

Executive Summary Table - 2019

2019	Electric Participants	Electric Budget	Generator kW	Generator kWh	Participant Test Ratio	Utility Test Ratio	Ratepayer Impact Measure Test Ratio	TRC Ratio
Business Segment								
Lighting Efficiency	334	\$389,320	484	3,985,513	2.47	5.78	0.49	1.16
Business Saver's Switch	12	\$37,213	42	107	INF	1.26	0.65	1.26
Peak and Energy Control	1	\$10,000	99	3,695	INF	4.66	1.15	4.66
Business Segment Total	347	\$436,533	626	3,989,315	2.51	5.37	0.50	1.17
Residential Segment								
Home Lighting	2,635	\$93,412	154	1,508,018	8.02	3.15	0.36	1.91
Residential Saver's Switch	770	\$187,913	546	1,651	INF	3.24	0.86	3.24
Consumer Education	68,000	\$21,165	N/A	N/A				
Residential Segment Total	71,405	\$302,490	700	1,509,669	13.31	2.99	0.58	2.43
Planning Segment								
Regulatory Affairs	0	\$13,000	N/A	N/A				
Planning Segment Total	0	\$13,000	N/A	N/A				
PORTFOLIO TOTAL	71,752	\$752,023	1,326	5,498,983	3.07	4.32	0.52	1.36

2019 SD DSM Plan Cost-Effectiveness Analysis

LIGHTING EFFICIENCY						2019 ELECTRIC		GOAL
2019 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	18.1 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	54.30%
Generation	N/A	\$364,323	\$364,323	\$364,323	\$364,323	Gross Load Factor at Customer	E	50.96%
T & D	N/A	\$222,200	\$222,200	\$222,200	\$222,200	Transmission Loss Factor (Energy)	F	4.420%
Marginal Energy	N/A	\$1,663,806	\$1,663,806	\$1,663,806	\$1,663,806	Transmission Loss Factor (Demand)	G	4.310%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$401
Subtotal	N/A	\$2,250,329	\$2,250,329	\$2,250,329	\$2,250,329	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	2.56 kW
Bill Reduction - Electric	\$4,174,756	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$284,320	N/A	N/A	\$284,320	\$284,320	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	\$4,459,076	N/A	N/A	\$284,320	\$284,320	Total Participants	J	334
Total Benefits						Total Budget	K	\$389,320
Costs						Gross kW Saved at Customer	$(J \times I)$	853.38 kW
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Utility Administration	N/A	\$105,000	\$105,000	\$105,000	\$105,000	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Rebates	N/A	\$284,320	\$284,320	\$284,320	\$284,320	Utility Program Cost per kW at Gen		
Other	N/A	\$0	\$0	\$0	\$0	\$0.0054		
Subtotal	N/A	\$389,320	\$389,320	\$389,320	\$389,320	\$804		
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$4,174,756	N/A	N/A			
Subtotal	N/A	N/A	\$4,174,756	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,717,744	N/A	N/A	\$1,717,744	\$1,717,744			
Incremental O&M Costs	\$85,539	N/A	N/A	\$85,539	\$85,539			
Subtotal	\$1,803,283	N/A	N/A	\$1,803,283	\$1,803,283			
Total Costs								
	\$1,803,283	\$389,320	\$4,564,076	\$2,192,603	\$2,192,603			
Net Benefit (Cost)								
	\$2,655,793	\$1,861,009	(\$2,313,747)	\$342,046	\$342,046			
Benefit/Cost Ratio								
	2.47	5.78	0.49	1.16	1.16			

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

2019 SD DSM Plan Cost-Effectiveness Analysis

BUSINESS SAVER'S SWITCH						2019	ELECTRIC	GOAL
2019 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	15.0 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	20.00%
Generation	N/A	\$29,168	\$29,168	\$29,168	\$29,168	Gross Load Factor at Customer	E	0.01%
T & D	N/A	\$17,765	\$17,765	\$17,765	\$17,765	Transmission Loss Factor (Energy)	F	4.420%
Marginal Energy	N/A	\$60	\$60	\$60	\$60	Transmission Loss Factor (Demand)	G	4.310%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$49
Subtotal	N/A	\$46,992	\$46,992	\$46,992	\$46,992	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	16.79 kW
Bill Reduction - Electric	\$34,908	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	3.51 kW
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	8 kWh
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	9 kWh
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants		
Subtotal	\$34,908	N/A	N/A	\$0	\$0	Total Participants	J	12
Total Benefits						Total Budget	K	\$37,213
Total Benefits	\$34,908	\$46,992	\$46,992	\$46,992	\$46,992	Gross kW Saved at Customer	$(J \times I)$	201.50 kW
Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	42 kW
Utility Project Costs						Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	102 kWh
Customer Services	N/A	\$0	\$0	\$0	\$0	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	107 kWh
Utility Administration	N/A	\$37,213	\$37,213	\$37,213	\$37,213	Societal Net Benefits	$(J \times I \times H)$	\$9,779
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh at Gen		\$23.2865
Rebates	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Other	N/A	\$0	\$0	\$0	\$0			\$884
Subtotal	N/A	\$37,213	\$37,213	\$37,213	\$37,213			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$34,908	N/A	N/A			
Subtotal	N/A	N/A	\$34,908	N/A	N/A			
Participant Costs								
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			
Total Costs								
Total Costs	\$0	\$37,213	\$72,121	\$37,213	\$37,213			
Net Benefit (Cost)								
Net Benefit (Cost)	\$34,908	\$9,779	(\$25,128)	\$9,779	\$9,779			
Benefit/Cost Ratio								
Benefit/Cost Ratio	INF	1.26	0.65	1.26	1.26			

