

Indicates measures/sub docs reviewed and endorsed for TRM/ December 2016 input assumptions filing

Target Market		Equipment Details				Annual Resource Savings				Other			
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type
Residential	Existing	Attic Insulation	upgrade to R-40	R-10		105	105	0	20	\$ 580.00	33%	UG	Retrofit
Residential	Existing	Basement Wall Insulation	upgrade to R-12	R-1		261	145	0	2.5	\$ 1,654.00	33%	UG	Retrofit
Residential	Existing	Draft Proofing Kit	(1) Spray Foam, can (1) Caulk, tube (30 ft) Foam Tape (4) Energy Saver Gasket with 2 child safety inserts	No Draft Proofing Kit		236	27	0	1	\$ 20.00	55%	UG	Retrofit
Residential	New	Energy Star Home	version 3	Home built to ORC 2006		1,018	1,450	0	25	\$ 3,200.00	48%	EGD	New
Residential	Existing	Fireplace Intermittent Ignition Control retrofit		Natural gas fireplace with pilot		104	-31	0	8	\$ 150.00	1%	UG	Retrofit
Residential	New/Existing	Fireplace 95% or Higher Efficiency Furnace	AFUE 95% or greater	High-Efficiency Furnace	AFUE 90%	1.05 /MBtu/hr input capacity	0	0	18	\$ 494.00	0%	Both	New Construction/ Natural Replacement
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Freestanding, Minimum 70% EnerGuide Rating	Freestanding fireplace	65% median efficiency	110	-31	0	20	\$ 135.00	17%	EGD	New
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Insert, Minimum 60% EnerGuide Rating	Insert	55% median efficiency	109	-31	0	20	\$ 135.00	17%	EGD	New
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, >=40 kBtu/h =Minimum 60% EnerGuide Rating	Zero Clearance		122	-31	0	20	\$ 135.00	17%	EGD	New
Residential	New	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, <40 kBtu/h =Minimum 70% EnerGuide Rating	Zero Clearance		108	-31	0	20	\$ 135.00	17%	EGD	New
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Freestanding, Minimum 70% EnerGuide Rating	Freestanding fireplace	65% median efficiency	110	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Insert, Minimum 60% EnerGuide Rating	Insert	55% median efficiency	109	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, >=40 kBtu/h =Minimum 60% EnerGuide Rating	Zero Clearance		122	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	High Efficiency Fireplace with Pilotless Ignition	Zero Clearance, <40 kBtu/h =Minimum 70% EnerGuide Rating	Zero Clearance		108	-31	0	20	\$ 135.00	17%	EGD	Replacement
Residential	Existing	Adaptive Thermostats - Retail Purchase	Adaptive Thermostat	Blended valve, Non Programmable and programmable Thermostat		185	176	0	15	\$ 300.00	4%	Both	Retrofit
Residential	Existing	Adaptive Thermostats - Direct Install	Adaptive Thermostat	Non-Programmable Thermostat		217	235	0	15	\$ 300.00	4%	Both	Retrofit
Residential	Existing	Adaptive Thermostats - Direct Install	Adaptive Thermostat	Programmable Thermostat		173	235	0	15	\$ 300.00	4%	Both	Retrofit
Residential	New	Adaptive Thermostats	Adaptive Thermostat	Programmable Thermostat		105	206	0	15	\$ 200.00	4%	Both	New Construction
Residential	Existing	Programmable Thermostat	Programmable thermostat with at least two programming modes (weekday and weekend)	Non Programmable Thermostat		46	0	0	15	\$ 97.00	43%	Both	Retrofit
Residential	Existing	Heat Reflector Panels	Heat reflector panel installed behind radiator	No heat reflector panel installed behind radiator		143.2	0	0	25	Actual Utility Cost	0%	Both	Retrofit

Residential Water Heating

Residential	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	31%	EGD	New/Retrofit
Residential	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.4	0	2,501	10	\$ 0.60	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.4	0	2,501	10	\$ 0.60	31%	EGD	New/Retrofit
Residential	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1459	10	\$ 0.60	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	11.56	0	4,516	10	\$ 1.14	33%	UG	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	31%	EGD	New/Retrofit
Residential	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	11.56	0	4,516	10	\$ 1.14	31%	EGD	New/Retrofit

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Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type		
Residential	New/Existing	Low-flow showerhead	1.25 GPM (Per household)	Average Existing Stock	2.5 GPM	28.2	0	13,885	10	Actual Utility Cost	10%	Bath	New Construction/ Retrofit		
Residential	New/Existing	Low-flow showerhead	1.5 GPM (Per Household)	Average Existing Stock	2.5 GPM	22.5	0	9,546	10	Actual Utility Cost	10%	Bath	New Construction/ Retrofit		
Residential	Existing	Pipe Wrap	R-4.35	No pipe wrap	R-0.435	3.54 / ft	0	0	15	\$ 80.39/ft	4%	Bath	Retrofit		
Residential	Existing	Solar Pool Heaters		Natural gas pool heater		1,116	-57	0	20	\$ 1,450.00	10%	Bath	Retrofit		
Residential	New/Existing	Tankless Water Heater	High Efficiency Non-Condensing Tankless Water Heater, EF = 0.82	Storage Tank Water Heater, EF=0.67	EF=0.67	88.8	0	0	20	\$ 1,667.00	2%	Bath	New Construction/ Natural Replacement		
Residential	New/Existing	Tankless Water Heater	Condensing Tankless Water Heater, EF = 0.91	Storage Tank Water Heater, EF=0.67	EF=0.67	128.0	0	0	20	\$ 2,066.00	2%	Bath	New Construction/ Natural Replacement		
Residential	New	High Efficiency Gas Storage Water Heaters	High efficiency storage tank water heater (Energy Factor of 0.80)	ENERGY STAR power vented storage tank water heater	Energy factor of 0.67	68.3	0	0	16	\$ 545.00		Bath	New		

Low-Income Residential Space Heating

Low-Income	New/Existing	95% or Higher Efficiency Furnace	AFUE 95% or greater	High-Efficiency Furnace	AFUE 90%	1.05 /MBtu/hr input capacity	0	0	18	\$ 494.00	0%	Bath	New Construction/ Natural Replacement
Low-Income	Existing	Heat Reflector Panels	Heat reflector panel installed behind radiator	No heat reflector panel installed behind radiator		143.2	0	0	25	Actual Utility Cost	0%	Bath	Retrofit
Low-Income	Existing	Adaptive Thermostats - Retail Purchase	Adaptive Thermostat	Blended value. Non Programmable and programmable Thermostat		185	176	0	15	\$ 300.00	0% EGD, 1% UG	Bath	Retrofit
Low-Income	Existing	Adaptive Thermostats - Direct Install	Adaptive Thermostat	Non-Programmable Thermostat		217	235	0	15	\$ 300.00	0% EGD, 1% UG	Bath	Retrofit
Low-Income	Existing	Adaptive Thermostats - Direct Install	Adaptive Thermostat	Programmable Thermostat		173	235	0	15	\$ 300.00	0% EGD, 1% UG	Bath	Retrofit
Low-Income	New	Adaptive Thermostats	Adaptive Thermostat	Programmable Thermostat		105	206	0	15	\$ 200.00	0% EGD, 1% UG	Bath	New Construction
Low-Income	Existing	Programmable Thermostat	Programmable thermostat with at least two programming modes (weekday and weekend)	Non Programmable Thermostat		46	0	0	15	\$ 97.00	1% UG, 0% EGD	Bath	Retrofit

Low-Income Residential Water Heating

Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.40	0	2,501	10	\$ 0.60	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1,459	10	\$ 0.60	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	11.56	0	4,516	10	\$ 1.14	1%	UG	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.40	0	2,501	10	\$ 0.60	0%	EGD	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1,459	10	\$ 0.60	0%	EGD	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	0%	EGD	New/Retrofit
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1,459	10	\$ 0.60	0%	EGD	New/Retrofit
Low-Income	New/Existing	Low-flow showerhead	1.25 GPM (Per household)	Average Existing Stock	2.5 GPM	28.2	0	13,885	10	Actual Utility Cost	0% EGD, 1% UG	Bath	New Construction/ Retrofit
Low-Income	New/Existing	Low-flow showerhead	1.5 GPM (Per Household)	Average Existing Stock	2.5 GPM	22.5	0	9,546	10	Actual Utility Cost	0% EGD, 1% UG	Bath	New Construction/ Retrofit
Low-Income	Existing	Pipe Wrap	R-4.35	No pipe wrap	R-0.435	3.54 / ft	0	0	15	\$ 80.39/ft	EGD 0%	Bath	Retrofit

