

➤ **Summary of 60-Day Notice: Multifamily Buildings**

The following 60-Day Notice summarizes Public Service Company of Colorado's (the "Company") action to update the tech assumptions and deemed savings in the Multifamily Buildings product.

The Company is including with this Notice:

- Redlined Deemed Savings worksheets;
- Redlined Technical Assumptions worksheets; and
- Updated cost-benefit analyses.

A copy of this notice is available on our website at:

https://www.xcelenergy.com/company/rates_and_regulations/filings/colorado_demand-side_management

The deemed sheets and technical assumptions were updated to accurately capture savings for ENERGY STAR clothes washer and smart thermostats measures.

Clothes washers

The Company is correcting the deemed savings and technical assumptions associated with ENERGY STAR clothes washers. The filed deemed savings in the 2021-22 DSM Plan reflected commercial clothes washers rather than residential equipment. The savings formulas have been corrected which resulted in a reduction in the deemed savings for these measures.

Smart Thermostats

The Company is correcting the technical assumptions associated with smart thermostats for home with electric resistance heat. The forecast assumptions included in the 2021-2022 DSM Plan included heating savings for these applications; however, smart thermostats are not capable of controlling electric resistance heating, and the forecast assumptions should have only included cooling savings. Electric resistance heat strips are typically controlled by in-line thermostats designed to handle the full current required by the heat strip. The forecast has been corrected to include only cooling savings for homes with electric resistance heating resulting in lower energy savings.

Table 1: Summary of Forecasted Impacts: Multifamily Buildings

	2021		2021	
	<i>As Filed</i>	<i>Revised per 60-day</i>	<i>As Filed</i>	<i>Revised per 60-day</i>
Electric Savings (kWh)	13,048,472	12,988,002	10,982,228	10,277,303
Electric Demand Reduction (kW)	2,109	1,728	1,987	1,472
Budget*	\$1,812,020	\$1,799,735	\$1,601,177	\$1,586,191
MTRC Test Ratio	1.86	1.79	1.87	1.76
Gas Savings (Dth)	34,522	35,889	34,522	35,889
Budget*	\$507,787	\$519,884	\$528,167	\$539,182
MTRC Test Ratio	4.07	4.00	3.99	3.92

*Rebates only. While the anticipated expenditure impacts are forecasted, the Company acknowledges that this Notice does not change the filed budget.

1.7 ENERGY STAR Clothes Washer

Algorithms

$$Customer\ kWh = \left(\left(\frac{Cap \times N}{IMEF_{Base}} \right) \times \left(CW_{Base} + \frac{DHW_{Base} \times \%ElectricDHW}{R_{Eff}} + (DryBase \times \%ElecDry) \right) \right) - \left(\left(\frac{Cap \times N}{IMEF_{EE}} \right) \times \left(CW_{EE} + \frac{DHW_{EE} \times \%ElectricDHW}{R_{Eff}} + (DryEE \times \%ElecDry) \right) \right)$$

$$Customer\ Coincident\ kW = \frac{Customer\ kWh}{Hours} \times Coincidence\ Factor$$

$$Customer\ Dth = \left(\left(\frac{Cap \times N}{IMEF_{Base}} \right) \times \left(\frac{DHW_{Base} \times (1 - \%ElectricDHW)}{R_{Eff}} + DryBase \times (1 - \%ElecDry) \right) \right) - \left(\left(\frac{Cap \times N}{IMEF_{EE}} \right) \times \left(\frac{DHW_{EE} \times (1 - \%ElectricDHW)}{R_{Eff}} + DryEE \times (1 - \%ElecDry) \right) \right) \times 0.003412$$

$$Non-Energy\ O\&M = Cap \times N \times (IWF_{Base} - IWF_{EE}) \times Water-Sewer-Rate$$

