CADMUS

MEMORANDUM

Date: October 29, 2013

To: Don Jones, Jr.

From: Aaron Jenniges

Re: WA 2014-2015 Total Company, Residential, and Commercial and Industrial Portfolio Cost-Effectiveness

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The tables below present the cost-effectiveness findings of the Washington total company, residential, and commercial and industrial portfolios based on 2014-15 costs and savings estimates provided by PacifiCorp. The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 49% load factor west residential whole house decrements for residential savings and the 2013 IRP 71% load factor west system decrements for commercial and industrial savings. Table 1 shows the input assumptions.

Table 1: Portfolio Financial Inputs

Input Description	Value
Discount Rate	6.88%
Residential Line Loss	9.67%
Commercial Line Loss	9.53%
Industrial Line Loss	8.16%
Irrigation Line Loss	9.67%
Inflation Rate	1.90%

Table 2 shows portfolio level costs.

Table 2: Portfolio Costs

Cost Type	2014	2015
Energy Education in Schools	$60,000	$60,000
Customer Outreach and Communication	$250,000	$250,000
Program Evaluations	$640,000	$328,000
Administration of Prior Programs	$1,500	$1,500

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Cost-effectiveness was tested for six portfolio scenarios:

1. Residential Portfolio (Table 4): Home Energy Savings, Home Energy Reporting, See-Ya Later Refrigerator, and Low Income Weatherization
2. Commercial & Industrial Portfolio (Table 5): Business Program
3. Total Company Portfolio (Table 6): Residential Portfolio, Commercial & Industrial Portfolio, and Portfolio Costs from Table 2
4. Total Company Portfolio including Non-Energy Benefits (Table 9)
5. Total Company Portfolio including NEEA (Table 10)
6. Total Company Portfolio including NEEA and Non-Energy Benefits (Table 11)

Table 3 provides a summary of the benefit/cost ratios for the six portfolio scenarios. The total company and sector specific portfolios are cost-effective from all perspectives except the RIM (Ratepayer Impact Test)

Table 3: Summary of Benefit/Cost Ratios

Scenario	PTRC	TRC	UCT	RIM	PCT
Residential Portfolio	1.54	1.40	2.02	0.59	3.48
C&I Portfolio	1.59	1.44	3.07	0.72	2.27
Total Portfolio	1.50	1.36	2.43	0.66	2.55
Total Portfolio + NEBs	1.70	1.57	2.47	0.67	2.82
Total Portfolio + NEEA	1.50	1.36	2.39	0.65	2.55
Total Portfolio + NEBS & NEEA	1.70	1.57	2.42	0.66	2.82

Table 4: WA 2014-15 Residential Portfolio

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.053	$9,009,077	$13,910,655	$4,901,579	1.54
Total Resource Cost Test (TRC) No Adder	$0.053	$9,009,077	$12,646,050	$3,636,974	1.40
Utility Cost Test (UCT)	$0.037	$6,254,505	$12,646,050	$6,391,545	2.02
Rate Impact Test (RIM)		$21,592,377	$12,646,050	($8,946,327)	0.59
Participant Cost Test (PCT)		$5,071,515	$17,654,816	$12,583,301	3.48
Lifecycle Revenue Impact ($/KWh)	0.000095896				
Discounted Participant Payback (years)	1.87				

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Table 5: WA 2014-15 Commercial and Industrial Portfolio

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.049	$20,771,445	$32,999,523	$12,228,078	1.59
Total Resource Cost Test (TRC) No Adder	$0.049	$20,771,445	$29,999,567	$9,228,122	1.44
Utility Cost Test (UCT)	$0.023	$9,769,411	$29,999,567	$20,230,156	3.07
Rate Impact Test (RIM)		$41,612,376	$29,999,567	($11,612,810)	0.72
Participant Cost Test (PCT)		$16,449,077	$37,290,008	$20,840,931	2.27
Lifecycle Revenue Impact ($/KWh)	0.000198969				
Discounted Participant Payback (years)	4.26				

Table 6: WA 2014-15 Total Company Portfolio Including Portfolio Costs

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.053	$31,330,345	$46,910,179	$15,579,834	1.50
Total Resource Cost Test (TRC) No Adder	$0.053	$31,330,345	$42,645,617	$11,315,272	1.36
Utility Cost Test (UCT)	$0.030	$17,573,739	$42,645,617	$25,071,878	2.43
Rate Impact Test (RIM)		$64,754,577	$42,645,617	($22,108,960)	0.66
Participant Cost Test (PCT)		$21,520,592	$54,944,824	$33,424,232	2.55
Lifecycle Revenue Impact ($/KWh)	0.000236986				
Discounted Participant Payback (years)	3.36				

Table 6 does not include non-energy benefits from the Home Energy Savings and Low Income Weatherization programs. Table 7 and Table 8 show the non-energy benefits from these programs.

