Executive Summary Table - 2020

2020	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	341	$389,320	453	3,960,428	2.67	5.74	0.47	1.20
Business Saver's Switch	10	$25,250	28	39	INF	1.23	0.50	1.23
Peak and Energy Control	1	$10,000	101	3,713	INF	4.60	1.03	4.60
Business Segment Total	**352**	**$424,570**	**582**	**3,964,179**	**2.71**	**5.44**	**0.48**	**1.21**
Residential Segment								
Home Lighting	5,245	$96,756	408	3,009,728	36.68	6.34	0.17	3.57
Residential Demand Response	1,410	$235,500	817	99,889	6.78	2.74	0.83	2.82
Consumer Education	68,000	$21,165	N/A	N/A				
Water Heating	21	$15,000	12	82,115	4.35	2.32	0.43	1.35
Residential Segment Total	**74,676**	**$368,421**	**1,237**	**3,191,731**	**18.18**	**3.51**	**0.29**	**2.89**
Planning Segment								
Regulatory Affairs	0	$14,000	N/A	N/A				
Planning Segment Total	**0**	**$0**	**N/A**	**N/A**				
PORTFOLIO TOTAL	**75,028**	**$806,991**	**1,819**	**7,155,910**	**4.89**	**4.46**	**0.39**	**1.60**

2020 SD DSM Plan Cost-Effectiveness Analysis

LIGHTING EFFICIENCY — 2020 — ELECTRIC — GOAL

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$338,439	$338,439	$338,439	$338,439
T & D	N/A	$206,552	$206,552	$206,552	$206,552
Marginal Energy	N/A	$1,688,254	$1,688,254	$1,688,254	$1,688,254
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$2,233,245	$2,233,245	$2,233,245	$2,233,245
Participant Benefits					
Bill Reduction - Electric	$4,322,713	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$315,210	N/A	N/A	$315,210	$315,210
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$0	N/A	N/A	$0	$0
Subtotal	$4,637,923	N/A	N/A	$315,210	$315,210
Total Benefits	$4,637,923	$2,233,245	$2,233,245	$2,548,454	$2,548,454
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$74,110	$74,110	$74,110	$74,110
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$315,210	$315,210	$315,210	$315,210
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$389,320	$389,320	$389,320	$389,320
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$4,322,713	N/A	N/A
Subtotal	N/A	N/A	$4,322,713	N/A	N/A
Participant Costs					
Incremental Capital Costs	$1,611,263	N/A	N/A	$1,611,263	$1,611,263
Incremental O&M Costs	$127,926	N/A	N/A	$127,926	$127,926
Subtotal	$1,739,189	N/A	N/A	$1,739,189	$1,739,189
Total Costs	$1,739,189	$389,320	$4,712,033	$2,128,509	$2,128,509
Net Benefit (Cost)	$2,898,734	$1,843,925	($2,478,789)	$419,945	$419,945
Benefit/Cost Ratio	2.67	5.74	0.47	1.20	1.20

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

Input Summary and Totals

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	48.56%
Gross Load Factor at Customer	E	48.84%
Transmission Loss Factor (Energy)	F	4.873%
Transmission Loss Factor (Demand)	G	5.640%
Societal Net Benefit (Cost)	H	$477

Program Summary per Participant

Gross kW Saved at Customer	I	2.58 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	1.33 kW
Gross Annual kWh Saved at Customer	(B x E x I)	11,036 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	11,602 kWh

Program Summary All Participants

Total Participants	J	341
Total Budget	K	**$389,320**
Gross kW Saved at Customer	(J x I)	880.62 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**453 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	3,767,456 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**3,960,428 kWh**
Societal Net Benefits	(J x I x H)	**$419,945**
Utility Program Cost per kWh Lifetime		**$0.0054**
Utility Program Cost per kW at Gen		**$859**

