

2017 SD DSM Plan Cost-Effectiveness Analysis

LIGHTING EFFICIENCY						2017 ELECTRIC		GOAL
2017 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	16.7 years
Avoided Revenue Requirements						Annual Hours	B	8760
Generation	N/A	\$308,026	\$308,026	\$308,026	\$308,026	Gross Customer kW	C	1 kW
T & D	N/A	\$185,979	\$185,979	\$185,979	\$185,979	Generator Peak Coincidence Factor	D	65.10%
Marginal Energy	N/A	\$1,633,731	\$1,633,731	\$1,633,731	\$1,633,731	Gross Load Factor at Customer	E	58.06%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Transmission Loss Factor (Energy)	F	4.710%
Subtotal	N/A	\$2,127,736	\$2,127,736	\$2,127,736	\$2,127,736	Transmission Loss Factor (Demand)	G	7.380%
Participant Benefits						Societal Net Benefit (Cost)	H	\$677
Bill Reduction - Electric	\$3,034,745	N/A	N/A	N/A	N/A	Program Summary per Participant		
Rebates from Xcel Energy	\$346,015	N/A	N/A	\$346,015	\$346,015	Gross kW Saved at Customer	I	0.37 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	\$3,380,760	N/A	N/A	\$346,015	\$346,015	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$	
Total Benefits	\$3,380,760	\$2,127,736	\$2,127,736	\$2,473,751	\$2,473,751	Program Summary All Participants		
Costs						Total Participants	J	2,140
Utility Project Costs						Total Budget	K	\$389,520
Customer Services	N/A	\$36,005	\$36,005	\$36,005	\$36,005	Gross kW Saved at Customer	$(J \times I)$	
Utility Administration	N/A	\$3,500	\$3,500	\$3,500	\$3,500	Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Advertising & Promotion	N/A	\$4,000	\$4,000	\$4,000	\$4,000	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	\$346,015	\$346,015	\$346,015	\$346,015	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								\$0.0056
Revenue Reduction - Electric	N/A	N/A	\$3,034,745	N/A	N/A			\$705
Subtotal	N/A	N/A	\$3,034,745	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,492,614	N/A	N/A	\$1,492,614	\$1,492,614			
Incremental O&M Costs	\$59,858	N/A	N/A	\$59,858	\$59,858			
Subtotal	\$1,552,471	N/A	N/A	\$1,552,471	\$1,552,471			
Total Costs	\$1,552,471	\$389,520	\$3,424,265	\$1,941,991	\$1,941,991			
Net Benefit (Cost)	\$1,828,289	\$1,738,216	(\$1,296,529)	\$531,760	\$531,760			
Benefit/Cost Ratio	2.18	5.46	0.62	1.27	1.27			

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

2017 SD DSM Plan Cost-Effectiveness Analysis

BUSINESS SAVER'S SWITCH						2017	ELECTRIC	GOAL
2017 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	15.0 years
Avoided Revenue Requirements						Annual Hours	B	8760
Generation	N/A	\$20,228	\$20,228	\$20,228	\$20,228	Gross Customer kW	C	1 kW
T & D	N/A	\$12,213	\$12,213	\$12,213	\$12,213	Generator Peak Coincidence Factor	D	19.67%
Marginal Energy	N/A	\$51	\$51	\$51	\$51	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	\$32,493	\$32,493	\$32,493	\$32,493	Transmission Loss Factor (Demand)	G	7.380%
						Societal Net Benefit (Cost)	H	\$10
Participant Benefits						Program Summary per Participant		
Bill Reduction - Electric	\$32,347	N/A	N/A	N/A	N/A	Gross kW Saved at Customer	I	13.45 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	\$32,347	N/A	N/A	\$0	\$0	Program Summary All Participants		
Total Benefits	\$32,347	\$32,493	\$32,493	\$32,493	\$32,493	Total Participants	J	12
Costs						Total Budget	K	\$30,950
Utility Project Costs						Gross kW Saved at Customer	$(J \times I)$	161 kW
Customer Services	N/A	\$17,700	\$17,700	\$17,700	\$17,700	Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$	
Utility Administration	N/A	\$11,750	\$11,750	\$11,750	\$11,750	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$	
Advertising & Promotion	N/A	\$1,500	\$1,500	\$1,500	\$1,500	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$	
Rebates	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime		
Other	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Subtotal	N/A	\$30,950	\$30,950	\$30,950	\$30,950			\$24.3854
								\$903
Utility Revenue Reduction						Net Benefit (Cost)		
Revenue Reduction - Electric	N/A	N/A	\$32,347	N/A	N/A			\$32,347
Subtotal	N/A	N/A	\$32,347	N/A	N/A	Benefit/Cost Ratio		
								INF
Participant Costs								1.05
Incremental Capital Costs	\$0	N/A	N/A	\$0	\$0			0.51
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0			1.05
Subtotal	\$0	N/A	N/A	\$0	\$0			1.05
Total Costs	\$0	\$30,950	\$63,297	\$30,950	\$30,950			