Table 7: WA 2014-15 Home Energy Savings Non-Energy Benefits

Non-Energy Benefit	Program Impact (Present Value)	Perspective Adjusted
Home Energy Savings	$5,640,857	PTRC, TRC, and PCT

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Table 8: WA 2014-15 Low Income Weatherization Non-Energy Benefits

Non-Energy Benefit	Program Impact	Perspective Adjusted
Arrearage Reduction	$7,125	PTRC, TRC
Economic Impact	$689,360	PTRC, RIM, UCT, TRC
Home Repair Benefits	$107,842	PCT, PTRC, TRC
Total	**$804,327**	

Table 9 shows the total portfolio cost-effectiveness with non-energy benefits included. The portfolio is cost-effective from all perspectives except the RIM. Table 10 shows the cost-effectiveness of the total portfolio including NEEA funded savings. Table 11 shows the cost-effectiveness of the total portfolio including both NEEA funded savings and non-energy benefits.

Table 9: WA 2014-15 Total Company Portfolio Including Portfolio Costs and Non-Energy Benefits

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.053	$31,330,345	$53,355,363	$22,025,018	1.70
Total Resource Cost Test (TRC) No Adder	$0.053	$31,330,345	$49,090,801	$17,760,456	1.57
Utility Cost Test (UCT)	$0.030	$17,573,739	$43,334,977	$25,761,238	2.47
Rate Impact Test (RIM)		$64,754,577	$43,334,977	($21,419,600)	0.67
Participant Cost Test (PCT)		$21,520,592	$60,693,523	$39,172,931	2.82

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Table 10: WA 2014-15 Total Company Portfolio Including Portfolio Costs and NEEA Funded Savings

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.053	$31,330,345	$46,910,179	$15,579,834	1.50
Total Resource Cost Test (TRC) No Adder	$0.053	$31,330,345	$42,645,617	$11,315,272	1.36
Utility Cost Test (UCT)	$0.030	$19,843,028	$47,357,926	$27,514,898	2.39
Rate Impact Test (RIM)		$73,013,119	$47,357,926	($25,655,193)	0.65
Participant Cost Test (PCT)		$21,520,592	$54,944,824	$33,424,232	2.55
Lifecycle Revenue Impact ($/KWh)	0.000295247				
Discounted Participant Payback (years)	3.36				

Table 11: WA 2014-15 Total Company Portfolio Including Portfolio Costs, NEEA Funded Savings, and Non-Energy Benefits

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.053	$31,330,345	$53,355,363	$22,025,018	1.70
Total Resource Cost Test (TRC) No Adder	$0.053	$31,330,345	$49,090,801	$17,760,456	1.57
Utility Cost Test (UCT)	$0.030	$19,843,028	$48,047,286	$28,204,258	2.42
Rate Impact Test (RIM)		$73,013,119	$48,047,286	($24,965,833)	0.66
Participant Cost Test (PCT)		$21,520,592	$60,693,523	$39,172,931	2.82

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MEMORANDUM

Date: **October 25, 2013**

To: **Don Jones, Jr.**

From: **Aaron Jenniges and Ken Lyons**

Re: **WA Low Income Weatherization 2014-2015 Cost-Effectiveness**

The tables below present the cost-effectiveness findings of the Washington Low Income Weatherization program based on 2014-15 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "CE inputs for tying to Table 1 business plan for 2014-2015 period 102213.xlsx". The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 49% load factor west residential whole house decrements. Table 1 shows the input assumptions.

Table 1: Low Income Weatherization Inputs

Input Description	2014-15
Discount Rate	6.88%
Residential Line Loss	9.67%
Inflation Rate	1.90%
Net-to-Gross	100%
Program Delivery and Administration	$1,840,000
Gross Site Savings (kWh)	475,272
Average Measure Life (years)	37

Table 2 shows the 2014-15 combined cost-effectiveness results. The WA Low Income Weatherization program was not cost-effective from any test perspective.

