

**NATURAL GAS CONSERVATION PROGRAMS/DEMAND-SIDE MANAGEMENT
BEN/COST ANALYSIS FOR GAS CONSERVATION**

Company: **Montana-Dakota Utilities Co.**
Project: **Residential 95+% AFUE Furnace - New**
Program Years: **2013**

Input Data		2013	
1) Retail Rate (\$/Dk) =	\$7.658	16) Utility Project Costs	
Escalation Rate =	3.50%	16a) Administrative & Operating Costs =	\$7,432
2) Non-Gas Fuel Retail Rate (\$/Fuel Unit) =	\$0.10200	16b) Incentive Costs =	
Escalation Rate =	3.50%	16c) Total Utility Project Costs =	\$7,432
Non-Gas Fuel Units (ie. kWh,Gallons, etc) =	Kwh	17) Direct Participant Costs (\$/Part.) =	\$620
3) Commodity Cost (\$/Dk) =	\$5.914	18) Participant Non-Energy Costs (Annual \$/Part.) =	\$0
Escalation Rate =	3.50%	Escalation Rate =	0.00%
4) Demand Cost (\$/Unit/Yr) =	\$117.73	19) Participant Non-Energy Savings (Annual \$/Part) =	\$0
Escalation Rate =	1.00%	Escalation Rate =	0.00%
5) Peak Reduction Factor =	1.000%	20) Project Life (Years) =	18
6) Variable O&M (\$/Dk) =	\$0.000	21) Avg. Dk/Part. Saved =	6,853
Escalation Rate =	0.00%	22) Avg Non-Gas Fuel Units/Part. Saved =	669
7) Non-Gas Fuel Cost (\$/Fuel Unit) =	\$0.02005	22a) Avg Additional Non-Gas Fuel Units/ Part. Used =	0
Escalation Rate =	3.50%	23) Number of Participants =	211
8) Non-Gas Fuel Loss Factor	7.48%	24) Total Annual Dk Saved =	1,446
9) Gas Environmental Damage Factor =	\$1.018	25) Incentive/Participant =	\$0
Escalation Rate =	2.30%	26) Distribution Delivery Charge	\$1.753
10) Non Gas Fuel Environmental Damage Factor :	\$0.000	27) Effective Income Tax Rate =	35.000%
Escalation Rate =	0.00%	(Federal & State Taxes)	
11) Participant Discount Rate =	10.00%		
12) Utility Discount Rate =	8.94%		
13) Societal Discount Rate =	4.25%		
14) General Input Data Year =	2012		
15) Project Analysis Year 1 =	2013		
Project Analysis Year 2 =	2013		
Project Analysis Year 3 =	2014		

Test Results	NPV	B/C
Ratepayer Impact Measure Test	\$96,355	4.44
Utility Cost Test	\$116,923	16.73
Societal Test	\$112,788	1.82
Participant Test	\$166,249	2.27
Total Resource Cost Test	\$24,443	1.18

**Table 4
Participant Test**

Company: **Montana-Dakota Utilities Co.**
Project: **Residential 95+% AFUE Furnace - New**

