

2018 SD DSM Plan Cost-Effectiveness Analysis

LIGHTING EFFICIENCY						2018 ELECTRIC		GOAL
2018 Net Present Cost Benefit Summary Analysis For All Participants						Input Summary and Totals		
	Participant Test (\$Total)	Utility Test (\$Total)	Rate Impact Test (\$Total)	Total Resource Test (\$Total)	Societal Test (\$Total)	Program "Inputs" per Customer kW		
Benefits						Lifetime (Weighted on Generator kWh)	A	18.2 years
Avoided Revenue Requirements						Annual Hours	B	8760
Generation	N/A	\$373,158	\$373,158	\$373,158	\$373,158	Gross Customer kW	C	1 kW
T & D	N/A	\$227,295	\$227,295	\$227,295	\$227,295	Generator Peak Coincidence Factor	D	56.21%
Marginal Energy	N/A	\$1,536,530	\$1,536,530	\$1,536,530	\$1,536,530	Gross Load Factor at Customer	E	50.79%
Environmental Externality	N/A	N/A	N/A	N/A	N/A	Transmission Loss Factor (Energy)	F	4.455%
Subtotal	N/A	\$2,136,983	\$2,136,983	\$2,136,983	\$2,136,983	Transmission Loss Factor (Demand)	G	7.106%
Participant Benefits						Societal Net Benefit (Cost)	H	\$443
Bill Reduction - Electric	\$3,745,737	N/A	N/A	N/A	N/A	Program Summary per Participant		
Rebates from Xcel Energy	\$293,165	N/A	N/A	\$293,165	\$293,165	Gross kW Saved at Customer	I	2.59 kW
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	
Subtotal	\$4,038,902	N/A	N/A	\$293,165	\$293,165	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Total Benefits	\$4,038,902	\$2,136,983	\$2,136,983	\$2,430,148	\$2,430,148	Program Summary All Participants		
Costs						Total Participants	J	325
Utility Project Costs						Total Budget	K	\$389,520
Customer Services	N/A	\$22,100	\$22,100	\$22,100	\$22,100	Gross kW Saved at Customer	$(J \times I)$	
Utility Administration	N/A	\$2,500	\$2,500	\$2,500	\$2,500	Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Advertising & Promotion	N/A	\$71,755	\$71,755	\$71,755	\$71,755	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Rebates	N/A	\$293,165	\$293,165	\$293,165	\$293,165	Societal Net Benefits	$(J \times I \times H)$	
Other	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Subtotal	N/A	\$389,520	\$389,520	\$389,520	\$389,520	Utility Program Cost per kW at Gen		
Utility Revenue Reduction								\$0.0055
Revenue Reduction - Electric	N/A	N/A	\$3,745,737	N/A	N/A			\$766
Subtotal	N/A	N/A	\$3,745,737	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,590,778	N/A	N/A	\$1,590,778	\$1,590,778			
Incremental O&M Costs	\$77,266	N/A	N/A	\$77,266	\$77,266			
Subtotal	\$1,668,044	N/A	N/A	\$1,668,044	\$1,668,044			
Total Costs	\$1,668,044	\$389,520	\$4,135,257	\$2,057,564	\$2,057,564			
Net Benefit (Cost)	\$2,370,858	\$1,747,463	(\$1,998,274)	\$372,584	\$372,584			
Benefit/Cost Ratio	2.42	5.49	0.52	1.18	1.18			

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

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BUSINESS SEGMENT TOTAL						2018	ELECTRIC	GOAL
2018 Net Present Cost Benefit Summary Analysis For All Participants						Input Summary and Totals		
	Participant	Utility	Rate	Total				
	Test	Test	Impact	Resource	Societal			
	(\$Total)	(\$Total)	(\$Total)	(\$Total)	Test			
	(\$Total)	(\$Total)	(\$Total)	(\$Total)	(\$Total)			
Benefits								
Avoided Revenue Requirements								
Generation	N/A	\$431,348	\$431,348	\$431,348	\$431,348			
T & D	N/A	\$262,605	\$262,605	\$262,605	\$262,605			
Marginal Energy	N/A	\$1,537,623	\$1,537,623	\$1,537,623	\$1,537,623			
Environmental Externality	N/A	N/A	N/A	N/A	N/A			\$0
Subtotal	N/A	\$2,231,576	\$2,231,576	\$2,231,576	\$2,231,576			
Participant Benefits								
Bill Reduction - Electric	\$3,798,497	N/A	N/A	N/A	N/A			
Rebates from Xcel Energy	\$293,165	N/A	N/A	\$293,165	\$293,165			
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0			
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0			
Subtotal	\$4,091,662	N/A	N/A	\$293,165	\$293,165			
Total Benefits	\$4,091,662	\$2,231,576	\$2,231,576	\$2,524,741	\$2,524,741			
Costs								
Utility Project Costs								
Customer Services	N/A	\$44,000	\$44,000	\$44,000	\$44,000			
Utility Administration	N/A	\$21,050	\$21,050	\$21,050	\$21,050			
Advertising & Promotion	N/A	\$78,518	\$78,518	\$78,518	\$78,518			
Measurement & Verification	N/A	\$0	\$0	\$0	\$0			
Rebates	N/A	\$293,165	\$293,165	\$293,165	\$293,165			
Other	N/A	\$0	\$0	\$0	\$0			
Subtotal	N/A	\$436,733	\$436,733	\$436,733	\$436,733			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$3,798,497	N/A	N/A			
Subtotal	N/A	N/A	\$3,798,497	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,590,778	N/A	N/A	\$1,590,778	\$1,590,778			
Incremental O&M Costs	\$77,266	N/A	N/A	\$77,266	\$77,266			
Subtotal	\$1,668,044	N/A	N/A	\$1,668,044	\$1,668,044			
Total Costs	\$1,668,044	\$436,733	\$4,235,230	\$2,104,776	\$2,104,776			
Net Benefit (Cost)	\$2,423,619	\$1,794,844	(\$2,003,653)	\$419,965	\$419,965			
Benefit/Cost Ratio	2.45	5.11	0.53	1.20	1.20			

