## **Commercial Analysis Appendix Tables**

|    | Commercial Analysis Appendix Tables                             |  |  |  |  |  |  |  |
|----|---|--|--|--|--|--|--|--|
| 1  | Measure Descriptions  |  |  |  |  |  |  |  |
|    | Economic Potential  |  |  |  |  |  |  |  |
| 2  | Cumulative Net Savings For Each Measure                         |  |  |  |  |  |  |  |
| 3  | Upstate Sector Sales  |  |  |  |  |  |  |  |
| 4  | Measures  |  |  |  |  |  |  |  |
| 5  | Measure Applicability   |  |  |  |  |  |  |  |
| 6  | Measure Feasibility   |  |  |  |  |  |  |  |
| 7  | Measure Turnover  |  |  |  |  |  |  |  |
| 8  | Retrofit Measures % Not Installed                               |  |  |  |  |  |  |  |
| 9  | Decatherm % Savings for Market Driven Measures                  |  |  |  |  |  |  |  |
| 10 | Decatherm % Savings for Retrofit Measures                       |  |  |  |  |  |  |  |
| 11 | Retrofit Measure Baseline Adjustment                            |  |  |  |  |  |  |  |
| 12 | Ratio of Annual Savings to Peak Savings                         |  |  |  |  |  |  |  |
| 13 | kWh Savings per Decatherm Savings                               |  |  |  |  |  |  |  |
| 14 | kW Savings per Decatherm Savings                                |  |  |  |  |  |  |  |
| 15 | Water Savings per Decatherm Savings                             |  |  |  |  |  |  |  |
| 16 | Market Driven Measure Costs                                     |  |  |  |  |  |  |  |
| 17 | Retrofit Measure Costs  |  |  |  |  |  |  |  |
| 18 | Retrofit Baseline Measure Costs                                 |  |  |  |  |  |  |  |
| 19 | Market Driven Measure Interactions                              |  |  |  |  |  |  |  |
| 20 | New Construction Measure Interactions                           |  |  |  |  |  |  |  |
| 21 | Retrofit Measure Interactions                                   |  |  |  |  |  |  |  |
| 22 | Electric Loadshapes   |  |  |  |  |  |  |  |
| 23 | Market Driven Measure Penetrations Assuming No Program Savings  |  |  |  |  |  |  |  |
| 24 | Retrofit Penetrations Assuming No Program Savings               |  |  |  |  |  |  |  |
|    | Program Scenario Potential                                      |  |  |  |  |  |  |  |
| 25 | Market Driven Penetrations Assuming Program Scenario Savings    |  |  |  |  |  |  |  |
| 26 | New Construction Penetrations Assuming Program Scenario Savings |  |  |  |  |  |  |  |
| 27 | Retrofit Penetrations Assuming Program Scenario Savings         |  |  |  |  |  |  |  |

|    | A  | С              | D               | Е                        | F           | G                |
|----|--|----------------|-----------------|--------------------------|-------------|------------------|
| 1  |  |                | cial Measures   |                          |             |                  |
| 2  | Total Resource Cost Test                           | Benefit/Co     | st Ratio and    | Levelized Cost of S      | aved Energy | ,                |
| 3  |  |                |                 |                          |             |                  |
| 4  |  |                |                 |                          | <u>-</u> '  |                  |
|    |  | Measure<br>ID4 |                 | Measure ID6              | Total       | TRC Levelized    |
|    |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5  | Measure Name                                       | type)          | (e.g., End Use) | NC, ROB)                 | BCR         | Therm (\$/Therm) |
| 6  | Exhaust Hood Makeup Air                            | Office         | Space Heating   | New construction         | 12.23       | (0.28)           |
| 7  | Exhaust Hood Makeup Air                            | Office         | Space Heating   | Remodel/Replacment       | 15.64       | (0.31)           |
| 8  | High efficiency ENERGY STAR fryer                  | Office         | Cooking         | New construction         | 1.92        | 0.44             |
| 9  | Pre-Rinse Spray Valve                              | Office         | Water Heating   | Retrofit                 | 33.27       | 0.00             |
| 10 | Refrigeration heat recovery                        | Office         | Water Heating   | Retrofit                 | 3.19        | 0.50             |
| 11 | Refrigeration heat recovery                        | Office         | Water Heating   | New construction         | 2.55        | 0.31             |
| 12 | Refrigeration heat recovery                        | Office         | Water Heating   | Remodel/Replacment       | 3.25        | 0.23             |
| 13 | Cooling system chilled water reset                 | Office         | Cooling         | Retrofit                 | 1.14        | 1.42             |
| 14 | Cooling system chilled water reset                 | Office         | Cooling         | Remodel/Replacment       | 1.14        | 0.65             |
| 15 | Cooling system water side economizer               | Office         | Cooling         | Retrofit                 | 1.19        | 1.05             |
| 16 | Cooling system water side economizer               | Office         | Cooling         | Remodel/Replacment       | 1.20        | 0.48             |
| 17 | Condensing DHW stand-alone                         | Office         | Water Heating   | Retrofit                 | 3.05        | 0.64             |
| 18 | Condensing DHW stand-alone                         | Office         | Water Heating   | New construction         | 3.50        | 0.25             |
| 19 | Condensing DHW stand-alone                         | Office         | Water Heating   | Remodel/Replacment       | 4.52        | 0.19             |
| 20 | Faucet aerator                                     | Office         | Water Heating   | Retrofit                 | 5.87        | (2.97)           |
| 21 | Indirect-fired DHW off space heating boiler        | Office         | Water Heating   | Retrofit                 | 2.58        | 0.87             |
| 22 | Indirect-fired DHW off space heating boiler        | Office         | Water Heating   | New construction         | 2.60        | 0.34             |
| 23 | Indirect-fired DHW off space heating boiler        | Office         | Water Heating   | Remodel/Replacment       | 3.36        | 0.26             |
| 24 | Instantaneous. High-Modulating Water Heater        | Office         | Water Heating   | Retrofit                 | 3.10        | 0.63             |
| 25 | Instantaneous. High-Modulating Water Heater        | Office         | Water Heating   | New construction         | 5.95        | 0.15             |
| 26 | Instantaneous. High-Modulating Water Heater        | Office         | Water Heating   | Renovation               | 5.95        | 0.15             |
| 27 | Instantaneous. High-Modulating Water Heater        | Office         | Water Heating   | Remodel/Replacment       | 7.68        | 0.11             |
| 28 | Low-flow shower heads                              | Office         | Water Heating   | Retrofit                 | 35.31       | (2.29)           |
| 29 | Low-flow shower heads                              | Office         | Water Heating   | New construction         | 20.20       | (0.99)           |
| 30 | Low-flow shower heads                              | Office         | Water Heating   | Remodel/Replacment       | 26.08       | (1.01)           |
| 31 | Pipe insulation - water heating                    | Office         | Water Heating   | Retrofit                 | 23.43       | 0.08             |
| 32 | Pipe insulation - water heating                    | Office         | Water Heating   | New construction         | 18.32       | 0.05             |
| 33 | Pipe insulation - water heating                    | Office         | Water Heating   | Renovation               | 18.32       | 0.05             |
| 34 | Tank insulation                                    | Office         | Water Heating   | Retrofit                 | 1.73        | 1.10             |
| 35 | Tank insulation                                    | Office         | Water Heating   | New construction         | 1.35        | 0.65             |
|    | Tank insulation                                    | Office         | Water Heating   | Remodel/Replacment       | 1.75        | 0.50             |
| 37 | Air Sealing  | Office         | Space Heating   | Retrofit                 | 13.37       | (0.25)           |
| 38 | Air Sealing  | Office         | Space Heating   | New construction         | 3.83        | 0.16             |
| 39 | Air Sealing  | Office         | Space Heating   | Renovation               | 3.83        | 0.16             |