Year	Benefits							Costs	
	Incentives Received (A)	Total Energy Reduction (B)	Retail Rate (C)	Gas Bill Savings (D)	Non-Gas Fuel Retail Rate (E)	Non-Gas Energy Savings (F)	Total Annual Benefits (G)	Direct Participant Costs (H)	Annual Benefits Less Costs (I)
2013	\$0	1,446	\$7.926	\$11,461	\$0.106	\$14,963	\$26,424	\$130,820	(\$104,396)
2014	0	1,446	8.203	11,862	0.109	15,386	27,248	0	27,248
2015	0	1,446	8.491	12,278	0.113	15,951	28,229	0	28,229
2016	0	1,446	8.788	12,707	0.117	16,516	29,223	0	29,223
2017	0	1,446	9.095	13,151	0.121	17,080	30,231	0	30,231
2018	0	1,446	9.414	13,613	0.125	17,645	31,258	0	31,258
2019	0	1,446	9.743	14,088	0.130	18,351	32,439	0	32,439
2020	0	1,446	10.084	14,581	0.134	18,915	33,496	0	33,496
2021	0	1,446	10.437	15,092	0.139	19,621	34,713	0	34,713
2022	0	1,446	10.802	15,620	0.144	20,327	35,947	0	35,947
2023	0	1,446	11.180	16,166	0.149	21,033	37,199	0	37,199
2024	0	1,446	11.572	16,733	0.154	21,738	38,471	0	38,471
2025	0	1,446	11.977	17,319	0.160	22,585	39,904	0	39,904
2026	0	1,446	12.396	17,925	0.165	23,291	41,216	0	41,216
2027	0	1,446	12.830	18,552	0.171	24,138	42,690	0	42,690
2028	0	1,446	13.279	19,201	0.177	24,985	44,186	0	44,186
2029	0	1,446	13.744	19,874	0.183	25,832	45,706	0	45,706
2030	0	1,446	14.225	20,569	0.189	26,679	47,248	0	47,248
2031	0	0	14.723	0	0.196	0	0	0	0
2032	0	0	15.238	0	0.203	0	0	0	0
2033	0	0	15.771	0	0.210	0	0	0	0
Total =		26,028					\$645,828	\$130,820	\$515,008
						NPV =	\$297,069	\$130,820	166,249
Total NPV =		\$166,249							
Benefit/Cost Ratio =		<u>2.27</u>							

Worksheet Calculations
(A) = Table 1 (N)
(B) = Table 1 (A)
(C) = Retail Rate (1) escalated.
(D) = (B) x (C)
(E) = Non-Gas Fuel Retail Rate (2), escalated.
(F) = (C) x [Avg. Non-Gas Fuel Units/Part.Saved (22) x No. of Part. (23)]
(G) = (A) + (D) + (F)
(H) = Direct Participant Costs (17) x Number of Participants (23)
(I) = (G) - (H)

**NATURAL GAS CONSERVATION PROGRAMS/DEMAND-SIDE MANAGEMENT
BEN/COST ANALYSIS FOR GAS CONSERVATION**

Company: **Montana-Dakota Utilities Co.**
Project: **Residential 95+% AFUE Furnace - Replacement**
Program Years: **2013**

Input Data		2013	
1) Retail Rate (\$/Dk) =	\$7.658	16) Utility Project Costs	
Escalation Rate =	3.50%	16a) Administrative & Operating Costs =	\$6,658
2) Non-Gas Fuel Retail Rate (\$/Fuel Unit) =	\$0.10200	16b) Incentive Costs =	0
Escalation Rate =	3.50%	16c) Total Utility Project Costs =	\$6,658
Non-Gas Fuel Units (ie. kWh,Gallons, etc) =	Kwh	17) Direct Participant Costs (\$/Part.) =	\$620
3) Commodity Cost (\$/Dk) =	\$5.914	18) Participant Non-Energy Costs (Annual \$/Part.) =	\$0
Escalation Rate =	3.50%	Escalation Rate =	0.00%
4) Demand Cost (\$/Unit/Yr) =	\$117.73	19) Participant Non-Energy Savings (Annual \$/Part) =	\$0
Escalation Rate =	1.00%	Escalation Rate =	0.00%
5) Peak Reduction Factor =	1.000%	20) Project Life (Years) =	18
6) Variable O&M (\$/Dk) =	\$0.000	21) Avg. Dk/Part. Saved =	12.553
Escalation Rate =	0.00%	22) Avg Non-Gas Fuel Units/Part. Saved =	669
7) Non-Gas Fuel Cost (\$/Fuel Unit) =	\$0.02005	22a) Avg Additional Non-Gas Fuel Units/ Part. Used =	0
Escalation Rate =	3.50%	23) Number of Participants =	190
8) Non-Gas Fuel Loss Factor	7.48%	24) Total Annual Dk Saved =	2,385
9) Gas Environmental Damage Factor =	\$1.018	25) Incentive/Participant =	\$0
Escalation Rate =	2.30%	26) Distribution Delivery Charge	\$1.753
10) Non Gas Fuel Environmental Damage Factor :	\$0.000	27) Effective Income Tax Rate =	35.000%
Escalation Rate =	0.00%	(Federal & State Taxes)	
11) Participant Discount Rate =	10.00%		
12) Utility Discount Rate =	8.94%		
13) Societal Discount Rate =	4.25%		
14) General Input Data Year =	2012		
15) Project Analysis Year 1 =	2013		
Project Analysis Year 2 =	2013		
Project Analysis Year 3 =	2014		

