document: Energy Efficiency Program for Consumer Products, Energy Conservation Standards for Heating Products, Appendix 8-A, Installation Cost Determination. pp. 8-A-8 and 8-A-9. January 5, 2009. ([http://www1.eere.energy.gov/buildings/appliance\\_standards/residential/pdfs/app\\_8a\\_direct\\_heat\\_standards\\_tsd.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/residential/pdfs/app_8a_direct_heat_standards_tsd.pdf))

consumers should see the a comparable first-hour recovery rate for a HPWH as they would similar sized electric resistance water heater.

Concern: Historic performance is suspect and there have been no successful programs

Staff Response and Analysis: Staff had previously reviewed the Oak Ridge National Laboratory report on the results of a field test of HPWH presented by the Workgroup at the CRAC meeting. The Workgroup highlighted study results where two of three Northwest installations performed poorly compared to other installations across the Country. Staff had previously discussed the performance of these units with the report's principal author (Dr. John Tomlinson) when he presented its findings at a HPWH workshop sponsored by the Council in 2002. The report and Dr. Tomlinson explained that the Seattle household had the highest hot water use of all test locations and the Portland site the lowest hot water use. The high hot water demand required more use of the backup resistance elements, hence produced less, but still significant (40%) savings. On the other hand, due to the low hot water demand in the Portland household, the tank "de-stratified" causing the lower resistance element to energize, even when the heat pump could have met all of the necessary water heating demand.

Staff also notes that with regard to cold climate performance, although two of the units in the PNW exhibited low savings, the third unit in Hillsboro, OR produced the second highest COP of all sites, and units in Connecticut and South Dakota - both cold climates, achieved COPs above 2.0. Moreover, as stated above, staff assumed that HPWH would be installed using venting configuration that isolated their performance from local climatic conditions.

Residential Lighting (CFLs covered by federal standards): Arneson raised several issues around the idea that the Council analysis inappropriately excluded from it's target any savings from CFLs covered by the federal standards adopted in 2007 and effective beginning in 2010.

Arneson stated that significant potential remains 2010-2014. Arneson made the following points:

- Actual saturation of CFLs is below draft plan assumption
- The federal phase-out of incandescent bulbs ends in 2014
- Council did not consider savings from halogen to CFL bulbs which may erode CFL savings assumed in the Plan
- There are low-income, rental unit and other niches where CFL saturation is low and could provide valuable savings in the near term

Arneson recommended several changes

- Count CFL savings towards targets in a stair-step phase out
- Evaluate savings from federal standards, particularly halogen bulbs
- Consider a program to promote high-efficiency CFLs

CRAC Comments Summarized: Many CRAC members thought it would be OK to count some CFLs towards the targets. But there was disagreement about what to count and whether it should add to the proposed targets. Many thought the savings from niche CFLs, should not substitute for other measures also identified as cost-effective and achievable. Fred Gordon said that Energy Trust of Oregon (ETO) took federally-covered CFLs out of its portfolio one year

ago. ETO is now focusing on specialty CFLs like those recommended in 6<sup>th</sup> Plan. Gordon indicated that the ETO might consider adding some CFLs back in as a cost-effective short-term niche opportunity. Workgroup members said that the intent was not to challenge the proposed targets. Instead they are seeking an accurate reflection of the marketplace, and a reasonable and meaningful target. Ralph Cavanagh made a plea to the CRAC to make judgment about the aggregate target and its reasonableness. Of course, the program-by-program implementation will be different than expected. The overall target is about one percent of system consumption per year. Is that reasonable?

**Staff Response and Analysis:** Staff agrees that the market penetration in low income and rental housing is well below the regional average. The Council supply curve analysis assumes that these savings would be captured by federal standards by 2020. However, the Council's portfolio analysis clearly shows that securing low cost energy efficiency savings early results lower economic cost and provides risk mitigation benefits to the region. Staff believes that capturing savings from CFLs installed in low income and rental households earlier in the planning period would be advantageous. However, staff also believes it would require different and likely more expensive program delivery mechanisms than those that have achieved higher market penetration in non-low income and rental market segments. That is, the region could not rely on current program designs, such as "Change a Light" or retail coupons, since these programs have failed to penetrate these two niche markets.

Staff estimated the potential savings from CFLs available in the low income and rental housing across the region. According to Census Bureau approximately 12% of the region's household fell below the federal poverty level in 2007. Also according to the Census Bureau, almost 33 percent of the region's households were renters in 2007. In order to establish an "upper bound" on the potential savings from CFLs in these two niche markets, staff assumed there was no overlap between renters and low-income households. Staff further assumed that the objective of programs targeted at these two markets would be to raise the saturation of CFLs in those households to a level equivalent to the average of the remainder of the market, or roughly 10 - 12 lamps per home. Under these assumptions, total regional potential savings in low-income and rental housing is at a maximum between 140 - 165 MWa. A more realistic estimate might be to assume there is at least a fifty percent overlap between renters and low-income households, in which case the total savings from these markets might be 70 to 80 MWa. In order to remain consistent with the Council's analytical methodology adding savings from CFLs installed in low income and rental households to the regional conservation potential would also required than they be removed from the load forecast. Due to their low cost and relative ease of implementation, savings from these markets would also result in higher five year targets.

Staff also agrees that there is some chance that the 30 percent improvement in efficiency levels called for in the federal standards could be achieved by non-CFL lighting technologies, undercutting the anticipated savings from the standards. It is impossible to determine whether these lower efficiency technologies will be cost-competitive with CFLs between 2012 and 2020 when the second step of the federal standards take effect. Therefore, staff has included in the draft Action Plan, a recommendation that as part of the biennial review of the Council's plan should include an assessment of the status of the residential lighting market.

Although the CRAC did not specifically raise this issue, staff believes that savings from CFLs that are attributable to the prior investments Bonneville, ETO and the region's utilities have

made through NEEA should also somehow be addressed in setting the regional targets. NEEA forecasts that between 25 and 30 MWa of annual savings from CFLs covered by the federal standard will occur in 2010 and 2011 as a result of their market transformation activities between 2005 and 2009. Currently, these savings are included in the Council's load forecast and are not included in the regional assessment of conservation resource potential. However, staff is concerned that savings from market transformation investments may be perceived as not counting towards the region's conservation targets, when in fact they are. One potential approach would show these savings as part of the regional target, but note that they are anticipated to occur without further investment. While this issue is currently most germane to treatment of CFLs savings, it is anticipated that NEEA will face this same issue as it targets other markets with similarly large potential savings.

