Commercial Analysis Appendix Tables

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#	End Use	Technology	Description	Market Type(s)
1	Cooking	Direct fired convection range/oven	Single integrated unit vs. standard range/oven unit; 30% more energy-efficient than standard models Convection ovens use a small fan to circulate hot air within the oven cavity. Circulating air can heat food more efficiently than the still air found in co	NC/RR
2	Cooking	Exhaust Hood Makeup Air	Provide makeup air directly at exhaust hood instead of pulling conditioned air from occupied space. Energy savings equal to heat load created by outdoor air cfm draw equal to exhaust fan cfm.	NC/RR
3	Cookina	High efficiency ENERGY STAR infrared fryer	Deep fryer; up to 25% more energy-efficient than standard models; catalytic infrared fryers cook foods by submerging them in hot animal or vegetable oils. The oil is heated by gas-burners with the flame traveling through several tubes that are submerged	NC/RR
4	Cooking Cooking	High Efficiency ENERGY STAR steam cooker	ESTAR minimum 38% cooking efficiency; up to 60% more energy-efficient than standard model	NC/RR RET
5	Cooking	High efficiency infrared griddle	Up to 15% more energy-efficient than standard models; rooved griddle replaces less efficient underfired broiler; infrared griddle is a thick slab of flat steel heated from below by gas burners. In an infrared (IR) griddle, standard burners are replaced with porous ceramic plate having about 200 holes per inch. Combustion is designed to take place very near the ceramic burner surface, causing it to glow red at a temperature of about 1,650° F. Efficiency is increased because the red-hot ceramic burner increases heat transfer to the griddle plate.	NC/RR
6	Cooking	Pre-Rinse Spray Valve	Spray used to remove particles before entering commercial dishwasher	RET
	Cooking			NC/RR
7	Cooking	Refrigeration heat recovery	Refrigeration heat recovery	RET
	Cooling			NC/RR
9	Cooling	Cooling system chilled water reset		RET NC/DD
10	Cooling	Cooling overton water side cooperation		NC/RR RET
10	Cooling	Cooling system water side economizer		NC/RR
11	Cooling	Cooling system oversized cooling tower		RET
Ė	DHW	occuring dyotern everteized occuring terror		NC/RR
12	DHW	Condensing DHW stand-alone tank	New high-efficiency residential-sized tank-type gas water heater.	RET
13	DHW	Faucet aerator	Faucet Aerators: Standard non conserving faucet aerators have a flow rate of 3-5 gpm (at 40 to 60 psi). Water saving faucet aerators for bathroom applications have flow rates of 0.5-1.0 gpm and water saving faucet aerators for kitchen applications have av	RET NC/RR
14	DHW	Graywater heat exchanger/GFX	Transfers heat from exiting shower/sink water to incoming city/well water.	RET
	DHW	,	This measure applies to use of indirect DHW as compared to stand-alone tank-	NC/RR
15	DHW	Indirect-fired DHW off space heating boiler	type heater.	RET
	DHW			NC/RR/RENO
16	DHW	Instantaneous. High-Modulating Water Heater	Gas water heating at point of use with no storage capacity.	RET
17	DHW	Low-flow shower heads	Low Flow Shower Heads: Standard non conserving shower heads have a flow rate of 3.5 to 6 gallons per minute (gpm at 80 psi). Typical water saving shower heads use 1 to 2.4 gpm and are designed to provide a good quality shower with less water. Water savi	NC/RR RET
-	DHW	Low now shower neads	1000 Water. Trater Surf	NC/RENO
18	DHW	Pipe insulation - water heating	DHW Pipe Insulation. Most systems likely already installed.	RET
19	DHW DHW HVAC	Tank insulation	Tank Insulation: Commercial water heater insulation is available either by the blanket or by square foot of fiberglass insulation with protective facing. Insulation blankets range from 50 to 82 gallon tank sizes, with thicknesses of 2 to 4 inches, and R-	NC/RR RET NC/RENO
20	HVAC	Air sealing		RET
		Improved heating system high efficiency unit - Tier	Condensing units capture latent heat from water vapor in the flue - care needs to be taken about acidity of condensate. Modulating units have a variable firing rate to match output to heat load. Other high efficiency units rely on other design	
21	HVAC	 	features an	NC/RENO
22	HVAC	II	See above	NC/RENO
	HVAC		Carbon dioxide sensor controls inlet dampers to vary the amount of inside fresh air used to meet ASHRAE 62 15 or 20 cfm/person standard. Most effective in	NC/RR
24	HVAC	Demand-Controlled Ventilation (controller, sensor)	large, intermitently-occupied spaces.	RET
	HVAC	(,	· · ·	NC/RR
25	HVAC	Outdoor air reset		RET
26	HVAC	High Performance Glazing double pane, low-E, low conductivity frame - Tier I	Currently available high efficiency glazing. Includes double pane, low-E, gas filled and improved solar heat gain coefficient. U-value @ 0.3, SHGF = 0.44.	NC/RENO
27	HVAC	High Performance Glazing double pane, low-E, low conductivity frame - Tier II	Emerging technology. Could include things such as electrochromic glazing and super high R-value windows. Reflects best currently available but very expensive technology.	NC/RENO

#	End Use	Technology	Description	Market Type(s)
28	HVAC	Improved wall insulation	Ceiling Insulation: Installing fiberglass or cellulose insulation material in floor, wall or roof cavities will reduce heat transfer across these surfaces. The type of building construction limits insulation possibilities. Choice of insulation material	NC/RENO
29	HVAC	Improved below-grade insulation	Beyond code, involves use of rigid insulation along foundation walls, between slab and foundation walls, and under slabs.	NC/RENO
30	HVAC	Improved roof insulation	Ceiling Insulation: Installing fiberglass or cellulose insulation material in floor, wall or roof cavities will reduce heat transfer across these surfaces. The type of building construction limits insulation possibilities. Choice of insulation material	NC/RENO
	HVAC HVAC		Efficiencies in heat transfer of 50-75%, depending on product; amount of savings depends upon percentage of heat load attributable to makeup/fresh ventilation air.	NC/RR
31	HVAC HVAC	Sensible Heat Recovery Pipe insulation - space heating	Boiler Pipe Insulation: Insulating accessible steam or hot water supply pipes in the boiler room is a cost-effective way to save energy. Savings will vary depending on the temperature of the hot water or steam and the ambient temperature.N Could include	RET RR/RENO RET
	Laundry		Tumbling uses less electrical energy and hot water than agitation, savings on	NC/RR
33	Laundry	Energy Star washer	gas drying.	RET
34	Swimming Pools Swimming	Swimming pool/spa covers	Pool Cover: Installing a pool cover is one of the most cost-effective ways to reduce energy use with a heated swimming pool. Pool covers typically save about 50 to 65% of the energy used to heat the pool if the cover is on 12 hours per day. A pool cover	NC/RR
35	Whole Building	Commissioning	Third party whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	NC/RR/RENO
	Whole	-	Optimizing energy usage of existing buildings and systems through better	
36	Building Whole Building	Retrocommissioning Integrated Design - High Performance (30% > codes)	operation and maintenance, control calibration, facilities staff training, etc. Reflects comprehensive, optimized design of new buildings addressing all enduses and interactions between them on a systems basis. Includes, but is not limited to, improved shell measures reduce HVAC loads, proper sizing of HVAC equipment and optimized d	RET
38	Whole Building	Integrated Design - Ultra Low Energy Commercial Building (50%> codes)	Emerging technology. Reflects more aggressive level of than Tier I of comprehensive, optimized design of new buildings addressing all end-uses and interactions between them on a systems basis. Performance improvement of 20% better than Tier I. This measur	NC
39	HVAC	Steam trap maintenance	Steam trap leaks lose steam to the plant, lowering overall system efficiency. See www.oit.doe.gov/bestpractices/factsheets/velsicol.pdf	RET
	HVAC			NC/RR
40	HVAC	Oxygen Trim	For larger, "built-up" boilers, includes oxygen trim, tuning, etc.	RET
41	HVAC HVAC	Infrared heater	Gas fired radiant heaters are available in tube or plaque form. They radiate heat directly down to the space - typically used in warehouse or light industrial settings, parking lots, transportation terminals. These heaters do not use ductwork, so duct los	RR RET

Air Sealing	2010 2011 1.08 1.33 8.57 58.44 72.25 906.15 1.120.44 0.00 0.00 0.00 1.70 2.12 17.92 2.2.38 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0
Results at Program Level by Measure 15 Measure 150 M	2010 2011 1.08 1.33 8.57 58.44 72.25 906.15 1.120.44 0.00 0.00 0.00 1.70 2.12 17.92 2.2.38 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0
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5 Measure Hame	1.08 1.33 8.57 10.57 58.44 72.25 906.15 1,120.44 0.00 0.00 0.00 1.70 2.12 17.92 22.38 0.00 0.00 (0.48) (0.51 (5.12) (6.48 0.00 0.00 0.00 7.07 8.84 75.47 94.36 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00
The Shabast Hood Makasap Air	8.57 10.57 58.44 72.25 906.15 1,120.44 0.00 0.00 1.70 2.12 17.92 22.38 0.00 0.00 (0.48) (0.61 (5.12) (6.48 0.00 0.00 0.00 7.07 8.84 75.47 94.36 50.00 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) 0.05 (0.78) (1.11 0.00 0.00 0.00 0.00 0.00 0.00 0.0
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9 high efficiency ENERGY STAR Type	906.15 1,120.44 0.00 0.00 1.70 0.00 1.70 2.12 17.92 22.38 0.00 0.00 (0.48) (0.61 (5.12) (6.48 0.00 0.00 7.07 8.84 75.47 94.36 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) 0.02 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00
10 De-Silnes Spray Valve	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
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133 Refrigeration heat recovery	17.92 22.38 0.00 0.00 (0.48) (0.61 (5.12) (6.48 0.00 0.00 7.07 8.84 75.47 94.36 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.076) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00
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15 Cooling system chilled water reset Office Cooling New construction (1,24) (2,50) (3,80)	(0.48) (0.61 (5.12) (6.48 (0.00 0.00 0.00 7.07 8.84 75.47 94.36 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 (0.07) (0.16 (0.07) (0.16 (0.07) (0.16 (0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.
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18 Cooling system water side economizar	7.07 8.84 75.47 94.36 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00
19 Configuration Water State and economizer Office Cooling Remodel/Replacement 18.84 37.70 56.58	75.47 94.36 0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00
Ordice almost DHW stand-alone	0.00 0.00 46.85 58.73 500.24 627.23 459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00
Condensing DHW stand-slone	46.85 58.73 500.24 627.23 459.84 459.84 459.88 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 2.45 3.02 39.17 48.42 0.00 1.93 2.40
22 Andrex-Erica DHW off space heating boiler	459.84 459.84 0.00 0.00 9.48 11.84 60.77 75.88 60.77 (0.10 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00 1.93 2.44
24	0.00 0.00 9.48 11.84 60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00 1.93 2.44
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27	60.77 75.88 0.00 0.00 (0.07) (0.10 (0.36) (0.52 (0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00
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30 Instantaneous. High-Modulating Water Heater	(0.78) (1.11 0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00 1.93 2.42
31 Low-flow shower heads	0.00 0.00 2.45 3.02 39.17 48.42 0.00 0.00 1.93 2.42
1.25 1.25	2.45 3.02 39.17 48.42 0.00 0.00 1.93 2.42
Pipe Insulation - water heating	0.00 0.00 1.93 2.42
35 Pipe insulation - water heating	1.93 2.42
Section Pipe insulation Water Heating Renovation Common Retrofit Common Commo	
37 Tank insulation	9.58 12.02
38 Tank Insulation	0.00 0.00
40 Air Sealing	0.88 1.10
Air Sealing	9.37 11.76
Air Sealing Air Sealing Office Space Heating Renovation 152.59 304.90 456.92	4,148.57 4,148.57 122.66 153.15
43 Improved heating system high efficiency unit - Tier 1 Office Space Heating New construction 4.36 8.66 12.87	608.64 760.04
45	16.98 20.98
46	105.38 130.25
47 Programmable Thermostat	4.75 5.95
48	29.45 36.93 0.00 0.00
49 Programmable Thermostat	18.83 23.63
51 Demand-Controlled Ventilation (controller, sensor) Office Space Heating New construction 0.32 0.62 0.92 52 Demand-Controlled Ventilation (controller, sensor) Office Space Heating Remodel/Replacment 3.36 6.64 9.83 53 Outdoor Air Reset Office Space Heating Retrofit 0.00 0.00 0.00 54 Outdoor Air Reset Office Space Heating New construction 1.87 3.72 3.70 55 Outdoor Air Reset Office Space Heating Remodel/Replacment 149.60 298.12 295.93 56 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating New construction 8.90 17.63 26.20 57 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating New construction 44.13 87.46 129.97 58 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 Office Space Heating New construction 15.96 32	60.77 76.28
52 Demand-Controlled Ventilation (controller, sensor) Office Space Heating Remodel/Replacment 3.36 6.64 9.83 53 Outdoor Air Reset Office Space Heating Retrofit 0.00 0.00 0.00 0.00 55 Outdoor Air Reset Office Space Heating New construction 1.87 3.72 3.70 55 Uutdoor Air Reset Office Space Heating Remodel/Replacment 149.60 298.12 295.93 56 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating New construction 8.90 17.63 26.20 57 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating New construction 44.13 87.46 129.97 58 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 Office Space Heating New construction 15.96 32.02 48.14	0.00 0.00
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Space Heating New construction 1.87 3.72 3.70	0.00 0.00
56 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating New construction 8.90 17.63 26.20 57 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating Renovation 44.13 87.46 129.97 58 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 Office Space Heating New construction 15.96 32.02 48.14	3.64 3.55
57 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 Office Space Heating Renovation 44.13 87.46 129.97 58 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 Office Space Heating New construction 15.96 32.02 48.14	291.32 284.26
58 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 Office Space Heating New construction 15.96 32.02 48.14	34.59 42.69 171.63 211.84
	64.34 80.58
59 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 Office Space Heating Renovation 79.18 158.82 238.86	319.25 399.89
60 Improved below-grade insulation Office Space Heating New construction 0.71 1.43 2.16	2.89 3.62
61 Improved below-grade insulation Office Space Heating Renovation 3.54 7.10 10.70 62 Pipe insulation - space heating Retrofit 0.00 0.00 0.00	14.33 17.98
62 Pipe insulation - space heating Office Space Heating Retrofit 0.00 0.00 0.00 63 Pipe insulation - space heating New construction 0.36 0.71 1.05	0.00 0.00 1.39 1.73
64 Pipe insulation - space heating Office Space Heating Renovation 1.76 3.50 5.22	6.92 8.59
65 Commissioning Office Total New construction 11.54 23.06 34.55	46.01 57.33
66 Commissioning Office Total Renovation 57,24 114,38 171,41	228.32 284.52
67 Commissioning Office Total Remodel/Replacment 263.95 527.42 790.39 1 68 Retrocommissioning Office Total Retrofit 911.12 911.12 911.12	1,052.83 1,311.99 911.12 911.12
Online O	392.07 488.51
70 Integrated Design - High Performance (50% > codes) Tier 2 Office Total New construction 10.65 21.34 32.05	42.80 53.58
71 Steam trap Maintenance Office Space Heating Retrofit 131,94 0.00 0.00	0.00 0.00
72 Oxygen Trim Office Space Heating Retrofit 0.00 0.00 0.00 73 Oxygen Trim Office Space Heating New construction 1.51 3.01 4.50	0.00 0.00 5.99 7.46
Office Space Heating New Construction 1.51 3.01 4.50 4.50 74 Oxygen Trim Office Space Heating New Construction 1.51 3.01 4.50	67.47 84.10
75 Direct fired convection range/oven Retail Cooking New construction 7.40 14.70 21.90	28.92 35.76
76 Direct fired convection range/oven Retail Cooking Remodel/Replacment 114.69 227.90 339.59	448.49 554.55
Transact Hood Makeup Air Retail Space Heating New construction 0.82 1.62 2.40	3.16 3.89 22.22 27.40
78 Exhaust Hood Makeup Air Retail Space Heating Remodel/Replacment 5.78 11.41 16.89 79 High efficiency ENERGY STAR fryer Retail Cooking New construction 18.46 36.67 54.63	72.14 89.19
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81 High efficiency ENERGY STAR steam cooker Retail Cooking Retrofit 0.00 0.00	0.00 0.00
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83 High efficiency ENERGY STAR steam cooker Retail Cooking Remodel/Replacment 41.88 83.21 124.00 84 Pre-Rinse Spray Valve Retail Water Heating Retrofit 26.76 26.76 0.00	
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86 Refrigeration heat recovery Retail Water Heating New construction 0.36 0.72 1.08	
87 Refrigeration heat recovery Retail Water Heating Remodel/Replacment 3.81 7.60 11.39	163.76 202.49 0.00 0.00 0.00 0.00 1.43 1.79
88 Cooling system chilled water reset Retail Cooling Retrofit 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	163.76 202.49 0.00 0.00 0.00 0.00 1.43 1.79 15.17 18.93
89 Cooling system chilled water reset Retail Cooling New construction (0.02) (0.04) (0.06) 90 Cooling system chilled water reset Retail Cooling Remodel/Replacment (0.21) (0.42) (0.64)	163.76 202.49 0.00 0.00 0.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00
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92 Cooling system water side economizer Retail Cooling New construction 0.30 0.60 0.90	163.76 202.49 0.00 0.00 0.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00
93 Cooling system water side economizer Retail Cooling Remodel/Replacment 3.20 6.39 9.59	163.76 202.49 0.00 0.00 1.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00 (0.08) (0.10 (0.87) (1.10 0.00 0.00 1.20 1.50
94 Condensing DHW stand-alone Retail Water Heating Retrofit 0.00 0.	163.76 202.49 0.00 0.00 0.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00 (0.08) (0.10 (0.87) (1.10 0.00 0.00 1.280 15.00
95 Condensing DHW stand-alone Retail Water Heating New construction 12.86 25.79 38.81 96 Condensing DHW stand-alone Retail Water Heating Remodel/Replacment 137.24 275.34 414.31	163.76 202.49 0.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00 (0.08) (0.10 (0.87) (1.10 0.00 0.00 1.20 1.50 1.280 16.00 0.00
Section Retail Water Heating Remoder/replaction 107.2 27.5 14.5 15.5	163.76 202.49 0.00 0.00 1.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00 (0.08) (0.10 (0.87) (1.10 0.00 0.00 1.20 1.50 12.80 16.00 0.00 51.90 65.06
98 Indirect-fired DHW off space heating boiler Retail Water Heating Retrofit 0.00 0.00 0.00	163.76 202.49 0.00 0.00 1.43 1.79 15.17 18.93 0.00 0.00 (0.08) (0.10 (0.87) (1.10 0.00 0.00 1.20 1.50 1.280 16.00 0.00

1 2	A	С		E conomic Potential nulative Gas Saving	F	G	Н	ı	J
3			Measure Curr	idiative Gas Saving	5				
4	Results at Program Level by Measure	la	har a sa	h	Cumulative NGas				2.70
	Indirect-fired DHW off space heating boiler Indirect-fired DHW off space heating boiler	Retail Retail	Water Heating Water Heating	New construction Remodel/Replacment	0.74 4.76	1.49 9.52	2.23 14.26	2.97 19.00	3.70 23.72
101	Instantaneous. High-Modulating Water Heater	Retail	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
102	Instantaneous. High-Modulating Water Heater	Retail	Water Heating	New construction	(0.01)	(0.03)	(0.05)	(0.08)	(0.12)
103	Instantaneous. High-Modulating Water Heater Instantaneous. High-Modulating Water Heater	Retail Retail	Water Heating Water Heating	Renovation Remodel/Replacment	(0.07) (0.15)	(0.15) (0.33)	(0.26) (0.57)	(0.40) (0.86)	(0.57) (1.23)
105	Pipe insulation - water heating	Retail	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
106	Pipe insulation - water heating	Retail	Water Heating	New construction	0.54	1.08	1.62	2.17	2.73
107	Pipe insulation - water heating Tank insulation	Retail Retail	Water Heating Water Heating	Renovation Retrofit	2.66 0.00	5.35 0.00	8.05 0.00	10.78 0.00	13.54 0.00
109	Tank insulation	Retail	Water Heating	New construction	0.24	0.49	0.74	0.99	1.24
110	Tank insulation	Retail	Water Heating	Remodel/Replacment	2.60	5.23	7.88	10.55	13.24
	Air Sealing	Retail	Space Heating	Retrofit	1,638.04	1,638.04	1,638.04	1,638.04	1,638.04
	Air Sealing Air Sealing	Retail Retail	Space Heating Space Heating	New construction Renovation	14.44 71.63	28.85 143.13	43.23 214.50	57.58 285.72	71.89 356.79
	Improved heating system high efficiency unit - Tier 1	Retail	Space Heating	New construction	2.34	4.66	6.92	9.13	11.28
	Improved heating system high efficiency unit - Tier 1	Retail	Space Heating	Remodel/Replacment	14.53	28.89	42.93	56.63	70.00
116	Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2	Retail Retail	Space Heating Space Heating	New construction Remodel/Replacment	0.47 2.91	0.94 5.84	1.42 8.79	1.90 11.76	2.38 14.75
118	Programmable Thermostat	Retail	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
119	Programmable Thermostat	Retail	Space Heating	Renovation	6.17	12.38	18.65	24.97	31.34
120	Programmable Thermostat Demand-Controlled Ventilation (controller, sensor)	Retail Retail	Space Heating Space Heating	Remodel/Replacment Retrofit	19.90 0.00	39.97 0.00	60.20 0.00	80.60 0.00	101.16 0.00
122	Demand-Controlled Ventilation (controller, sensor)	Retail	Space Heating	New construction	14.30	28.23	41.79	54.97	67.76
123	Demand-Controlled Ventilation (controller, sensor)	Retail	Space Heating	Remodel/Replacment	152.61	301.36	446.16	586.96	723.66
124	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Retail	Space Heating	New construction	0.43	0.85	1.27	1.67	2.06
125	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Retail Retail	Space Heating Space Heating	Renovation New construction	2.13 2.05	4.23 4.12	6.28 6.19	8.30 8.28	10.24 10.36
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Retail	Space Heating	Renovation	10.19	20.43	30.73	41.07	51.44
128	Improved below-grade insulation	Retail	Space Heating	New construction	1.06	2.13	3.20	4.29	5.38
129	Improved below-grade insulation	Retail	Space Heating	Renovation	5.25	10.55	15.89	21.28	26.71
130	Improved roof insulation Improved roof insulation	Retail Retail	Space Heating Space Heating	New construction Renovation	4.97 24.67	9.99 49.54	15.04 74.61	20.13 99.90	25.27 125.39
132	Sensible Heat Recovery	Retail	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
133	Sensible Heat Recovery	Retail	Space Heating	New construction	20.58	41.09	61.26	81.10	100.60
134	Sensible Heat Recovery	Retail	Space Heating	Remodel/Replacment	212.81	424.85	633.56	838.87	1,040.70
135	Pipe insulation - space heating Pipe insulation - space heating	Retail Retail	Space Heating Space Heating	Retrofit New construction	0.00 0.26	0.00 0.52	0.00 0.78	0.00 1.04	0.00 1.29
137	Pipe insulation - space heating	Retail	Space Heating	Renovation	1.31	2.60	3.88	5.14	6.38
138	Commissioning	Retail	Total	New construction	11.32	22.61	33.88	45.12	56.22
139	Commissioning	Retail Retail	Total	Renovation Remodel/Replacment	56.13 258.81	112.15 517.16	168.07 775.02	223.88 1,032.35	278.99 1,286.47
141	Commissioning Retrocommissioning	Retail	Total Total	Retrofit	893.40	893.40	893.40	893.40	893.40
	Integrated Design - High Performance (30% > codes) - Tier 1	Retail	Total	New construction	96.42	192.64	288.65	384.44	479.01
	Integrated Design - High Performance (50% > codes) Tier 2	Retail	Total	New construction	10.45	20.92	31.43	41.97	52.54
	Steam trap Maintenance	Retail	Space Heating	Retrofit	70.38 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00
	Oxygen Trim Oxygen Trim	Retail Retail	Space Heating Space Heating	Retrofit New construction	1.11	2.21	3.31	4.40	5.49
147	Oxygen Trim	Retail	Space Heating	Remodel/Replacment	9.33	18.62	27.86	37.04	46.17
	Direct fired convection range/oven	Grocery	Cooking	New construction	0.56	1.11	1.65	2.18	2.70
149 150	Direct fired convection range/oven Exhaust Hood Makeup Air	Grocery Grocery	Cooking Space Heating	Remodel/Replacment New construction	8.66 0.15	17.21 0.30	25.65 0.44	33.87 0.58	41.89 0.72
151	Exhaust Hood Makeup Air	Grocery	Space Heating	Remodel/Replacment	0.84	1.67	2.47	3.25	4.00
152	High efficiency ENERGY STAR fryer	Grocery	Cooking	New construction	1.39	2.77	4.13	5.45	6.74
153	High efficiency ENERGY STAR fryer High efficiency ENERGY STAR steam cooker	Grocery	Cooking	Remodel/Replacment	21.61 0.00	42.93 0.00	63.98 0.00	84.49 0.00	104.47 0.00
155	High efficiency ENERGY STAR steam cooker	Grocery	Cooking Cooking	Retrofit New construction	0.26	0.51	0.76	1.00	1.23
	High efficiency ENERGY STAR steam cooker	Grocery	Cooking	Remodel/Replacment	3.16	6.29	9.37	12.37	15.29
	Pre-Rinse Spray Valve	Grocery	Water Heating	Retrofit	26.20	26.20	0.00	0.00	0.00
158 159	Refrigeration heat recovery	Grocery	Water Heating	Retrofit	0.00 1.01	0.00 2.01	0.00 3.01	0.00 4.01	0.00 5.01
	Refrigeration heat recovery Refrigeration heat recovery	Grocery	Water Heating Water Heating	New construction Remodel/Replacment	10.51	20.99	31.44	41.87	52.27
161	Cooling system chilled water reset	Grocery	Cooling	Retrofit	0.00	0.00	0.00	0.00	0.00
	Cooling system chilled water reset	Grocery	Cooling	New construction	(0.01)	(0.02)	(0.04)	(0.05)	(0.06)
	Cooling system chilled water reset Cooling system water side economizer	Grocery	Cooling Cooling	Remodel/Replacment Retrofit	(0.12) 0.00	(0.24) 0.00	(0.37) 0.00	(0.50) 0.00	(0.63) 0.00
165	Cooling system water side economizer	Grocery	Cooling	New construction	0.17	0.35	0.52	0.70	0.87
166	Cooling system water side economizer	Grocery	Cooling	Remodel/Replacment	1.83	3.66	5.50	7.33	9.17
167 168	Condensing DHW stand-alone	Grocery	Water Heating	Retrofit	0.00 1.29	0.00 2.59	0.00 3.90	0.00 5.22	0.00 6.54
169	Condensing DHW stand-alone Condensing DHW stand-alone	Grocery	Water Heating Water Heating	New construction Remodel/Replacment	13.60	2.59 27.29	3.90 41.06	5.22 54.92	68.86
170	Faucet aerator	Grocery	Water Heating	Retrofit	0.89	0.89	0.89	0.89	0.89
	Indirect-fired DHW off space heating boiler	Grocery	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Indirect-fired DHW off space heating boiler Indirect-fired DHW off space heating boiler	Grocery	Water Heating Water Heating	New construction Remodel/Replacment	0.20 1.28	0.40 2.55	0.61 3.82	0.81 5.09	1.01 6.36
	Pipe insulation - water heating	Grocery	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
175	Pipe insulation - water heating	Grocery	Water Heating	New construction	0.05	0.11	0.16	0.22	0.27
176	Pipe insulation - water heating	Grocery	Water Heating	Renovation	0.26	0.53	0.80	1.07	1.35
177 178	Tank insulation Tank insulation	Grocery	Water Heating Water Heating	Retrofit New construction	0.00 0.02	0.00 0.05	0.00 0.07	0.00 0.10	0.00 0.12
	Tank insulation	Grocery	Water Heating	Remodel/Replacment	0.26	0.51	0.77	1.03	1.30
180	Improved heating system high efficiency unit - Tier 1	Grocery	Space Heating	New construction	0.36	0.72	1.07	1.41	1.74
	Improved heating system high efficiency unit - Tier 1	Grocery	Space Heating	Remodel/Replacment	2.21	4.40	6.54	8.63	10.66
182 183	Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2	Grocery	Space Heating Space Heating	New construction Remodel/Replacment	0.05 0.32	0.11 0.64	0.16 0.97	0.21 1.30	0.27 1.63
184	Programmable Thermostat	Grocery	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
185	Programmable Thermostat	Grocery	Space Heating	Renovation	0.93	1.86	2.81	3.76	4.72
	Programmable Thermostat	Grocery	Space Heating	Remodel/Replacment	2.95	5.93	8.93	11.95	15.00
	Demand-Controlled Ventilation (controller, sensor) Demand-Controlled Ventilation (controller, sensor)	Grocery Grocery	Space Heating Space Heating	Retrofit New construction	0.00 5.60	0.00 11.06	0.00 16.38	0.00 21.54	0.00 26.56
189	Demand-Controlled Ventilation (controller, sensor) Demand-Controlled Ventilation (controller, sensor)	Grocery	Space Heating	Remodel/Replacment	58.93	116.36	172.27	226.63	279.42
190	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Grocery	Space Heating	New construction	0.04	0.07	0.10	0.14	0.17
191	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Grocery	Space Heating	Renovation	0.18	0.35	0.52	0.68	0.84
192	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Grocery	Space Heating Space Heating	New construction Renovation	0.00 0.00	0.00	0.00	0.00 0.00	0.00
100		2.000iy	-base rearing		0.00	0.00	0.00	0.00	0.00