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Table 2: Low Income Weatherization 2014-15 Cost-Effectiveness

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.250	$1,780,762	$709,079	($1,071,683)	0.40
Total Resource Cost Test (TRC) No Adder	$0.250	$1,780,762	$644,618	($1,136,145)	0.36
Utility Cost Test (UCT)	$0.250	$1,780,762	$644,618	($1,136,145)	0.36
Rate Impact Test (RIM)		$2,420,164	$644,618	($1,775,546)	0.27
Participant Cost Test (PCT)		$0	$639,401	$639,401	N/A
Lifecycle Revenue Impact ($/KWh)	0.000117906				
Discounted Participant Payback (years)	N/A				

These results do not include the non-energy benefits analyzed in the 2012 program evaluation, including the program's arrearage reduction, economic, and home repair benefit impacts. These benefits are shown in Table 3.

Table 3: Low Income Weatherization Non-Energy Benefits

Non-Energy Benefit	Program Impact	Perspective Adjusted
Arrearage Reduction	$7,125	PTRC, TRC
Economic Impact	$689,360	PTRC, RIM, UCT, TRC
Home Repair Benefits	$107,842	PCT, PTRC, TRC
Total	**$804,327**	

Table 4 shows the cost-effectiveness results of the program with the non-energy benefits included. The program is not cost-effective from any test perspective.

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Table 4: Low Income Weatherization 2014-15 Cost-Effectiveness including Non-Energy Benefits

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.250	$1,780,762	$1,513,406	($267,356)	0.85
Total Resource Cost Test (TRC) No Adder	$0.250	$1,780,762	$1,448,945	($331,818)	0.81
Utility Cost Test (UCT)	$0.250	$1,780,762	$1,333,978	($446,785)	0.75
Rate Impact Test (RIM)		$2,420,164	$1,333,978	($1,086,186)	0.55
Participant Cost Test (PCT)		$0	$747,243	$747,243	N/A

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MEMORANDUM

Date: **October 25, 2013**

To: **Don Jones, Jr.**

From: **Aaron Jenniges and Byron Boyle**

Re: **WA See-Ya-Later Refrigerator (SYLR) 2014-2015 Cost-Effectiveness**

The tables below present the cost-effectiveness findings of the Washington SYLR program based on 2014-15 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "WA SYLR 2014-2015 Forecast_GHS for CE inputs 102213.xlsx". The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 49% load factor west residential whole house decrements. Table 1 show the input assumptions. Table 2 shows the 2014-15 combined cost-effectiveness results. The WA SYLR program was cost effective from all test perspectives except for the RIM.

Table 1: SYLR Inputs

Input Description	2014	2015	Total
Discount Rate	6.882%	6.882%	6.882%
Line Loss	9.67%	9.67%	9.67%
Inflation Rate	1.90%	1.90%	1.90%
Net-to-Gross	100%	100%	100%
Total Program Admin Costs	$192,749	$192,749	$385,498
Total Incentives	$45,633	$45,633	$91,266
Participant Measure Costs	$0	$0	$0
Gross Site Savings (kWh/year)	900,915	900,915	1,801,829
Average Measure Life (years)	6.59	6.59	6.59

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Table 2: WA SYLR 2014-15 Cost Effectiveness

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.035	$373,087	$785,681	$412,594	2.11
Total Resource Cost Test (TRC) No Adder	$0.035	$373,087	$714,256	$341,168	1.91
Utility Cost Test (UCT)	$0.044	$461,415	$714,256	$252,841	1.55
Rate Impact Test (RIM)		$1,373,842	$714,256	($659,587)	0.52
Participant Cost Test (PCT)		$0	$1,000,755	$1,000,755	N/A
Lifecycle Revenue Impacts ($/kWh)	$0.000019250				
Discounted Participant Payback (years)	N/A				

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MEMORANDUM

Date: **October 25, 2013**

To: **Don Jones, Jr.**

From: **Aaron Jenniges**

Re: **WA Home Energy Savings (HES) 2014-2015 Cost-Effectiveness**

The tables below present the cost-effectiveness findings of the Washington HES program based on 2014-15 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "WA HES State Savings Summary 2014_Proposed - used for CE inputs 102313 EM.xlsx". The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 49% load factor west residential whole house decrements. Table 1 show the input assumptions.