| 40 | Improved heating system high efficiency unit - Tie |                | Space Heating   | Retrofit                 | 3.89        | 0.77             |
| 41 | Improved heating system condensing unit - Tier 2   |                | Space Heating   | Retrofit                 | 0.83        | 3.60             |
| 42 | Programmable Thermostat                            | Office         | Space Heating   | Retrofit                 | 8.87        | 0.28             |
| 43 | Programmable Thermostat                            | Office         | Space Heating   | Renovation               | 3.55        | 0.33             |
| 44 | Programmable Thermostat                            | Office         | Space Heating   | Remodel/Replacment       | 4.59        | 0.25             |
| 45 | Demand-Controlled Ventilation (controller, sensor  |                | Space Heating   | Retrofit                 | 6.16        | 0.34             |
| 46 | Demand-Controlled Ventilation (controller, sensor  |                | Space Heating   | New construction         | 1.84        | 0.63             |
| 47 | Demand-Controlled Ventilation (controller, sensor  |                | Space Heating   | Remodel/Replacment       | 2.34        | 0.49             |
| 48 | Improved wall insulation                           | Office         | Space Heating   | New construction         | 1.05        | 1.14             |
| 49 | Improved wall insulation                           | Office         | Space Heating   | Renovation               | 1.05        | 1.14             |
| 50 | Improved below-grade insulation                    | Office         | Space Heating   | New construction         | 2.08        | 0.57             |
| 51 | Improved below-grade insulation                    | Office         | Space Heating   | Renovation               | 2.08        | 0.57             |
| 52 | Pipe insulation - space heating                    | Office         | Space Heating   | Retrofit                 | 55.11       | 0.05             |

|    | А  | С              | D               | Е                         | F             | G                |
|----|--|----------------|-----------------|---------------------------|---------------|------------------|
| 1  | Upstate  | e Commer       | cial Measures   | <u> </u>                  |               |                  |
| 2  | Total Resource Cost Test                           | Benefit/Co     | st Ratio and    | Levelized Cost of S       | aved Energy   |                  |
| 3  |  |                |                 |                           |               |                  |
| 4  |  |                |                 |                           |               |                  |
|    |  | Measure<br>ID4 |                 | Measure ID6               | Total         | TRC Levelized    |
|    |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit,  | Resource      | Cost per Saved   |
| 5  | Measure Name                                       | type)          | (e.g., End Use) | NC, ROB)                  |               | Therm (\$/Therm) |
|    | Pipe insulation - space heating                    | Office         | Space Heating   | New construction          | 44.00         | 0.03             |
| 54 | Pipe insulation - space heating                    | Office         | Space Heating   | Renovation                | 44.00         | 0.03             |
| 55 | Commissioning                                      | Office         | Total           | Renovation                | 2.40          | (0.41)           |
| 56 | Commissioning                                      | Office         | Total           | Remodel/Replacment        | 3.09          | (0.67)           |
| 57 | Retrocommissioning                                 | Office         | Total           | Retrofit                  | 3.36          | (0.33)           |
| 58 | Steam trap Maintenance                             | Office         | Space Heating   | Retrofit                  | 2.36          | 0.49             |
| 59 | Oxygen Trim  | Office         | Space Heating   | Retrofit                  | 33.58         | 0.08             |
| 60 | Oxygen Trim  | Office         | Space Heating   | New construction          | 49.79         | 0.02             |
| 61 | Oxygen Trim  | Office         | Space Heating   | Remodel/Replacment        | 45.16         | 0.03             |
| 62 | Direct fired convection range/oven                 | Retail         | Cooking         | New construction          | 2.99          | 0.28             |
| 63 | Direct fired convection range/oven                 | Retail         | Cooking         | Remodel/Replacment        | 2.99          | 0.28             |
| 64 | Exhaust Hood Makeup Air                            | Retail         | Space Heating   | New construction          | 11.59         | (0.19)           |
| 65 | Exhaust Hood Makeup Air                            | Retail         | Space Heating   | Remodel/Replacment        | 13.15         | (0.20)           |
| 66 | High efficiency ENERGY STAR fryer                  | Retail         | Cooking         | New construction          | 1.92          | 0.44             |
| 67 | High efficiency ENERGY STAR fryer                  | Retail         | Cooking         | Remodel/Replacment        | 1.92          | 0.44             |
| 68 | High efficiency ENERGY STAR steam cooker           | Retail         | Cooking         | Retrofit                  | 1.04          | 1.57             |
| 69 | High efficiency ENERGY STAR steam cooker           | Retail         | Cooking         | New construction          | 13.25         | (2.23)           |
| 70 | High efficiency ENERGY STAR steam cooker           | Retail         | Cooking         | Remodel/Replacment        | 13.25         | (2.23)           |
| 71 | Pre-Rinse Spray Valve                              | Retail         | Water Heating   | Retrofit                  | 34.47         | 0.00             |
| 72 | Refrigeration heat recovery                        | Retail         | Water Heating   | Retrofit                  | 3.24          | 0.50             |
| 73 | Refrigeration heat recovery                        | Retail         | Water Heating   | New construction          | 2.58          | 0.30             |
| 74 | Refrigeration heat recovery                        | Retail         | Water Heating   | Remodel/Replacment        | 3.30          | 0.22             |
| 75 | Cooling system chilled water reset                 | Retail         | Cooling         | Retrofit                  | 1.12          | 1.44             |
| 76 | Cooling system chilled water reset                 | Retail         | Cooling         | Remodel/Replacment        | 1.13          | 0.66             |
| 77 | Cooling system water side economizer               | Retail         | Cooling         | Retrofit                  | 1.19          | 1.03             |
|    | Cooling system water side economizer               | Retail         | Cooling         | Remodel/Replacment        | 1.20          | 0.47             |
| -  | Condensing DHW stand-alone                         | Retail         | Water Heating   | Retrofit                  | 9,999.00      | (0.19)           |
| 80 | Condensing DHW stand-alone                         | Retail         | Water Heating   | New construction          | 3.50          | 0.25             |
| 81 | Condensing DHW stand-alone                         | Retail         | Water Heating   | Remodel/Replacment        | 4.52          | 0.19             |
| 82 | Faucet aerator                                     | Retail         | Water Heating   | Retrofit                  | 18.48         | (3.66)           |
|    | Indirect-fired DHW off space heating boiler        | Retail         | Water Heating   | Retrofit                  | 14.01         | 0.16             |
| 84 | Indirect-fired DHW off space heating boiler        | Retail         | Water Heating   | New construction          | 2.60          | 0.34             |
|    | Indirect-fired DHW off space heating boiler        | Retail         | Water Heating   | Remodel/Replacment        | 3.36          | 0.26             |
| -  | Instantaneous. High-Modulating Water Heater        | Retail         | Water Heating   | Retrofit                  | 9,999.00      | (0.82)           |
| 87 | Instantaneous. High-Modulating Water Heater        | Retail         | Water Heating   | New construction          | 5.95          | 0.15             |
| 88 | Instantaneous. High-Modulating Water Heater        | Retail         | Water Heating   | Renovation                | 5.95          | 0.15             |
