

## Executive Summary Table - 2018

2018	Electric Participants	Electric Budget	Generator kW	Generator kWh	Participant Test Ratio	Utility Test Ratio	Ratepayer Impact Measure Test Ratio	TRC Ratio
<b>Business Segment</b>								
Lighting Efficiency	170	\$ 389,520	425	3,364,827	2.15	4.91	0.50	1.06
Business Saver's Switch	12	\$ 37,213	44	108	INF	1.28	0.64	1.28
Peak and Energy Control	1	\$ 10,000	102	3,707	INF	4.71	1.80	4.71
<b>Business Segment Total</b>	<b>183</b>	<b>\$ 436,733</b>	<b>571</b>	<b>3,368,641</b>	<b>2.18</b>	<b>4.59</b>	<b>0.51</b>	<b>1.08</b>
<b>Residential Segment</b>								
Home Lighting	3,225	\$ 109,598	162	1,480,452	3.77	3.10	0.37	1.22
Residential Saver's Switch	770	\$ 187,913	565	1,486	INF	3.28	0.86	3.28
Consumer Education	68,000	\$ 27,165			-	-	-	-
<b>Residential Segment Total</b>	<b>71,995</b>	<b>\$ 324,676</b>	<b>727</b>	<b>1,481,938</b>	<b>5.99</b>	<b>2.95</b>	<b>0.57</b>	<b>1.85</b>
<b>Planning Segment</b>								
Regulatory Affairs	0	\$ 13,000	0	0				
<b>Planning Segment Total</b>	<b>0</b>	<b>\$ 13,000</b>	<b>0</b>	<b>0</b>				
<b>PORTFOLIO TOTAL</b>								
	72,178	\$ 774,408	1,299	4,850,580	2.63	3.83	0.53	1.23

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>LIGHTING EFFICIENCY</b>						<b>2018 ELECTRIC</b>		<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant</b>	<b>Utility</b>	<b>Rate</b>	<b>Total</b>				
	<b>Test</b>	<b>Test</b>	<b>Impact</b>	<b>Resource</b>	<b>Societal</b>			
	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>Test</b>			
<b>Benefits</b>						<b>Program "Inputs" per Customer kW</b>		
<b>Avoided Revenue Requirements</b>						Lifetime (Weighted on Generator kWh)	A	18.3 years
Generation	N/A	\$312,189	\$312,189	\$312,189	\$312,189	Annual Hours	B	8760
T & D	N/A	\$190,166	\$190,166	\$190,166	\$190,166	Gross Customer kW	C	1 kW
Marginal Energy	N/A	\$1,409,222	\$1,409,222	\$1,409,222	\$1,409,222	Generator Peak Coincidence Factor	D	55.82%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Gross Load Factor at Customer	E	51.88%
Subtotal	N/A	\$1,911,578	\$1,911,578	\$1,911,578	\$1,911,578	Transmission Loss Factor (Energy)	F	4.710%
						Transmission Loss Factor (Demand)	G	7.380%
<b>Participant Benefits</b>						Societal Net Benefit (Cost)	H	\$174
Bill Reduction - Electric	\$3,443,645	N/A	N/A	N/A	N/A	<b>Program Summary per Participant</b>		
Rebates from Xcel Energy	\$373,290	N/A	N/A	\$373,290	\$373,290	Gross kW Saved at Customer	I	4.15 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	\$3,816,935	N/A	N/A	\$373,290	\$373,290	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
						<b>Program Summary All Participants</b>		
<b>Total Benefits</b>						Total Participants	J	170
	\$3,816,935	\$1,911,578	\$1,911,578	\$2,284,868	\$2,284,868	<b>Total Budget</b>	K	<b>\$389,520</b>
<b>Costs</b>						Gross kW Saved at Customer	$(J \times I)$	706 kW
<b>Utility Project Costs</b>						<b>Net coincident kW Saved at Generator</b>	$(I \times D) / (1 - G) \times J$	
Customer Services	N/A	\$10,000	\$10,000	\$10,000	\$10,000	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Utility Administration	N/A	\$2,500	\$2,500	\$2,500	\$2,500	<b>Net Annual kWh Saved at Generator</b>	$((B \times E \times I) / (1 - F)) \times J$	
Advertising & Promotion	N/A	\$3,730	\$3,730	\$3,730	\$3,730	<b>Societal Net Benefits</b>	$(J \times I \times H)$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kWh Lifetime</b>		
Rebates	N/A	\$373,290	\$373,290	\$373,290	\$373,290	<b>Utility Program Cost per kW at Gen</b>		
Other	N/A	\$0	\$0	\$0	\$0			\$0.0063
Subtotal	N/A	\$389,520	\$389,520	\$389,520	\$389,520			\$916
<b>Utility Revenue Reduction</b>								
Revenue Reduction - Electric	N/A	N/A	\$3,443,645	N/A	N/A			
Subtotal	N/A	N/A	\$3,443,645	N/A	N/A			
<b>Participant Costs</b>								
Incremental Capital Costs	\$1,698,596	N/A	N/A	\$1,698,596	\$1,698,596			
Incremental O&M Costs	\$74,152	N/A	N/A	\$74,152	\$74,152			
Subtotal	\$1,772,749	N/A	N/A	\$1,772,749	\$1,772,749			
<b>Total Costs</b>								
	\$1,772,749	\$389,520	\$3,833,165	\$2,162,269	\$2,162,269			
<b>Net Benefit (Cost)</b>								
	\$2,044,187	\$1,522,058	(\$1,921,588)	\$122,599	\$122,599			
<b>Benefit/Cost Ratio</b>								
	2.15	4.91	0.50	1.06	1.06			