Table 1: HES Inputs

Input Description	2014	2015	Total
Discount Rate	6.88%	6.88%	6.88%
Residential Line Loss	9.67%	9.67%	9.67%
Inflation Rate	1.90%	1.90%	1.90%
Net-to-Gross	100%	100%	100%
Utility Admin Costs	$140,000	$140,000	$280,000
Implementation Costs	$616,143	$660,376	$1,276,519
Incentives	$1,015,920	$1,296,154	$2,312,074
Participant Measure Costs	$2,395,829	$2,859,827	$5,255,657
Gross Site Savings (kWh/year)	7,312,374	8,677,822	15,990,196
Average Measure Life (years)	11.82	11.82	11.82

Table 2 shows the 2014-15 combined cost-effectiveness results. The WA HES program was cost effective from all test perspectives except for the RIM.

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Table 2: HES 2014-15 Cost-Effectiveness

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.046	$6,576,499	$11,689,831	$5,113,332	1.78
Total Resource Cost Test (TRC) No Adder	$0.046	$6,576,499	$10,627,119	$4,050,620	1.62
Utility Cost Test (UCT)	$0.026	$3,733,600	$10,627,119	$6,893,519	2.85
Rate Impact Test (RIM)		$16,650,500	$10,627,119	($6,023,381)	0.64
Participant Cost Test (PCT)		$5,071,515	$15,145,516	$10,074,001	2.99
Lifecycle Revenue Impact ($/KWh)	0.000119763				
Discounted Participant Payback (years)	2.63				

These results do not include non-energy benefits (operations and maintenance and water savings) from showerheads, clothes washers, and lighting measures. The present value of these non-energy benefits and the test perspectives adjusted are shown in Table 3.

Table 3: HES Non-Energy Benefits

Non-Energy Benefit	Program Impact (Present Value)	Perspective Adjusted
Total	$5,640,857	PTRC, TRC, and PCT

Table 4 shows the cost-effectiveness results of the program with the non-energy benefits included. The program is cost-effective from all test perspectives except the RIM.

Table 4: HES 2014-15 Cost-Effectiveness including Non-Energy Benefits

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.046	$6,576,499	$17,330,687	$10,754,188	2.63
Total Resource Cost Test (TRC) No Adder	$0.046	$6,576,499	$16,267,975	$9,691,476	2.47
Utility Cost Test (UCT)	$0.026	$3,733,600	$10,627,119	$6,893,519	2.85
Rate Impact Test (RIM)		$16,650,500	$10,627,119	($6,023,381)	0.64
Participant Cost Test (PCT)		$5,071,515	$20,786,373	$15,714,858	4.10

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MEMORANDUM

Date: **October 26, 2013**

To: **Don Jones, Jr.**

From: **Aaron Jenniges**

Re: **WA Home Energy Reports (HER) 2014-2015 Cost-Effectiveness**

The tables below present the cost-effectiveness findings of the Washington HER program based on 2014-15 costs and savings estimates provided by Don Jones, Jr. of PacifiCorp in an email on October 25, 2013. The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 49% load factor west residential whole house decrements. Table 1 shows the input assumptions.

Table 1: HER Inputs

Input Description	2014	2015	2014-15
Discount Rate	6.88%	6.88%	6.88%
Residential Line Loss	9.67%	9.67%	9.67%
Inflation Rate	1.90%	1.90%	1.90%
Net-to-Gross	100%	100%	100%
Utility Costs	$144,000	$144,000	$288,000
Gross Generation Savings (kWh/year)	5,079,000	4,846,000	9,925,000
Average Measure Life (years)	1	1	1

Table 2 shows the 2014-15 combined cost-effectiveness results. The WA HER program was cost-effective from all test perspectives except for the RIM.

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Table 2: WA HER 2014-15 Cost-Effectiveness

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.026	$278,728	$726,064	$447,336	2.60
Total Resource Cost Test (TRC) No Adder	$0.026	$278,728	$660,058	$381,330	2.37
Utility Cost Test (UCT)	$0.026	$278,728	$660,058	$381,330	2.37
Rate Impact Test (RIM)		$1,147,871	$660,058	($487,813)	0.58
Participant Cost Test (PCT)		$0	$869,143	$869,143	N/A
Lifecycle Revenue Impact ($/KWh)	0.000049998				
Discounted Participant Payback (years)	N/A				

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MEMORANDUM

Date: **October 29, 2013**

To: **Don Jones, Jr.**

From: **Aaron Jenniges**

Re: **WA Business Program 2014-2015 Cost-Effectiveness Summary**

The tables below present the cost-effectiveness findings of the Washington Business Program based on 2014-15 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "Copy of 2014-2015 Business Plan Tables 10232013 - REV for Energy management 102613.xlsx". The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 71% load factor west system decrements. Table 1 shows the financial input assumptions.