2020 SD DSM Plan Cost-Effectiveness Analysis

BUSINESS SAVER'S SWITCH **2020** **ELECTRIC** **GOAL**

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$19,301	$19,301	$19,301	$19,301
T & D	N/A	$11,769	$11,769	$11,769	$11,769
Marginal Energy	N/A	$20	$20	$20	$20
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$31,089	$31,089	$31,089	$31,089
Participant Benefits					
Bill Reduction - Electric	$36,940	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$0	N/A	N/A	$0	$0
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$0	N/A	N/A	$0	$0
Subtotal	$36,940	N/A	N/A	$0	$0
Total Benefits	$36,940	$31,089	$31,089	$31,089	$31,089
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$25,250	$25,250	$25,250	$25,250
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$0	$0	$0	$0
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$25,250	$25,250	$25,250	$25,250
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$36,940	N/A	N/A
Subtotal	N/A	N/A	$36,940	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	$25,250	$62,190	$25,250	$25,250
Net Benefit (Cost)	$36,940	$5,839	($31,101)	$5,839	$5,839
Benefit/Cost Ratio	INF	1.23	0.50	1.23	1.23

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	16.76%
Gross Load Factor at Customer	E	0.00%
Transmission Loss Factor (Energy)	F	4.872%
Transmission Loss Factor (Demand)	G	5.640%
Societal Net Benefit (Cost)	H	$37

Program Summary per Participant		
Gross kW Saved at Customer	I	15.93 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	2.83 kW
Gross Annual kWh Saved at Customer	(B x E x I)	4 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	4 kWh

Program Summary All Participants		
Total Participants	J	10
Total Budget	K	**$25,250**
Gross kW Saved at Customer	(J x I)	159.27 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**28 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	37 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**39 kWh**
Societal Net Benefits	(J x I x H)	**$5,839**

Utility Program Cost per kWh Lifetime	**$43.4116**
Utility Program Cost per kW at Gen	**$893**

2020 SD DSM Plan Cost-Effectiveness Analysis

PEAK AND ENERGY CONTROL — 2020 — ELECTRIC — GOAL

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$28,201	$28,201	$28,201	$28,201
T & D	N/A	$17,108	$17,108	$17,108	$17,108
Marginal Energy	N/A	$723	$723	$723	$723
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$46,032	$46,032	$46,032	$46,032
Participant Benefits					
Bill Reduction - Electric	$34,880	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$0	N/A	N/A	$0	$0
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$0	N/A	N/A	$0	$0
Subtotal	$34,880	N/A	N/A	$0	$0
Total Benefits	$34,880	$46,032	$46,032	$46,032	$46,032
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$10,000	$10,000	$10,000	$10,000
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$0	$0	$0	$0
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$10,000	$10,000	$10,000	$10,000
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$34,880	N/A	N/A
Subtotal	N/A	N/A	$34,880	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	$44,880	$10,000	$10,000
Net Benefit (Cost)	$34,880	$36,032	$1,152	$36,032	$36,032
Benefit/Cost Ratio	INF	4.60	1.03	4.60	4.60

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	5.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	47.46%
Gross Load Factor at Customer	E	0.20%
Transmission Loss Factor (Energy)	F	4.873%
Transmission Loss Factor (Demand)	G	5.640%
Societal Net Benefit (Cost)	H	$180

Program Summary per Participant		
Gross kW Saved at Customer	I	200.00 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	100.59 kW
Gross Annual kWh Saved at Customer	(B x E x I)	3,532 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	3,713 kWh

Program Summary All Participants		
Total Participants	J	1
Total Budget	K	**$10,000**
Gross kW Saved at Customer	(J x I)	200.00 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**101 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	3,532 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**3,713 kWh**
Societal Net Benefits	(J x I x H)	**$36,032**

Utility Program Cost per kWh Lifetime	**$0.5387**
Utility Program Cost per kW at Gen	**$99**