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

2019 SD DSM Plan Cost-Effectiveness Analysis

PEAK AND ENERGY CONTROL						2019	ELECTRIC	GOAL
2019 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	5.0 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	47.46%
Generation	N/A	\$28,419	\$28,419	\$28,419	\$28,419	Gross Load Factor at Customer	E	0.20%
T & D	N/A	\$17,221	\$17,221	\$17,221	\$17,221	Transmission Loss Factor (Energy)	F	4.420%
Marginal Energy	N/A	\$961	\$961	\$961	\$961	Transmission Loss Factor (Demand)	G	4.310%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$183
Subtotal	N/A	\$46,601	\$46,601	\$46,601	\$46,601	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	200.00 kW
Bill Reduction - Electric	\$30,671	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	99.20 kW
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$	3,532 kWh
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	3,695 kWh
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants		
Subtotal	\$30,671	N/A	N/A	\$0	\$0	Total Participants	J	1
Total Benefits						Total Budget	K	\$10,000
Costs						Gross kW Saved at Customer	$(J \times I)$	200.00 kW
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	99 kW
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	3,532 kWh
Utility Administration	N/A	\$10,000	\$10,000	\$10,000	\$10,000	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	3,695 kWh
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$	\$36,601
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Rebates	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Other	N/A	\$0	\$0	\$0	\$0	\$0.5412		
Subtotal	N/A	\$10,000	\$10,000	\$10,000	\$10,000	\$101		
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$30,671	N/A	N/A			
Subtotal	N/A	N/A	\$30,671	N/A	N/A			
Participant Costs								
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			
Total Costs								
Net Benefit (Cost)								
	\$30,671	\$36,601	\$5,930	\$36,601	\$36,601			
Benefit/Cost Ratio								
	INF	4.66	1.15	4.66	4.66			

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

2019 SD DSM Plan Cost-Effectiveness Analysis

BUSINESS SEGMENT TOTAL						2019	ELECTRIC	GOAL
2019 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	18.1 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	47.70%
Generation	N/A	\$421,909	\$421,909	\$421,909	\$421,909	Gross Load Factor at Customer	E	34.69%
T & D	N/A	\$257,186	\$257,186	\$257,186	\$257,186	Transmission Loss Factor (Energy)	F	4.420%
Marginal Energy	N/A	\$1,664,828	\$1,664,828	\$1,664,828	\$1,664,828	Transmission Loss Factor (Demand)	G	4.310%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$310
Subtotal	N/A	\$2,343,922	\$2,343,922	\$2,343,922	\$2,343,922	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	3.62 kW
Bill Reduction - Electric	\$4,240,334	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$284,320	N/A	N/A	\$284,320	\$284,320	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	\$4,524,654	N/A	N/A	\$284,320	\$284,320	Total Participants	J	347
Total Benefits						Total Budget	K	\$436,533
Costs						Gross kW Saved at Customer	$(J \times I)$	1,254.88 kW
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Utility Administration	N/A	\$152,213	\$152,213	\$152,213	\$152,213	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Rebates	N/A	\$284,320	\$284,320	\$284,320	\$284,320	Utility Program Cost per kW at Gen		
Other	N/A	\$0	\$0	\$0	\$0	\$0.0060		
Subtotal	N/A	\$436,533	\$436,533	\$436,533	\$436,533	\$698		
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$4,240,334	N/A	N/A			
Subtotal	N/A	N/A	\$4,240,334	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,717,744	N/A	N/A	\$1,717,744	\$1,717,744			
Incremental O&M Costs	\$85,539	N/A	N/A	\$85,539	\$85,539			
Subtotal	\$1,803,283	N/A	N/A	\$1,803,283	\$1,803,283			
Total Costs								
	\$1,803,283	\$436,533	\$4,676,867	\$2,239,816	\$2,239,816			
Net Benefit (Cost)								
	\$2,721,371	\$1,907,389	(\$2,332,945)	\$388,426	\$388,426			
Benefit/Cost Ratio								
	2.51	5.37	0.50	1.17	1.17			