| 89 | Instantaneous. High-Modulating Water Heater        | Retail         | Water Heating   | Remodel/Replacment        | 7.68          | 0.11             |
| 90 | Pipe insulation - water heating                    | Retail         | Water Heating   | Retrofit                  | 23.85         | 0.08             |
| 91 | Pipe insulation - water heating                    | Retail         | Water Heating   | New construction          | 18.62         | 0.05             |
| 92 | Pipe insulation - water heating                    | Retail         | Water Heating   | Renovation                | 18.62<br>1.76 | 0.05<br>1.08     |
| 93 | Tank insulation                                    | Retail         | Water Heating   | Retrofit New construction | 1.76          | 0.64             |
| 95 | Tank insulation                                    | Retail         | Water Heating   | New construction          | 1.37          | 0.64             |
| 96 | Tank insulation                                    | Retail         | Water Heating   | Remodel/Replacment        | 1.76          | 0.49             |
| 97 | Air Sealing  | Retail         | Space Heating   | Retrofit New construction | 5.66          | 0.11             |
| 98 | Air Sealing  | Retail         | Space Heating   | New construction          | 5.66          | 0.15             |
|    | Air Sealing  | Retail         | Space Heating   | Renovation                | 2.00          | 1.50             |
| JJ | Improved heating system high efficiency unit - Tie | retaii         | Space Heating   | Retrofit                  | 2.00          | 1.50             |

|     | A  | С              | D               | E                        | F           | G                |
|-----|--|----------------|-----------------|--------------------------|-------------|------------------|
| 1   |  |                | ial Measures    |                          |             |                  |
| 2   | Total Resource Cost Test                           | Benefit/Co     | st Ratio and    | Levelized Cost of S      | aved Energy | •                |
| 3   |  |                |                 |                          |             |                  |
| 4   |  |                |                 |                          | <u>-</u> '  |                  |
|     |  | Measure<br>ID4 |                 | Measure ID6              | Total       | TRC Levelized    |
|     |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5   | Measure Name                                       | type)          | (e.g., End Use) | NC, ROB)                 |             | Therm (\$/Therm) |
| 100 | Improved heating system high efficiency unit - Tie | Retail         | Space Heating   | New construction         | 1.02        | 1.17             |
|     | Improved heating system high efficiency unit - Tie |                | Space Heating   | Remodel/Replacment       | 1.28        | 0.93             |
| 102 | Improved heating system condensing unit - Tier 2   | Retail         | Space Heating   | Retrofit                 | 1.66        | 1.80             |
| _   | Improved heating system condensing unit - Tier 2   |                | Space Heating   | New construction         | 1.27        | 0.94             |
| 104 | Improved heating system condensing unit - Tier 2   | Retail         | Space Heating   | Remodel/Replacment       | 1.59        | 0.75             |
| 105 | Programmable Thermostat                            | Retail         | Space Heating   | Retrofit                 | 71.07       | 0.03             |
| 106 | Programmable Thermostat                            | Retail         | Space Heating   | Renovation               | 8.19        | 0.14             |
| 107 | Programmable Thermostat                            | Retail         | Space Heating   | Remodel/Replacment       | 10.57       | 0.11             |
| 108 | Demand-Controlled Ventilation (controller, sensor  | Retail         | Space Heating   | Retrofit                 | 2.76        | 0.61             |
| 109 | Demand-Controlled Ventilation (controller, sensor  | Retail         | Space Heating   | New construction         | 5.28        | 0.03             |
| 110 | Demand-Controlled Ventilation (controller, sensor  | Retail         | Space Heating   | Remodel/Replacment       | 6.38        | (0.01)           |
| 111 | Improved below-grade insulation                    | Retail         | Space Heating   | New construction         | 1.61        | 0.74             |
| 112 | Improved below-grade insulation                    | Retail         | Space Heating   | Renovation               | 1.61        | 0.74             |
| 113 | Sensible Heat Recovery                             | Retail         | Space Heating   | Retrofit                 | 8.43        | 1.30             |
| 114 | Sensible Heat Recovery                             | Retail         | Space Heating   | New construction         | 2.03        | 0.85             |
| 115 | Sensible Heat Recovery                             | Retail         | Space Heating   | Remodel/Replacment       | 2.43        | 0.80             |
| 116 | Pipe insulation - space heating                    | Retail         | Space Heating   | Retrofit                 | 55.57       | 0.05             |
| 117 | Pipe insulation - space heating                    | Retail         | Space Heating   | New construction         | 44.32       | 0.03             |
| 118 | Pipe insulation - space heating                    | Retail         | Space Heating   | Renovation               | 44.32       | 0.03             |
| 119 | Commissioning                                      | Retail         | Total           | Renovation               | 2.50        | (0.52)           |
| 120 | Commissioning                                      | Retail         | Total           | Remodel/Replacment       | 3.22        | (0.78)           |
| 121 | Retrocommissioning                                 | Retail         | Total           | Retrofit                 | 3.46        | (0.45)           |
| 122 | Steam trap Maintenance                             | Retail         | Space Heating   | Retrofit                 | 1.66        | 0.70             |
| 123 | Oxygen Trim  | Retail         | Space Heating   | Retrofit                 | 23.60       | 0.11             |
| 124 | Oxygen Trim  | Retail         | Space Heating   | New construction         | 49.79       | 0.02             |
| 125 | Oxygen Trim  | Retail         | Space Heating   | Remodel/Replacment       | 32.17       | 0.04             |
| 126 | Direct fired convection range/oven                 | Grocery        | Cooking         | New construction         | 2.99        | 0.28             |
| 127 | Direct fired convection range/oven                 | Grocery        | Cooking         | Remodel/Replacment       | 2.99        | 0.28             |
| 128 | Exhaust Hood Makeup Air                            | Grocery        | Space Heating   | New construction         | 11.78       | (0.18)           |
| 129 | Exhaust Hood Makeup Air                            | Grocery        | Space Heating   | Remodel/Replacment       | 10.22       | (0.16)           |
| 130 | High efficiency ENERGY STAR fryer                  | Grocery        | Cooking         | New construction         | 1.92        | 0.44             |
| 131 | High efficiency ENERGY STAR fryer                  | Grocery        | Cooking         | Remodel/Replacment       | 1.92        | 0.44             |
| 132 | High efficiency ENERGY STAR steam cooker           | Grocery        | Cooking         | Retrofit                 | 1.04        | 1.57             |
| -   | High efficiency ENERGY STAR steam cooker           | Grocery        | Cooking         | New construction         | 13.25       | (2.23)           |
| 134 | High efficiency ENERGY STAR steam cooker           | Grocery        | Cooking         | Remodel/Replacment       | 13.25       | (2.23)           |
| 135 | Pre-Rinse Spray Valve                              | Grocery        | Water Heating   | Retrofit                 | 33.82       | 0.00             |
| 136 | Refrigeration heat recovery                        | Grocery        | Water Heating   | Retrofit                 | 3.19        | 0.51             |
|     | Refrigeration heat recovery                        | Grocery        | Water Heating   | New construction         | 2.58        | 0.31             |
|     | Refrigeration heat recovery                        | Grocery        | Water Heating   | Remodel/Replacment       | 3.26        | 0.23             |
| 139 | Cooling system chilled water reset                 | Grocery        | Cooling         | Retrofit                 | 1.18        | 1.37             |