2020 SD DSM Plan Cost-Effectiveness Analysis

BUSINESS SEGMENT TOTAL **2020** **ELECTRIC** **GOAL**

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$385,941	$385,941	$385,941	$385,941
T & D	N/A	$235,430	$235,430	$235,430	$235,430
Marginal Energy	N/A	$1,688,996	$1,688,996	$1,688,996	$1,688,996
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$2,310,366	$2,310,366	$2,310,366	$2,310,366
Participant Benefits					
Bill Reduction - Electric	$4,394,533	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$315,210	N/A	N/A	$315,210	$315,210
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$0	N/A	N/A	$0	$0
Subtotal	$4,709,743	N/A	N/A	$315,210	$315,210
Total Benefits	$4,709,743	$2,310,366	$2,310,366	$2,625,576	$2,625,576
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$109,360	$109,360	$109,360	$109,360
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$315,210	$315,210	$315,210	$315,210
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$424,570	$424,570	$424,570	$424,570
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$4,394,533	N/A	N/A
Subtotal	N/A	N/A	$4,394,533	N/A	N/A
Participant Costs					
Incremental Capital Costs	$1,611,263	N/A	N/A	$1,611,263	$1,611,263
Incremental O&M Costs	$127,926	N/A	N/A	$127,926	$127,926
Subtotal	$1,739,189	N/A	N/A	$1,739,189	$1,739,189
Total Costs	$1,739,189	$424,570	$4,819,103	$2,163,759	$2,163,759
Net Benefit (Cost)	$2,970,554	$1,885,796	($2,508,737)	$461,817	$461,817
Benefit/Cost Ratio	2.71	5.44	0.48	1.21	1.21

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

Input Summary and Totals

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	44.30%
Gross Load Factor at Customer	E	34.72%
Transmission Loss Factor (Energy)	F	4.873%
Transmission Loss Factor (Demand)	G	5.640%
Societal Net Benefit (Cost)	H	$372

Program Summary per Participant		
Gross kW Saved at Customer	I	3.52 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	1.65 kW
Gross Annual kWh Saved at Customer	(B x E x I)	10,702 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	11,250 kWh

Program Summary All Participants		
Total Participants	J	352
Total Budget	K	**$424,570**
Gross kW Saved at Customer	(J x I)	1,239.90 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**582 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	3,771,025 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**3,964,179 kWh**
Societal Net Benefits	(J x I x H)	**$461,817**

Utility Program Cost per kWh Lifetime	**$0.0059**
Utility Program Cost per kW at Gen	**$729**

2020 SD DSM Plan Cost-Effectiveness Analysis

HOME LIGHTING — 2020 — ELECTRIC — GOAL

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$107,872	$107,872	$107,872	$107,872
T & D	N/A	$65,521	$65,521	$65,521	$65,521
Marginal Energy	N/A	$440,051	$440,051	$440,051	$440,051
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$613,444	$613,444	$613,444	$613,444
Participant Benefits					
Bill Reduction - Electric	$3,415,253	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$70,419	N/A	N/A	$70,419	$70,419
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$0	N/A	N/A	$0	$0
Subtotal	$3,485,672	N/A	N/A	$70,419	$70,419
Total Benefits	$3,485,672	$613,444	$613,444	$683,863	$683,863
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$26,337	$26,337	$26,337	$26,337
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$70,419	$70,419	$70,419	$70,419
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$96,756	$96,756	$96,756	$96,756
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$3,415,253	N/A	N/A
Subtotal	N/A	N/A	$3,415,253	N/A	N/A
Participant Costs					
Incremental Capital Costs	$95,029	N/A	N/A	$95,029	$95,029
Incremental O&M Costs	$0	N/A	N/A	$0	$0
Subtotal	$95,029	N/A	N/A	$95,029	$95,029
Total Costs	$95,029	$96,756	$3,512,009	$191,785	$191,785
Net Benefit (Cost)	$3,390,643	$516,688	($2,898,565)	$492,078	$492,078
Benefit/Cost Ratio	36.68	6.34	0.17	3.57	3.57