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

2017 SD DSM Plan Cost-Effectiveness Analysis

PEAK AND ENERGY CONTROL						2017	ELECTRIC	GOAL	
2017 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	5.0 years	
Avoided Revenue Requirements						Annual Hours	B	8760	
Generation	N/A	\$25,385	\$25,385	\$25,385	\$25,385	Gross Customer kW	C	1 kW	
T & D	N/A	\$15,325	\$15,325	\$15,325	\$15,325	Generator Peak Coincidence Factor	D	47.46%	
Marginal Energy	N/A	\$1,017	\$1,017	\$1,017	\$1,017	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	\$41,727	\$41,727	\$41,727	\$41,727	Transmission Loss Factor (Demand)	G	7.380%	
Participant Benefits						Societal Net Benefit (Cost)	H	\$159	
Bill Reduction - Electric	\$14,929	N/A	N/A	N/A	N/A	Program Summary per Participant			
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Gross kW Saved at Customer	I	200.00 kW	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		102.48 kW
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		3,532 kWh
Subtotal	\$14,929	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		3,707 kWh
Total Benefits	\$14,929	\$41,727	\$41,727	\$41,727	\$41,727	Program Summary All Participants			
Costs						Total Participants	J	1	
Utility Project Costs						Total Budget	K	\$10,000	
Customer Services	N/A	\$3,200	\$3,200	\$3,200	\$3,200	Gross kW Saved at Customer	$(J \times I)$		200 kW
Utility Administration	N/A	\$1,800	\$1,800	\$1,800	\$1,800	Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$		102 kW
Advertising & Promotion	N/A	\$5,000	\$5,000	\$5,000	\$5,000	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		3,532 kWh
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$		3,707 kWh
Rebates	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$		\$31,727
Other	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime			\$0.5396
Subtotal	N/A	\$10,000	\$10,000	\$10,000	\$10,000	Utility Program Cost per kW at Gen			\$98
Utility Revenue Reduction									
Revenue Reduction - Electric	N/A	N/A	\$14,929	N/A	N/A				
Subtotal	N/A	N/A	\$14,929	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	\$10,000	\$24,929	\$10,000	\$10,000				
Net Benefit (Cost)	\$14,929	\$31,727	\$16,798	\$31,727	\$31,727				
Benefit/Cost Ratio	INF	4.17	1.67	4.17	4.17				