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3			Measure Cum	ulative Gas Saving	S				
4	Results at Program Level by Measure				Cumulative NGas			of freeriders)	
	mproved below-grade insulation	Grocery	Space Heating	New construction	1.64	3.30	4.97	6.66	8.35
	mproved below-grade insulation Sensible Heat Recovery	Grocery Grocery	Space Heating Space Heating	Renovation Retrofit	8.15 0.00	16.38 0.00	24.67 0.00	33.03 0.00	41.46 0.00
	Sensible Heat Recovery	Grocery	Space Heating	New construction	2.79	5.57	8.30	10.99	13.64
	Sensible Heat Recovery	Grocery	Space Heating	Remodel/Replacment	28.42	56.74	84.62	112.04	138.99
199	Pipe insulation - space heating	Grocery	Space Heating	Retrofit	0.00 0.04	0.00 0.08	0.00 0.12	0.00 0.16	0.00 0.20
201	Pipe insulation - space heating Pipe insulation - space heating	Grocery	Space Heating Space Heating	New construction Renovation	0.20	0.40	0.60	0.80	0.20
202	Commissioning	Grocery	Total	New construction	1.29	2.59	3.88	5.16	6.43
203	Commissioning	Grocery	Total	Renovation	6.42	12.83	19.23	25.61	31.92
	Commissioning Retrocommissioning	Grocery	Total Total	Remodel/Replacment Retrofit	29.17 100.70	58.29 100.70	87.36 100.70	116.37 100.70	145.01 100.70
	ntegrated Design - High Performance (30% > codes) - Tier 1	Grocery	Total	New construction	10.87	21.71	32.54	43.33	53.99
	ntegrated Design - High Performance (50% > codes) Tier 2	Grocery	Total	New construction	0.45	0.91	1.36	1.82	2.28
	Steam trap Maintenance Dxygen Trim	Grocery	Space Heating Space Heating	Retrofit Retrofit	8.41 0.00	0.00	0.00 0.00	0.00	0.00
	Daygen Trim	Grocery	Space Heating	New construction	0.17	0.34	0.51	0.67	0.84
211	Oxygen Trim	Grocery	Space Heating	Remodel/Replacment	1.12	2.24	3.36	4.46	5.56
	nfrared Heater	Grocery	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	nfrared Heater Exhaust Hood Makeup Air	Grocery Warehouse	Space Heating Space Heating	Remodel/Replacment New construction	3.70 0.48	7.44 0.94	11.21 1.39	11.21 1.83	11.21 2.26
215	Exhaust Hood Makeup Air	Warehouse	Space Heating	Remodel/Replacment	2.93	5.78	8.56	11.26	13.89
	ligh efficiency ENERGY STAR fryer	Warehouse	Cooking	New construction	0.28	0.56	0.84	1.11	1.37
	digh efficiency ENERGY STAR fryer Pre-Rinse Spray Valve	Warehouse Warehouse	Cooking	Remodel/Replacment Retrofit	4.40 1.73	8.73 1.73	13.01 0.00	17.19 0.00	21.25 0.00
	Refrigeration heat recovery	Warehouse	Water Heating Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Refrigeration heat recovery	Warehouse	Water Heating	New construction	0.47	0.94	1.40	1.87	2.33
221	Refrigeration heat recovery	Warehouse	Water Heating	Remodel/Replacment	4.87	9.74	14.59	19.42	24.25
222	Cooling system chilled water reset	Warehouse	Cooling	Retrofit	0.00	0.00	0.00	0.00	0.00
223	Cooling system chilled water reset	Warehouse Warehouse	Cooling Cooling	New construction Remodel/Replacment	(0.00) (0.01)	(0.00)	(0.00) (0.04)	(0.00) (0.05)	(0.01) (0.07)
-	Cooling system water side economizer	Warehouse	Cooling	Retrofit	0.00	0.00	0.00	0.00	0.00
226	Cooling system water side economizer	Warehouse	Cooling	New construction	0.02	0.04	0.05	0.07	0.09
	Cooling system water side economizer Condensing DHW stand-alone	Warehouse Warehouse	Cooling Water Heating	Remodel/Replacment Retrofit	0.19 0.00	0.38 0.00	0.57 0.00	0.77 0.00	0.96 0.00
229	Condensing DHW stand-alone	Warehouse	Water Heating	New construction	0.85	1.70	2.56	3.42	4.29
230	Condensing DHW stand-alone	Warehouse	Water Heating	Remodel/Replacment	8.91	17.87	26.89	35.96	45.09
231	Faucet aerator	Warehouse	Water Heating	Retrofit	40.39	40.39	40.39	40.39	40.39
232	ndirect-fired DHW off space heating boiler ndirect-fired DHW off space heating boiler	Warehouse Warehouse	Water Heating Water Heating	Retrofit New construction	0.00 0.05	0.00 0.11	0.00 0.16	0.00 0.21	0.00 0.26
-	ndirect-fired DHW off space heating boiler	Warehouse	Water Heating	Remodel/Replacment	0.33	0.66	0.99	1.32	1.65
	nstantaneous. High-Modulating Water Heater	Warehouse	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
236	nstantaneous. High-Modulating Water Heater	Warehouse	Water Heating	New construction	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
237	nstantaneous. High-Modulating Water Heater nstantaneous. High-Modulating Water Heater	Warehouse Warehouse	Water Heating Water Heating	Renovation Remodel/Replacment	(0.00) (0.01)	(0.01) (0.02)	(0.02) (0.04)	(0.03)	(0.04) (0.08)
239	Low-flow shower heads	Warehouse	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	ow-flow shower heads	Warehouse	Water Heating	New construction	0.04	0.08	0.13	0.16	0.20
	ow-flow shower heads	Warehouse	Water Heating	Remodel/Replacment	0.67	1.33	1.97	2.60	3.22
242	Pipe insulation - water heating Pipe insulation - water heating	Warehouse Warehouse	Water Heating Water Heating	Retrofit New construction	0.00 0.04	0.00 0.07	0.00 0.11	0.00 0.14	0.00 0.18
-	Pipe insulation - water heating	Warehouse	Water Heating	Renovation	0.18	0.35	0.53	0.71	0.89
	Tank insulation	Warehouse	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
-	Tank insulation	Warehouse	Water Heating	New construction	0.02 0.17	0.03	0.05	0.07	0.08
	Fank insulation Air Sealing	Warehouse Warehouse	Water Heating Space Heating	Remodel/Replacment Retrofit	139.26	0.34 139.26	0.51 139.26	0.68 139.26	0.86 139.26
-	Air Sealing	Warehouse	Space Heating	New construction	1.77	3.54	5.30	7.06	8.82
	Air Sealing	Warehouse	Space Heating	Renovation	8.79	17.56	26.31	35.05	43.76
	mproved heating system high efficiency unit - Tier 1 mproved heating system high efficiency unit - Tier 1	Warehouse Warehouse	Space Heating Space Heating	Retrofit New construction	0.00 0.54	0.00 1.06	0.00 1.58	0.00 2.08	0.00 2.58
	mproved heating system high efficiency unit - Tier 1	Warehouse	Space Heating	Remodel/Replacment	3.27	6.50	9.66	12.75	15.75
-	mproved heating system condensing unit - Tier 2	Warehouse	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	mproved heating system condensing unit - Tier 2	Warehouse	Space Heating	New construction	0.08	0.16	0.23	0.31	0.39
	mproved heating system condensing unit - Tier 2 Programmable Thermostat	Warehouse Warehouse	Space Heating Space Heating	Remodel/Replacment Retrofit	0.47 0.00	0.95 0.00	1.43 0.00	1.91 0.00	2.40 0.00
	Programmable Thermostat	Warehouse	Space Heating	Renovation	9.26	18.59	28.01	37.50	47.07
259	Programmable Thermostat	Warehouse	Space Heating	Remodel/Replacment	29.45	59.14	89.07	119.26	149.69
	Demand-Controlled Ventilation (controller, sensor) Demand-Controlled Ventilation (controller, sensor)	Warehouse	Space Heating Space Heating	Retrofit	0.00 4.57	0.00 9.02	0.00 13.35	0.00 17.56	0.00 21.65
	Demand-Controlled Ventilation (controller, sensor) Demand-Controlled Ventilation (controller, sensor)	Warehouse Warehouse	Space Heating Space Heating	New construction Remodel/Replacment	4.57 48.05	9.02 94.88	140.47	17.56	21.65
263	ligh Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Warehouse	Space Heating	New construction	0.16	0.31	0.47	0.62	0.76
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Warehouse	Space Heating	Renovation	0.79	1.56	2.32	3.06	3.78
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Warehouse Warehouse	Space Heating Space Heating	New construction Renovation	0.00 0.00	0.00	0.00 0.00	0.00	0.00
	ngn Performance Glazing triple pane, low-E, low conductivity frame - Her 2	Warehouse	Space Heating Space Heating	New construction	0.52	1.04	1.56	2.09	2.63
268	mproved below-grade insulation	Warehouse	Space Heating	Renovation	2.56	5.15	7.75	10.38	13.03
	mproved roof insulation	Warehouse	Space Heating	New construction	1.48	2.97	4.47	5.98	7.50
	mproved roof insulation Sensible Heat Recovery	Warehouse Warehouse	Space Heating Space Heating	Renovation Retrofit	7.33 0.00	14.71 0.00	22.16 0.00	29.67 0.00	37.24 0.00
	Sensible Heat Recovery	Warehouse	Space Heating	New construction	3.11	6.21	9.25	12.25	15.20
273	Sensible Heat Recovery	Warehouse	Space Heating	Remodel/Replacment	31.67	63.23	94.30	124.85	154.89
274	Pipe insulation - space heating	Warehouse	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00 0.29
275 276	Pipe insulation - space heating Pipe insulation - space heating	Warehouse Warehouse	Space Heating Space Heating	New construction Renovation	0.06 0.30	0.12 0.60	0.18 0.89	0.24 1.18	1.46
-	Commissioning	Warehouse	Total	New construction	1.21	2.43	3.64	4.84	6.03
278	Commissioning	Warehouse	Total	Renovation	6.02	12.04	18.04	24.03	29.94
279	Commissioning	Warehouse	Total	Remodel/Replacment	27.37	54.68	81.94	109.15	136.02
	Retrocommissioning ntegrated Design - High Performance (30% > codes) - Tier 1	Warehouse Warehouse	Total Total	Retrofit New construction	94.46 10.19	94.46 20.37	94.46 30.52	94.46 40.65	94.46 50.65
	ntegrated Design - High Performance (50% > codes) Tier 2	Warehouse	Total	New construction	0.42	0.85	1.28	1.71	2.14
283	Steam trap Maintenance	Warehouse	Space Heating	Retrofit	10.96	0.00	0.00	0.00	0.00
	Oxygen Trim	Warehouse	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Oxygen Trim Oxygen Trim	Warehouse Warehouse	Space Heating Space Heating	New construction Remodel/Replacment	0.25 1.98	0.50 3.95	0.75 5.90	0.99 7.85	1.24 9.78
-	nfrared Heater	Warehouse	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	nfrared Heater		Space Heating	Remodel/Replacment	13.90	27.92	42.05	42.05	42.05

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Section of commission supplement Research Control Research Contr				Measure Cum	ulative Gas Saving	s				
200 Description of the common of the com			Education	Cooking						4 95
Section Sect										
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22 19 19 19 19 19 19 19	_									
200 American Perfect For American Company American Perfect For Ame			Education	Cooking		39.64	78.76	117.36	155.00	191.65
Second Column										
Section Company	_									
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Description for search Section Company	_									
State		Refrigeration heat recovery	Education		Remodel/Replacment	6.55	13.09	19.61	26.11	32.60
State Stat				-						
Section Sect										
200 Contenting Performance Content Con										
Sections Section Sec										
200 Control growth or mine strong Mare Integrity	308	Condensing DHW stand-alone	Education		Retrofit	0.00	0.00	0.00	0.00	0.00
201 12.01										
150 Seyment was entergeptPT										
15 September teat extraographics										
1313 Seminar from for off reace interrupt benefit Coloration Recent benefity Recent benefity										
13 December of the Cent of speec teaching Security (1997) 12.00 12.00 12.00 10.00	315	Indirect-fired DHW off space heating boiler	Education	Water Heating		0.00	0.00	0.00	0.00	0.00
13										
State Stat										
Secretarion Company	319	Instantaneous. High-Modulating Water Heater	Education	Water Heating		(0.00)	(0.01)	(0.01)	(0.02)	(0.03)
Secretary content beauth Secretary S										(0.14)
State Stat										
Section Sect	323	Low-flow shower heads		Water Heating	New construction	2.36	4.67	6.92	9.13	11.29
Section Sect										
23.27 Para Institution										
Section Description Desc	327	Pipe insulation - water heating	Education	Water Heating	Renovation					3.18
State Stat										
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See Perfect Section September Section Section September Section September Section September Section September Section September Section Section Section September Section Sectio	334									0.00
State Stat										
33 Programmatic Termenatar										
Separation Remonstrat										
349 Programmable Thermostat 66ucation 5pace Heating Renovation 6,28 12,60 19,38 25,42 31,90 33 30 33 34 34 34 34 3										
343 Benand-Controlled Verification (controlled, sensor) Education Space Heating Remortification 12.48 24.65 36.48 47.99 59.16										
345 Demand-Controlled Vertilation (controller, sensor)										
Separation Sep										
347 Salp Performance Glazing double pane, lowe, Eve conductivity frame—Tier 2 Education Space Heating New construction 141 2.84 4.27 5.70 7.41 348 High Performance Glazing triple pane, lowe, Eve conductivity frame—Tier 2 Education Space Heating New construction 7.02 14.07 21.16 28.28 35.43 349 High Performance Glazing triple pane, lowe, Eve conductivity frame—Tier 2 Education Space Heating New construction 7.02 14.07 21.16 28.28 35.43 351 Improved below-grade insulation Education Space Heating New construction 2.13 4.27 6.43 8.61 10.80 352 Sensible Heat Recovery Education Space Heating Remoration Education Space Heating Remoration 2.13 4.27 6.43 8.61 10.80 353 Sensible Heat Recovery Education Space Heating Remoration Education Space Heating Remoration 2.13 4.27 6.43 8.61 10.80 353 Sensible Heat Recovery Education Space Heating Remoration Space Heating Remoration 2.13 4.27 6.43 8.61 10.80 354 Sensible Heat Recovery Education Space Heating Remoration Space Heating New construction 0.00 0.00 0.00 0.00 0.00 0.00 357 Pope Insulation - space heating Space Heating New construction 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 358 Energy Star washer Education Space Heating New construction 0.53 1.06 1.58 0.09 0.00	345	Demand-Controlled Ventilation (controller, sensor)				133.23	263.09	389.51	512.43	631.77
348 High Performance Glazing triple pane, lowes, low conductivity frame - Tire 2 640-cation 59-ace Heating New construction 7.02 1.407 2.116 28.28 35.43 35.01										
349 High Performance Glazing triple pane, love-E, low conductivity frame - Tier 2 64ucation Space Heating New Construction 0.43 0.86 1.30 1.73 2.18 35.14 35.11 1.73 35.11 1.										
Stock Sensible Heat Recovery	349	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2		Space Heating	Renovation			21.16	28.28	35.43
Separation Space Heating Serroll* Separation Space Heating New construction Space Heating New construction Space Heating S										
Section Space Heating Remodel/Replacement Section Space Heating Remodel/Replacement Section Section										
Space Heating Space Heating Space Heating Retrofit Space Heating	353	Sensible Heat Recovery			New construction	5.19	10.37	15.46	20.47	25.39
Space Delaming Education Water Delaming Education Water Delaming Education Water Delaming Delami										
Education Mater Heating New construction 0.08 0.12 0.17 0.21 0.24 0.25 0.	356	Pipe insulation - space heating				0.11	0.21	0.32	0.42	0.52
Separate Education Mater Heating Remodel/Replacement 0.99 1.62 2.19 2.70 3.15 3.60 3.										
Education Miscellaneous Retrofit 0.00 0.0										
Second Swimming pool/spa covers Education Miscellaneous Remodel/Replacment 14,61 28.75 42.42 55.60 68.29 363 363 Commissioning Education Total New construction 15.48 30.94 46.36 61.75 76.53 365 365 Commissioning Education Total Remodel/Replacment 71.39 142.65 213.77 284.75 354.85 366 Retrocommissioning Education Total Remodel/Replacment 71.39 142.65 213.77 284.75 354.85 367 Integrated Design - High Performance (30% > codes) - Tier 1 Education Total New construction 26.60 53.14 79.62 106.04 132.12 368 Integrated Design - High Performance (50% > codes) Tier 2 Education Space Heating Retrofft 22.76 0.00 0.00 0.00 0.00 0.00 370 0.0	360	Swimming pool/spa covers	Education	Miscellaneous	Retrofit	0.00	0.00	0.00	0.00	0.00
Section Sect										
Section Sect										
Section Sec	364	Commissioning	Education	Total	Renovation	15.48	30.94	46.36	61.75	76.95
165 Integrated Design - High Performance (30% > codes) - Tier 1										
Bellegated Design - High Performance (50% > codes) Tier 2 Education Total New construction 2,88 5,77 8,67 11,58 14,49										
Space Heating Retrofit Space Heating Retrofit Space Heating Retrofit Space Heating Retrofit Space Heating	368	Integrated Design - High Performance (50% > codes) Tier 2	Education		New construction	2.88	5.77	8.67	11.58	14.49
371 Oxygen Trim										
372 Orgen Trim				.,						2.26
374 Direct fired convection range/oven Health Cooking Remodel/Replacment 29.53 58.67 87.43 115.47 142.77 375 Exhaust Hood Makeup Air Health Space Heating New construction 0.20 0.40 0.60 0.78 0.96 376 Exhaust Hood Makeup Air Health Space Heating Remodel/Replacment 1.45 2.87 4.25 5.59 6.98 377 High efficiency ENERGY STAR fyer Health Cooking New construction 4.75 9.44 14.07 18.57 22.96 378 High efficiency ENERGY STAR fyer Health Cooking Remodel/Replacment 73.65 146.35 218.07 288.00 356.11 379 High efficiency ENERGY STAR steam cooker Health Cooking Retrofit 0.00	372	Oxygen Trim	Education		Remodel/Replacment	3.42	6.82	10.21	13.58	16.92
Space Heating New construction 0.20 0.40 0.60 0.78 0.96										
Space Heating Remodel/Replacement 1.45 2.87 4.25 5.59 6.89										
378 High efficiency ENERGY STAR fryer Health Cooking Remodel/Replacment 73.65 146.35 218.07 288.00 356.11 379 High efficiency ENERGY STAR steam cooker Health Cooking Retrofft 0.00 0.00 0.00 0.00 0.00 380 High efficiency ENERGY STAR steam cooker Health Cooking New construction 0.87 1.73 2.57 3.40 4.20 381 High efficiency ENERGY STAR steam cooker Health Cooking Remodel/Replacment 10.78 21.42 31.92 42.16 52.13 382 Pre-Rinse Spray Valve Health Water Heating Retrofit 29.63 29.63 0.00 0.00 0.00	376	Exhaust Hood Makeup Air	Health	Space Heating	Remodel/Replacment	1.45	2.87	4.25	5.59	6.89
379 High efficiency ENERGY STAR steam cooker Health Cooking Retrofit 0.00 0.00 0.00 0.00 0.00 380 High efficiency ENERGY STAR steam cooker Health Cooking New construction 0.87 1.73 2.57 3.40 4.20 381 High efficiency ENERGY STAR steam cooker Health Cooking Remode/Replacement 10.78 21.42 31.92 42.16 52.13 382 Pre-Rinse Spray Valve Health Water Heating Retrofit 29.63 29.63 0.00 0.00 0.00										
380 High efficiency ENERGY STAR steam cooker Health Cooking New construction 0.87 1.73 2.57 3.40 4.20 381 High efficiency ENERGY STAR steam cooker Health Cooking Remodel/Replacment 10.78 21.42 31.92 42.16 52.13 382 Pre-Rises Spray Valve Health Water Heating Retrofit 29.63 29.63 0.00 0.00 0.00	379	High efficiency ENERGY STAR steam cooker	Health		Retrofit	0.00	0.00	0.00	0.00	0.00
382 Pre-Rinse Spray Valve Health Water Heating Retrofit 29.63 29.63 0.00 0.00 0.00										
										0.00

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3			Measure Cum	ulative Gas Saving	S				
4	Results at Program Level by Measure	l	h	la	Cumulative NGas T				4.91
	Refrigeration heat recovery Refrigeration heat recovery	Health Health	Water Heating Water Heating	New construction Remodel/Replacment	0.99 9.27	1.97 18.51	2.96 27.74	3.94 36.93	46.11
386	Cooling system chilled water reset	Health	Cooling	Retrofit	0.00	0.00	0.00	0.00	0.00
387	Cooling system chilled water reset	Health	Cooling	New construction	(0.03)	(0.07)	(0.10) (0.99)	(0.14)	(0.18) (1.69)
389	Cooling system chilled water reset Cooling system water side economizer	Health Health	Cooling Cooling	Remodel/Replacment Retrofit	(0.32) 0.00	(0.65) 0.00	0.00	(1.34) 0.00	0.00
390	Cooling system water side economizer	Health	Cooling	New construction	0.52	1.04	1.55	2.07	2.59
391	Cooling system water side economizer	Health	Cooling	Remodel/Replacment	4.92 0.00	9.84	14.76	19.69	24.62 0.00
393	Condensing DHW stand-alone Condensing DHW stand-alone	Health Health	Water Heating Water Heating	Retrofit New construction	8.33	0.00 16.72	0.00 25.15	0.00 33.64	42.17
394	Condensing DHW stand-alone	Health	Water Heating	Remodel/Replacment	79.12	158.73	238.84	319.45	400.55
395 396	Faucet aerator Graywater heat exchanger/GFX	Health	Water Heating	Retrofit	15.18 0.00	15.18 0.00	15.18 0.00	15.18 0.00	15.18 0.00
	Graywater heat exchanger/GFX Graywater heat exchanger/GFX	Health Health	Water Heating Water Heating	Retrofit New construction	0.00	0.49	0.73	0.98	1.22
398	Graywater heat exchanger/GFX	Health	Water Heating	Remodel/Replacment	1.73	3.46	5.20	6.96	8.71
	ndirect-fired DHW off space heating boiler Indirect-fired DHW off space heating boiler	Health Health	Water Heating Water Heating	Retrofit New construction	0.00 2.93	0.00 5.85	0.00 8.77	0.00 11.68	0.00 14.58
401	ndirect-fired DHW off space heating boiler	Health	Water Heating	Remodel/Replacment	16.68	33.33	49.95	66.54	83.09
402	nstantaneous. High-Modulating Water Heater	Health	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
403	nstantaneous. High-Modulating Water Heater Instantaneous. High-Modulating Water Heater	Health Health	Water Heating Water Heating	New construction Renovation	(0.01) (0.04)	(0.02) (0.10)	(0.03) (0.17)	(0.05) (0.26)	(0.07) (0.37)
405	Instantaneous. High-Modulating Water Heater	Health	Water Heating	Remodel/Replacment	(0.08)	(0.19)	(0.33)	(0.50)	(0.71)
406	Low-flow shower heads	Health	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
407	Low-flow shower heads Low-flow shower heads	Health Health	Water Heating Water Heating	New construction Remodel/Replacment	0.41 5.77	0.80 11.43	1.19 16.96	1.57 22.37	1.94 27.65
409	Pipe insulation - water heating	Health	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
410	Pipe insulation - water heating	Health	Water Heating	New construction	0.34	0.68	1.02	1.36	1.71
411	Pipe insulation - water heating Tank insulation	Health Health	Water Heating Water Heating	Renovation Retrofit	1.67 0.00	3.35 0.00	5.05 0.00	6.76 0.00	8.49 0.00
	Tank insulation	Health	Water Heating Water Heating	New construction	0.00	0.31	0.46	0.62	0.00
	Tank insulation	Health	Water Heating	Remodel/Replacment	1.45	2.92	4.39	5.88	7.38
	Air Sealing Air Sealing	Health Health	Space Heating Space Heating	Retrofit New construction	928.90 7.64	928.90 15.26	928.90 22.86	928.90 30.45	928.90 38.02
	Air Sealing	Health	Space Heating	Renovation	37.88	75.70	113.44	151.11	188.69
	mproved heating system high efficiency unit - Tier 1	Health	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	mproved heating system high efficiency unit - Tier 1	Health	Space Heating	New construction Remodel/Replacment	6.88	13.68	20.32	26.81	33.13
	mproved heating system high efficiency unit - Tier 1 mproved heating system condensing unit - Tier 2	Health Health	Space Heating Space Heating	Retrofit	37.97 0.00	75.48 0.00	112.15 0.00	147.96 0.00	182.88 0.00
422	mproved heating system condensing unit - Tier 2	Health	Space Heating	New construction	0.50	1.01	1.52	2.03	2.55
423	Improved heating system condensing unit - Tier 2	Health	Space Heating	Remodel/Replacment	2.78 0.00	5.57	8.38	11.21	14.06
424 425	Outdoor Air Reset Outdoor Air Reset	Health Health	Space Heating Space Heating	Retrofit New construction	0.75	0.00 1.49	0.00 1.48	0.00 1.46	0.00 1.42
426	Outdoor Air Reset	Health	Space Heating	Remodel/Replacment	53.31	106.24	105.46	103.82	101.30
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Health Health	Space Heating	New construction	2.31 11.47	4.58 22.73	6.81 33.78	8.99 44.61	11.09 55.06
429	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Health	Space Heating Space Heating	Renovation New construction	3.95	7.92	11.91	15.92	19.94
430	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Health	Space Heating	Renovation	19.60	39.30	59.11	79.01	98.97
431	mproved wall insulation mproved wall insulation	Health Health	Space Heating Space Heating	New construction Renovation	5.43 26.93	10.90 54.08	16.42 81.46	21.98 109.06	27.58 136.89
	Improved wait insulation	Health	Space Heating	New construction	0.24	0.48	0.72	0.96	1.21
434	mproved below-grade insulation	Health	Space Heating	Renovation	1.18	2.37	3.57	4.78	6.00
435	Sensible Heat Recovery Sensible Heat Recovery	Health Health	Space Heating Space Heating	Retrofit New construction	0.00 9.97	0.00 19.91	0.00 29.68	0.00 39.29	0.00 48.74
437	Sensible Heat Recovery	Health	Space Heating	Remodel/Replacment	91.70	183.07	273.00	361.47	448.44
438	Pipe insulation - space heating	Health	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
439	Pipe insulation - space heating Pipe insulation - space heating	Health Health	Space Heating Space Heating	New construction Renovation	0.14 0.70	0.28 1.39	0.42 2.07	0.55 2.75	0.69 3.41
	Swimming pool/spa covers	Health	Miscellaneous	Retrofit	0.00	0.00	0.00	0.00	0.00
442	Swimming pool/spa covers	Health	Miscellaneous	New construction	0.21	0.42	0.62	0.81	1.00
443	Swimming pool/spa covers	Health	Miscellaneous Total	Remodel/Replacment	5.85 5.99	11.50 11.97	16.97 17.93	22.24 23.88	27.32 29.76
445	Commissioning Commissioning	Health Health	Total	New construction Renovation	29.71	59.37	88.97	118.52	147.69
446	Commissioning	Health	Total	Remodel/Replacment	121.86	243.49	364.90	486.06	605.71
447	Retrocommissioning Integrated Design - High Performance (30% > codes) - Tier 1	Health Health	Total Total	Retrofit New construction	420.64 28.37	420.64 56.69	420.64 84.94	420.64 113.13	420.64 140.96
	ntegrated Design - High Performance (50% > codes) Tier 2	Health	Total	New construction	0.00	0.00	0.00	0.00	0.00
450	Steam trap Maintenance	Health	Space Heating	Retrofit	48.04	0.00	0.00	0.00	0.00
	Dxygen Trim Dxygen Trim	Health Health	Space Heating Space Heating	Retrofit New construction	0.00 0.57	0.00 1.14	0.00 1.71	0.00 2.27	0.00 2.83
453	Oxygen Trim	Health	Space Heating	Remodel/Replacment	5.76	11.48	17.18	22.85	28.48
	Direct fired convection range/oven	Lodging	Cooking	New construction	0.66	1.32	1.96	2.59	3.20
	Direct fired convection range/oven Exhaust Hood Makeup Air	Lodging Lodging	Cooking Space Heating	Remodel/Replacment New construction	10.28 0.04	20.42 0.08	30.43 0.13	40.19 0.16	49.69 0.20
457	Exhaust Hood Makeup Air	Lodging	Space Heating	Remodel/Replacment	0.32	0.64	0.95	1.25	1.54
	High efficiency ENERGY STAR fryer	Lodging	Cooking	New construction	1.68	3.35	4.99	6.58	8.14
	High efficiency ENERGY STAR fryer High efficiency ENERGY STAR steam cooker	Lodging Lodging	Cooking Cooking	Remodel/Replacment Retrofit	26.11 0.00	51.87 0.00	77.30 0.00	102.08 0.00	126.23 0.00
461	High efficiency ENERGY STAR steam cooker	Lodging	Cooking	New construction	0.31	0.61	0.91	1.20	1.49
	High efficiency ENERGY STAR steam cooker	Lodging	Cooking	Remodel/Replacment	3.82	7.59	11.32	14.94	18.48
	Pre-Rinse Spray Valve Refrigeration heat recovery	Lodging Lodging	Water Heating Water Heating	Retrofit Retrofit	9.75 0.00	9.75 0.00	0.00	0.00	0.00
465	Refrigeration heat recovery	Lodging	Water Heating	New construction	0.10	0.20	0.30	0.40	0.50
	Refrigeration heat recovery	Lodging	Water Heating	Remodel/Replacment	1.02	2.04	3.05	4.06	5.07
467 468	Cooling system chilled water reset Cooling system chilled water reset	Lodging Lodging	Cooling Cooling	Retrofit New construction	0.00 (0.01)	0.00 (0.02)	0.00 (0.02)	0.00 (0.03)	0.00 (0.04)
469	Cooling system chilled water reset	Lodging	Cooling	Remodel/Replacment	(0.08)	(0.17)	(0.26)	(0.34)	(0.44)
	Cooling system water side economizer	Lodging	Cooling	Retrofit	0.00	0.00	0.00	0.00	0.00
	Cooling system water side economizer Cooling system water side economizer	Lodging Lodging	Cooling Cooling	New construction Remodel/Replacment	0.12 1.27	0.24 2.54	0.36 3.81	0.48 5.08	0.60 6.35
473	Condensing DHW stand-alone	Lodging	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
474	Condensing DHW stand-alone	Lodging	Water Heating	New construction	2.54	5.10	7.67	10.26	12.86
475 476	Condensing DHW stand-alone Faucet aerator	Lodging Lodging	Water Heating Water Heating	Remodel/Replacment Retrofit	26.92 5.00	54.02 5.00	81.28 5.00	108.72 5.00	136.32 5.00
	Graywater heat exchanger/GFX	Lodging	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Graywater heat exchanger/GFX	Lodging	Water Heating	New construction	0.74	1.49	2.24	2.99	3.74

A	29.74
A Results at Program Level by Measure	29.74
Sequence Sequence	29.74
1855 Indirect devil DWF off gene hesting belief 1866 Indirect devil DWF off gene hesting belief 1867 Indirect devil DWF off gene hesting belief 1867 Indirect devil DWF off gene hesting belief 1868 Indirect devil DWF off gene hesting belief 1868 Indirect devil DWF off gene hesting belief 1869 Indirect devil DWF off gene hesting devil DWF off gene hest	
Section Comparison Configure Confi	
Section Comparison Compar	
685 Lone flow shower heads	
ABS Page Installation water heading Codging Water Heating Remode/Replacement 19.02 37.64 55.87 73.4	
1885 Pipe insulation - water heating	
1857 Pipe Installation - water healting	
1889 Trais Institutation	0.52
1807 Tank insulation	
1937 Art Institution	
1935 Air Sealing	
1949 Improved heating system high efficiency unit - Tier 1 Lodging Space Nearing New construction 0.45 0.89 1.33 1.15	
## ## ## ## ## ## ## #	
1989 Programmable Thermostat Lodging Space Heating Remodel/Replacement 1.04 2.04 2.2	
1999 Programmable Thermostat	
Doubloor Air Reset	
	0.00
518 Pipe insulation - space heating Lodging Space Heating Retrofit	
Energy Star washer	
522 swimming pool/spa covers Lodging Miscellaneous Retrofit 0.00 0.00 0.00 0.00 523 Swimming pool/spa covers Lodging Miscellaneous New construction 0.48 0.94 1.39 1.1 524 Swimming pool/spa covers Lodging Miscellaneous Remodel/Replacement 14,60 28,73 42,39 55.5 525 Commissioning Lodging Total New construction 1.71 3.42 5.12 6.1 526 Commissioning Lodging Total Remodel/Replacement 84.9 16.96 25.41 33. 527 Commissioning Lodging Total Remodel/Replacement 38.85 77.62 116.32 154.1 528 Interprated Design - High Performance (30% > codes) - Tier 1 Lodging Total New construction 14.47 28.91 43.40 134.09 134.09 134.09 134.09 134.09 134.09 134.09 134.09 134.09 134.09 134.09 <	0.20
Summing pool/spa covers	
Edging Miscellaneous Remodel/Replacment 14.60 28.73 42.39 55.525 Commissioning Lodging Total New construction 8.49 16.96 25.41 33.35 35.526 Commissioning Lodging Total Remodel/Replacment 38.85 77.62 116.32 154.528 Retrocommissioning Lodging Total Remodel/Replacment 38.85 77.62 116.32 154.528 Retrocommissioning Lodging Total Remodel/Replacment 14.47 28.91 134.09	
525 Commissioning Lodging Total New construction 1.71 3.42 5.12 6.1 526 Commissioning Lodging Total Renovation 8.49 16.96 25.41 33. 527 Commissioning Lodging Total Remodel/Replacement 38.85 77.62 116.32 154. 528 Retrocommissioning Lodging Total Retrofit 134.09	
528 Retrocommissioning Lodging Total Retrofit 134.09 134.00 136.00 136.00	
529 Integrated Design - High Performance (30% > codes) - Tier 1 Lodging Total New construction 14.47 28.91 43.32 57. 530 Integrated Design - High Performance (50% > codes) Tier 2 Lodging Total New construction 1.09 2.17 3.27 4. 531 Steam trap Maintenance Lodging Space Heating Retrofit 13.68 0.00	
532 Oxygen Trim Lodging Space Heating Retrofit 0.00 0.00 0.00 0.00 533 Oxygen Trim Lodging Space Heating New construction 0.15 0.30 0.46 0.1 534 Oxygen Trim Lodging Space Heating Remodel/Replacment 1.58 3.14 4.70 6.5 535 Direct fired convection range/oven Restaurant Cooking New construction 3.30 6.55 9.76 12.1 537 Exhaust Hood Makeup Air Restaurant Restaurant Space Heating New construction 2.13 4.21 6.24 8.3	
533 Oxygen Trim Lodging Space Heating New construction 0.15 0.30 0.46 0.1 534 Oxygen Trim Lodging Space Heating Remodel/Replacement 1.58 3.14 4.70 6. 535 Direct fired convection range/oven Restaurant Cooking New construction 3.30 6.55 9.76 12.1 536 Direct fired convection range/oven Restaurant Restaurant Soking Remodel/Replacement 51.11 101.56 151.33 199.3 537 Exhaust Hood Makeup Air Restaurant New construction 2.13 4.21 6.24 8.2	
534 Oxygen Trim Lodging Space Heating Remodel/Replacment 1.58 3.14 4.70 6.3 535 Direct fired convection range/oven Restaurant Cooking New construction 3.30 6.55 9.76 12.1 536 Direct fired convection range/oven Restaurant Cooking Remodel/Replacment 51.11 101.56 151.33 199.9 537 Exhaust Hood Makeup Air Restaurant Research acting New construction 2.13 4.21 6.24 8.3	
535 Direct fired convection rangeloven Restaurant Cooking New construction 3.30 6.55 9.76 12. 536 Direct fired convection rangeloven Restaurant Cooking New construction 51.11 101.56 151.33 199.1 537 Exhaust Hood Makeup Air Restaurant Reservant New construction 2.13 4.21 6.24 8.3	
537 Exhaust Hood Makeup Air Restaurant Space Heating New construction 2.13 4.21 6.24 8.	15.93
12.01 Extract root managers.	
539 High efficiency ENERGY STAR fryer Restaurant Cooking New construction 8.22 16.34 24.34 32.	
540 High efficiency ENERGY STAR fryer Restaurant Cooking Remodel/Replacment 127.48 253.30 377.45 498.	616.37
541 High efficiency ENERGY STAR steam cooker Restaurant Cooking Retrofit 0.00 0.00 0.00 0.01 542 High efficiency ENERGY STAR steam cooker Restaurant Cooking New construction 1.50 2.99 4.45 5.1	
542 High efficiency ENERGY STAR steam cooker Restaurant Cooking New construction 1.50 2.99 4.45 5.1 543 High efficiency ENERGY STAR steam cooker Restaurant Cooking Remodel/Replacment 18.66 37.08 55.25 72.1	
544 Pre-Rinse Spray Valve Restaurant Water Heating Retrofit 282.93 282.93 0.00 0.1	0.00
546 Refrigeration heat recovery Restaurant Water Heating New construction 11.58 23.13 34.65 46. 547 Refrigeration heat recovery Restaurant Water Heating Remodel/Replacment 98.52 196.82 294.87 392.1	
C-9-77 (Peringui adunt neutrous) Restaulariant Vaccining a Notice (Peringui adunt neutrous) 95.22 199.02 299.01 392.1 5-48 [Cooling system chilled water reset Restaulariant Cooling Retrofield 0.00 <	
549 Cooling system chilled water reset Restaurant Cooling New construction (0.03) (0.05) (0.08) (0.08)	(0.13)
S50 Cooling system chilled water reset Restaurant Cooling Remodel/Replacment (0.24) (0.48) (0.73) (0.75) (0.7	
551 Cooling system water side economizer Restaurant Cooling Retrofit 0.00 0.00 0.00 0.00 552 Cooling system water side economizer Restaurant Cooling New construction 0.38 0.76 1.14 1.1	
553 Cooling system water side economizer Restaurant Cooling Remodel/Replacment 3.62 7.24 10.86 14.	18.12
554 Condensing DHW stand-alone Restaurant Water Heating Retrofit 0.00 0.00 0.00 0.00	
555 Condensing DHW stand-alone Restaurant Water Heating New construction 4.29 8.62 12.96 17.3 556 Condensing DHW stand-alone Restaurant Water Heating Remodel/Replacment 40.77 81.80 123.08 164.0	
Generating Gen	
558 Graywater heat exchanger/GFX Restaurant Water Heating Retrofit 0.00 0.00 0.00 0.00	0.00
560 Graywater heat exchanger/GFX Restaurant Water Heating Remodel/Replacment 22.73 45.58 68.56 91.1 561 Indirect-fired DHW off space heating boiler Restaurant Water Heating Retrofit 0.00 0.00 0.00 0.00	
See Indirect-field DHW of space heating boiler Restaurant Water Heating New Construction 0.67 1.34 2.01 2.1	
563 Indirect-fired DHW off space heating boiler Restaurant Water Heating Remodel/Replacment 3.83 7.65 11.46 15.	19.07
565 Pipe insulation - water heating Restaurant Water Heating New construction 0.18 0.36 0.54 0.7 566 Pipe insulation - water heating Restaurant Water Heating Renovation 0.88 1.77 2.66 3.3	
567 Tank insulation Restaurant Water Heating Retrofit 0.00 0.00 0.00 0.0	
568 Tank insulation Restaurant Water Heating New construction 0.08 0.16 0.24 0.3	0.41
Sept	
570 Air Sealing Restaurant Space Heating Retrofit 325.22 <td></td>	
573 Improved heating system high efficiency unit - Tier 1 Restaurant Space Heating New construction 0.68 1.35 2.01 2.0	