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

HOME LIGHTING						2019 ELECTRIC			GOAL
2019 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		4.6 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		11.67%
Generation	N/A	\$39,061	\$39,061	\$39,061	\$39,061	Gross Load Factor at Customer	E		13.08%
T & D	N/A	\$23,664	\$23,664	\$23,664	\$23,664	Transmission Loss Factor (Energy)	F		5.227%
Marginal Energy	N/A	\$231,235	\$231,235	\$231,235	\$231,235	Transmission Loss Factor (Demand)	G		5.453%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H		\$141
Subtotal	N/A	\$293,960	\$293,960	\$293,960	\$293,960	Program Summary per Participant			
Participant Benefits						Gross kW Saved at Customer	I		0.47 kW
Bill Reduction - Electric	\$722,035	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		0.06 kW
Rebates from Xcel Energy	\$74,162	N/A	N/A	\$74,162	\$74,162	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		542 kWh
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		572 kWh
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants			
Subtotal	\$796,196	N/A	N/A	\$74,162	\$74,162	Total Participants	J		2,635
Total Benefits						Total Budget	K		\$93,412
Costs						Gross kW Saved at Customer	$(J \times I)$		1,246.97 kW
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$		154 kW
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		1,429,187 kWh
Utility Administration	N/A	\$19,251	\$19,251	\$19,251	\$19,251	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$		1,508,018 kWh
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$		\$175,416
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime			
Rebates	N/A	\$74,162	\$74,162	\$74,162	\$74,162	Utility Program Cost per kW at Gen			
Other	N/A	\$0	\$0	\$0	\$0				\$0.0135
Subtotal	N/A	\$93,412	\$93,412	\$93,412	\$93,412				\$607
Utility Revenue Reduction									
Revenue Reduction - Electric	N/A	N/A	\$722,035	N/A	N/A				
Subtotal	N/A	N/A	\$722,035	N/A	N/A				
Participant Costs									
Incremental Capital Costs	\$99,293	N/A	N/A	\$99,293	\$99,293				
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0				
Subtotal	\$99,293	N/A	N/A	\$99,293	\$99,293				
Total Costs									
	\$99,293	\$93,412	\$815,447	\$192,705	\$192,705				
Net Benefit (Cost)									
	\$696,903	\$200,548	(\$521,487)	\$175,416	\$175,416				
Benefit/Cost Ratio									
	8.02	3.15	0.36	1.91	1.91				

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

RESIDENTIAL SAVER'S SWITCH						2019	ELECTRIC	GOAL
2019 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	15.0 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	27.29%
Generation	N/A	\$378,415	\$378,415	\$378,415	\$378,415	Gross Load Factor at Customer	E	0.01%
T & D	N/A	\$230,475	\$230,475	\$230,475	\$230,475	Transmission Loss Factor (Energy)	F	5.500%
Marginal Energy	N/A	\$781	\$781	\$781	\$781	Transmission Loss Factor (Demand)	G	5.525%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$223
Subtotal	N/A	\$609,671	\$609,671	\$609,671	\$609,671	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	2.46 kW
Bill Reduction - Electric	\$525,107	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	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	\$525,107	N/A	N/A	\$0	\$0	Total Participants	J	770
Total Benefits						Total Budget	K	\$187,913
Costs						Gross kW Saved at Customer	$(J \times I)$	1,891.50 kW
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Utility Administration	N/A	\$187,913	\$187,913	\$187,913	\$187,913	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Rebates	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Other	N/A	\$0	\$0	\$0	\$0	\$7,5888		
Subtotal	N/A	\$187,913	\$187,913	\$187,913	\$187,913	\$344		
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$525,107	N/A	N/A			
Subtotal	N/A	N/A	\$525,107	N/A	N/A			
Participant Costs								
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			
Total Costs								
	\$0	\$187,913	\$713,020	\$187,913	\$187,913			
Net Benefit (Cost)	\$525,107	\$421,758	(\$103,350)	\$421,758	\$421,758			
Benefit/Cost Ratio	INF	3.24	0.86	3.24	3.24			