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

2017 SD DSM Plan Cost-Effectiveness Analysis

BUSINESS SEGMENT TOTAL						2017	ELECTRIC	GOAL
2017 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	16.7 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	55.64%
Generation	N/A	\$353,639	\$353,639	\$353,639	\$353,639	Gross Load Factor at Customer	E	39.80%
T & D	N/A	\$213,517	\$213,517	\$213,517	\$213,517	Transmission Loss Factor (Energy)	F	4.710%
Marginal Energy	N/A	\$1,634,799	\$1,634,799	\$1,634,799	\$1,634,799	Transmission Loss Factor (Demand)	G	7.380%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$493
Subtotal	N/A	\$2,201,956	\$2,201,956	\$2,201,956	\$2,201,956	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	0.53 kW
Bill Reduction - Electric	\$3,082,021	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$346,015	N/A	N/A	\$346,015	\$346,015	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	\$3,428,036	N/A	N/A	\$346,015	\$346,015	Total Participants	J	2,153
Total Benefits						Total Budget	K	\$430,470
	\$3,428,036	\$2,201,956	\$2,201,956	\$2,547,971	\$2,547,971	Gross kW Saved at Customer	$(J \times I)$	1,147 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	\$56,905	\$56,905	\$56,905	\$56,905	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Utility Administration	N/A	\$17,050	\$17,050	\$17,050	\$17,050	Societal Net Benefits	$(J \times I \times H)$	
Advertising & Promotion	N/A	\$10,500	\$10,500	\$10,500	\$10,500	Utility Program Cost per kWh Lifetime		
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Rebates	N/A	\$346,015	\$346,015	\$346,015	\$346,015	\$0.0062		
Other	N/A	\$0	\$0	\$0	\$0	\$625		
Subtotal	N/A	\$430,470	\$430,470	\$430,470	\$430,470			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$3,082,021	N/A	N/A			
Subtotal	N/A	N/A	\$3,082,021	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,492,614	N/A	N/A	\$1,492,614	\$1,492,614			
Incremental O&M Costs	\$59,858	N/A	N/A	\$59,858	\$59,858			
Subtotal	\$1,552,471	N/A	N/A	\$1,552,471	\$1,552,471			
Total Costs								
	\$1,552,471	\$430,470	\$3,512,491	\$1,982,941	\$1,982,941			
Net Benefit (Cost)								
	\$1,875,565	\$1,771,486	(\$1,310,536)	\$565,029	\$565,029			
Benefit/Cost Ratio								
	2.21	5.12	0.63	1.28	1.28			

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

2017 SD DSM Plan Cost-Effectiveness Analysis

GROUND SOURCE HEAT PUMP						2017	ELECTRIC	GOAL
2017 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	0.0 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	#DIV/0!
Generation	N/A	\$0	\$0	\$0	\$0	Gross Load Factor at Customer	E	#DIV/0!
T & D	N/A	\$0	\$0	\$0	\$0	Transmission Loss Factor (Energy)	F	0.000%
Marginal Energy	N/A	\$0	\$0	\$0	\$0	Transmission Loss Factor (Demand)	G	0.000%
Environmental Externality	N/A	N/A	N/A	N/A	N/A	Societal Net Benefit (Cost)	H	#DIV/0!
Subtotal	N/A	\$0	\$0	\$0	\$0	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	#DIV/0!
Bill Reduction - Electric	\$0	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	$((B \times E \times I) / (1 - F)) \times J$	
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Program Summary All Participants		
Subtotal	\$0	N/A	N/A	\$0	\$0	Total Participants	J	0
Total Benefits						Total Budget	K	\$0
Total Benefits	\$0	\$0	\$0	\$0	\$0	Gross kW Saved at Customer	$(J \times I)$	#DIV/0!
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	\$0	\$0	\$0	\$0	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Utility Administration	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$	
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 kW at Gen		
Rebates	N/A	\$0	\$0	\$0	\$0	#DIV/0!		
Other	N/A	\$0	\$0	\$0	\$0	#DIV/0!		
Subtotal	N/A	\$0	\$0	\$0	\$0			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$0	N/A	N/A			
Subtotal	N/A	N/A	\$0	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	\$0	\$0	\$0	\$0			
Net Benefit (Cost)								
Net Benefit (Cost)	\$0	\$0	\$0	\$0	\$0			
Benefit/Cost Ratio								
Benefit/Cost Ratio	INF	INF	INF	INF	INF			