Variables

Cap	3.45	Clothes washer drum capacity (ft ³). If unknown, assume 3.45ft ³ (Reference 1)
IMEF _{Base}	Table 1.7.1	Integrated Modified Energy Factor for Federal Minimum equipment (ft ³ /kWh/cycle) (Reference 1)
IMEF _{EE}	Table 1.7.1	Difference in cost between the standard equipment and the more efficient equipment
N	Table 1.7.1	Annual number of loads (Reference 1)
CW _{Base}	7%	Percentage of total energy consumption for clothes washer operation for baseline equipment (Reference 1)
CW _{EE}	6%	Percentage of total energy consumption for clothes washer operation for EnergyStar equipment (Reference 1)
DHW _{Base}	33%	Percentage of total energy consumption for water heating for baseline equipment (Reference 1)
DHW _{EE}	31%	Percentage of total energy consumption for water heating for EnergyStar equipment (Reference 1)
%Electric _{DHW}	Table 1.7.2	Percent of domestic hot water savings assumed to be electric (Reference 1)
DryBase	59%	Percent of total energy consumption for dryer operation in baseline case.
DryEE	62%	Percent of total energy consumption for dryer operation in efficient case.
%ElecDry	See Table 1.2.7	Percent of dryer operation assumed to be electric.
IWF _{Base}	See Table 1.1.7	Baseline Integrated Water Factor (Gal / cycle / cu.ft.) for a standard clothes washer with a capacity of 1.6 cu.ft. or greater
IWF _{EE}	See Table 1.1.7	EnergyStar Integrated Water Factor (Gal / cycle / cu.ft.) for a clothes washer with a capacity of 1.6 cu.ft. or greater
Water-Sewer-Rate	\$0.008797	Water rate + Sewer rate per saved gallon of water.
Conversion Factor	0.0034120	convert kWh to Dtherms (factor is Dth/kWh)
Incremental Cost	\$50.00	Incremental Cost for EnergyStar Top Loading Clothes Washer
Incremental Cost	\$190.00	Incremental Cost for EnergyStar Front Loading Clothes Washer
R _{Eff}	Table 1.7.2	Recovery efficiency (Reference 1)
Coincidence Factor	Table 1.7.1	Coincidence Factor (Reference 1)
Hours	Table 1.7.1	Annual Hours of Use (Reference 1)
Lifetime	11	Measured Lifetime (Reference 1)

Provided by Product Vendor or Customer

M&V Verified

Quantity of ENERGY STAR Clothes Washers Installed	Yes	
ENERGY STAR Clothes Washer Water Heater Fuel Type	Yes	Provide the Water Heater fuel type for the clothes washer's hot water; Electric or Natural Gas.
ENERGY STAR Clothes Washer-Sector	Yes	
Clothes Dryer Fuel Type	Yes	Provide the Clothes Dryer's fuel type; Electric or Natural Gas

Table 1.1.7 Sector-Breakout Clothes Washer Efficiency and Operational Information

Sector	Unit Type	IMEF _{Base}	IMEF _{EE}	N	Hours	Coincidence	IWF _{Base}	IWF _{EE}
Single-Family	Top and Front-Load-Average	1.64	2.24	258	258	3.8%		
	Top Loading	1.84	2.76	258	258	3.8%	6.5	4.3
	Front Loading	1.57	2.06	258	258	3.8%	4.7	3.7
Multi-Family	Commercial Front Load	2.00	2.20	1244	1244	4.5%		

Table 1.7.2 Washer Fuel Type by Factor

Fuel Type	%Electric _{DHW}	R _{Eff}	%ElecDry
Electric	100%	98%	100%
Gas	0%	78%	0%

References:

1. State of Minnesota Technical Reference Manual for Energy Conservation Improvement Programs Version 3.1 January 20, 2020
2. 2008 Database for Energy Efficient Resources, Version 2008.2.05, EUL/RUL Values, October 10, 2008.
3. Weighted average of 258 clothes washer cycles per year (based on 2015 Residential Energy Consumption Survey (RECS) national sample survey of housing appliances section, West North Central Region. nups4/www.eld.gov/Lurisumpuun/residential/data/2015/hc/phpi