| 140 | Cooling system chilled water reset                 | Grocery        | Cooling         | Remodel/Replacment       | 1.19        | 0.63             |
| 141 | Cooling system water side economizer               | Grocery        | Cooling         | Retrofit                 | 1.17        | 1.09             |
| 142 | Cooling system water side economizer               | Grocery        | Cooling         | Remodel/Replacment       | 1.18        | 0.49             |
| 143 | Condensing DHW stand-alone                         | Grocery        | Water Heating   | Retrofit                 | 2.13        | 0.92             |
| 144 | Condensing DHW stand-alone                         | Grocery        | Water Heating   | New construction         | 2.67        | 0.33             |
| 145 | Condensing DHW stand-alone                         | Grocery        | Water Heating   | Remodel/Replacment       | 3.39        | 0.26             |
|     | Faucet aerator                                     | Grocery        | Water Heating   | Retrofit                 | 18.26       | (3.65)           |

|     | А  | С           | D               | Е                        | F           | G                |
|-----|--|-------------|-----------------|--------------------------|-------------|------------------|
| 1   |  |             | cial Measures   |                          |             |                  |
| 2   | Total Resource Cost Test                           |             |                 |                          | aved Energy | ,                |
| 3   | 101011110000110000011001                           |             |                 |                          | <br>        |                  |
| 4   |  |             |                 |                          |             |                  |
| +   |  | Measure     |                 |                          | 1           |                  |
|     |  | ID4         |                 | Measure ID6              | Total       | TRC Levelized    |
|     |  | (e.g., Bldg | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5   | Measure Name                                       | type)       | (e.g., End Use) | NC, ROB)                 |             | Therm (\$/Therm) |
| 147 | Indirect-fired DHW off space heating boiler        | Grocery     | Water Heating   | Retrofit                 | 1.84        | 1.22             |
|     | Indirect-fired DHW off space heating boiler        | Grocery     | Water Heating   | New construction         | 1.98        | 0.44             |
|     | Indirect-fired DHW off space heating boiler        | Grocery     | Water Heating   | Remodel/Replacment       | 2.52        | 0.35             |
|     | Pipe insulation - water heating                    | Grocery     | Water Heating   | Retrofit                 | 23.57       | 0.08             |
|     | Pipe insulation - water heating                    | Grocery     | Water Heating   | New construction         | 18.70       | 0.05             |
| 152 | Pipe insulation - water heating                    | Grocery     | Water Heating   | Renovation               | 18.70       | 0.05             |
| 153 | Tank insulation                                    | Grocery     | Water Heating   | Retrofit                 | 1.74        | 1.10             |
| 154 | Tank insulation                                    | Grocery     | Water Heating   | New construction         | 1.38        | 0.64             |
| -   | Tank insulation                                    | Grocery     | Water Heating   | Remodel/Replacment       | 1.76        | 0.50             |
| 156 | Improved heating system high efficiency unit - Tie | Grocery     | Space Heating   | Retrofit                 | 1.03        | 2.92             |
| _   | Improved heating system high efficiency unit - Tie |             | Space Heating   | New construction         | 1.48        | 0.81             |
| 158 | Improved heating system high efficiency unit - Tie | Grocery     | Space Heating   | Remodel/Replacment       | 1.82        | 0.66             |
| 159 | Improved heating system condensing unit - Tier 2   | Grocery     | Space Heating   | Retrofit                 | 2.73        | 1.10             |
| 160 | Improved heating system condensing unit - Tier 2   | Grocery     | Space Heating   | New construction         | 0.52        | 2.29             |
| 161 | Improved heating system condensing unit - Tier 2   | Grocery     | Space Heating   | Remodel/Replacment       | 0.64        | 1.86             |
| 162 | Programmable Thermostat                            | Grocery     | Space Heating   | Retrofit                 | 7.30        | 0.36             |
| 163 | Programmable Thermostat                            | Grocery     | Space Heating   | Renovation               | 7.44        | 0.16             |
| 164 | Programmable Thermostat                            | Grocery     | Space Heating   | Remodel/Replacment       | 9.46        | 0.12             |
| 165 | Demand-Controlled Ventilation (controller, sensor  | Grocery     | Space Heating   | Retrofit                 | 15.17       | (0.10)           |
| 166 | Demand-Controlled Ventilation (controller, sensor  | Grocery     | Space Heating   | New construction         | 6.41        | 0.07             |
|     | Demand-Controlled Ventilation (controller, sensor  | Grocery     | Space Heating   | Remodel/Replacment       | 8.07        | 0.03             |
| 168 | Improved below-grade insulation                    | Grocery     | Space Heating   | New construction         | 2.15        | 0.56             |
|     | Improved below-grade insulation                    | Grocery     | Space Heating   | Renovation               | 2.15        | 0.56             |
|     | Sensible Heat Recovery                             | Grocery     | Space Heating   | Retrofit                 | 3.06        | 1.59             |
| 171 | Sensible Heat Recovery                             | Grocery     | Space Heating   | New construction         | 1.91        | 0.87             |
|     | Sensible Heat Recovery                             | Grocery     | Space Heating   | Remodel/Replacment       | 2.35        | 0.80             |
|     | Pipe insulation - space heating                    | Grocery     | Space Heating   | Retrofit                 | 55.51       | 0.05             |
|     | Pipe insulation - space heating                    | Grocery     | Space Heating   | New construction         | 45.17       | 0.03             |
|     | Pipe insulation - space heating                    | Grocery     | Space Heating   | Renovation               | 45.17       | 0.03             |
|     | Commissioning                                      | Grocery     | Total           | Renovation               | 2.23        | (0.19)           |
|     | Commissioning                                      | Grocery     | Total           | Remodel/Replacment       | 2.83        | (0.44)           |
|     | Retrocommissioning                                 | Grocery     | Total           | Retrofit                 | 3.14        | (0.10)           |
|     | Steam trap Maintenance                             | Grocery     | Space Heating   | Retrofit                 | 1.34        | 0.87             |
| _   | Oxygen Trim  | Grocery     | Space Heating   | Retrofit                 | 19.90       | 0.13             |
|     | Oxygen Trim  | Grocery     | Space Heating   | New construction         | 49.79       | 0.02             |
|     | Oxygen Trim  | Grocery     | Space Heating   | Remodel/Replacment       | 26.02       | 0.05             |
| -   | Infrared Heater                                    | Grocery     | Space Heating   | Retrofit                 | 27.47       | 0.11             |
|     | Infrared Heater                                    | Grocery     | Space Heating   | Remodel/Replacment       | 90.45       | 0.01             |
|     | Exhaust Hood Makeup Air                            | Warehouse   | Space Heating   | New construction         | 11.21       | (0.12)           |
| -   | Exhaust Hood Makeup Air                            | Warehouse   | Space Heating   | Remodel/Replacment       | 11.92       | (0.12)           |
|     | High efficiency ENERGY STAR fryer                  | Warehouse   | Cooking         | New construction         | 1.92        | 0.44             |
|     | High efficiency ENERGY STAR fryer                  | Warehouse   | Cooking         | Remodel/Replacment       | 1.92        | 0.44             |
|     | Pre-Rinse Spray Valve                              | Warehouse   | Water Heating   | Retrofit                 | 34.22       | 0.00             |