1	A	С		E conomic Potential	F	G	Н	ı	J
3			Measure Cun	nulative Gas Saving	S				
	Results at Program Level by Measure	la	la u u	ا بسیا	Cumulative NGas T				40.07
	Improved heating system high efficiency unit - Tier 1 Improved heating system condensing unit - Tier 2	Restaurant Restaurant	Space Heating Space Heating	Remodel/Replacment New construction	3.75 0.10	7.46 0.20	11.08 0.30	14.62 0.40	18.07 0.50
	Improved heating system condensing unit - Tier 2	Restaurant	Space Heating	Remodel/Replacment	0.54	1.09	1.64	2.19	2.75
577	Programmable Thermostat	Restaurant	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
578 579	Programmable Thermostat Programmable Thermostat	Restaurant Restaurant	Space Heating Space Heating	Renovation Remodel/Replacment	1.79 5.13	3.59 10.29	5.40 15.51	7.23 20.76	9.08 26.06
	Demand-Controlled Ventilation (controller, sensor)	Restaurant	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Demand-Controlled Ventilation (controller, sensor)	Restaurant	Space Heating	New construction	6.14	12.13	17.96	23.62	29.12
	Demand-Controlled Ventilation (controller, sensor) High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Restaurant Restaurant	Space Heating Space Heating	Remodel/Replacment New construction	58.32 1.14	115.16 2.25	170.50 3.34	224.30 4.41	276.54 5.45
584	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Restaurant	Space Heating	Renovation	5.63	11.16	16.59	21.90	27.03
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Restaurant	Space Heating	New construction	2.01	4.03	6.05	8.09	10.13
586	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Restaurant	Space Heating	Renovation New construction	9.96	19.97	30.04	40.15	50.29
	Improved below-grade insulation Improved below-grade insulation	Restaurant Restaurant	Space Heating Space Heating	Renovation	0.58 2.87	1.16 5.76	1.75 8.67	2.34 11.61	2.94 14.57
	Sensible Heat Recovery	Restaurant	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Sensible Heat Recovery	Restaurant	Space Heating	New construction	7.67	15.31	22.83	30.22	37.49
591 592	Sensible Heat Recovery Pipe insulation - space heating	Restaurant Restaurant	Space Heating Space Heating	Remodel/Replacment Retrofit	70.52 0.00	140.80 0.00	209.96 0.00	278.00 0.00	344.89 0.00
593	Pipe insulation - space heating	Restaurant	Space Heating	New construction	0.08	0.15	0.23	0.30	0.37
594	Pipe insulation - space heating	Restaurant	Space Heating	Renovation	0.38	0.76	1.13	1.49	1.85
	Commissioning Commissioning	Restaurant Restaurant	Total Total	New construction Renovation	4.28 21.24	8.56 42.44	12.82 63.60	17.07 84.72	21.27 105.58
	Commissioning	Restaurant	Total	Remodel/Replacment	87.11	174.07	260.86	347.47	433.00
598	Retrocommissioning	Restaurant	Total	Retrofit	300.70	300.70	300.70	300.70	300.70
	Integrated Design - High Performance (30% > codes) - Tier 1	Restaurant	Total	New construction	20.28	40.52	60.72	80.87	100.77
	Integrated Design - High Performance (50% > codes) Tier 2 Steam trap Maintenance	Restaurant Restaurant	Total Space Heating	New construction Retrofit	0.00 15.00	0.00	0.00	0.00	0.00
	Oxygen Trim	Restaurant	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
603	Oxygen Trim	Restaurant	Space Heating	New construction	0.29	0.57	0.85	1.14	1.42
	Oxygen Trim Exhaust Hood Makeup Air	Restaurant Other	Space Heating Space Heating	Remodel/Replacment New construction	2.07 0.03	4.13 0.05	6.17 0.08	8.21 0.10	10.23 0.13
	Exhaust Hood Makeup Air	Other	Space Heating	Remodel/Replacment	0.23	0.46	0.68	0.90	1.10
	High efficiency ENERGY STAR fryer	Other	Cooking	New construction	1.68	3.33	4.97	6.56	8.11
	High efficiency ENERGY STAR fryer High efficiency ENERGY STAR steam cooker	Other	Cooking	Remodel/Replacment	26.00 0.00	51.67 0.00	76.99 0.00	101.68 0.00	125.73 0.00
	High efficiency ENERGY STAR steam cooker High efficiency ENERGY STAR steam cooker	Other Other	Cooking Cooking	Retrofit New construction	0.00	0.30	0.45	0.60	0.00
	High efficiency ENERGY STAR steam cooker	Other	Cooking	Remodel/Replacment	1.90	3.78	5.64	7.44	9.20
	Pre-Rinse Spray Valve	Other	Water Heating	Retrofit	1.70	1.70	0.00	0.00	0.00
	Refrigeration heat recovery Refrigeration heat recovery	Other Other	Water Heating Water Heating	Retrofit New construction	0.00 0.01	0.00 0.02	0.00 0.04	0.00 0.05	0.00
	Refrigeration heat recovery	Other	Water Heating	Remodel/Replacment	0.15	0.30	0.45	0.59	0.74
	Cooling system chilled water reset	Other	Cooling	Retrofit	0.00	0.00	0.00	0.00	0.00
	Cooling system chilled water reset	Other	Cooling	New construction	(0.00) (0.04)	(0.01) (0.08)	(0.01) (0.11)	(0.01) (0.15)	(0.01) (0.19)
_	Cooling system chilled water reset Cooling system water side economizer	Other Other	Cooling Cooling	Remodel/Replacment Retrofit	0.00	0.00	0.00	0.00	0.00
620	Cooling system water side economizer	Other	Cooling	New construction	0.04	0.09	0.13	0.17	0.22
	Cooling system water side economizer	Other	Cooling	Remodel/Replacment	0.57 0.00	1.13 0.00	1.70 0.00	2.27 0.00	2.84 0.00
	Condensing DHW stand-alone Condensing DHW stand-alone	Other Other	Water Heating Water Heating	Retrofit New construction	0.70	1.40	2.11	2.82	3.54
	Condensing DHW stand-alone	Other	Water Heating	Remodel/Replacment	9.12	18.30	27.53	36.82	46.17
	Faucet aerator	Other	Water Heating	Retrofit	8.92	8.92	8.92	8.92	8.92
	Graywater heat exchanger/GFX Graywater heat exchanger/GFX	Other	Water Heating Water Heating	Retrofit Remodel/Replacment	0.00 1.33	0.00 2.68	0.00 4.02	0.00 5.38	0.00 6.74
	Indirect-fired DHW off space heating boiler	Other	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
629	Indirect-fired DHW off space heating boiler	Other	Water Heating	New construction	0.13	0.27	0.40	0.53	0.66
	Indirect-fired DHW off space heating boiler	Other Other	Water Heating Water Heating	Remodel/Replacment Retrofit	1.04 0.00	2.08 0.00	3.12 0.00	4.16 0.00	5.19 0.00
	Instantaneous. High-Modulating Water Heater Instantaneous. High-Modulating Water Heater	Other	Water Heating	New construction	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
	Instantaneous. High-Modulating Water Heater	Other	Water Heating	Renovation	(0.00)	(0.01)	(0.01)	(0.02)	(0.03)
	Instantaneous. High-Modulating Water Heater	Other	Water Heating	Remodel/Replacment	(0.01)	(0.02)	(0.04)	(0.06)	(0.08)
635 636	Low-flow shower heads Low-flow shower heads	Other Other	Water Heating Water Heating	Retrofit New construction	0.00 0.22	0.00 0.44	0.00 0.66	0.00 0.86	0.00 1.07
	Low-flow shower heads	Other	Water Heating	Remodel/Replacment	4.37	8.64	12.83	16.92	20.92
	Pipe insulation - water heating	Other	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Pipe insulation - water heating Pipe insulation - water heating	Other Other	Water Heating Water Heating	New construction Renovation	0.03 0.14	0.06 0.29	0.09 0.43	0.12 0.58	0.15 0.72
	Tank insulation	Other	Water Heating Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
642	Tank insulation	Other	Water Heating	New construction	0.01	0.03	0.04	0.05	0.07
	Tank insulation	Other	Water Heating	Remodel/Replacment	0.17	0.34	0.52	0.69	0.87
	Air Sealing Air Sealing	Other Other	Space Heating Space Heating	Retrofit New construction	134.99 0.94	134.99 1.88	134.99 2.82	134.99 3.75	134.99 4.68
646	Air Sealing	Other	Space Heating	Renovation	4.67	9.33	13.98	18.62	23.25
	Improved heating system high efficiency unit - Tier 1	Other	Space Heating	New construction	0.24	0.47	0.70	0.93	1.15
	Improved heating system high efficiency unit - Tier 1 Improved heating system condensing unit - Tier 2	Other Other	Space Heating Space Heating	Remodel/Replacment New construction	1.81 0.04	3.60 0.08	5.34 0.12	7.05 0.16	8.71 0.20
	Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2	Other	Space Heating Space Heating	Remodel/Replacment	0.30	0.61	0.12	1.22	1.53
651	Programmable Thermostat	Other	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
	Programmable Thermostat	Other	Space Heating	Renovation	0.36	0.73	1.09	1.46	1.84
	Programmable Thermostat Demand-Controlled Ventilation (controller, sensor)	Other Other	Space Heating Space Heating	Remodel/Replacment Retrofit	1.43 0.00	2.87 0.00	4.32 0.00	5.78 0.00	7.26 0.00
	Demand-Controlled Ventilation (controller, sensor)	Other	Space Heating	New construction	0.68	1.35	1.99	2.62	3.23
	Demand-Controlled Ventilation (controller, sensor)	Other	Space Heating	Remodel/Replacment	8.90	17.57	26.01	34.22	42.18
	Outdoor Air Reset High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Other	Space Heating Space Heating	Retrofit New construction	0.00 0.19	0.00 0.37	0.00 0.55	0.00 0.73	0.00 0.90
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Other	Space Heating Space Heating	Renovation	0.19	1.84	2.74	3.62	4.47
660	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Other	Space Heating	New construction	0.35	0.70	1.05	1.40	1.75
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Other	Space Heating	Renovation	1.72	3.46	5.20	6.95	8.71
	Improved below-grade insulation Improved below-grade insulation	Other Other	Space Heating Space Heating	New construction Renovation	0.08 0.39	0.16 0.78	0.24 1.18	0.32 1.58	0.40 1.98
	Sensible Heat Recovery	Other	Space Heating Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
665	Sensible Heat Recovery	Other	Space Heating	New construction	0.91	1.81	2.69	3.57	4.43
666	Sensible Heat Recovery	Other	Space Heating	Remodel/Replacment	11.45	22.85	34.08	45.12	55.98
	Pipe insulation - space heating Pipe insulation - space heating	Other Other	Space Heating Space Heating	Retrofit New construction	0.00 0.02	0.00 0.03	0.00 0.05	0.00 0.06	0.00 0.08
550	,	,	_ ,outg		3.02	0.00	0.00	0.00	0.00

Part	1	Α	С	D Downstate E	E conomic Potential	F	G	Н	I	J
Company						ıs				
The content of the			Other	Space Heating	Renovation					0.38
Column	670	Energy Star washer	Other	Water Heating	New construction	0.01	0.01	0.01	0.01	0.02
Column C										
The contractions										
The contractions Contract C	_									
Column										
College Description Processor Proc	677	Commissioning								
Column Proceedings Table Proceedings Table Proceedings Table T		-								
Section Control Cont	680	Integrated Design - High Performance (50% > codes) Tier 2	Other	Total	New construction	4.27	8.55	12.85	17.15	21.47
Section Column										
Column C	683	Oxygen Trim								0.41
Column Teach Tea										
Section Sect										
Color										
Section Content Cont										
Column Section Secti	690	Graywater heat exchanger/GFX		Water Heating						
Marchanner Mar										
2005 Pays Institution, wear Inching Marchardy Parce Hearing New Contentions 1,37 2,77 4,30 5,67 7,58	693	Low-flow shower heads	Multifamily	Water Heating		67.41	133.45	198.06	261.24	322.96
Big Page Internation I										
Column										
1.70 3.33 5.32 7.12 8.93 7.10 8.94 7.10 9.94 7.10 9.94 7.10 9.94 7.10 9.94 7.10 9.94	697	Tank insulation	Multifamily	Water Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
1,981.86 1,981.86										
The standing of the standing system ship efficiency part. The 1 Multilansy, gazen Relating was construction 17.5 146.38 22.786 70.44 87.787 70.65 70.65 70.44 87.787 70.65 70.65 70.44 87.787 70.65 70.65 70.44 87.787 70.65 70.65 70.44 87.787 70.65 70.65 70.65 70.44 87.787 70.65	700	Air Sealing	Multifamily	Space Heating	Retrofit	1,981.86	1,981.86	1,981.86	1,981.86	1,981.86
Total purposed bending systems (pight defining out = Text	_									
Tool Proposed harding system condensing unit. Time 2 Mutitations Space National State Mutitations Space National State Space National State National State National N										
No.										
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Top Programmate Thermountal Muniform Space Nesting Remorded Replacement 1,944 21.97 33.10 44.31 55.62 77.11 Control Ar Researt Muniform Space Nesting Space Nesting Space Nesting Control Ar Researt Control Ar Research Control Ar			Multifamily	Space Heating	Retrofit	0.00	0.00	0.00	0.00	0.00
To Disclose Air Reset										
17.2 Dischool Air Reset	710	Outdoor Air Reset	Multifamily	Space Heating		0.00	0.00	0.00	0.00	0.00
73 Styles Performance Classing double game, low-E, low consciouting frame - Tar Multimary Space Heating Recovering classing double game, low-E, low conductivity frame - Tar Multimary Recovering Recov						4				
715 Step Performance Clasmy pripie pare, loved, low conductivity frame - Tar 2 Multifamily Space Intenting Resourcing										
Till Steph Performance Glazeng prisp pene, love E, low conductivity frame - Tot 2 Multifamily Space Intenting New Construction 4.52 9.15 13.89 18.76 23.75 7.18 Improved for Insulation Multifamily Space Intenting New Construction 5.99 12.02 18.11 24.25 30.44 30.77										
Trigonometric institution										
Tig Sensible Near Recovery	717	Improved roof insulation	Multifamily	Space Heating	New construction	4.52	9.15	13.89		23.75
200 Seasable Heat Recovery										
Table Tabl	720	Sensible Heat Recovery	Multifamily		New construction	55.85	112.43	169.07	225.72	282.35
723 Pipe insusation - space heating										
725 Energy Star washer										
Table Design Start weather										
Note Commission Note Commission Note No										
Multifamily Multifamily Multifamily Multifamily Total New Construction All 0.8 81.29 12.82 162.27 202.27	727	Swimming pool/spa covers	Multifamily	Miscellaneous						
Total New construction Substituting Total New construction Substituting Total Substituting Subst										
Second	730	Commissioning	Multifamily			30.68	61.83	93.43	125.51	157.72
Add Set Commission Comm										
Total New construction September High Performance (30% > codes) - Tier 1 Multifamily Total New construction 19.46 39.32 59.57 80.23 101.31			Multifamily			642.75	642.75	642.75	642.75	642.75
Space Heating Space Heating Retrofit Space Heating Retrofit Space Heating Retrofit Space Heating Retrofit Space Heating										
Topic Composition Multifamily Space Heating Retrofit Space Heating Space Heating Retrofit Space Heating Retrofit Space Heating Retrofit Space Heating Retrofit Space Heating Retro	736	Steam trap Maintenance								
17.34 34.58 51.74 68.80 85.76 1234			Multifamily	Space Heating		0.00		0.00		
1234										
1236 1237 1238 1239 1240 1241 1242 1243 1244 1244 1244 1246 1246 1247 1248 1249 1250 1250 1250 1251 1252 1253 1254 1254 1255 1254 1256	1234			,	,]			**	
1237 1238 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1251 1252 1253 1254 1255 1256										
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1256	1254									

	A	С	D	E	F	G
1	Downstate Cor	nmercial N	easures	•		
2	Total Resource Cost Test Benefit/	Cost Ratio	and Levelized C	ost of Saved Energy		
3						
4		Measure	1		7	
		ID4		Measure ID6	Total	TRC Levelized
_		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	Cost per Saved
_	Measure Name	type)	(e.g., End Use)	ROB)	BCR	Therm (\$/Therm)
	Exhaust Hood Makeup Air	Office	Space Heating	New construction	16.55 21.24	(0.43)
	Exhaust Hood Makeup Air	Office	Space Heating	Remodel/Replacment	21.24	(0.46) 0.44
	High efficiency ENERGY STAR fryer High efficiency ENERGY STAR fryer	Office Office	Cooking Cooking	New construction Remodel/Replacment	2.06	0.44
	Pre-Rinse Spray Valve	Office	Water Heating	Retrofit	34.30	0.00
	Refrigeration heat recovery	Office	Water Heating	Retrofit	3.49	0.51
	Refrigeration heat recovery	Office	Water Heating	New construction	2.80	0.31
	Refrigeration heat recovery	Office	Water Heating	Remodel/Replacment	3.57	0.23
	Cooling system chilled water reset	Office	Cooling	Retrofit	1.87	1.01
	Cooling system chilled water reset	Office	Cooling	New construction	1.46	0.56
16	Cooling system chilled water reset	Office	Cooling	Remodel/Replacment	1.89	0.46
17	Cooling system water side economizer	Office	Cooling	Retrofit	1.54	0.65
18	Cooling system water side economizer	Office	Cooling	New construction	1.26	0.49
19	Cooling system water side economizer	Office	Cooling	Remodel/Replacment	1.55	0.29
20	Condensing DHW stand-alone	Office	Water Heating	Retrofit	3.13	0.69
	Condensing DHW stand-alone	Office	Water Heating	New construction	3.88	0.25
22	Condensing DHW stand-alone	Office	Water Heating	Remodel/Replacment	5.01	0.19
	Faucet aerator	Office	Water Heating	Retrofit	6.05	(2.96)
24	Indirect-fired DHW off space heating boiler	Office	Water Heating	Retrofit	2.70	0.92
	Indirect-fired DHW off space heating boiler	Office	Water Heating	New construction	2.87	0.34
_	Indirect-fired DHW off space heating boiler	Office	Water Heating	Remodel/Replacment	3.70	0.26
	Instantaneous. High-Modulating Water Heater	Office	Water Heating	Retrofit	3.00	0.73
	Instantaneous. High-Modulating Water Heater	Office	Water Heating	New construction	6.59	0.15
	Instantaneous. High-Modulating Water Heater	Office	Water Heating	Renovation	6.59	0.15
	Instantaneous. High-Modulating Water Heater	Office	Water Heating	Remodel/Replacment	8.51	0.11
31	Low-flow shower heads	Office	Water Heating	Retrofit	36.80	(2.29)
	Low-flow shower heads	Office	Water Heating	New construction	21.25	(0.99)
	Low-flow shower heads	Office	Water Heating	Remodel/Replacment	27.43 25.77	(1.01) 0.08
	Pipe insulation - water heating	Office Office	Water Heating	Retrofit	20.30	0.05
	Pipe insulation - water heating Pipe insulation - water heating	Office	Water Heating Water Heating	New construction Renovation	20.30	0.05
	Tank insulation	Office	Water Heating	Retrofit	1.90	1.11
-	Tank insulation	Office	Water Heating	New construction	1.50	0.65
	Tank insulation	Office	Water Heating	Remodel/Replacment	1.93	0.50
	Air Sealing	Office	Space Heating	Retrofit	6.60	(0.21)
_	Air Sealing	Office	Space Heating	New construction	3.85	0.13
	Air Sealing	Office	Space Heating	Renovation	3.85	0.13
43	Improved heating system high efficiency unit - Tier 1	Office	Space Heating	New construction	1.03	1.56
	Improved heating system high efficiency unit - Tier 1	Office	Space Heating	Remodel/Replacment	1.29	1.29
	Improved heating system condensing unit - Tier 2	Office	Space Heating	New construction	1.03	1.56
	Improved heating system condensing unit - Tier 2	Office	Space Heating	Remodel/Replacment	1.29	1.25
	Programmable Thermostat	Office	Space Heating	Retrofit	3.08	0.98
48	Programmable Thermostat	Office	Space Heating	Renovation	1.99	0.75
49	Programmable Thermostat	Office	Space Heating	Remodel/Replacment	2.57	0.56
50	Demand-Controlled Ventilation (controller, sensor)	Office	Space Heating	Retrofit	7.96	0.23
51	Demand-Controlled Ventilation (controller, sensor)	Office	Space Heating	New construction	6.83	0.14
	Demand-Controlled Ventilation (controller, sensor)	Office	Space Heating	Remodel/Replacment	8.05	0.10
	Outdoor Air Reset	Office	Space Heating	Retrofit	2.18	1.57
	Outdoor Air Reset	Office	Space Heating	New construction	1.21	1.39
	Outdoor Air Reset	Office	Space Heating	Remodel/Replacment	1.56	1.08
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Office	Space Heating	New construction	9.10	(0.13)
_	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Office	Space Heating	Renovation	9.10	(0.13)
_	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Office	Space Heating	New construction	1.47	1.00
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Office	Space Heating	Renovation	1.47	1.00
	Improved below-grade insulation	Office	Space Heating	New construction	2.55	0.63
	Improved below-grade insulation	Office	Space Heating	Renovation	2.55	0.63
	Pipe insulation - space heating	Office	Space Heating	Retrofit	74.47	0.05
	Pipe insulation - space heating	Office	Space Heating	New construction	59.45	0.03
	Pipe insulation - space heating	Office	Space Heating	Renovation New construction	59.45 4.13	0.03
	Commissioning	Office	Total	New construction	4.13	(1.97) (1.97)
	Commissioning Commissioning	Office Office	Total Total	Renovation Remodel/Replacment	5.34	(2.23)
	Retrocommissioning	Office	Total	Retrofit	6.88	(1.83)
	Integrated Design - High Performance (30% > codes) - Tier 1	Office	Total	New construction	2.41	0.00
	Integrated Design - High Performance (30% > codes) - Her 1 Integrated Design - High Performance (50% > codes) Tier 2	Office	Total	New construction	2.41	0.00 Dow
	micgrated besign - migh renormance (50% > COUCS) Hel Z	Jille	i vlai	INCW CONSTRUCTION	2.41	U.UU UU W

	A	С	D	E	F	G
1	Downstate Con	nmercial M	easures	•		
2	Total Resource Cost Test Benefit/	Cost Ratio	and Levelized Co	st of Saved Energy		
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		Measure ID4		Measure ID6	Total	TRC Levelized
		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	Cost per Save
	Measure Name	type)	(e.g., End Use)	ROB)		Therm (\$/Therm
_	Steam trap Maintenance	Office	Space Heating	Retrofit	3.44	0.48
_	Oxygen Trim	Office	Space Heating	Retrofit	47.39	0.08
_	Oxygen Trim	Office	Space Heating	New construction	68.26	0.02
	Oxygen Trim	Office	Space Heating	Remodel/Replacment	62.00	0.03
	Direct fired convection range/oven	Retail	Cooking	New construction	3.21	0.28
_	Direct fired convection range/oven	Retail	Cooking	Remodel/Replacment	3.21 15.51	0.28 (0.28)
	Exhaust Hood Makeup Air Exhaust Hood Makeup Air	Retail Retail	Space Heating	New construction	17.60	(0.28)
	High efficiency ENERGY STAR fryer	Retail	Space Heating Cooking	Remodel/Replacment New construction	2.06	0.44
	High efficiency ENERGY STAR fryer	Retail	Cooking	Remodel/Replacment	2.06	0.44
	High efficiency ENERGY STAR steam cooker	Retail	Cooking	Retrofit	1.06	1.57
	High efficiency ENERGY STAR steam cooker	Retail	Cooking	New construction	13.50	(2.23)
	High efficiency ENERGY STAR steam cooker	Retail	Cooking	Remodel/Replacment	13.50	(2.23)
	Pre-Rinse Spray Valve	Retail	Water Heating	Retrofit	35.52	0.00
	Refrigeration heat recovery	Retail	Water Heating	Retrofit	3.54	0.50
	Refrigeration heat recovery	Retail	Water Heating	New construction	2.84	0.30
	Refrigeration heat recovery	Retail	Water Heating	Remodel/Replacment	3.63	0.22
88	Cooling system chilled water reset	Retail	Cooling	Retrofit	1.84	1.03
89 (Cooling system chilled water reset	Retail	Cooling	New construction	1.44	0.57
90	Cooling system chilled water reset	Retail	Cooling	Remodel/Replacment	1.86	0.47
91 (Cooling system water side economizer	Retail	Cooling	Retrofit	1.55	0.63
	Cooling system water side economizer	Retail	Cooling	New construction	1.26	0.49
	Cooling system water side economizer	Retail	Cooling	Remodel/Replacment	1.56	0.29
	Condensing DHW stand-alone	Retail	Water Heating	Retrofit	3.14	0.69
	Condensing DHW stand-alone	Retail	Water Heating	New construction	3.88	0.25
_	Condensing DHW stand-alone	Retail	Water Heating	Remodel/Replacment	5.01	0.19
	Faucet aerator	Retail	Water Heating	Retrofit	19.05	(3.65)
	Indirect-fired DHW off space heating boiler	Retail	Water Heating	Retrofit	2.71	0.92
	Indirect-fired DHW off space heating boiler	Retail	Water Heating	New construction	2.87	0.34
	Indirect-fired DHW off space heating boiler	Retail	Water Heating	Remodel/Replacment	3.70 3.02	0.26
	Instantaneous. High-Modulating Water Heater Instantaneous. High-Modulating Water Heater	Retail Retail	Water Heating	Retrofit New construction	6.59	0.72 0.15
	Instantaneous, nigh-Modulating Water Heater	Retail	Water Heating		6.59	0.15
	Instantaneous. High-Modulating Water Heater	Retail	Water Heating Water Heating	Renovation Remodel/Replacment	8.51	0.13
	Pipe insulation - water heating	Retail	Water Heating	Retrofit	26.24	0.08
	Pipe insulation - water heating	Retail	Water Heating	New construction	20.63	0.05
	Pipe insulation - water heating	Retail	Water Heating	Renovation	20.63	0.05
	Tank insulation	Retail	Water Heating	Retrofit	1.94	1.09
109	Tank insulation	Retail	Water Heating	New construction	1.52	0.64
	Tank insulation	Retail	Water Heating	Remodel/Replacment	1.97	0.49
	Air Sealing	Retail	Space Heating	Retrofit	5.49	0.40
	Air Sealing	Retail	Space Heating	New construction	4.73	0.21
	Air Sealing	Retail	Space Heating	Renovation	4.73	0.21
114 I	Improved heating system high efficiency unit - Tier 1	Retail	Space Heating	New construction	1.41	1.14
	mproved heating system high efficiency unit - Tier 1	Retail	Space Heating	Remodel/Replacment	1.76	0.91
	mproved heating system condensing unit - Tier 2	Retail	Space Heating	New construction	0.95	1.70
	mproved heating system condensing unit - Tier 2	Retail	Space Heating	Remodel/Replacment	1.18	1.36
_	Programmable Thermostat	Retail	Space Heating	Retrofit	9.07	0.39
	Programmable Thermostat	Retail	Space Heating	Renovation	7.26	0.22
	Programmable Thermostat	Retail	Space Heating	Remodel/Replacment	9.37	0.17
_	Demand-Controlled Ventilation (controller, sensor)	Retail	Space Heating	Retrofit	8.07	(3.93)
	Demand-Controlled Ventilation (controller, sensor)	Retail	Space Heating	New construction	5.77	(1.62)
	Demand-Controlled Ventilation (controller, sensor)	Retail	Space Heating	Remodel/Replacment	7.37	(1.76) 0.26
_	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Retail	Space Heating	New construction	10.55 10.55	0.26
	High Performance Glazing double pane, low-E, low conductivity frame - Her 1 High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Retail Retail	Space Heating Space Heating	Renovation New construction	2.34	0.26
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Retail	Space Heating	Renovation	2.34	0.68
	Improved below-grade insulation	Retail	Space Heating	New construction	1.99	0.81
	Improved below-grade insulation	Retail	Space Heating	Renovation	1.99	0.81
	Improved roof insulation	Retail	Space Heating	New construction	1.28	1.19
_	Improved roof insulation	Retail	Space Heating	Renovation	1.28	1.19
	Sensible Heat Recovery	Retail	Space Heating	Retrofit	27.71	1.93
_	Sensible Heat Recovery	Retail	Space Heating	New construction	25.40	0.89
1001	·	1			-1	
_	Sensible Heat Recovery	Retail	Space Heating	Remodel/Replacment	29.08	0.89

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-		Measure	1		7	
		ID4		Measure ID6	Total	TRC Levelized
_	Maria de Nama	(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	
_	Measure Name	type)	(e.g., End Use)	ROB)		Therm (\$/Therm)
	Pipe insulation - space heating	Retail	Space Heating	New construction	60.06	0.03
	Pipe insulation - space heating	Retail	Space Heating	Renovation	60.06	0.03
	Commissioning	Retail	Total	New construction	4.33	(2.19)
	Commissioning	Retail	Total	Renovation	4.33	(2.19)
	Commissioning	Retail	Total	Remodel/Replacment	5.59	(2.45)
	Retrocommissioning	Retail	Total	Retrofit	7.11	(2.02)
	Integrated Design - High Performance (30% > codes) - Tier 1	Retail	Total	New construction	2.47	(0.07)
	Integrated Design - High Performance (50% > codes) Tier 2	Retail	Total	New construction	2.47	(0.07)
	Steam trap Maintenance	Retail	Space Heating	Retrofit	2.49	0.66
	Oxygen Trim	Retail	Space Heating	Retrofit	34.39	0.10
	Oxygen Trim	Retail	Space Heating	New construction	68.26	0.02
	Oxygen Trim	Retail	Space Heating	Remodel/Replacment	46.30	0.04
	Direct fired convection range/oven	Grocery	Cooking	New construction	3.21	0.28
	Direct fired convection range/oven	Grocery	Cooking	Remodel/Replacment	3.21	0.28
	Exhaust Hood Makeup Air	Grocery	Space Heating	New construction	15.70	(0.27)
	Exhaust Hood Makeup Air	Grocery	Space Heating	Remodel/Replacment	14.14	(0.26)
	High efficiency ENERGY STAR fryer	Grocery	Cooking	New construction	2.06	0.44
153	High efficiency ENERGY STAR fryer	Grocery	Cooking	Remodel/Replacment	2.06	0.44
154	High efficiency ENERGY STAR steam cooker	Grocery	Cooking	Retrofit	1.06	1.57
155	High efficiency ENERGY STAR steam cooker	Grocery	Cooking	New construction	13.50	(2.23)
156	High efficiency ENERGY STAR steam cooker	Grocery	Cooking	Remodel/Replacment	13.50	(2.23)
157	Pre-Rinse Spray Valve	Grocery	Water Heating	Retrofit	34.85	0.00
158	Refrigeration heat recovery	Grocery	Water Heating	Retrofit	3.49	0.52
159	Refrigeration heat recovery	Grocery	Water Heating	New construction	2.84	0.31
	Refrigeration heat recovery	Grocery	Water Heating	Remodel/Replacment	3.59	0.23
	Cooling system chilled water reset	Grocery	Cooling	Retrofit	1.95	0.95
	Cooling system chilled water reset	Grocery	Cooling	New construction	1.54	0.53
	Cooling system chilled water reset	Grocery	Cooling	Remodel/Replacment	1.96	0.44
	Cooling system water side economizer	Grocery	Cooling	Retrofit	1.52	0.69
	Cooling system water side economizer	Grocery	Cooling	New construction	1.25	0.50
	Cooling system water side economizer	Grocery	Cooling	Remodel/Replacment	1.53	0.31
	Condensing DHW stand-alone	Grocery	Water Heating	Retrofit	2.34	0.93
	Condensing DHW stand-alone	Grocery	Water Heating	New construction	2.95	0.33
	Condensing DHW stand-alone	Grocery	Water Heating	Remodel/Replacment	3.76	0.26
	Faucet aerator	Grocery	Water Heating	Retrofit	18.83	(3.65)
_	Indirect-fired DHW off space heating boiler	Grocery	Water Heating	Retrofit	2.02	1.23
	Indirect-fired DHW off space heating boiler	Grocery	Water Heating	New construction	2.18	0.44
	Indirect-fired DHW off space heating boiler	Grocery	Water Heating	Remodel/Replacment	2.78	0.35
	Pipe insulation - water heating	-	-	Retrofit	25.93	0.08
	Pipe insulation - water heating Pipe insulation - water heating	Grocery Grocery	Water Heating Water Heating	New construction	20.71	0.05
	Pipe insulation - water neating Pipe insulation - water heating	1	-		20.71	0.05
	Pipe insulation - water neating Tank insulation	Grocery	Water Heating Water Heating	Renovation Retrofit	1.91	1.10
	Tank insulation Tank insulation	Grocery			1.53	0.64
	Tank insulation Tank insulation	Grocery	Water Heating	New construction		
		Grocery	Water Heating	Remodel/Replacment	1.94	0.50
	Improved heating system high efficiency unit - Tier 1	Grocery	Space Heating	New construction	1.44	1.11
	Improved heating system high efficiency unit - Tier 1	Grocery	Space Heating	Remodel/Replacment	1.78	0.90
	Improved heating system condensing unit - Tier 2	Grocery	Space Heating	New construction	0.70	2.29
	Improved heating system condensing unit - Tier 2	Grocery	Space Heating	Remodel/Replacment	0.86	1.86
	Programmable Thermostat	Grocery	Space Heating	Retrofit	5.01	0.71
	Programmable Thermostat	Grocery	Space Heating	Renovation	7.05	0.23
	Programmable Thermostat	Grocery	Space Heating	Remodel/Replacment	8.97	0.18
	Demand-Controlled Ventilation (controller, sensor)	Grocery	Space Heating	Retrofit	14.49	(2.28)
	Demand-Controlled Ventilation (controller, sensor)	Grocery	Space Heating	New construction	10.61	(0.98)
	Demand-Controlled Ventilation (controller, sensor)	Grocery	Space Heating	Remodel/Replacment	13.34	(1.03)
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Grocery	Space Heating	New construction	6.68	0.37
101	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Grocery	Space Heating	Renovation	6.68	0.37
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Grocery	Space Heating	New construction	9,999.00	0.00
		Grocery	Space Heating	Renovation	9,999.00	0.00
192	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2		Space Heating	New construction	18.26	0.09
192 193	High Performance Glazing triple pane, low-E, low conductivity frame - 1ier 2 Improved below-grade insulation	Grocery	Space neating			
192 193 194		Grocery Grocery	Space Heating	Renovation	18.26	0.09
192 193 194 195	Improved below-grade insulation	1		Renovation Retrofit	18.26 12.31	0.09 1.97
192 193 194 195 196	Improved below-grade insulation Improved below-grade insulation	Grocery	Space Heating		-	
192 193 194 195 196 197	Improved below-grade insulation Improved below-grade insulation Sensible Heat Recovery	Grocery Grocery	Space Heating Space Heating Space Heating	Retrofit	12.31	1.97 0.91
192 193 194 195 196 197	Improved below-grade insulation Improved below-grade insulation Sensible Heat Recovery Sensible Heat Recovery	Grocery Grocery Grocery	Space Heating Space Heating	Retrofit New construction	12.31 11.70	1.97