DEEMED SAVINGS TECHNICAL ASSUMPTIONS

4. 10 CFR Parts 429 and 430 [Docket Number EERE-2008—BT—STD— 0019] RIN 1904—AB90 Energy Conservation Program: Energy Conservation Standards
5. The percentage of total energy consumption that is used for the machine, heating the hot water or by the dryer is different depending on the efficiency of the unit.
6. The percentage of total (gas and electric fuel types) water heating units that are electric calculated from 2015 Residential Energy Consumption Survey (RECS) data. <https://www.2ia.gov/consumption/residential/data/2015/hc/php/hc8.7.phr> Fuel used by main water heater section.
7. The percentage of total (gas and electric fuel types) dryer units that are electric calculated from 2015 Residential Energy Consumption Survey (RECS) data.
8. To account for the different efficiency of electric and Natural Gas hot water heaters (gas water heater): recovery efficiencies ranging from 0.74 to 0.85 (0.78)
9. Calculated from Itron eShapes, 8,760 hourly data by end-use for Missouri, as provided by Ameren. Reference is from Illinois Technical Reference Manual June
10. Clothes Washer Program Requirements Version 7.0.
<https://www.energystar.gov/certified-products/sites/products/uploads/files/ENERGY%20STAR%20Final%20Version%207%20Clothes>
11. Clothes Washer Program Requirements Version 8.0.
12. ENERGY STAR Calculator. https://www.energystar.gov/sites/default/files/asset/document/appliance_calculator.xlsx
13. Based on the average clothes washer volume of all units that pass the new Federal Standard on the California Energy Commission (CEC) database of Clothes
14. Department of Energy. Energy Efficiency Program for certain commercial and industrial equipment
15. Department of Energy: Energy Savings Potential and RD&D Opportunities for Commercial Building Appliances Report. 2009.
16. 2015 Residential Energy Consumption Survey (RECS) Data
17. California Public Utilities District. Res Retro HIM Evaluation Report. Weighted by quantity of each efficiency level from MESP SPECTRUM. Reference it from

Changes from Recent Filing:

DEEMED SAVINGS TECHNICAL ASSUMPTIONS

18.7 Residential Smart Thermostats

Algorithms

Customer kWh = Customer Cooling kWh + Customer Heating kWh

Customer Coincident kW = Customer kW * Coincidence Factor

Smart Thermostat Savings:

Customer kW = (Cooling kW * TStat Qty Factor) × ES Reduction_{cooling} * Cooling Scaling Factor

Customer Cooling kWh = (Cooling Tons * TStat Qty Factor) * $\frac{12}{SEER_{Avg}}$ * EFLH_{Cooling} * ES Reduction_{cooling} * Cooling Scaling Factor

Customer Heating kWh = (Heating kW * TStat Qty Factor) * ES Reduction_{heating} * EFLH_{Heat} * Heating Scaling Factor

Customer DTh = (Baseline DTh * TStat Qty Factor) * ES Reduction_{heating} * Heating Scaling Factor

Thermostat Optimization Savings:

Customer kW = Cooling kW * (1 - ES Reduction_{cooling}) * Tstat_Optimization_Reduction * Cooling Scaling Factor

Customer Cooling kWh = Cooling Tons * $\frac{12}{SEER_{Avg}}$ * EFLH_{Cooling} * (1 - ES Reduction_{cooling}) * Tstat_Optimization_Reduction * Cooling Scaling Factor

Customer Heating kWh = Heating kW * EFLH_{Heat} * (1 - ES Reduction_{heating}) * Tstat_Optimization_Reduction * Heating Scaling Factor

Customer Dth = Baseline Dth * (1 - ES Reduction_{heating}) * Tstat_Optimization_Reduction * Heating Scaling Factor