|     | Refrigeration heat recovery                        | Warehouse   | Water Heating   | Retrofit                 | 3.23        | 0.50             |
|     | Refrigeration heat recovery                        | Warehouse   | Water Heating   | New construction         | 2.61        | 0.30             |
|     | Refrigeration heat recovery                        | Warehouse   | Water Heating   | Remodel/Replacment       | 3.28        | 0.23             |
| 193 | Cooling system chilled water reset                 | Warehouse   | Cooling         | Retrofit                 | 1.17        | 1.38             |

|             | A  | С                      | D                           | Е                             | F              | G                |
|-------------|--|------------------------|-----------------------------|-------------------------------|----------------|------------------|
| 1           |  |                        | cial Measure                |                               |                |                  |
| 2           | Total Resource Cost Test                           | Benefit/Co             | st Ratio and                | Levelized Cost of S           | aved Energy    | •                |
| 3           |  |                        |                             |                               |                |                  |
| 4           |  |                        |                             |                               | <u>-</u> '     |                  |
|             |  | Measure<br>ID4         |                             | Measure ID6                   | Total          | TRC Levelized    |
|             |  | (e.g., Bldg            | Measure ID5                 | (e.g., Market: Retrofit,      | Resource       | Cost per Saved   |
| 5           | Measure Name                                       | type)                  | (e.g., End Use)             | NC, ROB)                      | BCR            | Therm (\$/Therm) |
| 194         | Cooling system chilled water reset                 | Warehouse              | Cooling                     | Remodel/Replacment            | 1.18           | 0.63             |
| 195         | Cooling system water side economizer               | Warehouse              | Cooling                     | Retrofit                      | 1.18           | 1.08             |
| 196         | Cooling system water side economizer               | Warehouse              | Cooling                     | Remodel/Replacment            | 1.18           | 0.49             |
| 197         | Condensing DHW stand-alone                         | Warehouse              | Water Heating               | Retrofit                      | 3.51           | 0.56             |
|             | Condensing DHW stand-alone                         | Warehouse              | Water Heating               | New construction              | 3.56           | 0.25             |
| 199         | Condensing DHW stand-alone                         | Warehouse              | Water Heating               | Remodel/Replacment            | 4.52           | 0.19             |
|             | Faucet aerator                                     | Warehouse              | Water Heating               | Retrofit                      | 18.40          | (3.66)           |
| 201         | Indirect-fired DHW off space heating boiler        | Warehouse              | Water Heating               | Retrofit                      | 2.81           | 0.80             |
|             | Indirect-fired DHW off space heating boiler        | Warehouse              | Water Heating               | New construction              | 2.64           | 0.33             |
|             | Indirect-fired DHW off space heating boiler        | Warehouse              | Water Heating               | Remodel/Replacment            | 3.36           | 0.26             |
|             | Instantaneous. High-Modulating Water Heater        | Warehouse              | Water Heating               | Retrofit                      | 4.02           | 0.49             |
|             | Instantaneous. High-Modulating Water Heater        | Warehouse              | Water Heating               | New construction              | 6.04           | 0.15             |
|             | Instantaneous. High-Modulating Water Heater        | Warehouse              | Water Heating               | Renovation                    | 6.04           | 0.15             |
|             | Instantaneous. High-Modulating Water Heater        | Warehouse              | Water Heating               | Remodel/Replacment            | 7.68           | 0.11             |
|             | Low-flow shower heads                              | Warehouse              | Water Heating               | Retrofit                      | 36.20          | (2.30)           |
|             | Low-flow shower heads                              | Warehouse              | Water Heating               | New construction              | 20.84          | (1.00)           |
| <del></del> | Low-flow shower heads                              | Warehouse              | Water Heating               | Remodel/Replacment            | 26.51          | (1.02)           |
|             | Pipe insulation - water heating                    | Warehouse              | Water Heating               | Retrofit                      | 23.84          | 0.08             |
| $\vdash$    | Pipe insulation - water heating                    | Warehouse              | Water Heating               | New construction              | 18.89          | 0.05             |
| -           | Pipe insulation - water heating                    | Warehouse              | Water Heating               | Renovation                    | 18.89          | 0.05             |
|             | Tank insulation                                    | Warehouse              | Water Heating               | Retrofit                      | 1.76           | 1.08             |
|             | Tank insulation                                    | Warehouse              | Water Heating               | New construction              | 1.39           | 0.63             |
|             | Tank insulation                                    | Warehouse              | Water Heating               | Remodel/Replacment            | 1.77           | 0.49             |
|             | Air Sealing  | Warehouse              | Space Heating               | Retrofit                      | 2.98           | 0.95             |
| -           | Air Sealing  | Warehouse              | Space Heating               | New construction              | 2.32           | 0.50             |
| -           | Air Sealing  | Warehouse              | Space Heating               | Renovation                    | 2.32           | 0.50             |
|             | Improved heating system high efficiency unit - Tie |                        | Space Heating               | Retrofit                      | 0.78           | 3.84             |
|             | Improved heating system high efficiency unit - Tie |                        | Space Heating               | New construction              | 1.90           | 0.63             |
| -           | Improved heating system high efficiency unit - Tie |                        | Space Heating               | Remodel/Replacment            | 2.34           | 0.51             |
| 004         | Improved heating system condensing unit - Tier 2   |                        | Space Heating               | Retrofit                      | 3.03           | 0.99             |
|             | Improved heating system condensing unit - Tier 2   |                        |                             |                               | 2.35           | 0.51<br>0.41     |
|             | Improved heating system condensing unit - Tier 2   |                        | Space Heating               | Remodel/Replacment            | 2.90<br>56.50  |                  |
|             | Programmable Thermostat                            | Warehouse              | Space Heating Space Heating | Retrofit                      | 56.59<br>24.91 | 0.05<br>0.05     |
|             | Programmable Thermostat Programmable Thermostat    | Warehouse<br>Warehouse | Space Heating               | Renovation Remodel/Replacment | 31.69          | 0.03             |
|             | Demand-Controlled Ventilation (controller, sensor  |                        |                             | Retrofit                      | 2.95           | 0.04             |