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

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>BUSINESS SAVER'S SWITCH</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant Test (\$Total)</b>	<b>Utility Test (\$Total)</b>	<b>Rate Impact Test (\$Total)</b>	<b>Total Resource Test (\$Total)</b>	<b>Societal Test (\$Total)</b>	<b>Program "Inputs" per Customer kW</b>		
<b>Benefits</b>						Lifetime (Weighted on Generator kWh)	A	15.0 years
<b>Avoided Revenue Requirements</b>						Annual Hours	B	8760
Generation	N/A	\$29,473	\$29,473	\$29,473	\$29,473	Gross Customer kW	C	1 kW
T & D	N/A	\$17,929	\$17,929	\$17,929	\$17,929	Generator Peak Coincidence Factor	D	20.00%
Marginal Energy	N/A	\$65	\$65	\$65	\$65	Gross Load Factor at Customer	E	0.01%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Transmission Loss Factor (Energy)	F	4.710%
Subtotal	N/A	\$47,467	\$47,467	\$47,467	\$47,467	Transmission Loss Factor (Demand)	G	7.380%
						Societal Net Benefit (Cost)	H	\$51
<b>Participant Benefits</b>						<b>Program Summary per Participant</b>		
Bill Reduction - Electric	\$36,598	N/A	N/A	N/A	N/A	Gross kW Saved at Customer	I	16.79 kW
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Subtotal	\$36,598	N/A	N/A	\$0	\$0	<b>Program Summary All Participants</b>		
<b>Total Benefits</b>	<b>\$36,598</b>	<b>\$47,467</b>	<b>\$47,467</b>	<b>\$47,467</b>	<b>\$47,467</b>	Total Participants	J	12
<b>Costs</b>						<b>Total Budget</b>	<b>K</b>	<b>\$37,213</b>
<b>Utility Project Costs</b>						Gross kW Saved at Customer	$(J \times I)$	201 kW
Customer Services	N/A	\$18,700	\$18,700	\$18,700	\$18,700	<b>Net coincident kW Saved at Generator</b>	$(I \times D) / (1 - G) \times J$	
Utility Administration	N/A	\$16,750	\$16,750	\$16,750	\$16,750	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Advertising & Promotion	N/A	\$1,763	\$1,763	\$1,763	\$1,763	<b>Net Annual kWh Saved at Generator</b>	$((B \times E \times I) / (1 - F)) \times J$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	<b>Societal Net Benefits</b>	$(J \times I \times H)$	
Rebates	N/A	\$0	\$0	\$0	\$0			
Other	N/A	\$0	\$0	\$0	\$0			
Subtotal	N/A	\$37,213	\$37,213	\$37,213	\$37,213	<b>Utility Program Cost per kWh Lifetime</b>		<b>\$23.0528</b>
						<b>Utility Program Cost per kW at Gen</b>		<b>\$855</b>
<b>Utility Revenue Reduction</b>								
Revenue Reduction - Electric	N/A	N/A	\$36,598	N/A	N/A			
Subtotal	N/A	N/A	\$36,598	N/A	N/A			
<b>Participant Costs</b>								
Incremental Capital Costs	\$0	N/A	N/A	\$0	\$0			
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0			
Subtotal	\$0	N/A	N/A	\$0	\$0			
<b>Total Costs</b>	<b>\$0</b>	<b>\$37,213</b>	<b>\$73,811</b>	<b>\$37,213</b>	<b>\$37,213</b>			
<b>Net Benefit (Cost)</b>	<b>\$36,598</b>	<b>\$10,254</b>	<b>(\$26,344)</b>	<b>\$10,254</b>	<b>\$10,254</b>			
<b>Benefit/Cost Ratio</b>	<b>INF</b>	<b>1.28</b>	<b>0.64</b>	<b>1.28</b>	<b>1.28</b>			