Industrial Energy Management and Optimization Measures: Arneson recommended further reducing measure ramp rates used by staff to reflect challenges perceived by some of the utilities. He cited several factors that may reduce near-term achievability of these measures. These included:

- Competition with non-energy projects for limited customer investment capital
- Recent reductions in industrial engineering staff
- Council examples are unique, few firms can achieve such savings
- M&V Protocols needed to claim verified savings are not well defined

CRAC Discussion Summarized:

Workgroup member Doug Swier stated he was very uncomfortable with savings estimates and ramp rates for pulp and paper based on ten years of experience at Cowlitz PUD. Jim Lazar countered that incentives offered were very small. What would happen if utilities offered to pay full value of the energy savings?

Staff Response and Analysis:

- The ramp rates for the measures & practices in question have already been reduced significantly to reflect these same concerns raised earlier. The original higher ramp rates were recommended by the firm that prepared the industrial assessment and are based on their collective judgment, experience and familiarity with these activities across the country and offshore.
- This reduction was discussed by CRAC on April 17, 2009 where there was a lively debate between NEEA staff and the Northwest Energy Efficiency Council on the readiness and availability of qualified PNW private-sector industrial expertise to help firms develop these business practices. Good points were made on both sides. Staff believes its modified ramp rate assumptions are a reasonable approximation of achievability.
- The Council's estimates of savings from these measures already takes into account that they are only applicable at the largest of firms in a few industries.
- Staff gauged whether its overall industrial targets are reasonable by looking at recent regional industrial savings reports. Reported industrial savings for 2005 to 2007 ranged between 32 and 38 MWa per year. Staff's proposed industrial targets ramp from 35 to 55 MWa per year and average 45 MWa per year and over the 5-year period. This would be about a 30 percent increase over regional 2005-2007 levels.

- Public utilities serve about 55 percent of regional non-DSI industrial load. However, in the 2005-2007 time period, only about 20 percent of industrial savings were reported by public utilities and BPA. Based on this data it appears that savings in IOU service territories are already meeting or exceeding more than their “share” of the Council’s proposed 2010-2014 targets for industrial conservation. The data also explains the large gap between current activities and Council targets perceived by BPA and some public utilities. There may be some good reasons for the differences. But it also may mean that significant increases in industrial conservation are possible in the 2010-2014 timeframe for the public utility system. BPA is already gearing up for a renewed effort in industrial and Council staff believes this effort will uncover new opportunities to meet the targets in the near future.

**Workgroup Presentation 2: Process review and readiness issues. Lauren Gage BPA.**

Gage summarized the process the Workgroup used to develop its analysis and recommendations. A consultant, Cadmus, was retained to help develop the analytic review. A significant amount of Workgroup resources were dedicated to reviewing the details of the development of the Council’s analysis. NEEA provided data and information based on its market transformation work in specific markets. The workgroup review concluded that the Council’s conservation analysis is robust with regard to overall conservation potential and cost.

Gage identified the large gap between the Council’s staff’s proposed five-year targets and the current conservation activities of the BPA and public utility system. This determined the focus of the main body of the Workgroup 2 analysis on the “readiness” of each of the conservation bundles identified by the Council. Gage characterized the work as preliminary and suggested it would be a good framework for discussing research needs and appropriate implementation strategy with a broader regional group.

The group divided readiness into three levels, Full/Partial/Low. It identified four aspects of readiness; Technology, Verified Savings, Market, and Program. Each of the Council’s measure bundles were assessed for the four areas of readiness. Summary charts of readiness were presented. The charts indicated how much of the proposed 5-year conservation targets were Full/Partial/Low readiness based on the assessment of the workgroup.

CRAC Discussion Summarized:

Cavanagh: Asked whether the Workgroup had considered there may be positive surprises too. That some measures or program will capture savings faster than the staff estimated.

Eckman: Questioned the Workgroup assessment of partial readiness for measures without “deemed” savings by the RTF. He suggested that program evaluations could substitute for RTF deemed savings and thus promote many measures from Partial to Full readiness.

Cavanagh: Suggested that more resources are needed to support the RTF to help accelerate the readiness of savings estimates.

Keating: Questioned the Workgroup decision to group Partial and Low readiness together. He suggested instead grouping Partial and Full readiness together which paints a much different picture. Keating noted that Low readiness is a very small fraction of the proposed five-year targets for any of the readiness categories the Workgroup identified - less than 100 MWa out of 1200 MWa.

Lazar: Agreed there are uncertainties in the conservation assumptions as in all assumptions in the 6<sup>th</sup> Power Plan including gas prices, carbons costs, or the cost of wind generation. He urged the group to recognize that high conservation acquisition rates emerge from all of the uncertainties analyzed in the Council’s portfolio modeling and sensitivity analysis. The high conservation targets proposed by staff are not exactly right but they are a close approximation of the optimal resource development which would be hugely valuable to the region.

Gordon: Sees the targets as attainable in the near term. Energy Trust is already targeting more than its “share” of the Council targets based on its own assessment in the service territories it serves. He believes the region can ramp up to the proposed levels at the same time it develops the technology, markets and verified savings estimates of the more difficult measures.

Group: There was further discussion about to what degree it is appropriate to set targets without complete understanding the likely success of development and implementation aspects of each measure. While no consensus was reached on the issue, there was general agreement that outcomes will be different than expectations for individual elements and on the whole.

#### Staff Analysis:

- The Workgroup analysis is an excellent first step that could form the basis of a thoughtful, multi-year, strategic and tactical plan to achieve the proposed targets. Staff hopes that building on the analysis will identify specific actions, budgets, and milestones needed to achieve the targets.
- Staff generally agrees that some measures or program bundles are less ready than others. Staff’s analysis uses year by year measure penetration assumptions, or ramp rates, to account for the readiness of each of the measures and the region’s ability to accelerate activities. So in effect staff believes it has accounted for varying degrees of readiness in its assessment.
- Staff agrees there is uncertainty about the pace at which readiness can be overcome. But we disagree that the uncertainty is predominantly in the direction of slower penetration rates.
- Staff believes that removing readiness barriers can take place concurrently with achievement of the proposed average megawatt targets. Staff agrees that resources need to be dedicated to both of those efforts simultaneously. That is how the region has been doing conservation for the last 25 years.

#### Technology Readiness:

- The measures identified as lacking full technological readiness by the Workgroup are: HPHW, TVs, LEDs for specialty lighting, Exterior lighting, Commercial Recommissioning, Low Pressure Distribution Systems, Rooftop Optimization, Industrial Energy Project Management, Plant Energy Management, and Integrated Plant Energy Management and non-CVR distribution efficiency.
- Staff disagrees with the Workgroup’s assessment of technological readiness for all of the measures identified as Partial and Low readiness. Or we do not understand how the Workgroup determines technology readiness. Staff believes there is adequate evidence that all the measures in its conservation assessment are technologically ready or will be so by 2010. Technological readiness is one of the key criteria for inclusion in the assessment. Staff also notes that there are other measures that are technologically ready but are not in the assessment for lack of time to include them. These could add upside savings potential in the next five years. For example, measures with promising savings not now included in the assessment include, commercial cooking equipment, evaporative



cooling equipment, and a suite of measures in large-scale information technology centers and server farms.