Test Results	NPV	B/C
Ratepayer Impact Measure Test	\$164,499	5.05
Utility Cost Test	\$198,426	30.80
Societal Test	\$249,225	3.00
Participant Test	\$246,430	3.09
Total Resource Cost Test	\$115,151	1.93

**Table 4
Participant Test**

Company: **Montana-Dakota Utilities Co.**
Project: **Residential 95+% AFUE Furnace - Replacement**

Year	Benefits						Total Annual Benefits (G)	Direct Participant Costs (H)	Annual Benefits Less Costs (I)
	Incentives Received (A)	Total Energy Reduction (B)	Retail Rate (C)	Gas Bill Savings (D)	Non-Gas Fuel Retail Rate (E)	Non-Gas Energy Savings (F)			
2013	\$0	2,385	\$7,926	\$18,904	\$0.106	\$13,474	\$32,378	\$117,800	(\$85,422)
2014	0	2,385	8,203	19,564	0.109	13,855	33,419	0	33,419
2015	0	2,385	8,491	20,251	0.113	14,363	34,614	0	34,614
2016	0	2,385	8,788	20,959	0.117	14,872	35,831	0	35,831
2017	0	2,385	9,095	21,692	0.121	15,380	37,072	0	37,072
2018	0	2,385	9,414	22,452	0.125	15,889	38,341	0	38,341
2019	0	2,385	9,743	23,237	0.130	16,524	39,761	0	39,761
2020	0	2,385	10,084	24,050	0.134	17,033	41,083	0	41,083
2021	0	2,385	10,437	24,892	0.139	17,668	42,560	0	42,560
2022	0	2,385	10,802	25,763	0.144	18,304	44,067	0	44,067
2023	0	2,385	11,180	26,664	0.149	18,939	45,603	0	45,603
2024	0	2,385	11,572	27,599	0.154	19,575	47,174	0	47,174
2025	0	2,385	11,977	28,565	0.160	20,338	48,903	0	48,903
2026	0	2,385	12,396	29,564	0.165	20,973	50,537	0	50,537
2027	0	2,385	12,830	30,600	0.171	21,736	52,336	0	52,336
2028	0	2,385	13,279	31,670	0.177	22,498	54,168	0	54,168
2029	0	2,385	13,744	32,779	0.183	23,261	56,040	0	56,040
2030	0	2,385	14,225	33,927	0.189	24,024	57,951	0	57,951
2031	0	0	14,723	0	0.196	0	0	0	0
2032	0	0	15,238	0	0.203	0	0	0	0
2033	0	0	15,771	0	0.210	0	0	0	0
Total =		42,930					\$791,838	\$117,800	\$674,038
						NPV =	\$364,230	\$117,800	246,430
Total NPV =		\$246,430							
Benefit/Cost Ratio =		<u>3.09</u>							

Worksheet Calculations
(A) = Table 1 (N)
(B) = Table 1 (A)
(C) = Retail Rate (1) escalated.
(D) = (B) x (C)
(E) = Non-Gas Fuel Retail Rate (2), escalated.
(F) = (C) x [Avg. Non-Gas Fuel Units/Part.Saved (22) x No. of Part. (23)]
(G) = (A) + (D) + (F)
(H) = Direct Participant Costs (17) x Number of Participants (23)
(I) = (G) - (H)

**NATURAL GAS CONSERVATION PROGRAMS/DEMAND-SIDE MANAGEMENT
BEN/COST ANALYSIS FOR GAS CONSERVATION**

Company: **Montana-Dakota Utilities Co.**
Project: **Residential Water Heating .67 EF**
Program Years: **2013**