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

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>PEAK AND ENERGY CONTROL</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant Test (\$Total)</b>	<b>Utility Test (\$Total)</b>	<b>Rate Impact Test (\$Total)</b>	<b>Total Resource Test (\$Total)</b>	<b>Societal Test (\$Total)</b>	<b>Program "Inputs" per Customer kW</b>		
<b>Benefits</b>						Lifetime (Weighted on Generator kWh)	A	5.0 years
<b>Avoided Revenue Requirements</b>						Annual Hours	B	8760
Generation	N/A	\$28,718	\$28,718	\$28,718	\$28,718	Gross Customer kW	C	1 kW
T & D	N/A	\$17,381	\$17,381	\$17,381	\$17,381	Generator Peak Coincidence Factor	D	47.46%
Marginal Energy	N/A	\$1,027	\$1,027	\$1,027	\$1,027	Gross Load Factor at Customer	E	0.20%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Transmission Loss Factor (Energy)	F	4.710%
Subtotal	N/A	\$47,127	\$47,127	\$47,127	\$47,127	Transmission Loss Factor (Demand)	G	7.380%
						Societal Net Benefit (Cost)	H	\$186
<b>Participant Benefits</b>						<b>Program Summary per Participant</b>		
Bill Reduction - Electric	\$16,162	N/A	N/A	N/A	N/A	Gross kW Saved at Customer	I	200.00 kW
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Subtotal	\$16,162	N/A	N/A	\$0	\$0	<b>Program Summary All Participants</b>		
<b>Total Benefits</b>	<b>\$16,162</b>	<b>\$47,127</b>	<b>\$47,127</b>	<b>\$47,127</b>	<b>\$47,127</b>	Total Participants	J	1
<b>Costs</b>						<b>Total Budget</b>	<b>K</b>	<b>\$10,000</b>
<b>Utility Project Costs</b>						Gross kW Saved at Customer	$(J \times I)$	200 kW
Customer Services	N/A	\$3,200	\$3,200	\$3,200	\$3,200	<b>Net coincident kW Saved at Generator</b>	$(I \times D) / (1 - G) \times J$	
Utility Administration	N/A	\$1,800	\$1,800	\$1,800	\$1,800	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Advertising & Promotion	N/A	\$5,000	\$5,000	\$5,000	\$5,000	<b>Net Annual kWh Saved at Generator</b>	$((B \times E \times I) / (1 - F)) \times J$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	<b>Societal Net Benefits</b>	$(J \times I \times H)$	
Rebates	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kWh Lifetime</b>		
Other	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kW at Gen</b>		
Subtotal	N/A	\$10,000	\$10,000	\$10,000	\$10,000			\$0.5396
								\$98
<b>Utility Revenue Reduction</b>						<b>Participant Costs</b>		
Revenue Reduction - Electric	N/A	N/A	\$16,162	N/A	N/A	Incremental Capital Costs	\$0	N/A
Subtotal	N/A	N/A	\$16,162	N/A	N/A	Incremental O&M Costs	\$0	N/A
						Subtotal	\$0	N/A
<b>Total Costs</b>	<b>\$0</b>	<b>\$10,000</b>	<b>\$26,162</b>	<b>\$10,000</b>	<b>\$10,000</b>	<b>Total Costs</b>	<b>\$0</b>	<b>\$10,000</b>
<b>Net Benefit (Cost)</b>	<b>\$16,162</b>	<b>\$37,127</b>	<b>\$20,964</b>	<b>\$37,127</b>	<b>\$37,127</b>	<b>Net Benefit (Cost)</b>	<b>\$16,162</b>	<b>\$37,127</b>
<b>Benefit/Cost Ratio</b>	<b>INF</b>	<b>4.71</b>	<b>1.80</b>	<b>4.71</b>	<b>4.71</b>	<b>Benefit/Cost Ratio</b>	<b>INF</b>	<b>4.71</b>