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	5.2 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	16.21%
Gross Load Factor at Customer	E	13.87%
Transmission Loss Factor (Energy)	F	5.696%
Transmission Loss Factor (Demand)	G	7.127%
Societal Net Benefit (Cost)	H	$211

Program Summary per Participant		
Gross kW Saved at Customer	I	0.45 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	0.08 kW
Gross Annual kWh Saved at Customer	(B x E x I)	541 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	574 kWh

Program Summary All Participants		
Total Participants	J	5,245
Total Budget	K	**$96,756**
Gross kW Saved at Customer	(J x I)	2,336.05 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**408 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	2,838,286 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**3,009,728 kWh**
Societal Net Benefits	(J x I x H)	**$492,078**

Utility Program Cost per kWh Lifetime	**$0.0062**
Utility Program Cost per kW at Gen	**$237**

2020 SD DSM Plan Cost-Effectiveness Analysis

RESIDENTIAL DEMAND RESPONSE — 2020 — ELECTRIC — GOAL

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$378,810	$378,810	$378,810	$378,810
T & D	N/A	$230,791	$230,791	$230,791	$230,791
Marginal Energy	N/A	$34,592	$34,592	$34,592	$34,592
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$644,193	$644,193	$644,193	$644,193
Participant Benefits					
Bill Reduction - Electric	$536,077	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$50,000	N/A	N/A	$50,000	$50,000
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$363,741	N/A	N/A	$363,741	$363,741
Subtotal	$949,817	N/A	N/A	$413,741	$413,741
Total Benefits	$949,817	$644,193	$644,193	$1,057,934	$1,057,934
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$185,500	$185,500	$185,500	$185,500
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$50,000	$50,000	$50,000	$50,000
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$235,500	$235,500	$235,500	$235,500
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$536,077	N/A	N/A
Subtotal	N/A	N/A	$536,077	N/A	N/A
Participant Costs					
Incremental Capital Costs	$140,000	N/A	N/A	$140,000	$140,000
Incremental O&M Costs	$0	N/A	N/A	$0	$0
Subtotal	$140,000	N/A	N/A	$140,000	$140,000
Total Costs	$140,000	$235,500	$771,577	$375,500	$375,500
Net Benefit (Cost)	$809,817	$408,693	($127,384)	$682,434	$682,434
Benefit/Cost Ratio	6.78	2.74	0.83	2.82	2.82

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	37.93%
Gross Load Factor at Customer	E	0.54%
Transmission Loss Factor (Energy)	F	5.950%
Transmission Loss Factor (Demand)	G	7.220%
Societal Net Benefit (Cost)	H	$341

Program Summary per Participant		
Gross kW Saved at Customer	I	1.42 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	0.58 kW
Gross Annual kWh Saved at Customer	(B x E x I)	67 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	71 kWh

Program Summary All Participants		
Total Participants	J	1,410
Total Budget	K	**$235,500**
Gross kW Saved at Customer	(J x I)	1,998.47 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**817 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	93,946 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**99,889 kWh**
Societal Net Benefits	(J x I x H)	**$682,434**

Utility Program Cost per kWh Lifetime	**$0.2358**
Utility Program Cost per kW at Gen	**$288**

