CONSERVATION ADVISORY COUNCIL
Notes from meeting Nov. 18, 2009

Attending from the Council:
Jim Abrahamson, Cascade Natural Gas
Lauren Shapton, Portland General Electric
Bill Welch, EWEB

Attending from Energy Trust:
Peter West
Fred Gordon
Sue Meyer Sample
Diane Ferington
John Volkman
Spencer Moersfelder
Kim Crossman
Hannah Hacker
Phil Degens

Attending from the board:
John Reynolds
Dan Enloe

Others attending:
Dave Jeffries, NW Blower Door
Mark Hughey, Green Energy Management
Dave Burton
Daniel Senic
Carolyn Farrar, NW Natural
Andrew Ragen, Rogers Machinery
Peter Gutmann
Jeremy Anderson, WISE
Becky Walker, PECI
Theresa Gibney, OPUC
Moshrek Sobhy, OPUC
Gary Frayn, Advanced Energy

1. Welcome and introductions
At 1:35 p.m., Peter West asked for self-introductions and reviewed the agenda.

2. 2010 meeting schedule
Peter went through the CAC meeting dates scheduled for 2010. No changes were made to the schedule.

3. 2010-2011 program budgets and changes
Peter distributed 2010-2011 program budgets (broken out by utility per request of last meeting). Based on feedback of the October meeting, initial reductions to gas measures were reevaluated and presented again. No comments on handout.

2010 program budgets

	ELECTRIC	GAS	TOTAL
PROGRAM EXPENSE			
Existing Buildings	20,688,159	6,183,010	26,871,169
New Buildings	11,600,940	1,654,187	13,255,127
NEEA - Commercial	2,513,014	-	2,513,014
Production Efficiency	22,767,999	2,336,382	25,104,382
NEEA - Industrial	1,185,574	-	1,185,574
Existing Homes	11,647,039	12,199,616	23,846,655
New Homes and Products	14,581,104	2,202,738	16,783,842
NEEA - Residential	3,048,737	-	3,048,737
TOTAL EXPENSE BY PROGRAM	**88,032,566**	**24,575,934**	**112,608,499**

2010 budget by utility

	TOTAL	PGE	PAC	other electric	NWN-WA	NWN-firm AND interruptable	NWN	CNG
PROGRAM EXPENSE								
Existing Buildings	26,871,169	15,035,213	5,631,921	21,026	244,712	456,896	4,979,457	501,945
New Buildings	13,255,127	5,208,622	6,392,318	-	-	-	1,551,240	102,947
NEEA - Commercial	2,513,014	1,432,418	1,080,596	-	-	-	-	-
Production Efficiency	25,104,382	13,462,808	9,305,191	-	-	1,457,084	532,386	346,912
NEEA - Industrial	1,185,574	675,777	509,797	-	-	-	-	-
Existing Homes	23,846,655	7,270,190	4,376,848	-	466,522	-	10,917,827	815,267
New Homes and Products	16,783,842	9,778,109	4,802,995	-	-	-	1,845,599	357,139
NEEA - Residential	3,048,737	1,737,780	1,310,957	-	-	-	-	-
TOTAL	**112,608,499**	**54,600,918**	**33,410,622**	**21,026**	**711,234**	**1,913,980**	**19,826,511**	**2,124,209**

2011 program budgets

	TOTAL ELECTRIC	TOTAL GAS	TOTAL
PROGRAM EXPENSE			
Existing Buildings	26,060,870	4,733,793	30,794,663
New Buildings	11,207,302	2,549,883	13,757,185
NEEA - Commercial	3,041,867	-	3,041,867
Production Efficiency	27,657,323	1,263,600	28,920,923
NEEA - Industrial	1,430,477	-	1,430,477
Existing Homes	13,758,980	11,895,027	25,654,007
New Homes and Products	14,867,554	2,830,456	17,698,010
NEEA - Residential	3,697,856	-	3,697,856
TOTAL EXPENSE BY PROGRAM	**101,722,229**	**23,272,758**	**124,994,988**