|             | Demand-Controlled Ventilation (controller, sensor  |                        | Space Heating Space Heating | New construction              | 1.95           | 0.62             |
| 004         | Demand-Controlled Ventilation (controller, sensor  |                        | Space Heating               | Remodel/Replacment            | 2.41           | 0.50             |
|             | Improved below-grade insulation                    | Warehouse              | Space Heating               | New construction              | 3.02           | 0.40             |
|             | Improved below-grade insulation                    | Warehouse              | Space Heating               | Renovation                    | 3.02           | 0.40             |
|             | Improved below-grade insulation                    | Warehouse              | Space Heating               | New construction              | 1.38           | 0.86             |
|             | Improved roof insulation                           | Warehouse              | Space Heating               | Renovation                    | 1.38           | 0.86             |
| $\vdash$    | Sensible Heat Recovery                             | Warehouse              | Space Heating               | Retrofit                      | 2.39           | 1.73             |
|             | Sensible Heat Recovery                             | Warehouse              | Space Heating               | New construction              | 1.69           | 0.92             |
|             | Sensible Heat Recovery                             | Warehouse              | Space Heating               | Remodel/Replacment            | 2.02           | 0.85             |
|             | Pipe insulation - space heating                    | Warehouse              | Space Heating               | Retrofit                      | 55.57          | 0.05             |
|             | Pipe insulation - space heating                    | Warehouse              | Space Heating               | New construction              | 44.98          | 0.03             |
| 270         | i ipo modiation - space neating                    | **a: 6:10u36           | Lobace Heating              | inew construction             | 77.30          | 0.03             |

|     | Α   | С           | D               | Е                        | F           | G                |
|-----|---|-------------|-----------------|--------------------------|-------------|------------------|
| 1   |   |             | ial Measures    |                          | -           |                  |
| 2   | Total Resource Cost Test                        |             |                 |                          | aved Energy | ,                |
| 3   |   |             |                 |                          | l           |                  |
| 4   |   |             |                 |                          |             |                  |
| 4   |   | Measure     | 1               | T .                      | Ī           |                  |
|     |   | ID4         |                 | Measure ID6              | Total       | TRC Levelized    |
|     |   | (e.g., Bldg | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5   | Measure Name                                    | type)       | (e.g., End Use) | NC, ROB)                 |             | Therm (\$/Therm) |
| 241 | Pipe insulation - space heating                 | Warehouse   | Space Heating   | Renovation               | 44.98       | 0.03             |
| 242 | Commissioning                                   | Warehouse   | Total           | New construction         | 2.30        | (0.28)           |
| 243 | Commissioning                                   | Warehouse   | Total           | Renovation               | 2.30        | (0.28)           |
| 244 | Commissioning                                   | Warehouse   | Total           | Remodel/Replacment       | 2.93        | (0.52)           |
| 245 | Retrocommissioning                              | Warehouse   | Total           | Retrofit                 | 3.21        | (0.17)           |
|     | Integrated Design - High Performance (30% > cod | Warehouse   | Total           | New construction         | 1.53        | 0.59             |
| 247 | Integrated Design - High Performance (50% > cod | Warehouse   | Total           | New construction         | 0.46        | 3.26             |
| 248 | Steam trap Maintenance                          | Warehouse   | Space Heating   | Retrofit                 | 1.54        | 0.76             |
|     | Oxygen Trim                                     | Warehouse   | Space Heating   | Retrofit                 | 24.10       | 0.11             |
|     | Oxygen Trim                                     | Warehouse   | Space Heating   | New construction         | 49.79       | 0.02             |
|     | Oxygen Trim                                     | Warehouse   | Space Heating   | Remodel/Replacment       | 35.81       | 0.03             |
|     | Infrared Heater                                 | Warehouse   | Space Heating   | Retrofit                 | 18.89       | 0.16             |
|     | Infrared Heater                                 | Warehouse   | Space Heating   | Remodel/Replacment       | 110.83      | 0.01             |
|     | Direct fired convection range/oven              | Education   | Cooking         | New construction         | 2.99        | 0.28             |
|     | Direct fired convection range/oven              | Education   | Cooking         | Remodel/Replacment       | 2.99        | 0.28             |
| -   | Exhaust Hood Makeup Air                         |             |                 | •                        | 12.09       | (0.26)           |
|     | •   | Education   | Space Heating   | New construction         | 11.72       | (0.26)           |
|     | Exhaust Hood Makeup Air                         | Education   | Space Heating   | Remodel/Replacment       |             | ` ,              |
|     | High efficiency ENERGY STAR fryer               | Education   | Cooking         | New construction         | 1.92        | 0.44             |
|     | High efficiency ENERGY STAR fryer               | Education   | Cooking         | Remodel/Replacment       | 1.92        | 0.44             |
|     | Pre-Rinse Spray Valve                           | Education   | Water Heating   | Retrofit                 | 29.56       | 0.00             |
|     | Refrigeration heat recovery                     | Education   | Water Heating   | Retrofit                 | 3.14        | 0.52             |
|     | Refrigeration heat recovery                     | Education   | Water Heating   | New construction         | 2.51        | 0.31             |
|     | Refrigeration heat recovery                     | Education   | Water Heating   | Remodel/Replacment       | 3.00        | 0.25             |
|     | Cooling system chilled water reset              | Education   | Cooling         | Retrofit                 | 1.05        | 1.51             |
|     | Cooling system chilled water reset              | Education   | Cooling         | Remodel/Replacment       | 1.06        | 0.69             |
| 266 | Cooling system water side economizer            | Education   | Cooling         | Retrofit                 | 1.21        | 0.98             |
|     | Cooling system water side economizer            | Education   | Cooling         | Remodel/Replacment       | 1.22        | 0.44             |
| 268 | Condensing DHW stand-alone                      | Education   | Water Heating   | Retrofit                 | 1.73        | 1.13             |
| 269 | Condensing DHW stand-alone                      | Education   | Water Heating   | New construction         | 2.19        | 0.40             |
| 270 | Condensing DHW stand-alone                      | Education   | Water Heating   | Remodel/Replacment       | 2.83        | 0.31             |
| 271 | Faucet aerator                                  | Education   | Water Heating   | Retrofit                 | 5.43        | (2.89)           |
| 272 | Graywater heat exchanger/GFX                    | Education   | Water Heating   | New construction         | 1.93        | 0.45             |
|     | Graywater heat exchanger/GFX                    | Education   | Water Heating   | Remodel/Replacment       | 2.50        | 0.35             |
|     | Indirect-fired DHW off space heating boiler     | Education   | Water Heating   | Retrofit                 | 1.51        | 1.49             |
|     | Indirect-fired DHW off space heating boiler     | Education   | Water Heating   | New construction         | 1.62        | 0.54             |