<u>Input Data</u>		<u>2013</u>	
1) Retail Rate (\$/Dk) =	\$7.658	16) Utility Project Costs	
Escalation Rate =	3.50%	16a) Administrative & Operating Costs =	\$399
2) Non-Gas Fuel Retail Rate (\$/Fuel Unit) =	\$0.10200	16b) Incentive Costs =	
Escalation Rate =	3.50%	16c) Total Utility Project Costs =	\$399
Non-Gas Fuel Units (ie. kWh,Gallons, etc) =	Kwh	17) Direct Participant Costs (\$/Part.) =	\$100
3) Commodity Cost (\$/Dk) =	\$5.914	18) Participant Non-Energy Costs (Annual \$/Part.) =	\$0
Escalation Rate =	3.50%	Escalation Rate =	0.00%
4) Demand Cost (\$/Unit/Yr) =	\$117.73	19) Participant Non-Energy Savings (Annual \$/Part) =	\$0
Escalation Rate =	1.00%	Escalation Rate =	0.00%
5) Peak Reduction Factor =	1.000%	20) Project Life (Years) =	10
6) Variable O&M (\$/Dk) =	\$0.000	21) Avg. Dk/Part. Saved =	4.676
Escalation Rate =	0.00%	22) Avg Non-Gas Fuel Units/Part. Saved =	0
7) Non-Gas Fuel Cost (\$/Fuel Unit) =	\$0.02005	22a) Avg Additional Non-Gas Fuel Units/ Part. Used =	0
Escalation Rate =	3.50%	23) Number of Participants =	34
8) Non-Gas Fuel Loss Factor	7.48%	24) Total Annual Dk Saved =	159
9) Gas Environmental Damage Factor =	\$1.018	25) Incentive/Participant =	\$0
Escalation Rate =	2.30%	26) Distribution Delivery Charge	\$1.753
10) Non Gas Fuel Environmental Damage Factor :	\$0.000	27) Effective Income Tax Rate =	35.000%
Escalation Rate =	0.00%	(Federal & State Taxes)	
11) Participant Discount Rate =	10.00%		
12) Utility Discount Rate =	8.94%		
13) Societal Discount Rate =	4.25%		
14) General Input Data Year =	2012		
15) Project Analysis Year 1 =	2013		
Project Analysis Year 2 =	2013		
Project Analysis Year 3 =	2014		

Test Results	NPV	B/C
Ratepayer Impact Measure Test	\$7,294	4.83
Utility Cost Test	\$8,799	23.05
Societal Test	\$8,803	3.32
Participant Test	\$6,327	2.86
Total Resource Cost Test	\$5,399	2.42

**Table 4
Participant Test**

Company: **Montana-Dakota Utilities Co.**
Project: **Residential Water Heating .67 EF**

Year	Benefits						Costs	Annual Benefits Less Costs (I)	
	Incentives Received (A)	Total Energy Reduction (B)	Retail Rate (C)	Gas Bill Savings (D)	Non-Gas Fuel Retail Rate (E)	Non-Gas Energy Savings (F)	Total Annual Benefits (G)		Direct Participant Costs (H)
2013	\$0	159	\$7.926	\$1,260	\$0.106	\$0	\$1,260	\$3,400	(\$2,140)
2014	0	159	8.203	1,304	0.109	0	1,304	0	1,304
2015	0	159	8.491	1,350	0.113	0	1,350	0	1,350
2016	0	159	8.788	1,397	0.117	0	1,397	0	1,397
2017	0	159	9.095	1,446	0.121	0	1,446	0	1,446
2018	0	159	9.414	1,497	0.125	0	1,497	0	1,497
2019	0	159	9.743	1,549	0.130	0	1,549	0	1,549
2020	0	159	10.084	1,603	0.134	0	1,603	0	1,603
2021	0	159	10.437	1,659	0.139	0	1,659	0	1,659
2022	0	159	10.802	1,718	0.144	0	1,718	0	1,718
2023	0	0	11.180	0	0.149	0	0	0	0
2024	0	0	11.572	0	0.154	0	0	0	0
2025	0	0	11.977	0	0.160	0	0	0	0
2026	0	0	12.396	0	0.165	0	0	0	0
2027	0	0	12.830	0	0.171	0	0	0	0
2028	0	0	13.279	0	0.177	0	0	0	0
2029	0	0	13.744	0	0.183	0	0	0	0
2030	0	0	14.225	0	0.189	0	0	0	0
2031	0	0	14.723	0	0.196	0	0	0	0
2032	0	0	15.238	0	0.203	0	0	0	0
2033	0	0	15.771	0	0.210	0	0	0	0
Total =		1,590					\$14,783	\$3,400	\$11,383
							NPV = \$9,727	\$3,400	6,327
Total NPV =		\$6,327							
Benefit/Cost Ratio =		<u>2.86</u>							