2011 budget by utility

	PGE	PAC	other electric	NWN-WA	NWN-firm AND interruptable	NWN	CNG
PROGRAM EXPENSE							
Existing Buildings	18,383,242	7,677,628	-	-	145,887	4,018,867	569,038
New Buildings	7,314,456	3,892,846	-	-	-	2,426,141	123,742
NEEA - Commercial	1,733,864	1,308,002	-	-	-	-	-
Production Efficiency	17,672,431	9,984,892	-	-	386,398	577,327	299,875
NEEA - Industrial	815,372	615,105	-	-	-	-	-
Existing Homes	8,828,756	4,930,225	-	-	-	10,807,185	1,087,841
New Homes and Products	10,003,923	4,863,631	-	-	-	2,436,817	393,640
NEEA - Residential	2,107,778	1,590,078	-	-	-	-	-
TOTAL EXPENSE BY PROGRAM	**66,859,821**	**34,862,408**	**-**	**-**	**532,286**	**20,266,336**	**2,474,136**

Diane Ferington presented the revised Home Energy Solutions—Existing Homes 2010 budget, highlighting the restoration of proposed Oregon incentive decreases for NW Natural customers:

i. Air sealing: $275 (restored $100), incentive level kept the same as the 2009 incentive level for gas homes, allowing us to retain consistency in our messaging
ii. Attic insulation: $0.25/sq. ft. (restored $0.05/sq. ft.)
iii. Wall insulation: $0.30/sq. ft. (restored $0.05/sq. ft.)
iv. Tankless water heaters: $200 (restored $100)
v. Floor insulation: $0.30/sq. ft. (decreased $0.15/sq. ft.); reduction for both gas- and electrically-heated homes due to initial impact evaluation results
vi. Furnaces: based on feedback from previous CAC meetings throughout 2009, the program revised the decision on furnace measures; furnaces as a stand-alone measure for Oregon customers will sunset Dec. 31, 2009, but will remain at the current incentive level for Savings Within Reach (moderate-income program) participants and Washington customers of NW Natural; Oregon gas-heat customers can receive a $100 bonus when combining the purchase of a qualifying gas furnace of 0.90 AFUE or greater, with either a qualifying gas tank water heater with an EF of 0.67 or greater or a qualifying gas tankless water heater with an EF of 0.80 or greater. The bundle bonus will be available Jan. 1, 2010, through April 30, 2010. Starting May 1, 2010, no incentives will be offered for furnaces but the program will continue promoting high-efficiency gas furnaces as an energy-efficiency measure to gas customers

Diane also presented program changes to trade ally notification timelines and forms deadlines. Because of the greater need to quickly inform trade allies and interested parties of changes to program requirements and details, the program is moving from a 90-day notice to a 30-day advance notice before changes go into effect. Diane said the goal will be to notify trade allies as soon as possible via Insider (our monthly e-newsletter), web updates and email. In the need for increased reliability in forecasting, the program is instituting a change to customer forms: Effective January 1, 2010, moving from 120 days to 90 days for when customer applications are due to Energy Trust after date of installation.

Jeremy Anderson, WISE, asked for clarification on the trade ally travel allowance discussed at the October CAC meeting. Peter clarified the travel allowance is meant for contractors serving rural areas (Eastern Oregon) vs. I-5 corridor to better serve this customer base and reinforce our customer service focus. Funds for the travel allowance are slotted for Pacific Power, Cascade Natural Gas and some of NW Natural territory (no funds allocated to PGE territory).

Jeremy noted that on the 30-day advance notice change, a longer notice will help prevent disgruntled customers coming back to the contractor for an Energy Trust decision. The more notice, the better. Jeremy also asked for the determining factor for reducing the floor insulation measure. Diane responded it was mainly due to cost-

effectiveness resulting from an impact evaluation. CAC members were supportive of the adjustments.

4. Monitoring & Reporting incentive structure: New Buildings program

Spencer Moersfelder presented on the Path to Net Zero pilot, which launched May 2009 to encourage the building market to move to high-performance design in pursuit of a net-zero standard. To be eligible, projects must be in schematic design phase or earlier, and be committed to being at least 50% better than 2007 Oregon code through energy efficiency and at least another 10% better than code through any combination of energy efficiency and on-site renewable energy generation. The pilot budget is $580,000 for 2009 and $2 million for 2010. At this point, the pilot is full with 15 projects enrolled (1.1 million sq. ft.). Ten projects are striving for net-zero site energy use; others have minimum goals of 50% more efficient than current Oregon code. Projects are for varying building types (school, retail/event, office, multi-unit residential) and sizes (1,500 sq. ft to 500,000 sq. ft.).