|     | Indirect-fired DHW off space heating boiler     | Education   | Water Heating   | Remodel/Replacment       | 2.10        | 0.42             |
| ~== | Instantaneous. High-Modulating Water Heater     | Education   | Water Heating   | Retrofit                 | 1.64        | 1.20             |
|     | Instantaneous. High-Modulating Water Heater     | Education   | Water Heating   | New construction         | 3.72        | 0.24             |
|     | Instantaneous. High-Modulating Water Heater     | Education   | Water Heating   | Renovation               | 3.72        | 0.24             |
|     | Instantaneous. High-Modulating Water Heater     | Education   | Water Heating   | Remodel/Replacment       | 4.80        | 0.18             |
|     | Low-flow shower heads                           | Education   | Water Heating   | Retrofit                 | 29.69       | (2.27)           |
| 000 | Low-flow shower heads                           | Education   | Water Heating   | New construction         | 23.90       | (1.01)           |
|     | Low-flow shower heads                           |             |                 |                          | 30.86       |                  |
|     |   | Education   | Water Heating   | Remodel/Replacment       |             | (1.03)           |
|     | Pipe insulation - water heating                 | Education   | Water Heating   | Retrofit                 | 23.10       | 0.08             |
|     | Pipe insulation - water heating                 | Education   | Water Heating   | New construction         | 18.09       | 0.05             |
|     | Pipe insulation - water heating                 | Education   | Water Heating   | Renovation               | 18.09       | 0.05             |
| 287 | Tank insulation                                 | Education   | Water Heating   | Retrofit                 | 1.71        | 1.12             |

|     | A  | С              | D               | Е                        | F           | G                |
|-----|--|----------------|-----------------|--------------------------|-------------|------------------|
| 1   |  |                | ial Measures    |                          |             |                  |
| 2   | Total Resource Cost Test                           | Benefit/Co     | st Ratio and    | Levelized Cost of S      | aved Energy | ,                |
| 3   |  |                |                 |                          |             |                  |
| 4   |  |                |                 |                          | <u>-</u> '  |                  |
|     |  | Measure<br>ID4 |                 | Measure ID6              | Total       | TRC Levelized    |
|     |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5   | Measure Name                                       | type)          | (e.g., End Use) | NC, ROB)                 |             | Therm (\$/Therm) |
| 288 | Tank insulation                                    | Education      | Water Heating   | New construction         | 1.34        | 0.66             |
| 289 | Tank insulation                                    | Education      | Water Heating   | Remodel/Replacment       | 1.72        | 0.51             |
| 290 | Air Sealing  | Education      | Space Heating   | Retrofit                 | 3.10        | 0.86             |
|     | Air Sealing  | Education      | Space Heating   | New construction         | 3.79        | 0.27             |
| 292 | Air Sealing  | Education      | Space Heating   | Renovation               | 3.79        | 0.27             |
| 293 | Improved heating system high efficiency unit - Tie | Education      | Space Heating   | Retrofit                 | 1.08        | 2.78             |
| 294 | Improved heating system high efficiency unit - Tie | Education      | Space Heating   | New construction         | 2.08        | 0.58             |
|     | Improved heating system high efficiency unit - Tie |                | Space Heating   | Remodel/Replacment       | 2.60        | 0.46             |
|     | Improved heating system condensing unit - Tier 2   |                | Space Heating   | Retrofit                 | 5.03        | 0.60             |
| 297 | Improved heating system condensing unit - Tier 2   | Education      | Space Heating   | New construction         | 1.86        | 0.64             |
|     | Improved heating system condensing unit - Tier 2   |                | Space Heating   | Remodel/Replacment       | 2.33        | 0.51             |
| 299 | Programmable Thermostat                            | Education      | Space Heating   | Retrofit                 | 21.87       | 0.09             |
| 300 | Programmable Thermostat                            | Education      | Space Heating   | Renovation               | 9.48        | 0.11             |
| 301 | Programmable Thermostat                            | Education      | Space Heating   | Remodel/Replacment       | 12.25       | 0.09             |
| 302 | Demand-Controlled Ventilation (controller, sensor  | Education      | Space Heating   | Retrofit                 | 4.62        | 0.55             |
| 303 | Demand-Controlled Ventilation (controller, sensor  | Education      | Space Heating   | New construction         | 2.46        | 0.48             |
| 304 | Demand-Controlled Ventilation (controller, sensor  | Education      | Space Heating   | Remodel/Replacment       | 3.16        | 0.38             |
| 305 | Improved below-grade insulation                    | Education      | Space Heating   | New construction         | 2.55        | 0.47             |
| 306 | Improved below-grade insulation                    | Education      | Space Heating   | Renovation               | 2.55        | 0.47             |
| 307 | Sensible Heat Recovery                             | Education      | Space Heating   | Retrofit                 | 2.47        | 1.25             |
| 308 | Sensible Heat Recovery                             | Education      | Space Heating   | New construction         | 3.03        | 0.50             |
| 309 | Sensible Heat Recovery                             | Education      | Space Heating   | Remodel/Replacment       | 3.75        | 0.43             |
|     | Pipe insulation - space heating                    | Education      | Space Heating   | Retrofit                 | 55.09       | 0.05             |
| 311 | Pipe insulation - space heating                    | Education      | Space Heating   | New construction         | 43.98       | 0.03             |
| 312 | Pipe insulation - space heating                    | Education      | Space Heating   | Renovation               | 43.98       | 0.03             |
| 313 | Energy Star washer                                 | Education      | Water Heating   | New construction         | 1.67        | (2.10)           |
| 314 | Energy Star washer                                 | Education      | Water Heating   | Remodel/Replacment       | 1.94        | (2.71)           |
| 315 | Swimming pool/spa covers                           | Education      | Miscellaneous   | Retrofit                 | 3.97        | 0.38             |
| 316 | Swimming pool/spa covers                           | Education      | Miscellaneous   | New construction         | 3.74        | 0.24             |
| 317 | Swimming pool/spa covers                           | Education      | Miscellaneous   | Remodel/Replacment       | 3.94        | 0.22             |
| 318 | Commissioning                                      | Education      | Total           | New construction         | 2.45        | (0.47)           |
| 319 | Commissioning                                      | Education      | Total           | Renovation               | 2.45        | (0.47)           |
| 320 | Commissioning                                      | Education      | Total           | Remodel/Replacment       | 3.16        | (0.73)           |
| 321 | Retrocommissioning                                 | Education      | Total           | Retrofit                 | 3.41        | (0.39)           |
| 322 | Integrated Design - High Performance (30% > code   | Education      | Total           | New construction         | 1.60        | 0.51             |
|     | Integrated Design - High Performance (50% > code   | Education      | Total           | New construction         | 0.48        | 3.17             |
|     | Steam trap Maintenance                             | Education      | Space Heating   | Retrofit                 | 1.49        | 0.78             |
|     | Oxygen Trim  | Education      | Space Heating   | Retrofit                 | 21.26       | 0.12             |