Worksheet Calculations
(A) = Table 1 (N)
(B) = Table 1 (A)
(C) = Retail Rate (1) escalated.
(D) = (B) x (C)
(E) = Non-Gas Fuel Retail Rate (2), escalated.
(F) = (C) x [Avg. Non-Gas Fuel Units/Part.Saved (22) x No. of Part. (23)]
(G) = (A) + (D) + (F)
(H) = Direct Participant Costs (17) x Number of Participants (23)
(I) = (G) - (H)

**NATURAL GAS CONSERVATION PROGRAMS/DEMAND-SIDE MANAGEMENT
BENICOST ANALYSIS FOR GAS CONSERVATION**

Company: **Montana-Dakota Utilities Co.**
Project: **Programmable Thermostats**
Program Years: **2013**

<u>Input Data</u>		<u>2013</u>	
1) Retail Rate (\$/Dk) =	\$7.658	16) Utility Project Costs	
Escalation Rate =	3.50%	16a) Administrative & Operating Costs =	\$332
2) Non-Gas Fuel Retail Rate (\$/Fuel Unit) =	\$0.10200	16b) Incentive Costs =	
Escalation Rate =	3.50%	16c) Total Utility Project Costs =	\$332
Non-Gas Fuel Units (ie. kWh,Gallons, etc) =	Kwh	17) Direct Participant Costs (\$/Part.) =	\$60
3) Commodity Cost (\$/Dk) =	\$5.914	18) Participant Non-Energy Costs (Annual \$/Part.) =	\$0
Escalation Rate =	3.50%	Escalation Rate =	0.00%
4) Demand Cost (\$/Unit/Yr) =	\$117.73	19) Participant Non-Energy Savings (Annual \$/Part) =	\$0
Escalation Rate =	1.00%	Escalation Rate =	0.00%
5) Peak Reduction Factor =	1.000%	20) Project Life (Years) =	15
6) Variable O&M (\$/Dk) =	\$0.000	21) Avg. Dk/Part. Saved =	2.901
Escalation Rate =	0.00%	22) Avg Non-Gas Fuel Units/Part. Saved =	216
7) Non-Gas Fuel Cost (\$/Fuel Unit) =	\$0.02005	22a) Avg Additional Non-Gas Fuel Units/ Part. Used =	0
Escalation Rate =	3.50%	23) Number of Participants =	141
8) Non-Gas Fuel Loss Factor	7.48%	24) Total Annual Dk Saved =	409
9) Gas Environmental Damage Factor =	\$1.018	25) Incentive/Participant =	\$0
Escalation Rate =	2.30%	26) Distribution Delivery Charge	\$1.753
10) Non Gas Fuel Environmental Damage Factor :	\$0.000	27) Effective Income Tax Rate =	35.000%
Escalation Rate =	0.00%	(Federal & State Taxes)	
11) Participant Discount Rate =	10.00%		
12) Utility Discount Rate =	8.94%		
13) Societal Discount Rate =	4.25%		
14) General Input Data Year =	2012		
15) Project Analysis Year 1 =	2013		
Project Analysis Year 2 =	2013		
Project Analysis Year 3 =	2014		

Test Results	NPV	B/C
Ratepayer Impact Measure Test	\$25,911	5.70
Utility Cost Test	\$31,090	94.64
Societal Test	\$48,250	6.49
Participant Test	\$56,983	7.74
Total Resource Cost Test	\$29,995	4.41