Variables

ES Reduction Heating	8%	Energy Star Connected Thermostat criteria for annual heating equipment runtime reduction (Reference 1)
ES Reduction Cooling	10%	Energy Star Connected Thermostat criteria for annual cooling equipment runtime reduction (Reference 1)
Typical Res Gas Heating System Efficiency	80%	gas heating system efficiency in existing homes
Typical Res Electric Heating System Efficiency	100%	electric resistance heating system efficiency in existing homes
Cooling Tons	2.690	Average Home model capacity for Res Cooling (Tons)
SEER_Avg	13.400	Average Home model SEER rating
EER_Avg	11.417	Average Home model EER rating (converted from SEER)
Cooling kW	2.827	Forecasted High Efficiency Thermostat demand
EFLH_Cooling	See Table 18.0.1	Forecasted High Efficiency Thermostat hours use Cooling EFLH
Baseline Dth	101.1	Forecasted Home gas use estimated from average furnace program participation
Heating kW	12.989	Full load kW for electric resistance heating based on forecasted gas usage and annual operating hours.
EFLH_Heat	See Table 18.0.1	Forecasted High Efficiency Thermostat hours use Heating EFLH
TStat Qty Factor	See Table 18.7.3	The Primary Thermostat in a home saves the full EnergyStar heating or cooling criteria. A Secondary Thermostat in a home saves half of the energy and demand of a Primary Thermostat. The baseline cooling and heating demands will be adjusted by the factor based on the type of thermostat (Primary or Secondary) selected.
EnergyStar_CF	76%	Coincidence Factor for High Efficiency Thermostat
Cooling Scaling Factor	See Table 18.7.1	Cooling energy and demand percent adjustment for home types
Heating Scaling Factor	See Table 18.7.1	Heating energy percent adjustment for home types
Tstat_Optimization_Reduction	3%	Assumed percent savings by participating in manufacturer's optimization algorithm updates.
Lifetime	10	Measure life for ENERGY STAR Smart Thermostat (Reference 4)
Incremental Cost	See Table 18.7.2	Incremental cost for ENERGY STAR Smart Thermostat (Reference 4)

Customer Inputs

M&V Verified

Certified Energy Star Connected Thermostat	Yes	
County	No	
Home Type	No	

Table 18.7.1

Home type	Single Family	Multifamily	Townhome
Cooling Scaling Factor	100%	35%	64%
Heating Scaling Factor	100%	15%	52%

Table 18.7.2

	Incremental Cost
LI SFW EnergyStar Smart Thermostat	\$100.00
ENERGY STAR smart thermostat (Reference)	\$200.00
Home Energy Squad Smart Thermostat	\$125.00
Home Energy Squad upgraded Smart	\$225.00

DEEMED SAVINGS TECHNICAL ASSUMPTIONS

Table 18.7.3	TStat Qty Factor
Primary EnergyStar Smart Thermostat	1.0
Sedondary EnergyStar Smart Thermostat	0.5

References:

1. ENERGY STAR Connected Thermostat Key Product Criteria - https://www.energystar.gov/products/heating_cooling/smart_thermostats/key_product_criteria
2. 2017 Seasonal Savings Evaluation, Navigant, 3/5/2018
3. Xcel Study of Winter Seasonal Savings, 2017-2018, Initial Estimates
4. Lifetime of 10 years for programmable T-Stats from "Measure Life Report Residential and Commercial/Industrial Lighting and HVAC Measures", June 2007 by GDS Associates.

Changes from Recent Filing:

1. included electric heating savings
2. added Thermostat Optimization savings measure
3. clarified secondary thermostat savings for smart thermostat measures.