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

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>BUSINESS SEGMENT TOTAL</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant</b>	<b>Utility</b>	<b>Rate</b>	<b>Total</b>				
	<b>Test</b>	<b>Test</b>	<b>Impact</b>	<b>Resource</b>	<b>Societal</b>			
	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>Test</b>			
	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>			
<b>Benefits</b>								
<b>Avoided Revenue Requirements</b>								
Generation	N/A	\$370,380	\$370,380	\$370,380	\$370,380			
T & D	N/A	\$225,477	\$225,477	\$225,477	\$225,477			
Marginal Energy	N/A	\$1,410,314	\$1,410,314	\$1,410,314	\$1,410,314			
Environmental Externality	N/A	N/A	N/A	N/A	N/A			
Subtotal	N/A	\$2,006,171	\$2,006,171	\$2,006,171	\$2,006,171			
<b>Participant Benefits</b>								
Bill Reduction - Electric	\$3,496,406	N/A	N/A	N/A	N/A			
Rebates from Xcel Energy	\$373,290	N/A	N/A	\$373,290	\$373,290			
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0			
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0			
Subtotal	\$3,869,696	N/A	N/A	\$373,290	\$373,290			
<b>Total Benefits</b>	<b>\$3,869,696</b>	<b>\$2,006,171</b>	<b>\$2,006,171</b>	<b>\$2,379,461</b>	<b>\$2,379,461</b>			
<b>Costs</b>								
<b>Utility Project Costs</b>								
Customer Services	N/A	\$31,900	\$31,900	\$31,900	\$31,900			
Utility Administration	N/A	\$21,050	\$21,050	\$21,050	\$21,050			
Advertising & Promotion	N/A	\$10,493	\$10,493	\$10,493	\$10,493			
Measurement & Verification	N/A	\$0	\$0	\$0	\$0			
Rebates	N/A	\$373,290	\$373,290	\$373,290	\$373,290			
Other	N/A	\$0	\$0	\$0	\$0			
Subtotal	N/A	\$436,733	\$436,733	\$436,733	\$436,733			
<b>Utility Revenue Reduction</b>								
Revenue Reduction - Electric	N/A	N/A	\$3,496,406	N/A	N/A			
Subtotal	N/A	N/A	\$3,496,406	N/A	N/A			
<b>Participant Costs</b>								
Incremental Capital Costs	\$1,698,596	N/A	N/A	\$1,698,596	\$1,698,596			
Incremental O&M Costs	\$74,152	N/A	N/A	\$74,152	\$74,152			
Subtotal	\$1,772,749	N/A	N/A	\$1,772,749	\$1,772,749			
<b>Total Costs</b>	<b>\$1,772,749</b>	<b>\$436,733</b>	<b>\$3,933,138</b>	<b>\$2,209,481</b>	<b>\$2,209,481</b>			
<b>Net Benefit (Cost)</b>	<b>\$2,096,947</b>	<b>\$1,569,438</b>	<b>(\$1,926,967)</b>	<b>\$169,980</b>	<b>\$169,980</b>			
<b>Benefit/Cost Ratio</b>	<b>2.18</b>	<b>4.59</b>	<b>0.51</b>	<b>1.08</b>	<b>1.08</b>			

  

<b>Program "Inputs" per Customer kW</b>		
Lifetime (Weighted on Generator kWh)	A	18.3 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	47.79%
Gross Load Factor at Customer	E	33.10%
Transmission Loss Factor (Energy)	F	4.710%
Transmission Loss Factor (Demand)	G	7.380%
Societal Net Benefit (Cost)	H	\$154

  

<b>Program Summary per Participant</b>		
Gross kW Saved at Customer	I	6.05 kW
Net coincident kW Saved at Generator	( I x D ) / ( 1 - G )	3.12 kW
Gross Annual kWh Saved at Customer	( B x E x I )	17,541 kWh
Net Annual kWh Saved at Generator	( B x E x I ) / ( 1 - F )	18,408 kWh

  