**Table 4
Participant Test**

Company: **Montana-Dakota Utilities Co.**
Project: **Programmable Thermostats**

Year	Benefits						Costs		Annual Benefits Less Costs (I)
	Incentives Received (A)	Total Energy Reduction (B)	Retail Rate (C)	Gas Bill Savings (D)	Non-Gas Fuel Retail Rate (E)	Non-Gas Energy Savings (F)	Total Annual Benefits (G)	Direct Participant Costs (H)	
2013	\$0	409	\$7.926	\$3,242	\$0.106	\$3,228	\$6,470	\$8,460	(\$1,990)
2014	0	409	8.203	3,355	0.109	3,320	6,675	0	6,675
2015	0	409	8.491	3,473	0.113	3,442	6,915	0	6,915
2016	0	409	8.788	3,594	0.117	3,563	7,157	0	7,157
2017	0	409	9.095	3,720	0.121	3,685	7,405	0	7,405
2018	0	409	9.414	3,850	0.125	3,807	7,657	0	7,657
2019	0	409	9.743	3,985	0.130	3,959	7,944	0	7,944
2020	0	409	10.084	4,124	0.134	4,081	8,205	0	8,205
2021	0	409	10.437	4,269	0.139	4,233	8,502	0	8,502
2022	0	409	10.802	4,418	0.144	4,386	8,804	0	8,804
2023	0	409	11.180	4,573	0.149	4,538	9,111	0	9,111
2024	0	409	11.572	4,733	0.154	4,690	9,423	0	9,423
2025	0	409	11.977	4,899	0.160	4,873	9,772	0	9,772
2026	0	409	12.396	5,070	0.165	5,025	10,095	0	10,095
2027	0	409	12.830	5,247	0.171	5,208	10,455	0	10,455
2028	0	0	13.279	0	0.177	0	0	0	0
2029	0	0	13.744	0	0.183	0	0	0	0
2030	0	0	14.225	0	0.189	0	0	0	0
2031	0	0	14.723	0	0.196	0	0	0	0
2032	0	0	15.238	0	0.203	0	0	0	0
2033	0	0	15.771	0	0.210	0	0	0	0

Total = 6,135 NPV = \$124,590 \$8,460 \$116,130
\$65,443 \$8,460 56,983

Total NPV = \$56,983
Benefit/Cost Ratio = 7.74

Worksheet Calculations
(A) = Table 1 (N)
(B) = Table 1 (A)
(C) = Retail Rate (1) escalated.
(D) = (B) x (C)
(E) = Non-Gas Fuel Retail Rate (2), escalated.
(F) = (C) x [Avg. Non-Gas Fuel Units/Part.Saved (22) x No. of Part. (23)]
(G) = (A) + (D) + (F)
(H) = Direct Participant Costs (17) x Number of Participants (23)
(I) = (G) - (H)

**NATURAL GAS CONSERVATION PROGRAMS/DEMAND-SIDE MANAGEMENT
BEN/COST ANALYSIS FOR GAS CONSERVATION**

Company: **Montana-Dakota Utilities Co.**
Project: **Commercial 95+% AFUE Furnace - Replacement**
Program Years: **2013**

Input Data		2013	
1) Retail Rate (\$/Dk) =	\$7.216	16) Utility Project Costs	
Escalation Rate =	3.50%	16a) Administrative & Operating Costs =	\$247
2) Non-Gas Fuel Retail Rate (\$/Fuel Unit) =	\$0.10340	16b) Incentive Costs =	
Escalation Rate =	3.50%	16c) Total Utility Project Costs =	\$247
Non-Gas Fuel Units (ie. kWh,Gallons, etc) =	Kwh	17) Direct Participant Costs (\$/Part.) =	\$620
3) Commodity Cost (\$/Dk) =	\$5.914	18) Participant Non-Energy Costs (Annual \$/Part.) =	\$0
Escalation Rate =	3.50%	Escalation Rate =	0.00%
4) Demand Cost (\$/Unit/Yr) =	\$117.73	19) Participant Non-Energy Savings (Annual \$/Part) =	\$0
Escalation Rate =	1.00%	Escalation Rate =	0.00%
5) Peak Reduction Factor =	1.000%	20) Project Life (Years) =	18
6) Variable O&M (\$/Dk) =	\$0.000	21) Avg. Dk/Part. Saved =	30.571
Escalation Rate =	0.00%	22) Avg Non-Gas Fuel Units/Part. Saved =	669
7) Non-Gas Fuel Cost (\$/Fuel Unit) =	\$0.02005	22a) Avg Additional Non-Gas Fuel Units/ Part. Used =	0
Escalation Rate =	3.50%	23) Number of Participants =	7
8) Non-Gas Fuel Loss Factor	7.48%	24) Total Annual Dk Saved =	214
9) Gas Environmental Damage Factor =	\$1.018	25) Incentive/Participant =	\$0
Escalation Rate =	2.30%	26) Distribution Delivery Charge	\$1.368
10) Non Gas Fuel Environmental Damage Factor :	\$0.000	27) Effective Income Tax Rate =	35.000%
Escalation Rate =	0.00%	(Federal & State Taxes)	
11) Participant Discount Rate =	10.00%		
12) Utility Discount Rate =	8.94%		
13) Societal Discount Rate =	4.25%		
14) General Input Data Year =	2012		
15) Project Analysis Year 1 =	2013		
Project Analysis Year 2 =	2013		
Project Analysis Year 3 =	2014		