Low-Income Multi-Residential Water Heating

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Target Market		Equipment Details						Annual Resource Savings					Other			
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type			
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.40	0	2,501	10	\$ 0.60	1%	UG	New/Retrofit			
Low-Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1,459	10	\$ 0.60	1%	UG	New/Retrofit			
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	1%	UG	New/Retrofit			
Low-Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	11.56	0	4,516	10	\$ 1.14	1%	UG	New/Retrofit			
Low Income	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.40	0	2,501	10	\$ 0.60	0%	EGD	New/Retrofit			
Low Income	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1,459	10	\$ 0.60	0%	EGD	New/Retrofit			
Low Income	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	0%	EGD	New/Retrofit			
Low Income	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	11.56	0	4,516	10	\$ 1.14	0%	EGD	New/Retrofit			
Low-Income	New/Existing	Low-flow showerhead	1.25 GPM	Average existing stock	2.5 GPM	38.2	0	12,105	10	Actual Utility Cost	1%UG, 0%EGD	Both	New Construction / Retrofit			
Low-Income	New/Existing	Low-flow showerhead	1.50 GPM	Average existing stock	2.5 GPM	30.6	0	8,322	10	Actual Utility Cost	1%UG, 0%EGD	Both	New Construction / Retrofit			

Low-Income Multi-Residential Space Heating

Low income	New	Condensing Boiler - Space Heating (<100 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 1,475.00	Union 5%, EGD 0%	Both	New
Low income	New	Condensing Boiler - Space Heating (100 to 199 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,414.00	Union 5%, EGD 0%	Both	New
Low income	New	Condensing Boiler - Space Heating (200 to 299 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,227.00	Union 5%, EGD 0%	Both	New
Low income	Existing	Condensing Boiler - Space Heating (<100 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,045.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Condensing Boiler - Space Heating (100 to 199 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,984.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Condensing Boiler - Space Heating (200 to 299 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,797.00	Union 5%, EGD 0%	Both	Replacement
Low income	New/Existing	Condensing Boilers - Space Heating, 300 and above MBTUH	88% seasonal efficiency	Non-condensing boiler	76% estimated seasonal efficiency	0.0104 m3 /Btu/hr	0	0	25	\$12 /Btu/hr	5%	UG	New/Replacement
Low income	New	High Efficiency Boiler - Space Heating (<100 Mbtuh)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,238.00	Union 5%, EGD 0%	Both	New
Low income	New	High Efficiency Boiler - Space Heating (100 to 199 Mbtuh)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,544.00	Union 5%, EGD 0%	Both	New
Low income	New	High Efficiency Boiler - Space Heating (200 to 299 Mbtuh)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,388.00	Union 5%, EGD 0%	Both	New
Low income	Existing	High Efficiency Boiler - Space Heating (<100 Mbtuh)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,808.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	High Efficiency Boiler - Space Heating (100 to 199 Mbtuh)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 2,114.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	High Efficiency Boiler - Space Heating (200 to 299 Mbtuh)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 /Btu/hr	0	0	25	\$ 1,958.00	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Prescriptive High Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	Union 5%, EGD 0%	Both	Replacement
Low income	Existing	Prescriptive High Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	Union 5%, EGD 0%	Both	Replacement
Low income	New	Prescriptive High Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	Union 5%, EGD 0%	Both	New
Low income	New	Prescriptive High Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	Union 5%, EGD 0%	Both	New

Commercial Cooking

Commercial	New/Existing	Energy Star Fryer	Energy Star Rated Fryer	Non-Energy Star rated Fryer		1408	0	0	12	\$ 2,476.00	20%	Both	New/Replacement
Commercial	New/Existing	Energy Star Convection Ovens	Energy Star Rated Convection Oven (Full Size)	Conventional Convection Oven (Full Size)		865	40.1	0	12	\$ -	20%	Both	New/Replacement

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Commercial	New/Existing	Energy Star Steam Cookers	Energy Star Rated Steam Cooker	Boiler-based steam cooker	pre-heat <= 48,000 Btu and cooking energy rate <= 96,000 Btu/hr	8,889	0	340,142	12	\$ 3,880.00	20%	Both	New/Replacement		
Commercial	New/Existing	High Efficiency Under-Fired Boilers - 3 foot	pre-heat <= 40,500 Btu and cooking energy rate <= 72,000 Btu/hr	Conventional Efficiency Under-Fired Boiler	pre-heat <= 48,000 Btu and cooking energy rate <= 96,000 Btu/hr	2,511	0	0	12	\$ 1,900.00	20%	Both	New/Replacement		
Commercial	New/Existing	High Efficiency Under-Fired Boilers - 4 foot	pre-heat 40,501 to 54,000 Btu and a cooking energy rate 72,001 to 96,000 Btu/hr	Conventional Efficiency Under-Fired Boiler	pre-heat 48,001 to 64,000 Btu and a cooking energy rate 96,001 to 128,000 Btu/hr	3,347	0	0	12	\$ 1,900.00	20%	Both	New/Replacement		
Commercial	New/Existing	High Efficiency Under-Fired Boilers - 5 foot	pre-heat 54,001 to 67,500 Btu and a cooking energy rate 96,001 to 120,000 Btu/hr	Conventional Efficiency Under-Fired Boiler	pre-heat 64,001 to 80,000 Btu and a cooking energy rate 96,001 to 128,000 Btu/hr	4,184	0	0	12	\$ 1,900.00	20%	Both	New/Replacement		
Commercial	New/Existing	High Efficiency Under-Fired Boilers - 6 foot	pre-heat 67,501 to 81,000 Btu and a cooking energy rate 120,001 to 144,000 Btu/hr	Conventional Efficiency Under-Fired Boiler	pre-heat 80,001 to 96,000 Btu and a cooking energy rate 120,001 to 160,000 Btu/hr	5,021	0	0	12	\$ 1,900.00	20%	Both	New/Replacement		
Commercial Space Heating															
Commercial	New/Existing	Air Curtains	Single door 7' x 3'	Non - air curtain doors	82% AFUE	671	-152	0	15	\$1,429	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Single door 7' x 6'	Non - air curtain doors	82% AFUE	1,343	-110	0	15	\$2,000	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Single door 8' x 6'	Non - air curtain doors	82% AFUE	1,622	-95	0	15	\$2,143	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Double door 2 x 7' x 3'	Non - air curtain doors	82% AFUE	1,343	-305	0	15	\$2,857	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Double door 2 x 7' x 6'	Non - air curtain doors	82% AFUE	2,686	-219	0	15	\$4,000	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Double door 2 x 8' x 6'	Non - air curtain doors	82% AFUE	3,243	-189	0	15	\$4,286	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Shipping and Receiving door 8' x 8'	Non - air curtain doors	82% AFUE	12,108	-1,453	0	15	\$5,000	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Shipping and Receiving door 8' x 10'	Non - air curtain doors	82% AFUE	15,135	-2,906	0	15	\$5,000	5%	Bath	New Construction /Retrofit		
Commercial	New/Existing	Air Curtains	Shipping and Receiving door 10' x 10'	Non - air curtain doors	82% AFUE	20,796	-2,906	0	15	\$6,429	5%	Bath	New Construction /Retrofit		
Commercial	New	Condensing Boiler - Space Heating (<100 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 1,475.00	5%	Both	New		
Commercial	New	Condensing Boiler - Space Heating (100 to 199 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,414.00	5%	Both	New		
Commercial	New	Condensing Boiler - Space Heating (200 to 299 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,227.00	5%	Both	New		
Commercial	Existing	Condensing Boiler - Space Heating (<100 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,045.00	5%	Both	Replacement		
Commercial	Existing	Condensing Boiler - Space Heating (100 to 199 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 2,984.00	5%	Both	Replacement		
Commercial	Existing	Condensing Boiler - Space Heating (200 to 299 Mbtuh)	90% AFUE	Non-condensing Boiler	82% AFUE	0.01019 /Btu/hr	0	0	25	\$ 3,797.00	5%	Both	Replacement		
Commercial	New/Existing	Condensing Boilers - Space Heating, 300 and above MBTUH	88% seasonal efficiency	Non-condensing boiler	76% estimated seasonal efficiency	0.0104 m3/Btu/hr	0	0	25	\$12/Kbtu/hr	5%	UG	New/Replacement		
Commercial	New/Existing	Condensing Make Up Air Unit (MUA) - Commercial	Constant Speed	Conventional MUA	80% Thermal Efficiency	0.407/CFM	0	0	20	\$870.00 + \$0.66/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Make Up Air Unit (MUA) - Commercial	2 Speed	Conventional MUA	80% Thermal Efficiency	1.22/CFM	1.24/CFM	0	20	\$870.00 + \$1.01/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Make Up Air Unit (MUA) - Commercial	VFD	Conventional MUA	80% Thermal Efficiency	2.05/CFM	2.04/CFM	0	20	\$870.00 + 1.02/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Make Up Air Unit (MUA) - MR and LTC	Constant Speed	Conventional MUA	80% Thermal Efficiency	0.919/CFM	0	0	20	\$870.00 + \$0.66/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Make Up Air Unit (MUA) - MR and LTC	2 Speed	Conventional MUA	80% Thermal Efficiency	2.45/CFM	1.61/CFM	0	20	\$870.00 + \$1.01/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Make Up Air Unit (MUA) - MR and LTC	VFD	Conventional MUA	80% Thermal Efficiency	3.00/CFM	2.30/CFM	0	20	\$870.00 + \$1.02/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	Existing	Condensing Unit Heater	30-100 kBtu/hr - 90% Thermal Efficiency, 89% Annual Efficiency	Non-Condensing Unit Heater	80% Thermal Efficiency, 78% Annual Efficiency	7.89 /kBtu/hr input capacity	296	0	18	\$12.90/KBtu/hr input capacity	0%	Both	Natural Replacement		