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1	Downstate Com	mercial M	easures	•	•	•
2	Total Resource Cost Test Benefit/0	Cost Ratio	and Levelized Co	st of Saved Energy		
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		Measure ID4		Measure ID6	Total	TRC Levelized
		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	
	Measure Name	type)	(e.g., End Use)	ROB)		Therm (\$/Therm
	Pipe insulation - space heating	Grocery	Space Heating	Renovation	61.03	0.03
_	Commissioning	Grocery	Total	New construction	3.79	(1.53)
	Commissioning	Grocery	Total	Renovation	3.79	(1.53)
_	Commissioning	Grocery	Total	Remodel/Replacment	4.82	(1.77)
	Retrocommissioning	Grocery	Total	Retrofit	6.40	(1.44)
	Integrated Design - High Performance (30% > codes) - Tier 1	Grocery	Total	New construction	2.27 2.27	0.16
_	Integrated Design - High Performance (50% > codes) Tier 2	Grocery	Total	New construction	1.95	0.16 0.84
	Steam trap Maintenance Oxygen Trim	Grocery	Space Heating	Retrofit Retrofit	28.02	0.04
	Oxygen Trim	Grocery Grocery	Space Heating Space Heating	New construction	68.26	0.13
	Oxygen Trim	Grocery	Space Heating	Remodel/Replacment	36.56	0.04
	Infrared Heater	Grocery	Space Heating	Retrofit	36.32	0.04
	Infrared Heater	Grocery	Space Heating	Remodel/Replacment	126.35	0.01
	Exhaust Hood Makeup Air	Warehouse	Space Heating	New construction	14.82	(0.16)
	Exhaust Hood Makeup Air	Warehouse	Space Heating	Remodel/Replacment	14.71	(0.16)
	High efficiency ENERGY STAR fryer	Warehouse	Cooking	New construction	2.06	0.44
	High efficiency ENERGY STAR fryer	Warehouse	Cooking	Remodel/Replacment	2.06	0.44
	Pre-Rinse Spray Valve	Warehouse	Water Heating	Retrofit	35.27	0.00
_	Refrigeration heat recovery	Warehouse	Water Heating	Retrofit	3.53	0.51
	Refrigeration heat recovery	Warehouse	Water Heating	New construction	2.87	0.30
_	Refrigeration heat recovery	Warehouse	Water Heating	Remodel/Replacment	3.61	0.23
222	Cooling system chilled water reset	Warehouse	Cooling	Retrofit	1.94	0.96
223	Cooling system chilled water reset	Warehouse	Cooling	New construction	1.53	0.53
224	Cooling system chilled water reset	Warehouse	Cooling	Remodel/Replacment	1.95	0.44
225	Cooling system water side economizer	Warehouse	Cooling	Retrofit	1.52	0.69
226	Cooling system water side economizer	Warehouse	Cooling	New construction	1.25	0.50
	Cooling system water side economizer	Warehouse	Cooling	Remodel/Replacment	1.53	0.31
	Condensing DHW stand-alone	Warehouse	Water Heating	Retrofit	4.07	0.53
_	Condensing DHW stand-alone	Warehouse	Water Heating	New construction	3.94	0.25
230	Condensing DHW stand-alone	Warehouse	Water Heating	Remodel/Replacment	5.01	0.19
	Faucet aerator	Warehouse	Water Heating	Retrofit	18.97	(3.65)
_	Indirect-fired DHW off space heating boiler	Warehouse	Water Heating	Retrofit	3.18	0.78
	Indirect-fired DHW off space heating boiler	Warehouse	Water Heating	New construction	2.91	0.33
	Indirect-fired DHW off space heating boiler	Warehouse	Water Heating	Remodel/Replacment	3.70	0.26
	Instantaneous. High-Modulating Water Heater	Warehouse	Water Heating	Retrofit	4.90	0.44
	Instantaneous. High-Modulating Water Heater	Warehouse	Water Heating	New construction	6.69	0.15
_	Instantaneous. High-Modulating Water Heater	Warehouse	Water Heating	Renovation	6.69	0.15
_	Instantaneous. High-Modulating Water Heater	Warehouse	Water Heating	Remodel/Replacment Retrofit	8.51 37.71	0.11
_	Low-flow shower heads Low-flow shower heads	Warehouse Warehouse	Water Heating		21.92	(2.29) (1.00)
			Water Heating	New construction	-	, ,
	Low-flow shower heads Pipe insulation - water heating	Warehouse Warehouse	Water Heating	Remodel/Replacment Retrofit	27.89 26.23	(1.02) 0.08
	Pipe insulation - water neating Pipe insulation - water heating	Warehouse	Water Heating Water Heating	New construction	20.23	0.06
	Pipe insulation - water heating Pipe insulation - water heating		Water Heating	Renovation	20.93	0.05
	Tank insulation	Warehouse	Water Heating	Retrofit	1.94	1.09
	Tank insulation	Warehouse	Water Heating	New construction	1.55	0.63
	Tank insulation	Warehouse	Water Heating	Remodel/Replacment	1.97	0.49
	Air Sealing	Warehouse	Space Heating	Retrofit	1.78	2.12
	Air Sealing	Warehouse	Space Heating	New construction	2.02	0.74
	Air Sealing	Warehouse	Space Heating	Renovation	2.02	0.74
	Improved heating system high efficiency unit - Tier 1	Warehouse	Space Heating	Retrofit	1.05	3.82
	Improved heating system high efficiency unit - Tier 1	Warehouse	Space Heating	New construction	2.88	0.56
	Improved heating system high efficiency unit - Tier 1	Warehouse	Space Heating	Remodel/Replacment	3.55	0.45
_	Improved heating system condensing unit - Tier 2	Warehouse	Space Heating	Retrofit	1.75	2.30
	Improved heating system condensing unit - Tier 2	Warehouse	Space Heating	New construction	1.40	1.15
256	Improved heating system condensing unit - Tier 2	Warehouse	Space Heating	Remodel/Replacment	1.72	0.93
257	Programmable Thermostat	Warehouse	Space Heating	Retrofit	52.62	0.07
258	Programmable Thermostat	Warehouse	Space Heating	Renovation	39.16	0.04
259	Programmable Thermostat	Warehouse	Space Heating	Remodel/Replacment	49.82	0.03
260	Demand-Controlled Ventilation (controller, sensor)	Warehouse	Space Heating	Retrofit	2.78	1.26
261	Demand-Controlled Ventilation (controller, sensor)	Warehouse	Space Heating	New construction	2.60	0.62
262	Demand-Controlled Ventilation (controller, sensor)	Warehouse	Space Heating	Remodel/Replacment	3.23	0.50
_	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Warehouse	Space Heating	New construction	9.72	0.13
264	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Warehouse	Space Heating	Renovation	9.72	0.13
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Warehouse	Space Heating	New construction	9,999.00	0.00

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2	Total Resource Cost Test Benefit/	Cost Ratio	and Levelized Co	ost of Saved Energy		
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		Measure ID4		Measure ID6	Total	TDC Lovelized
		(e.g., Bldg	Measure ID5		Total Resource	TRC Levelized Cost per Saved
5	Manager Nama	type)	(e.g., End Use)	(e.g., Market: Retrofit, NC, ROB)		Therm (\$/Therm)
	Measure Name		· ·	· ·		
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Warehouse	Space Heating	Renovation	9,999.00	0.00
	Improved below-grade insulation	Warehouse	Space Heating	New construction	2.20	0.73
268	Improved below-grade insulation	Warehouse	Space Heating	Renovation	2.20	0.73
269	Improved roof insulation	Warehouse	Space Heating	New construction	1.16	1.38
270	Improved roof insulation	Warehouse	Space Heating	Renovation	1.16	1.38
	Sensible Heat Recovery	Warehouse	Space Heating	Retrofit	1.35	3.09
	Sensible Heat Recovery	Warehouse	Space Heating	New construction	1.37	1.41
_				•	-	
	Sensible Heat Recovery	Warehouse	Space Heating	Remodel/Replacment	1.66	1.31
	Pipe insulation - space heating	Warehouse	Space Heating	Retrofit	75.41	0.05
275	Pipe insulation - space heating	Warehouse	Space Heating	New construction	61.03	0.03
276	Pipe insulation - space heating	Warehouse	Space Heating	Renovation	61.03	0.03
277	Commissioning	Warehouse	Total	New construction	3.92	(1.68)
	Commissioning	Warehouse	Total	Renovation	3.92	(1.68)
	Commissioning	Warehouse	Total	Remodel/Replacment	4.99	(1.92)
	· ·	1				, ,
	Retrocommissioning	Warehouse	Total	Retrofit	6.56	(1.57)
	Integrated Design - High Performance (30% > codes) - Tier 1	Warehouse	Total	New construction	2.32	0.10
	Integrated Design - High Performance (50% > codes) Tier 2	Warehouse	Total	New construction	2.32	0.10
283	Steam trap Maintenance	Warehouse	Space Heating	Retrofit	1.72	0.95
284	Oxygen Trim	Warehouse	Space Heating	Retrofit	26.12	0.14
	Oxygen Trim	Warehouse	Space Heating	New construction	68.26	0.02
	Oxygen Trim	Warehouse	Space Heating	Remodel/Replacment	43.58	0.04
		1		·		
	Infrared Heater	Warehouse	Space Heating	Retrofit	22.44	0.18
	Infrared Heater	Warehouse	Space Heating	Remodel/Replacment	139.20	0.01
	Direct fired convection range/oven	Education	Cooking	New construction	3.21	0.28
290	Direct fired convection range/oven	Education	Cooking	Remodel/Replacment	3.21	0.28
291	Exhaust Hood Makeup Air	Education	Space Heating	New construction	16.32	(0.40)
292	Exhaust Hood Makeup Air	Education	Space Heating	Remodel/Replacment	15.55	(0.40)
_	High efficiency ENERGY STAR fryer	Education	Cooking	New construction	2.06	0.44
	High efficiency ENERGY STAR fryer				2.06	0.44
		Education	Cooking	Remodel/Replacment	-1	
	High efficiency ENERGY STAR steam cooker	Education	Cooking	Retrofit	1.06	1.57
296	High efficiency ENERGY STAR steam cooker	Education	Cooking	New construction	13.50	(2.23)
297	High efficiency ENERGY STAR steam cooker	Education	Cooking	Remodel/Replacment	13.50	(2.23)
298	Pre-Rinse Spray Valve	Education	Water Heating	Retrofit	30.48	0.00
299	Refrigeration heat recovery	Education	Water Heating	Retrofit	3.43	0.52
	Refrigeration heat recovery	Education	Water Heating	New construction	2.76	0.31
		Education	-		3.31	0.25
	Refrigeration heat recovery		Water Heating	Remodel/Replacment		
	Cooling system chilled water reset	Education	Cooling	Retrofit	1.74	1.11
303	Cooling system chilled water reset	Education	Cooling	New construction	1.35	0.61
304	Cooling system chilled water reset	Education	Cooling	Remodel/Replacment	1.75	0.51
	Cooling system water side economizer	Education	Cooling	Retrofit	1.59	0.57
	Cooling system water side economizer	Education	Cooling	New construction	1.29	0.46
307	Cooling system water side economizer	Education	Cooling	Remodel/Replacment	1.60	0.26
	Condensing DHW stand-alone				1.96	1.11
		Education	Water Heating	Retrofit		
	Condensing DHW stand-alone	Education	Water Heating	New construction	2.43	0.40
	Condensing DHW stand-alone	Education	Water Heating	Remodel/Replacment	3.13	0.31
311	Faucet aerator	Education	Water Heating	Retrofit	5.60	(2.88)
312	Graywater heat exchanger/GFX	Education	Water Heating	Retrofit	2.71	0.88
	Graywater heat exchanger/GFX	Education	Water Heating	New construction	2.14	0.45
	Graywater heat exchanger/GFX	Education	Water Heating	Remodel/Replacment	2.76	0.35
		1			1.69	
	Indirect-fired DHW off space heating boiler	Education	Water Heating	Retrofit		1.47
	Indirect-fired DHW off space heating boiler	Education	Water Heating	New construction	1.79	0.54
	Indirect-fired DHW off space heating boiler	Education	Water Heating	Remodel/Replacment	2.31	0.42
318	Instantaneous. High-Modulating Water Heater	Education	Water Heating	Retrofit	1.88	1.16
319	Instantaneous. High-Modulating Water Heater	Education	Water Heating	New construction	4.12	0.24
	Instantaneous. High-Modulating Water Heater	Education	Water Heating	Renovation	4.12	0.24
	Instantaneous. High-Modulating Water Heater	Education	Water Heating	Remodel/Replacment	5.32	0.18
		1		•	30.97	
	Low-flow shower heads	Education	Water Heating	Retrofit		(2.27)
		Education	Water Heating	New construction	25.14	(1.01)
323	Low-flow shower heads		114/-4 114:	Remodel/Replacment	32.46	(1.03)
323 324	Low-flow shower heads	Education	Water Heating		-	
323 324		Education Education	Water Heating	Retrofit	25.42	0.08
323 324 325	Low-flow shower heads Pipe insulation - water heating		Water Heating	Retrofit New construction	-	
323 324 325 326	Low-flow shower heads Pipe insulation - water heating Pipe insulation - water heating	Education Education	Water Heating Water Heating	New construction	25.42 20.04	0.05
323 324 325 326 327	Low-flow shower heads Pipe insulation - water heating	Education Education Education	Water Heating Water Heating Water Heating	New construction Renovation	25.42 20.04 20.04	0.05 0.05
323 324 325 326 327 328	Low-flow shower heads Pipe insulation - water heating Pipe insulation - water heating Pipe insulation - water heating Tank insulation	Education Education Education Education	Water Heating Water Heating Water Heating Water Heating	New construction Renovation Retrofit	25.42 20.04 20.04 1.88	0.05 0.05 1.13
323 324 325 326 327 328 329	Low-flow shower heads Pipe insulation - water heating Pipe insulation - water heating Pipe insulation - water heating Tank insulation	Education Education Education	Water Heating Water Heating Water Heating	New construction Renovation	25.42 20.04 20.04	0.05 0.05

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2	Total Resource Cost Test Benefit/	Cost Ratio	and Levelized Co	ost of Saved Energy		
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		ID4		Measure ID6	Total	TRC Levelized
_		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	
	Measure Name	type)	(e.g., End Use)	ROB)		Therm (\$/Therm)
	Air Sealing	Education	Space Heating	Retrofit	2.09	1.83
332	Air Sealing	Education	Space Heating	New construction	5.04	0.27
333	Air Sealing	Education	Space Heating	Renovation	5.04	0.27
334	Improved heating system high efficiency unit - Tier 1	Education	Space Heating	Retrofit	0.81	4.95
	Improved heating system high efficiency unit - Tier 1	Education	Space Heating	New construction	2.79	0.58
					3.49	0.46
	Improved heating system high efficiency unit - Tier 1	Education	Space Heating	Remodel/Replacment	4	
	Improved heating system condensing unit - Tier 2	Education	Space Heating	Retrofit	3.17	1.27
	Improved heating system condensing unit - Tier 2	Education	Space Heating	New construction	2.50	0.64
339	Improved heating system condensing unit - Tier 2	Education	Space Heating	Remodel/Replacment	3.13	0.51
340	Programmable Thermostat	Education	Space Heating	Retrofit	22.69	(0.04)
	Programmable Thermostat	Education	Space Heating	Renovation	13.58	0.03
	Programmable Thermostat	Education	Space Heating	Remodel/Replacment	17.54	0.01
				·	3.21	
	Demand-Controlled Ventilation (controller, sensor)	Education	Space Heating	Retrofit	4	1.07
	Demand-Controlled Ventilation (controller, sensor)	Education	Space Heating	New construction	3.30	0.48
345	Demand-Controlled Ventilation (controller, sensor)	Education	Space Heating	Remodel/Replacment	4.22	0.37
346	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Education	Space Heating	New construction	12.45	0.09
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Education	Space Heating	Renovation	12.45	0.09
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Education	Space Heating	New construction	1.83	0.84
					1.83	0.84
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Education	Space Heating	Renovation	-	
_	Improved below-grade insulation	Education	Space Heating	New construction	1.84	0.87
	Improved below-grade insulation	Education	Space Heating	Renovation	1.84	0.87
352	Sensible Heat Recovery	Education	Space Heating	Retrofit	3.27	1.67
353	Sensible Heat Recovery	Education	Space Heating	New construction	3.46	0.75
354	Sensible Heat Recovery	Education	Space Heating	Remodel/Replacment	4.28	0.68
	Pipe insulation - space heating	Education	Space Heating	Retrofit	74.47	0.05
	Pipe insulation - space heating	Education	Space Heating	New construction	59.45	0.03
					4	
	Pipe insulation - space heating	Education	Space Heating	Renovation	59.45	0.03
	Energy Star washer	Education	Water Heating	New construction	1.70	(2.10)
359	Energy Star washer	Education	Water Heating	Remodel/Replacment	1.97	(2.71)
360	Swimming pool/spa covers	Education	Miscellaneous	Retrofit	4.42	0.38
	Swimming pool/spa covers	Education	Miscellaneous	New construction	4.17	0.24
	Swimming pool/spa covers	Education	Miscellaneous	Remodel/Replacment	4.40	0.22
	Commissioning	Education	Total	New construction	4.23	(2.08)
					-	, ,
	Commissioning	Education	Total	Renovation	4.23	(2.08)
365	Commissioning	Education	Total	Remodel/Replacment	5.46	(2.34)
366	Retrocommissioning	Education	Total	Retrofit	6.99	(1.92)
367	Integrated Design - High Performance (30% > codes) - Tier 1	Education	Total	New construction	2.44	(0.03)
368	Integrated Design - High Performance (50% > codes) Tier 2	Education	Total	New construction	2.44	(0.03)
	Steam trap Maintenance	Education	Space Heating	Retrofit	1.96	0.84
	Oxygen Trim		•	Retrofit	27.04	0.13
		Education	Space Heating		4	
	Oxygen Trim	Education	Space Heating	New construction	68.26	0.02
	Oxygen Trim	Education	Space Heating	Remodel/Replacment	41.26	0.04
373	Direct fired convection range/oven	Health	Cooking	New construction	3.21	0.28
374	Direct fired convection range/oven	Health	Cooking	Remodel/Replacment	3.21	0.28
	Exhaust Hood Makeup Air	Health	Space Heating	New construction	15.88	(0.26)
	Exhaust Hood Makeup Air	Health	Space Heating	Remodel/Replacment	18.27	(0.27)
	High efficiency ENERGY STAR fryer	Health	Cooking	New construction	2.06	0.44
			-			
	High efficiency ENERGY STAR fryer	Health	Cooking	Remodel/Replacment	2.06	0.44
	High efficiency ENERGY STAR steam cooker	Health	Cooking	Retrofit	1.06	1.57
	High efficiency ENERGY STAR steam cooker	Health	Cooking	New construction	13.50	(2.23)
	High efficiency ENERGY STAR steam cooker	Health	Cooking	Remodel/Replacment	13.50	(2.23)
	Pre-Rinse Spray Valve	Health	Water Heating	Retrofit	33.36	0.00
	Refrigeration heat recovery	Health	Water Heating	Retrofit	3.41	0.53
	•					
	Refrigeration heat recovery	Health	Water Heating	New construction	3.09	0.27
	Refrigeration heat recovery	Health	Water Heating	Remodel/Replacment	3.50	0.23
300	Cooling system chilled water reset	Health	Cooling	Retrofit	1.96	0.94
300	Cooling system chilled water reset	Health	Cooling	New construction	1.72	0.48
	Cooling system crimed water reset		Cooling	Remodel/Replacment	1.97	0.43
387		Health				
387 388	Cooling system chilled water reset	Health Health		Retrofit	1 52	
387 388 389	Cooling system chilled water reset Cooling system water side economizer	Health	Cooling	Retrofit	1.52	0.70
387 388 389 390	Cooling system chilled water reset Cooling system water side economizer Cooling system water side economizer	Health Health	Cooling Cooling	New construction	1.36	0.42
387 388 389 390 391	Cooling system chilled water reset Cooling system water side economizer	Health Health Health	Cooling Cooling Cooling	New construction Remodel/Replacment	1.36 1.52	0.42 0.32
387 388 389 390 391	Cooling system chilled water reset Cooling system water side economizer Cooling system water side economizer	Health Health	Cooling Cooling	New construction	1.36	0.42 0.32 0.69
387 388 389 390 391 392	Cooling system chilled water reset Cooling system water side economizer	Health Health Health	Cooling Cooling Cooling	New construction Remodel/Replacment	1.36 1.52	0.42 0.32
387 388 389 390 391 392 393	Cooling system chilled water reset Cooling system water side economizer Condensing DHW stand-alone Condensing DHW stand-alone	Health Health Health Health Health	Cooling Cooling Cooling Water Heating Water Heating	New construction Remodel/Replacment Retrofit New construction	1.36 1.52 3.15 4.36	0.42 0.32 0.69 0.22
387 388 389 390 391 392 393	Cooling system chilled water reset Cooling system water side economizer Condensing DHW stand-alone	Health Health Health Health	Cooling Cooling Cooling Water Heating	New construction Remodel/Replacment Retrofit	1.36 1.52 3.15	0.42 0.32 0.69

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		ID4		Measure ID6	Total	TRC Levelized
		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	
5	Measure Name	type)	(e.g., End Use)	ROB)	BCR	Therm (\$/Therm)
396	Graywater heat exchanger/GFX	Health	Water Heating	Retrofit	2.70	0.89
397	Graywater heat exchanger/GFX	Health	Water Heating	New construction	2.39	0.40
398	Graywater heat exchanger/GFX	Health	Water Heating	Remodel/Replacment	2.75	0.35
399	Indirect-fired DHW off space heating boiler	Health	Water Heating	Retrofit	2.72	0.92
	Indirect-fired DHW off space heating boiler	Health	Water Heating	New construction	3.22	0.30
	Indirect-fired DHW off space heating boiler	Health	Water Heating	Remodel/Replacment	3.70	0.26
	Instantaneous. High-Modulating Water Heater	Health	Water Heating	Retrofit	3.04	0.72
	Instantaneous. High-Modulating Water Heater	Health	Water Heating	New construction	7.41	0.13
	Instantaneous. High-Modulating Water Heater	Health	Water Heating	Renovation	7.41	0.13
	Instantaneous. High-Modulating Water Heater	Health	Water Heating	Remodel/Replacment	8.51	0.11
	Low-flow shower heads		_	•	1,990.68	(2.41)
		Health	Water Heating	Retrofit	- '	, ,
	Low-flow shower heads	Health	Water Heating	New construction	6.24	(0.76)
	Low-flow shower heads	Health	Water Heating	Remodel/Replacment	7.17	(0.80)
	Pipe insulation - water heating	Health	Water Heating	Retrofit	25.30	0.08
	Pipe insulation - water heating	Health	Water Heating	New construction	22.44	0.04
	Pipe insulation - water heating	Health	Water Heating	Renovation	22.44	0.04
	Tank insulation	Health	Water Heating	Retrofit	1.87	1.13
	Tank insulation	Health	Water Heating	New construction	1.66	0.59
414	Tank insulation	Health	Water Heating	Remodel/Replacment	1.90	0.51
415	Air Sealing	Health	Space Heating	Retrofit	11.57	(1.09)
416	Air Sealing	Health	Space Heating	New construction	4.25	(0.10)
417	Air Sealing	Health	Space Heating	Renovation	4.25	(0.10)
418	Improved heating system high efficiency unit - Tier 1	Health	Space Heating	Retrofit	5.78	0.92
	Improved heating system high efficiency unit - Tier 1	Health	Space Heating	New construction	17.44	0.20
420	Improved heating system high efficiency unit - Tier 1	Health	Space Heating			0.19
	Improved heating system condensing unit - Tier 2	Health	Space Heating Retrofit		19.40 4.23	0.95
	Improved heating system condensing unit - Tier 2	Health	Space Heating New construction		3.75	0.43
	Improved heating system condensing unit - Tier 2	Health	<u> </u>		4.17	0.39
	Outdoor Air Reset	Health	Space Heating Remodel/Replacment Space Heating Retrofit		3.01	1.14
			Space Heating		1.05	1.61
	Outdoor Air Reset	Health	Space Heating	New construction		
	Outdoor Air Reset	Health	Space Heating	Remodel/Replacment	1.20	1.40
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Health	Space Heating	New construction	20.10	(0.77)
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Health	Space Heating	Renovation	20.10	(0.77)
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Health	Space Heating	New construction	2.19	0.72
430	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Health	Space Heating	Renovation	2.19	0.72
431	Improved wall insulation	Health	Space Heating	New construction	1.84	0.66
432	Improved wall insulation	Health	Space Heating	Renovation	1.84	0.66
433	Improved below-grade insulation	Health	Space Heating	New construction	1.27	1.26
434	Improved below-grade insulation	Health	Space Heating	Renovation	1.27	1.26
	Sensible Heat Recovery	Health	Space Heating	Retrofit	7.33	2.30
	Sensible Heat Recovery	Health	Space Heating	New construction	3.25	1.17
	Sensible Heat Recovery	Health	Space Heating	Remodel/Replacment	3.59	1.15
	Pipe insulation - space heating	Health	Space Heating	Retrofit	68.66	0.05
439	Pipe insulation - space heating	Health	Space Heating	New construction	62.28	0.03
	Pipe insulation - space heating	Health	Space Heating	Renovation	62.28	0.03
	Swimming pool/spa covers	Health	Miscellaneous	Retrofit	4.41	0.39
	Swimming pool/spa covers				4.29	0.39
		Health	Miscellaneous	New construction		
	Swimming pool/spa covers	Health	Miscellaneous	Remodel/Replacment	4.39	0.22
	Commissioning	Health	Total	New construction	4.39	(1.83)
	Commissioning	Health	Total	Renovation	4.39	(1.83)
	Commissioning	Health	Total	Remodel/Replacment	5.04	(1.96)
	Retrocommissioning	Health	Total	Retrofit	6.61	(1.60)
448	Integrated Design - High Performance (30% > codes) - Tier 1	Health	Total	New construction	2.33	0.09
449	Integrated Design - High Performance (50% > codes) Tier 2	Health	Total	New construction	9,999.00	0.00
450	Steam trap Maintenance	Health	Space Heating	Retrofit	3.30	0.50
451	Oxygen Trim	Health	Space Heating	Retrofit	45.50	0.08
	Oxygen Trim	Health	Space Heating	New construction	68.26	0.02
TUL	Oxygen Trim	Health	Space Heating	Remodel/Replacment	55.36	0.03
			Cooking	New construction	3.21	0.28
453	Direct fired convection range/oven	Loggina				0.28
453 454	Direct fired convection range/oven	Lodging	Cooking	Remodel/Replacment		
453 454 455	Direct fired convection range/oven	Lodging	Cooking	Remodel/Replacment	3.21	
453 454 455 456	Direct fired convection range/oven Exhaust Hood Makeup Air	Lodging Lodging	Space Heating	New construction	15.59	(0.29)
453 454 455 456 457	Direct fired convection range/oven Exhaust Hood Makeup Air Exhaust Hood Makeup Air	Lodging Lodging Lodging	Space Heating Space Heating	New construction Remodel/Replacment	15.59 19.02	(0.29) (0.32)
453 454 455 456 457 458	Direct fired convection range/oven Exhaust Hood Makeup Air Exhaust Hood Makeup Air High efficiency ENERGY STAR fryer	Lodging Lodging Lodging Lodging	Space Heating Space Heating Cooking	New construction Remodel/Replacment New construction	15.59 19.02 2.06	(0.29) (0.32) 0.44
453 454 455 456 457 458 459	Direct fired convection range/oven Exhaust Hood Makeup Air Exhaust Hood Makeup Air	Lodging Lodging Lodging	Space Heating Space Heating	New construction Remodel/Replacment	15.59 19.02	(0.29) (0.32)

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3 4	Total Resource Cost Test Benefit/C	oct Datio									
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	Measure Name	type)	(e.g., End Use)	ROB)	BCR	Therm (\$/Therm					
	ligh efficiency ENERGY STAR steam cooker	Lodging	Cooking	New construction	13.50	(2.23)					
	ligh efficiency ENERGY STAR steam cooker	Lodging	Cooking	Remodel/Replacment	13.50	(2.23)					
	Pre-Rinse Spray Valve	Lodging	Water Heating	Retrofit	31.71	0.00					
	Refrigeration heat recovery	Lodging	Water Heating	Retrofit	3.41	0.53					
	Refrigeration heat recovery	Lodging	Water Heating	New construction	2.77	0.31					
	Refrigeration heat recovery	Lodging	Water Heating	Remodel/Replacment	3.38	0.25					
	Cooling system chilled water reset	Lodging	Cooling	Retrofit	1.85	1.02					
	Cooling system chilled water reset	Lodging	Cooling	New construction	1.46 1.87	0.56 0.47					
	Cooling system chilled water reset	Lodging	Cooling	Remodel/Replacment Retrofit	1.55	0.47					
	Cooling system water side economizer	Lodging	Cooling		1.33	0.48					
	Cooling system water side economizer	Lodging Lodging	Cooling Cooling	New construction Remodel/Replacment	1.56	0.48					
	Condensing DHW stand-alone	Lodging	Water Heating	Retrofit	3.08	0.70					
	Condensing DHW stand-alone	Lodging	Water Heating	New construction	3.91	0.75					
_	Condensing DHW stand-alone	Lodging	Water Heating	Remodel/Replacment	5.01	0.19					
	aucet aerator	Lodging	Water Heating	Retrofit	8.68	(3.27)					
	Graywater heat exchanger/GFX	Lodging	Water Heating	Retrofit	1.40	1.71					
	Graywater heat exchanger/GFX	Lodging	Water Heating	New construction	1.11	0.87					
	Graywater heat exchanger/GFX	Lodging	Water Heating	Remodel/Replacment	1.42	0.68					
	ndirect-fired DHW off space heating boiler	Lodging	Water Heating	Retrofit	2.68	0.93					
	ndirect-fired DHW off space heating boiler	Lodging	Water Heating	New construction	2.89	0.33					
	ndirect-fired DHW off space heating boiler	Lodging	Water Heating	Remodel/Replacment	3.70	0.26					
	ow-flow shower heads	Lodging	Water Heating	Retrofit	561.96	(2.41)					
484 L	ow-flow shower heads	Lodging	Water Heating	New construction	5.41	(0.71)					
485 L	ow-flow shower heads	Lodging	Water Heating	Remodel/Replacment	6.94	(0.79)					
486 P	Pipe insulation - water heating	Lodging	Water Heating	Retrofit	25.39	0.08					
487 P i	Pipe insulation - water heating	Lodging	Water Heating	New construction	20.17	0.05					
488 P	Pipe insulation - water heating	Lodging	Water Heating	Renovation	20.17	0.05					
489 Ta	ank insulation	Lodging	Water Heating	Retrofit	1.87	1.13					
490 Ta	ank insulation	Lodging	Water Heating	New construction	1.49	0.65					
491 T a	ank insulation	Lodging	Water Heating	Remodel/Replacment	1.91	0.51					
492 A	Air Sealing	Lodging	Space Heating	Retrofit	3.35	1.19					
	Air Sealing	Lodging	Space Heating	New construction	2.94	0.55					
	Air Sealing	Lodging	Space Heating	Renovation	2.94	0.55					
	mproved heating system high efficiency unit - Tier 1	Lodging	Space Heating	New construction	4.36	0.37					
	mproved heating system high efficiency unit - Tier 1	Lodging	Space Heating	Remodel/Replacment	5.41	0.30					
	mproved heating system condensing unit - Tier 2	Lodging	Space Heating	New construction	3.84	0.42					
	mproved heating system condensing unit - Tier 2	Lodging	Space Heating	Remodel/Replacment	4.77	0.34					
	Programmable Thermostat	Lodging	Space Heating	Retrofit	2.92	1.23					
	Programmable Thermostat	Lodging	Space Heating	Renovation	2.70	0.60					
	Programmable Thermostat	Lodging	Space Heating	Remodel/Replacment	3.46	0.47					
	Demand-Controlled Ventilation (controller, sensor)	Lodging	Space Heating	Retrofit	2.43	1.45					
	Demand-Controlled Ventilation (controller, sensor)	Lodging	Space Heating	New construction	1.92	0.84					
	Demand-Controlled Ventilation (controller, sensor)	Lodging	Space Heating	Remodel/Replacment	2.45	0.66					
	Outdoor Air Reset	Lodging	Space Heating	Retrofit New construction	2.06 1.64	1.66 1.03					
	Outdoor Air Reset	Lodging	Space Heating		2.10	0.80					
	Outdoor Air Reset ligh Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Lodging Lodging	Space Heating Space Heating	Remodel/Replacment New construction	9.66	0.80					
	ligh Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Lodging	Space Heating	Renovation	9.66	0.17					
	ligh Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Lodging	Space Heating	New construction	1.57	1.02					
	ligh Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Lodging	Space Heating	Renovation	1.57	1.02					
	mproved roof insulation	Lodging	Space Heating	New construction	1.00	1.60					
	mproved roof insulation	Lodging	Space Heating	Renovation	1.00	1.60					
	Sensible Heat Recovery	Lodging	Space Heating	Retrofit	5.78	0.75					
	Sensible Heat Recovery	Lodging	Space Heating	New construction	5.29	0.37					
	Sensible Heat Recovery	Lodging	Space Heating	Remodel/Replacment	6.52	0.32					
	Pipe insulation - space heating	Lodging	Space Heating	Retrofit	74.45	0.05					
	Pipe insulation - space heating	Lodging	Space Heating	New construction	59.88	0.03					
	Pipe insulation - space heating	Lodging	Space Heating	Renovation	59.88	0.03					
	Energy Star washer	Lodging	Water Heating	New construction	1.65	(1.87)					
	Energy Star washer	Lodging	Water Heating	Remodel/Replacment	1.95	(2.55)					
	Swimming pool/spa covers	Lodging	Miscellaneous	Retrofit	4.42	0.39					
	Swimming pool/spa covers	Lodging	Miscellaneous	New construction	4.18	0.24					
	Swimming pool/spa covers	Lodging	Miscellaneous	Remodel/Replacment	4.40	0.22					
	Commissioning	Lodging	Total	New construction	4.26	(2.09)					