Test Results	NPV	B/C
Ratepayer Impact Measure Test	\$15,726	7.00
Utility Cost Test	\$18,101	74.28
Societal Test	\$26,305	6.73
Participant Test	\$19,323	5.45
Total Resource Cost Test	\$15,033	4.28

**Table 4
Participant Test**

Company: **Montana-Dakota Utilities Co.**
Project: **Commercial 95+% AFUE Furnace - Replacement**

Year	Benefits						Costs		
	Incentives Received (A)	Total Energy Reduction (B)	Retail Rate (C)	Gas Bill Savings (D)	Non-Gas Fuel Retail Rate (E)	Non-Gas Energy Savings (F)	Total Annual Benefits (G)	Direct Participant Costs (H)	Annual Benefits Less Costs (I)
2013	\$0	214	\$7.469	\$1,598	\$0.107	\$501	\$2,099	\$4,340	(\$2,241)
2014	0	214	7.730	1,654	0.111	520	2,174	0	2,174
2015	0	214	8.001	1,712	0.115	539	2,251	0	2,251
2016	0	214	8.281	1,772	0.119	557	2,329	0	2,329
2017	0	214	8.570	1,834	0.123	576	2,410	0	2,410
2018	0	214	8.870	1,898	0.127	595	2,493	0	2,493
2019	0	214	9.181	1,965	0.132	618	2,583	0	2,583
2020	0	214	9.502	2,033	0.136	637	2,670	0	2,670
2021	0	214	9.835	2,105	0.141	660	2,765	0	2,765
2022	0	214	10.179	2,178	0.146	684	2,862	0	2,862
2023	0	214	10.535	2,254	0.151	707	2,961	0	2,961
2024	0	214	10.904	2,333	0.156	731	3,064	0	3,064
2025	0	214	11.286	2,415	0.162	759	3,174	0	3,174
2026	0	214	11.680	2,500	0.167	782	3,282	0	3,282
2027	0	214	12.089	2,587	0.173	810	3,397	0	3,397
2028	0	214	12.512	2,678	0.179	838	3,516	0	3,516
2029	0	214	12.950	2,771	0.186	871	3,642	0	3,642
2030	0	214	13.404	2,868	0.192	899	3,767	0	3,767
2031	0	0	13.873	0	0.199	0	0	0	0
2032	0	0	14.358	0	0.206	0	0	0	0
2033	0	0	14.861	0	0.213	0	0	0	0

Total = 3,852 NPV = \$51,439 \$4,340 \$47,099

NPV = \$23,663 \$4,340 19,323

Total NPV = \$19,323
Benefit/Cost Ratio = 5.45

Worksheet Calculations
(A) = Table 1 (N)
(B) = Table 1 (A)
(C) = Retail Rate (1) escalated.
(D) = (B) x (C)
(E) = Non-Gas Fuel Retail Rate (2), escalated.
(F) = (C) x [Avg. Non-Gas Fuel Units/Part.Saved (22) x No. of Part. (23)]
(G) = (A) + (D) + (F)
(H) = Direct Participant Costs (17) x Number of Participants (23)
(I) = (G) - (H)