#### RTF Status/Verified Savings Readiness:

- Staff generally agrees that there are uncertainties around the savings estimates for the measures characterized as Partial and Low by the Workgroup. These measures include Ductless Heat Pumps, Demand Control Ventilation, Integrated Building Design, Controls Commissioning, Signage Lighting, Network PC, and small-scale Computer Servers. But savings verification is already underway for the largest of these Ductless Heat Pumps. Further, savings verification on others can be done concurrently with deployment. Once verified, savings estimates can be adjusted, up or down. It is an iterative process with these measures just as it is with all measures deployed across the region. While savings adjustments introduce uncertainty, staff disagrees with the implication that the uncertainty is all one way - that all savings estimates will be adjusted down when verified.
- Staff does not agree that RTF “approval” of deemed savings needs to delay implementation or slow penetration rates more than assumed by staff. Program evaluations can be used in place of RTF deemed savings and may be a preferable solution to expedite conservation ramp up. Indeed, staff estimates that well over 50 percent of the regional savings potential is available from measures or practices that will require program or project evaluations instead of deemed savings estimates. Compared to reliance on “deemed” saving, use of custom calculations and program evaluations provides considerably more flexibility to tailor programs to specific local conditions and “bundle” measures into more attractive or administratively-simpler packages. The RTF has already adopted recommended evaluation protocols (e.g. IPMVP) that can be used to establish savings. While use of evaluation rather than deemed values presents program administrators with some risk and adds costs, staff believe that delaying program implementation also creates risks and adds cost, since savings are also delayed.

#### Market Readiness:

- Staff generally agrees that market readiness is an issue for the measures identified by the Workgroup. However, staff believes its proposed ramp rates for penetration take market readiness into account.
- Staff agrees that significant resources are required to understand how best to improve market readiness, to do market research that will identify good programs and implementation mechanisms and to develop better market relationships with non-utility providers. Staff is concerned that there are not enough resources dedicated to these activities now.

### **Workgroup Presentation 3: Gauging Uncertainty of the Target and Proposal to Accommodate Uncertainty, Jill Steiner, Snohomish PUD**

Jill Steiner summarized concerns of the Workgroup: The staff’s proposed targets appear high, the high targets require a high success rate at ramping up uncertain new initiatives, historical achievements may not be good indicators of future success, and the need to sustain high conservation acquisition levels, beyond the five-year time frame, must be taken into consideration.

Steiner described the Workgroup approach to assessing uncertainty. First it reviewed and revised Council staff’s measure-by-measure ramp rate assumptions. Results of the Workgroups

revised ramp rates for the measure-by-measure analysis reduced staff's proposed five-year cumulative target by about 15 percent.

The Workgroup also did an uncertainty analysis which reduced "realization rates" for measures it identified as Low or Partial readiness. The results of the lower realization rates analysis showed a similar 15 percent reduction to 5-year target on average across a range of realization rate assumptions. The lowest uncertainty was in the market readiness category and was 30 percent below the "full" realization rate. The highest was 100 percent of the "full" realization rate.

Finally the Workgroup applied a "margin of error" analysis where they propose setting a target at 80 percent of expected to account for the fact that even best efforts may not be as successful as anticipated.

The Workgroup also identified that future avoided costs may not be as expected. This would impact the amount of conservation perceived as cost effective. The Workgroup estimated that a 15 to 20 percent difference in the conservation cost-effectiveness threshold produced a 5-year cumulative target difference of about 75 MWh.

Steiner summarized the Workgroup's thinking on how to address conservation uncertainty in the Council Plan. The Workgroup suggested the Council set a lower regional target of about 1000 MWh over five years, combined with measureable milestones to address progress towards the more uncertain measures and programs identified in the Council's assessment. The milestones would include a regional research agenda that contains specific objectives, priorities and funding commitments with milestones for monitoring progress and making decisions to address the elements with higher levels of uncertainty proposed Council targets. Steiner expressed a desire to be judged successful if the region hit a 1000 MWh target and made strong progress towards measureable non-energy targets for the more uncertain elements. Part of this desire is due to potential I-937 penalties for not achieving targets. But it is also driven by the desire to have achievable goals commensurate with their abilities to influence them.

#### CRAC Comments Summarized:

There was general agreement that there is uncertainty about the likely success of conservation efforts. However, there was a widely-held reaction from CRAC members that the Workgroup uncertainty analysis was heavily biased towards less conservation. Workgroup members countered that this was not universally true - some of their changes increased near-term targets for some measures. A lively discussion followed. Fred Gordon noted a study that ETO staff did last year that showed strong historic bias of planning studies to systematically under predict success. There are a lot of historic examples of not predicting the upside. Ken Keating agreed and pointed out that he saw the same tendency at NEEA too. Ralph Cavanagh again pleaded with the utilities to look at the Council's targets in aggregate and to not score this by target setting.

There was considerable agreement among those present that more specificity in the Council's draft action plan should be developed to identify actions, besides energy savings targets, that could indicate progress towards conservation goals. But some expressed strong reservations that substituting measureable actions for energy-savings targets would result in inadequate budgets, infrastructure development, planning, implementation activity and overall lower achievements.

Steve Weiss and Stan Price reminded the group that the region has a poor track record of making good on “pledges” to do better.

The discussion turned to identifying conservation budgets as a non-energy savings metric to measure regional activity. There was not agreement on what recommendations the Council should make regarding conservation budgets. The group discussed whether the Action Plan should contain budgets for conservation. Karen Meadows suggested the need for specificity of actions, but not budgets. Jim Lazar disagreed and suggested that the 6<sup>th</sup> Plan should, at least, identify a range of costs needed to accomplish the conservation so utilities and regulators could scale their efforts. Meadows suggested the need for regulatory relief if more resources are to be focused on development activities that might not produce near-term results. Gordon suggested that the region needs to invest more in development activities and that it not consider development costs as a percent of measure cost, but as a separate item. Steiner identified that utilities are held to a cost-effectiveness test that limits R&D investment. Craig Smith, current chair of NEEA, acknowledged that NEEA may need more money to do all the needed market transformation work, in addition to its just-doubled budget proposal.

Jim Lazar identified that the biggest gap between utility plans and the Council targets is in the public utility territories. He suggested that those utilities may not be the right vehicle to place the conservation obligation on. This engendered a lively debate on the role of utilities in conservation development. No agreement was reached. Discussion turned to CRAC members, and others, expressing a wide range of opinions about the reasonableness of the proposed targets and the opportunities and challenges for efficiency in the current environment. There was no clear consensus. But there was considerable acknowledgement that virtually all of the resistance to staff proposed targets was within the public utility community. Finally, considerable support emerged for utilities, BPA, ETO, states, the efficiency industry and others to collaborate on developing a strategic plan to move forward on meeting challenges.