Indicates measures/sub docs reviewed and endorsed for TRM/ December 2016 input assumptions filing

Target Market		Equipment Details						Annual Resource Savings						Other		
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type			
Commercial	Existing	Condensing Unit Heater	125-200 kBtu/hr-90% Thermal Efficiency, 89% Annual Efficiency	Non-Condensing Unit Heater	80% Thermal Efficiency, 78% Annual Efficiency	7.89 /kBtu/hr input capacity	530	0	18	\$12.90/kBtu/hr input capacity	0%	Both	Natural Replacement			
Commercial	Existing	Condensing Unit Heater	225-300 kBtu/hr-90% Thermal Efficiency, 89% Annual Efficiency	Non-Condensing Unit Heater	80% Thermal Efficiency, 78% Annual Efficiency	7.89 /kBtu/hr input capacity	546	0	18	\$12.90/kBtu/hr input capacity	0%	Both	Natural Replacement			
Commercial	New	Condensing Unit Heater	30-100 kBtu/hr - 90% Thermal Efficiency, 89% Annual Efficiency	Non-Condensing Unit Heater	80% Thermal Efficiency, 78% Annual Efficiency	5.92 /kBtu/hr input capacity	222	0	18	\$12.90/kBtu/hr input capacity	0%	Both	New Construction			
Commercial	New	Condensing Unit Heater	125-200 kBtu/hr-90% Thermal Efficiency, 89% Annual Efficiency	Non-Condensing Unit Heater	80% Thermal Efficiency, 78% Annual Efficiency	5.92 /kBtu/hr input capacity	398	0	18	\$12.90/kBtu/hr input capacity	0%	Both	New Construction			
Commercial	New	Condensing Unit Heater	225-300 kBtu/hr-90% Thermal Efficiency, 89% Annual Efficiency	Non-Condensing Unit Heater	80% Thermal Efficiency, 78% Annual Efficiency	5.92 /kBtu/hr input capacity	410	0	18	\$12.90/kBtu/hr input capacity	0%	Both	New Construction			
Commercial	Existing	Demand Control Kitchen Ventilation	0 - 5,000 CFM	Constant Volume Kitchen Ventilation	Constant Volume Kitchen Ventilation	4,207.0	4,940	0	15	\$4,766	5%	Both	Retrofit			
Commercial	Existing	Demand Control Kitchen Ventilation	5,001 - 10,000 CFM	Constant Volume Kitchen Ventilation	Constant Volume Kitchen Ventilation	10,517.0	16,294	0	15	\$11,915	5%	Both	Retrofit			
Commercial	Existing	Demand Control Kitchen Ventilation	10,001 - 15,000 CFM	Constant Volume Kitchen Ventilation	Constant Volume Kitchen Ventilation	17,529.0	28,929	0	15	\$19,859	5%	Both	New Construction/ Natural Replacement			
Commercial	New	Demand Control Kitchen Ventilation	0 - 5,000 CFM	Constant Volume Kitchen Ventilation	Constant Volume Kitchen Ventilation	4,207.0	4,940	0	15	\$ 2,383.00	5%	Both	New Construction/ Natural Replacement			
Commercial	New	Demand Control Kitchen Ventilation	5,001 - 10,000 CFM	Constant Volume Kitchen Ventilation	Constant Volume Kitchen Ventilation	10,517.0	16,294	0	15	\$ 5,958.00	5%	Both	New Construction/ Natural Replacement			
Commercial	New	Demand Control Kitchen Ventilation	10,001 - 15,000 CFM	Constant Volume Kitchen Ventilation	Constant Volume Kitchen Ventilation	17,529.0	28,929	0	15	\$ 9,929.00	5%	Both	New Construction/ Natural Replacement			
Commercial	Existing	Destratification Fans	Destratification Fans	No destratification fans	No destratification fans	583/fan	-	0	15	\$ 8,714.00	10%	Both	New Construction			
Commercial	Existing	Destratification Fans	Destratification Fans	No destratification fans	No destratification fans	1,734 /fan	-	0	15	\$ 8,714.00	10%	Both	Retrofit			
Commercial	New/Existing	High Efficient 65% Energy Recovery Ventilation High Use Group (Multi-Residential, Health Care, Nursing Homes)	Minimum 65% Sensible Heat Recovery Effectiveness and 63% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	1.37 /CFM	0 /CFM	0	14	\$1.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 75% Energy Recovery Ventilation High Use Group (Multi-Residential, Health Care, Nursing Homes)	Minimum 75% Sensible Heat Recovery Effectiveness and 73% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	2.42 /CFM	0 /CFM	0	14	\$2.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 85% Energy Recovery Ventilation High Use Group (Multi-Residential, Health Care, Nursing Homes)	Minimum 85% Sensible Heat Recovery Effectiveness and 83% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	3.48 /CFM	0 /CFM	0	14	\$3.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 65% Energy Recovery Ventilation Medium Use Group (Hotel, Restaurant, Retail,)	Minimum 65% Sensible Heat Recovery Effectiveness and 63% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	0.76 /CFM	0 /CFM	0	14	\$1.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 75% Energy Recovery Ventilation Medium Use Group (Hotel, Restaurant, and Retail,)	Minimum 75% Sensible Heat Recovery Effectiveness and 73% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	1.34 /CFM	0 /CFM	0	14	\$2.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 85% Energy Recovery Ventilation Medium Use Group (Hotel, Restaurant, Retail,)	Minimum 85% Sensible Heat Recovery Effectiveness and 83% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	1.93 /CFM	0 /CFM	0	14	\$3.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 65% Energy Recovery Ventilation Low Use Group (Office, Warehouse, School)	Minimum 65% Sensible Heat Recovery Effectiveness and 63% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	0.49 /CFM	0 /CFM	0	14	\$1.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 75% Energy Recovery Ventilation Low Use Group (Office, Warehouse, School)	Minimum 75% Sensible Heat Recovery Effectiveness and 73% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	0.86 /CFM	0 /CFM	0	14	\$2.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New/Existing	High Efficient 85% Energy Recovery Ventilation Low Use Group (Office, Warehouse, School)	Minimum 85% Sensible Heat Recovery Effectiveness and 83% Total Energy Recovery Effectiveness at 32°F	Minimum 50% Energy Recovery Effectiveness as per Ontario Building Code 2015	80% Thermal Efficiency, 78% Annual Efficiency	1.23 /CFM	0 /CFM	0	14	\$3.00/CFM	5%	Both	New Construction/ Natural Replacement			
Commercial	New / Existing	High Use Group Energy Recovery Ventilation (Multi-Residential, Health Care, Nursing Homes)	Ventilation with ERV Integrated	Ventilation without ERV	80% Thermal Efficiency, 78% Annual Efficiency	6.64 /CFM	-4.62 /CFM	0	14	\$5.14/CFM	5%	Both	Retrofit/ New Construction			
Commercial	New / Existing	High Use Group Energy Recovery Ventilation (Multi-Residential, Health Care, Nursing Homes)	Ventilation with ERV Standalone	Ventilation without ERV	80% Thermal Efficiency, 78% Annual Efficiency	6.64 /CFM	-4.62 /CFM	0	14	\$8.24/CFM	5%	Both	Retrofit/ New Construction			
Commercial	New / Existing	Medium Use Group Energy Recovery Ventilation (Hotels, Restaurant, Retail)	Ventilation with ERV Integrated	Ventilation without ERV	80% Thermal Efficiency, 78% Annual Efficiency	3.68 /CFM	-2.57 /CFM	0	14	\$5.14/CFM	5%	Both	Retrofit/ New Construction			
Commercial	New / Existing	Medium Use Group Energy Recovery Ventilation (Hotels, Restaurant, Retail)	Ventilation with ERV Standalone	Ventilation without ERV	80% Thermal Efficiency, 78% Annual Efficiency	3.68 /CFM	-2.57 /CFM	0	14	\$8.24/CFM	5%	Both	Retrofit/ New Construction			
Commercial	New / Existing	Low Use Group Energy Recovery Ventilation (Office, Warehouse, School)	Ventilation with ERV Integrated	Ventilation without ERV	80% Thermal Efficiency, 78% Annual Efficiency	2.36 /CFM	-1.64 /CFM	0	14	\$5.14/CFM	5%	Both	Retrofit/ New Construction			
Commercial	New / Existing	Low Use Group Energy Recovery Ventilation (Office, Warehouse, School)	Ventilation with ERV Standalone	Ventilation without ERV	80% Thermal Efficiency, 78% Annual Efficiency	2.36 /CFM	-1.64 /CFM	0	14	\$8.24/CFM	5%	Both	Retrofit/ New Construction			