The pilot includes four milestones for incentive payments:

i. Early design assistance
    a. Up to $10,000 for an integrated design charrette
ii. Technical assistance
    a. Up to $50,000 for energy studies and building simulation modeling
iii. Equipment installation and commissioning
    a. Up to $500,000 for installing measures and commissioning the building
iv. Monitoring and reporting
    a. Up to $30,000 for building monitoring and data reporting; to be released December 1

Premises for design of this M&R offering: Owners should be vested in making the buildings perform (Energy Trust's first foray into working with the operations of the building and it's the program's responsibility to guide the owner to implement effective operating practices); We chose to call this phase of the pilot M&R as opposed to Monitoring & Verification (M&V) because M&V already has connotations for many that typically includes robust analysis. Each building and owner have different needs and we want to be able to present an appropriate amount of information for each project. It's important to keep in mind that the net-zero concept is an unknown for the industry, particularly when evaluating occupant behavior, and to truly achieve the standard, one needs a vested interest with owners, occupants, building maintenance, etc. Bill Welch asked why we didn't take a more analytical approach to the monitoring. Spencer said that we are setting up base monitoring of energy use at the point of connection (meter) to gather data to help the owner understand the performance of the building and identify issues that need a response. Spencer also said the program will be looking at net energy consumption that includes the generation of renewable energy systems installed on the projects. Subsystem metering can be very valuable for a building owner or operator to identify and correct operational issues.

The Path to Net Zero pilot's M&R offering involves three phases:

i. M&R plan
   a. Required for all projects, draft submitted before 50% of construction documents and final draft at 90% construction documents—program will provide a template for this document, review and approve.

ii. Set-up and data collection:
   a. Whole building interval data is required for all projects and owner must provide data electronically on a monthly basis; incentive available for interval or advanced metering systems. Incentives offered for incurred costs up to $30,000. Incentive up to $0.20/sq. ft. for costs related to subsystem metering: to help owner understand that if they design their building wiring early on it gives them the potential to identify deviations from the original plan on how the building should be performing. Other costs approved on a case-by-case basis.

iii. 18-month M&R period
   a. Program will go over past 18 months of data with building operators, owners and design teams, as well as monthly and quarterly check-ins with the program: How is the building performing? How should it be performing? How useful are the M&R systems? How do we get the building operation back to the plan? At this point, there are no financial stipulations with how the building performs in the real-world.
   b. Lauren Shapton mentioned how these projects are dependent on occupant behavior and maintenance/management policies. Lauren encourages incentives (financial, congratulatory) for when a building is performing well. Bill Welch supported Lauren's "carrot" idea to keep the savings going.
   c. Spencer clarified the building names and owners aren't available to the public in order to align with Energy Trust's confidentiality policy with customers and to remain sensitive to their needs on data sharing. Bill and Spencer agreed on the benefits of being able to divulge broad data points (type of building, etc) when appropriate.
   d. John Reynolds mentioned the benefits of subsystem meters, citing a BPA case study that highlighted the ability to make adjustments immediately on-site.
   e. Fred Gordon said Energy Trust will be evaluating this pilot extensively and determining where the data collected through the M&R process is sufficient for evaluation needs or where more is needed. We are interested in overall program savings, but may also want to carefully evaluate equipment options that look important and replicable. We think it's important to test the M&R process separately from evaluation as a tool to help people run buildings more efficiently.

Throughout the three M&R phases, the program aims to work with the building owner, facility manager and building operator on a frequent basis: touching base during the integrated design charrette, scoping meeting with the engineer, technical assistance review with the engineer, and the M&R plan review, commissioning report review and quarterly data reporting meetings with the owner. CAC members were supportive of the approach and incentives outlined.

5. Recent evaluations and survey results

Phil Degens gave an in-depth recap of recent evaluations on the Existing Buildings and Production Efficiency programs, as well as the residential customer awareness survey.