Table 1: Business Program Financial Inputs

Input Description	2014	2015	2014-15
Discount Rate	6.88%	6.88%	6.88%
Commercial Line Loss	9.53%	9.53%	9.53%
Industrial Line Loss	8.16%	8.16%	8.16%
Irrigation Line Loss	9.67%	9.67%	9.67%
Inflation Rate	1.90%	1.90%	1.90%

Table 2 shows the 2014-15 utility and participant costs by program component. Table 3 shows the 2014-15 KWh savings, realization rates, and measure lives by program component.

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Table 2: 2014-15 Utility and Participant Costs by Scenario

Scenario	Year	Program Delivery Costs	Utility Delivery Costs	Incentives	Total Utility Costs	Participant Measure Costs
Portfolio - Business As Usual	2014	$1,430,462	$414,423	$2,532,628	$4,377,512	$7,906,221
	2015	$1,498,275	$438,215	$2,691,103	$4,627,594	$8,335,340
Increase Custom Incentive Project Cost Cap	2014	$14,221	$5,034	$136,751	$156,006	$90,570
	2015	$15,643	$5,537	$150,426	$171,606	$99,627
Eliminate kW $ and Fund Cx	2014	$68,543	$0	($41,815)	$26,728	($68,543)
	2015	$75,397	$0	($45,996)	$29,401	($75,397)
Food Service	2014	$2,294	$538	($850)	$1,982	$30,198
	2015	$5,837	$1,370	$4,531	$11,738	$54,836
HVAC	2014	$1,446	$339	$5,000	$6,785	$42,500
	2015	$2,726	$640	$9,500	$12,865	$77,650
Irrigation	2014	$11,254	$2,641	$7,800	$21,694	$27,083
	2015	$11,254	$2,641	$7,841	$21,735	$27,056
Compressed Air	2014	$10,433	$2,448	$17,958	$30,840	$43,510
	2015	$10,433	$2,448	$17,958	$30,840	$43,510
Potato storage Van VFD	2014	$2,683	$630	$4,650	$7,963	$9,900
	2015	$2,683	$630	$4,650	$7,963	$9,900
Adaptive Refrigeration Control	2014	$8,512	$2,510	$17,100	$28,122	$34,000
	2015	$8,917	$2,629	$18,000	$29,546	$37,200
Fast Acting Door	2014	$3,513	$1,036	$7,800	$12,349	$32,500
	2015	$7,836	$2,310	$17,400	$27,547	$72,500
End Use Compressed Air Reduction	2014	$3,895	$914	$6,750	$11,560	$11,200
	2015	$4,112	$965	$7,125	$12,202	$11,800
Wastewater - Low Power Mixing	2014	$5,998	$1,727	$13,500	$21,225	$40,000
	2015	$5,998	$1,727	$13,500	$21,225	$40,000
Energy Management	2014	$117,355	$35,436	$10,506	$163,297	$27,086
	2015	$156,364	$59,116	$21,055	$236,535	$54,727

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Table 3: 2014-15 Energy Savings and Measure Lives by Scenario