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Target Market		Equipment Details					Annual Resource Savings					Other			
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type		
Commercial	New/Existing	High Efficient 65% Heat Recovery Ventilation High Use Group (Multi-Residential, Health Care, Nursing Homes)	HRV with Minimum 65% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		1.16 CFM	0 CFM	0	14	\$1.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 75% Heat Recovery Ventilation High Use Group (Multi-Residential, Health Care, Nursing Homes)	HRV with Minimum 75% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		1.93 CFM	0 CFM	0	14	\$2.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 85% Heat Recovery Ventilation High Use Group (Multi-Residential, Health Care, Nursing Homes)	HRV with Minimum 85% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		2.70 CFM	0 CFM	0	14	\$3.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 65% Heat Recovery Ventilation Medium Use Group (Hotel, Restaurant, Retail)	HRV with Minimum 65% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		0.64 CFM	0 CFM	0	14	\$1.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 75% Heat Recovery Ventilation Medium Use Group (Hotel, Restaurant, Retail)	HRV with Minimum 75% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		1.07 CFM	0 CFM	0	14	\$2.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 85% Heat Recovery Ventilation Low Use Group (Office, Warehouse, School)	HRV with Minimum 85% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		1.50 CFM	0 CFM	0	14	\$3.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 65% Heat Recovery Ventilation Low Use Group (Office, Warehouse, School)	HRV with Minimum 65% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		0.41 CFM	0 CFM	0	14	\$1.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 75% Heat Recovery Ventilation Low Use Group (Office, Warehouse, School)	HRV with Minimum 75% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		0.68 CFM	0 CFM	0	14	\$2.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Efficient 85% Heat Recovery Ventilation Low Use Group (Office, Warehouse, School)	HRV with Minimum 85% Sensible Heat Recovery Effectiveness at 32°F	HRV with Minimum 50% Sensible Heat Recovery Effectiveness as per Ontario Building Code 2015		0.96 CFM	0 CFM	0	14	\$3.00/CFM	5%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	High Use Group Heat Recovery Ventilation (Multi-Residential, Health Care, Nursing Homes)	Ventilation with HRV Integrated	Ventilation without HRV		5.00 CFM	-4.62 CFM	0	14	\$5.64/CFM	5%	Both	New Construction/ Retrofit		
Commercial	New/Existing	High Use Group Heat Recovery Ventilation (Multi-Residential, Health Care, Nursing Homes)	Ventilation with HRV Standalone	Ventilation without HRV		5.00 CFM	-4.62 CFM	0	14	\$8.74/CFM	5%	Both	New Construction/ Retrofit		
Commercial	New/Existing	Medium Use Group Heat Recovery Ventilation (Hotel, Restaurant, Retail)	Ventilation with HRV Integrated	Ventilation without HRV		2.78 CFM	-2.57 CFM	0	14	\$5.64/CFM	5%	Both	New Construction/ Retrofit		
Commercial	New/Existing	Medium Use Group Heat Recovery Ventilation (Hotel, Restaurant, Retail)	Ventilation with HRV Standalone	Ventilation without HRV		2.78 CFM	-2.57 CFM	0	14	\$8.74/CFM	5%	Both	New Construction/ Retrofit		
Commercial	New/Existing	Low Use Group Heat Recovery Ventilation (Office, Warehouse, School)	Ventilation with HRV Integrated	Ventilation without HRV		1.78 CFM	-1.64 CFM	0	14	\$5.64/CFM	5%	Both	New Construction/ Retrofit		
Commercial	New/Existing	Low Use Group Heat Recovery Ventilation (Office, Warehouse, School)	Ventilation with HRV Standalone	Ventilation without HRV		1.78 CFM	-1.64 CFM	0	14	\$8.74/CFM	5%	Both	New Construction/ Retrofit		
Commercial	New	High Efficiency Boiler - Space Heating (<100 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 BTU/hr	0	0	25	\$ 1,238.00	5%	Both	New		
Commercial	New	High Efficiency Boiler - Space Heating (100 to 199 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 BTU/hr	0	0	25	\$ 1,544.00	5%	Both	New		
Commercial	Existing	High Efficiency Boiler - Space Heating (<100 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 BTU/hr	0	0	25	\$ 1,808.00	5%	Both	Replacement		
Commercial	Existing	High Efficiency Boiler - Space Heating (100 to 199 Mbtu/h)	85% AFUE	Non-condensing Boiler	82% AFUE	0.00318 BTU/hr	0	0	25	\$ 2,114.00	5%	Both	Replacement		
Commercial	New	High Efficiency Condensing Furnace	>95% AFUE	Condensing Furnace	82% AFUE	0	0	0	25	\$ 1,958.00	5%	Both	Replacement		
Commercial	Existing	High Efficiency Condensing Furnace	>95% AFUE	Condensing Furnace	82% AFUE	2.337 kBTU/hr	0	0	18	\$494.00	17.5%	Both	New Construction/ Natural Replacement		
Commercial	Existing	High Efficiency Condensing Furnace	>95% AFUE	Condensing Furnace	82% AFUE	3.117 kBTU/hr	0	0	18	\$494.00	17.5%	Both	Natural Replacement		
Commercial	Existing	Single Stage & High Intensity Infrared Heaters	0 - 49,999 BTU/hr	Regular Unit Heater		11.5 kBTU/hr input capacity	0	0	17	\$30.28/kBTU/hr input capacity	33%	Both	Retrofit		
Commercial	Existing	2-Stage Infrared Heaters	0 - 49,999 BTU/hr	Regular Unit Heater		13.1 kBTU/hr input capacity	0	0	17	\$30.28/kBTU/hr input capacity	33%	Both	Retrofit		
Commercial	Existing	Single Stage & High Intensity Infrared Heaters	50,000 - 164,999 BTU/hr	Regular Unit Heater		11.5 kBTU/hr input capacity	300	0	17	\$30.28/kBTU/hr input capacity	33%	Both	Retrofit		
Commercial	Existing	2-Stage Infrared Heaters	50,000 - 164,999 BTU/hr	Regular Unit Heater		13.1 kBTU/hr input capacity	300	0	17	\$30.28/kBTU/hr input capacity	33%	Both	Retrofit		
Commercial	Existing	Single Stage & High Intensity Infrared Heaters	165,000 - 300,000 BTU/hr	Regular Unit Heater		11.5 kBTU/hr input capacity	1,040	0	17	\$30.28/kBTU/hr input capacity	33%	Both	Retrofit		
Commercial	Existing	2-Stage Infrared Heaters	165,000 - 300,000 BTU/hr	Regular Unit Heater		13.1 kBTU/hr input capacity	1,040	0	17	\$30.28/kBTU/hr input capacity	33%	Both	Retrofit		
Commercial	New	Single Stage & High Intensity Infrared Heaters	0 - 49,999 BTU/hr	Regular Unit Heater		8.6 kBTU/hr input capacity	0	0	17	\$11.22/kBTU/hr input capacity	33%	Both	New Construction		
Commercial	New	2-Stage Infrared Heaters	0 - 49,999 BTU/hr	Regular Unit Heater		9.8 kBTU/hr input capacity	0	0	17	\$11.22/kBTU/hr input capacity	33%	Both	New Construction		
Commercial	New	Single Stage & High Intensity Infrared Heaters	50,000 - 164,999 BTU/hr	Regular Unit Heater		8.6 kBTU/hr input capacity	225	0	17	\$11.22/kBTU/hr input capacity	33%	Both	New Construction		
Commercial	New	2-Stage Infrared Heaters	50,000 - 164,999 BTU/hr	Regular Unit Heater		9.8 kBTU/hr input capacity	225	0	17	\$11.22/kBTU/hr input capacity	33%	Both	New Construction		
Commercial	New	Single Stage & High Intensity Infrared Heaters	165,000 - 300,000 BTU/hr	Regular Unit Heater		8.6 kBTU/hr input capacity	510	0	17	\$11.22/kBTU/hr input capacity	33%	Both	New Construction		
Commercial	New	2-Stage Infrared Heaters	165,000 - 300,000 BTU/hr	Regular Unit Heater		9.8 kBTU/hr input capacity	510	0	17	\$11.22/kBTU/hr input capacity	33%	Both	New Construction		
Commercial	Existing	Prescriptive Higher Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$5900-\$4950	10/12/20%	Both	Replacement		