2020 SD DSM Plan Cost-Effectiveness Analysis

WATER HEATING **2020 ELECTRIC** **GOAL**

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$6,042	$6,042	$6,042	$6,042
T & D	N/A	$3,675	$3,675	$3,675	$3,675
Marginal Energy	N/A	$25,136	$25,136	$25,136	$25,136
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$34,853	$34,853	$34,853	$34,853
Participant Benefits					
Bill Reduction - Electric	$66,021	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$8,400	N/A	N/A	$8,400	$8,400
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$0	N/A	N/A	$0	$0
Subtotal	$74,421	N/A	N/A	$8,400	$8,400
Total Benefits	$74,421	$34,853	$34,853	$43,253	$43,253
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$6,600	$6,600	$6,600	$6,600
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$8,400	$8,400	$8,400	$8,400
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$15,000	$15,000	$15,000	$15,000
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$66,021	N/A	N/A
Subtotal	N/A	N/A	$66,021	N/A	N/A
Participant Costs					
Incremental Capital Costs	$12,841	N/A	N/A	$12,841	$12,841
Incremental O&M Costs	$4,255	N/A	N/A	$4,255	$4,255
Subtotal	$17,096	N/A	N/A	$17,096	$17,096
Total Costs	$17,096	$15,000	$81,021	$32,096	$32,096
Net Benefit (Cost)	$57,325	$19,853	($46,168)	$11,157	$11,157
Benefit/Cost Ratio	4.35	2.32	0.43	1.35	1.35

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	100.00%
Gross Load Factor at Customer	E	79.10%
Transmission Loss Factor (Energy)	F	5.950%
Transmission Loss Factor (Demand)	G	7.220%
Societal Net Benefit (Cost)	H	$1,001

Program Summary per Participant		
Gross kW Saved at Customer	I	0.53 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	0.57 kW
Gross Annual kWh Saved at Customer	(B x E x I)	3,678 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	3,910 kWh

Program Summary All Participants		
Total Participants	J	21
Total Budget	K	**$15,000**
Gross kW Saved at Customer	(J x I)	11.14 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**12 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	77,229 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**82,115 kWh**
Societal Net Benefits	(J x I x H)	**$11,157**

Utility Program Cost per kWh Lifetime	**$0.0183**
Utility Program Cost per kW at Gen	**$1,249**

2020 SD DSM Plan Cost-Effectiveness Analysis

RESIDENTIAL SEGMENT TOTAL — 2020 ELECTRIC — GOAL

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$492,723	$492,723	$492,723	$492,723
T & D	N/A	$299,987	$299,987	$299,987	$299,987
Marginal Energy	N/A	$499,780	$499,780	$499,780	$499,780
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$1,292,491	$1,292,491	$1,292,491	$1,292,491
Participant Benefits					
Bill Reduction - Electric	$4,017,350	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$128,819	N/A	N/A	$128,819	$128,819
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$359,485	N/A	N/A	$359,485	$359,485
Subtotal	$4,505,655	N/A	N/A	$488,304	$488,304
Total Benefits	$4,505,655	$1,292,491	$1,292,491	$1,780,795	$1,780,795
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$239,602	$239,602	$239,602	$239,602
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$128,819	$128,819	$128,819	$128,819
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$368,421	$368,421	$368,421	$368,421
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$4,017,350	N/A	N/A
Subtotal	N/A	N/A	$4,017,350	N/A	N/A
Participant Costs					
Incremental Capital Costs	$247,870	N/A	N/A	$247,870	$247,870
Incremental O&M Costs	$0	N/A	N/A	$0	$0
Subtotal	$247,870	N/A	N/A	$247,870	$247,870
Total Costs	$247,870	$368,421	$4,385,771	$616,291	$616,291
Net Benefit (Cost)	$4,257,785	$924,070	($3,093,281)	$1,164,504	$1,164,504
Benefit/Cost Ratio	18.18	3.51	0.29	2.89	2.89

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	5.5 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	26.42%
Gross Load Factor at Customer	E	7.91%
Transmission Loss Factor (Energy)	F	5.711%
Transmission Loss Factor (Demand)	G	7.170%
Societal Net Benefit (Cost)	H	$268

Program Summary per Participant		
Gross kW Saved at Customer	I	0.06 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	0.02 kW
Gross Annual kWh Saved at Customer	(B x E x I)	40 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	43 kWh

Program Summary All Participants		
Total Participants	J	74,676
Total Budget	K	**$368,421**
Gross kW Saved at Customer	(J x I)	4,345.66 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**1,237 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	3,009,460 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**3,191,731 kWh**
Societal Net Benefits	(J x I x H)	**$1,164,504**