Existing Buildings program impact evaluation (2006-2007): slides 2-12

The Existing Buildings impact evaluation period ran from January 2006 to December 2007; site visits and customer surveys were out in the field from Q4 2007 – Q3 2008. Participation in 2006 included 1,611 sites saving 985,727 therms and 31,326,511 kWh; 2007 included 1,463 sites saving 526,998 therms and 26,531,894 kWh. Of measures installed, lighting measures accounted for 60.8% of all measures and foodservice measures accounted for 32% (mainly spray valves).Impact methods included: site visits with engineering analysis and billing analysis. Proposed to visit 119 sites in 2006—visited 81 sites, representing 63% of gas savings and 75% of electric savings. Proposed to visit 149 sites in 2007—visited 98 sites, representing 66% of gas savings and 79% of electric savings. Even though listed in our Terms & Conditions, a number of participants refused site visits (20 sites in 2006 and 16 sites in 2007). Final verifiable savings from 56 sites in 2006 (58% gas savings and 42% electric savings) and 89 sites in 2007 (51% of gas savings and 66% of electric). Phil clarified the different results between site visit completed and verifiable savings as a result of support documentation not sufficient to make a judgment on the savings. Billing analysis was performed on sites that did not receive a site visit.

A Statistically Adjusted Engineering Model (SAE) was estimated for different buildings types and generated the realization rates for measure level savings. On average, for gas, the realization rate was 98% for 2006, 102% for 2007; for electric, 90% for 2006 and 94% for 2007. Realization rates that were estimated from site visits and billing analysis differed significantly for lighting measures—calling attention to the need to reconcile lighting billing analysis with site visit realization rates. (Energy Trust is revisiting the sample of 2006 and 2007 lighting-only sites; performing site visits and logging hours of operation of lighting systems; will then compare the results to the billing analysis results—a report is expected in January 2010.)

Production Efficiency program process evaluation (2007-2008) and impact evaluation (2007):

The Production Efficiency process and impact evaluation period ran from January 2007 to December 2008.

Site visits completed represented 90% of total program savings, a megaproject (a paper plant) with 45% of program savings has not been completed (plant shutdowns). Site visits included end-use metering, spot metering (visual inspection, billing analysis and logging hours of operations).

Impact findings: total working savings is approximately 120 million kWh. Percent total of non-mega program savings: 55%. Production efficiency end-use types analyzed to come up with realization rate: air abatement, compressed air, HVAC, lighting, motors, process, industrial pumps, irrigation pumps, refrigeration, and water treatment.

Impact analysis issues: 1) Economic conditions—estimated impact on two levels (economy adjusted, full capacity) and saw only a minor impact on overall realization rate (about 1 percentage point); 2) Large projects can influence results (megaproject that represents 45% of savings, second largest project represents 18% of savings).

Impact analysis findings: 1) Overall realization rate of 94%; 2) Wastewater projects had poor results; since 2008, there is a new program specialist to help provide project oversight for wastewater projects; 3) Megaprojects now require separate evaluation plans. Mark Hughey asked for a greater explanation on the wastewater plant problems. Kim Crossman elaborated on how the projects involved a wastewater controls optimization approach that, while promising, did not deliver the verifiable savings expected. There were also issues with overestimation of baseline for both of these projects.

Impact evaluation recommendations: 1) Standardize participant data requirements; 2) Evaluate the quality of project documentation and review the technical analysis study guidelines; 3) Incorporate a plant closure study component to future evaluations (not planned/seasonal closures, to revisit 10-year measure life we currently use and to use Energy Trust data); 4) Ensure that participants are aware of Monitoring and Verification activities as early as possible. Reynolds asked if the plant closures affect our levelized cost. Phil responded that they were not affected as the 10-year measure life incorporates anticipated plant closures.