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	Measure								
		ID4		Measure ID6	Total	TRC Levelized			
		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	Cost per Save			
5	Measure Name	type)	(e.g., End Use)	ROB)	BCR	Therm (\$/Therm			
526	Commissioning	Lodging	Total	Renovation	4.26	(2.09)			
527	Commissioning	Lodging	Total	Remodel/Replacment	5.46	(2.34)			
	Retrocommissioning	Lodging	Total	Retrofit	6.99	(1.92)			
					4	, ,			
	Integrated Design - High Performance (30% > codes) - Tier 1	Lodging	Total	New construction	2.44	(0.03)			
	Integrated Design - High Performance (50% > codes) Tier 2	Lodging	Total	New construction	2.44	(0.03)			
531	Steam trap Maintenance	Lodging	Space Heating	Retrofit	3.52	0.47			
532	Oxygen Trim	Lodging	Space Heating	Retrofit	48.51	0.07			
	Oxygen Trim	Lodging	Space Heating	New construction	68.26	0.02			
	Oxygen Trim	Lodging	Space Heating	Remodel/Replacment	56.74	0.03			
			-	•	4				
535	Direct fired convection range/oven	Restaurant	Cooking	New construction	3.21	0.28			
536	Direct fired convection range/oven	Restaurant	Cooking	Remodel/Replacment	3.21	0.28			
537	Exhaust Hood Makeup Air	Restaurant	Space Heating	New construction	16.55	(0.19)			
538	Exhaust Hood Makeup Air	Restaurant	Space Heating	Remodel/Replacment	15.68	(0.18)			
	High efficiency ENERGY STAR fryer	Restaurant	Cooking	New construction	2.06	0.44			
		1	•		2.06	0.44			
	High efficiency ENERGY STAR fryer	Restaurant	Cooking	Remodel/Replacment					
	High efficiency ENERGY STAR steam cooker	Restaurant	Cooking	Retrofit	1.06	1.57			
542	High efficiency ENERGY STAR steam cooker	Restaurant	Cooking	New construction	13.50	(2.23)			
543	High efficiency ENERGY STAR steam cooker	Restaurant	Cooking	Remodel/Replacment	13.50	(2.23)			
	Pre-Rinse Spray Valve	Restaurant	Water Heating	Retrofit	29.72	0.00			
	Refrigeration heat recovery	Restaurant	_	Retrofit	3.49	0.52			
	· · · · · · · · · · · · · · · · · · ·		Water Heating		4				
	Refrigeration heat recovery	Restaurant	Water Heating	New construction	3.15	0.27			
547	Refrigeration heat recovery	Restaurant	Water Heating	Remodel/Replacment	3.24	0.26			
548	Cooling system chilled water reset	Restaurant	Cooling	Retrofit	1.91	0.98			
549	Cooling system chilled water reset	Restaurant	Cooling	New construction	1.67	0.50			
	Cooling system chilled water reset	Restaurant	Cooling	Remodel/Replacment	1.92	0.45			
	Cooling system water side economizer	1		·	1.53	0.67			
		Restaurant	Cooling	Retrofit	4				
	Cooling system water side economizer	Restaurant	Cooling	New construction	1.38	0.41			
553	Cooling system water side economizer	Restaurant	Cooling	Remodel/Replacment	1.54	0.30			
554	Condensing DHW stand-alone	Restaurant	Water Heating	Retrofit	2.30	0.94			
555	Condensing DHW stand-alone	Restaurant	Water Heating	New construction	3.27	0.30			
	Condensing DHW stand-alone	Restaurant	Water Heating	Remodel/Replacment	3.76	0.26			
	Faucet aerator		-	•					
		Restaurant	Water Heating	Retrofit	16.95	(3.61)			
	Graywater heat exchanger/GFX	Restaurant	Water Heating	Retrofit	2.76	0.87			
559	Graywater heat exchanger/GFX	Restaurant	Water Heating	New construction	2.45	0.39			
560	Graywater heat exchanger/GFX	Restaurant	Water Heating	Remodel/Replacment	2.81	0.34			
561	Indirect-fired DHW off space heating boiler	Restaurant	Water Heating	Retrofit	2.00	1.24			
	Indirect-fired DHW off space heating boiler	Restaurant	Water Heating	New construction	2.42	0.40			
		1	-		2.78	0.35			
	Indirect-fired DHW off space heating boiler	Restaurant	Water Heating	Remodel/Replacment	4				
	Pipe insulation - water heating	Restaurant	Water Heating	Retrofit	25.93	0.08			
565	Pipe insulation - water heating	Restaurant	Water Heating	New construction	22.94	0.04			
566	Pipe insulation - water heating	Restaurant	Water Heating	Renovation	22.94	0.04			
	Tank insulation	Restaurant	Water Heating	Retrofit	1.91	1.10			
	Tank insulation		Water Heating	New construction	1.69	0.57			
	Tank insulation		Water Heating	Remodel/Replacment	1.94	0.50			
	Air Sealing	Restaurant	Space Heating	Retrofit	5.11	0.64			
571	Air Sealing	Restaurant	Space Heating	New construction	5.00	0.27			
572	Air Sealing	Restaurant	Space Heating	Renovation	5.00	0.27			
	Improved heating system high efficiency unit - Tier 1	Restaurant	Space Heating	New construction	1.58	1.02			
	Improved heating system high efficiency unit - Tier 1	Restaurant	Space Heating	Remodel/Replacment	1.75	0.92			
		1							
	Improved heating system condensing unit - Tier 2	Restaurant	Space Heating	New construction	0.76	2.11			
576	Improved heating system condensing unit - Tier 2	Restaurant	Space Heating	Remodel/Replacment	0.85	1.89			
577	Programmable Thermostat	Restaurant	Space Heating	Retrofit	11.15	0.32			
578	Programmable Thermostat	Restaurant	Space Heating	Renovation	9.61	0.17			
	Programmable Thermostat	Restaurant	Space Heating	Remodel/Replacment	11.04	0.15			
		1		•	4.41	0.76			
	Demand-Controlled Ventilation (controller, sensor)	Restaurant	Space Heating	Retrofit					
	Demand-Controlled Ventilation (controller, sensor)	Restaurant	Space Heating	New construction	3.57	0.44			
582	Demand-Controlled Ventilation (controller, sensor)	Restaurant	Space Heating	Remodel/Replacment	3.94	0.39			
583	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Restaurant	Space Heating	New construction	7.34	0.28			
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Restaurant	Space Heating	Renovation	7.34	0.28			
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Restaurant	Space Heating	New construction	1.25	1.29			
		1							
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Restaurant	Space Heating	Renovation	1.25	1.29			
587	Improved below-grade insulation	Restaurant	Space Heating	New construction	1.66	0.97			
588	Improved below-grade insulation	Restaurant	Space Heating	Renovation	1.66	0.97			
589	Sensible Heat Recovery	Restaurant	Space Heating	Retrofit	14.43	1.58			
	Sensible Heat Recovery	Restaurant	Space Heating	New construction	14.30	0.73			
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		ID4		Measure ID6	Total	TRC Levelized
		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit, NC,	Resource	Cost per Saved
5	Measure Name	type)	(e.g., End Use)	ROB)	BCR	Therm (\$/Therm
591	Sensible Heat Recovery	Restaurant	Space Heating	Remodel/Replacment	14.44	0.73
	Pipe insulation - space heating	Restaurant	Space Heating	Retrofit	75.41	0.05
	Pipe insulation - space heating	Restaurant	Space Heating	New construction	67.61	0.02
	Pipe insulation - space heating	Restaurant	Space Heating	Renovation	67.61	0.02
					4	
	Commissioning	Restaurant	Total	New construction	4.35	(1.80)
_	Commissioning	Restaurant	Total	Renovation	4.35	(1.80)
	Commissioning	Restaurant	Total	Remodel/Replacment	5.00	(1.93)
598	Retrocommissioning	Restaurant	Total	Retrofit	6.57	(1.57)
599	Integrated Design - High Performance (30% > codes) - Tier 1	Restaurant	Total	New construction	2.32	0.10
600	Integrated Design - High Performance (50% > codes) Tier 2	Restaurant	Total	New construction	9,999.00	0.00
601	Steam trap Maintenance	Restaurant	Space Heating	Retrofit	2.06	0.80
602	Oxygen Trim	Restaurant	Space Heating	Retrofit	28.39	0.13
	Oxygen Trim	Restaurant	Space Heating	New construction	68.26	0.02
	Oxygen Trim	Restaurant	Space Heating	Remodel/Replacment	39.74	0.04
	Exhaust Hood Makeup Air		•		12.31	(0.21)
	•	Other	Space Heating	New construction		, ,
	Exhaust Hood Makeup Air	Other	Space Heating	Remodel/Replacment	17.53	(0.26)
	High efficiency ENERGY STAR fryer	Other	Cooking	New construction	2.06	0.44
	High efficiency ENERGY STAR fryer	Other	Cooking	Remodel/Replacment	2.06	0.44
609	High efficiency ENERGY STAR steam cooker	Other	Cooking	Retrofit	1.06	1.57
610	High efficiency ENERGY STAR steam cooker	Other	Cooking	New construction	13.50	(2.23)
611	High efficiency ENERGY STAR steam cooker	Other	Cooking	Remodel/Replacment	13.50	(2.23)
612	Pre-Rinse Spray Valve	Other	Water Heating	Retrofit	33.23	0.00
	Refrigeration heat recovery	Other	Water Heating	Retrofit	3.48	0.52
	Refrigeration heat recovery		-		2.28	0.39
	·	Other	Water Heating	New construction	4	
	Refrigeration heat recovery	Other	Water Heating	Remodel/Replacment	3.49	0.24
	Cooling system chilled water reset	Other	Cooling	Retrofit	1.90	0.99
617	Cooling system chilled water reset	Other	Cooling	New construction	1.21	0.65
618	Cooling system chilled water reset	Other	Cooling	Remodel/Replacment	1.92	0.45
619	Cooling system water side economizer	Other	Cooling	Retrofit	1.53	0.67
620	Cooling system water side economizer	Other	Cooling	New construction	1.05	0.70
	Cooling system water side economizer	Other	Cooling	Remodel/Replacment	1.54	0.30
	Condensing DHW stand-alone	Other	Water Heating	· ·		0.71
_	Condensing DHW stand-alone	Other	Water Heating	New construction	3.07 3.17	0.31
	Condensing DHW stand-alone		-		5.01	0.19
		Other	Water Heating	Remodel/Replacment		
	Faucet aerator	Other	Water Heating	Retrofit	8.95	(3.29)
	Graywater heat exchanger/GFX	Other	Water Heating	Retrofit	1.42	1.68
	Graywater heat exchanger/GFX	Other	Water Heating	Remodel/Replacment	1.44	0.67
628	Indirect-fired DHW off space heating boiler	Other	Water Heating	Retrofit	2.67	0.93
629	Indirect-fired DHW off space heating boiler	Other	Water Heating	New construction	2.35	0.41
630	Indirect-fired DHW off space heating boiler	Other	Water Heating	Remodel/Replacment	3.70	0.26
	Instantaneous. High-Modulating Water Heater	Other	Water Heating	Retrofit	2.90	0.75
	Instantaneous. High-Modulating Water Heater	Other	Water Heating	New construction	5.39	0.18
	Instantaneous. High-Modulating Water Heater	Other	Water Heating	Renovation	5.39	0.18
234	Instantaneous. High-Modulating Water Heater					0.10
		Other	Water Heating	Remodel/Replacment	8.51	
	Low-flow shower heads	Other	Water Heating	Retrofit	44.77	(2.31)
	Low-flow shower heads	Other	Water Heating	New construction	10.87	(0.90)
	Low-flow shower heads	Other	Water Heating	Remodel/Replacment	17.17	(0.97)
638	Pipe insulation - water heating	Other	Water Heating	Retrofit	25.82	0.08
639	Pipe insulation - water heating	Other	Water Heating	New construction	16.63	0.06
640	Pipe insulation - water heating	Other	Water Heating	Renovation	16.63	0.06
	Tank insulation	Other	Water Heating	Retrofit	1.91	1.11
_	Tank insulation	Other	Water Heating	New construction	1.23	0.79
	Tank insulation	Other	Water Heating	Remodel/Replacment	1.94	0.50
				Retrofit	5.89	0.38
	Air Sealing	Other	Space Heating			
	Air Sealing	Other	Space Heating	New construction	2.50	0.56
	Air Sealing	Other	Space Heating	Renovation	2.50	0.56
_	Improved heating system high efficiency unit - Tier 1	Other	Space Heating	New construction	1.35	1.20
648	Improved heating system high efficiency unit - Tier 1	Other	Space Heating	Remodel/Replacment	2.06	0.79
649	Improved heating system condensing unit - Tier 2	Other	Space Heating	New construction	0.94	1.71
	Improved heating system condensing unit - Tier 2	Other	Space Heating	Remodel/Replacment	1.44	1.12
	Programmable Thermostat	Other	Space Heating	Retrofit	10.04	0.26
	Programmable Thermostat	Other	Space Heating	Renovation	3.58	0.42
	•					
_	Programmable Thermostat	Other	Space Heating	Remodel/Replacment	5.66	0.25
	Demand-Controlled Ventilation (controller, sensor)	Other	Space Heating	Retrofit	4.47	(0.41)
	Demand-Controlled Ventilation (controller, sensor)	Other	Space Heating	New construction	5.00	(0.25)

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		ID4	M ID5	Measure ID6	Total	TRC Levelized
_	Manager Name	(e.g., Bldg	Measure ID5 (e.g., End Use)	(e.g., Market: Retrofit, NC, ROB)	Resource	Cost per Saved Therm (\$/Therm)
	Measure Name	type)		· ·		
_	Demand-Controlled Ventilation (controller, sensor)	Other	Space Heating	Remodel/Replacment	7.78	(0.41)
657	Outdoor Air Reset	Other	Space Heating	Retrofit	1.52	2.25
658	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Other	Space Heating	New construction	8.02	0.11
659	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Other	Space Heating	Renovation	8.02	0.11
660	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Other	Space Heating	New construction	1.51	1.05
	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Other	Space Heating	Renovation	1.51	1.05
	Improved below-grade insulation	Other	Space Heating	New construction	1.65	0.97
		1			-1	
	Improved below-grade insulation	Other	Space Heating	Renovation	1.65	0.97
	Sensible Heat Recovery	Other	Space Heating	Retrofit	4.69	2.21
665	Sensible Heat Recovery	Other	Space Heating	New construction	1.24	1.47
666	Sensible Heat Recovery	Other	Space Heating	Remodel/Replacment	1.87	1.26
667	Pipe insulation - space heating	Other	Space Heating	Retrofit	74.13	0.05
	Pipe insulation - space heating	Other	Space Heating	New construction	48.44	0.03
	Pipe insulation - space heating	Other	Space Heating	Renovation	48.44	0.03
					1.40	
	Energy Star washer	Other	Water Heating	New construction	-1	(1.15)
_	Energy Star washer	Other	Water Heating	Remodel/Replacment	2.07	(2.86)
	Swimming pool/spa covers	Other	Miscellaneous	Retrofit	4.43	0.38
673	Swimming pool/spa covers	Other	Miscellaneous	New construction	3.96	0.25
674	Swimming pool/spa covers	Other	Miscellaneous	Remodel/Replacment	4.41	0.22
	Commissioning	Other	Total	New construction	3.25	(1.53)
	Commissioning	Other	Total	Renovation	3.25	(1.53)
	Commissioning				5.13	(2.05)
		Other	Total	Remodel/Replacment		, ,
	Retrocommissioning	Other	Total	Retrofit	6.69	(1.67)
679	Integrated Design - High Performance (30% > codes) - Tier 1	Other	Total	New construction	2.35	0.06
680	Integrated Design - High Performance (50% > codes) Tier 2	Other	Total	New construction	2.35	0.06
681	Steam trap Maintenance	Other	Space Heating	Retrofit	2.74	0.60
682	Oxygen Trim	Other	Space Heating	Retrofit	38.54	0.09
	Oxygen Trim	Other	Space Heating	New construction	68.26	0.02
	Oxygen Trim				50.72	0.03
	• •	Other	Space Heating	Remodel/Replacment	-	
	Infrared Heater	Other	Space Heating	Retrofit	36.31	0.11
686	Infrared Heater	Other	Space Heating	Remodel/Replacment	160.94	0.01
687	Faucet aerator	Multifamily	Water Heating	Retrofit	10.35	(3.38)
688	Graywater heat exchanger/GFX	Multifamily	Water Heating	Retrofit	1.67	1.44
	Graywater heat exchanger/GFX	Multifamily	Water Heating	New construction	1.30	0.74
	Graywater heat exchanger/GFX	Multifamily	Water Heating	Remodel/Replacment	1.67	0.58
			-		9,999.00	
	Low-flow shower heads	Multifamily	Water Heating	Retrofit	- '	(2.44)
	Low-flow shower heads	Multifamily	Water Heating	New construction	6.34	(0.76)
	Low-flow shower heads	Multifamily	Water Heating	Remodel/Replacment	8.13	(0.84)
694	Pipe insulation - water heating	Multifamily	Water Heating	Retrofit	30.29	0.07
695	Pipe insulation - water heating	Multifamily	Water Heating	New construction	23.63	0.04
_	Pipe insulation - water heating	Multifamily	Water Heating	Renovation	23.63	0.04
	Tank insulation	Multifamily	Water Heating	Retrofit	2.24	0.94
	Tank insulation				1.74	0.56
			Water Heating	New construction		
	Tank insulation	Multifamily	Water Heating	Remodel/Replacment	2.24	0.43
	Air Sealing	Multifamily	Space Heating	Retrofit	3.56	1.12
701	Air Sealing	Multifamily	Space Heating	New construction	2.94	0.55
702	Air Sealing	Multifamily	Space Heating	Renovation	2.94	0.55
703	Improved heating system high efficiency unit - Tier 1	Multifamily	Space Heating	New construction	4.36	0.37
	Improved heating system high efficiency unit - Tier 1	Multifamily	Space Heating	Remodel/Replacment	5.41	0.30
	Improved heating system right entitlericy unit - Tier 1	Multifamily	Space Heating	New construction	3.84	0.42
_	Improved heating system condensing unit - Tier 2	Multifamily	Space Heating	Remodel/Replacment	4.77	0.34
	Programmable Thermostat	Multifamily	Space Heating	Retrofit	2.92	1.23
708	Programmable Thermostat	Multifamily	Space Heating	Renovation	2.70	0.60
709	Programmable Thermostat	Multifamily	Space Heating	Remodel/Replacment	3.46	0.47
710	Outdoor Air Reset	Multifamily	Space Heating	Retrofit	2.19	1.57
	Outdoor Air Reset	Multifamily	Space Heating	New construction	1.72	0.98
	Outdoor Air Reset	Multifamily	Space Heating	Remodel/Replacment	2.20	0.76
_					-1	
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Multifamily	Space Heating	New construction	10.12	0.16
	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	Multifamily	Space Heating	Renovation	10.12	0.16
715	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Multifamily	Space Heating	New construction	1.65	0.97
716	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Multifamily	Space Heating	Renovation	1.65	0.97
	Improved roof insulation	Multifamily	Space Heating	New construction	1.05	1.53
_	Improved roof insulation	Multifamily	Space Heating	Renovation	1.05	1.53
	improved root insulation	mununannny				
_	Councilla Hant Banassans	B.A Print				
719	Sensible Heat Recovery Sensible Heat Recovery	Multifamily Multifamily	Space Heating Space Heating	Retrofit New construction	6.13 5.54	0.72 0.36

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2	Total Resource Cost Test Benefit/	Cost Ratio	and Levelized Co	ost of Saved Energy		
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		ID4 (e.g., Bldg	Measure ID5	Measure ID6 (e.g., Market: Retrofit, NC,	Total Resource	TRC Levelized Cost per Saved
5	Measure Name	type)	(e.g., End Use)	ROB)		Therm (\$/Therm)
_	Sensible Heat Recovery	Multifamily	Space Heating	Remodel/Replacment	6.81	0.31
	Pipe insulation - space heating	Multifamily	Space Heating	Retrofit	74.45	0.05
	Pipe insulation - space heating	Multifamily	Space Heating	New construction	59.88	0.03
_	Pipe insulation - space heating	Multifamily	Space Heating	Renovation	59.88	0.03
	Energy Star washer	Multifamily	Water Heating	New construction	1.93	(2.51)
	Energy Star washer	Multifamily	Water Heating	Remodel/Replacment	2.29	(3.09)
_	Swimming pool/spa covers Swimming pool/spa covers	Multifamily Multifamily	Miscellaneous Miscellaneous	Retrofit New construction	4.58 4.35	0.37 0.23
	Swimming pool/spa covers	Multifamily	Miscellaneous	Remodel/Replacment	4.54	0.23
	Commissioning	Multifamily	Total	New construction	4.26	(2.09)
	Commissioning	Multifamily	Total	Renovation	4.26	(2.09)
	Commissioning	Multifamily	Total	Remodel/Replacment	5.46	(2.34)
733	Retrocommissioning	Multifamily	Total	Retrofit	6.99	(1.92)
	Integrated Design - High Performance (30% > codes) - Tier 1	Multifamily	Total	New construction	2.44	(0.03)
_	Integrated Design - High Performance (50% > codes) Tier 2	Multifamily	Total	New construction	2.44	(0.03)
	Steam trap Maintenance	Multifamily	Space Heating	Retrofit	3.74	0.44
_	Oxygen Trim	Multifamily Multifamily	Space Heating	Retrofit New construction	51.57 68.26	0.07 0.02
	Oxygen Trim Oxygen Trim	Multifamily	Space Heating Space Heating	New construction Remodel/Replacment	59.45	0.02
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Subtracted Cost Effective Measures -- Downstate -- Low Avoided Costs

	Subtracted Cost Effective Measures	Downstate	Low Avoid	ed Costs		1
#	Measure Name	Measure ID4 (e.g., Bldg type)	Measure ID5 (e.g., End Use)	Measure ID6 (e.g., Market: Retrofit, NC, ROB)	Total Resource BCR	TRC Levelized Cost per Saved Therm (\$/Therm)
52	Improved heating system high efficiency unit - Tier 1	Office	Space Heating	New construction	0.74	1.56
53	Improved heating system high efficiency unit - Tier 1	Office	Space Heating	Remodel/Replacment	0.93	1.29
55	Improved heating system condensing unit - Tier 2	Office	Space Heating	New construction	0.77	1.56
56	Improved heating system condensing unit - Tier 2	Office	Space Heating	Remodel/Replacment	0.97	1.25
64	Outdoor Air Reset	Office	Space Heating	New construction	0.91	1.39
105	High efficiency ENERGY STAR steam cooker	Retail	Cooking	Retrofit	0.99	1.57
153	Improved heating system condensing unit - Tier 2	Retail	Space Heating	New construction	0.71	1.70
154	Improved heating system condensing unit - Tier 2	Retail	Space Heating	Remodel/Replacment	0.89	1.36
203	High efficiency ENERGY STAR steam cooker	Grocery	Cooking	Retrofit	0.99	1.57
251	Improved heating system condensing unit - Tier 2	Grocery	Space Heating	New construction	0.53	2.29
252	Improved heating system condensing unit - Tier 2	Grocery	Space Heating	Remodel/Replacment	0.65	1.86
345	Improved heating system high efficiency unit - Tier 1	Warehouse	Space Heating	Retrofit	0.79	3.82
348	Improved heating system condensing unit - Tier 2	Warehouse	Space Heating	Retrofit	1.31	2.30
368	Improved roof insulation	Warehouse	Space Heating	New construction	0.87	1.38
369	Improved roof insulation	Warehouse	Space Heating	Renovation	0.87	1.38
370	Sensible Heat Recovery	Warehouse	Space Heating	Retrofit	0.64	3.09
371	Sensible Heat Recovery	Warehouse	Space Heating	New construction	0.65	1.41
372	Sensible Heat Recovery	Warehouse	Space Heating	Remodel/Replacment	0.79	1.31
399	High efficiency ENERGY STAR steam cooker	Education	Cooking	Retrofit	0.99	1.57
409	Cooling system chilled water reset	Education	Cooling	New construction	0.92	0.61
443	Improved heating system high efficiency unit - Tier 1	Education	Space Heating	Retrofit	0.61	4.95
446	Improved heating system condensing unit - Tier 2	Education	Space Heating	Retrofit	2.38	1.27
497	High efficiency ENERGY STAR steam cooker	Health	Cooking	Retrofit	0.99	1.57
554	Outdoor Air Reset	Health	Space Heating	New construction	0.79	1.61
555	Outdoor Air Reset	Health	Space Heating	Remodel/Replacment	0.90	1.40
562	Improved below-grade insulation	Health	Space Heating	New construction	0.95	1.26
563	Improved below-grade insulation	Health	Space Heating	Renovation	0.95	1.26
595	High efficiency ENERGY STAR steam cooker	Lodging	Cooking	Retrofit	0.99	1.57
618	Graywater heat exchanger/GFX	Lodging	Water Heating	New construction	0.83	0.87
662	Improved roof insulation	Lodging	Space Heating	New construction	0.75	1.60
663	Improved roof insulation	Lodging	Space Heating	Renovation	0.75	1.60
693	High efficiency ENERGY STAR steam cooker	Restaurant	Cooking	Retrofit	0.99	1.57
741	Improved heating system condensing unit - Tier 2	Restaurant	Space Heating	New construction	0.57	2.11
742	Improved heating system condensing unit - Tier 2	Restaurant	Space Heating	Remodel/Replacment	0.64	1.89
754	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Restaurant	Space Heating	New construction	0.93	1.29
755	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	Restaurant	Space Heating	Renovation	0.93	1.29
889	High efficiency ENERGY STAR steam cooker	Other	Cooking	Retrofit	0.99	1.57
899	Cooling system chilled water reset	Other	Cooling	New construction	0.86	0.65
902	Cooling system water side economizer	Other	Cooling	New construction	0.90	0.70
928	Tank insulation	Other	Water Heating	New construction	0.92	0.79
937	Improved heating system condensing unit - Tier 2	Other	Space Heating	New construction	0.71	1.71
959	Sensible Heat Recovery	Other	Space Heating	New construction	0.58	1.47
960	Sensible Heat Recovery	Other	Space Heating	Remodel/Replacment	0.88	1.26

Added Cost Effective Measures -- Downstate -- High Avoided Costs

	Added Cost Effective Measures Do	wiistate	nign Avoided	i Cosis		
						TRC Levelized
		Measure				Cost per
		ID4		Measure ID6	Total	Saved
		(e.g., Bldg	Measure ID5	(e.g., Market: Retrofit,	Resource	Therm
#	Measure Name	type)	(e.g., End Use)	NC, ROB)	BCR	(\$/Therm)
29	Graywater heat exchanger/GFX	Office	Water Heating	Retrofit	1.19	2.50
31	Graywater heat exchanger/GFX	Office	Water Heating	Remodel/Replacment	1.21	0.99
70	Improved wall insulation	Office	Space Heating	New construction	1.06	1.86
71	Improved wall insulation	Office	Space Heating	Renovation	1.06	1.86
149	Improved heating system high efficiency unit - Tier 1	Retail	Space Heating	Retrofit	0.92	5.46
152	Improved heating system condensing unit - Tier 2	Retail	Space Heating	Retrofit	1.50	3.35
161	Outdoor Air Reset	Retail	Space Heating	Retrofit	1.02	4.20
168	Improved wall insulation	Retail	Space Heating	New construction	1.17	1.70
169	Improved wall insulation	Retail	Space Heating	Renovation	1.17	1.70
270	Improved roof insulation	Grocery	Space Heating	New construction	1.03	1.95
271	Improved roof insulation	Grocery	Space Heating	Renovation	1.03	1.95
323	Graywater heat exchanger/GFX	Warehouse	Water Heating	Retrofit	1.22	2.46
325	Graywater heat exchanger/GFX	Warehouse	Water Heating	Remodel/Replacment	1.23	0.98
760	Improved roof insulation	Restaurant	Space Heating	New construction	1.14	1.74
761	Improved roof insulation	Restaurant	Space Heating	Renovation	1.14	1.74
912	Graywater heat exchanger/GFX	Other	Water Heating	New construction	1.14	1.05
933	Improved heating system high efficiency unit - Tier 1	Other	Space Heating	Retrofit	1.05	4.77
936	Improved heating system condensing unit - Tier 2	Other	Space Heating	Retrofit	1.82	2.76
947	Outdoor Air Reset	Other	Space Heating	Remodel/Replacment	1.19	1.77

Natu	ıral Gas Sales	Used in	Maste	r Com Ef	f ('000 dTh)]
SALES	S_Used	1	2	3	4	5	6	7	8	9	10		
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other		TOTAL
EXIST	ING END USE SALE									,			
	1 Space Heating	24,750	18,197	2,776	4,097	7,485	9,388	2,506	4,697	26,320	1,354		101570.495
	2 Water Heating	16,038	17,766	1,761	1,153	4,301	10,242	3,485	5,278	10,545	1,181		71748.2737
	3 Cooking	11,703	17,099	1,292	222	2,369	4,402	1,560	7,620	1,308	906		48480.6865
	4 Cooling	1,963	333	191	20	149	512	132	377	0	59		3736.18600
	5 Miscellaneous	0	0	0	154	424	596	330	0	241	47		1791.56946
	6 Total	54,454	53,395	6,019	5,646	14,728	25,140	8,014	17,972	38,415	3,547		227,32
New C	Construction Sales in	('000 dTh): 2007 NS	SALES_Used	i								
	1 Space Heating	199.6	146.8	22.4	33.0	60.4	75.7	20.2	37.9	794.0	10.9		1400.86134
	2 Water Heating	129.3	143.3	14.2	9.3	34.7	82.6	28.1	42.6	318.1	9.5		811.697559
	3 Cooking	94.4	137.9	10.4	1.8	19.1	35.5	12.6	61.4	39.5	7.3		419.893376
	4 Cooling	15.8	2.7	1.5	0.2	1.2	4.1	1.1	3.0	0.0	0.5		
	5 Miscellaneous	0.0	0.0	0.0	1.2	3.4	4.8	2.7	0.0	7.3	0.4		19.7810771
	6 Total	439.1	430.6	48.5	45.5	118.8	202.7	64.6	144.9	1,158.9	28.6		2,68
													230,010
Growt	th Factors — Annual	percents a	apply to 20										
Existin			2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
	1 Office		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	2 Retail		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	3 Grocery		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	4 Warehouse		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	5 Education		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	6 Health		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	7 Lodging		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	8 Restaurant		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	9 Multifamily		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
	10 Other		100.0%	100.8%	101.7%	102.5%	103.4%	104.2%	105.1%	105.9%	106.8%	107.7%	
NC	N_Growth_Used												
	1 Office		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	2 Retail		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	3 Grocery		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	4 Warehouse		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	5 Education		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	6 Health		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	7 Lodging		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	8 Restaurant		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	
	9 Multifamily		100.0%	102.5%	105.1%	107.8%	110.5%	113.3%	116.3%	119.3%	122.5%	125.7%	
l	10 Other		100.0%	100.8%	101.6%	102.4%	103.2%	104.1%	105.1%	106.2%	107.2%	108.3%	

Measure	Life	Enduse	Existing Life	NG Loadshape Name	Elec Loadshape Name
Direct fired convection range/oven	8	Cooking	8	NG Base	None
Exhaust Hood Makeup Air	20	Space Heating	20	NG Com Space Heat	Com Cooling
High efficiency ENERGY STAR fryer	8	Cooking	8	NG Base	None
High efficiency ENERGY STAR steam cooker	10	Cooking	10	NG Base	None
High efficiency griddle	8	Cooking	8	NG Base	None
Pre-Rinse Spray Valve	5	Water Heating	5	NG DHW	None
Refrigeration heat recovery	15	Water Heating	15	NG DHW	Com Refrigeration
, ,					None
Cooling system chilled water reset	15	Cooling	15	NG Cooling	Com Cooling
Cooling system water side economizer	15	Cooling	15	NG Cooling	Com Cooling
Cooling system oversized cooling tower	20	Cooling	20	NG Cooling	Com Cooling
Condensing DHW stand-alone	15	Water Heating	15	NG DHW	None
Faucet aerator	10	Water Heating	10	NG DHW	None
Graywater heat exchanger/GFX	20	Water Heating	20	NG DHW	None
Indirect-fired DHW off space heating boiler	25	Water Heating	25	NG DHW	None
Instantaneous. High-Modulating Water Heater	15	Water Heating	15	NG DHW	None
Low-flow shower heads	10	Water Heating	10	NG DHW	None
Pipe insulation - water heating	15	Water Heating	15	NG DHW	None
Tank insulation	15	Water Heating	15	NG DHW	None
Air Sealing	20	Space Heating	20	NG Com Space Heat	Com Ventilation
Improved heating system high efficiency unit - Tier 1	25	Space Heating	25	NG Com Space Heat	Com Heating
Improved heating system condensing unit - Tier 2	25	Space Heating	25	NG Com Space Heat	None
Programmable Thermostat	10	Space Heating	10	NG Com Space Heat	Com Cooling
Demand-Controlled Ventilation (controller, sensor)	15	Space Heating	15	NG Com Space Heat	Com Cooling
Outdoor Air Reset	2	Space Heating	2	NG Com Space Heat	None
Outdoor All Neset		Space Heating	2	NG Com Space Heat	None
High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	30	Space Heating	30	NG Com Space Heat	Com Cooling
High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	30	Space Heating	30	NG Com Space Heat	Com Cooling
Improved wall insulation	30	Space Heating	30	NG Com Space Heat	Com Cooling
Improved below-grade insulation	30	Space Heating	30	NG Com Space Heat	None
Improved roof insulation	30	Space Heating	30	NG Com Space Heat	Com Cooling
Sensible Heat Recovery	15	Space Heating	15	NG Com Space Heat	Com Economizer
Pipe insulation - space heating	15	Space Heating	15	NG Com Space Heat	None
Energy Star washer	11	Water Heating	11	NG DHW	Com Water Heating
Swimming pool/spa covers	5	Miscellaneous	5	NG DHW	None
Commissioning	7	Total	7	NG Com Space Heat	Com Total Building
Retrocommissioning	7	Total	7	NG Com Space Heat	Com Total Building
Integrated Design - High Performance (30% > codes) - Tier 1	25	Total	25	NG Com Space Heat	Com Total Building
Integrated Design - High Performance (50% > codes) Tier 2	25	Total	25	NG Com Space Heat	Com Total Building
Steam trap Maintenance	1	Space Heating	1	NG Com Space Heat	None
Oxygen Trim	10	Space Heating	10	NG Com Space Heat	None
Infrared Heater	20	Space Heating	20	NG Com Space Heat	None

Development Of Measure Factors

Applicability factors represent the share of end-use level gas usage that is attributable to a particular technology. The analysis drew on a variety of sources to develop applicability factors for each measure by building type. In general, data on market shares for different types and sizes of technologies are weighted based on overall energy consumption or capacity. For example, the applicability factor for condensing boilers reflects the share of total commercial square feet heated by gas that uses hot water boilers of less than approximately 3 million British thermal units per hour (Btuh) capacity. This reflects that condensing boilers are only applicable for hydronic (not steam) systems, and are currently available only up to about 3 million Btuh capacity. Where possible, separate applicability factors for each building type were developed. Where building type data was not available, average data for the total commercial market was used for all building types. New York-specific data was used when available. Alternatively, data from the Northeast or Mid-Atlantic states were used if possible. These data reflect a variety of baseline and market assessment data, including studies done for Long Island Power Authority (LIPA), NYSERDA, proprietary analyses for a number of New York and New Jersey utilities, the Commercial Building Energy Consumption survey (CBECS) developed by EIA, ACEEE, and published market assessments and other potential studies.

Feasibility factors are the fraction of the applicable end use technically feasible for conversion to the high-efficiency technology. Feasibility is not reduced for economic or behavioral barriers. Rather, feasibility reflects only technical or physical constraints that would make measure adoption inappropriate. For example, it is not feasible to install refrigeration heat recovery to supplement domestic hot water usage in buildings that do not have walk-in or other large refrigeration systems and relatively constant hot water loads. In most cases, it is feasible to replace baseline technology with an efficient alternative, resulting in a 100% feasibility factor. These data are based on various studies or engineering judgment. Major sources of data include a number of proprietary U.S. potential studies conducted in the past 5-years.

Measure savings factors are calculated based on individual measure data and assumptions about existing stock efficiency (for retrofit measures), standard practice for construction and purchases (for market-driven measures), and high-efficiency options. Measure-savings characteristics were developed using public and private information sources, including NYSERDA, CBECS, California Energy Commission, Efficiency Vermont, American Council for an Energy Efficient Economy (ACEEE), Lawrence Berkeley Laboratory (LBL), National Fenestration Rating Council (NFRC), various Northeastern U.S. baseline and market assessment studies, recent gas potential studies, and communications with manufacturers and vendors. Measure savings are expressed in % of baseline energy usage.