<b>Program Summary All Participants</b>		
Total Participants	J	183
<b>Total Budget</b>	<b>K</b>	<b>\$436,733</b>
Gross kW Saved at Customer	( J x I )	1,107 kW
<b>Net coincident kW Saved at Generator</b>	<b>( I x D ) / ( 1 - G ) x J</b>	<b>571 kW</b>
Gross Annual kWh Saved at Customer	( B x E x I ) x J	3,209,978 kWh
<b>Net Annual kWh Saved at Generator</b>	<b>( ( B x E x I ) / ( 1 - F ) ) x J</b>	<b>3,368,641 kWh</b>
<b>Societal Net Benefits</b>	<b>( J x I x H )</b>	<b>\$169,980</b>

  

<b>Utility Program Cost per kWh Lifetime</b>	<b>\$0.0071</b>
<b>Utility Program Cost per kW at Gen</b>	<b>\$765</b>

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

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>RESIDENTIAL HOME LIGHTING</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>	
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>			
	<b>Participant</b>	<b>Utility</b>	<b>Rate</b>	<b>Total</b>					
	<b>Test</b>	<b>Test</b>	<b>Impact</b>	<b>Resource</b>	<b>Societal</b>				
	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>Test</b>				
<b>Benefits</b>						<b>Program "Inputs" per Customer kW</b>			
<b>Avoided Revenue Requirements</b>						Lifetime (Weighted on Generator kWh)	A	5.7 years	
Generation	N/A	\$48,566	\$48,566	\$48,566	\$48,566	Annual Hours	B	8760	
T & D	N/A	\$29,401	\$29,401	\$29,401	\$29,401	Gross Customer kW	C	1 kW	
Marginal Energy	N/A	\$262,302	\$262,302	\$262,302	\$262,302	Generator Peak Coincidence Factor	D	11.70%	
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Gross Load Factor at Customer	E	12.63%	
Subtotal	N/A	\$340,270	\$340,270	\$340,270	\$340,270	Transmission Loss Factor (Energy)	F	5.136%	
						Transmission Loss Factor (Demand)	G	8.512%	
<b>Participant Benefits</b>						Societal Net Benefit (Cost)	H	\$60	
Bill Reduction - Electric	\$816,536	N/A	N/A	N/A	N/A	<b>Program Summary per Participant</b>			
Rebates from Xcel Energy	\$83,898	N/A	N/A	\$83,898	\$83,898	Gross kW Saved at Customer	I	0.39 kW	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		0.05 kW
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		435 kWh
Subtotal	\$900,434	N/A	N/A	\$83,898	\$83,898	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		459 kWh
<b>Total Benefits</b>						<b>Program Summary All Participants</b>			
	\$900,434	\$340,270	\$340,270	\$424,168	\$424,168	Total Participants	J	3,225	
<b>Costs</b>						<b>Total Budget</b>	K	<b>\$109,598</b>	
<b>Utility Project Costs</b>						Gross kW Saved at Customer	$(J \times I)$	1,269 kW	
Customer Services	N/A	\$21,000	\$21,000	\$21,000	\$21,000	<b>Net coincident kW Saved at Generator</b>	$(I \times D) / (1 - G) \times J$		<b>162 kW</b>
Utility Administration	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		1,404,421 kWh
Advertising & Promotion	N/A	\$4,700	\$4,700	\$4,700	\$4,700	<b>Net Annual kWh Saved at Generator</b>	$((B \times E \times I) / (1 - F)) \times J$		<b>1,480,452 kWh</b>
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	<b>Societal Net Benefits</b>	$(J \times I \times H)$		<b>\$75,843</b>
Rebates	N/A	\$83,898	\$83,898	\$83,898	\$83,898	<b>Utility Program Cost per kWh Lifetime</b>			<b>\$0.0129</b>
Other	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kW at Gen</b>			<b>\$675</b>
Subtotal	N/A	\$109,598	\$109,598	\$109,598	\$109,598				
<b>Utility Revenue Reduction</b>									
Revenue Reduction - Electric	N/A	N/A	\$816,536	N/A	N/A				
Subtotal	N/A	N/A	\$816,536	N/A	N/A				
<b>Participant Costs</b>									
Incremental Capital Costs	\$238,727	N/A	N/A	\$238,727	\$238,727				
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0				
Subtotal	\$238,727	N/A	N/A	\$238,727	\$238,727				
<b>Total Costs</b>									
	\$238,727	\$109,598	\$926,134	\$348,325	\$348,325				
<b>Net Benefit (Cost)</b>	<b>\$661,708</b>	<b>\$230,672</b>	<b>(\$585,864)</b>	<b>\$75,843</b>	<b>\$75,843</b>				
<b>Benefit/Cost Ratio</b>	<b>3.77</b>	<b>3.10</b>	<b>0.37</b>	<b>1.22</b>	<b>1.22</b>				