MULTIFAMILY BUILDINGS

2021 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test (\$Total)	Utility Test (\$Total)	Rate Impact Test (\$Total)	Modified Total Resource Test (\$Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	\$1,651,768	\$1,651,768	\$1,651,768
Trans. & Dist. Capacity	N/A	\$206,862	\$206,862	\$206,862
Marginal Energy	N/A	\$2,746,573	\$2,746,573	\$2,746,573
Avoided Emissions (CO2)	N/A	N/A	N/A	\$2,202,538
Subtotal				\$6,807,741
Non-Energy Benefits Adder (20.0%)				
Subtotal	N/A	\$4,605,203	\$4,605,203	\$7,728,781
Participant Benefits				
Bill Reduction - Electric	\$12,934,843	N/A	N/A	N/A
Participant Rebates and Incentives	\$1,799,735	N/A	N/A	\$1,799,735
Incremental Capital Savings	\$0	N/A	N/A	\$0
Incremental O&M Savings	\$68,552	N/A	N/A	\$68,552
Subtotal	\$14,803,130	N/A	N/A	\$1,868,287
Total Benefits	\$14,803,130	\$4,605,203	\$4,605,203	\$9,597,069
Costs				
Utility Project Costs				
Program Planning & Design	N/A	\$0	\$0	\$0
Administration & Program Delivery	N/A	\$1,046,977	\$1,046,977	\$1,046,977
Advertising/Promotion/Customer Ed	N/A	\$0	\$0	\$0
Participant Rebates and Incentives	N/A	\$1,799,735	\$1,799,735	\$1,799,735
Equipment & Installation	N/A	\$0	\$0	\$0
Measurement and Verification	N/A	\$0	\$0	\$0
Subtotal	N/A	\$2,846,712	\$2,846,712	\$2,846,712
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	\$12,934,421	N/A
Subtotal	N/A	N/A	\$12,934,421	N/A
Participant Costs				
Incremental Capital Costs	\$2,725,120	N/A	N/A	\$2,522,030
Incremental O&M Costs	\$225	N/A	N/A	\$225
Subtotal	\$2,725,345	N/A	N/A	\$2,522,255
Total Costs	\$2,725,345	\$2,846,712	\$15,781,133	\$5,368,967
Net Benefit (Cost)	\$12,077,786	\$1,758,491	(\$11,175,930)	\$4,228,102
Benefit/Cost Ratio	5.43	1.62	0.29	1.79

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

2021

ELECTRIC

GOAL

Input Summary and Totals

Program "Inputs" per Customer kW and per Participant

Lifetime (Weighted on Generator kWh)	A	14.2 years
T & D Loss Factor (Energy)	B	5.78%
T & D Loss Factor (Demand)	C	8.34%
Net-to-Gross (Energy)	D	100.00%
Net-to-Gross (Demand)	E	100.00%
Installation Rate (Energy)	F	100.00%
Installation Rate (Demand)	G	100.00%
Net coincident kW Saved at Generator	H	0.01 kW
Gross Annual kWh Saved at Customer	I	60.07 kWh
Net Annual kWh Saved at Generator	J	63.76 kWh

Program Summary All Participants

Total Budget	K	\$2,846,712
Net coincident kW Saved at Generator	L	1,728 kW
Gross Annual kWh Saved at Customer	M	12,237,118 kWh
Net Annual kWh Saved at Generator	N	12,988,002 kWh
Total MTRC Net Benefits with Adder	O	\$4,228,102
Total MTRC Net Benefits without Adder	P	\$3,307,061

Utility Program Cost per kWh Lifetime	K/(A x N)	\$0.0154
Utility Program Cost per kW at Gen	K/ L	\$1,647

Avoided Lifetime CO2 Emissions, Total Program (tons CO2)		56,211
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MULTIFAMILY BUILDINGS

2022 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test (\$Total)	Utility Test (\$Total)	Rate Impact Test (\$Total)	Modified Total Resource Test (\$Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	\$1,464,382	\$1,464,382	\$1,464,382
Trans. & Dist. Capacity	N/A	\$183,395	\$183,395	\$183,395
Marginal Energy	N/A	\$2,418,981	\$2,418,981	\$2,418,981
Avoided Emissions (CO2)	N/A	N/A	N/A	\$1,811,498
Subtotal				\$5,878,255
Non-Energy Benefits Adder (20.0%)				\$813,352
Subtotal	N/A	\$4,066,758	\$4,066,758	\$6,691,607
Participant Benefits				
Bill Reduction - Electric	\$11,108,847	N/A	N/A	N/A
Participant Rebates and Incentives	\$1,586,191	N/A	N/A	\$1,586,191
Incremental Capital Savings	\$0	N/A	N/A	\$0
Incremental O&M Savings	\$79,635	N/A	N/A	\$79,635
Subtotal	\$12,774,672	N/A	N/A	\$1,665,826
Total Benefits	\$12,774,672	\$4,066,758	\$4,066,758	\$8,357,433
Costs				
Utility Project Costs				
Program Planning & Design	N/A	\$0	\$0	\$0
Administration & Program Delivery	N/A	\$903,836	\$903,836	\$903,836
Advertising/Promotion/Customer Ed	N/A	\$0	\$0	\$0
Participant Rebates and Incentives	N/A	\$1,586,191	\$1,586,191	\$1,586,191
Equipment & Installation	N/A	\$0	\$0	\$0
Measurement and Verification	N/A	\$0	\$0	\$0
Subtotal	N/A	\$2,490,027	\$2,490,027	\$2,490,027
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	\$11,108,414	N/A
Subtotal	N/A	N/A	\$11,108,414	N/A
Participant Costs				
Incremental Capital Costs	\$2,492,489	N/A	N/A	\$2,264,542
Incremental O&M Costs	\$337	N/A	N/A	\$337
Subtotal	\$2,492,826	N/A	N/A	\$2,264,880
Total Costs	\$2,492,826	\$2,490,027	\$13,598,441	\$4,754,907
Net Benefit (Cost)	\$10,281,846	\$1,576,731	(\$9,531,684)	\$3,602,526
Benefit/Cost Ratio	5.12	1.63	0.30	1.76

