



**Portland General Electric Company**  
121 SW Salmon Street • Portland, Oregon 97204  
PortlandGeneral.com

October 1, 2010

*Via Electronic Filing and U.S. Mail*

Oregon Public Utility Commission  
Attention: Filing Center  
550 Capitol Street NE, #215  
PO Box 2148  
Salem OR 97308-2148

**Re: LC 48**

Attention Filing Center:

Enclosed for filing in the above-captioned docket are an original and three copies of Portland General Electric Company's Response to the Commission's Bench Request issued on September 21, 2010.

This is being filed by electronic mail with the Filing Center.

An extra copy of the cover letter is enclosed. Please date stamp the extra copy and return to me in the envelope provided. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Dahlgren", with a long, sweeping horizontal line extending to the right.

Randy Dahlgren  
Director, Regulatory Policy and Affairs

Enclosures  
cc: LC 48 Service List (w/enclosures)

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

**DOCKET NO. LC 48**

In the Matter of PORTLAND GENERAL ELECTRIC COMPANY 2009 Integrated Resource Plan.		<b>Response to Bench Request</b>
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On September 21, 2010, the Commission issued a Bench Request directing Portland General Electric (PGE) to submit the following supplemental information:

Create a new combined future by using:

- a. PIRA's low natural gas price scenario (\$5.22 per MMBTu in real-levelized 2009 dollars, PGE IRP at 77);
- b. PGE's low load growth rate forecast (1.57 percent for 2010-2030, PGE IRP at 36);
- c. PGE's low carbon dioxide price scenario (\$12 per ton in real-levelized 2009 dollars, PGE IRP at 106); and
- d. Reference case assumptions for all other input assumptions.

Using the new combined future, conduct portfolio sensitivity analyses on at least the following minimum set of portfolios:

- e. DEQ 2040 (BART I);
- f. PGE 2020 (BART II);
- g. PGE 2020 (BART III);
- h. DEQ 2020 (Option I);
- i. DEQ 2018 (Option 2);
- j. DEQ 2015 (Option 3);
- k. Boardman through 2014; and
- l. Boardman through 2017.

For each portfolio, provide the new sensitivity case NPVRR and the difference between the new sensitivity case NPVRR and the reference case NPVRR

PGE provides the information requested in Attachment A hereto. The analysis for a 2017 portfolio is not included in our response as we informed parties that we were removing this portfolio from the IRP candidate portfolios in our August 10<sup>th</sup> Reply Comments. We also offer the following observations to provide context for the results of the Bench Request:

- We believe that the use of “futures” that examine assumptions and conditions that differ from those of a reference case is helpful in assessing the durability of candidate portfolios. However, we caution against using the futures in isolation to draw conclusions about the relative merits of different long-term resource actions. PGE developed and modeled twenty futures that test cost assumptions and external circumstances that differ materially from those in our reference case. These futures were developed by PGE in conjunction with stakeholder feedback received in public workshops conducted over a roughly one and a half year period. The combined future described in the Bench Request (Combined Future) incorporates three existing IRP futures and brings the total number of futures to twenty-one (not including the reference case). “Futures” are most useful for examining portfolio robustness in the event that new resource decisions are made and implemented and future circumstances later change from the assumptions made during the planning phase. In other words, futures provide insights regarding the resiliency and durability of portfolios if the world you encounter in the future is different from what was assumed in the reference case. However, modeled futures also have limitations to their usefulness as they focus on a single result and do not consider potential uncertainty around the outcome, and therefore provide only partial guidance in resource decision making. More specifically, futures do not examine cost variability, reliability or execution risks associated with candidate portfolios under the alternate future assumptions. Given these limitations, futures should not be accepted in lieu of a reference case scenario nor should they be used in isolation to draw conclusions about the relative merits of different long-term resource actions.