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

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>RESIDENTIAL SAVER'S SWITCH</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant Test (\$Total)</b>	<b>Utility Test (\$Total)</b>	<b>Rate Impact Test (\$Total)</b>	<b>Total Resource Test (\$Total)</b>	<b>Societal Test (\$Total)</b>	<b>Program "Inputs" per Customer kW</b>		
<b>Benefits</b>						Lifetime (Weighted on Generator kWh)	A	15.0 years
<b>Avoided Revenue Requirements</b>						Annual Hours	B	8760
Generation	N/A	\$382,722	\$382,722	\$382,722	\$382,722	Gross Customer kW	C	1 kW
T & D	N/A	\$232,819	\$232,819	\$232,819	\$232,819	Generator Peak Coincidence Factor	D	27.31%
Marginal Energy	N/A	\$698	\$698	\$698	\$698	Gross Load Factor at Customer	E	0.01%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Transmission Loss Factor (Energy)	F	5.260%
Subtotal	N/A	\$616,239	\$616,239	\$616,239	\$616,239	Transmission Loss Factor (Demand)	G	8.580%
						Societal Net Benefit (Cost)	H	\$226
<b>Participant Benefits</b>						<b>Program Summary per Participant</b>		
Bill Reduction - Electric	\$528,934	N/A	N/A	N/A	N/A	Gross kW Saved at Customer	I	2.46 kW
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Subtotal	\$528,934	N/A	N/A	\$0	\$0	<b>Program Summary All Participants</b>		
<b>Total Benefits</b>	<b>\$528,934</b>	<b>\$616,239</b>	<b>\$616,239</b>	<b>\$616,239</b>	<b>\$616,239</b>	Total Participants	J	770
<b>Costs</b>						<b>Total Budget</b>	<b>K</b>	<b>\$187,913</b>
<b>Utility Project Costs</b>						Gross kW Saved at Customer	$(J \times I)$	1,892 kW
Customer Services	N/A	\$96,550	\$96,550	\$96,550	\$96,550	<b>Net coincident kW Saved at Generator</b>	$(I \times D) / (1 - G) \times J$	
Utility Administration	N/A	\$82,100	\$82,100	\$82,100	\$82,100	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Advertising & Promotion	N/A	\$9,263	\$9,263	\$9,263	\$9,263	<b>Net Annual kWh Saved at Generator</b>	$((B \times E \times I) / (1 - F)) \times J$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	<b>Societal Net Benefits</b>	$(J \times I \times H)$	
Rebates	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kWh Lifetime</b>		
Other	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kW at Gen</b>		
Subtotal	N/A	\$187,913	\$187,913	\$187,913	\$187,913			\$8.4313
								\$333
<b>Utility Revenue Reduction</b>						<b>Participant Costs</b>		
Revenue Reduction - Electric	N/A	N/A	\$528,934	N/A	N/A	Incremental Capital Costs	\$0	N/A
Subtotal	N/A	N/A	\$528,934	N/A	N/A	Incremental O&M Costs	\$0	N/A
						Subtotal	\$0	N/A
<b>Total Costs</b>	<b>\$0</b>	<b>\$187,913</b>	<b>\$716,847</b>	<b>\$187,913</b>	<b>\$187,913</b>	<b>Total Costs</b>	<b>\$0</b>	<b>\$187,913</b>
<b>Net Benefit (Cost)</b>	<b>\$528,934</b>	<b>\$428,327</b>	<b>(\$100,608)</b>	<b>\$428,327</b>	<b>\$428,327</b>	<b>Net Benefit (Cost)</b>	<b>\$528,934</b>	<b>\$428,327</b>
<b>Benefit/Cost Ratio</b>	<b>INF</b>	<b>3.28</b>	<b>0.86</b>	<b>3.28</b>	<b>3.28</b>	<b>Benefit/Cost Ratio</b>	<b>INF</b>	<b>3.28</b>