Baseline adjustment factors were used to adjust long term savings downward for retrofit measures. The initial savings for retrofit measures is the difference between the typical existing stock efficiency and the high-efficiency alternative. However, the long-term savings are the difference between the typical baseline efficiency of new construction and equipment and the high-efficiency alternative, which is typically lower. If retrofits were not considered, the existing stock eventually would get replaced with new baseline efficiency measures anyway. In most cases, the current baseline efficiency is more efficient than the average existing stock. For example, clothes washing equipment meeting U.S. Energy Policy Act (EPAct) efficiency levels are baseline for new clothes washer purchases. However, the average efficiency of clothes washers existing today in commercial buildings falls short of EPAct levels. The baseline adjustment factor adjusts the savings downward in future years for retrofit measures. The analysis assumes the vintage of all measures replaced in retrofit markets is half of its estimated measure life. Therefore, the baseline adjustment applies in the year immediately following half of the measure life. Baseline adjustment factors were developed based on the relative baseline efficiencies of new and existing stock, from current and historical technology, baseline and market assessment studies. Baseline adjustment factors are expressed in % of first year energy savings.

Electric and water savings factors (kWh/Dth-yr) and (gallons/Dth-yr) were developed based on engineering calculations or simulation modeling to calculate non-gas resource impacts.

Annual to peak-day ratios were used to estimate the measure peak-day impacts. The analysis relies on 8,760 hourly end-use and building-type specific load shape data to estimate these ratios, separately for each building type and measure. Load shape data is from Regional Economic Research.

Measure lives were developed from various sources including prior potential studies, NYSERDA, DOE, EPA, ACEEE, ASHRAE, Efficiency Vermont, NFRC, equipment manufacturers and professional judgment. The estimated measure lives reflect both engineering service life and estimated remodel activity.

Measure costs for each of the 40 technologies were developed based on a variety of sources, including but not limited to proprietary studies or data from northeastern United States utilities, R.S. Means, Efficiency Vermont, Grainger, and a California Energy Commission database of equipment costs, and discussions with equipment vendors. Measure costs obtained outside the Northeast region were adjusted based on R.S. Means location factors to better reflect New York costs. Retrofit measure costs include the total material and labor cost. Market-driven measure costs reflect the incremental material and labor cost of high efficiency as compared to standard practice.

Measure costs per Dth annual savings (\$/Dth) were developed for each building type for each of the 40 technologies analyzed, based on building-type-specific data, and the market applied to.

O&M cost impacts are considered in addition to measure installation costs. These reflect any incremental effects on O&M costs for each measure over its lifetime. O&M cost impacts reflect changes in measure and replacement component lives and costs for both the high- and standard-efficiency options.

Deferral credits were captured to properly estimate the long-term societal costs of retrofit measures. Related to O&M costs, the analysis accounts for the time value of permanently deferring the equipment purchase cycle for early-retirement (retrofit) measures. For example, a high-efficiency space heating unit typically lasts 25-years. If an existing space heating unit expected to last another 10-years is retrofitted with a new, high-efficiency model, the customer no longer has to purchase a new one in 10-years. Rather, the next space heating purchase will be in 25-years. Thus, all future space heating purchases have now been shifted out by fifteen years in perpetuity. This deferment of future capital investments provides a societal benefit by lowering present-value replacement costs. This societal value is captured through a "deferral credit." The analysis assumed the remaining life of all existing measures to be retrofitted was, on average, equal to one half of the total measure life (for example, for an HVAC unit with a 25- year life, it was assumed the average existing unit was 12.5-years old and would normally be replaced 12.5-years hence).

Base-case penetrations were used to estimate the current and future market penetration of measures without any program intervention. The potential efficiency for any given measure is a function of the size of the market, the measure characteristics and the base-case penetration that would occur absent any market intervention. Base-case penetrations for each of the 40 technologies were separately estimated. In some cases, differing estimates by building-type are used, but in many cases, this level of disaggregation was not supported by the data. The base-case represents the existing and forecast measure penetrations that are assumed to underlie the forecast, which assumes no gas program interventions, but does take into account current and expected codes and standards, as well as current and expected New York electric efficiency programs. For retrofit measures, 5% of existing stock is assumed to likely be modified for retrofit reasons over the 10-year planning horizon (equivalent to assuming a 5% freeridership for the economic potential). Base-case penetrations for each of the market-driven measures were estimated to reflect expectations about likely market adoptions, based on expert judgment, review of market assessments, and knowledge of likely codes and standards changes over the planning period.

"Not complete" factors were used to eliminate any opportunities in the retrofit market where efficient equipment already exists rather than relying on base-case penetrations. These factors represent the remaining share of existing stock that has not already adopted the efficient measures. In other words, if 10% of existing buildings have condensing furnaces, the not complete factor for this measure would be 90%. Therefore, for retrofit measures base-case penetrations start at 0%.

Competing Technologies are accounted for with the economic potential penetrations. For the economic potential, by definition, 100% penetration is assumed whenever a measure is applicable and feasible. However, some of the technologies modeled are mutually exclusive -- that is, one or the other could be installed, but not both. For example, water heaters can be replaced with a stand-alone unit, an integrated system off a boiler, or point-of-use heaters. When two or more measures compete with one another, the adoption of the measure offering the highest per-unit savings or greatest anticipated cost-effectiveness is counted first. The penetration of the next competing measure was then estimated based on the remaining potential, taking into account the applicability, feasibility, and achievable penetration of the first measure. In other words, if 100% of water heaters could be replaced with condensing stand-alone units (and this measure is considered first), then 0% penetration opportunity remains for the other competing measures.

Interactions factors were used to account for interactions among measures. Individual measure savings are not additive. Because of interactions between measures, the total potential for all measures is less than the sum of individual measure opportunities taken independently. For example, installing high performance windows will reduce heating load and therefore lower the savings opportunities from installing a condensing boiler. Interaction factors are separately estimated for retrofit, existing building market-driven, and new construction markets. This is because some measures only apply to one market. For example, integrated high efficiency design applies only for new construction, retrocommissioning applies only for retrofit. As a result, the measures that interact with each other differ for each market. The measures within a group that interact, typically by end-use, are ranked based on priority. Although some measures, like commissioning, interact with all end uses. This ranking is based on per unit savings, or judgment about what measures are typically most cost-effective and likely to offer the greatest customer benefit. Each subsequent interacting measure is then adjusted for the potential savings captured by the prior measure.

It should be noted that the rank order does not affect ultimate total potential savings. However, it does effect the per measure savings and cost-effectiveness. A measure further down in the ranking would still cost the same amount to install, but is assumed to save less because of prior measures already assumed to be installed.

Note that both competing measure issues and interactions are not considered for the program scenario potential estimate. This is because the program scenario is sufficiently lower than likely maximum achievable potential that penetrations are not high enough to assume most customers are pursuing numerous measures at once.

APPLICA	ABILITY	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	0%	18%	18%	0%	18%	18%	18%	18%	0%	0%
2	Exhaust Hood Makeup Air	1%	2%	3%	6%	3%	1%	1%	20%	0%	1%
3	High efficiency ENERGY STAR fryer	54%	46%	46%	54%	46%	46%	46%	46%	0%	78%
4	High efficiency ENERGY STAR steam cooker	0%	6%	6%	0%	6%	6%	6%	6%	0%	5%
5	High efficiency griddle	46%	10%	10%	46%	10%	10%	10%	10%	0%	17%
6	Pre-Rinse Spray Valve	1%	1%	10%	1%	2%	2%	2%	40%	0%	1%
7	Refrigeration heat recovery	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
8											
9	Cooling system chilled water reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10	Cooling system water side economizer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11	Cooling system oversized cooling tower	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
12	Condensing DHW stand-alone	62%	62%	62%	62%	62%	62%	62%	62%	0%	62%
13	Faucet aerator	50%	60%	5%	60%	15%	15%	5%	5%	5%	26%
14	Graywater heat exchanger/GFX	2%	0%	0%	2%	33%	2%	20%	50%	20%	13%
15	Indirect-fired DHW off space heating boiler	21%	6%	16%	6%	32%	36%	33%	16%	0%	20%
16	Instantaneous. High-Modulating Water Heater	62%	62%	62%	62%	62%	62%	62%	62%	0%	62%
17	Low-flow shower heads	2%	0%	0%	2%	33%	2%	20%	0%	20%	13%
18	Pipe insulation - water heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
19	Tank insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	
20	Air Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
21	Improved heating system high efficiency unit - Tier 1	48%	48%	48%	48%	48%	48%	48%	48%	48%	
22	Improved heating system condensing unit - Tier 2	48%	48%	48%	48%	48%	48%	48%	48%	48%	
23	Programmable Thermostat	74%	74%	74%	74%	74%	74%	74%	74%	74%	
24	Demand-Controlled Ventilation (controller, sensor)	10%	100%	100%	100%	100%	100%	100%	100%	100%	
25	Outdoor Air Reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	
28	Improved wall insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	
29	Improved below-grade insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	
30	Improved roof insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	
31	Sensible Heat Recovery	74%	74%	74%	74%	74%	74%	74%	74%	74%	
32	Pipe insulation - space heating	48%	48%	48%	48%	48%	48%	48%	48%	48%	
33	Energy Star washer	0%	0%	0%	0%	1%	0%	1%	0%	1%	
34	Swimming pool/spa covers	0%	0%	0%	0%	70%	20%	90%	0%	90%	
35	Commissioning	71%	71%	71%	71%	71%	71%	71%	71%	71%	
36	Retrocommissioning	54%	54%	54%	54%	54%	54%	54%	54%	54%	
37	Integrated Design - High Performance (30% > codes) - Tier 1	93%	93%	93%	93%	93%	93%	93%	93%	93%	
38	Integrated Design - High Performance (50% > codes) - Her 1	93%	93%	93%	93%	93%	93%	93%	93%	93%	
39	Steam trap Maintenance	26%	93% 26%	93% 26%	26%	26%	93% 26%	93% 26%	26%	93% 26%	
39 40	Oxygen Trim	48%	26% 48%	26% 48%	26% 48%	26% 48%	26% 48%	26% 48%	26% 48%	26% 48%	
	Infrared Heater	48% 0%	48% 0%			48% 0%	48% 0%	48% 0%		48% 0%	
41	inirared Heater	0%	υ%	50%	75%	0%	υ%	υ%	0%	0%	50%

FEASIBIL	ITY	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
2	Exhaust Hood Makeup Air	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
3	High efficiency ENERGY STAR fryer	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
4	High efficiency ENERGY STAR steam cooker	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
5	High efficiency griddle	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
6	Pre-Rinse Spray Valve	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%
7	Refrigeration heat recovery	10%	5%	80%	10%	15%	80%	20%	80%	0%	5%
8											
9	Cooling system chilled water reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10	Cooling system water side economizer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11	Cooling system oversized cooling tower	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
12	Condensing DHW stand-alone	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
13	Faucet aerator	95%	95%	25%	95%	50%	25%	50%	25%	50%	75%
14	Graywater heat exchanger/GFX	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
15	Indirect-fired DHW off space heating boiler	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
16	Instantaneous. High-Modulating Water Heater	10%	10%	0%	10%	10%	10%	0%	0%	0%	10%
17	Low-flow shower heads	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
18	Pipe insulation - water heating	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
19	Tank insulation	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
20	Air Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
21	Improved heating system high efficiency unit - Tier 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
22	Improved heating system condensing unit - Tier 2	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
23	Programmable Thermostat	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%
24	Demand-Controlled Ventilation (controller, sensor)	100%	100%	100%	100%	100%	0%	50%	100%	0%	100%
25	Outdoor Air Reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	75%	75%	0%	0%	75%	75%	75%	75%	75%	75%
28	Improved wall insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
29	Improved below-grade insulation	100%	100%	100%	100%	100%	100%	0%	100%	0%	100%
30	Improved roof insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
31	Sensible Heat Recovery	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	Pipe insulation - space heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
33	Energy Star washer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
34	Swimming pool/spa covers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
35	Commissioning	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%
36	Retrocommissioning	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
37	Integrated Design - High Performance (30% > codes) - Tier 1	80%	80%	80%	80%	80%	50%	80%	50%	80%	100%
38	Integrated Design - High Performance (50% > codes) Tier 2	13%	13%	5%	5%	13%	0%	9%	0%	9%	80%
39	Steam trap Maintenance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
40	Oxygen Trim	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%
41	Infrared Heater	0%	0%	65%	100%	0%	0%	0%	0%	0%	35%

TURNOV	ER	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
2	Exhaust Hood Makeup Air	5%	5%	5%	5%	5%	5%	5%	5%		5%
3	High efficiency ENERGY STAR fryer	13%	13%	13%	13%	13%	13%	13%	13%		13%
4	High efficiency ENERGY STAR steam cooker	10%	10%	10%	10%	10%	10%	10%	10%		10%
5	High efficiency griddle	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
6	Pre-Rinse Spray Valve	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
7	Refrigeration heat recovery	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
8											
9	Cooling system chilled water reset	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
10	Cooling system water side economizer	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
11	Cooling system oversized cooling tower	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
12	Condensing DHW stand-alone	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
13	Faucet aerator	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
14	Graywater heat exchanger/GFX	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
15	Indirect-fired DHW off space heating boiler	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
16	Instantaneous. High-Modulating Water Heater	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
17	Low-flow shower heads	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
18	Pipe insulation - water heating	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
19	Tank insulation	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
20	Air Sealing	5%	5%	5%	5%	5%	5%	5%	5%		5%
21	Improved heating system high efficiency unit - Tier 1	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
22	Improved heating system condensing unit - Tier 2	4%	4%	4%	4%	4%	4%	4%	4%		4%
23	Programmable Thermostat	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
24	Demand-Controlled Ventilation (controller, sensor)	7%	7%	7%	7%	7%	7%	7%	7%		7%
25	Outdoor Air Reset	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	3%	3%	3%	3%	3%	3%	3%	3%		3%
28	Improved wall insulation	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
29	Improved below-grade insulation	3%	3%	3%	3%	3%	3%	3%	3%		3%
30	Improved roof insulation	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
31	Sensible Heat Recovery	7%	7%	7%	7%	7%	7%	7%	7%		7%
32	Pipe insulation - space heating	7%	7%	7%	7%	7%	7%	7%	7%		7%
33	Energy Star washer	9%	9%	9%	9%	9%	9%	9%	9%		9%
34	Swimming pool/spa covers	20%	20%	20%	20%	20%	20%	20%	20%		20%
35	Commissioning	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
36	Retrocommissioning	14%	14%	14%	14%	14%	14%	14%	14%		14%
37	Integrated Design - High Performance (30% > codes) - Tier 1	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
38	Integrated Design - High Performance (50% > codes) Tier 2	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
39	Steam trap Maintenance	100%	100%	100%	100%	100%	100%	100%	100%		100%
40	Oxygen Trim	10%	10%	10%	10%	10%	10%	10%	10%		10%
41	Infrared Heater	5%	5%	5%	5%	5%	5%	5%	5%		5%

	fit measures not complete										
RET_Not_	_Complete	1	2	3	4	5	6	. 7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven										
2	Exhaust Hood Makeup Air										
3	High efficiency ENERGY STAR fryer										
4	High efficiency ENERGY STAR steam cooker	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
5	High efficiency griddle										
6	Pre-Rinse Spray Valve	40%	40%	40%	40%	40%	40%	40%	40%	40%	
7	Refrigeration heat recovery	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
8											
9	Cooling system chilled water reset	80%	80%	80%	80%	80%	80%	80%	80%	80%	
10	Cooling system water side economizer	80%	80%	80%	80%	80%	80%	80%	80%	80%	
11	Cooling system oversized cooling tower	80%	80%	80%	80%	80%	80%	80%	80%	80%	
12	Condensing DHW stand-alone	95%	95%	95%	95%	95%	95%	95%	95%	95%	
13	Faucet aerator	10%	10%	10%	10%	10%	10%	10%	10%	10%	
14	Graywater heat exchanger/GFX	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
15	Indirect-fired DHW off space heating boiler	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
16	Instantaneous. High-Modulating Water Heater	93%	89%	100%	94%	99%	92%	100%	97%	100%	93%
17	Low-flow shower heads	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
18	Pipe insulation - water heating	50%	73%	70%	76%	14%	33%	49%	75%	49%	59%
19	Tank insulation	89%	76%	100%	100%	25%	25%	25%	86%	25%	25%
20	Air Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
21	Improved heating system high efficiency unit - Tier 1	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
22	Improved heating system condensing unit - Tier 2	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
23	Programmable Thermostat	49%	79%	78%	38%	49%	49%	34%	50%	34%	42%
24	Demand-Controlled Ventilation (controller, sensor)	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
25	Outdoor Air Reset	53%	79%	80%	78%	17%	75%	57%	100%	57%	17%
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1										
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2										
28	Improved wall insulation										
29	Improved below-grade insulation										
30	Improved roof insulation										
31	Sensible Heat Recovery	90%	90%	76%	69%	74%	90%	62%	78%	50%	50%
32	Pipe insulation - space heating	25%	25%	25%	25%	25%	25%	25%	25%	25%	
33	Energy Star washer										
34	Swimming pool/spa covers	0%	0%	0%	0%	27%	50%	80%	0%	80%	63%
35	Commissioning					,,			-,-		
36	Retrocommissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
37	Integrated Design - High Performance (30% > codes) - Tier 1	. 5576	. 55 76	.5576	. 50 70	.0070	.0070	.0070	. 5070	.3070	.55%
38	Integrated Design - High Performance (50% > codes) Tier 2										
39	Steam trap Maintenance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
40	Oxygen Trim	90%	90%	90%	90%	90%	90%	90%	90%	90%	
40	Infrared Heater	100%	100%	100%	94%	100%	100%	100%	100%	100%	

MD ENE	RGY SAVINGS FRACTIONS	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
2	Exhaust Hood Makeup Air	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%
3	High efficiency ENERGY STAR fryer	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
4	High efficiency ENERGY STAR steam cooker	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
5	High efficiency griddle	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
6	Pre-Rinse Spray Valve										
7	Refrigeration heat recovery	5%	8%	14%	77%	20%	2%	3%	47%	0%	5%
8											
9	Cooling system chilled water reset	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
10	Cooling system water side economizer	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
11	Cooling system oversized cooling tower	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
12	Condensing DHW stand-alone	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
13	Faucet aerator										
14	Graywater heat exchanger/GFX	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
15	Indirect-fired DHW off space heating boiler	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
16	Instantaneous. High-Modulating Water Heater	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
17	Low-flow shower heads	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
18	Pipe insulation - water heating	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
19	Tank insulation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
20	Air Sealing	21%	13%	1%	8%	15%	13%	9%	11%	9%	14%
21	Improved heating system high efficiency unit - Tier 1	6%	4%	4%	4%	6%	22%	6%	4%	6%	7%
22	Improved heating system condensing unit - Tier 2	8%	4%	3%	3%	8%	8%	8%	3%	8%	6%
23	Programmable Thermostat	4%	7%	7%	44%	17%	0%	3%	7%	3%	7%
24	Demand-Controlled Ventilation (controller, sensor)	2%	15%	37%	21%	32%	0%	12%	22%	12%	12%
25	Outdoor Air Reset	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	11%	1%	1%	1%	5%	7%	4%	8%	4%	6%
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	15%	3%	0%	0%	6%	9%	4%	10%	4%	8%
28	Improved wall insulation	6%	5%	6%	8%	4%	9%	2%	6%	2%	6%
29	Improved below-grade insulation	0%	1%	14%	2%	1%	0%	0%	2%	0%	1%
30	Improved roof insulation	1%	5%	6%	7%	3%	1%	1%	3%	1%	3%
31	Sensible Heat Recovery	7%	34%	37%	25%	25%	27%	15%	46%	15%	24%
32	Pipe insulation - space heating	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
33	Energy Star washer	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
34	Swimming pool/spa covers	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
35	Commissioning	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
36	Retrocommissioning										
37	Integrated Design - High Performance (30% > codes) - Tier 1	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
38	Integrated Design - High Performance (50% > codes) Tier 2	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
39	Steam trap Maintenance										
40	Oxygen Trim	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
41	Infrared Heater	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%

RET ENE	RGY SAVINGS FRACTIONS	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven										
2	Exhaust Hood Makeup Air										
3	High efficiency ENERGY STAR fryer										
4	High efficiency ENERGY STAR steam cooker	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
5	High efficiency griddle										
6	Pre-Rinse Spray Valve	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
7	Refrigeration heat recovery	5%	8%	14%	77%	20%	2%	3%	47%	0%	5%
8											
9	Cooling system chilled water reset	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
10	Cooling system water side economizer	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
11	Cooling system oversized cooling tower	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
12	Condensing DHW stand-alone	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
13	Faucet aerator	75%	75%	50%	75%	50%	50%	75%	50%	75%	50%
14	Graywater heat exchanger/GFX	40%	40%	40%	40%	40%	40%	40%	40%	40%	
15	Indirect-fired DHW off space heating boiler	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
16	Instantaneous. High-Modulating Water Heater	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
17	Low-flow shower heads	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
18	Pipe insulation - water heating	2%	2%	2%	2%	2%	2%	2%	2%	2%	
19	Tank insulation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
20	Air Sealing	21%	13%	1%	8%	15%	13%	9%	11%	9%	14%
21	Improved heating system high efficiency unit - Tier 1	6%	4%	4%	4%	6%	22%	6%	4%	6%	
22	Improved heating system condensing unit - Tier 2	8%	4%	3%	3%	8%	8%	8%	3%	8%	
23	Programmable Thermostat	4%	7%	7%	44%	17%	0%	3%	7%	3%	
24	Demand-Controlled Ventilation (controller, sensor)	2%	15%	37%	21%	32%	0%	12%	22%	12%	
25	Outdoor Air Reset	2%	2%	2%	2%	2%	2%	2%	2%	2%	
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1										
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2										
28	Improved wall insulation										
29	Improved below-grade insulation										
30	Improved roof insulation										
31	Sensible Heat Recovery	7%	34%	37%	25%	25%	27%	15%	46%	15%	24%
32	Pipe insulation - space heating	2%	2%	2%	2%	2%	2%	2%	2%	2%	
33	Energy Star washer	_,,			-/-	_,,		-/-	-7*		
34	Swimming pool/spa covers	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
35	Commissioning	0070	0070	0070	0070	0070	0070	0070	0070	0070	0070
36	Retrocommissioning	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
37	Integrated Design - High Performance (30% > codes) - Tier 1	070	070	070	070	070	070	070	0,0	070	070
38	Integrated Design - High Performance (50% > codes) Tier 2										
39	Steam trap Maintenance	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
40	Oxygen Trim	5%	5%	5% 5%	5%	5%	5%	5%	5%	5% 5%	
40	Infrared Heater	12%	12%	12%	12%	12%	12%	12%	12%	12%	

Ultimate savings as percent of first year savings.

BASELIN	E_ADJUST	1	2	3	4	5	6	. 7	. 8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven										
2	Exhaust Hood Makeup Air										
3	High efficiency ENERGY STAR fryer										
4	High efficiency ENERGY STAR steam cooker	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
5	High efficiency griddle										
6	Pre-Rinse Spray Valve	0%	0%	0%	0%	0%	0%	0%	0%	0%	
7	Refrigeration heat recovery	100%	100%	100%	100%	100%	100%	100%	100%	100%	
8											100%
9	Cooling system chilled water reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	
10	Cooling system water side economizer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11	Cooling system oversized cooling tower	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
12	Condensing DHW stand-alone	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
13	Faucet aerator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
14	Graywater heat exchanger/GFX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
15	Indirect-fired DHW off space heating boiler	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
16	Instantaneous. High-Modulating Water Heater	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
17	Low-flow shower heads	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
18	Pipe insulation - water heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
19	Tank insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	
20	Air Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
21	Improved heating system high efficiency unit - Tier 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
22	Improved heating system condensing unit - Tier 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
23	Programmable Thermostat	100%	100%	100%	100%	100%	100%	100%	100%	100%	
24	Demand-Controlled Ventilation (controller, sensor)	100%	100%	100%	100%	100%	100%	100%	100%	100%	
25	Outdoor Air Reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1										
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2										
28	Improved wall insulation										
29	Improved below-grade insulation										
30	Improved roof insulation										
31	Sensible Heat Recovery	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	Pipe insulation - space heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	
33	Energy Star washer	10070	10070	.0070	.0070	10070	.0070	10070	10070	10070	.0070
34	Swimming pool/spa covers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
35	Commissioning	10070	10070	10070	10070	10070	10070	10070	10070	10070	10070
36	Retrocommissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
37	Integrated Design - High Performance (30% > codes) - Tier 1	10070	10070	10070	10070	10070	10070	10070	10070	10070	10070
38	Integrated Design - High Performance (50% > codes) Tier 2										
39	Steam trap Maintenance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Oxygen Trim	100%	100%	100%	100%	100%	100%	100%	100%	100%	
40 41	Infrared Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	
41	IIIIaieu nealei	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

kWh kW	Th saved/Peak day dTH saved			•		5		7	8		10
KWN_KW	_ratio	1 Office	2 Retail	3 Grocery	4 Warehouse	5 Education	6 Health	/ Lodging	8 Restaurant	9 Multifamily	10 Other
	Direct first securities are referen	268	363	363	281	226	351	Loaging 365	363	365	Otner 344
1	Direct fired convection range/oven Exhaust Hood Makeup Air		76	73	86	67	89	62	80	62	85
2		86	363	363	281	226	351	365	363	365	344
3	High efficiency ENERGY STAR fryer	268				226 226	351	365	363	365	344
4	High efficiency ENERGY STAR steam cooker	268	363 363	363 363	281 281	226 226	351	365 365	363	365	344
5	High efficiency griddle	268						308	299	308	291
6	Pre-Rinse Spray Valve	293	300	300	640	226	291			308	291
/	Refrigeration heat recovery	293	300	300	640	226	291	308	299	308	291
8					000 000 000	000 000 000	000 000 000	000 000 000	000 000 000	000 000 000	999,999,999
9	Cooling system chilled water reset	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999 999,999,999	999,999,999 999,999,999	999,999,999 999,999,999	999,999,999
10	Cooling system water side economizer	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	, ,	, ,	, ,	
11	Cooling system oversized cooling tower	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999	999,999,999
12	Condensing DHW stand-alone	293	300	300	640	226	291	308	299	308	291
13	Faucet aerator	293	300	300	640	226	291	308	299	308	291
14	Graywater heat exchanger/GFX	293	300	300	640	226	291	308	299	308	291
15	Indirect-fired DHW off space heating boiler	293	300	300	640	226	291	308	299	308	291
16	Instantaneous. High-Modulating Water Heater	293	300	300	640	226	291	308	299	308	291
17	Low-flow shower heads	293	300	300	640	226	291	308	299	308	291
18	Pipe insulation - water heating	293	300	300	640	226	291	308	299	308	291
19	Tank insulation	293	300	300	640	226	291	308	299	308	291
20	Air Sealing	86	76	73	86	67	89	62	80	62	85
21	Improved heating system high efficiency unit - Tier 1	86	76	73	86	67	89	62	80	62	85
22	Improved heating system condensing unit - Tier 2	86	76	73	86	67	89	62	80	62	85
23	Programmable Thermostat	86	76	73	86	67	89	62	80	62	85
24	Demand-Controlled Ventilation (controller, sensor)	86	76	73	86	67	89	62	80	62	85
25	Outdoor Air Reset	86	76	73	86	67	89	62	80	62	85
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	86	76	73	86	67	89	62	80	62	85
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	86	76	73	86	67	89	62	80	62	85
28	Improved wall insulation	86	76	73	86	67	89	62	80	62	85
29	Improved below-grade insulation	86	76	73	86	67	89	62	80	62	85
30	Improved roof insulation	86	76	73	86	67	89	62	80	62	85
31	Sensible Heat Recovery	86	76	73	86	67	89	62	80	62	85
32	Pipe insulation - space heating	86	76	73	86	67	89	62	80	62	85
33	Energy Star washer	293	300	300	640	226	291	308	299	308	291
34	Swimming pool/spa covers	293	300	300	640	226	291	308	299	308	291
35	Commissioning	86	76	73	86	67	89	62	80	62	85
36	Retrocommissioning	86	76	73	86	67	89	62	80	62	85
37	Integrated Design - High Performance (30% > codes) - Tier 1	86	76	73	86	67	89	62	80	62	85
38	Integrated Design - High Performance (50% > codes) Tier 2	86	76	73	86	67	89	62	80	62	85
39	Steam trap Maintenance	86	76	73	86	67	89	62	80	62	85
40	Oxygen Trim	86	76	73	86	67	89	62	80	62	85
41	Infrared Heater	86	76	73	86	67	89	62	80	62	85

kWh saved or increased per dTh saved (negative for increased electric usage)

kWh DTh	ed or increased per dTh saved (negative for increased electric usage)	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Exhaust Hood Makeup Air	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35
3	High efficiency ENERGY STAR fryer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	High efficiency ENERGY STAR steam cooker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	High efficiency griddle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Pre-Rinse Spray Valve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Refrigeration heat recovery	11.99	11.99	11.99	11.99	11.99	11.99	11.99	11.99	11.99	11.99
8											
9	Cooling system chilled water reset	(12.77)	(12.77)	(12.77)	(12.77)	(12.77)	(12.77)	(12.77)	(12.77)	(12.77)	(12.77)
10	Cooling system water side economizer	10.21	10.21	10.21	10.21	10.21	10.21	10.21	10.21	`10.21 [´]	10.21
11	Cooling system oversized cooling tower	(11.13)	(11.13)	(11.13)	(11.13)	(11.13)	(11.13)	(11.13)	(11.13)	(11.13)	(11.13)
12	Condensing DHW stand-alone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	Faucet aerator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Graywater heat exchanger/GFX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Indirect-fired DHW off space heating boiler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Instantaneous. High-Modulating Water Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Low-flow shower heads	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Pipe insulation - water heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Tank insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Air Sealing	24.21	14.45	(6.51)	14.45	4.37	61.37	0.00	8.93	0.00	14.45
21	Improved heating system high efficiency unit - Tier 1	(25.98)	0.00	0.00	0.00	0.00	(20.08)	0.00	0.00	0.00	(5.12)
22	Improved heating system condensing unit - Tier 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Programmable Thermostat	9.51	0.49	0.49	0.00	7.42	0.00	0.00	0.00	0.00	5.46
24	Demand-Controlled Ventilation (controller, sensor)	21.47	455.77	255.79	0.00	3.31	255.79	0.00	5.07	0.00	142.93
25	Outdoor Air Reset	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	24.63	(11.76)	(15.63)	4.64	3.02	93.09	0.00	(9.38)	0.00	10.52
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	19.83	0.00	0.00	0.00	5.39	2.88	0.00	(9.91)	0.00	4.83
28	Improved wall insulation	49.91	15.25	9.87	2.77	8.17	48.09	0.00	4.16	0.00	17.17
29	Improved below-grade insulation	0.00	(51.50)	(54.90)	3.33	(7.54)	0.00	0.00	(52.94)	0.00	(19.85)
30	Improved roof insulation	9.90	26.79	(20.29)	3.79	0.48	15.53	0.00	17.65	0.00	6.79
31	Sensible Heat Recovery	(395.43)	(180.22)	(180.22)	(180.22)	(81.22)	(202.05)	0.00	(141.18)	0.00	(180.22)
32	Pipe insulation - space heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	Energy Star washer	57.79	57.79	57.79	57.79	57.79	57.79	57.79	57.79	57.79	57.79
34	Swimming pool/spa covers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	Commissioning	571.43	571.43	571.43	571.43	571.43	571.43	571.43	571.43	571.43	571.43
36	Retrocommissioning	261.54	261.54	261.54	261.54	261.54	261.54	261.54	261.54	261.54	261.54
37	Integrated Design - High Performance (30% > codes) - Tier 1	185.71	185.71	185.71	185.71	185.71	185.71	185.71	185.71	185.71	185.71
38	Integrated Design - High Performance (50% > codes) Tier 2	185.71	185.71	185.71	185.71	185.71	185.71	185.71	185.71	185.71	185.71
39	Steam trap Maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Oxygen Trim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	Infrared Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

kW saved or increased per dTh saved (negative for increased electric usage)