- Under the Combined Future the projected cost of all portfolios declines substantially. The average change in cost across all candidate portfolios when compared to the reference case is approximately twenty-four percent (or roughly \$6.8 billion). In addition, portfolios that rely more heavily on natural gas generation generally perform better on cost, while portfolios that rely more heavily on fixed cost assets (wind / renewables, coal and nuclear) do not perform as well on cost relative to other portfolios. We have not provided a risk analysis for the Combined Future as risk performance is analyzed against the reference case set of assumptions in PGE’s IRP modeling framework, and doing so would go beyond the scope of the Bench Request. However, we believe that if we were to conduct such risk modeling, we would find that portfolios that reduce exposure to volatile cost drivers (such as wholesale gas and electric markets) would continue to perform better from a risk perspective. The increased portfolio risk associated with higher exposure to natural gas and electric prices was evidenced in the modeling results of our filed IRP where portfolios with lower reliance on gas generation

and electric markets (these are also typically portfolios with more fixed cost assets such as wind and coal), generally perform better with regard to risk metrics.

- The cost differences between most of the proposed PGE and DEQ BART portfolios under the Combined Future are relatively small, yet the risk differences remain significant. In particular, the execution and supply risk associated with replacing a large baseload plant like Boardman in the 2015 timeframe is high. As our IRP indicates, we already have a large resource gap in 2015 without a Boardman closure. Our IRP projects an energy resource deficit of 873 MWa in 2015 even if Boardman remains in our portfolio. Closing Boardman in 2015 would increase the gap to 1,187 MWa or approximately 43% of the average electricity demand for PGE's entire customer base. The challenges associated with sourcing firm, controllable and reasonably-priced replacement energy supply in the 2015 timeframe is discussed in detail in our August 10<sup>th</sup> and September 27<sup>th</sup> Comments.

- The Combined Future includes a combination of assumptions for low natural gas and CO2 prices that we believe are unlikely to persist for the next 30 years. The Bench Request directs PGE to use the IRP low future natural gas price scenario which assumes that natural gas prices over the next 30 years will actually be lower (in real dollar terms) than the average natural gas prices that have been realized in the Northwest gas markets over the last decade. At such low price levels, the risk associated with potential changes in gas prices becomes highly asymmetric – gas prices have very little room to move down from the forecast levels (due to costs of exploration, extraction and processing), but lots of potential for prices to move up. Accordingly, the risk of being “wrong” with respect to gas prices could be very high if too much emphasis is placed on a low price future. We more fully discuss risks associated with gas supply projections and price variability in our August 10<sup>th</sup> and September 27<sup>th</sup> Comments. With respect to CO2 prices, we recognize that the likelihood of near-term greenhouse gas legislation that materially increases energy costs has diminished due to broad economic and unemployment concerns. However, we are also skeptical that if such legislative action is taken in the future that the long-term, real dollar cost would be as low as the level suggested in the Combined Future. Our analysis of CO2 risk is more fully discussed in our IRP.

- It is also important to recognize that IRP futures and modeling more generally cannot address all of the uncertainties and requirements facing PGE and its customers in this planning cycle. We must also rely on sound judgment and experience when considering our choices with respect to existing resources such as Boardman, or new supply and demand side resources such as the transmission, generation and energy efficiency contained in our resource action plan. Accordingly, we believe that a preferred portfolio must not only perform well with respect to IRP cost, risk and reliability analysis, but it must also be practical with respect to our ability to implement, integrate and operate. A preferred portfolio should also maintain resource and fuel diversity, as diversification is a well proven method for reducing the risk of encountering extreme bad outcomes. Finally, when considering the potential closure of a large and important plant such as Boardman, any reasonable solution must recognize that significant and long-

lasting impacts will occur – to communities, employees and PGE’s future resource mix. A plan that provides a reasonable time for transition would mitigate adverse impacts of ceasing coal-fired operations at Boardman, while providing valuable time to plan and secure new sources of supply. We believe that this is the only responsible approach to evaluating and selecting a preferred resource action plan.