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

2018 SD DSM Plan Cost-Effectiveness Analysis

<b>RESIDENTIAL SEGMENT TOTAL</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant</b>	<b>Utility</b>	<b>Rate</b>	<b>Total</b>				
	<b>Test</b>	<b>Test</b>	<b>Impact</b>	<b>Resource</b>	<b>Societal</b>			
	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>	<b>(\$Total)</b>			
<b>Benefits</b>								
<b>Avoided Revenue Requirements</b>								
Generation	N/A	\$431,288	\$431,288	\$431,288	\$431,288			
T & D	N/A	\$262,220	\$262,220	\$262,220	\$262,220			
Marginal Energy	N/A	\$263,001	\$263,001	\$263,001	\$263,001			
Environmental Externality	N/A	N/A	N/A	N/A	N/A			\$0
Subtotal	N/A	\$956,509	\$956,509	\$956,509	\$956,509			
<b>Participant Benefits</b>								
Bill Reduction - Electric	\$1,345,471	N/A	N/A	N/A	N/A			
Rebates from Xcel Energy	\$83,898	N/A	N/A	\$83,898	\$83,898			
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0			
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0			
Subtotal	\$1,429,369	N/A	N/A	\$83,898	\$83,898			
<b>Total Benefits</b>	<b>\$1,429,369</b>	<b>\$956,509</b>	<b>\$956,509</b>	<b>\$1,040,407</b>	<b>\$1,040,407</b>			
<b>Costs</b>								
<b>Utility Project Costs</b>								
Customer Services	N/A	\$117,550	\$117,550	\$117,550	\$117,550			
Utility Administration	N/A	\$83,900	\$83,900	\$83,900	\$83,900			
Advertising & Promotion	N/A	\$39,328	\$39,328	\$39,328	\$39,328			
Measurement & Verification	N/A	\$0	\$0	\$0	\$0			
Rebates	N/A	\$83,898	\$83,898	\$83,898	\$83,898			
Other	N/A	\$0	\$0	\$0	\$0			
Subtotal	N/A	\$324,676	\$324,676	\$324,676	\$324,676			
<b>Utility Revenue Reduction</b>								
Revenue Reduction - Electric	N/A	N/A	\$1,345,471	N/A	N/A			
Subtotal	N/A	N/A	\$1,345,471	N/A	N/A			
<b>Participant Costs</b>								
Incremental Capital Costs	\$238,727	N/A	N/A	\$238,727	\$238,727			
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0			
Subtotal	\$238,727	N/A	N/A	\$238,727	\$238,727			
<b>Total Costs</b>	<b>\$238,727</b>	<b>\$324,676</b>	<b>\$1,670,146</b>	<b>\$563,402</b>	<b>\$563,402</b>			
<b>Net Benefit (Cost)</b>	<b>\$1,190,642</b>	<b>\$631,834</b>	<b>(\$713,637)</b>	<b>\$477,005</b>	<b>\$477,005</b>			
<b>Benefit/Cost Ratio</b>	<b>5.99</b>	<b>2.95</b>	<b>0.57</b>	<b>1.85</b>	<b>1.85</b>			

  

<b>Program "Inputs" per Customer kW</b>		
Lifetime (Weighted on Generator kWh)	A	5.8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	21.04%
Gross Load Factor at Customer	E	5.08%
Transmission Loss Factor (Energy)	F	5.136%
Transmission Loss Factor (Demand)	G	8.553%
Societal Net Benefit (Cost)	H	\$151

  

<b>Program Summary per Participant</b>		
Gross kW Saved at Customer	I	0.04 kW
Net coincident kW Saved at Generator	( I x D ) / ( 1 - G )	0.01 kW
Gross Annual kWh Saved at Customer	( B x E x I )	20 kWh
Net Annual kWh Saved at Generator	( B x E x I ) / ( 1 - F )	21 kWh

  

<b>Program Summary All Participants</b>		
Total Participants	J	71,995
<b>Total Budget</b>	<b>K</b>	<b>\$324,676</b>
Gross kW Saved at Customer	( J x I )	3,161 kW
<b>Net coincident kW Saved at Generator</b>	<b>( I x D ) / ( 1 - G ) x J</b>	<b>727 kW</b>
Gross Annual kWh Saved at Customer	( B x E x I ) x J	1,405,829 kWh
<b>Net Annual kWh Saved at Generator</b>	<b>( ( B x E x I ) / ( 1 - F ) ) x J</b>	<b>1,481,938 kWh</b>
<b>Societal Net Benefits</b>	<b>( J x I x H )</b>	<b>\$477,005</b>

  

<b>Utility Program Cost per kWh Lifetime</b>	<b>\$0.0380</b>
<b>Utility Program Cost per kW at Gen</b>	<b>\$446</b>