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

RESIDENTIAL SEGMENT TOTAL						2019	ELECTRIC	GOAL	
2019 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	4.6 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	21.09%	
Generation	N/A	\$417,475	\$417,475	\$417,475	\$417,475	Gross Load Factor at Customer	E	5.20%	
T & D	N/A	\$254,139	\$254,139	\$254,139	\$254,139	Transmission Loss Factor (Energy)	F	5.228%	
Marginal Energy	N/A	\$232,016	\$232,016	\$232,016	\$232,016	Transmission Loss Factor (Demand)	G	5.496%	
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$184	
Subtotal	N/A	\$903,631	\$903,631	\$903,631	\$903,631	Program Summary per Participant			
Participant Benefits						Gross kW Saved at Customer	I	0.04 kW	
Bill Reduction - Electric	\$1,247,142	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		0.01 kW
Rebates from Xcel Energy	\$74,162	N/A	N/A	\$74,162	\$74,162	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		20 kWh
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		21 kWh
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants			
Subtotal	\$1,321,304	N/A	N/A	\$74,162	\$74,162	Total Participants	J	71,405	
Total Benefits						Total Budget	K	\$302,490	
Costs						Gross kW Saved at Customer	$(J \times I)$	3,138.47 kW	
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$		700 kW
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		1,430,747 kWh
Utility Administration	N/A	\$228,329	\$228,329	\$228,329	\$228,329	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$		1,509,669 kWh
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$		\$576,009
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime			\$0.0435
Rebates	N/A	\$74,162	\$74,162	\$74,162	\$74,162	Utility Program Cost per kW at Gen			\$432
Other	N/A	\$0	\$0	\$0	\$0				
Subtotal	N/A	\$302,490	\$302,490	\$302,490	\$302,490				
Utility Revenue Reduction									
Revenue Reduction - Electric	N/A	N/A	\$1,247,142	N/A	N/A				
Subtotal	N/A	N/A	\$1,247,142	N/A	N/A				
Participant Costs									
Incremental Capital Costs	\$99,293	N/A	N/A	\$99,293	\$99,293				
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0				
Subtotal	\$99,293	N/A	N/A	\$99,293	\$99,293				
Total Costs									
	\$99,293	\$302,490	\$1,549,632	\$401,783	\$401,783				
Net Benefit (Cost)	\$1,222,010	\$601,141	(\$646,001)	\$576,009	\$576,009				
Benefit/Cost Ratio	13.31	2.99	0.58	2.43	2.43				

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

2019 SD DSM Plan Cost-Effectiveness Analysis

PORTFOLIO TOTAL						2019	ELECTRIC	GOAL	
2019 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	14.4 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	28.62%	
Generation	N/A	\$839,384	\$839,384	\$839,384	\$839,384	Gross Load Factor at Customer	E	13.63%	
T & D	N/A	\$511,325	\$511,325	\$511,325	\$511,325	Transmission Loss Factor (Energy)	F	4.642%	
Marginal Energy	N/A	\$1,896,844	\$1,896,844	\$1,896,844	\$1,896,844	Transmission Loss Factor (Demand)	G	5.161%	
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$217	
Subtotal	N/A	\$3,247,553	\$3,247,553	\$3,247,553	\$3,247,553	Program Summary per Participant			
Participant Benefits						Gross kW Saved at Customer	I	0.06 kW	
Bill Reduction - Electric	\$5,487,476	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		0.02 kW
Rebates from Xcel Energy	\$358,482	N/A	N/A	\$358,482	\$358,482	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		73 kWh
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		77 kWh
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants			
Subtotal	\$5,845,958	N/A	N/A	\$358,482	\$358,482	Total Participants	J	71,752	
Total Benefits						Total Budget	K	\$752,023	
Costs						Gross kW Saved at Customer	$(J \times I)$	4,393.35 kW	
Utility Project Costs						Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$		1,326 kW
Customer Services	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		5,243,734 kWh
Utility Administration	N/A	\$393,542	\$393,542	\$393,542	\$393,542	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$		5,498,983 kWh
Advertising & Promotion	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$		\$951,435
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime			\$0.0095
Rebates	N/A	\$358,482	\$358,482	\$358,482	\$358,482	Utility Program Cost per kW at Gen			\$567
Other	N/A	\$0	\$0	\$0	\$0				
Subtotal	N/A	\$752,023	\$752,023	\$752,023	\$752,023				
Utility Revenue Reduction									
Revenue Reduction - Electric	N/A	N/A	\$5,487,476	N/A	N/A				
Subtotal	N/A	N/A	\$5,487,476	N/A	N/A				
Participant Costs									
Incremental Capital Costs	\$1,817,037	N/A	N/A	\$1,817,037	\$1,817,037				
Incremental O&M Costs	\$85,539	N/A	N/A	\$85,539	\$85,539				
Subtotal	\$1,902,576	N/A	N/A	\$1,902,576	\$1,902,576				
Total Costs									
	\$1,902,576	\$752,023	\$6,239,499	\$2,654,599	\$2,654,599				
Net Benefit (Cost)									
	\$3,943,382	\$2,495,530	(\$2,991,946)	\$951,435	\$951,435				
Benefit/Cost Ratio									
	3.07	4.32	0.52	1.36	1.36				

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