**October 1, 2010 - Response to Bench Request**

Table represents IRP portfolios and futures, including new OPUC Bench Request "Combined Future." The Reference Case is the only scenario that has been tested through full IRP cost and risk modeling. All other futures provide cost sensitivities only, based on changes in certain assumptions

Suppl. Table D Addendum: Scenario Analysis Detail (\$ Million)

Portfolios -->		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
		Market	Natural Gas	Wind	Diversified Green	Diversified Thermal with Wind	Bridge to IGCC in WY	Bridge to Nuclear	Green w/ On-peak Energy Target	Diversified Thermal with Green	Boardman through 2014	Oregon CO2 Goal	PGE 2020 BART II	Diversified Green with wind in WY	Diversified Thermal w/ Green w/o lease	DEQ 2020 (Option 1)	DEQ 2018 (Option 2)	DEQ 2015 (Option 3)	PGE 2020 BART III	
<b>A</b>	<b>Reference Case</b>	NPVRR	\$27,211	\$29,027	\$29,288	\$28,987	\$28,891	\$32,735	\$29,853	\$28,971	\$28,674	\$28,593	\$30,375	\$28,396	\$30,828	28,668	\$28,758	\$28,521	\$28,546	28,499
		Delta to Reference Case	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>B</b>	<b>High Gas</b>	NPVRR	\$34,213	\$35,970	\$34,181	\$34,067	\$35,312	\$37,642	\$34,707	\$34,011	\$35,310	\$36,175	\$35,006	\$35,551	\$35,946	\$35,231	\$35,971	\$35,856	\$36,036	\$35,694
		Delta to Reference Case	\$7,002	\$6,944	\$4,893	\$5,080	\$6,420	\$4,907	\$4,855	\$5,040	\$6,636	\$7,582	\$4,631	\$7,155	\$5,119	\$6,563	\$7,213	\$7,334	\$7,490	\$7,196
<b>C</b>	<b>Low Gas</b>	NPVRR	\$23,524	\$25,099	\$26,597	\$26,201	\$25,342	\$29,986	\$27,260	\$26,087	\$25,012	\$24,517	\$28,141	\$24,532	\$28,002	\$24,958	\$24,845	\$24,560	\$24,524	\$24,590
		Delta to Reference Case	-\$3,687	-\$3,928	-\$2,691	-\$2,786	-\$3,550	-\$2,749	-\$2,592	-\$2,884	-\$3,662	-\$4,076	-\$2,234	-\$3,864	-\$2,825	-\$3,710	-\$3,913	-\$3,961	-\$4,022	-\$3,909
<b>D</b>	<b>CO2 \$45 per ton</b>	NPVRR	\$29,302	\$30,956	\$30,866	\$30,618	\$30,760	\$35,144	\$31,289	\$30,528	\$30,606	\$30,293	\$31,150	\$30,152	\$32,468	\$30,575	\$30,517	\$30,274	\$30,266	\$30,261
		Delta to Reference Case	\$2,091	\$1,929	\$1,578	\$1,631	\$1,868	\$2,409	\$1,436	\$1,557	\$1,932	\$1,700	\$775	\$1,756	\$1,640	\$1,907	\$1,759	\$1,753	\$1,720	\$1,762
<b>E</b>	<b>CO2 \$65 per ton</b>	NPVRR	\$32,183	\$33,520	\$32,980	\$32,809	\$33,264	\$38,270	\$33,234	\$32,576	\$33,200	\$32,596	\$32,296	\$32,544	\$34,658	\$33,142	\$32,884	\$32,628	\$32,584	\$32,622
		Delta to Reference Case	\$4,972	\$4,494	\$3,692	\$3,822	\$4,372	\$5,535	\$3,381	\$3,605	\$4,526	\$4,003	\$1,921	\$4,148	\$3,830	\$4,474	\$4,126	\$4,106	\$4,038	\$4,123
<b>F</b>	<b>No CO2</b>	NPVRR	\$23,024	\$24,945	\$25,998	\$25,595	\$25,004	\$27,757	\$26,956	\$25,626	\$24,672	\$25,281	\$29,107	\$24,952	\$27,414	\$24,755	\$25,321	\$25,113	\$25,205	\$25,062
		Delta to Reference Case	-\$4,187	-\$4,081	-\$3,290	-\$3,392	-\$3,887	-\$4,978	-\$2,897	-\$3,344	-\$4,002	-\$3,312	-\$1,267	-\$3,444	-\$3,414	-\$3,913	-\$3,437	-\$3,408	-\$3,341	-\$3,436