Free rider rates: Rates have increased in 2007 and 2008. 2007 custom participants weighted—27%; 2007 custom participants unweighted—28%; 2008 custom participants weighted—25%; 2008 small participants weighted—24%. A high level of free ridership isn't unexpected. This is an indicator of the times, as more and more people are interested in energy efficiency and it takes less time for action; corporate policies are also indicating a shift as they start to develop energy efficiency goals and performance metrics. No specific trend could be identified to inform program design. Higher free rider rates pose a significant challenge in meeting increasing program goals. At the National Evaluation Conference, a presentation comparing several large customer programs found 30-40% of participants took the incentive but said that they didn't need it. Yet, the programs are cost-effective considering this, and are continuing. Energy Trust has a pilot

which is collecting data closer to the time of project completion and from a larger sample of participants. Welch asked how to estimate free ridership. Peter responded the key is the trend of free riders over time, it can show when program design is successful as in the pilot anecdote (it's taking less time between the decision making and the investment). Andrew Ragen (Rogers Machinery) talked about how in this economic environment, there are no free riders as customers are not able to upgrade without the incentives and the Business Energy Tax Credit—they don't have the capital and some still don't believe the incentive/tax credit offer on the table is true.

Spillover analysis: Participants installing energy-efficiency measures without receiving an incentive increased from 2007 to 2008. The upside of the spillover analysis showing the program appears to have had a high-level of influence on the company's decision to make the investment. Downside of the spillover analysis is we can't quantify spillover: projects range from small lighting upgrades to a large milling machine—don't know the baseline or the actual measure as we can't do site visits. Because of this, the evaluation used a 1% spillover rate.

Participant survey results: 2008 participants indicated a high awareness and high level of satisfaction of Energy Trust. 100% would participate again; 30% suggested more facilitation and training. 20% implemented a project in the same year they first considered it; 85% received a Business Energy Tax Credit; both Energy Trust incentive and state tax credit appear to be influential in decision making. Top reasons for participating: energy cost savings, incentive, and reliability. Participant energy management practices: purchasing energy-efficient equipment, tracking energy use, managing motors, energy plan, and dedicated staff responsible for energy use (a new component).

Small industrial customer survey: High level of satisfaction with Energy Trust and vendors (57% of participants heard of Energy Trust through their vendors); one-third implemented a project in the same year they first considered it, a sign that projects are moving quicker through the process. Views of vendors: 75% vendor knowledgeable about program, 65% assisted participant with paperwork, 80% easy to contact, 95% consider calling, 84% explained savings clearly and 86% explained costs clearly. Small industrial customers' reasons for participating: energy-cost savings, incentive and process efficiency. Small industrial customers not at the level of custom project participants but still fairly active in managing energy use.

Production Delivery Contractors process evaluation: Moving from a PMC model to an in-house offering. Currently, there are six PDCs, who expressed only marginal changes in their role with the change in management. PDCs would like to see more regular feedback on performance and more guidance on marketing plans and marketing methods. Study guidelines have improved, still room for improvement. Expressed concerns over the poor economy impacting the ability to meet goals and production efficiency projects also qualifying for a Business Energy Tax Credit.

Allied Technical Assistance Contractors process evaluation: The Industrial program currently has 28 ATACs. (7 in 2008). Energy Trust selects ATACs in-house once a PDC determines a study is needed. ATACs perceived no changes in program with management change, still a perception of conflict of interest between PDCs also acting as ATACs, although no actual conflict was found by the evaluators given Energy Trust's role in independently assigning ATACs to projects.

Vendor survey results: Ten vendors surveyed; compressed air and lighting were the areas with the most active vendors. 90% have been aware of the program for more than five years and most market energy efficiency options. Two-thirds generally know if a project will qualify for the program and 90% reported no difficulty in understanding the program or receiving complaints from customers. The most frequent reasons for not applying for incentives: a hassle, incentive too small, outside of service territory.

Other stakeholders were also surveyed: BPA, NEEA, Oregon Department of Energy, PacifiCorp. No large concerns in change in management but consensus that communications could be improved, as well as coordination with Business Energy Tax Credit (ideas to improve included sending in correct forms and better vendor training on guidelines). Also expressed support on developing more regional approaches so entities could offer consistent standardized approaches over the entire region.

Process evaluation recommendations: Increase the pool of ATACs; consider using out-of-state firms for industry-specific experience; increase transparency of assigning and delegating work to address issues of conflict of interest; coordinate with Oregon Department of Energy to communicate to customers, staff and trade allies requirements and changes to the Business Energy Tax Credit; develop an online application; Energy Trust communications department to work more closely with PDC marketing teams; continue quarterly PDC and annual ATAC meetings; include vendors in communications.

