

MEMORANDUM

To: Don Jones, Jr.
From: Aaron Jenniges and Byron Boyle
Subject: Utah 2013-15 Business Plan Cost-Effectiveness
Date: April 12, 2013

The tables below present the cost-effectiveness findings of the Utah 2013-15 Business Plan based on 2013-15 costs and savings estimates provided by PacifiCorp in a spreadsheet entitled "UT 2012 CI Cost Recovery + DLJ calculations for CE REVISED 040913xlsx". The utility discount rate is from the 2011 PacifiCorp Integrated Resource Plan.

Cost-effectiveness inputs and results for nine scenarios are presented in this memo.

1. Base Case Business Plan
2. Energy Management Incentives
3. Standard Offer
4. Energy Project Manager Funding
5. Utility Funding of Commissioning
6. Base Case with 4 Additional Measures (Medium Carbon Decrements)
7. Base Case with 4 Additional Measures (Zero Carbon Decrements)
8. Base Case with 4 Additional Measures (10% lower participation than scenario 6)
9. Base Case with 4 Additional Measures (10% higher participation than scenario 6)

For all except scenario seven, cost-effectiveness was tested using the 2011 IRP 69% load factor east system medium carbon decrements. Cost-effectiveness for scenario seven was tested using the 2011 IRP 69% load factor east system zero carbon decrements. Table 1 lists modeling inputs, Table 2 lists the costs and incentives, and Table 3 lists the annual savings for each scenario. Tables 4 to 11 show the cost-effectiveness results for the nine scenarios.

Table 1: UT 2013-15 Business Plan Inputs

Parameter	Value
Discount Rate	7.17%
Commercial Line Loss	8.71%
Industrial Line Loss	5.85%
Commercial Energy Rate (\$/kWh) (2012 base rate) ¹	\$0.0785
Industrial Energy Rate (\$/kWh) (2012 base rate) ¹	\$0.0538
Inflation Rate ²	1.80%

¹ Future rates determined using a 1.8% annual escalator.

² Used to escalate future year energy rates.

**Table 2: UT 2013-15 Business Plan
Annual Program Costs**

	Year	Utility Admin	Incentives	Total Utility Costs	Net Participant Incremental Cost
Base Case	2013	\$6,550,210	\$13,544,923	\$20,095,133	\$31,979,986
	2014	\$6,550,210	\$13,544,923	\$20,095,133	\$31,979,986
	2015	\$6,550,210	\$13,544,923	\$20,095,133	\$31,979,986
Energy Management Incentives	2013	\$782,124	\$80,249	\$862,372	\$189,011
	2014	\$1,571,537	\$176,209	\$1,747,746	\$387,795
	2015	\$3,055,182	\$348,952	\$3,404,134	\$753,450
Standard Offer	2013	\$293,151	\$1,867,986	\$2,161,138	\$1,333,541
	2014	\$293,151	\$1,867,986	\$2,161,138	\$1,333,541
	2015	\$293,151	\$1,867,986	\$2,161,138	\$1,333,541
Energy Project Manager Funding	2013	\$720,901	\$1,490,723	\$2,211,624	\$3,519,644
	2014	\$480,601	\$993,815	\$1,474,416	\$2,346,429
	2015	\$480,601	\$993,815	\$1,474,416	\$2,346,429
Utility Funding of Commissioning	2013	\$208,921	\$100,548	\$309,469	\$235,419
	2014	\$208,921	\$100,548	\$309,469	\$235,419
	2015	\$208,921	\$100,548	\$309,469	\$235,419
Base Case + 4 Measures	2013	\$8,555,307	\$17,084,429	\$25,639,736	\$37,257,601
	2014	\$9,104,420	\$16,683,482	\$25,787,901	\$36,283,170
	2015	\$10,588,065	\$16,856,224	\$27,444,289	\$36,648,825

**Table 3: UT 2013-15 Business Plan
Savings by Measure Type**

	Year	Gross kWh Savings	Realization Rate	Adjusted Gross Savings	Net to Gross Percentage	Net kWh Savings	Measure Life
Base Case	2013	109,033,718	94%	102,491,695	84%	86,093,024	14
	2014	109,033,718	94%	102,491,695	84%	86,093,024	14
	2015	109,033,718	94%	102,491,695	84%	86,093,024	14
Energy Management Incentives	2013	4,012,439	100%	4,012,439	90%	3,611,195	3
	2014	8,646,178	100%	8,646,178	90%	7,781,561	3
	2015	16,803,010	100%	16,803,010	90%	15,122,709	3
Standard Offer	2013	4,876,433	94%	4,583,847	84%	3,850,431	14
	2014	4,876,433	94%	4,583,847	84%	3,850,431	14
	2015	4,876,433	94%	4,583,847	84%	3,850,431	14
Energy Project Manager Funding	2013	12,000,000	94%	11,280,000	84%	9,475,200	14
	2014	8,000,000	94%	7,520,000	84%	6,316,800	14
	2015	8,000,000	94%	7,520,000	84%	6,316,800	14
Utility Funding of Commissioning	2013	876,327	94%	823,747	84%	691,947	14
	2014	876,327	94%	823,747	84%	691,947	14
	2015	876,327	94%	823,747	84%	691,947	14
Base Case + 4 Measures	2013	130,798,917		123,191,728		103,721,798	
	2014	131,432,656		124,065,468		104,733,763	
	2015	139,589,487		132,222,299		112,074,912	