<b>G</b>	<b>CO2 \$20 per ton</b>	NPVRR	\$25,825	\$27,707	\$28,220	\$27,885	\$27,626	\$31,106	\$28,909	\$27,900	\$27,368	\$27,470	\$29,917	\$27,227	\$29,717	\$27,369	\$27,594	\$27,374	\$27,419	\$27,338
		Delta to Reference Case	-\$1,387	-\$1,320	-\$1,066	-\$1,101	-\$1,265	-\$1,629	-\$943	-\$1,071	-\$1,306	-\$1,123	-\$458	-\$1,169	-\$1,110	-\$1,299	-\$1,164	-\$1,148	-\$1,126	-\$1,161
<b>H</b>	<b>High Capital Costs</b>	NPVRR	\$27,419	\$29,340	\$30,062	\$29,710	\$29,314	\$33,749	\$34,063	\$29,665	\$29,046	\$29,002	\$34,993	\$28,796	\$31,735	\$29,053	\$29,158	\$28,925	\$28,953	\$28,898
		Delta to Reference Case	\$208	\$314	\$773	\$723	\$423	\$1,014	\$4,210	\$695	\$372	\$409	\$4,619	\$400	\$908	\$385	\$400	\$404	\$407	\$400
<b>I</b>	<b>High PGE Load Growth</b>	NPVRR	\$30,410	\$32,225	\$32,487	\$32,186	\$32,090	\$35,934	\$33,052	\$32,170	\$31,873	\$31,792	\$33,574	\$31,595	\$34,026	\$31,867	\$31,956	\$31,719	\$31,743	\$31,696
		Delta to Reference Case	\$3,199	\$3,199	\$3,487	\$3,199	\$3,199	\$3,939	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199	\$3,199
<b>J</b>	<b>Low PGE load growth</b>	NPVRR	\$24,867	\$26,682	\$26,944	\$26,642	\$26,547	\$30,390	\$27,508	\$26,626	\$26,329	\$26,248	\$28,030	\$26,051	\$28,483	\$26,323	\$26,415	\$26,178	\$26,202	\$26,155
		Delta to Reference Case	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,345	-\$2,344	-\$2,344	-\$2,344	-\$2,344
<b>K</b>	<b>High Electricity Prices</b>	NPVRR	\$39,882	\$25,266	\$21,997	\$24,158	\$26,348	\$32,046	\$28,547	\$22,576	\$27,853	\$26,400	\$23,541	\$25,554	\$26,141	\$27,477	\$25,930	\$25,860	\$26,130	\$25,654
		Delta to Reference Case	\$12,670	-\$3,760	-\$7,291	-\$4,829	-\$2,543	-\$689	-\$1,306	-\$6,395	-\$821	-\$2,193	-\$6,833	-\$2,842	-\$4,686	-\$1,191	-\$2,828	-\$2,661	-\$2,416	-\$2,844
<b>L</b>	<b>Low Electricity Prices</b>	NPVRR	\$19,054	\$21,452	\$23,716	\$23,110	\$21,748	\$26,010	\$24,748	\$23,396	\$21,201	\$21,109	\$26,914	\$21,120	\$24,822	\$21,147	\$21,399	\$21,122	\$21,115	\$21,143
		Delta to Reference Case	-\$8,158	-\$7,575	-\$5,573	-\$5,877	-\$7,144	-\$6,725	-\$5,105	-\$5,575	-\$7,473	-\$7,484	-\$5,461	-\$7,276	-\$6,006	-\$7,521	-\$7,359	-\$7,400	-\$7,431	-\$7,356
<b>M</b>	<b>No Incentives</b>	NPVRR	\$27,678	\$29,493	\$30,841	\$30,658	\$29,698	\$33,205	\$30,322	\$30,642	\$29,356	\$29,275	\$32,046	\$29,078	\$32,488	\$29,350	\$29,440	\$29,203	\$29,228	\$29,181
		Delta to Reference Case	\$467	\$467	\$1,553	\$1,672	\$807	\$470	\$470	\$1,672	\$682	\$682	\$1,672	\$682	\$1,661	\$682	\$682	\$682	\$682	\$682
<b>N</b>	<b>50 percent incentives</b>	NPVRR	\$27,445	\$29,260	\$30,065	\$29,823	\$29,295	\$32,970	\$30,088	\$29,807	\$29,015	\$28,934	\$31,211	\$28,737	\$31,658	\$29,009	\$29,099	\$28,863	\$28,887	\$28,840
		Delta to Reference Case	\$234	\$234	\$777	\$836	\$403	\$235	\$235	\$836	\$341	\$341	\$836	\$341	\$831	\$341	\$341	\$341	\$341	\$341