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Target Market		Equipment Details						Annual Resource Savings						Other			
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type				
Commercial	Existing	Prescriptive Higher Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	10/12/20%	Both	Replacement				
Commercial	New	Prescriptive Higher Efficiency Boiler - Space Heating	83-84% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	2,474-19,340	0	0	25	\$3900-\$4950	10/12/20%	Both	New				
Commercial	New	Prescriptive Higher Efficiency Boiler - Space Heating	85-88% Efficient, 300-2000 MBH	Space Heating Boiler	80.5% Thermal Efficiency	3,496-27,325	0	0	25	\$4,500-\$7,050	10/12/20%	Both	New				
Commercial	Existing	Prescriptive Schools - Elementary	hydronic boiler with 83% + thermal efficiency	hydronic boiler with 80.5% thermal efficiency	80.5% Thermal Efficiency	12,217	0	0	25	\$ 8,646.00	27%	UG	Replacement				
Commercial	Existing	Prescriptive Schools - Elementary	hydronic boiler with 83% + thermal efficiency	hydronic boiler with 80.5% thermal efficiency	80.5% Thermal Efficiency	12,217	0	0	25	\$ 8,646.00	12%	EGD	Replacement				
Commercial	Existing	Prescriptive Schools - Secondary	hydronic boiler with 83% + thermal efficiency	hydronic boiler with 80.5% thermal efficiency	80.5% Thermal Efficiency	49,476	0	0	25	\$ 14,470.00	27%	UG	Replacement				
Commercial	Existing	Prescriptive Schools - Secondary	hydronic boiler with 83% + thermal efficiency	hydronic boiler with 80.5% thermal efficiency	80.5% Thermal Efficiency	49,476	0	0	25	\$ 14,470.00	12%	EGD	Replacement				
Commercial	Existing	Programmable Thermostat	Educational - School	Standard thermostat	13 - 108**	15 - 77**	0	0	15	\$ 110.00	20%	UG	Retrofit				
Commercial	Existing	Programmable Thermostat	Educational - University/College	Standard thermostat	65	8	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Food Service - Restaurant/Tavern	Standard thermostat	58	57	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Hotel/Motel	Standard thermostat	69	77	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Large Hotel	Standard thermostat	10	11	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Multi-Residential	Existing	Programmable Thermostat	Multi Family	Standard thermostat	14	14	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Recreation - Small Fitness / Spa	Standard thermostat	35	37	0	0	15	\$ 110.00	20%	Both	Retrofit				
Commercial	Existing	Programmable Thermostat	Retail - Food	Standard thermostat	22	16	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Retail - Mall	Standard thermostat	14	19	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Retail - Strip Mall	Standard thermostat	11	14	0	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Small Office	Standard thermostat	39	43	0	0	0	\$ 110.00	20%	EGD	Retrofit				
Commercial	Existing	Programmable Thermostat	Warehouse / Wholesale	Standard thermostat		132	9	0	15	\$ 110.00	20%	EGD	Retrofit				
Commercial	New/Existing	Rooftop Unit	Two-stage rooftop unit	Single stage rooftop unit		255	0	0	15	\$ 375.00	5%	Both	New/Replacement				
Commercial	New	Demand Control Ventilation	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	10	\$1050 per zone	20%	Both	New/Replacement				
Commercial	New	Demand Control Ventilation (with a documented maintenance plan)	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	15	\$1350 per zone	20%	Both	New/Replacement				
Commercial	New	Demand Control Ventilation	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	10	\$1050 per zone	20%	Both	New/Replacement				
Commercial	New	Demand Control Ventilation (with a documented maintenance plan)	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	15	\$1350 per zone	20%	Both	New/Replacement				
Commercial	Existing	Demand Control Ventilation	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	10	\$1350 per zone	5%	Both	Retrofit				
Commercial	Existing	Demand Control Ventilation (with a documented maintenance plan)	Office	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.112 m3/ft2	0	0	15	\$1650 per zone	5%	Both	Retrofit				
Commercial	Existing	Demand Control Ventilation	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	10	\$1350 per zone	5%	Both	Retrofit				