#### Staff Response and Analysis

- The Workgroup’s “Readiness” analysis will be very useful to help shape near-term actions needed to accelerate conservation for specific measures, practices and initiatives. Staff strongly supports using this framework as the basis for collaboratively developing a strategic conservation plan, with measureable interim results, to guide the region towards full deployment of the conservation resource.
- Staff agrees there is uncertainty around the targets. Uncertainty due to avoided costs, savings and costs estimates, the rate at which initiatives can be deployed, market acceptance and other factors.
- Staff does not agree that the bulk of the uncertainty is on the down side. The Workgroup’s target adjustments for measure-by-measure ramp rates, target realization rate and estimating error are all on the downside. The adjustments upward in residential might be more aptly characterized as a result of finding an error in staff analysis. Staff maintains that there are several measures where substantial upside potential for increased savings exists, including consumer electronics, ductless heat pumps and lighting in the commercial sector.
- One of the things not recognized in the Workgroup analysis is the ability to shift and substitute. Staff believes that target uncertainty should be managed by developing a portfolio of measures, programs and initiatives available to fill gaps that may emerge in

particular initiatives. This is preferable to reducing the targets for uncertainty. For example, staff's analysis of retrofit conservation identified over 2400 average megawatts available at costs below \$30 per MWh. That is a huge pool of opportunity that could be tapped to fill gaps and provide immense value to the region.

- The targets should be viewed as regional targets. The region should not expect that each and every utility should exactly hit its "share" of the targets. Nonetheless, the targets are useful broad indicators of success.
- Staff believes the difference in target "acceptance" between IOU/ETO and POU territories is primarily due to the public system's relative lag in developing initiatives to replace recent high savings achievements driven by residential CFLs. In addition, many smaller public utilities have relied nearly exclusively on BPA-funded and NEEA initiatives which, if continued at historic levels, will not be enough to hit higher targets. In addition, Washington's I-937 requirements and BPA's potential backstop role add potential consequences for failure to achieve targets that are focusing attention on the Council targets in new ways. All of these reasons for the gap between current activity levels and targets are resolvable with adequate planning, funding, and coordination. But inadequate funding of conservation activities is not a reason to reduce targets. Finally, staff believes the potential consequences of the Council targets for I-937 covered utilities can be managed with appropriate regulatory implementation in Washington.
- As a final note staff expects that savings accomplishments 2005-2009 will amount to over 900 average megawatts. This is well above the 700 average target established in the 5<sup>th</sup> power Plan. Setting a 2010-2014 target at 1000 average megawatts, a level not much higher than recent accomplishments does not seem reasonable given the factors that are at play. Below are just a few of the drivers that exist today that did not exist when the Fifth Plan was adopted:
  - The cost of new generation is up significantly,
  - BPA is adopting tiered rates,
  - More than half the region is already targeting conservation at levels that would reach the 1200 average megawatt target,
  - Conservation budgets are up region wide,
  - NEEA's strategic plan calls for doubling its budgets and it appears this plan will be funded,
  - The federal administration is committed to efficiency, with a strong emphasis on improving federal efficiency standards,
  - There is considerable federal stimulus money directed towards efficiency,
  - Climate change legislation has already passed the House of Representatives and it includes an entire section focused on energy efficiency, including one designed to assist small rural coops,
  - Energy codes are poised for improvement in all four states,
  - States and local governments are adopting efficiency policies and establishing incentives,
  - The private sector is engaged like never before; and,
  - The energy-efficiency industry and infrastructure is growing fast and attracting many new talented people from other industries.

Staff believes the region has never before been as well positioned to accelerate its conservation acquisition, in short "Yes We Can!"

W. Bill Booth  
Chair  
Idaho

James A. Yost  
Idaho

Tom Karier  
Washington

Dick Wallace  
Washington



Bruce A. Measure  
Vice-Chair  
Montana

Rhonda Whiting  
Montana

Melinda S. Eden  
Oregon

Joan M. Dukes  
Oregon

July 6, 2009

## MEMORANDUM

**TO: Council Members**

**FROM:** Tom Eckman and Charles Grist

**SUBJECT:** Summary of Conservation Resource Advisory Committee (CRAC) Discussions on 6<sup>th</sup> Plan Conservation Targets

At the June 19<sup>th</sup> CRAC meeting, a Workgroup, consisting of Bonneville and some of the region's public utilities presented the results of their review of the staffs' conservation assessment and proposed conservation target.<sup>1</sup> At that meeting, the Workgroup concluded that, based on its review, it was their collective judgment that the regional target should be set at 1,000 average megawatts, with a stretch or "aspirational" goal of 1,200 average megawatts. There was not adequate time available to discuss fully the difference between the staffs' view of the amount of conservation that is achievable over the next five years and the view of members of the Workgroup. Consequently, a follow-up meeting of the CRAC was scheduled. This was held on June 25<sup>th</sup> to review the staff proposed conservation Action Plan. At that meeting, Bonneville and members of the workgroup ask an additional CRAC meeting to continue dialogue on the proposed conservation targets. They stated that they were working on an alternative proposal to address the concerns raised by staff and other CRAC members regarding their proposed 1,000 average megawatt target. The CRAC met again on July 2<sup>nd</sup> to continue its discussion of the staffs' proposed regional conservation target of 1,200 average megawatts. The remainder of this memo summarizes the discussion and a recommendation for the proposed regional conservation target from public utilities at that meeting. While Bonneville was originally part of the Workgroup, its representative on the CRAC stated that the agency has not taken a position on the regional conservation target.

Staff opened the meeting with a short presentation on its response to three issues raised at the June 19<sup>th</sup> CRAC meeting. These issues were the "net revenue" impact of increased investments in energy efficiency, the magnitude of potential savings from CFLs in low income, renter and rural households and "achievability" of the staff proposed regional conservation target by the

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<sup>1</sup> A memo dated July 1, 2009 containing the staffs' analysis and response to the issues raised by the Workgroup is included in the Council meeting packet.

public utilities in the region. After presenting the staffs analysis of the first two of these issues, staff asked the Workgroup present its proposed alternative.<sup>2</sup>

A representative of the Workgroup described its alternative as calling for the same conservation target it had recommended (1,000 average megawatts) as had been proposed at the June 19<sup>th</sup> meeting. However, the expanded proposal includes more specific recommendations for other actions that the utilities commit to pursue over the next five years to ensure that the region is better positioned to achieve higher levels of conservation acquisition post-2014.