<b>O</b>	<b>Low Coal-High Gas-\$65 CO2</b>	NPVRR	\$38,340	\$40,028	\$37,302	\$37,302	\$39,129	\$42,693	\$37,447	\$37,218	\$39,257	\$39,942	\$36,455	\$39,389	\$39,217	\$39,323	\$39,769	\$39,664	\$39,815	\$39,491
		Delta to Reference Case	\$11,129	\$11,002	\$8,014	\$8,315	\$10,238	\$9,958	\$7,595	\$8,247	\$10,583	\$11,349	\$6,080	\$10,994	\$8,390	\$10,655	\$11,011	\$11,143	\$11,269	\$10,992
<b>P</b>	<b>CO2 Start 1 year later</b>	NPVRR	\$26,951	\$28,775	\$29,064	\$28,759	\$28,645	\$32,455	\$29,631	\$28,747	\$28,424	\$28,367	\$30,206	\$28,162	\$30,597	\$28,423	\$28,518	\$28,291	\$28,321	\$28,265
		Delta to Reference Case	-\$261	-\$252	-\$224	-\$228	-\$246	-\$280	-\$222	-\$223	-\$250	-\$226	-\$168	-\$234	-\$230	-\$245	-\$240	-\$231	-\$225	-\$233
<b>Q</b>	<b>CO2 Start 1 year earlier</b>	NPVRR	\$27,477	\$29,289	\$29,522	\$29,224	\$29,147	\$33,024	\$30,087	\$29,206	\$28,933	\$28,832	\$30,560	\$28,642	\$31,066	\$28,923	\$29,003	\$28,766	\$28,787	\$28,746
		Delta to Reference Case	\$266	\$263	\$234	\$237	\$256	\$289	\$234	\$235	\$259	\$239	\$185	\$246	\$238	\$255	\$244	\$244	\$241	\$247
<b>R</b>	<b>CO2 \$12 per ton</b>	NPVRR	\$24,738	\$26,648	\$27,372	\$27,009	\$26,618	\$29,801	\$28,162	\$27,036	\$26,330	\$26,588	\$29,574	\$26,309	\$28,835	\$26,340	\$26,693	\$26,472	\$26,525	\$26,429
		Delta to Reference Case	-\$2,474	-\$2,379	-\$1,916	-\$1,978	-\$2,273	-\$2,934	-\$1,691	-\$1,935	-\$2,344	-\$2,005	-\$801	-\$2,087	-\$1,992	-\$2,328	-\$2,065	-\$2,050	-\$2,021	-\$2,069
<b>S</b>	<b>Aggressive EE</b>	NPVRR	\$26,600	\$28,416	\$28,677	\$28,376	\$28,281	\$32,124	\$29,242	\$28,360	\$28,063	\$27,982	\$29,764	\$27,785	\$30,217	\$28,057	\$28,148	\$27,911	\$27,935	\$27,888
		Delta to Reference Case	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$611	-\$610	-\$611	-\$611	-\$611	-\$611
<b>T</b>	<b>Major Resources 1 Year Earlier</b>	NPVRR	\$27,209	\$29,144	\$29,518	\$29,160	\$29,021	\$33,025	\$29,893	\$29,132	\$28,775	\$28,741	\$30,707	\$28,493	\$31,102	\$28,781	\$28,856	\$28,664	\$28,642	\$28,597
		Delta to Reference Case	-\$2	\$118	\$230	\$173	\$130	\$290	\$41	\$161	\$101	\$148	\$332	\$97	\$275	\$98	\$142	\$97	\$98	
<b>U</b>	<b>Major Resources 1 Year Later</b>	NPVRR	\$27,212	\$28,916	\$29,083	\$28,831	\$28,771	\$32,474	\$29,673	\$28,577	\$28,577	\$28,453	\$30,079	\$28,268	\$30,574	\$28,562	\$28,662	\$28,392	\$28,462	\$28,409
		Delta to Reference Case	\$0	-\$111	-\$205	-\$156	-\$121	-\$261	-\$180	-\$97	-\$145	-\$140	-\$296	-\$128	-\$254	-\$106	-\$96	-\$130	-\$84	-\$90
<b>V</b>	<b>Bench Request 092110 *</b>	NPVRR	\$19,668	\$21,487	\$23,394	\$22,930	\$21,793	\$25,815	\$24,212	\$22,922	\$21,386	\$21,094	\$25,751	\$21,022	\$24,728	\$21,346	\$21,383	\$21,096	\$21,077	\$21,125
		Delta to Reference Case	-\$7,543	-\$7,539	-\$5,895	-\$6,057	-\$7,098	-\$6,920	-\$5,641	-\$6,049	-\$7,288	-\$7,499	-\$4,624	-\$7,374	-\$6,100	-\$7,322	-\$7,376	-\$7,425	-\$7,468	-\$7,374