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

2022

ELECTRIC

GOAL

Input Summary and Totals

Program "Inputs" per Customer kW and per Participant

Lifetime (Weighted on Generator kWh)	A	14.6 years
T & D Loss Factor (Energy)	B	5.69%
T & D Loss Factor (Demand)	C	8.23%
Net-to-Gross (Energy)	D	100.00%
Net-to-Gross (Demand)	E	100.00%
Installation Rate (Energy)	F	100.00%
Installation Rate (Demand)	G	100.00%
Net coincident kW Saved at Generator	H	0.01 kW
Gross Annual kWh Saved at Customer	I	65.71 kWh
Net Annual kWh Saved at Generator	J	69.67 kWh

Program Summary All Participants

Total Budget	K	\$2,490,027
Net coincident kW Saved at Generator	L	1,472 kW
Gross Annual kWh Saved at Customer	M	10,277,303 kWh
Net Annual kWh Saved at Generator	N	10,897,633 kWh
Total MTRC Net Benefits with Adder	O	\$3,602,526
Total MTRC Net Benefits without Adder	P	\$2,789,174

Utility Program Cost per kWh Lifetime	K/(A x N)	\$0.0157
Utility Program Cost per kW at Gen	K/ L	\$1,691

Avoided Lifetime CO2 Emissions, Total Program (tons CO2)		44,467
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MULTIFAMILY BUILDINGS

2021 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test (\$Total)	Utility Test (\$Total)	Rate Impact Test (\$Total)	Modified Total Resource Test (\$Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	\$740,348	\$740,348	\$740,348
Variable O&M Savings	N/A	\$13,901	\$13,901	\$13,901
Demand Savings	N/A	\$97,371	\$97,371	\$97,371
Subtotal				\$851,620
Non-Energy Benefits Adder (20.0%)				\$170,324
Subtotal	N/A	\$851,620	\$851,620	\$1,021,944
Participant Benefits				
Bill Reduction - Gas	\$1,323,875	N/A	N/A	N/A
Participant Rebates and Incentives	\$519,884	N/A	N/A	\$519,884
Incremental Capital Savings	\$0	N/A	N/A	\$0
Incremental O&M Savings	\$4,202,850	N/A	N/A	\$4,202,850
Subtotal	\$6,046,608	N/A	N/A	\$4,722,733
Total Benefits	\$6,046,608	\$851,620	\$851,620	\$5,744,678
Costs				
Utility Project Costs				
Program Planning & Design	N/A	\$0	\$0	\$0
Administration & Program Delivery	N/A	\$341,674	\$341,674	\$341,674
Advertising/Promotion/Customer Ed	N/A	\$0	\$0	\$0
Participant Rebates and Incentives	N/A	\$519,884	\$519,884	\$519,884
Equipment & Installation	N/A	\$0	\$0	\$0
Measurement and Verification	N/A	\$0	\$0	\$0
Subtotal	N/A	\$861,558	\$861,558	\$861,558
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	\$1,323,875	N/A
Subtotal	N/A	N/A	\$1,323,875	N/A
Participant Costs				
Incremental Capital Costs	\$577,255	N/A	N/A	\$576,120
Incremental O&M Costs	\$142	N/A	N/A	\$142
Subtotal	\$577,398	N/A	N/A	\$576,262
Total Costs	\$577,398	\$861,558	\$2,185,433	\$1,437,819
Net Benefit (Cost)	\$5,469,211	(\$9,937)	(\$1,333,813)	\$4,306,858
Benefit/Cost Ratio	10.47	0.99	0.39	4.00