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Target Market		Equipment Details					Annual Resource Savings					Other		
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type	
Commercial	Existing	Demand Control Ventilation (with a documented maintenance plan)	Retail	New single-zone, constant volume ventilation system	Provides min outdoor air requirements as specified in Table 6.2.2.1 of ASHRAE Standard 62.1-2013 [1]	0.392 m3/ft2	0	0	15	\$1,650 per zone	5%	Both	Retrofit	
Commercial Water Heating														
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Washer extractor <= 60 lbs	Commercial laundry with no ozone treatment system	Commercial laundry with no ozone treatment system	0.0383 m3/lbs/yr	0.00213 kWh/lbs/yr	2.08L/lbs/yr	15	\$15,714	8%	Both	New/Retrofit	
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Washer extractor 61 lbs to 499 lbs	Commercial laundry with no ozone treatment system	Commercial laundry with no ozone treatment system	0.0383 m3/lbs/yr	0.00213 kWh/lbs/yr	2.08L/lbs/yr	15	\$35,714	8%	Both	New/Retrofit	
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Washer extractor >= 500 lbs	Commercial laundry with no ozone treatment system	Commercial laundry with no ozone treatment system	0.0383 m3/lbs/yr	0.00213 kWh/lbs/yr	2.08L/lbs/yr	15	\$44,286	8%	Both	New/Retrofit	
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Tunnel Washer <= 120 lbs	Commercial laundry with no ozone treatment system	Commercial laundry with no ozone treatment system	0.0305 m3/lbs/yr	0.00150 kWh/lbs/yr	1.27 L/lbs/yr	15	\$71,429	8%	Both	New/Retrofit	
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Tunnel Washer 121 lbs to 499 lbs	Commercial laundry with no ozone treatment system	Commercial laundry with no ozone treatment system	0.0305 m3/lbs/yr	0.00150 kWh/lbs/yr	1.27 L/lbs/yr	15	\$150,000	8%	Both	New/Retrofit	
Commercial	New/Existing	Commercial Ozone Laundry Treatment	Ozone Treatment Tunnel Washer >= 500 lbs	Commercial laundry with no ozone treatment system	Commercial laundry with no ozone treatment system	0.0305 m3/lbs/yr	0.00150 kWh/lbs/yr	1.27 L/lbs/yr	15	\$228,571	8%	Both	New/Retrofit	
Commercial	Existing	Condensing Boiler - DHW (<100 Mbu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.02170 Btu/hr	0	0	25	\$ 2,045.00	5%	Both	Replacement	
Commercial	Existing	Condensing Boiler - DHW (100 to 199 Mbu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.01332 Btu/hr	0	0	25	\$ 2,984.00	5%	Both	Replacement	
Commercial	Existing	Condensing Boiler - DHW (200 to 299 Mbu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.00996 Btu/hr	0	0	25	\$ 3,797.00	5%	Both	Replacement	
Commercial	New	Condensing Boiler - DHW (<100 Mbu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.02170 Btu/hr	0	0	25	\$ 1,475.00	5%	Both	New	
Commercial	New	Condensing Boiler - DHW (100 to 199 Mbu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.01332 Btu/hr	0	0	25	\$ 2,414.00	5%	Both	New	
Commercial	New	Condensing Boiler - DHW (200 to 299 Mbu/h)	90% or greater AFUE	Non-condensing Boiler	82% AFUE	0.00996 Btu/hr	0	0	25	\$ 3,227.00	5%	Both	New	
Commercial	New/Existing	Condensing Storage Water Heater - Low Utilization	> 75 kBtu/hr and <=250 kBtu/hr. input Estimated overall efficiency of units shipped = 94.5%	Non-condensing storage water heater	Non-condensing storage water heater Greater than 75 kBtu/hr. input Estimated overall efficiency of units shipped = 80.1%	1.36 kBtu/hr input capacity	0	0	15	\$2,591.00	5%	Both	New Construction/ Natural Replacement	
Commercial	New/Existing	Condensing Storage Water Heater - Medium Utilization	> 75 kBtu/hr and <=250 kBtu/hr. input Estimated overall efficiency of units shipped = 94.5%	Non-condensing storage water heater	Non-condensing storage water heater Greater than 75 kBtu/hr. input Estimated overall efficiency of units shipped = 80.1%	2.22 kBtu/hr input capacity	0	0	15	\$2,591.00	5%	Both	New Construction/ Natural Replacement	
Commercial	New/Existing	Condensing Storage Water Heater - High Utilization	> 75 kBtu/hr and <=250 kBtu/hr. input Estimated overall efficiency of units shipped = 94.5%	Non-condensing storage water heater	Non-condensing storage water heater Greater than 75 kBtu/hr. input Estimated overall efficiency of units shipped = 80.1%	3.09 kBtu/hr input capacity	0	0	15	\$2,591.00	5%	Both	New Construction/ Natural Replacement	
Commercial	New/Existing	Condensing Storage Water Heater - Low Utilization	>250 kBtu/hr. input Estimated overall efficiency of units shipped = 94.5%	Non-condensing storage water heater	Non-condensing storage water heater Greater than 75 kBtu/hr. input Estimated overall efficiency of units shipped = 80.1%	1.36 kBtu/hr input capacity	0	0	15	\$4,464.00	5%	Both	New Construction/ Natural Replacement	
Commercial	New/Existing	Condensing Storage Water Heater - Medium Utilization	>250 kBtu/hr. input Estimated overall efficiency of units shipped = 94.5%	Non-condensing storage water heater	Non-condensing storage water heater Greater than 75 kBtu/hr. input Estimated overall efficiency of units shipped = 80.1%	2.22 kBtu/hr input capacity	0	0	15	\$4,464.00	5%	Both	New Construction/ Natural Replacement	
Commercial	New/Existing	Condensing Storage Water Heater - High Utilization	>250 kBtu/hr. input Estimated overall efficiency of units shipped = 94.5%	Non-condensing storage water heater	Non-condensing storage water heater Greater than 75 kBtu/hr. input Estimated overall efficiency of units shipped = 80.1%	3.09 kBtu/hr input capacity	0	0	15	\$4,464.00	5%	Both	New Construction/ Natural Replacement	
Commercial	New	Drain Water Heat Recovery (DWHR)	Laundromat	No DWHR		49,735	0	0	25	\$ 37,211.00	5%	Both	New	
Commercial	New	Drain Water Heat Recovery (DWHR)	Entertainment, Arena	No DWHR		394 per Showerhead	0	0	25	\$ 77.6 per Showerhead	5%	Both	New	

Indicates measures/sub docs reviewed and endorsed for TRM/ December 2016 input assumptions filing