\* Combination of futures: low gas, \$12 CO2, low PGE load growth

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day caused the foregoing **LC 48 PORTLAND GENERAL ELECTRIC'S RESPONSE TO THE COMMISSIONS BENCH REQUEST** to be served by electronic mail to those parties whose email addresses appear on the attached service list, and by First Class US Mail, postage prepaid and properly addressed, to those parties on the attached service lists who have not waived paper service from OPUC Docket No. LC 48.

Dated at Portland, Oregon, this 1<sup>st</sup> day of October 2010.



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Randy Dahlgren  
Director, Regulatory Policy and Affairs  
On behalf of Portland General Electric Company



**eDockets**

Docket Summary

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**Docket No:** LC 48      **Docket Name:** PORTLAND GENERAL ELECTRIC COMPANY

[Print Summary](#)

**Subject Company:** PORTLAND GENERAL ELECTRIC

In the Matter of PORTLAND GENERAL ELECTRIC COMPANY 2009 Integrated Resource Plan. (See also 5/4/10 errata filing).  
Filed by Randy Dahlgren.

**Filing Date:** 11/5/2009

**Case Manager:** MAURY GALBRAITH      **Phone:** (503) 378-8718      **Email:** [maury.galbraith@state.or.us](mailto:maury.galbraith@state.or.us)

**Staff Contact:** LISA GORSUCH      **Phone:** (503) 378-3778      **Email:** [lisa.gorsuch@state.or.us](mailto:lisa.gorsuch@state.or.us)

**Law Judge:** SHANI PINES      **Phone:**

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W	KELLY NOKES	<a href="mailto:crk@gorge.net">crk@gorge.net</a>	
W	JOHN PRESCOTT POWER RESOURCES COOPERATIVE	711 NE HALSEY PORTLAND OR 97232 <a href="mailto:jprescott@pngcpower.com">jprescott@pngcpower.com</a>	
W	RYAN M SWINBURNSON COUNSEL FOR MORROW COUNTY	515 N NEEL ST KENNEWICK WA 99336 <a href="mailto:r_swinburnson@verizon.net">r_swinburnson@verizon.net</a>	
W	<b>*DEPARTMENT OF JUSTICE</b>  JANET L PREWITT (C) ASSISTANT AG	NATURAL RESOURCES SECTION 1162 COURT ST NE SALEM OR 97301-4096 <a href="mailto:janet.prewitt@doj.state.or.us">janet.prewitt@doj.state.or.us</a>	
W	<b>*OREGON DEPARTMENT OF ENERGY</b>  KIP PHEIL (C) SENIOR POLICY ANALYST	625 MARION ST NE - STE 1 SALEM OR 97301-3737 <a href="mailto:kip.pheil@state.or.us">kip.pheil@state.or.us</a>	
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W	<b>ASSOCIATED OREGON INDUSTRIES</b>  JOHN LEDGER	1149 COURT ST NE SALEM OR 97301 <a href="mailto:johnledger@aoi.org">johnledger@aoi.org</a>	



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