During an extended discussion of their proposal, the question was raised whether investor owned utilities viewed the staffs' proposed 1,200 average megawatt conservation target as achievable. Representatives of IOUs attending the meeting were asked for their views on this issue. A representative from Idaho Power stated that while they were significantly increasing their demand side management budget, most of the increase was going to target demand response. He also noted that the company was engaged in an IRP process and expected its conservation targets to increase. Avista and PSE representatives stated that their companies expected to meet or exceed their share of the proposed target. The Energy Trust of Oregon also stated that they were planning to meet or exceed their share of the staff proposed targets in their service area. CRAC member Ralph Cavanagh from NRDC indicated that he had received a copy of a letter sent to the Montana Council members by Northwestern Energy stating that they also planned to meet or exceed their share of the staffs proposed conservation target. The public utility representatives attending the meeting were then asked about their own utilities plans. Tacoma, Snohomish PUD, Seattle and PNGC all stated that they were targeting conservation levels that, if they could achieve them, would meet or exceed their share of staffs proposed 1,200 average megawatt target. A representative Central Lincoln PUD in Oregon stated that he doubted whether his utility could meet the target due to local concerns about the rate increase required to do so.

Tacoma stated that in its IRP it was targeting a range of conservation, with low, base and high cases. They would be budgeting to achieve the base level of savings, but might under or over achieve due to changing conditions. Staff asked, whether it was possible that those public utilities who had proposed the 1,000 might consider supporting the 1,200 average megawatt target as the "base," for the 6<sup>th</sup> Plan, within the range from 1,000 to 1,400 average megawatts that was contained in their proposal. Staff agreed that there is some uncertainty regarding the actual level of conservation that can be achieved over the next five years. Therefore, in concert with supporting the 1,200 average megawatt target, staff is proposing in the conservation Action Pan, that Council, along with Bonneville, utilities and the Energy Trust of Oregon, formally review progress towards this target midway through the 2010 - 2014 period.<sup>3</sup> Staff noted that this "check-in" proposal had been included as part of the Council's biennial review of the Plan. The Plan's conservation regional target could be modified up or down depending upon the findings of this review.

The public utilities asked to caucus over lunch. Following lunch the group representing some of the region's public utilities stated that they supported the following general proposal:

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<sup>2</sup> Staff is scheduled to present this information to the Power Committee and Council at the July meeting.

<sup>3</sup> In order to review at least two years of conservation program results, this review would not be able to take place until the middle of 2012 since it usually takes at least 3-4 months after the end of a year to "close the books" on savings estimates.

Given the level of uncertainty inherent in the supply curves, economic conditions, power market, carbon cost, progress on emerging technology, etc., a range of targets that reflect the variability in possible outcomes is appropriate. Therefore, the 6<sup>th</sup> Plan's conservation targets should be stated as a range. This range should specify 1,200 average megawatts as the "expected level of performance," 1,000 average megawatts as the threshold level of performance that demonstrates obligation as related to acquiring a share of the regional targets, and an aspirational goal of 1,400 average megawatts. This range is supported by uncertainty analysis based on an assessment of technological, market or programmatic readiness of individual measures that may result in higher or lower impacts. Activities, resources and budgets should be geared to acquire 1,200 average megawatts from 2010-2014 from utility program implementation, market transformation efforts, and codes and standards not included in the regional load forecast.

Utilities should be able to count savings from compact fluorescent lamps (CFLs) acquired through utility programs toward this target until the federal standards take effect in 2012. CFLs savings from the impact of prior NEEA initiatives and CFLs sales that NEEA has forecast to occur due to natural market change will not count toward the 6<sup>th</sup> Plan's conservation target as these savings are already included in the regional load forecast. Utility efforts should focus on increasing CFL adoption in markets currently underserved, such as low-income and tenant-occupied housing.

Bonneville, Utilities, the Energy Trust of Oregon and NEEA should develop, fund, implement and adaptively manage a strategic plan for regionally coordinated conservation acquisition and infrastructure development. This plan would include specific actions and milestones in the areas of research and demonstration, emerging technology and industrial sector efficiency initiatives.

As part of the Council's biennial review of the 6<sup>th</sup> Plan, Bonneville, Utilities, the Energy Trust of Oregon and NEEA would provide an assessment of their progress towards the 6<sup>th</sup> Plan's conservation goals as well as infrastructure capacity building against specific metrics or planning parameters identified in the Plan. Parameters and metrics should address at least the following issues; power market prices, carbon prices, economic and market conditions; status of new and emerging technology and progress on state codes and federal standards. Based on this biennial review, modifications to the regional conservation targets, action plan, or savings acquisition activities may be identified or recommended to the Council.

In the discussion following the presentation of the above proposal other CRAC members raised three major concerns:

- If CFL savings from lamps covered by federal standards were to count towards the regional conservation target, the Council's analytical methodology would require that the target be modified to reflect the fact that these savings are being removed from the load forecast and treated as "potential options" in the conservation supply curves. This would increase the near term target in the low, base and high case.
- Follow-through on prior utility conservation commitments has been poor. If utilities plan to pursue actively research and demonstration, they should also commit to funding them as well.

- Since public utilities represent just 46 percent of the region and they are the only ones concerned about being able to meet the staffs' proposed 1,200 target, why isn't the "low" case target reduced by just 46 percent of the difference between the "low" and the "expected value" target? This would make the low case target approximately 1,100 average megawatts.

The CRAC then turned to a discussion of the draft conservation Action Plan. CRAC members suggested a range of modifications to the draft language. Staff is incorporating many of these recommendations into a revised draft.

## **Staff Analysis**

The staff believe that stating a range estimate for the regional conservation target is an appropriate way to handle the uncertainty in future power market prices, carbon control/mitigation costs, economic growth, technological change and other factors. Staff also strongly supports the use of the "expected value" target of 1,200 average megawatts as the basis for sizing activities, resources and budgets. Staff agrees on the need for a "mid-term" review of the region's progress not only towards meeting the savings targets, but also on how Bonneville, utilities, the Energy Trust and NEEA are progressing on accomplishing other critical action items in the Plan.

Staffs' original proposal to set 1,200 average megawatts as the "expected value" regional conservation target did not assume savings from CFLs covered by federal standards. However, the public utilities' proposal would include savings from CFLs covered by federal standards as part of the 1,200 average megawatts. Under the Council's analytical methodology, additional savings from CFLs, if removed from the load forecast should be added to the proposed targets. Staff estimates this would increase the "expected value" target by approximately 40 average megawatts over the five-year period.

It appears that the current market penetration of CFLs in low income, renter and rural markets are well below that of other markets. Consequently, a strong case can be made that programs targeted at these markets would produce cost-effective savings beyond those currently assumed by the Council. Staff estimate CFLs savings in low income, renter and rural household would increase the "expected value" target by approximately 80 average megawatts over the five-year period. However, staff recommends against including a detailed direction in the plan regarding where such savings should be achieved. Staff believes the preferred approach would be to use the mid-term review to assess whether the region's utilities have diversified their conservation portfolios away from CFLs, and/or are targeting these under-served markets with their programs.