Scenario	Year	Gross KWh Savings	Realization Rate	Adjusted Gross KWh Savings	Net-to-Gross Ratio	Net Adjusted KWh Savings	Measure Life (Years)
Portfolio - Business As Usual	2014	20,395,389	97%	19,742,722	100%	19,742,722	14
	2015	21,664,015	97%	20,949,831	100%	20,949,831	14
Increase Custom Incentive Project Cost Cap	2014	269,268	95%	256,040	100%	256,040	14
	2015	296,195	95%	281,644	100%	281,644	14
Eliminate kW $ and Fund Cx	2014	0	95%	0	100%	0	14
	2015	0	95%	0	100%	0	14
Food Service	2014	26,500	97%	25,705	100%	25,705	12
	2015	67,438	97%	65,414	100%	65,414	12
HVAC	2014	22,500	72%	16,200	100%	16,200	15
	2015	42,425	72%	30,546	100%	30,546	15
Irrigation	2014	130,000	97%	126,100	100%	126,100	6
	2015	130,000	97%	126,100	100%	126,100	6
Compressed Air	2014	120,525	97%	116,909	100%	116,909	9
	2015	120,525	97%	116,909	100%	116,909	9
Potato storage Van VFD	2014	31,000	97%	30,070	100%	30,070	10
	2015	31,000	97%	30,070	100%	30,070	10
Adaptive Refrigeration Control	2014	126,000	94%	118,440	100%	118,440	14
	2015	132,000	94%	124,080	100%	124,080	14
Fast Acting Door	2014	52,000	94%	48,880	100%	48,880	14
	2015	116,000	94%	109,040	100%	109,040	14
End Use Compressed Air Reduction	2014	45,000	97%	43,650	100%	43,650	9
	2015	47,500	97%	46,075	100%	46,075	9
Wastewater - Low Power Mixing	2014	90,000	95%	85,500	100%	85,500	14
	2015	90,000	95%	85,500	100%	85,500	14
Energy Management	2014	525,293	95%	499,028	100%	499,028	3
	2015	1,033,105	95%	981,450	100%	981,450	3

Table 4 shows the cost-effectiveness results for the WA 2014-15 Business Program. The program is cost-effective (benefit/cost ratio greater than 1.0) from all test perspectives except the RIM.

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Table 4: WA 2014-15 Business Program Portfolio

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	$0.049	$20,771,445	$32,999,523	$12,228,078	1.59
Total Resource Cost Test (TRC) No Adder	$0.049	$20,771,445	$29,999,567	$9,228,122	1.44
Utility Cost Test (UCT)	$0.023	$9,769,411	$29,999,567	$20,230,156	3.07
Rate Impact Test (RIM)		$41,612,376	$29,999,567	($11,612,810)	0.72
Participant Cost Test (PCT)		$16,449,077	$37,290,008	$20,840,931	2.27
Lifecycle Revenue Impact ($/KWh)	0.000198969				
Discounted Participant Payback (years)	4.26				

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MEMORANDUM

Date: **October 28, 2013**

To: **Don Jones, Jr.**

From: **Aaron Jenniges and Byron Boyle**

Re: **WA NEEA 2014-2015 Cost-Effectiveness**

The tables below present the cost-effectiveness findings of the Washington NEEA funding based on 2014-15 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "Copy of Pacific_6thAND7thPPSavingsReport_2014-2015_20130920_wMeasureLife_Costs_Sent_KB+ DLJ CE calculations 102513.xlsx". The utility discount rate is from the 2013 PacifiCorp Integrated Resource Plan.

Cost-effectiveness was tested using the 2013 IRP 49% load factor west residential whole house decrements for residential savings and the 2013 IRP 71% load factor west system decrements for commercial and industrial savings. Table 1 shows the input assumptions.

Table 1: NEEA Inputs

Input Description	2014	2015	2014-15
Discount Rate	6.88%	6.88%	6.88%
Commercial Line Loss	9.53%	9.53%	9.53%
Industrial Line Loss	8.16%	8.16%	8.16%
Residentiial Line Loss	9.67%	9.67%	9.67%
Inflation Rate	1.90%	1.90%	1.90%
Net-to-Gross	100%	100%	100%
Utility Costs	$1,225,843	$1,115,256	$2,341,099
Gross Generation Savings (kWh/year)	7,088,896	7,224,424	14,313,320
Average Measure Life (years)	6	6	6

Table 2 shows the savings shares by sector. These shares are used to divide the savings by sector so that appropriate retail rates and line losses are applied.

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Table 2: NEEA Sector Shares

Sector	Share
Commercial	13.71%
Industrial/Agriculture	1.46%
Residential	84.83%

Table 3 shows the 2014-15 combined cost-effectiveness results. The WA NEEA funding was cost-effective from the UCT (Utility Cost Test) perspective but not the RIM (Ratepayer Impact) perspective.

Table 3: WA NEEA 2014-15 Cost-Effectiveness

Cost-Effectiveness Test	Levelized $/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Utility Cost Test (UCT)	$0.032	$2,269,289	$4,712,309	$2,443,020	2.08
Rate Impact Test (RIM)		$8,258,542	$4,712,309	($3,546,233)	0.57
Lifecycle Revenue Impact ($/KWh)	0.000115825				

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