Table 4: Base Case

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0448	\$108,055,931	\$244,317,626	\$136,261,694	2.26
Total Resource Cost Test (TRC) No Adder	0.0448	\$108,055,931	\$222,106,932	\$114,051,001	2.06
Utility Cost Test (UCT)	0.0234	\$56,342,067	\$222,106,932	\$165,764,865	3.94
Rate Impact Test (RIM)		\$231,917,979	\$222,106,932	(\$9,811,047)	0.96
Participant Cost Test (PCT)		\$106,774,607	\$246,995,749	\$140,221,141	2.31
Discounted Participant Payback (years)				4.59	

Table 5: Energy Management Incentives

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0844	\$6,118,918	\$6,696,806	\$577,888	1.09
Total Resource Cost Test (TRC) No Adder	0.0844	\$6,118,918	\$6,088,005	(\$30,912)	0.99
Utility Cost Test (UCT)	0.0753	\$5,457,066	\$6,088,005	\$630,940	1.12
Rate Impact Test (RIM)		\$10,629,108	\$6,088,005	(\$4,541,103)	0.57
Participant Cost Test (PCT)		\$1,344,825	\$6,295,205	\$4,950,379	4.68
Discounted Participant Payback (years)				0.56	

Table 6: Standard Offer

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0423	\$4,561,959	\$10,926,881	\$6,364,922	2.40
Total Resource Cost Test (TRC) No Adder	0.0423	\$4,561,959	\$9,933,528	\$5,371,569	2.18
Utility Cost Test (UCT)	0.0562	\$6,059,326	\$9,933,528	\$3,874,202	1.64
Rate Impact Test (RIM)		\$14,343,086	\$9,933,528	(\$4,409,557)	0.69
Participant Cost Test (PCT)		\$4,452,418	\$15,099,017	\$10,646,599	3.39
Discounted Participant Payback (years)				0.72	

Payback (years)					
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Table 7: Energy Project Manager Funding

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0448	\$9,342,116	\$21,011,284	\$11,669,168	2.25
Total Resource Cost Test (TRC) No Adder	0.0448	\$9,342,116	\$19,101,168	\$9,759,051	2.04
Utility Cost Test (UCT)	0.0234	\$4,871,127	\$19,101,168	\$14,230,041	3.92
Rate Impact Test (RIM)		\$20,843,352	\$19,101,168	(\$1,742,184)	0.92
Participant Cost Test (PCT)		\$9,231,338	\$22,297,888	\$13,066,550	2.42
Discounted Participant Payback (years)				4.25	

Table 8: Utility Funding Commissioning

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0643	\$1,246,020	\$1,963,631	\$717,612	1.58
Total Resource Cost Test (TRC) No Adder	0.0643	\$1,246,020	\$1,785,119	\$539,100	1.43
Utility Cost Test (UCT)	0.0448	\$867,679	\$1,785,119	\$917,441	2.06
Rate Impact Test (RIM)		\$2,356,324	\$1,785,119	(\$571,205)	0.76
Participant Cost Test (PCT)		\$786,017	\$2,054,110	\$1,268,093	2.61
Discounted Participant Payback (years)				4.05	

Table 9: Base Case + 4 Measures (Medium Carbon Decrements)

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0459	\$129,324,944	\$284,916,229	\$155,591,284	2.20
Total Resource Cost Test (TRC) No Adder	0.0459	\$129,324,944	\$259,014,753	\$129,689,809	2.00
Utility Cost Test (UCT)	0.0261	\$73,597,265	\$259,014,753	\$185,417,488	3.52
Rate Impact Test (RIM)		\$280,089,849	\$259,014,753	(\$21,075,095)	0.92
Participant Cost Test (PCT)		\$122,589,205	\$292,741,967	\$170,152,762	2.39
Discounted Participant Payback (years)				4.15	

Table 10: Base Case + 4 Measures (Zero Carbon Decrements)

	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	0.0459	\$129,324,944	\$233,568,492	\$104,243,548	1.81
Total Resource Cost Test (TRC) No Adder	0.0459	\$129,324,944	\$212,334,993	\$83,010,049	1.64
Utility Cost Test (UCT)	0.0261	\$73,597,265	\$212,334,993	\$138,737,728	2.89
Rate Impact Test (RIM)		\$280,089,849	\$212,334,993	(\$67,754,856)	0.76
Participant Cost Test (PCT)		\$122,589,205	\$292,741,967	\$170,152,762	2.39
Discounted Participant Payback (years)				4.15	

Table 11: Base Case + 4 Measures (+/- 10% Participation)

		Costs (NPV)	Benefits (NPV)	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	Higher Participation (+10 %)	\$129,324,944	\$313,407,851	\$184,082,907	2.42
	Lower Participation (-10 %)	\$129,324,944	\$256,424,606	\$127,099,662	1.98
Total Resource Cost Test (TRC) No Adder	Higher Participation (+10 %)	\$129,324,944	\$284,916,229	\$155,591,284	2.20
	Lower Participation (-10 %)	\$129,324,944	\$233,113,278	\$103,788,334	1.80
Utility Cost Test (UCT)	Higher Participation (+10 %)	\$73,597,265	\$284,916,229	\$211,318,964	3.87
	Lower Participation (-10 %)	\$73,597,265	\$233,113,278	\$159,516,013	3.17
Rate Impact Test (RIM)	Higher Participation (+10 %)	\$300,739,107	\$284,916,229	-\$15,822,878	0.95
	Lower Participation (-10 %)	\$259,440,590	\$233,113,278	-\$26,327,312	0.90
Participant Cost Test (PCT)	Higher Participation (+10 %)	\$122,589,205	\$317,283,370	\$194,694,165	2.59
	Lower Participation (-10 %)	\$122,589,205	\$268,200,565	\$145,611,360	2.19