Since only the public utilities are concerned about meeting the "expected value" target of 1,200 average megawatts, staff believes that the low range of conservation achievability should be set at 1,100 average megawatts. This reflects the fact that public system comprise 46 percent of the region's load and none of the region's investor owned utilities nor the Energy Trust of Oregon have expressed any concerns about meeting their share of the 1,200 average megawatt target.



Staff will present a summary of the major changes to the draft conservation action plan at the July Council meeting. However, the most significant change is the proposed incorporation of an uncertainty surrounding “achievability” of the regional conservation target as was suggested by the public utilities. Conservation Action Item 16 has been modified to reflect staff’s proposed range.

# DRAFT Action Plan for the Sixth Power Plan (draft, 7/10)

## CONSERVATION

*Energy efficiency is the first priority resource in the Northwest Power Act. The Council's analysis for the Sixth Power Plan strongly affirmed that energy efficiency improvements provide the most cost-effective and least risky response to the region's growing electricity needs. Further, accelerated acquisition of cost-effective efficiency reduces the contribution of the power system to green house gas emissions. With green house gas reduction policies in flux, and many new sources of carbon-free electricity expensive or lacking capacity contributions to go with their energy, accelerated acquisition of cost-effective efficiency can buy time to develop policies and identify alternative sources of carbon-free generation.*

*The region is increasing its efforts to accomplish conservation through integrated resource planning requirements, state and utility programs, and the Northwest Energy Efficiency Taskforce. Nevertheless, achieving the level of conservation identified in the Sixth Power Plan is a task that will require aggressive actions by the region. The Action Plan of the Sixth Power Plan contains a list of recommendations that will help the region to meet the efficiency challenge.*

*Key areas for enhanced implementation activity include , (1) enhancing the region's ability to acquire efficiency potential that has been identified (2) increasing efforts to identify and verify new cost-effective and feasible technologies, and (3) developing regional mechanisms to keep efficiency policies up to date with changing information, to track and verify achievements, and adaptively manage regional efficiency acquisition strategies.*

### ***Conservation: Deployment***

CONS-1. Utilities, Energy Trust of Oregon, Utility Regulators, Bonneville Power Administration, Northwest Energy Efficiency Alliance (NEEA), and States: Achieve at least the level of conservation resource acquisition called for in the Sixth Plan's conservation target and accomplish the other actions necessary to accelerate conservation deployment. The Council believes that the region should be able to achieve at least 1,200 average megawatts of conservation savings under the majority of future conditions. Consequently, activities, resources and budgets should be geared to acquire 1,200 average megawatts of savings from 2010-2014 from utility program implementation, market transformation efforts, and codes and standards not included in the regional load forecast. However, the Council recognizes that there is a level of uncertainty inherent in its assessment of regional conservation potential, the pace of anticipated economic recovery, power market conditions, carbon control requirements, technology evolution, the success or failure of acquisition mechanisms and strategies, progress on research and development and the adoption of codes and standards. Therefore, the Sixth Plan's conservation targets range from a low of 1100 average megawatts of savings to a high of 1400 average megawatts over the next five years. Since the future is uncertain Action

## **PRELIMINARY**

Item CONS-16, calls for a mid-term review of regional progress towards the regional conservation goal to assess progress towards the 1200 average megawatt savings goal and whether the target should be adjusted upward or downward for the remainder of the period covered by the Action Plan. In addition the mid-term review will assess the potential impacts on other resource actions if there is significant discrepancy in conservation acquisitions from the targets.

CONS-2. Bonneville, Utilities, Energy Trust of Oregon, and NEEA: Develop and implement an action plan for measures that are commercially viable but relatively new to programs or markets. The Sixth Power Plan identifies new or technologically-improved efficiency measures that are cost-effective to pursue. The Sixth Plan identified nearly 6,000 average megawatts of cost-effective conservation realistically achievable over twenty years. Of that, approximately 2500 average megawatts will require new initiatives, programs, market transformation efforts or progress towards adoption in codes and standards. While in the near-term these measures make up about one-quarter of the conservation targets, activities to develop these measures need to start now, so that the region is positioned to place increased reliance on them in the future. The Council believes that regional collaboration on initiatives to develop and deploy these measures would greatly enhance their chance of success. This activity will require concurrent market research to determine the most effective ways to develop and deploy these new measures. Each of these measures is at different stage of development and requires a different implementation strategy. All require efforts beyond what is now being done. These measures include but are not be limited to:

- a. Distribution system efficiency measures
- b. Commercial outdoor lighting
- c. Residential heat pump water heaters
- d. Residential ductless heat pumps
- e. TV, set-top boxes, desktop PCs and PC monitors
- f. Industrial system optimization measures

CONS-3. Bonneville, Utilities, and Energy Trust of Oregon: Provide adequate funding for the Northwest Energy Efficiency Alliance's (NEEA) market transformation efforts. NEEA's regional market transformation activities have proved to be a great value. Market transformation has been a key part of the development of many existing efficiency initiatives, and will need to be so for many of the new initiatives that the region must take up.

NEEA's newly adopted strategic plan should be funded by regional utilities. In addition, the region should institute an ongoing process to identify needed market transformation efforts that are not in the current NEEA business plan but which may be necessary to reach regional conservation targets. The process should include a mechanism, such as subscription-based initiatives, to adjust funding allocations between regional and local program as market dynamics change and new opportunities arise.

CONS-4. Bonneville, Utilities, Energy Trust of Oregon, NEEA, and States: Develop long-term partnerships with energy efficiency businesses, trade allies and other parties in

## **PRELIMINARY**

product and service supply chains. Decisions to adopt efficiency measures and practices are made by consumers. Consumer's decisions are influenced by many factors, including relationships with the energy efficiency industry and trade allies such as building designers, equipment vendors, contractors, engineering firms, lighting designers, and the product and service options available to them. Accelerating consumer adoption of energy efficient technologies and practices can be facilitated by creating cooperative working relationships between NEEA and utility programs, product manufacturers, distributors, retailers and the energy efficiency industry and trade allies to leverage their market relationships.

CONS-5. Utilities, Energy Trust of Oregon, NEEA, Bonneville and States: Support the adoption of cost-effective codes and standards and work to help ensure compliance. This includes, but is not limited to the following activities:

- Advocating for the development and adoption of cost-effective energy codes and equipment and appliance standards at the state and national level in a manner that is consistent with the entities' roles in the acquisition of efficiency resources and legal limitations on political activities.
- Providing technical and political leadership in both legislative and rulemaking processes.
- Enhancing code compliance by working with local government officials to create a supportive environment and adequate funding for comprehensive energy code implementation.
- Providing technical and educational support to code-enforcement staff.
- Developing and implementing a coordinated, high-level, adequately funded Pacific Northwest presence in federal efficiency standard rulemaking processes, to ensure that efficiency standards for federally regulated appliances and equipment achieve cost-effective energy savings.