Overall: Participants are satisfied with the program and program representatives and are a good resource for future projects. Incentive levels and offerings are appropriate and motivating. Vendors and participants view energy efficiency applications as common. Need to communicate program offerings and train vendors and ATACs on energy-efficiency messaging.

Oregon Residential Awareness Study (2009):
Second annual Oregon Residential Awareness Study was completed for 2009 to gauge our customers' general level of interest and awareness on Energy Trust, energy efficiency, renewable energy and climate change. Results will be used to help design marketing and implementation of existing and future programs and campaigns. We surveyed a representative sample of Oregon, not just our service territory. Awareness of Energy Trust: growing over time, highest in Portland metro, increased across the board. Awareness by electric provider and by gas provider is growing. Asked "What does

Energy Trust offer?" respondents said: energy-saving programs for homes (28%), cash incentives for energy-saving products (16%). Respondents are first hearing about Energy Trust through utility channels (30%), including utility websites, bill inserts, advertising and representatives; as well as, word of mouth (21%) and mass media (17%). Participation with Energy Trust by homeowners in 2009 increased in all regions. Satisfaction rate with program participation: 84% "satisfied" or "very satisfied." Lauren Shapton recommends asking satisfaction questions before participation questions because some people aren't participants but had an interaction with Energy Trust. Phil said they'd keep that in mind for the next awareness study. Participants in the survey were homeowners (98%) of single-family homes (84%), are more likely to be 45-54, to have at least a college degree with a higher income (79% reported making more than $50,000), and to have gas space and water heat. However, most respondents were nonparticipants with characteristics similar to the general population: mix of owners and renters (64%/36%), mix of single-family and multifamily, more likely to be younger than 35 with a mix of education levels, likely to make less than $50,000 and to have electric space and water heat.

Segmentation results: Six categories

1. Maybe Later (15%): Young renters, multifamily, low incomes, concerned about energy issues, as their incomes and they buy homes they may become participants
2. Show Me (11%): Eastern Oregon homeowners, moderate incomes and education, most have low energy use, least concerned about energy issues, low opinion of energy efficiency helping prevent climate change
3. Hands Full (18%): Middle-aged homeowners, larger families (children, parents, extended family), lower incomes, electric/non-gas heating, some concern about energy issues, low opinion of energy efficiency helping prevent climate change
4. Strugglers (13%): Young/middle-aged renters in multifamily units, lowest incomes, electric heating and low to medium energy use, some concern about energy issues, low opinion of energy efficiency helping prevent climate change
5. Willing & Able (24%): Middle-aged homeowners, highest incomes, natural gas heating, highest energy use of all segments, high participation with Energy Trust, high opinion of energy efficiency helping prevent climate change
6. Main Street Oregonians (18%): Older homeowners, non-urban with lower incomes, electric heating, varied energy use, not concerned about energy issues, low opinion of energy efficiency helping prevent climate change

Next year, the survey will be repeated but with fewer questions exploring new topics and to track trends in awareness and participation. Not planning on repeating the segmentation.

6. Updates on free rider and realization rates

Fred Gordon gave an update on forecasting electric savings for the next budget round. To forecast electric savings in 2010 and 2011, we took into account updated estimates of market effects from recent programs evaluations of New Buildings, Existing Buildings

and Industry. We use a three-year average of market effects from prior evaluations for forecasting, so the new information was averaged in with the two prior years. The result was that the forecast of electric savings was reduced by about 2.9 average megawatts.

We also adjusted multifamily retrofit savings based on preliminary evaluation results. It became clear that the engineering models used to estimate savings assumed much higher energy use than we found based on utility bills. We are broadening the sample for this evaluation, but it's pretty clear that savings estimates will be reduced when it is finalized. The result is a reduction in forecast savings in 2010 of about 0.4 aMW.

With these adjustments, we are still expecting to meet Integrated Resource Planning goals within our budget.

Gordon clarified free riders are accounted for in both electric and gas forecasts.

7. Additional public comment

No public comments.

8. Adjourn

The meeting adjourned at 3:31 p.m. Next meeting is January 13, 2010.