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	18.2 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	48.91%
Gross Load Factor at Customer	E	34.40%
Transmission Loss Factor (Energy)	F	4.455%
Transmission Loss Factor (Demand)	G	7.195%
Societal Net Benefit (Cost)	H	\$338

Program Summary per Participant		
Gross kW Saved at Customer	I	3.67 kW
Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	1.94 kW
Gross Annual kWh Saved at Customer	$(B \times E \times I)$	11,073 kWh
Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	11,589 kWh

Program Summary All Participants		
Total Participants	J	338
Total Budget	K	\$436,733
Gross kW Saved at Customer	$(J \times I)$	1,242 kW
Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	655 kW
Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	3,742,677 kWh
Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	3,917,198 kWh
Societal Net Benefits	$(J \times I \times H)$	\$419,965

Utility Program Cost per kWh Lifetime	\$0.0061
Utility Program Cost per kW at Gen	\$667

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

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PORTFOLIO TOTAL						2018	ELECTRIC	GOAL
2018 Net Present Cost Benefit Summary Analysis For All Participants						Input Summary and Totals		
	Participant	Utility	Rate	Total	Societal	Program "Inputs" per Customer kW		
	Test	Test	Impact	Resource	Test	Lifetime (Weighted on Generator kWh)	A	14.8 years
	(\$Total)	(\$Total)	(\$Total)	(\$Total)	(\$Total)	Annual Hours	B	8760
Benefits						Gross Customer kW	C	1 kW
Avoided Revenue Requirements						Generator Peak Coincidence Factor	D	28.82%
Generation	N/A	\$862,637	\$862,637	\$862,637	\$862,637	Gross Load Factor at Customer	E	13.35%
T & D	N/A	\$524,825	\$524,825	\$524,825	\$524,825	Transmission Loss Factor (Energy)	F	4.642%
Marginal Energy	N/A	\$1,800,623	\$1,800,623	\$1,800,623	\$1,800,623	Transmission Loss Factor (Demand)	G	8.174%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$201
Subtotal	N/A	\$3,188,085	\$3,188,085	\$3,188,085	\$3,188,085	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	0.06 kW
Bill Reduction - Electric	\$5,143,968	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$377,063	N/A	N/A	\$377,063	\$377,063	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants		
Subtotal	\$5,521,031	N/A	N/A	\$377,063	\$377,063	Total Participants	J	72,333
Total Benefits						Total Budget	K	\$774,408
	\$5,521,031	\$3,188,085	\$3,188,085	\$3,565,148	\$3,565,148	Gross kW Saved at Customer	$(J \times I)$	4,403 kW
Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Utility Project Costs						Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Customer Services	N/A	\$161,550	\$161,550	\$161,550	\$161,550	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Utility Administration	N/A	\$117,950	\$117,950	\$117,950	\$117,950	Societal Net Benefits	$(J \times I \times H)$	
Advertising & Promotion	N/A	\$117,845	\$117,845	\$117,845	\$117,845	Utility Program Cost per kWh Lifetime		
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Rebates	N/A	\$377,063	\$377,063	\$377,063	\$377,063	\$0.0097		
Other	N/A	\$0	\$0	\$0	\$0	\$560		
Subtotal	N/A	\$774,408	\$774,408	\$774,408	\$774,408			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$5,143,968	N/A	N/A			
Subtotal	N/A	N/A	\$5,143,968	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,829,505	N/A	N/A	\$1,829,505	\$1,829,505			
Incremental O&M Costs	\$77,266	N/A	N/A	\$77,266	\$77,266			
Subtotal	\$1,906,770	N/A	N/A	\$1,906,770	\$1,906,770			
Total Costs								
	\$1,906,770	\$774,408	\$5,918,376	\$2,681,178	\$2,681,178			
Net Benefit (Cost)								
	\$3,614,260	\$2,413,677	(\$2,730,290)	\$883,970	\$883,970			
Benefit/Cost Ratio								
	2.90	4.12	0.54	1.33	1.33			

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.