CONS-6. Utilities, Energy Trust of Oregon, NEEA, Bonneville and States: Implement the Sixth Plan's Model Conservation Standards (MCS). This includes supporting the adoption of the MCS in state codes and standards and working with local jurisdictions to increase compliance rates. It also includes implementing programs to achieve savings from measures in the MCS not adopted into code and operating programs consistent with the MCS for Conservation Program Not Covered by Other MCS.

CONS-7. Utility Regulatory Commissions: Adopt policies that encourage utilities to actively participate in the processes to establish and improve the implementation of state efficiency codes and federal efficiency standards in a manner that is consistent with their responsibility to acquire cost-effective efficiency resources. For example, state regulators could provide cost recovery for efforts to establish new codes and standards when utilities demonstrate that their efforts made a substantial difference in the adoption of those codes or standards.

**PRELIMINARY**

CONS-8. Bonneville, Utilities, Energy Trust of Oregon, and States: Support the ongoing operation of the Regional Technical Forum (RTF) and assure that the RTF has sufficient resources to review the new efficiency measures identified in the Power Plan. The financial resources provided to the RTF's to support its review of energy savings estimates, development of measurement and verification protocols, and establishment of measure specifications needs to be enhanced to cover the expanding suite of conservation activities. In order to avoid delaying the acceleration of regional conservation acquisition efforts the RTF will require increased funding to carry out its reviews in a timely and thorough manner. The region should provisionally increase its support of the RTF in 2010 at a level commensurate with estimated cost of identified research, analysis, tracking and evaluation while the Northwest Energy Efficiency Taskforce (NEET) conducts a review of the RTF's function, role, funding, and governance. Upon completion of the independent review, NEET should submit its recommendations regarding these issues to the Council for consideration.

CONS-9. Regional Technical Forum: Develop energy savings verification protocols for conservation measures, practices, and programs when current verification methods appear problematic or expensive or verification methods do not exist. Streamlined measurement and verification protocols will allow the region to monitor the reality and persistence of savings as well as help Bonneville, the utilities, and regulators identify savings against targets and goals. The RTF should work with utilities for consistent guidance on tracking and verification of savings. The RTF should prioritize its work to allow the region to move forward quickly to capture and verify savings. The RTF should also recommend improvements to the regional conservation measurement and evaluation procedures based on recommendations from the NEET workgroup as a starting point.

CONS-10. Regional Technical Forum: Develop a comprehensive library of estimates of savings from conservation measures and savings evaluation and measurement protocols. Review and compare utility and Energy Trust of Oregon savings estimates for measures not addressed by current RTF recommendations. Expand and update the library of energy savings estimates, over time resolve any inconsistencies, and make the library available for use across the region.

CONS-11. Industry and trade allies, Bonneville, Utilities, Energy Trust of Oregon, NEEA, and States: In recognition of the higher goal for industry-sector conservation, develop and implement a comprehensive strategy to improve the energy efficiency and economic competitiveness of industries in the region.

CONS-12. State Utility Regulatory Commissions and Utilities: Consistent with standard practices for Integrated Resource Plans, establish polices for incorporating a risk-mitigation premium for conservation in the determination of the avoided cost used to establish the cost-effectiveness of conservation measures. The Council's resource portfolio modeling identified valuable risk-mitigation benefits for the region from developing conservation. A risk-mitigation value should be incorporated into conservation cost-effectiveness methodologies used by utilities and their regulators and system benefits administrators. The Council recognizes that each utility and system benefits administrator is in a different position with regard to the risks it faces. As one

## **PRELIMINARY**

aspect of this effort, establish policies on how to incorporate the estimated cost of addressing greenhouse gas emissions from thermal resources in avoided-cost methodologies and IRP processes or in processes used by system benefits administrators.

CONS-13. To State Utility Regulatory Commissions, Investor-Owned and Publicly Owned Utilities, and Others: Identify regulatory barriers and disincentives to the deployment of conservation, and consider policies to address these barriers.

### ***Conservation: Adaptive Management***

The Council is well positioned to conduct periodic reviews of the remaining conservation potential, and of existing and planned conservation initiatives as well as conservation research and evaluation efforts. However, Bonneville, the utilities, the Energy Trust of Oregon, and NEEA along with the States are best positioned to develop and adaptively manage the actual acquisition of conservation resources. These entities have a long and successful history of developing strategies and funding programs to acquire conservation, transform markets, and upgrade codes and standards.

CONS-14. Bonneville, Utilities, Energy Trust of Oregon, and NEEA: Prepare a detailed strategic and tactical plan to achieve the Sixth Plan's conservation target and accomplish the other actions set forth in the Sixth Plan that are necessary to build the capability to accelerate conservation deployment for the remainder of the planning period in a cost-efficient manner. A regional conservation acquisition plan is needed to assure resources are being effectively deployed to reach the Sixth Plan's conservation targets. The Council recognizes that Bonneville, Utilities, Energy Trust of Oregon, and NEEA are best positioned to prepare and adaptively manage the implementation of such a plan. However, the development and implementation of this plan will also require the active collaboration of these entities with other market actors, including energy efficiency business and their trade allies as well as associations and organizations that represent key customer groups. The Council believes that the plan should include specific actions focused on developing energy efficiency technologies and practices. The plan should describe how these technologies and practices will be brought to market from conception to full deployment using local utility programs, coordinated regional programs, market transformation, codes and standards adoption and enforcement and any other mechanism deemed appropriate. Savings achieved through all of these mechanisms will count toward achievement of the Council's conservation target. The plan should also set forth the level of funding for staffing and infrastructure needed for its successful implementation. Finally, the plan should develop quantifiable milestones to measure progress toward these targets and actions that can be evaluated at strategic points over the five-year action plan. Progress toward these milestones should be reviewed in the mid-term report on progress towards meeting plan objectives (CONS-16).

CONS-15. Bonneville, Utilities, Energy Trust of Oregon, NEEA, State Regulatory Commissions, along with the States and the Council - Develop an ongoing mechanism to identify high-priority actions that will enhance the deployment of cost-effective energy efficiency across the region. Adaptive management of the implementation of the regional conservation action plan called for in CONS-14 will require timely decisions regarding

## PRELIMINARY

the allocation of funding between local, regional programs and market transformation initiatives; the continuation and expansion of successful existing programs and efforts; the modification or termination of poorly performing programs, and the development of new initiatives for new efficiency measures and practices identified in the Sixth Plan. In order to accomplish this, the Council believes that a high-level forum for ongoing policy-level guidance on these issues should be formed. The Council views this as a continuance of the NEET efforts to address the dynamic nature of conservation acquisition and, like NEET, this forum must include senior-level management and decision makers to assure common understanding, commitments, and follow through. While pursuant to the NEET recommendations NEEA has agreed to host and facilitate regional efforts to better coordinate programs this does not adequately address the need.

