

MEMORANDUM

To: Eli Morris
 From: Brian Hedman and Byron Boyle
 Subject: 2016-2017 UT Wattsmart Business Cost-Effectiveness
 Date: January 25, 2016

The tables below present the cost-effectiveness findings for the 2016-2017 Wattsmart Business program, based on costs and savings estimates provided by PacifiCorp in the spreadsheet entitled “UT WSB C-E Inputs 01192015.xlsx”; and in an email from Eli Morris on January 20, 2016. The utility discount rate is from the 2015 PacifiCorp Integrated Resource Plan.

For all scenarios, cost-effectiveness was tested using the 2015 IRP *East Industrial 40%, East Commercial Lighting 53%, East Commercial Cooling 14%, and East Plug Load 71% Load Factor Decrements*. Table 1 lists modeling inputs. Table 2 list the costs and incentives and Table 3 lists the annual energy savings for each program and scenario. Table 4 provides a comparative summary of the benefit/cost ratios from all five test perspectives by scenario. Table 5 to Table 12 show the complete cost-effectiveness results for each scenario. All scenarios are cost-effective from all test perspectives except the RIM.

Table 1. 2016-17 UT Wattsmart Business Program Financial Inputs

Parameter	Value
Discount Rate	6.66%
Commercial Line Loss	8.71%
Industrial Line Loss	5.85%
Commercial Energy Rate (\$/kWh) - 2014 base rate	\$0.0838
Industrial Energy Rate (\$/kWh) - 2014 base rate	\$0.0578
Inflation Rate	1.9%

Table 2. 2016-17 Wattsmart Business Program Costs

Measure	Year	Admin	Delivery	Incentives	Total Utility Costs	Participant Incremental Cost
Business as Usual	2016-2017	\$1,600,000	\$15,639,746	\$62,883,463	\$80,123,208	\$146,429,541
Proposed with Changes	2016-2017	\$1,600,000	\$15,639,746	\$50,290,840	\$67,530,585	\$138,505,053
Proposed with Changes +10% Participation	2016-2017	\$1,600,000	\$17,203,720	\$55,319,924	\$74,123,644	\$152,355,559
Proposed with Changes -10% Participation	2016-2017	\$1,600,000	\$14,075,771	\$45,261,756	\$60,937,527	\$124,654,548
Lighting Only – Business as Usual	2016-2017	\$400,000	\$4,811,285	\$29,344,849	\$34,556,134	\$71,333,845
Lighting Only with Proposed Changes	2016-2017	\$400,000	\$4,811,285	\$16,772,904	\$21,984,189	\$63,458,651
Lighting Only with Proposed Changes +10% Participation	2016-2017	\$400,000	\$5,292,413	\$18,450,195	\$24,142,608	\$69,804,516
Lighting Only with Proposed Changes -10% Participation	2016-2017	\$400,000	\$4,330,156	\$15,095,614	\$19,825,770	\$57,112,786

Table 3. 2016-17 UT Wattsmart Business Program Annual Savings

Measure	Year	Gross KWh Savings	Realization Rate	Adjusted KWh Savings	Net-to-Gross Percentage	Net KWh Savings	Measure Life
Business as Usual	2016-2017	451,861,903	95%	428,470,236	86%	369,433,382	12.2
Proposed with Changes	2016-2017	430,457,930	95%	409,848,779	87%	354,849,367	12.2
Proposed with Changes +10% Participation	2016-2017	473,503,723	95%	450,833,657	87%	390,334,304	12.2
Proposed with Changes -10% Participation	2016-2017	387,412,137	95%	368,863,901	87%	319,364,430	12.2
Lighting Only – Business as Usual	2016-2017	180,919,492	88%	159,804,959	80%	128,206,829	13.0
Lighting Only with Proposed Changes	2016-2017	159,937,059	89%	141,550,242	80%	113,789,474	13.0
Lighting Only with Proposed Changes +10% Participation	2016-2017	175,930,765	89%	155,705,266	80%	125,168,421	13.0
Lighting Only with Proposed Changes 10% Participation	2016-2017	143,943,353	89%	127,395,218	80%	102,410,527	13.0

Table 4. 2016-17 UT Wattsmart Business Program Benefit/Cost Ratios

Measure	PTRC	TRC	UCT	RIM	PCT
Business as Usual	1.78	1.62	2.87	0.70	2.41
Proposed with Changes	1.77	1.61	3.23	0.72	2.34
Proposed with Changes +10% Participation	1.77	1.61	3.24	0.72	2.34
Proposed with Changes -10% Participation	1.77	1.61	3.22	0.72	2.34
Lighting Only – Business as Usual	1.77	1.61	2.89	0.68	2.38
Lighting Only with Proposed Changes	1.75	1.59	4.02	0.72	2.23
Lighting Only with Proposed Changes +10% Participation	1.75	1.59	4.02	0.72	2.23
Lighting Only with Proposed Changes 10% Participation	1.75	1.59	4.01	0.72	2.23

Table 5. 2016-17 UT Wattsmart Business Program

Business as Usual – Cost-Effectiveness

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.042	\$137,439,444	\$244,763,497	\$107,324,053	1.78
Total Resource Cost Test (TRC) No Adder	\$0.042	\$137,439,444	\$222,512,270	\$85,072,826	1.62
Utility Cost Test (UCT)	\$0.024	\$77,618,480	\$222,512,270	\$144,893,790	2.87
Rate Impact Test (RIM)		\$317,608,712	\$222,512,270	(\$95,096,442)	0.70
Participant Cost Test (PCT)		\$141,857,908	\$341,734,914	\$199,877,006	2.41
Discounted Participant Payback (years)					1.46
Lifecycle Revenue Impact (\$/KWh)					\$0.00030625