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

2017 SD DSM Plan Cost-Effectiveness Analysis

RESIDENTIAL HOME LIGHTING						2017	ELECTRIC	GOAL	
2017 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)	(\$Total)				
Benefits						Program "Inputs" per Customer kW			
Avoided Revenue Requirements						Lifetime (Weighted on Generator kWh)	A	5.9 years	
Generation	N/A	\$54,194	\$54,194	\$54,194	\$54,194	Annual Hours	B	8760	
T & D	N/A	\$32,721	\$32,721	\$32,721	\$32,721	Gross Customer kW	C	1 kW	
Marginal Energy	N/A	\$320,603	\$320,603	\$320,603	\$320,603	Generator Peak Coincidence Factor	D	11.59%	
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Gross Load Factor at Customer	E	13.10%	
Subtotal	N/A	\$407,518	\$407,518	\$407,518	\$407,518	Transmission Loss Factor (Energy)	F	5.096%	
						Transmission Loss Factor (Demand)	G	8.514%	
Participant Benefits						Societal Net Benefit (Cost)	H	\$252	
Bill Reduction - Electric	\$940,261	N/A	N/A	N/A	N/A	Program Summary per Participant			
Rebates from Xcel Energy	\$70,340	N/A	N/A	\$70,340	\$70,340	Gross kW Saved at Customer	I	0.23 kW	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		0.03 kW
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		268 kWh
Subtotal	\$1,010,601	N/A	N/A	\$70,340	\$70,340	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		283 kWh
Total Benefits						Program Summary All Participants			
Total Benefits	\$1,010,601	\$407,518	\$407,518	\$477,858	\$477,858	Total Participants	J	3,772	
Costs						Total Budget	K	\$97,340	
Utility Project Costs						Gross kW Saved at Customer	$(J \times I)$	881 kW	
Customer Services	N/A	\$22,000	\$22,000	\$22,000	\$22,000	Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$		112 kW
Utility Administration	N/A	\$0	\$0	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		1,011,596 kWh
Advertising & Promotion	N/A	\$5,000	\$5,000	\$5,000	\$5,000	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$		1,065,912 kWh
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$		\$221,717
Rebates	N/A	\$70,340	\$70,340	\$70,340	\$70,340	Utility Program Cost per kWh Lifetime			\$0.0154
Other	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen			\$871
Subtotal	N/A	\$97,340	\$97,340	\$97,340	\$97,340				
Utility Revenue Reduction									
Revenue Reduction - Electric	N/A	N/A	\$940,261	N/A	N/A				
Subtotal	N/A	N/A	\$940,261	N/A	N/A				
Participant Costs									
Incremental Capital Costs	\$158,801	N/A	N/A	\$158,801	\$158,801				
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0				
Subtotal	\$158,801	N/A	N/A	\$158,801	\$158,801				
Total Costs									
Total Costs	\$158,801	\$97,340	\$1,037,601	\$256,141	\$256,141				
Net Benefit (Cost)	\$851,800	\$310,178	(\$630,083)	\$221,717	\$221,717				
Benefit/Cost Ratio	6.36	4.19	0.39	1.87	1.87				