kW_DTh	or increased per dTh saved (negative for increased electric usage)	1	2	3	4	5	6	7	8	9	10
KW_DIII		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Exhaust Hood Makeup Air	0.06	0.04	0.04	0.02	0.06	0.03	0.04	0.02	0.04	0.03
3	High efficiency ENERGY STAR fryer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	High efficiency ENERGY STAR steam cooker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	High efficiency griddle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Pre-Rinse Spray Valve	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Refrigeration heat recovery	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	·										
9	Cooling system chilled water reset	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
10	Cooling system water side economizer	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01
11	Cooling system oversized cooling tower	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
12	Condensing DHW stand-alone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	Faucet aerator	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Graywater heat exchanger/GFX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Indirect-fired DHW off space heating boiler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Instantaneous. High-Modulating Water Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Low-flow shower heads	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Pipe insulation - water heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Tank insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Air Sealing	0.04	0.01	(0.01)	0.01	0.01	0.05	0.00	0.00	0.00	0.01
21	Improved heating system high efficiency unit - Tier 1	(0.04)	0.00	0.00	0.00	0.00	(0.02)	0.00	0.00	0.00	(0.00)
22	Improved heating system condensing unit - Tier 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Programmable Thermostat	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
24	Demand-Controlled Ventilation (controller, sensor)	0.00	0.06	0.03	0.00	0.00	0.04	0.00	0.00	0.00	0.02
25	Outdoor Air Reset	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	0.04	(0.01)	(0.01)	0.00	0.00	0.07	0.00	(0.00)	0.00	0.01
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	0.03	0.00	0.00	0.00	0.01	0.00	0.00	(0.00)	0.00	0.00
28	Improved wall insulation	0.08	0.01	0.01	0.00	0.01	0.04	0.00	0.00	0.00	0.01
29	Improved below-grade insulation	0.00	(0.05)	(0.05)	0.00	(0.01)	0.00	0.00	(0.03)	0.00	(0.02)
30	Improved roof insulation	0.02	0.02	(0.02)	0.00	0.00	0.01	0.00	0.01	0.00	0.01
31	Sensible Heat Recovery	(0.07)	(0.03)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
32	Pipe insulation - space heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	Energy Star washer	0.01	0.01	0.01	0.02	0.02	0.01	(0.02)	0.02	(0.02)	0.01
34	Swimming pool/spa covers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35	Commissioning	0.18	0.22	0.10	0.13	0.20	0.13	0.20	0.13	0.20	0.15
36	Retrocommissioning	0.08	0.10	0.05	0.06	0.09	0.06	0.09	0.06	0.09	0.07
37	Integrated Design - High Performance (30% > codes) - Tier 1	0.06	0.07	0.03	0.04	0.06	0.04	0.06	0.04	0.06	0.05
38	Integrated Design - High Performance (50% > codes) Tier 2	0.06	0.07	0.03	0.04	0.06	0.04	0.06	0.04	0.06	0.05
39	Steam trap Maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Oxygen Trim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	Infrared Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Water	Gallons/dTh saved	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Exhaust Hood Makeup Air	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	High efficiency ENERGY STAR fryer	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	High efficiency ENERGY STAR steam cooker	5,749.99	5,749.99	5,749.99	5,749.99	5,749.99	5,749.99	5,749.99	5,749.99	5,749.99	5,749.99
5	High efficiency griddle	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Pre-Rinse Spray Valve	1,422.42	1,422.42	1,422.42	1,422.42	1,422.42	1,422.42	1,422.42	1,422.42	1,422.42	1,422.42
7	Refrigeration heat recovery	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8											
9	Cooling system chilled water reset	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Cooling system water side economizer	1,031.55	1,031.55	1,031.55	1,031.55	1,031.55	1,031.55	1,031.55	1,031.55	1,031.55	1,031.55
11	Cooling system oversized cooling tower	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)	(10,844.49)
12	Condensing DHW stand-alone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	Faucet aerator	4,168.52	4,168.52	4,168.52	4,168.52	4,168.52	4,168.52	4,168.52	4,168.52	4,168.52	4,168.52
14	Graywater heat exchanger/GFX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Indirect-fired DHW off space heating boiler	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Instantaneous. High-Modulating Water Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Low-flow shower heads	2,531.95	2,531.95	2,531.95	2,531.95	2,531.95	2,531.95	2,531.95	2,531.95	2,531.95	2,531.95
18	Pipe insulation - water heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Tank insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Air Sealing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Improved heating system high efficiency unit - Tier 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Improved heating system condensing unit - Tier 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Programmable Thermostat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Demand-Controlled Ventilation (controller, sensor)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	Outdoor Air Reset	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	Improved wall insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	Improved below-grade insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Improved roof insulation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	Sensible Heat Recovery	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Pipe insulation - space heating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33	Energy Star washer	14,265.83	14,265.83	14,265.83	14,265.83	14,265.83	14,265.83	14,265.83	14,265.83	14,265.83	14,265.83
34	Swimming pool/spa covers	26.26	26.26	26.26	26.26	26.26	26.26	26.26	26.26	26.26	26.26
35	Commissioning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	Retrocommissioning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	Integrated Design - High Performance (30% > codes) - Tier 1	28.02	28.02	28.02	28.02	28.02	28.02	28.02	28.02	28.02	28.02
38	Integrated Design - High Performance (50% > codes) Tier 2	28.02	28.02	28.02	28.02	28.02	28.02	28.02	28.02	28.02	28.02
39	Steam trap Maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Oxygen Trim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	Infrared Heater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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MD_COS	TS		1	2		3		4	5	6		7		8		9	10
		7	Office	Retail	G	rocery	War	ehouse	ducation	Health	Lo	odging	Res	taurant	Mυ	ıltifamily	 Other
1	Direct fired convection range/oven	\$	19.31	19.31	\$	19.31	\$	19.31	19.31	\$	\$		\$	19.31	\$		\$ 19.31
2	Exhaust Hood Makeup Air	\$	13.19	13.19	\$	13.19	\$	13.19	\$ 13.19		\$	13.19		13.19	\$	13.19	\$ 13.19
3	High efficiency ENERGY STAR fryer	\$	30.11	30.11	\$	30.11	\$	30.11	\$ 30.11	30.11	\$	30.11		30.11	\$		\$ 30.11
4	High efficiency ENERGY STAR steam cooker	\$	20.57	\$ 20.57		20.57		20.57	\$	20.57	\$		\$	20.57	\$	20.57	20.57
5	High efficiency griddle	\$	244.00	\$ 244.00	\$	244.00	\$	244.00	\$ 244.00	\$ 244.00	\$	244.00	\$	244.00	\$	244.00	\$ 244.00
6	Pre-Rinse Spray Valve																
7	Refrigeration heat recovery	\$	28.05	\$ 28.05	\$	28.05	\$	28.05	\$ 28.05	\$ 28.05	\$	28.05	\$	28.05	\$	28.05	\$ 28.05
8																	
9	Cooling system chilled water reset	\$	36.41	\$ 36.41	\$	36.41	\$	36.41	\$ 36.41	\$	\$	36.41	\$	36.41	\$	36.41	\$ 36.41
10	Cooling system water side economizer	\$	73.92	\$ 73.92	\$	73.92	\$	73.92	\$ 73.92	\$ 73.92	\$	73.92	\$	73.92	\$	73.92	73.92
11	Cooling system oversized cooling tower	\$	156.84	\$ 156.84	\$	156.84	\$	156.84	\$ 156.84	\$ 156.84	\$	156.84	\$	156.84	\$	156.84	156.84
12	Condensing DHW stand-alone	\$	21.99	\$ 21.99	\$	29.32	\$	21.99	\$ 35.18	\$ 21.99	\$	21.99	\$	29.32	\$	21.99	\$ 21.99
13	Faucet aerator																
14	Graywater heat exchanger/GFX	\$	119.03	\$ 119.03	\$	119.03	\$	119.03	\$ 41.40	\$ 41.40	\$	80.22	\$	41.40	\$	80.22	\$ 80.22
15	Indirect-fired DHW off space heating boiler	\$	41.44	\$ 41.44	\$	55.25	\$	41.44	\$ 66.30	\$ 41.44	\$	41.44	\$	55.25	\$	41.44	\$ 41.44
16	Instantaneous. High-Modulating Water Heater	\$	12.95	\$ 12.95	\$	17.26	\$	12.95	\$ 20.72	\$ 12.95	\$	12.95	\$	17.26	\$	12.95	\$ 12.95
17	Low-flow shower heads	\$	5.35	5.35		5.35	\$	5.35	\$ 4.20	\$ 20.15	\$	20.15		5.35	\$	20.15	\$ 8.38
18	Pipe insulation - water heating	\$	3.64	\$ 3.64	\$	3.64	\$	3.64	\$ 3.64	\$ 3.64	\$	3.64	\$	3.64	\$	3.64	\$ 3.64
19	Tank insulation	\$	49.27	\$ 49.27	\$	49.27	\$	49.27	\$ 49.27	\$ 49.27	\$	49.27	\$	49.27	\$	49.27	\$ 49.27
20	Air Sealing	\$	53.56	\$ 38.86	\$	422.40	\$	83.52	\$ 33.55	\$ 57.42	\$	57.07	\$	39.21	\$	57.07	\$ 58.78
21	Improved heating system high efficiency unit - Tier 1	\$	170.83	\$ 140.52	\$	139.27	\$	69.78	\$ 71.04	\$ 11.90	\$	45.83	\$	141.51	\$	45.83	\$ 118.01
22	Improved heating system condensing unit - Tier 2	\$	192.51	\$ 209.60	\$	286.79	\$	143.98	\$ 79.31	\$ 59.49	\$	51.95	\$	292.30	\$	51.95	\$ 172.28
23	Programmable Thermostat	\$	52.79	\$ 13.63	\$	14.25	\$	2.56	\$ 7.59	\$ -	\$	36.43	\$	11.55	\$	36.43	\$ 22.83
24	Demand-Controlled Ventilation (controller, sensor)	\$	13.96	\$ 54.30	\$	21.82	\$	47.92	\$ 39.34	\$ -	\$	68.93	\$	31.02	\$	68.93	\$ 30.44
25	Outdoor Air Reset	\$	19.32	\$ 35.14	\$	42.39	\$	109.73	\$ 42.33	\$ 23.52	\$	13.71	\$	132.68	\$	13.71	\$ 28.62
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	\$	27.37	\$ 16.12	\$	20.32	\$	18.63	\$ 12.80	\$ 16.63	\$	20.40	\$	25.28	\$	20.40	\$ 20.13
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	\$	163.07	\$ 78.44	\$	-	\$	-	\$ 88.74	\$ 99.81	\$	125.29	\$	147.58	\$	125.29	\$ 103.42
28	Improved wall insulation	\$	327.25	\$ 212.08	\$	208.18	\$	378.35	\$ 296.81	\$ 150.30	\$	637.24	\$	255.17	\$	637.24	\$ 266.66
29	Improved below-grade insulation	\$	80.36	\$ 92.48	\$	8.24	\$	80.78	\$ 84.69	\$ 169.05	\$	-	\$	116.92	\$	-	\$ 92.20
30	Improved roof insulation	\$	342.63	\$ 167.56	\$	164.10	\$	155.72	\$ 443.72	\$ 302.61	\$	198.00	\$	227.43	\$	198.00	\$ 260.90
31	Sensible Heat Recovery	\$	106.87	\$ 1.41	\$	3.31	\$	34.75	\$ 21.16	\$ 16.87	\$	22.62	\$	0.48	\$	22.62	\$ 37.25
32	Pipe insulation - space heating	\$	2.29	\$ 2.29	\$	2.29	\$	2.29	\$ 2.29	\$ 2.29	\$	2.29	\$	2.29	\$	2.29	\$ 2.29
33	Energy Star washer	\$	260.00	\$ 260.00	\$	260.00	\$	260.00	\$ 260.00	\$ 260.00	\$	260.00	\$	260.00	\$	260.00	\$ 260.00
34	Swimming pool/spa covers	\$	1.95	\$ 1.95	\$	1.95	\$	1.95	\$ 1.95	\$ 1.95	\$	1.95	\$	1.95	\$	1.95	\$ 1.95
35	Commissioning	\$	54.48	\$ 54.48	\$	54.48	\$	54.48	\$ 54.48	\$ 54.48	\$	54.48	\$	54.48	\$	54.48	\$ 54.48
36	Retrocommissioning																
37	Integrated Design - High Performance (30% > codes) - Tier 1	\$	171.56	\$ 171.56	\$	171.56	\$	171.56	\$ 171.56	\$ 171.56	\$	171.56	\$	171.56	\$	171.56	\$ 171.56
38	Integrated Design - High Performance (50% > codes) Tier 2	\$	171.56	\$ 171.56	\$	171.56	\$	171.56	\$ 171.56	\$ 171.56	\$	171.56	\$	171.56	\$	171.56	\$ 171.56
39	Steam trap Maintenance																
40	Oxygen Trim	\$	1.97	\$ 1.97	\$	1.97	\$	1.97	\$ 1.97	\$ 1.97	\$	1.97	\$	1.97	\$	1.97	\$ 1.97
41	Infrared Heater	\$	1.21	1.21		1.21		1.21	1.21	1.21		1.21		1.21		1.21	1.21

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RET_COS	its	 1		2		3		4		5		6		7		8		9	10
		 Office	F	Retail	G	Grocery	V	Varehouse	Е	ducation	H	Health	Loc	lging	R	estaurant	M	ultifamily	Other
1	Direct fired convection range/oven	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
2	Exhaust Hood Makeup Air	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
3	High efficiency ENERGY STAR fryer	\$ -	\$	-	\$	-	\$	-	\$		\$	-	\$	-	\$	-	\$	-	\$ -
4	High efficiency ENERGY STAR steam cooker	\$ 457.97	\$	457.97	\$	457.97	\$	457.97	\$		\$			457.97	\$	457.97	\$	457.97	\$ 457.97
5	High efficiency griddle	\$ -	\$	-	\$	-	\$	-	\$		\$		\$	-	\$	-	\$	-	\$ -
6	Pre-Rinse Spray Valve	\$ 1.82	\$	1.82	\$		\$		\$		\$		\$	1.82			\$		\$ 1.82
7	Refrigeration heat recovery	\$ 28.05	\$	28.05	\$	28.05	\$	28.05	\$	28.05	\$	28.05	\$	28.05	\$	28.05	\$	28.05	\$ 28.05
8																			
9	Cooling system chilled water reset	\$ 36.41	\$	36.41	\$		\$		\$		\$	36.41		36.41	\$	36.41			\$ 36.41
10	Cooling system water side economizer	\$ 73.92	\$	73.92	\$	73.92	\$	73.92	\$	73.92	\$	73.92	\$	73.92	\$	73.92	\$	73.92	\$ 73.92
11	Cooling system oversized cooling tower	\$ 700.09	\$	700.09	\$	700.09	\$	700.09	\$	700.09	\$	700.09		700.09	\$	700.09	\$	700.09	\$ 700.09
12	Condensing DHW stand-alone	\$ 45.87	\$	45.87	\$	61.16	\$	45.87	\$	73.39	\$	45.87	\$	45.87	\$	61.16	\$	45.87	\$ 45.87
13	Faucet aerator	\$ 32.02	\$	10.40	\$	10.40	\$	10.40	\$	32.02	\$	32.02	\$	21.21	\$	10.40	\$	21.21	\$ 21.21
14	Graywater heat exchanger/GFX	\$ 119.03	\$	119.03	\$	119.03	\$	119.03	\$	41.40	\$	41.40	\$	80.22	\$	41.40	\$	80.22	\$ 80.22
15	Indirect-fired DHW off space heating boiler	\$ 67.58	\$	67.58	\$	90.11	\$	67.58	\$	108.13	\$	67.58	\$	67.58	\$	90.11	\$	67.58	\$ 67.58
16	Instantaneous. High-Modulating Water Heater	\$ 55.95	\$	55.95	\$	74.61	\$	55.95	\$	89.53	\$	55.95	\$	55.95	\$	74.61	\$	55.95	\$ 55.95
17	Low-flow shower heads	\$ 5.35		5.35		5.35	\$	5.35	\$	5.35	\$	5.35	\$	5.35		5.35	\$	5.35	\$ 5.35
18	Pipe insulation - water heating	\$ 3.64	\$	3.64	\$	3.64	\$	3.64	\$	3.64	\$	3.64	\$	3.64	\$	3.64	\$	3.64	\$ 3.64
19	Tank insulation	\$ 49.27	\$	49.27	\$	49.27	\$	49.27	\$	49.27	\$	49.27	\$	49.27	\$	49.27	\$	49.27	\$ 49.27
20	Air Sealing	\$ 37.78	\$	33.96	\$	350.08	\$	66.78	\$	61.90	\$	22.96	\$	57.07	\$	31.84	\$	57.07	\$ 32.05
21	Improved heating system high efficiency unit - Tier 1	\$ 885.22	\$	585.95	\$	677.28	\$	348.03	\$	463.60	\$	58.99	\$ 2,	732.50	\$	814.34	\$	2,732.50	\$ 430.96
22	Improved heating system condensing unit - Tier 2	\$ 192.51	\$	209.60	\$	286.79	\$	143.98	\$	79.31	\$	59.49	\$	51.95	\$	292.30	\$	51.95	\$ 172.28
23	Programmable Thermostat	\$ 44.59	\$	14.23	\$	25.78	\$	2.45	\$	5.93	\$	-	\$	43.63	\$	11.56	\$	43.63	\$ 12.99
24	Demand-Controlled Ventilation (controller, sensor)	\$ 13.96	\$	47.46	\$	19.22	\$	38.31	\$	46.22	\$	-	\$	68.93	\$	25.19	\$	68.93	\$ 51.78
25	Outdoor Air Reset	\$ 13.62	\$	30.71	\$	35.13	\$	87.74	\$	39.47	\$	9.40	\$	13.71	\$	107.76	\$	13.71	\$ 16.83
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
28	Improved wall insulation	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
29	Improved below-grade insulation	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
30	Improved roof insulation	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
31	Sensible Heat Recovery	\$ 75.38	\$	1.23	\$	3.21	\$	27.79	\$	19.42	\$	6.75	\$	22.62	\$	0.39	\$	22.62	\$ 11.19
32	Pipe insulation - space heating	\$ 2.29	\$	2.29	\$	2.29	\$	2.29	\$	2.29	\$	2.29	\$	2.29	\$	2.29	\$	2.29	\$ 2.29
33	Energy Star washer	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
34	Swimming pool/spa covers	\$ 1.95	\$	1.95	\$	1.95	\$	1.95	\$	1.95	\$	1.95	\$	1.95	\$	1.95	\$	1.95	\$ 1.95
35	Commissioning	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -
36	Retrocommissioning	\$ 27.20	\$	27.20	\$	27.20	\$	27.20	\$	27.20	\$	27.20	\$	27.20	\$	27.20	\$	27.20	\$ 27.20
37	Integrated Design - High Performance (30% > codes) - Tier 1	\$ -	\$	-	\$		\$	-	\$		\$	-	\$	-	\$	_	\$	_	\$ -
38	Integrated Design - High Performance (50% > codes) Tier 2	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	_	\$ -
39	Steam trap Maintenance	\$ 3.33	\$	3.33	\$	3.33	\$	3.33	\$	3.33	\$	3.33	\$	3.33	\$	3.33	\$	3.33	\$ 3.33
40	Oxygen Trim	\$ 1.97	\$	1.97	\$	1.97	\$	1.97	\$	1.97			\$	1.97	\$	1.97	\$		\$ 1.97
41	Infrared Heater	\$ 8.48	\$			8.48				8.48			\$	8.48		8.48			\$ 8.48

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RET_BAS	E_COSTS	1	2		3		4		5		6		7	8		9	10
		Office	Retail	G	Procery	W	/arehouse	Е	ducation	H	lealth	L	odging	Restaura	ıt	Multifamily	Other
1	Direct fired convection range/oven																
2	Exhaust Hood Makeup Air																
3	High efficiency ENERGY STAR fryer																
4	High efficiency ENERGY STAR steam cooker	\$ 431.87	\$ 431.87	\$	431.87	\$	431.87	\$	431.87	\$	431.87	\$	431.87	\$ 431	.87	\$ 431.87	\$ 431.87
5	High efficiency griddle																
6	Pre-Rinse Spray Valve	\$ 1.36	\$ 1.36		1.36		1.36		1.36	\$	1.36	\$	1.36		.36		1.36
7	Refrigeration heat recovery	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -	\$ -
8																	
9	Cooling system chilled water reset	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
10	Cooling system water side economizer	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
11	Cooling system oversized cooling tower	\$ 543.25	\$ 543.25		543.25	\$	543.25	\$	543.25	\$		\$	543.25		.25		
12	Condensing DHW stand-alone	\$ 24.85	\$ 25.20	\$	32.73	\$	42.18	\$	39.95	\$	25.47	\$	23.81	\$ 31	.14	\$ 23.81	\$ 23.44
13	Faucet aerator	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
14	Graywater heat exchanger/GFX	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
15	Indirect-fired DHW off space heating boiler	\$ 29.99	\$ 30.42	\$	39.50	\$	50.90	\$	48.22	\$	30.74	\$	28.74	\$ 37	.58	\$ 28.74	\$ 28.29
16	Instantaneous. High-Modulating Water Heater	\$	\$ 44.11	\$	57.27	\$	73.81		69.91	\$		\$	41.67		.49		
17	Low-flow shower heads	\$ 3.74	\$ 3.74	\$	3.74	\$	3.74	\$	2.93	\$	14.07	\$	14.07	\$ 3	.74	\$ 14.07	\$ 5.85
18	Pipe insulation - water heating	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$,	\$ -	\$ -
19	Tank insulation	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$,	\$ -	\$ -
20	Air Sealing	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$,	\$ -	\$ -
21	Improved heating system high efficiency unit - Tier 1	\$ 714.68	\$ 623.60	\$	538.01	\$	278.26	\$	393.56	\$	47.09	\$	201.44	\$ 672	.83	\$ 201.44	\$ 349.33
22	Improved heating system condensing unit - Tier 2	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -		\$ -	\$ -
23	Programmable Thermostat	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$,	\$ -	\$ -
24	Demand-Controlled Ventilation (controller, sensor)	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -		\$ -	\$ -
25	Outdoor Air Reset	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -		\$ -	\$ -
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1																
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2																
28	Improved wall insulation																
29	Improved below-grade insulation																
30	Improved roof insulation	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
31	Sensible Heat Recovery	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
32	Pipe insulation - space heating	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
33	Energy Star washer																
34	Swimming pool/spa covers	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
35	Commissioning																
36	Retrocommissioning	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
37	Integrated Design - High Performance (30% > codes) - Tier 1																
38	Integrated Design - High Performance (50% > codes) Tier 2																
39	Steam trap Maintenance	\$ -	\$ -	\$	-	\$	-	\$	-	\$	-	\$	-	\$		\$ -	\$ -
40	Oxygen Trim	\$ _	\$ _	\$	_	\$	-	\$	_	\$	_	\$	_	1		\$ -	\$ _
41	Infrared Heater	\$ 7.27	7.27		7.27		7.27		7.27	-	7.27		7.27		.27		7.27

% replace	ment/remodel interaction or overlap factor												
MD Intera	actions	1	2	3	4	5	6	7	8	9	10	rank order	interacts
MD_IIIter		Office	Retail		•			Lodging	-	Multifamily	Other	order	WILI
1	Direct fired convection range/oven	100%	100%	100%		100%	100%	100%	100%	100%	100%	0	
2	Exhaust Hood Makeup Air	93%	83%	67%	74%	69%	87%	89%	78%	93%	84%	10	2a,3,9
3	High efficiency ENERGY STAR fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
4	High efficiency ENERGY STAR steam cooker	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
5	High efficiency griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
6	Pre-Rinse Spray Valve	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
7	Refrigeration heat recovery	85%	87%	86%	87%	79%	84%	81%	78%	95%	84%	8	,1,2,4,6,7
8													
9	Cooling system chilled water reset	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%		,2a,3
10	Cooling system water side economizer	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%		,2a,3
11	Cooling system oversized cooling tower	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%		,2a
12	Condensing DHW stand-alone	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
13	Faucet aerator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
14	Graywater heat exchanger/GFX	87%	88%	87%	88%	85%	85%	85%	87%	100%	87%		,1,2
15	Indirect-fired DHW off space heating boiler	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
16	Instantaneous. High-Modulating Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
17	Low-flow shower heads	86%	88%	87%	88%	80%	85%	82%	79%	96%	84%		,1,2,4
18	Pipe insulation - water heating	87%	88%	87%	88%	85%	85%	85%	87%	100%	87%		,1,2
19	Tank insulation	87%	88%	87%	88%	85%	85%	85%	87%	100%	87%		,1,2
20	Air Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
21	Improved heating system high efficiency unit - Tier 1	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%		2a
22	Improved heating system condensing unit - Tier 2	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%		2a
23	Programmable Thermostat	94%	95%	95%	95%	94%	87%	94%	95%	94%	93%		,2a,3
24	Demand-Controlled Ventilation (controller, sensor)	94%	95%	95%	95%	94%	87%	94%	95%	94%	93%		,2a,3
25	Outdoor Air Reset	93%	83%	67%		69%	87%	89%	78%	93%	84%		,2a,3,4,5
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	93%	83%	67%	74%	69%	87%	89%	78%	93%	84%		,2a,3,5,9
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	93%	83%	67%	74%	69%	87%	89%	78%	93%	84%		,2a,3,5,9
28	Improved wall insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
29	Improved below-grade insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
30	Improved roof insulation	100%		100%	100%	100%	100%	100%	100%	100%	100%		
31	Sensible Heat Recovery	92%	82%	66%	73%	68%	86%	88%	77%	92%	83%		2a,3,4,5,7
32	Pipe insulation - space heating	92%	82%	66%		68%	86%	88%	77%	92%	83%		2a,3,4,5,7
33	Energy Star washer	83%	85%	84%	84%	77%	81%	79%	76%	92%	81%		2a,1,2,4,6,7
34	Swimming pool/spa covers	83%	85%	84%	84%	82%	82%	82%	84%	96%	83%		2a,1,2,6,7
35	Commissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		0
36	Retrocommissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
37	Integrated Design - High Performance (30% > codes) - Tier 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		0
38	Integrated Design - High Performance (50% > codes) Tier 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		0
39	Steam trap Maintenance	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
40	Oxygen Trim	91%	68%	54%	64%	60%	81%	83%	58%	87%	74%		2a,4,5,7,8,9
41	Infrared Heater	96%	85%	68%	75%	71%	97%	92%	80%	96%	87%	13	2a,4,5

) interim	interactions	1	2	3	4	5	6	7	8	9	10
		Office	Retail		Warehouse I		Health		Restaurant M		Other
	Direct fired convection range/or	0%	5%	5%	0%	5%	5%	5%		0%	C
	Exhaust Hood Makeup Air	0%	1%	1%	2%	1%	0%	0%		0%	0
	High efficiency ENERGY STAF	14%	12%	12%	14%	12%	12%	12%		0%	20
	High efficiency ENERGY STAF	0%	2%	2%	0%	2%	2%	2%		0%	2
	High efficiency griddle	3%	1%	1%	3%	1%	1%	1%		0%	
	Pre-Rinse Spray Valve	0%	0%	0%	0%	0%	0%	0%		0%	
	Refrigeration heat recovery	0%	0%	10%	7%	3%	2%	1%	34%	0%	
8											
	Cooling system chilled water re	-1%	-1%	-1%	-1%	-1%	-1%	-1%		-1%	-
	Cooling system water side eco	15%	15%	15%	15%	15%	15%	15%		15%	1
	Cooling system oversized cooli	2%	2%	2%	2%	2%	2%	2%		2%	
	Condensing DHW stand-alone	11%	11%	11%	11%	11%	11%	11%		0%	1
	Faucet aerator	0%	0%	0%	0%	0%	0%	0%		0%	
	Graywater heat exchanger/GF)	0%	0%	0%	0%	6%	0%	4%		4%	
	Indirect-fired DHW off space h€	2%	1%	2%	1%	4%	4%	4%		0%	
	Instantaneous. High-Modulating	-0.04%	0%	0%	0%	0%	0%	0%		0%	
	Low-flow shower heads	1%	0%	0%	1%	10%	1%	6%		6%	
	Pipe insulation - water heating	1%	1%	1%	1%	1%	1%	1%		1%	
	Tank insulation	0%	0%	0%	0%	0%	0%	0%		0%	
	Air Sealing	20%	13%	1%	7%	14%	12%	9%	11%	9%	1
	Improved heating system high	2%	2%	2%	2%	2%	9%	2%	2%	2%	
22	Improved heating system cond	1%	0%	0%	0%	1%	1%	1%	0%	1%	
23	Programmable Thermostat	1%	1%	1%	8%	3%	0%	0%	1%	0%	
24	Demand-Controlled Ventilation	0%	11%	29%	16%	24%	0%	5%	17%	0%	
25	Outdoor Air Reset	1%	1%	1%	1%	1%	1%	1%	1%	1%	
26	High Performance Glazing dou	5%	0%	0%	1%	2%	3%	2%	4%	2%	
27	High Performance Glazing tripl	11%	2%	0%	0%	4%	7%	3%	8%	3%	
	Improved wall insulation	6%	5%	6%	8%	4%	9%	2%		2%	
29	Improved below-grade insulation	0%	1%	14%	2%	1%	0%	0%	2%	0%	
30	Improved roof insulation	1%	5%	6%	7%	3%	1%	1%	3%	1%	
31	Sensible Heat Recovery	4%	19%	21%	14%	14%	15%	8%	26%	8%	1
32	Pipe insulation - space heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	
33	Energy Star washer	0%	0%	0%	0%	0%	0%	0%	0%	0%	
34	Swimming pool/spa covers	0%	0%	0%	0%	17%	5%	22%	0%	22%	
	Commissioning	3%	3%	3%	3%	3%	3%	3%	3%	3%	
	Retrocommissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Integrated Design - High Perfor	21%	21%	21%	21%	21%	13%	21%		21%	2
	Integrated Design - High Perfor	2%	2%	1%	1%	2%	0%	2%		2%	1
	Steam trap Maintenance	0%	0%	0%	0%	0%	0%	0%		0%	
	Oxygen Trim	1%	1%	1%	1%	1%	1%	1%		1%	
	Infrared Heater	0%	0%	1%	3%	0%	0%	0%		0%	

% new													
constructio													
/renovatio													
n													
interaction													
factor													
NC_Interact						_						rank	interacts
ions		1	2	3	4	5	6	7	8	9	10	order	with
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other		
1	Direct fired convection range/oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%)
2	Exhaust Hood Makeup Air	72%	73%	74%	74%	72%	76%	73%	82%	73%	59%	10	1,2,3,9
3	High efficiency ENERGY STAR fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	()
4	High efficiency ENERGY STAR steam cooker	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%)
5	High efficiency griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%)
6	Pre-Rinse Spray Valve	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
7	Refrigeration heat recovery	67%	68%	68%	69%	66%	74%	67%	76%	78%	55%	8	1a,1,2
8	-	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
9	Cooling system chilled water reset	74%	74%	75%	75%	74%	83%	74%	83%	74%	60%		1,2,3
10	Cooling system water side economizer	74%	74%	75%	75%	74%	83%	74%	83%	74%	60%		1,2,3
11	Cooling system oversized cooling tower	75%	75%	76%	76%	75%	84%	76%	84%	76%	61%		1,2
12	Condensing DHW stand-alone	77%	77%	79%	79%	77%	87%	78%	87%	78%	63%	1	1a
13	Faucet aerator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1	1
14	Graywater heat exchanger/GFX	67%	68%	68%	69%	66%	74%	67%	76%	78%	55%	_	1a,1,2
15	Indirect-fired DHW off space heating boiler	77%	77%	79%	79%	77%	87%	78%	87%	78%	63%		1a, 1, 2
16	Instantaneous. High-Modulating Water Heater	77%	77%	79%	79%	77%	87%	78%	87%	78%	63%		1a
17	Low-flow shower heads	67%	68%	68%	69%	62%	74%	64%	68%	75%	53%		1a,1,2,4
18	Pipe insulation - water heating	67%	68%	68%	69%	66%	74%	67%	76%	78%	55%		1a,1,2
19	Tank insulation	67%	68%	68%	69%	66%	74%	67%	76%	78%	55%		1a,1,2
20	Air Sealing	74%	75%	76%	71%	73%	79%	75%	84%	75%	60%		1,3,4
21	Improved heating system high efficiency unit - Tier 1	77%	77%	79%	79%	77%	87%	78%	87%	78%	63%	1 3	1,5,4
22	Improved heating system condensing unit - Tier 2	77%	77%	79%	79%	77%	87%	78%	87%	78%	63%		3
23	Programmable Thermostat	73%	73%	75%	75%	73%	76%	73%	83%	73%	59%	1 7	1,2,3
24	Demand-Controlled Ventilation (controller, sensor)	73%	73%	75%	75%	73%	76%	73%	83%	73%	59%	-	1,2,3
25	Outdoor Air Reset	72%	64%	53%	58%	53%	76%	69%	68%	73%	53%	1	1,2,3,4,5
23	Oddool All Reset	12/0	04 /6	3370	30 /0	3376	10%	0970	00 /0	13/0	3370	interacts	1,2,3,4,3
												with	1
												mechan	
-00	TELE CONTROL OF THE PROPERTY O	700/	050/	500/	000/	550/	700/	700/	0001	700/	F 40/		
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	72%	65%	53%	63%	55%	76%	70%	69%	73%	54%	interacts	1,2,3,5,9
													'I
												with	
												mechan	
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	72%	65%	53%	63%	55%	76%	70%	69%	73%	54%		1,2,3,5,9
												interacts	•
												with	
												mechan	i
28	Improved wall insulation	72%	65%	53%	63%	55%	76%	70%	69%	73%	54%		1,2,3,5,9
												interacts	1
												with	I
												mechan	il
29	Improved below-grade insulation	72%	65%	53%	63%	55%	76%	70%	69%	73%	54%		1,2,3,5,9
	1 · · · · · · · · · · · · · · · · · · ·											interacts	,-,-
												with	1
												mechan	il
30	Improved roof inculation	72%	65%	53%	63%	55%	76%	70%	60%	73%	5.4%		12350

55% 55% 74% 66% 66% 77% 100% 100% 100% 100% 76% 78% 78% 74% 87% 100% 100% 100% 100% 100% 70% 71% 75% 67% 67% 100% 100% 100% 100% 100% 69% 69% 84% 76% 87% 100% 100% 100% 100% 100%

63% 59% 76% 69% 79% 100% 100% 100% 100% 100%

72% 74% 74% 67% 67% 100% 100% 100% 100% 65% 66% 75% 68% 68% 77% 100% 100% 100% 100% 53% 54% 76% 68% 68% 79% 100% 100% 100% 100% 100% 73% 74% 75% 78% 78% 100% 100% 100% 100% 100% mechani cal only 1,2,3,5,9 8 1,3,4,5,7 9 1,3,7 9 1a,1,2 10 1a,1,2 2 1a

Improved roof insulation
Sensible Heat Recovery
Pipe insulation - space heating
Energy Star washer
Swimming pool/spa covers
Commissioning
Retrocommissioning
Retrocommissioning
Integrated Design - High Performance (30% > codes) - Tier 1
Integrated Design - High Performance (50% > codes) Tier 2
Steam trap Maintenance
Oxygen Trim
Infrared Heater

