



Energy+Environmental Economics

Version:

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Description:

This spreadsheet is designed to illustrate the relationships of the cost-effectiveness tests, and the impact of energy efficiency on utility shareholder financials.

This spreadsheet is based on levelized values, and does not incorporate an annual cash flow. This is similar to the lifecycle economics in the Standard Practice Manual.

The analysis purposefully uses the simplest formulation to illustrate the key drivers and provide transparency. More sophisticated and accurate approaches are possible.

For example the analysis does not capture ramp-up effects of efficiency programs, or phased in reductions in utility capital expenditures over time.

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Rates and Revenue Without Energy Efficiency			
	Utility Sales		11,680 GWh
Rates Before EE	\$/kWh	RR (\$M)	
Fixed costs	\$ 0.0250	\$	292.0
Marginal costs	\$ 0.0400	\$	467.2
Total	\$ 0.0650	\$	759.2

Efficiency Program			
	Utility Budget (\$M)	\$	4.0
	EE Quantity	\$	54.7 GWh
	Levelized Cost (\$/kWh)	Amortized Cost (\$M)	
Utility Cost	\$ 0.016	\$	0.9
Participant Cost	\$ 0.019	\$	1.0
Total EE Cost (TRC)	\$ 0.035	\$	1.9

Case with Energy Efficiency - Before Rate Adjustments			
	Utility Sales	\$	11,625.3 GWh
Rates After EE		Revenue (\$M)	
Fixed costs	\$ 0.0250	\$	290.6
Marginal costs	\$ 0.0400	\$	465.0
Total	\$ 0.0650	\$	755.6

Case with Energy Efficiency - After Rate Adjustments			
	Utility Sales	\$	11,625 GWh
Rates After EE		RR (\$M)	
Fixed costs	\$ 0.0251	\$	292.0
Marginal costs	\$ 0.0400	\$	465.0
Utility EE Costs	\$ 0.0001	\$	0.9
Total	\$ 0.0652	\$	757.9

Impact of Revenue Undercollection Before Rate Adjustment			
	Target Earnings	\$	17.0 \$M
	Revenue Undercollection	\$	2.2 \$M
	Earnings	\$	14.8 \$M
	ROE Before Rate Adjustment		9.55%
	ROE After Rate Adjustment		11.00%

Cost-effectiveness Results using SPM				Description of Costs and Benefits
		\$M	B/C Ratio	
RIM	Costs	\$ 4.4		Utility EE Program + Bill Savings Avoided Energy Costs
	Benefits	\$ 2.2		
	Net Benefits	\$ (2.2)	0.5	
TRC	Costs	\$ 1.9		Total EE Costs Avoided Energy Costs
	Benefits	\$ 2.2		
	Net Benefits	\$ 0.3	1.1	
PCT	Costs	\$ 1.0		Participant out of pocket costs Bill Savings
	Benefits	\$ 3.6		
	Net Benefits	\$ 2.5	3.4	
PAC	Costs	\$ 0.9		Utility program costs Avoided Energy Costs
	Benefits	\$ 2.2		
	Net Benefits	\$ 1.3	2.5	

Key Results for Policy Makers			
<u>Impacts Before Rate Adjustment</u>			
Rate increase			0.0 \$/kWh
Utility revenue collection short-fall from RR	\$	2.2 \$M	
Overall decrease in customer bills	\$	3.6 \$M	
Utility ROE before rate adjustment (Target =%11.00)			9.55%
<u>Impacts After Rate Adjustment</u>			
Rate increase	\$ 0.0002	\$/kWh	
Rate increase			0.3% % of Total Rate
Utility revenue collection short-fall from RR		0 \$M	
Overall decrease in customer bills	\$	1.3 \$M	
Utility ROE after rate adjustment (Target =%11.00)			11.00%

Input Assumptions are in grey highlight			
<u>Abbreviations</u>			
EE	Energy Efficiency	RIM	Ratepayer Impact Measure
RB	Rate Base	TRC	Total Resource Cost Test
RR	Revenue Requirement	PCT	Participant Cost Test
SPM	Standard Practice Manual	PAC	Program Administrator Cost Test
T+1	Next time period		

Rates and Revenue Without Energy Efficiency			
	Utility Sales		11,680 GWh
Rates Before EE	\$/kWh	RR (\$M)	
Fixed costs	\$ 0.0250	\$	292
Marginal costs	\$ 0.0400	\$	467
Total	\$ 0.0650	\$	759

Efficiency Program			
	Utility Budget (\$M)		\$8.00
	EE Quantity		109 GWh
	Levelized Cost (\$/kWh)	Amortized Cost (\$M)	
Utility Cost	\$ 0.016	\$	2
Participant Cost	\$ 0.019	\$	2
Total EE Cost (TRC)	\$ 0.035	\$	4

Case with Energy Efficiency - Before Rate Adjustments			
	Utility Sales		11,571 GWh
Rates After EE		Revenue (\$M)	
Fixed costs	\$ 0.0250	\$	289
Marginal costs	\$ 0.0400	\$	463
Total	\$ 0.0650	\$	752

Case with Energy Efficiency - After Rate Adjustments			
	Utility Sales		11,571 GWh
Rates After EE		RR (\$M)	
Fixed costs	\$ 0.0252	\$	292
Marginal costs	\$ 0.0400	\$	463
Utility EE Costs	\$ 0.0002	\$	2
Total	\$ 0.0654	\$	757

Impact of Revenue Undercollection Before Rate Adjustment			
	Target Earnings	\$	17 \$M
	Revenue Undercollection	\$	4 \$M
	Earnings	\$	12 \$M
	ROE Before Rate Adjustment		8.09%
	ROE After Rate Adjustment		11.00%

Cost-effectiveness Results using SPM				Description of Costs and Benefits
		\$M	B/C Ratio	
RIM	Costs	\$ 8.86		Utility EE Program + Bill Savings Avoided Energy Costs
	Benefits	\$ 4		
	Net Benefits	\$ (4.48)	0.5	
		\$M	B/C Ratio	
TRC	Costs	\$ 3.83		Total EE Costs Avoided Energy Costs
	Benefits	\$ 4.37		
	Net Benefits	\$ 0.55	1.1	
		\$M	B/C Ratio	
PCT	Costs	\$ 2.08		Participant out of pocket costs Bill Savings
	Benefits	\$ 7.11		
	Net Benefits	\$ 5.03	3.4	
		\$M	B/C Ratio	
PAC	Costs	\$ 1.75		Utility program costs Avoided Energy Costs
	Benefits	\$ 4.37		
	Net Benefits	\$ 2.62	2.5	

Key Results for Policy Makers			
<u>Impacts Before Rate Adjustment</u>			
Rate increase			0.0 \$/kWh
Utility revenue collection short-fall from RR	\$	4.5	\$M
Overall decrease in customer bills	\$	7.1	\$M
Utility ROE before rate adjustment (Target =%11.00)			8.09%
<u>Impacts After Rate Adjustment</u>			
Rate increase	\$ 0.0004		\$/kWh
Rate increase			0.6% % of Total Rate
Utility revenue collection short-fall from RR			0 \$M
Overall decrease in customer bills	\$	2.6	\$M
Utility ROE after rate adjustment (Target =%11.00)			11.00%

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<u>Abbreviations</u>			
EE	Energy Efficiency	RIM	Ratepayer Impact Measure
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