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

2017 SD DSM Plan Cost-Effectiveness Analysis

RESIDENTIAL SAVER'S SWITCH						2017	ELECTRIC	GOAL	
2017 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	15.0 years	
Avoided Revenue Requirements						Annual Hours	B	8760	
Generation	N/A	\$335,688	\$335,688	\$335,688	\$335,688	Gross Customer kW	C	1 kW	
T & D	N/A	\$202,682	\$202,682	\$202,682	\$202,682	Generator Peak Coincidence Factor	D	27.31%	
Marginal Energy	N/A	\$695	\$695	\$695	\$695	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	\$539,065	\$539,065	\$539,065	\$539,065	Transmission Loss Factor (Demand)	G	8.580%	
Participant Benefits						Societal Net Benefit (Cost)	H	\$189	
Bill Reduction - Electric	\$528,539	N/A	N/A	N/A	N/A	Program Summary per Participant			
Rebates from Xcel Energy	\$0	N/A	N/A	\$0	\$0	Gross kW Saved at Customer	I	2.46 kW	
Incremental Capital Savings	\$0	N/A	N/A	\$0	\$0	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$		0.73 kW
Incremental O&M Savings	\$0	N/A	N/A	\$0	\$0	Gross Annual kWh Saved at Customer	$(B \times E \times I)$		2 kWh
Subtotal	\$528,539	N/A	N/A	\$0	\$0	Net Annual kWh Saved at Generator	$(B \times E \times I) / (1 - F)$		2 kWh
Total Benefits	\$528,539	\$539,065	\$539,065	\$539,065	\$539,065	Program Summary All Participants			
Costs						Total Participants	J	770	
Utility Project Costs						Total Budget	K	\$181,650	
Customer Services	N/A	\$91,550	\$91,550	\$91,550	\$91,550	Gross kW Saved at Customer	$(J \times I)$		1,892 kW
Utility Administration	N/A	\$82,100	\$82,100	\$82,100	\$82,100	Net coincident kW Saved at Generator	$(I \times D) / (1 - G) \times J$		565 kW
Advertising & Promotion	N/A	\$8,000	\$8,000	\$8,000	\$8,000	Gross Annual kWh Saved at Customer	$(B \times E \times I) \times J$		1,408 kWh
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$		1,486 kWh
Rebates	N/A	\$0	\$0	\$0	\$0	Societal Net Benefits	$(J \times I \times H)$		\$357,415
Other	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kWh Lifetime			\$8.1503
Subtotal	N/A	\$181,650	\$181,650	\$181,650	\$181,650	Utility Program Cost per kW at Gen			\$321
Utility Revenue Reduction									
Revenue Reduction - Electric	N/A	N/A	\$528,539	N/A	N/A				
Subtotal	N/A	N/A	\$528,539	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	\$181,650	\$710,189	\$181,650	\$181,650				
Net Benefit (Cost)	\$528,539	\$357,415	(\$171,124)	\$357,415	\$357,415				
Benefit/Cost Ratio	INF	2.97	0.76	2.97	2.97				

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

2017 SD DSM Plan Cost-Effectiveness Analysis

RESIDENTIAL SEGMENT TOTAL						2017	ELECTRIC	GOAL
2017 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	5.9 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	22.32%
Generation	N/A	\$389,883	\$389,883	\$389,883	\$389,883	Gross Load Factor at Customer	E	4.17%
T & D	N/A	\$235,403	\$235,403	\$235,403	\$235,403	Transmission Loss Factor (Energy)	F	5.096%
Marginal Energy	N/A	\$321,298	\$321,298	\$321,298	\$321,298	Transmission Loss Factor (Demand)	G	8.559%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$199
Subtotal	N/A	\$946,583	\$946,583	\$946,583	\$946,583	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	0.04 kW
Bill Reduction - Electric	\$1,468,800	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$70,340	N/A	N/A	\$70,340	\$70,340	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	\$1,539,140	N/A	N/A	\$70,340	\$70,340	Total Participants	J	72,542
Total Benefits						Total Budget	K	\$306,155
Total Benefits	\$1,539,140	\$946,583	\$946,583	\$1,016,923	\$1,016,923	Gross kW Saved at Customer	$(J \times I)$	2,773 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	\$113,550	\$113,550	\$113,550	\$113,550	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Utility Administration	N/A	\$83,900	\$83,900	\$83,900	\$83,900	Societal Net Benefits	$(J \times I \times H)$	
Advertising & Promotion	N/A	\$38,365	\$38,365	\$38,365	\$38,365	Utility Program Cost per kWh Lifetime		
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Rebates	N/A	\$70,340	\$70,340	\$70,340	\$70,340	\$0.0483		
Other	N/A	\$0	\$0	\$0	\$0	\$452		
Subtotal	N/A	\$306,155	\$306,155	\$306,155	\$306,155			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$1,468,800	N/A	N/A			
Subtotal	N/A	N/A	\$1,468,800	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$158,801	N/A	N/A	\$158,801	\$158,801			
Incremental O&M Costs	\$0	N/A	N/A	\$0	\$0			
Subtotal	\$158,801	N/A	N/A	\$158,801	\$158,801			
Total Costs								
Total Costs	\$158,801	\$306,155	\$1,774,955	\$464,956	\$464,956			
Net Benefit (Cost)	\$1,380,339	\$640,428	(\$828,372)	\$551,968	\$551,968			
Benefit/Cost Ratio	9.69	3.09	0.53	2.19	2.19			