Utility Program Cost per kWh Lifetime	**$0.0210**
Utility Program Cost per kW at Gen	**$298**

2020 SD DSM Plan Cost-Effectiveness Analysis

PORTFOLIO TOTAL **2020 ELECTRIC GOAL**

2020 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Total Resource Test ($Total)	Societal Test ($Total)
Benefits					
Avoided Revenue Requirements					
Generation	N/A	$878,664	$878,664	$878,664	$878,664
T & D	N/A	$535,417	$535,417	$535,417	$535,417
Marginal Energy	N/A	$2,188,776	$2,188,776	$2,188,776	$2,188,776
Environmental Externality	N/A	N/A	N/A	N/A	$0
Subtotal	N/A	$3,602,857	$3,602,857	$3,602,857	$3,602,857
Participant Benefits					
Bill Reduction - Electric	$8,411,884	N/A	N/A	N/A	N/A
Rebates from Xcel Energy	$444,029	N/A	N/A	$444,029	$444,029
Incremental Capital Savings	$0	N/A	N/A	$0	$0
Incremental O&M Savings	$231,559	N/A	N/A	$231,559	$231,559
Subtotal	$9,087,472	N/A	N/A	$675,588	$675,588
Total Benefits	$9,087,472	$3,602,857	$3,602,857	$4,278,445	$4,278,445
Costs					
Utility Project Costs					
Customer Services	N/A	$0	$0	$0	$0
Utility Administration	N/A	$362,962	$362,962	$362,962	$362,962
Advertising & Promotion	N/A	$0	$0	$0	$0
Measurement & Verification	N/A	$0	$0	$0	$0
Rebates	N/A	$444,029	$444,029	$444,029	$444,029
Other	N/A	$0	$0	$0	$0
Subtotal	N/A	$806,991	$806,991	$806,991	$806,991
Utility Revenue Reduction					
Revenue Reduction - Electric	N/A	N/A	$8,411,884	N/A	N/A
Subtotal	N/A	N/A	$8,411,884	N/A	N/A
Participant Costs					
Incremental Capital Costs	$1,859,133	N/A	N/A	$1,859,133	$1,859,133
Incremental O&M Costs	$0	N/A	N/A	$0	$0
Subtotal	$1,859,133	N/A	N/A	$1,859,133	$1,859,133
Total Costs	$1,859,133	$806,991	$9,218,875	$2,666,124	$2,666,124
Net Benefit (Cost)	$7,228,339	$2,795,866	($5,616,018)	$1,612,321	$1,612,321
Benefit/Cost Ratio	4.89	4.46	0.39	1.60	1.60

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

Input Summary and Totals

Program "Inputs" per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12.5 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	30.34%
Gross Load Factor at Customer	E	13.86%
Transmission Loss Factor (Energy)	F	5.246%
Transmission Loss Factor (Demand)	G	6.835%
Societal Net Benefit (Cost)	H	$289

Program Summary per Participant		
Gross kW Saved at Customer	I	0.07 kW
Net coincident kW Saved at Generator	(I x D) / (1 - G)	0.02 kW
Gross Annual kWh Saved at Customer	(B x E x I)	90 kWh
Net Annual kWh Saved at Generator	(B x E x I) / (1 - F)	95 kWh

Program Summary All Participants		
Total Participants	J	75,028
Total Budget	K	**$806,991**
Gross kW Saved at Customer	(J x I)	5,585.56 kW
Net coincident kW Saved at Generator	**(I x D) / (1 - G) x J**	**1,819 kW**
Gross Annual kWh Saved at Customer	(B x E x I) x J	6,780,485 kWh
Net Annual kWh Saved at Generator	**((B x E x I) / (1 - F)) x J**	**7,155,910 kWh**
Societal Net Benefits	(J x I x H)	**$1,612,321**

Utility Program Cost per kWh Lifetime	**$0.0090**
Utility Program Cost per kW at Gen	**$444**