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



2018 SD DSM Plan Cost-Effectiveness Analysis

<b>PORTFOLIO TOTAL</b>						<b>2018</b>	<b>ELECTRIC</b>	<b>GOAL</b>
<b>2018 Net Present Cost Benefit Summary Analysis For All Participants</b>						<b>Input Summary and Totals</b>		
	<b>Participant Test (\$Total)</b>	<b>Utility Test (\$Total)</b>	<b>Rate Impact Test (\$Total)</b>	<b>Total Resource Test (\$Total)</b>	<b>Societal Test (\$Total)</b>	<b>Program "Inputs" per Customer kW</b>		
<b>Benefits</b>						Lifetime (Weighted on Generator kWh)	A	14.5 years
<b>Avoided Revenue Requirements</b>						Annual Hours	B	8760
Generation	N/A	\$801,668	\$801,668	\$801,668	\$801,668	Gross Customer kW	C	1 kW
T & D	N/A	\$487,697	\$487,697	\$487,697	\$487,697	Generator Peak Coincidence Factor	D	27.92%
Marginal Energy	N/A	\$1,673,315	\$1,673,315	\$1,673,315	\$1,673,315	Gross Load Factor at Customer	E	12.35%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Transmission Loss Factor (Energy)	F	4.840%
Subtotal	N/A	\$2,962,680	\$2,962,680	\$2,962,680	\$2,962,680	Transmission Loss Factor (Demand)	G	8.251%
						Societal Net Benefit (Cost)	H	\$149
<b>Participant Benefits</b>						<b>Program Summary per Participant</b>		
Bill Reduction - Electric	\$4,841,876	N/A	N/A	N/A	N/A	Gross kW Saved at Customer	I	0.06 kW
Rebates from Xcel Energy	\$457,188	N/A	N/A	\$457,188	\$457,188	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Subtotal	\$5,299,064	N/A	N/A	\$457,188	\$457,188	<b>Program Summary All Participants</b>		
<b>Total Benefits</b>	<b>\$5,299,064</b>	<b>\$2,962,680</b>	<b>\$2,962,680</b>	<b>\$3,419,868</b>	<b>\$3,419,868</b>	Total Participants	J	72,178
<b>Costs</b>						<b>Total Budget</b>	K	<b>\$774,408</b>
<b>Utility Project Costs</b>						Gross kW Saved at Customer	$(J \times I)$	
Customer Services	N/A	\$149,450	\$149,450	\$149,450	\$149,450	<b>Net coincident kW Saved at Generator</b>	$(I \times D) / (1 - G) \times J$	
Utility Administration	N/A	\$117,950	\$117,950	\$117,950	\$117,950	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Advertising & Promotion	N/A	\$49,820	\$49,820	\$49,820	\$49,820	<b>Net Annual kWh Saved at Generator</b>	$((B \times E \times I) / (1 - F)) \times J$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	<b>Societal Net Benefits</b>	$(J \times I \times H)$	
Rebates	N/A	\$457,188	\$457,188	\$457,188	\$457,188	<b>Utility Program Cost per kWh Lifetime</b>		
Other	N/A	\$0	\$0	\$0	\$0	<b>Utility Program Cost per kW at Gen</b>		
Subtotal	N/A	\$774,408	\$774,408	\$774,408	\$774,408			<b>\$0.0110</b>
								<b>\$596</b>
<b>Utility Revenue Reduction</b>								
Revenue Reduction - Electric	N/A	N/A	\$4,841,876	N/A	N/A			
Subtotal	N/A	N/A	\$4,841,876	N/A	N/A			
<b>Participant Costs</b>								
Incremental Capital Costs	\$1,937,323	N/A	N/A	\$1,937,323	\$1,937,323			
Incremental O&M Costs	\$74,152	N/A	N/A	\$74,152	\$74,152			
Subtotal	\$2,011,475	N/A	N/A	\$2,011,475	\$2,011,475			
<b>Total Costs</b>	<b>\$2,011,475</b>	<b>\$774,408</b>	<b>\$5,616,284</b>	<b>\$2,785,883</b>	<b>\$2,785,883</b>			
<b>Net Benefit (Cost)</b>	<b>\$3,287,589</b>	<b>\$2,188,272</b>	<b>(\$2,653,604)</b>	<b>\$633,985</b>	<b>\$633,985</b>			
<b>Benefit/Cost Ratio</b>	<b>2.63</b>	<b>3.83</b>	<b>0.53</b>	<b>1.23</b>	<b>1.23</b>			

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