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

2017 SD DSM Plan Cost-Effectiveness Analysis

PORTFOLIO TOTAL						2017	ELECTRIC	GOAL
2017 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	14.5 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	31.98%
Generation	N/A	\$743,522	\$743,522	\$743,522	\$743,522	Gross Load Factor at Customer	E	14.60%
T & D	N/A	\$448,920	\$448,920	\$448,920	\$448,920	Transmission Loss Factor (Energy)	F	4.788%
Marginal Energy	N/A	\$1,956,097	\$1,956,097	\$1,956,097	\$1,956,097	Transmission Loss Factor (Demand)	G	8.217%
Environmental Externality	N/A	N/A	N/A	N/A	\$0	Societal Net Benefit (Cost)	H	\$281
Subtotal	N/A	\$3,148,539	\$3,148,539	\$3,148,539	\$3,148,539	Program Summary per Participant		
Participant Benefits						Gross kW Saved at Customer	I	0.05 kW
Bill Reduction - Electric	\$4,550,821	N/A	N/A	N/A	N/A	Net coincident kW Saved at Generator	$(I \times D) / (1 - G)$	
Rebates from Xcel Energy	\$416,355	N/A	N/A	\$416,355	\$416,355	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	\$4,967,176	N/A	N/A	\$416,355	\$416,355	Total Participants	J	74,696
Total Benefits						Total Budget	K	\$750,625
	\$4,967,176	\$3,148,539	\$3,148,539	\$3,564,894	\$3,564,894	Gross kW Saved at Customer	$(J \times I)$	3,920 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	\$170,455	\$170,455	\$170,455	\$170,455	Net Annual kWh Saved at Generator	$((B \times E \times I) / (1 - F)) \times J$	
Utility Administration	N/A	\$114,950	\$114,950	\$114,950	\$114,950	Societal Net Benefits	$(J \times I \times H)$	
Advertising & Promotion	N/A	\$48,865	\$48,865	\$48,865	\$48,865	Utility Program Cost per kWh Lifetime		
Measurement & Verification	N/A	\$0	\$0	\$0	\$0	Utility Program Cost per kW at Gen		
Rebates	N/A	\$416,355	\$416,355	\$416,355	\$416,355	\$0.0098		
Other	N/A	\$0	\$0	\$0	\$0	\$550		
Subtotal	N/A	\$750,625	\$750,625	\$750,625	\$750,625			
Utility Revenue Reduction								
Revenue Reduction - Electric	N/A	N/A	\$4,550,821	N/A	N/A			
Subtotal	N/A	N/A	\$4,550,821	N/A	N/A			
Participant Costs								
Incremental Capital Costs	\$1,651,414	N/A	N/A	\$1,651,414	\$1,651,414			
Incremental O&M Costs	\$59,858	N/A	N/A	\$59,858	\$59,858			
Subtotal	\$1,711,272	N/A	N/A	\$1,711,272	\$1,711,272			
Total Costs								
	\$1,711,272	\$750,625	\$5,301,446	\$2,461,897	\$2,461,897			
Net Benefit (Cost)								
	\$3,255,904	\$2,397,914	(\$2,152,907)	\$1,102,997	\$1,102,997			
Benefit/Cost Ratio								
	2.90	4.19	0.59	1.45	1.45			

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