C interim	Interactions	1 Office	2 Retail	3 Grocery	4 Warehouse	5 Education	6 Health	7 Lodging	8 Restaurant	9 Multifamily	10 Other
1	Direct fired convection range/oven	0%	5%	5%		5%	5%	5%	5%	0%	00
2	Exhaust Hood Makeup Air	0%	1%	1%	2%	1%	0%	0%	6%	0%	09
3	High efficiency ENERGY STAR fry	14%	12%	12%	14%	12%	12%	12%	12%	0%	209
4	High efficiency ENERGY STAR ste	0%	2%	2%	0%	2%	2%	2%	2%	0%	2
5	High efficiency griddle	3%	1%	1%		1%	1%	1%	1%	0%	1
6	Pre-Rinse Spray Valve	0%	0%	0%		0%	0%	0%		0%	0
7	Refrigeration heat recovery	0%	0%	10%	7%	3%	2%	1%	34%	0%	0
8											
9	Cooling system chilled water reset	-1%	-1%	-1%		-1%	-1%	-1%	-1%	-1%	-1
10	Cooling system water side econon	15%	15%	15%		15%	15%	15%	15%	15%	15
11	Cooling system oversized cooling	2%	2%	2%		2%	2%	2%	2%	2%	2
12	Condensing DHW stand-alone	11%	11%	11%		11%	11%	11%		0%	11
13	Faucet aerator	0%	0%	0%		0%	0%	0%	0%	0%	C
14	Graywater heat exchanger/GFX	0%	0%	0%		6%	0%	4%	10%	4%	3
15	Indirect-fired DHW off space heatii	2%	1%	2%		4%	4%	4%	2%	0%	2
16	Instantaneous. High-Modulating W	-0.04%	0%	0%		0%	0%	0%	0%	0%	(
17	Low-flow shower heads	1%	0%	0%		10%	1%	6%	0%	6%	4
18	Pipe insulation - water heating	1%	1%	1%		1%	1%	1%	1%	1%	
19	Tank insulation	0%	0%	0%		0%	0%	0%	0%	0%	(
20	Air Sealing	20%	13%	1%		14%	12%	9%	11%	9%	14
21	Improved heating system high effic	2%	2%	2%		2%	9%	2%	2%	2%	:
22	Improved heating system condens	1%	0%	0%		1%	1%	1%	0%	1%	
23	Programmable Thermostat	1%	1%	1%		3%	0%	0%	1%	0%	
24 25	Demand-Controlled Ventilation (cc Outdoor Air Reset	0% 1%	11% 1%	29% 1%		24% 1%	0% 1%	5% 1%	17% 1%	0% 1%	
26	High Performance Glazing double	5%	0%	0%	1%	2%	3%	2%	4%	2%	3
27	High Performance Glazing triple pa	11%	2%	0%	0%	4%	7%	3%	8%	3%	
28	Improved wall insulation	6%	5%	6%	8%	4%	9%	2%	6%	2%	6
29	Improved below-grade insulation	0%	1%	14%	2%	1%	0%	0%	2%	0%	
30	_Improved roof insulation	1%	5%	6%		3%	1%	1%	3%	1%	
31	Sensible Heat Recovery	4%	19%	21%		14%	15%	8%	26%	8%	1
32	Pipe insulation - space heating	0%	0%	0%		0%	0%	0%	0%	0%	
33	Energy Star washer	0%	0%	0%		0%	0%	0%	0%	0%	
34	Swimming pool/spa covers	0%	0%	0%		17%	5%	22%	0%	22%	
35	Commissioning	3%	3%	3%		3%	3%	3%	3%	3%	
36	Retrocommissioning	0%	0%	0%		0%	0%	0%	0%	0%	
37	Integrated Design - High Performa	21%	21%	21%		21%	13%	21%	13%	21%	2
38	Integrated Design - High Performa	2%	2%	1%		2%	0%	2%		2%	1
39	Steam trap Maintenance	0%	0%	0%		0%	0%	0%	0%	0%	
40	Oxygen Trim	1%	1%	1%		1%	1%	1%	1%	1%	
41	Infrared Heater	0%	0%	1%	3%	0%	0%	0%	0%	0%	

o retront n	nteraction or overlap factor											rank	
RET Intera	ations	4	2	3	4	5	6	7	8	9			nteracts with
LE I_IIILEI a	I	Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other	order i	interacts with
1	Direct fired convection range/oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
2	Exhaust Hood Makeup Air	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	ō	
3	High efficiency ENERGY STAR fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	ő	
4	High efficiency ENERGY STAR steam cooker	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	ŏ	
5	High efficiency griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	ő	
6	Pre-Rinse Spray Valve	83%	85%	84%	85%	77%	82%	79%	76%	94%	81%	10	1,2,4,7,8
7	Refrigeration heat recovery	83%	85%	84%	85%	82%	82%	82%	84%	98%	84%		1,2,7,8
8	Nemgeration heat recovery	0070	0070	0470	0570	0270	0270	0270	0470	3070	0470	٥,	1,2,7,0
9	Cooling system chilled water reset	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	2	la,1
10	Cooling system crimed water reset Cooling system water side economizer	95%	95%	95% 95%	95%	95%	95%	95%	95% 95%	95%	95% 95%		ia,i la.1
11	Cooling system oversized cooling tower	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		ia,i Ia
12	Condensing DHW stand-alone	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	I 'I'	a
13	Faucet aerator	85%	87%	86%	86%	78%	83%	80%	77%	96%	83%	6	1,2,3,4
14	Graywater heat exchanger/GFX	85%	87%	86%	87%	84%	84%	84%	86%	100%	85%		1,2,3,4
15	Indirect-fired DHW off space heating boiler	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	4,	1,2
			100%					100%	100%			2	
16	Instantaneous. High-Modulating Water Heater	100%		100%	100%	100%	100%			100%	100%	3	
17	Low-flow shower heads	85%	87%	86%	86%	78%	83%	80%	77%	96%	83%		1,2,4
18	Pipe insulation - water heating	85%	87%	86%	87%	84%	84%	84%	86%	100%	85%		1,2
19	Tank insulation	85%	87%	86%	87%	84%	84%	84%	86%	100%	85%		1,2
20	Air Sealing	90%	76%	56%	50%	56%	86%	86%	70%	91%	78%	6 1	a,2,3,4,5
21	Improved heating system high efficiency unit - Tier 1	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	2	
22	Improved heating system condensing unit - Tier 2	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	2	
23	Programmable Thermostat	95%	96%	96%	96%	95%	87%	95%	96%	95%	94%		la,2
24	Demand-Controlled Ventilation (controller, sensor)	92%	91%	91%	64%	83%	87%	93%	91%	93%	90%		a,2,3
25	Outdoor Air Reset	92%	78%	57%	51%	57%	87%	87%	71%	93%	79%	5 1	a,2,3,4
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
28	Improved wall insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
29	Improved below-grade insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
30	Improved roof insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
31	Sensible Heat Recovery	71%	66%	56%	46%	47%	75%	78%	62%	83%	67%		la,2,3,4,5,6
32	Pipe insulation - space heating	93%	94%	94%	94%	93%	86%	93%	94%	93%	92%	8 1	la,2,5
33	Energy Star washer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
34	Swimming pool/spa covers	85%	87%	86%	87%	84%	84%	84%	86%	100%	85%	10 1	1,2
35	Commissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
36	Retrocommissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	1a	
37	Integrated Design - High Performance (30% > codes) - Tier 1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	
38	Integrated Design - High Performance (50% > codes) Tier 2	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	Ó	
39	Steam trap Maintenance	71%	51%	40%	36%	40%	68%	73%	42%	77%	56%	10 1	a,3,4,6,7,8,
40	Oxygen Trim	69%	50%	41%	38%	40%	67%	71%	42%	76%	56%		a,3,4,5,6,7,
41	Infrared Heater	95%	93%	93%	66%	86%	98%	96%	93%	96%	93%	11 1	

nteraction	interim factors (prod of %savings,	applicability	, feasibility	, and max _l	oen)						
RET interim	n interactions	1	2	3	4	5	6	7	8	9	10
		Office	Retail	Grocery	Warehouse	Education	Health	Lodging	Restaurant	Multifamily	Other
1	Direct fired convection range/oven	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	Exhaust Hood Makeup Air	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	High efficiency ENERGY STAR fry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	High efficiency ENERGY STAR ste	0%	3%	3%	0%	3%	3%	3%	3%	0%	2%
5	High efficiency griddle	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	Pre-Rinse Spray Valve	0%	0%	5%	0%	1%	1%	1%	19%	0%	0%
7	Refrigeration heat recovery	1%	0%	11%	8%	3%	2%	1%	38%	0%	0%
8	_										
9	Cooling system chilled water reset	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	Cooling system water side econom	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
11	Cooling system oversized cooling t	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
12	Condensing DHW stand-alone	13%	13%	13%	13%	13%	13%	13%	13%	0%	13%
13	Faucet aerator	35%	43%	1%	43%	4%	2%	2%	1%	2%	10%
14	Graywater heat exchanger/GFX	0%	0%	0%	0%	7%	0%	4%	10%	4%	3%
15	Indirect-fired DHW off space heating	2%	1%	2%	1%	4%	4%	4%	2%	0%	2%
16	Instantaneous. High-Modulating W	0.00%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	Low-flow shower heads	1%	0%	0%	1%	16%	1%	10%	0%	10%	6%
18	Pipe insulation - water heating	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
19	Tank insulation	1%	1%	1%	1%	1%	1%	1%	1%	1%	19
20	Air Sealing	21%	13%	1%	8%	15%	13%	9%	11%	9%	14%
21	Improved heating system high effic	3%	2%	2%	2%	3%	10%	3%		3%	3%
22	Improved heating system condensi	1%	0%	0%		1%	1%	1%		1%	1%
23	Programmable Thermostat	3%	5%	5%		13%	0%	2%		2%	5%
24	Demand-Controlled Ventilation (co	0%	15%	37%		31%	0%	6%		0%	12%
25	Outdoor Air Reset	2%	2%	2%		2%	2%	2%		2%	2%
26	High Performance Glazing double	0%	0%	0%		0%	0%	0%		0%	0%
27	High Performance Glazing triple pa	0%	0%	0%		0%	0%	0%		0%	0%
28	Improved wall insulation	0%	0%	0%		0%	0%	0%		0%	0%
29	Improved below-grade insulation	0%	0%	0%		0%	0%	0%		0%	0%
30	Improved roof insulation	0%	0%	0%		0%	0%	0%		0%	0%
31	Sensible Heat Recovery	5%	25%	27%		18%	20%	11%		11%	18%
32	Pipe insulation - space heating	1%	1%	1%		1%	1%	1%		1%	19
33	Energy Star washer	0%	0%	0%		0%	0%	0%		0%	0%
34	Swimming pool/spa covers	0%	0%	0%		42%	12%	54%		54%	12%
35	Commissioning	0%	0%	0%		0%	0%	0%		0%	0%
36	Retrocommissioning	2%	2%	2%		2%	2%	2%		2%	2%
37	Integrated Design - High Performan	0%	0%	0%		0%	0%	0%		0%	0%
38	Integrated Design - High Performan	0%	0%	0%		0%	0%	0%		0%	0%
39	Steam trap Maintenance	1%	1%	1%		1%	1%	1%		1%	19
40	Oxygen Trim	1%	1%	1%		1%	1%	1%		1%	19
41	_Oxygen mm Infrared Heater	0%	0%	4%		0%	0%	0%		0%	29

Elect_Load	dshapes		% of	Annual Ene	rgy Savings			Coincidenc	e Factors
				Summer		Winter Off-	Winter	Summer	Winter
		Summer On-	Summer Off-	Shoulder	Winter On-	Peak	Shoulder	Generation	Generation
	Loadshape Name	Peak Energy	Peak Energy	Energy	Peak Energy	Energy	Energy	Capacity	Capacity
1	Com Cooling	21%	49%	25%	0%	4%	0%	99%	4%
2	Com Refrigeration	5%	38%	8%	6%	37%	6%	92%	86%
3	Com Ventilation	5%	32%	7%	7%	43%	7%	90%	94%
4	Com Heating	0%	1%	0%	14%	66%	18%	1%	69%
5	Com Economizer	25%	45%	28%	0%	1%	0%	62%	0%
6	Com Water Heating	6%	33%	8%	10%	37%	7%	69%	85%
7	Com Total Building	8%	38%	11%	6%	32%	5%	78%	45%

Market Dr	iven Baseline Penetrations											
MD_PEN		1	2	3	4	5	6	7	8	9	10	11
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg Pen
1	Direct fired convection range/oven	5%	7%	9%	12%	15%	18%	22%	26%	30%	34%	
2	Exhaust Hood Makeup Air	40%	42%	44%	46%	48%	50%	52%	54%	56%	58%	
3	High efficiency ENERGY STAR fryer	5%	7%	9%	12%	15%	18%	22%	26%	30%	34%	18%
4	High efficiency ENERGY STAR steam cooker	5%	7%	9%	12%	15%	18%	22%	26%	30%	34%	
5	High efficiency griddle	5%	7%	9%	12%	15%	18%	22%	26%	30%	34%	
6	Pre-Rinse Spray Valve	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
7	Refrigeration heat recovery	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	
8												0%
9	Cooling system chilled water reset	33%	33%	34%	34%	35%	35%	36%	36%	37%	37%	35%
10	Cooling system water side economizer	33%	33%	34%	34%	35%	35%	36%	36%	37%	37%	35%
11	Cooling system oversized cooling tower	50%	51%	52%	53%	54%	55%	56%	57%	58%	59%	55%
12	Condensing DHW stand-alone	5%	5%	5%	6%	6%	6%	6%	6%	7%	7%	6%
13	Faucet aerator	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	Graywater heat exchanger/GFX	1%	1%	2%	2%	2%	3%	4%	5%	6%	7%	3%
15	Indirect-fired DHW off space heating boiler	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	5%
16	Instantaneous, High-Modulating Water Heater	1%	1%	2%	2%	2%	3%	4%	5%	6%	7%	3%
17	Low-flow shower heads	30%	32%	34%	36%	38%	40%	42%	44%	46%	48%	39%
18	Pipe insulation - water heating	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
19	Tank insulation	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
20	Air Sealing	0%	1%	2%	3%	4%	5%	6%	7%	8%	9%	5%
21	Improved heating system high efficiency unit - Tier 1	0%	2%	5%	8%	11%	14%	17%	20%	23%	26%	13%
22	Improved heating system condensing unit - Tier 2	5%	5%	5%	6%	6%	6%	6%	6%	7%	7%	
23	Programmable Thermostat	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
24	Demand-Controlled Ventilation (controller, sensor)	10%	13%	16%	19%	22%	25%	28%	31%	34%	37%	
25	Outdoor Air Reset	35%	36%	37%	39%	41%	43%	45%	48%	51%	54%	
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	24%	26%	28%	30%	33%	36%	39%	43%	47%	51%	
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	1%	1%	2%	2%	2%	3%	4%	5%	6%	7%	
28	Improved wall insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
29	Improved below-grade insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30	Improved roof insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
31	Sensible Heat Recovery	15%	16%	18%	20%	22%	24%	27%	30%	33%	37%	
32	Pipe insulation - space heating	75%	76%	76%	77%	77%	78%	78%	79%	79%	80%	
33	Energy Star washer	20%	50%	55%	60%	65%	75%	100%	100%	100%	100%	
34	Swimming pool/spa covers	50%	52%	54%	56%	58%	60%	62%	64%	66%	68%	
35	Commissioning	0%	1%	2%	3%	5%	7%	10%	13%	16%	20%	
36	Retrocommissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
37	Integrated Design - High Performance (30% > codes) - Tier 1	0%	1%	2%	3%	5%	7%	10%	13%	16%	20%	
38	Integrated Design - High Performance (50% > codes) Tier 2	0%	1%	1%	2%	2%	3%	3%	4%	4%	5%	
39	Steam trap Maintenance	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
40	Oxygen Trim	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	
41	Infrared Heater	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	

RET PEN	TECH	1	2	3	4	5	6	7	8	9	10	11
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Max Pen
1	Direct fired convection range/oven	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	Exhaust Hood Makeup Air	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	High efficiency ENERGY STAR fryer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	High efficiency ENERGY STAR steam cooker	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
5	High efficiency griddle	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	Pre-Rinse Spray Valve	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
7	Refrigeration heat recovery	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
8		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9	Cooling system chilled water reset	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
10	Cooling system water side economizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	1009
11	Cooling system oversized cooling tower	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
12	Condensing DHW stand-alone	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
13	Faucet aerator	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
14	Graywater heat exchanger/GFX	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
	Indirect-fired DHW off space heating boiler	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
16	Instantaneous. High-Modulating Water Heater	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	Low-flow shower heads	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
18	Pipe insulation - water heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
19	Tank insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
20	Air Sealing	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
	Improved heating system high efficiency unit - Tier 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
	Improved heating system condensing unit - Tier 2	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
	Programmable Thermostat	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
24	Demand-Controlled Ventilation (controller, sensor)	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
25	Outdoor Air Reset	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
28	Improved wall insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
29	Improved below-grade insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
30	Improved roof insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
31	Sensible Heat Recovery	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
32	Pipe insulation - space heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
33	Energy Star washer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
34	Swimming pool/spa covers	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
35	Commissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
36	Retrocommissioning	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
37	Integrated Design - High Performance (30% > codes) - Tier 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
38	Integrated Design - High Performance (50% > codes) Tier 2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	09
39	Steam trap Maintenance	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
40	Oxygen Trim	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
41	Infrared Heater	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%

	iven Achievable Penetrations	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38		<scaler< th=""><th>Ì</th></scaler<>	Ì
MD_PEN	TECH	1	2	3	4	5	6	7	8	9	10	11	Market
		2007	2008	2009	2010	2011	2012	2013	2014	2015		Max Pen	Acceptance
1	Direct fired convection range/oven	7%	11%	15%	21%	26%	24%	28%	32%	37%	41%	41%	
2	Exhaust Hood Makeup Air	42%	46%	50%	55%	59%	58%	60%	63%	66%	69%	69%	
3	High efficiency ENERGY STAR fryer	7%	11%	15%	21%	26%	24%	28%	32%	37%	41%	41%	
4	High efficiency ENERGY STAR steam cooker	7%	11%	15%	21%	26%	24%	28%	32%	37%	41%	41%	
5	High efficiency griddle	5%	7%	9%	12%	15%	18%	22%	26%	30%	34%	34%	nce
6	Pre-Rinse Spray Valve	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Ï
7	Refrigeration heat recovery	6%	8%	9%	11%	13%	11%	12%	14%	15%	16%	16%	L
8		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Ì
9	Cooling system chilled water reset	34%	36%	38%	40%	42%	38%	39%	40%	41%	42%	42%	
10	Cooling system water side economizer	34%	36%	38%	40%	42%	38%	39%	40%	41%	42%	42%	
11	Cooling system oversized cooling tower	50%	51%	52%	53%	54%	55%	56%	57%	58%	59%	59%	
12	Condensing DHW stand-alone	7%	9%	11%	14%	17%	12%	12%	13%	14%	14%	17%	Н
13	Faucet aerator	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Ï
14	Graywater heat exchanger/GFX	2%	3%	4%	5%	6%	4%	5%	6%	8%	10%	10%	L
15	Indirect-fired DHW off space heating boiler	2%	5%	8%	12%	15%	11%	12%	13%	15%	16%	16%	Н
16	Instantaneous. High-Modulating Water Heater	2%	3%	4%	5%	6%	4%	5%	6%	8%	10%	10%	L
17	Low-flow shower heads	32%	35%	39%	42%	46%	43%	45%	48%	50%	53%	53%	M
18	Pipe insulation - water heating	47%	48%	50%	51%	53%	49%	50%	50%	51%	52%	53%	M
19	Tank insulation	76%	77%	78%	79%	80%	78%	78%	78%	79%	79%	80%	M
20	Air Sealing	2%	4%	7%	9%	12%	8%	9%	11%	12%	14%	14%	M
21	Improved heating system high efficiency unit - Tier 1	2%	6%	11%	17%	22%	20%	23%	26%	30%	33%	33%	Н
22	Improved heating system condensing unit - Tier 2	7%	9%	11%	14%	17%	12%	12%	13%	14%	14%	17%	Н
23	Programmable Thermostat	78%	79%	80%	81%	82%	80%	80%	80%	81%	81%	82%	Н
24	Demand-Controlled Ventilation (controller, sensor)	12%	17%	22%	28%	33%	31%	34%	37%	41%	44%	44%	Н
25	Outdoor Air Reset	37%	40%	43%	48%	52%	49%	51%	54%	58%	61%	61%	Н
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	26%	30%	34%	39%	44%	42%	45%	49%	54%	58%	58%	Н
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	2%	3%	4%	5%	6%	4%	5%	6%	8%	10%	10%	L
28	Improved wall insulation	0%	1%	1%	2%	2%	0%	1%	1%	2%	2%	2%	VL
29	Improved below-grade insulation	0%	1%	1%	2%	2%	0%	1%	1%	2%	2%	2%	VL
30	Improved roof insulation	0%	1%	1%	2%	2%	0%	1%	1%	2%	2%	2%	VL
31	Sensible Heat Recovery	17%	19%	23%	26%	30%	27%	30%	34%	37%	42%	42%	M
32	Pipe insulation - space heating	76%	77%	79%	80%	82%	80%	81%	82%	83%	83%	83%	M
33	Energy Star washer	22%	54%	61%	69%	76%	81%	100%	100%	100%	100%	100%	Н
34	Swimming pool/spa covers	51%	54%	57%	60%	63%	62%	64%	67%	69%	71%	71%	LM
35	Commissioning	1%	3%	4%	6%	9%	8%	11%	15%	18%	22%	22%	I L
36	Retrocommissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Ì
37	Integrated Design - High Performance (30% > codes) - Tier 1	1%	3%	5%	7%	10%	9%	12%	16%	19%	23%	23%	LM
38	Integrated Design - High Performance (50% > codes) Tier 2	0%	1%	2%	3%	4%	3%	4%	5%	6%	6%	6%	VL
39	Steam trap Maintenance	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Í
40	Oxygen Trim	27%	29%	32%	34%	37%	33%	34%	36%	37%	39%	39%	М
41	Infrared Heater	2%	4%	6%	100%	100%	100%	100%	100%	100%	100%	100%	Н

Market Dr	iven Achievable Penetrations	Net Penetrat	ions (Peneti	ration above	baseline)						
MD_PEN_	TECH	1	2	3	4	5	6	7	8	9	10
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	Direct fired convection range/oven	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
2	Exhaust Hood Makeup Air	0.05	0.1	0.16	0.23	0.3	0.2	0.22	0.24	0.26	0.28
3	High efficiency ENERGY STAR fryer	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
4	High efficiency ENERGY STAR steam cooker	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
5	High efficiency griddle										
6	Pre-Rinse Spray Valve										
7	Refrigeration heat recovery	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
8	,										
9	Cooling system chilled water reset	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
10	Cooling system water side economizer	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
11	Cooling system oversized cooling tower										
12	Condensing DHW stand-alone	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
13	Faucet aerator										
14	Graywater heat exchanger/GFX	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
15	Indirect-fired DHW off space heating boiler	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
16	Instantaneous. High-Modulating Water Heater	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
17	Low-flow shower heads	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
18	Pipe insulation - water heating	0.04	0.08	0.12	0.16	0.2	0.1	0.12	0.14	0.16	0.18
19	Tank insulation	0.03	0.05	0.07	0.1	0.12	0.075	0.085	0.09	0.1	0.1
20	Air Sealing	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
21	Improved heating system high efficiency unit - Tier 1	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
22	Improved heating system condensing unit - Tier 2	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
23	Programmable Thermostat	0.03	0.05	0.07	0.1	0.12	0.075	0.085	0.09	0.1	0.1
24	Demand-Controlled Ventilation (controller, sensor)	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
25	Outdoor Air Reset	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
28	Improved wall insulation	0.01	0.02	0.03	0.04	0.05	0.01	0.02	0.03	0.04	0.05
29	Improved below-grade insulation	0.01	0.02	0.03	0.04	0.05	0.01	0.02	0.03	0.04	0.05
30	Improved roof insulation	0.01	0.02	0.03	0.04	0.05	0.01	0.02	0.03	0.04	0.05
31	Sensible Heat Recovery	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
32	Pipe insulation - space heating	0.03	0.05	0.07	0.1	0.12	0.075	0.085	0.09	0.1	0.1
33	Energy Star washer	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
34	Swimming pool/spa covers	0.03	0.05	0.08	0.11	0.13	0.05	0.06	0.07	0.08	0.09
35	Commissioning	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
36	Retrocommissioning										
37	Integrated Design - High Performance (30% > codes) - Tier 1	0.03	0.05	0.08	0.11	0.13	0.05	0.06	0.07	0.08	0.09
38	Integrated Design - High Performance (50% > codes) Tier 2	0.01	0.02	0.03	0.04	0.05	0.01	0.02	0.03	0.04	0.05
39	Steam trap Maintenance										
40	Oxygen Trim	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
41	Infrared Heater	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19

New Cons	struction Achievable Penetrations	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	<scaler< th=""><th>1</th></scaler<>	1
NC_PEN_	TECH	1	2	3	4	5	6	7	8	9	10	11	Market
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Max Pen	Acceptance
1	Direct fired convection range/oven	8%	12%	17%	24%	30%	26%	30%	35%	39%	44%	44%	
2	Exhaust Hood Makeup Air	43%	47%	52%	58%	63%	60%	63%	66%	69%	72%	72%	
3	High efficiency ENERGY STAR fryer	8%	12%	17%	24%	30%	26%	30%	35%	39%	44%	44%	
4	High efficiency ENERGY STAR steam cooker	8%	12%	17%	24%	30%	26%	30%	35%	39%	44%	44%	
5	High efficiency griddle	6%	9%	12%	16%	20%	19%	24%	28%	33%	37%	37%	nce
6	Pre-Rinse Spray Valve	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
7	Refrigeration heat recovery	6%	8%	10%	12%	14%	11%	13%	14%	16%	17%	17%	L
8		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
9	Cooling system chilled water reset	35%	38%	42%	46%	50%	43%	44%	45%	46%	47%	50%	H
10	Cooling system water side economizer	35%	38%	42%	46%	50%	43%	44%	45%	46%	47%	50%	H
11	Cooling system oversized cooling tower	51%	53%	55%	57%	59%	56%	58%	59%	61%	62%	62%	L
12	Condensing DHW stand-alone	8%	10%	13%	17%	21%	13%	14%	15%	16%	16%	21%	Н
13	Faucet aerator	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
14	Graywater heat exchanger/GFX	3%	5%	8%	10%	12%	7%	8%	10%	11%	13%	13%	М
15	Indirect-fired DHW off space heating boiler	3%	6%	10%	15%	19%	13%	14%	16%	17%	19%	19%	Н
16	Instantaneous, High-Modulating Water Heater	2%	3%	5%	6%	7%	4%	5%	7%	8%	10%	10%	L
17	Low-flow shower heads	32%	36%	40%	44%	48%	44%	47%	49%	52%	54%	54%	м
18	Pipe insulation - water heating	48%	50%	53%	57%	60%	53%	53%	54%	54%	55%	60%	н
19	Tank insulation	77%	78%	79%	80%	81%	79%	79%	80%	80%	80%	81%	
20	Air Sealing	3%	6%	10%	15%	19%	13%	14%	16%	17%	19%	19%	н
21	Improved heating system high efficiency unit - Tier 1	3%	7%	13%	20%	26%	22%	25%	29%	32%	36%	36%	н
22	Improved heating system condensing unit - Tier 2	8%	10%	13%	17%	21%	13%	14%	15%	16%	16%	21%	н
23	Programmable Thermostat	79%	80%	81%	82%	83%	81%	81%	82%	82%	82%	83%	
24	Demand-Controlled Ventilation (controller, sensor)	13%	18%	24%	31%	37%	33%	36%	40%	43%	47%	47%	
25	Outdoor Air Reset	38%	41%	45%	51%	56%	51%	53%	57%	60%	64%	64%	
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	27%	31%	36%	42%	48%	44%	47%	52%	56%	61%	61%	
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	2%	3%	5%	6%	7%	4%	5%	7%	8%	10%	10%	
28	Improved wall insulation	1%	2%	3%	4%	5%	1%	2%	2%	3%	3%	5%	
29	Improved below-grade insulation	2%	5%	7%	10%	13%	6%	7%	7%	8%	8%	13%	мн
30	Improved roof insulation	1%	2%	3%	4%	5%	1%	2%	2%	3%	3%	5%	
31	Sensible Heat Recovery	17%	20%	24%	28%	32%	28%	32%	35%	39%	43%	43%	м
32	Pipe insulation - space heating	77%	78%	80%	82%	83%	81%	82%	83%	84%	85%	85%	н
33	Energy Star washer	23%	55%	63%	72%	80%	83%	100%	100%	100%	100%	100%	н
34	Swimming pool/spa covers	52%	55%	58%	62%	65%	63%	65%	68%	70%	73%	73%	
35	Commissioning	1%	3%	5%	7%	10%	8%	12%	15%	19%	23%	23%	L
36	Retrocommissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
37	Integrated Design - High Performance (30% > codes) - Tier 1	2%	5%	8%	11%	15%	11%	15%	18%	22%	26%	26%	м
38	Integrated Design - High Performance (50% > codes) Tier 2	1%	2%	3%	4%	5%	3%	4%	5%	6%	7%		VL
39	Steam trap Maintenance	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	l
40	Oxygen Trim	27%	30%	33%	36%	39%	34%	36%	37%	39%	40%	40%	м
41	Infrared Heater	3%	5%	8%	100%	100%	100%	100%	100%	100%	100%	100%	

	struction Achievable Penetrations	Net Penetrat	ions (Peneti	ration above	e baseline)						
NC_PEN_	TECH	1	2	3	4	5	6	7	8	9	10
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	Direct fired convection range/oven	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
2	Exhaust Hood Makeup Air	0.05	0.1	0.16	0.23	0.3	0.2	0.22	0.24	0.26	0.28
3	High efficiency ENERGY STAR fryer	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
4	High efficiency ENERGY STAR steam cooker	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
5	High efficiency griddle	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
6	Pre-Rinse Spray Valve										
7	Refrigeration heat recovery	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
8											
9	Cooling system chilled water reset	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
10	Cooling system water side economizer	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
11	Cooling system oversized cooling tower	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
12	Condensing DHW stand-alone	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
13	Faucet aerator										
14	Graywater heat exchanger/GFX	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
15	Indirect-fired DHW off space heating boiler	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
16	Instantaneous. High-Modulating Water Heater	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
17	Low-flow shower heads	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
18	Pipe insulation - water heating	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
19	Tank insulation	0.03	0.05	0.07	0.1	0.12	0.075	0.085	0.09	0.1	0.1
20	Air Sealing	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
21	Improved heating system high efficiency unit - Tier 1	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
22	Improved heating system condensing unit - Tier 2	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
23	Programmable Thermostat	0.03	0.05	0.07	0.1	0.12	0.075	0.085	0.09	0.1	0.1
24	Demand-Controlled Ventilation (controller, sensor)	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
25	Outdoor Air Reset	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
28	Improved wall insulation	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
29	Improved below-grade insulation	0.04	0.09	0.14	0.2	0.25	0.12	0.13	0.14	0.15	0.16
30	Improved roof insulation	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
31	Sensible Heat Recovery	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
32	Pipe insulation - space heating	0.03	0.05	0.07	0.1	0.12	0.075	0.085	0.09	0.1	0.1
33	Energy Star washer	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
34	Swimming pool/spa covers	0.03	0.05	0.08	0.11	0.13	0.05	0.06	0.07	0.08	0.09
35	Commissioning	0.02	0.04	0.06	0.08	0.1	0.02	0.03	0.04	0.05	0.06
36	Retrocommissioning										
37	Integrated Design - High Performance (30% > codes) - Tier 1	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
38	Integrated Design - High Performance (50% > codes) Tier 2	0.01	0.02	0.03	0.04	0.05	0.01	0.02	0.03	0.04	0.05
39	Steam trap Maintenance										
40	Oxygen Trim	0.04	0.08	0.12	0.16	0.2	0.08	0.09	0.1	0.11	0.12
41	Infrared Heater	0.05	0.1	0.16	0.23	0.3	0.15	0.16	0.17	0.18	0.19
	DOLLAR AND AND AND AND AND AND AND AND AND AND		0	20	3.20	0.0	20	2.10		20	2.10

	chievable Penetrations	0	0	0	0	0	0	0	0	0	0	<scaler< th=""><th></th></scaler<>	
RET_PEN	TECH	1	2	3	4	5	6	7	8	9	10		Market
		2007	2008	2009	2010	2011	2012	2013	2014	2015			Acceptance
1	Direct fired convection range/oven	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
2	Exhaust Hood Makeup Air	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	High efficiency ENERGY STAR fryer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	High efficiency ENERGY STAR steam cooker	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	VL
	High efficiency griddle	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Pre-Rinse Spray Valve	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
7	Refrigeration heat recovery	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
8		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
9	Cooling system chilled water reset	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
10	Cooling system water side economizer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
11	Cooling system oversized cooling tower	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
12	Condensing DHW stand-alone	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
13	Faucet aerator	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
14	Graywater heat exchanger/GFX	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
15	Indirect-fired DHW off space heating boiler	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
16	Instantaneous. High-Modulating Water Heater	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
17	Low-flow shower heads	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
18	Pipe insulation - water heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
19	Tank insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	H
20	Air Sealing	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	H
21	Improved heating system high efficiency unit - Tier 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	VL
22	Improved heating system condensing unit - Tier 2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	VL
23	Programmable Thermostat	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	H
24	Demand-Controlled Ventilation (controller, sensor)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	H
25	Outdoor Air Reset	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	H
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
28	Improved wall insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
29	Improved below-grade insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
30	Improved roof insulation	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
31	Sensible Heat Recovery	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	L
32	Pipe insulation - space heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
33	Energy Star washer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
34	Swimming pool/spa covers	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	L
35	Commissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
36	Retrocommissioning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	L
37	Integrated Design - High Performance (30% > codes) - Tier 1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
38	Integrated Design - High Performance (50% > codes) Tier 2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
39	Steam trap Maintenance	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	H
40	Oxygen Trim	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	M
41	Infrared Heater	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	L

	chievable Penetrations	Net Penetra		tration above	e baseline)	
RET_PEN	_TECH	1	2	3	4	5
1	Direct fired convection range/oven	2007	2008	2009	2010	2011
2	Exhaust Hood Makeup Air					
3	High efficiency ENERGY STAR fryer					
4	High efficiency ENERGY STAR five	0.00125	0.0025	0.0035	0.005	0.0075
5	High efficiency griddle	0.00125	0.0025	0.0033	0.005	0.0073
6	Pre-Rinse Spray Valve	0.005	0.01	0.015	0.02	0.03
7		0.005	0.0035	0.015	0.02	0.005
	Refrigeration heat recovery	0.0025	0.0033	0.0045	0.005	0.003
8	Casting a setting ability of setting and s	0.005	0.04	0.045	0.02	0.03
9	Cooling system chilled water reset		0.01	0.015		
10	Cooling system water side economizer	0.0035	0.005	0.0075	0.01	0.0125
11	Cooling system oversized cooling tower	0.00125	0.0025	0.0035	0.005	0.0075
12	Condensing DHW stand-alone	0.0035	0.005	0.0075	0.01	0.0125
13	Faucet aerator	0.005	0.01	0.015	0.02	0.03
14	Graywater heat exchanger/GFX	0.00125	0.0025	0.0035	0.005	0.0075
15	Indirect-fired DHW off space heating boiler	0.0035	0.005	0.0075	0.01	0.0125
16	Instantaneous. High-Modulating Water Heater	0.0035	0.005	0.0075	0.01	0.0125
17	Low-flow shower heads	0.005	0.01	0.015	0.02	0.03
18	Pipe insulation - water heating	0.0035	0.005	0.0075	0.01	0.0125
19	Tank insulation	0.005	0.01	0.015	0.02	0.03
20	Air Sealing	0.005	0.01	0.015	0.02	0.03
21	Improved heating system high efficiency unit - Tier 1	0.00125	0.0025	0.0035	0.005	0.0075
22	Improved heating system condensing unit - Tier 2	0.00125	0.0025	0.0035	0.005	0.0075
23	Programmable Thermostat	0.005	0.01	0.015	0.02	0.03
24	Demand-Controlled Ventilation (controller, sensor)	0.005	0.01	0.015	0.02	0.03
25	Outdoor Air Reset	0.005	0.01	0.015	0.02	0.03
26	High Performance Glazing double pane, low-E, low conductivity frame - Tier 1					
27	High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2					
28	Improved wall insulation					
29	Improved below-grade insulation					
30	Improved roof insulation					
31	Sensible Heat Recovery	0.0025	0.0035	0.0045	0.005	0.005
32	Pipe insulation - space heating	0.0035	0.005	0.0075	0.01	0.0125
33	Energy Star washer					
34	Swimming pool/spa covers	0.0025	0.0035	0.0045	0.005	0.005
35	Commissioning	0.0020	0.0000	0.0010	0.000	0.000
36	Retrocommissioning	0.005	0.01	0.015	0.02	0.03
37	Integrated Design - High Performance (30% > codes) - Tier 1	0.000	0.01	0.010	0.02	0.00
38	Integrated Design - High Performance (50% > codes) - Her I					
39	Steam trap Maintenance	0.005	0.01	0.015	0.02	0.03
40	Oxygen Trim	0.005	0.005	0.015	0.02	0.03
40	Infrared Heater	0.0035	0.005	0.0075	0.005	0.0125
41	Illinated neater	0.0025	0.0035	0.0045	0.005	0.005