Target Market		Equipment Details										Annual Resource Savings					Other			
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type							
Commercial	New	Drain Water Heat Recovery (DWHR)	University/College Cafeterias - Dishwashing	No DWHR		4.6 per Meal Served/Day	0	0	25	\$3.41 per Meal Served/Day	5%	Both	New							
Commercial	New	Drain Water Heat Recovery (DWHR)	Hospital - Dishwashing	No DWHR		12 per Bed	0	0	25	\$1.88 per Bed	5%	Both	New							
Commercial	New	Drain Water Heat Recovery (DWHR)	Hospital - Laundry	No DWHR		295 Per Bed	0	0	25	\$2.50 per Bed	5%	Both	New							
Commercial	New	Drain Water Heat Recovery (DWHR)	Nursing Home - Dishwashing	No DWHR		12 per Bed	0	0	25	\$16.54 per Bed	5%	Both	New							
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Laundromat	No DWHR		49,735	0	0	25	\$ 40.811.00	5%	Both	Retrofit							
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Entertainment Area	No DWHR		394 per Showerhead	0	0	25	\$1209.00 per Showerhead	5%	Both	Retrofit							
Commercial	Existing	Drain Water Heat Recovery (DWHR)	University/College Cafeterias - Dishwashing	No DWHR		11.6 Meal Served per Day	0	0	25	\$626 per day Served per day	5%	Both	Retrofit							
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Hospital - Dishwashing	No DWHR		31 per Bed	0	0	25	\$18.19 per Bed	5%	Both	Retrofit							
Commercial	Existing	Drain Water Heat Recovery (DWHR)	Hospital - Laundry	No DWHR		295 per Bed	0	0	25	\$2.74 per Bed	5%	Both	Retrofit							
Commercial	New/Existing	Energy Star Dishwasher	Undercounter - High Temperature	Non-Energy Star Dishwasher		137	1,791	20,371	10	\$ 171.00	40%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Undercounter - Low Temperature	Non-Energy Star Dishwasher		322	0	47,827	10	\$ 71.00	40%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Stationary Single Tank Door - High Temperature	Non-Energy Star Dishwasher		890	4,173	132,263	15	\$ 1,100.00	20%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Stationary Single Tank Door - Low Temperature	Non-Energy Star Dishwasher		2,046	0	304,205	15	\$ -	20%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Single Tank Conveyor - High Temperature	Non-Energy Star Dishwasher		540	4,251	80,303	20	\$ 2,929.00	27%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Single Tank Conveyor - Low Temperature	Non-Energy Star Dishwasher		1,652	0	245,631	20	\$ -	27%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Multi Tank Conveyor - High Temperature	Non-Energy Star Dishwasher		2,049	9,680	304,677	20	\$ 1,386.00	27%	Both	New/Replacement							
Commercial	New/Existing	Energy Star Dishwasher	Multi Tank Conveyor - Low Temperature	Non-Energy Star Dishwasher		2,383	0	354,276	20	\$ 1,386.00	27%	Both	New/Replacement							
Commercial	Existing	High Efficiency Boiler - DHW (<100 Mbtuh)	85% or greater AFUE	Non-Condensing Boiler		0.00468 /Btu/hr	0	0	25	\$ 1,808.00	5%	Both	Replacement							
Commercial	Existing	High Efficiency Boiler - DHW (100 to 199 Mbtuh)	85% or greater AFUE	Non-Condensing Boiler		0.00287 /Btu/hr	0	0	25	\$ 2,114.00	5%	Both	Replacement							
Commercial	Existing	High Efficiency Boiler - DHW (200 to 299 Mbtuh)	85% or greater AFUE	Non-Condensing Boiler		0.00215 /Btu/hr	0	0	25	\$ 1,958.00	5%	Both	Replacement							
Commercial	New	High Efficiency Boiler - DHW (<100 Mbtuh)	85% or greater AFUE	Non-Condensing Boiler		0.00468 /Btu/hr	0	0	25	\$ 1,238.00	5%	Both	New							
Commercial	New	High Efficiency Boiler - DHW (100 to 199 Mbtuh)	85% or greater AFUE	Non-Condensing Boiler		0.00287 /Btu/hr	0	0	25	\$ 1,544.00	5%	Both	New							
Commercial	New	High Efficiency Boiler - DHW (200 to 299 Mbtuh)	85% or greater AFUE	Non-Condensing Boiler		0.00215 /Btu/hr	0	0	25	\$ 1,388.00	5%	Both	New							
Commercial	Existing/New	Pre-Rinse Spray Nozzle (Full Service)	0.64 GPM	Pre-rinse spray nozzle		453.0	0	97,529	5	Actual Utility Cost	0%	Both	Retrofit/New Construction /Natural Replacement							
Commercial	Existing/New	Pre-Rinse Spray Nozzle (Limited)	0.64 GPM	Pre-rinse spray nozzle		89.0	0	19,100	5	Actual Utility Cost	0%	Both	Retrofit/New Construction /Natural Replacement							
Commercial	Existing/New	Pre-Rinse Spray Nozzle (Other)	0.64 GPM	Pre-rinse spray nozzle		107.0	0	23,025	5	Actual Utility Cost	0%	Both	Retrofit/New Construction /Natural Replacement							
Commercial	New	Prescriptive Higher Efficiency Boiler - DWH	83-84% Efficient, 300-1500 MBH	DWH Boiler		1,168-4,693	0	0	25	\$3900-\$5900	10/12/20%	Both	New							
Commercial	New	Prescriptive Higher Efficiency Boiler - DWH	85-88% Efficient, 300-1500 MBH	DWH Boiler		1,861-7,475	0	0	25	\$4500-\$7400	10/12/20%	Both	New							
Commercial	Existing	Prescriptive Higher Efficiency Boiler - DWH	83-84% Efficient, 300-1500 MBH	DWH Boiler		1,168-4,693	0	0	25	\$3900-\$5900	10/12/20%	Both	Replacement							
Commercial	Existing	Prescriptive Higher Efficiency Boiler - DWH	85-88% Efficient, 300-1500 MBH	DWH Boiler		1,861-7,475	0	0	25	\$4500-\$7400	10/12/20%	Both	Replacement							
Commercial	New/Existing	Condensing Tankless Water Heater - Low Utilization	>75 and <200 kBtu/hr Thermal efficiency = 92.9% Stand-by Loss = negligible	Non-Condensing Storage Water Heater		212 + 0.79/kBtu/hr input capacity	0	0	20	\$ 2,227.00	2%	Both	New Construction/ Natural Replacement							
Commercial	New/Existing	Condensing Tankless Water Heater - Medium Utilization	>75 and <200 kBtu/hr Thermal efficiency = 92.9% Stand-by Loss = negligible	Non-Condensing Storage Water Heater		212 + 1.29/kBtu/hr input capacity	0	0	20	\$ 2,227.00	2%	Both	New Construction/ Natural Replacement							
Commercial	New/Existing	Condensing Tankless Water Heater - High Utilization	>75 and <200 kBtu/hr Thermal efficiency = 92.9% Stand-by Loss = negligible	Non-Condensing Storage Water Heater		212 + 1.79/kBtu/hr input capacity	0	0	20	\$ 2,227.00	2%	Both	New Construction/ Natural Replacement							

Indicates measures/sub docs reviewed and endorsed for TRM/ December 2016 input assumptions filing

Target Market		Equipment Details					Annual Resource Savings					Other			
Sector	New/Existing	Efficient Equipment	Details of Efficient Equipment	Base Equipment	Details of Base Equipment	Natural Gas (m3)	Electricity (kWh)	Water (L)	EUL	Incremental Cost (\$)	Free Rider (%)	Utility Measure Applies to	Decision Type		
Commercial	New/Existing	Condensing Tankless Water Heater - Low Utilization	>=200 kBtu/hr Thermal efficiency = 92.9% Stand-by Loss = negligible	Non-Condensing Storage Water Heater	75 kBtu/hr. and greater Thermal efficiency of units shipped = 80.1% Stand-by Loss Q0.8 +10(V0)	326 + 0.79/kBtu/hr input capacity	0	0	20	\$ 2,227.00	2%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Tankless Water Heater - Medium Utilization	>=200 kBtu/hr Thermal efficiency = 92.9% Stand-by Loss = negligible	Non-Condensing Storage Water Heater	75 kBtu/hr. and greater Thermal efficiency of units shipped = 80.1% Stand-by Loss Q0.8 +10(V0)	326 + 1.29/kBtu/hr input capacity	0	0	20	\$ 2,227.00	2%	Both	New Construction/ Natural Replacement		
Commercial	New/Existing	Condensing Tankless Water Heater - High Utilization	>=200 kBtu/hr Thermal efficiency = 92.9% Stand-by Loss = negligible	Non-Condensing Storage Water Heater	75 kBtu/hr. and greater Thermal efficiency of units shipped = 80.1% Stand-by Loss Q0.8 +10(V0)	326 + 1.79/kBtu/hr input capacity	0	0	20	\$ 2,227.00	2%	Both	New Construction/ Natural Replacement		
Multi-Residential Water Heating															
Multi-Residential	New/Existing	CEE Tier 2 Front-Loading Clothes Washer	MEF=2.20, WF=5.1	Conventional top-loading, vertical axis clothes washer	MEF=1.26, WF=9.5	117	396	58,121	11	\$ 600.00	10%	Both	New/Replacement		
Multi-Residential	New/Existing	Energy Star Front-Loading Clothes Washer	MEF=1.72, WF=8.0	Conventional top loading vertical axis washers	MEF = 1.26, WF=9.5	76	201	19,814	11	\$ 150.00	48%	UG	New/Replacement		
Multi-Residential	New/Existing	Faucet Aerator	Bathroom, 1.0 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	6.40	0	2,501	10	\$ 0.60	10%	Both	New/Retrofit		
Multi-Residential	New/Existing	Faucet Aerator	Bathroom, 1.5 GPM	Standard flow bathroom aerator (code compliant)	2.2 GPM	3.73	0	1,459	10	\$ 0.60	10%	Both	New/Retrofit		
Multi-Residential	New/Existing	Faucet Aerator	Kitchen, 1.0 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	19.82	0	7,742	10	\$ 1.14	10%	Both	New/Retrofit		
Multi-Residential	New/Existing	Faucet Aerator	Kitchen, 1.5 GPM	Standard flow kitchen aerator (code compliant)	2.2 GPM	11.56	0	4,516	10	\$ 1.14	10%	Both	New/Retrofit		
Multi-Residential	New/Existing	Low-flow showerhead	1.25 GPM	Average existing stock	2.5 GPM	38.2	0	12,105	10	Actual Utility Cost	10%	Both	New Construction/ Retrofit		
Multi-Residential	New/Existing	Low-flow showerhead	1.50 GPM	Average existing stock	2.5 GPM	30.6	0	8,322	10	Actual Utility Cost	10%	Both	New Construction/ Retrofit		

* Efficiency ratings and natural gas savings will vary by fireplace type. Please see substantiation sheet for type specific efficiency ratings and savings.
 ** Savings will vary for different segments. Please see substantiation sheet for segment specific savings.