Table 6. 2016-17 UT Wattsmart Business Program
Proposed with Changes – Cost-Effectiveness

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.042	\$131,462,657	\$232,778,478	\$101,315,822	1.77
Total Resource Cost Test (TRC) No Adder	\$0.042	\$131,462,657	\$211,616,798	\$80,154,142	1.61
Utility Cost Test (UCT)	\$0.021	\$65,550,725	\$211,616,798	\$146,066,073	3.23
Rate Impact Test (RIM)		\$293,240,546	\$211,616,798	(\$81,623,748)	0.72
Participant Cost Test (PCT)		\$134,292,354	\$314,097,019	\$179,804,665	2.34
Discounted Participant Payback (years)					1.60
Lifecycle Revenue Impact (\$/KWh)					\$0.00026652

Table 7. 2016-17 UT Wattsmart Business Program
Proposed with Changes +10% Participation – Cost-Effectiveness

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.042	\$144,453,917	\$256,056,326	\$111,602,409	1.77
Total Resource Cost Test (TRC) No Adder	\$0.042	\$144,453,917	\$232,778,478	\$88,324,561	1.61
Utility Cost Test (UCT)	\$0.021	\$71,950,793	\$232,778,478	\$160,827,685	3.24
Rate Impact Test (RIM)		\$322,409,596	\$232,778,478	(\$89,631,118)	0.72
Participant Cost Test (PCT)		\$147,721,590	\$345,506,721	\$197,785,131	2.34
Discounted Participant Payback (years)					1.60
Lifecycle Revenue Impact (\$/KWh)					\$0.00029266

Table 8. 2016-17 UT Wattsmart Business Program
Proposed with Changes -10% Participation – Cost-Effectiveness

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.042	\$118,471,396	\$209,500,630	\$91,029,235	1.77
Total Resource Cost Test (TRC) No Adder	\$0.042	\$118,471,396	\$190,455,119	\$71,983,723	1.61
Utility Cost Test (UCT)	\$0.021	\$59,150,658	\$190,455,119	\$131,304,461	3.22
Rate Impact Test (RIM)		\$264,071,496	\$190,455,119	(\$73,616,378)	0.72
Participant Cost Test (PCT)		\$120,863,119	\$282,687,317	\$161,824,198	2.34
Discounted Participant Payback (years)					1.60
Lifecycle Revenue Impact (\$/KWh)					\$0.00024037

Table 9. 2016-17 UT Wattsmart Business Program
Lighting Only Business as Usual – Cost-Effectiveness

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.049	\$60,135,358	\$106,572,916	\$46,437,558	1.77
Total Resource Cost Test (TRC) No Adder	\$0.049	\$60,135,358	\$96,884,470	\$36,749,111	1.61
Utility Cost Test (UCT)	\$0.027	\$33,475,047	\$96,884,470	\$63,409,422	2.89
Rate Impact Test (RIM)		\$143,091,700	\$96,884,470	(\$46,207,231)	0.68
Participant Cost Test (PCT)		\$69,106,752	\$164,786,130	\$95,679,378	2.38
Discounted Participant Payback (years)					1.52
Lifecycle Revenue Impact (\$/KWh)					\$0.00016312

**Table 10. 2016-17 UT Wattsmart Business Program
Lighting Only with Proposed Changes – Cost-Effectiveness**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.050	\$54,196,265	\$94,666,961	\$40,470,695	1.75
Total Resource Cost Test (TRC) No Adder	\$0.050	\$54,196,265	\$86,060,873	\$31,864,608	1.59
Utility Cost Test (UCT)	\$0.020	\$21,427,304	\$86,060,873	\$64,633,569	4.02
Rate Impact Test (RIM)		\$118,858,867	\$86,060,873	(\$32,797,994)	0.72
Participant Cost Test (PCT)		\$61,588,913	\$137,314,222	\$75,725,309	2.23
Discounted Participant Payback (years)					1.94
Lifecycle Revenue Impact (\$/KWh)					\$0.00011578

**Table 11. 2016-17 UT Wattsmart Business Program
Lighting Only with Proposed Changes +10% Participation – Cost-Effectiveness**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.050	\$59,577,141	\$104,133,657	\$44,556,516	1.75
Total Resource Cost Test (TRC) No Adder	\$0.050	\$59,577,141	\$94,666,961	\$35,089,820	1.59
Utility Cost Test (UCT)	\$0.020	\$23,531,283	\$94,666,961	\$71,135,677	4.02
Rate Impact Test (RIM)		\$130,706,002	\$94,666,961	(\$36,039,042)	0.72
Participant Cost Test (PCT)		\$67,747,804	\$151,045,644	\$83,297,840	2.23
Discounted Participant Payback (years)					1.94
Lifecycle Revenue Impact (\$/KWh)					\$0.00012722

Table 12. 2016-17 UT Wattsmart Business Program

Lighting Only with Proposed Changes -10% Participation – Cost-Effectiveness

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.050	\$48,815,390	\$85,200,264	\$36,384,875	1.75
Total Resource Cost Test (TRC) No Adder	\$0.050	\$48,815,390	\$77,454,786	\$28,639,396	1.59
Utility Cost Test (UCT)	\$0.020	\$19,323,325	\$77,454,786	\$58,131,461	4.01
Rate Impact Test (RIM)		\$107,011,731	\$77,454,786	(\$29,556,946)	0.72
Participant Cost Test (PCT)		\$55,430,022	\$123,582,800	\$68,152,778	2.23
Discounted Participant Payback (years)					1.94
Lifecycle Revenue Impact (\$/KWh)					\$0.00010434