CONS-16. Bonneville, Utilities, Energy Trust of Oregon, and NEEA: Report on progress towards meeting plan objectives. As part of the Council's biennial review of the Sixth Power Plan, Bonneville, Utilities, Energy Trust of Oregon, and NEEA should report on progress towards meeting plan's conservation targets and objectives. The report should include an assessment of progress toward mid-term milestones established in the strategic plan developed in CONS-14. The Council recognizes that the plan's conservation targets are based on an "expected value" across a wide range of potential futures. The actual future the region experiences will differ in some regard from the plan's assumptions. Therefore, this report should identify whether the regional conservation acquisition plan (CONS-14), the implementation of that plan (CONS-15) and/or the Council's target (CONS-1), need to be modified to account for conditions or circumstances different than expected. These include slower- or faster-than-anticipated economic recovery, substantially different power market conditions, carbon control requirements, technology evolution, the success or failure of acquisition mechanisms and strategies, progress on research and development and the adoption of codes and standards.

CONS-17. Bonneville: In consultation with its customers develop and implement programs that address the special barriers to conservation acquisition faced by smaller and/or rural utilities. This should include working with those customers to identify measures that are applicable to their service territories and with the RTF to see that the savings and cost-effectiveness of measures are expeditiously evaluated.

CONS-18. Council: In consultation with Bonneville, Utilities, Energy Trust of Oregon, and NEEA develop recommendations on measure bundling, the use of cost-effectiveness tests, research and development investments and others issues. Guidance is needed to ensure that the Sixth Plan's conservation resource assessment is translated into acquisition programs and research and development activities. The NEET process identified a need for both a reference document and ongoing process to assist utilities and others in their efforts to design and implement effective and administratively-efficient conservation program using the data from the Council's plan.

CONS-19. Regional Technical Forum, Utilities, Energy Trust of Oregon, Bonneville, NEEA, and States: Develop and implement improvements to the regional conservation Planning, Tracking and Reporting (PTR) systems so that energy efficiency savings and

## **PRELIMINARY**

expenditures are more consistently and comprehensively reported. Also identify a governance structure to guide improvement of the systems and funding agreements to share the responsibility for its ongoing operation and maintenance equitably. The tracking system should evolve over time so that conservation from all mechanisms and funding sources, including utility programs, codes and standards, state and federal tax credits, market transformation, and non-programmatic changes in markets can be reported. Savings from market changes outside of programs may need to be tracked outside of the PTR system.

### ***Conservation: Development and Confirmation***

The Sixth Plan's assessment of technically achievable energy efficiency resources relies on research and demonstration program results initiated as long ago as the early 1980's. In order to expand the conservation options available in the future, and to confirm the resource cost, savings, and consumer acceptance of some measures identified in the Sixth Plan, the region should fund conservation research and demonstration activities. The responsibility for carrying out these activities varies with their purpose and scope. However, given the "community property" nature of the results of these projects, Bonneville, the utilities, NEEA and the Energy Trust of Oregon should, to the extent practicable, collaborate on funding and coordinate on implementation. At the same time, regulatory commissions should establish guidelines to allow cost recovery for such research and demonstration activities.

CONS-20. Utilities, Bonneville, Energy Trust of Oregon, NEEA and other program operators: In order to ensure the long-term supply of conservation resources, develop and fund a regional research plan that directs development, demonstration, and pilot program activity. The plan should focus on both the new measures and practices identified in the Sixth Power Plan conservation assessment and promising measures that emerge over the next five years that require additional technical, market, or other research. Assess feasibility, collect and evaluate data on costs and savings (including load shape impacts), and identify programmatic approaches, delivery mechanisms, implementation strategies, and infrastructure needs. The research plan should :

- a. Prioritize research needs based on the magnitude of potential savings and level of uncertainty of measure performance.
- b. Identify research objectives that define specific milestones or the knowledge sought in order to increase certainty and solidify resource components of the long-term conservation supply.
- c. Identify funding requirements and commitments to accomplish research objectives.
- d. Assign the roles and responsibilities of the various regional entities, including but not limited to the Regional Technical Forum, NEEA, utilities, Energy Trust of Oregon, and the states.
- e. Identify milestones for reviewing research progress, determining additional research needs, and determining how regional conservation potential and associated targets should be adjusted based on the findings. Periodic review of the research plan and findings could be done as part of a biennium review of the power plan, or as needed.



**PRELIMINARY**

- f. Examples of the measures that could be incorporated into the research plan include:

Industrial

System optimization & energy management measures

Commercial

Mini server rooms

Streetlighting

Parking, area & walkway lighting with bi-level controls

Exterior façade lighting

Neon signs to light emitting diode

Demand control ventilation restaurant hoods

Window frame improvements

Retrofit windows

Residential

Heat pump water heater

Ductless heat pumps

Gravity film heat exchangers

Promising Measures not in the Sixth Plan Assessment

Consumer behavior modification

Commercial evaporative cooling

Commercial cooking equipment

Smart plug strips

Enterprise server farms & large-scale information technology

Whole building voltage regulation for commercial buildings

Double package sprinkler for irrigation

Irrigation holding ponds

Wireless technology controls for irrigation sprinkler shutoff

CONS-21. Bonneville, NEEA, Utilities, Council and Regional Technical Forum: Develop a regional approach to support data needs for energy efficiency. The region should develop multi-year data collection and research plan that prioritizes the initiatives needed to facilitate the implementation of conservation resources and determine their impact on the power system. The plan should set forth a process to improve data coordination, distillation and dissemination and outline the most appropriate and cost-efficient way to acquire needed data. The development of this plan should be carried out in a manner consistent with the NEET recommendations. Elements of this data collection work can assigned to the Regional Technical Forum, NEEA, Bonneville, and the utilities. High priority data needs include:

- a. Residential and commercial building characteristics
- b. Customer end-use surveys
- c. Measured end use & savings load shapes
- d. Efficiency measure saturations
- e. Capacity impact of efficiency measures
- f. Appliance and equipment saturations
- g. Market/Supply Chain structure
- h. Tracking of non-programmatic conservation savings

**PRELIMINARY**

CONS-22. State Utility Regulatory Commissions, Public Utility Boards and Commissions, and Utilities: Establish guidelines to consider, balancing utility and consumer interests, cost recovery for conservation research, demonstration, confirmation, and coordination activities.