Union's Other Free Rider Rates	
Sector	Free Rider (%)
Agriculture	54%
Industrial	54%
Commercial	54%
Multi-Residential	54%
New Construction	54%
Low-Income - Weatherization	0%
Low-Income - Clusston	5%
Residential - Home Reno Rebate	15%

Fairbridge Other Free Rider Rates	
Sector	Free Rider (%)
Agriculture	40%
Industrial	50%
Commercial	12%
Multi-Residential	20%
New construction	26%
Low-Income	0%
Residential - Home Energy Conservation (formerly Community Energy Retrofit)	15%

Union Gas Effective Useful Life (EUL)¹ Guide Commercial/Industrial Custom Offering

Equipment Type	Sector	EUL	
		Years	Source

Boilers

Industrial Process - greater than 2500 MBHp	Industrial	20	2
Space heating - Under 300 MBHp	Commercial & Multi-Residential	20*	4
Space heating - 300 to 2500 MBHp	Commercial & Multi-Residential	20*	4
Domestic Hot Water	Commercial & Multi-Residential	20*	4
Controls	All	20*	4
Combustion Tune-Up	Industrial & Commercial	1	
Air Makeup (line)	Industrial	20	
Oxy-Fuel	Industrial	20	
Low NOx Boiler	Industrial	20	

Building Optimization

Building Optimization Program/RunSmart - Behavioral Savings Project	Commercial	5	3
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Economizers

Conventional and condensing	Industrial & Commercial	20	9
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Electronic Burner Control

Linkage-Less Controls, Modulating Motors, Mod Motors	Industrial & Commercial	20	9, 10
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Agriculture

IR Poly	Greenhouse	5	2
Energy Curtains	Greenhouse	10	10, 11
Grain Dryer	Commercial	20	5

¹ Where site specific information or a relevant prescriptive EUL is available to support an alternate EUL value for a specific custom project, Union Gas will use the alternate value for that custom project.”

HVAC

Air Curtains (single and double door)	Commercial	15	2
Building Automation System - New	Industrial & Commercial	20	4, 9
Cooling tower for HVAC systems	Commercial	15	1, 2
Combustion Tune-Up	Industrial & Commercial	1	5
Dessicant Cooling	Commercial	15	6
Exhaust Fan Controls	Commercial	15	5
Heat Recovery	Industrial & Commercial	Comm 15 Indust 20	9, 10
Infiltration Controls - Dock Seals, Air Doors	Commercial	15	2
Make-Up Air	All	20	12
Heat Reflector Panels	Commercial & Multi-Residential	15	
VFD retrofit on MUA	Commercial & Multi-Residential	10	
Turndown controls on Modulating Boiler	Commercial	20	5

Heat Exchangers

Plate - Plate or Tube-Tube	Industrial & Commercial	Comm 14 Indust 20	2, 11
Air -Air	Commercial	Comm 14 Indust 20	2

Insulation

Roof/Ceiling insulation	Industrial & Commercial	20	2
Outside Pipe - exposed to the environment, properly protected	Industrial & Commercial	20	10, 11
Building Weatherization - Air sealing	Commercial	15	1
Tank Exterior Insulation	Industrial & Commercial	20	5, 11

Ovens and Thermal oxidizers

Low Temperature (less than 300°C)	Industrial	20	
Medium Temperature (300°C - 1000°C)	Industrial	20	
High Temperature (>1000°C)	Industrial	20	

Process Controls

Electronic Loop Controllers	Industrial	20	
PLC's	Industrial	20	
Flame Supervision (relays)	Industrial	20	

Steam Distribution

Steam Traps	Industrial & Commercial	7	5, 9, 11
Steam Piping Leaks	Industrial & Commercial	20	5, 9, 10, 11
Steam Valve	Industrial Food Services	10	10, 11

Water Conditioners

Reverse Osmosis (RO)	Industrial	20	
Ion Exchange	Industrial	20	

Industrial Equipment

All other industrial equipment	Industrial	Up to 20 yrs	Best available info
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References

*	Useful Life estimates are most dependent on the application and quality of maintenance. Any equipment life that was reported higher than 20 years was reduced to 20 years to conform to Union Gas's 20 year limit.
1	2011 Commercial Opportunity Screening Report May 02 2011, Navigant for Union Gas
2	DEER EUL Summary 2014
3	Measure Life for Retro-Commissioning and Continuous Commissioning Projects, Finn Projects for Enbridge
4	ASHRAE Service Life & Maintenance Cost Database (Jan 14, 2015)
5	Union Gas 2010 DSM Audited Results
6	Enbridge Approved IA
7	2011 Commercial Hydronic Boiler System Baseline Study, ICF Marbek for Enbridge
8	Confirmation of high quality feed water required for 10 year life
9	Union Gas 2011 DSM Audited Results
10	Union Gas 2012 DSM Audited Results
11	Union Gas 2013 DSM Audited Results
12	Prescriptive TRM Sub Doc (Source ASHRAE Handbook – HVAC Applications I-P Edition, Atlanta: ASHRAE, 2008, p. 32.8)

Union Gas Effective Useful Life (EUL) Guide *Residential and Low Income Offerings*

Offering	2015	2016-2020
Union Gas Home Reno Rebate – without furnace upgrade	25 ²	25 ³
Union Gas Home Reno Rebate – with furnace upgrade	15 ⁴	25 ⁵
Union Gas Low Income Weatherization	25 ⁶	25 ⁴
Residential Behavioural Offering	N/A	1

² Union Gas Independent Audit of 2012 DSM Program Results. Applies to 2014 results and 2015 roll over.

³ As per Union Gas 2015-2020 DSM Plan (EB-2015-0029)

⁴ EB-2012-0441; Exhibit B, Tab 1, Schedule 3

⁵ See Home Reno Rebate Evaluation Plan in EB-2015-0029 for details on this EUL (results from a change in the base case in 2016 and beyond).

⁶ Endorsed by the Technical Evaluation Committee, February 13, 2014

Enbridge Measure Life Guide*

Commercial/Industrial Custom Offers			
	Commercial (years)	Industrial (years)	Multi Residential (years)
Boiler Related			
Boilers – DHW	25 ¹	n/a	25 ¹
Boilers - Industrial Process	n/a	20	n/a
Boilers – Space Heating	25 ¹	25 ¹	25 ¹
Combustion Tune-up	5	5	n/a
Controls	15	15	15
Steam pipe/tank insulation	20 ²	20 ²	20 ²
Steam trap	6 ³	6 ³	n/a
Building Related			
Building envelope	25	25	25
Windows	25	25	25
Greenhouse curtains	n/a	10	n/a
Double Poly greenhouse	n/a	5	n/a
Air Doors	15 ⁴	15 ⁴	n/a
HVAC Related			
Dessicant cooling	15	n/a	n/a
Heat Recovery	15	15	n/a
Infrared heaters	17 ⁵	17 ⁵	n/a
Make-up Air	15	15	15
Heat Reflector Panels	15	n/a	15
Furnaces (gas-fired)	18 ⁶	n/a	18 ⁶
Recommissioning, Retro-Commissioning	5 ⁷	n/a	5 ⁷
Process Related			
Industrial Process/Industrial Equipment	n/a	20	n/a
Residential and Low Income Offers			
Home Energy Conservation – without furnace upgrade		25 ⁸	
Home Energy Conservation – with furnace upgrade		25 ⁹	
Low Income Weatherization – Home Winterproofing		25 ¹⁰	

* Where site specific information or a relevant prescriptive measure life is available to support an alternate measure life value for a specific custom project, Enbridge will use the alternate value for that custom project.

¹ 2011 ASHRAE handbook-HVAC Applications, Chapter 37, Table 4 (Comparison of Service Life Estimates).
² 2011 ASHRAE handbook-HVAC Applications, Chapter 37, Table 4 (Comparison of Service Life Estimates).
³ Massachusetts 2013 Prescriptive Gas Impact Evaluation Steam Trap Evaluation Phase 1: FINAL, DNV GL (Kema Inc.), June 17, 2015.
⁴ Enbridge TRM, Substantiation Document – Air Doors, reference: GDS Associates, Inc., "Measure Life Report Residential and Commercial/Industrial Lighting and HVAC Measures," p. C-16, June 2007.
⁵ Enbridge TRM, Substantiation Document – Infrared Heaters, endorsed by TEC May 28, 2015
⁶ 2011 ASHRAE handbook-HVAC Applications, Chapter 37, Table 4 (Comparison of Service Life Estimates).
⁷ "Measure Life for Retro-Commissioning and Continuous Commissioning Projects", Finn Projects. Dec. 31, 2008.
⁸ Endorsed by Enbridge Audit Committee, February, 2014. Applicable to 2014 results and 2015 rollover year.
⁹ Effective 2017, updated to reflect change in base case furnace.
¹⁰ Endorsed by Technical Evaluation Committee, Jan 23, 2014.