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

2021 GAS

GOAL

Input Summary and Totals		
Program "Inputs" per Dth		
Lifetime (Weighted on Dth)	A	10.1 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.00%
Program Summary per Participant		
Gross Annual Dth Saved	D	1.3
Net Annual Dth Saved	E	1.3
Program Summary All Participants		
Total Budget	F	\$861,558
Gross Annual Dth Saved	G	35,889 Dth
Net Annual Dth Saved	H	35,889 Dth
Total MTRC Net Benefits with Adder	I	\$4,306,858
Total MTRC Net Benefits without Adder	J	\$4,136,534
Utility Program Cost per Dth Lifetime	F/(A x H)	\$2.3714

MULTIFAMILY BUILDINGS

2022 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test (\$Total)	Utility Test (\$Total)	Rate Impact Test (\$Total)	Modified Total Resource Test (\$Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	\$772,649	\$772,649	\$772,649
Variable O&M Savings	N/A	\$13,901	\$13,901	\$13,901
Demand Savings	N/A	\$97,371	\$97,371	\$97,371
Subtotal				\$883,921
Non-Energy Benefits Adder (20.0%)				\$176,784
Subtotal	N/A	\$883,921	\$883,921	\$1,060,705
Participant Benefits				
Bill Reduction - Gas	\$1,381,615	N/A	N/A	N/A
Participant Rebates and Incentives	\$539,182	N/A	N/A	\$539,182
Incremental Capital Savings	\$0	N/A	N/A	\$0
Incremental O&M Savings	\$4,199,443	N/A	N/A	\$4,199,443
Subtotal	\$6,120,240	N/A	N/A	\$4,738,626
Total Benefits	\$6,120,240	\$883,921	\$883,921	\$5,799,331
Costs				
Utility Project Costs				
Program Planning & Design	N/A	\$0	\$0	\$0
Administration & Program Delivery	N/A	\$342,774	\$342,774	\$342,774
Advertising/Promotion/ Customer Ed	N/A	\$0	\$0	\$0
Participant Rebates and Incentives	N/A	\$539,182	\$539,182	\$539,182
Equipment & Installation	N/A	\$0	\$0	\$0
Measurement and Verification	N/A	\$0	\$0	\$0
Subtotal	N/A	\$881,956	\$881,956	\$881,956
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	\$1,381,615	N/A
Subtotal	N/A	N/A	\$1,381,615	N/A
Participant Costs				
Incremental Capital Costs	\$594,412	N/A	N/A	\$596,869
Incremental O&M Costs	\$142	N/A	N/A	\$142
Subtotal	\$594,554	N/A	N/A	\$597,011
Total Costs	\$594,554	\$881,956	\$2,263,571	\$1,478,967
Net Benefit (Cost)	\$5,525,686	\$1,965	(\$1,379,650)	\$4,320,364
Benefit/Cost Ratio	10.29	1.00	0.39	3.92

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

2022

GAS

GOAL

Input Summary and Totals		
Program "Inputs" per Dth		
Lifetime (Weighted on Dth)	A	10.1 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.00%
Program Summary per Participant		
Gross Annual Dth Saved	D	1.3
Net Annual Dth Saved	E	1.3
Program Summary All Participants		
Total Budget	F	\$881,956
Gross Annual Dth Saved	G	35,889 Dth
Net Annual Dth Saved	H	35,889 Dth
Total MTRC Net Benefits with Adder	I	\$4,320,364
Total MTRC Net Benefits without Adder	J	\$4,143,580
Utility Program Cost per Dth Lifetime	F / (A x H)	\$2.4275