| 326 | Oxygen Trim  | Education      | Space Heating   | New construction         | 49.79       | 0.02             |
| 327 | Oxygen Trim  | Education      | Space Heating   | Remodel/Replacment       | 31.01       | 0.04             |
| 328 | Direct fired convection range/oven                 | Health         | Cooking         | New construction         | 2.99        | 0.28             |
| 329 | Direct fired convection range/oven                 | Health         | Cooking         | Remodel/Replacment       | 2.99        | 0.28             |
| 330 | Exhaust Hood Makeup Air                            | Health         | Space Heating   | New construction         | 12.81       | (0.18)           |
| 331 | Exhaust Hood Makeup Air                            | Health         | Space Heating   | Remodel/Replacment       | 14.74       | (0.20)           |
| 332 | High efficiency ENERGY STAR fryer                  | Health         | Cooking         | New construction         | 1.92        | 0.44             |
| 333 | High efficiency ENERGY STAR fryer                  | Health         | Cooking         | Remodel/Replacment       | 1.92        | 0.44             |
|     | High efficiency ENERGY STAR steam cooker           | Health         | Cooking         | Retrofit                 | 1.04        | 1.57             |

|      | А  | С              | D               | Е                         | F            | G                |
|------|--|----------------|-----------------|---------------------------|--------------|------------------|
| 1    | Upstate  | Commerc        | ial Measures    |                           |              |                  |
| 2    | Total Resource Cost Test   | Benefit/Co     | st Ratio and    | Levelized Cost of S       | aved Energy  | ,                |
| 3    |  |                |                 |                           |              |                  |
| 4    |  |                |                 |                           | -            |                  |
|      |  | Measure<br>ID4 |                 | Measure ID6               | Total        | TRC Levelized    |
|      |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit,  | Resource     | Cost per Saved   |
| 5    | Measure Name   | type)          | (e.g., End Use) | NC, ROB)                  | BCR          | Therm (\$/Therm) |
| 335  | High efficiency ENERGY STAR steam cooker   | Health         | Cooking         | New construction          | 13.25        | (2.23)           |
| 336  | High efficiency ENERGY STAR steam cooker   | Health         | Cooking         | Remodel/Replacment        | 13.25        | (2.23)           |
| 337  | Pre-Rinse Spray Valve  | Health         | Water Heating   | Retrofit                  | 32.36        | 0.00             |
| 338  | Refrigeration heat recovery  | Health         | Water Heating   | Retrofit                  | 3.12         | 0.52             |
| 339  | Refrigeration heat recovery  | Health         | Water Heating   | New construction          | 2.80         | 0.27             |
| 340  | Refrigeration heat recovery  | Health         | Water Heating   | Remodel/Replacment        | 3.18         | 0.23             |
| 341  | Cooling system chilled water reset   | Health         | Cooling         | Retrofit                  | 1.19         | 1.36             |
| 342  | Cooling system chilled water reset   | Health         | Cooling         | New construction          | 1.04         | 0.70             |
| 343  | Cooling system chilled water reset   | Health         | Cooling         | Remodel/Replacment        | 1.20         | 0.62             |
| 344  | Cooling system water side economizer   | Health         | Cooling         | Retrofit                  | 1.17         | 1.10             |
|      | Cooling system water side economizer   | Health         | Cooling         | New construction          | 1.05         | 0.65             |
| 346  | Cooling system water side economizer   | Health         | Cooling         | Remodel/Replacment        | 1.18         | 0.50             |
| 347  | Condensing DHW stand-alone   | Health         | Water Heating   | Retrofit                  | 2.78         | 0.70             |
|      | Condensing DHW stand-alone   | Health         | Water Heating   | New construction          | 3.94         | 0.22             |
|      | Condensing DHW stand-alone   | Health         | Water Heating   | Remodel/Replacment        | 4.52         | 0.19             |
|      | Faucet aerator   | Health         | Water Heating   | Retrofit                  | 5.76         | (2.95)           |
|      | Graywater heat exchanger/GFX   | Health         | Water Heating   | New construction          | 2.17         | 0.40             |
|      | Graywater heat exchanger/GFX   | Health         | Water Heating   | Remodel/Replacment        | 2.49         | 0.35             |
|      | Indirect-fired DHW off space heating boiler  | Health         | Water Heating   | Retrofit                  | 2.43         | 0.93             |
|      | Indirect-fired DHW off space heating boiler  | Health         | Water Heating   | New construction          | 2.92         | 0.30             |
|      | Indirect-fired DHW off space heating boiler  | Health         | Water Heating   | Remodel/Replacment        | 3.36         | 0.26             |
|      | Instantaneous. High-Modulating Water Heater  | Health         | Water Heating   | Retrofit                  | 2.64         | 0.74             |
|      | Instantaneous. High-Modulating Water Heater  | Health         | Water Heating   | New construction          | 6.69         | 0.13             |
|      | Instantaneous. High-Modulating Water Heater  | Health         | Water Heating   | Renovation                | 6.69         | 0.13             |
|      | Instantaneous. High-Modulating Water Heater  | Health         | Water Heating   | Remodel/Replacment        | 7.68         | 0.11             |
|      | Low-flow shower heads  | Health         | Water Heating   | Retrofit                  | 3,933.29     | (2.41)           |
|      | Low-flow shower heads  | Health         | Water Heating   | New construction          | 5.93         | (0.76)           |
|      | Low-flow shower heads  | Health         | Water Heating   | Remodel/Replacment        | 6.82         | (0.80)           |
|      | Pipe insulation - water heating  | Health         | Water Heating   | Retrofit                  | 23.00        | 0.08             |
| ~~=  | Pipe insulation - water heating  | Health         | Water Heating   | New construction          | 20.26        | 0.04             |
|      | Pipe insulation - water heating  | Health         | Water Heating   | Renovation                | 20.26        | 0.04             |
|      | Tank insulation  | Health         | Water Heating   | Retrofit                  | 1.70         | 1.12             |
|      | Tank insulation  | Health         | Water Heating   | New construction          | 1.50         | 0.59             |
|      | Tank insulation  | Health         | Water Heating   | Remodel/Replacment        | 1.72         | 0.51             |
|      | Air Sealing  | Health         | Space Heating   | Retrofit                  | 4.34         | (0.29)           |
|      | Air Sealing  | Health         | Space Heating   | New construction          | 3.47         | (0.02)           |
|      | Air Sealing  | Health         | Space Heating   | Renovation                | 3.47         | (0.02)           |
|      | Improved heating system high efficiency unit - Tie   |                | Space Heating   | Retrofit                  | 6.14<br>3.07 | 0.72<br>0.46     |
|      | Improved heating system high efficiency unit - Tie   |                | Space Heating   | New construction          |              | 0.46             |
|      | Improved heating system high efficiency unit - Tie   |                | Space Heating   | Remodel/Replacment        | 3.42<br>6.50 |                  |
|      | Improved heating system condensing unit - Tier 2   |                | Space Heating   | Retrofit                  | 6.50<br>5.33 | 0.46<br>0.22     |
|      | Improved heating system condensing unit - Tier 2   |                | Space Heating   | New construction          | 5.33<br>5.93 | 0.22             |
|      | Improved heating system condensing unit - Tier 2 Outdoor Air Reset   | Health         | Space Heating   | Remodel/Replacment        | 3.39         | 0.20             |
|      | High Performance Glazing double pane, low-E, low   |                | Space Heating   | Retrofit New construction | 1.38         | 0.73             |
|      | High Performance Glazing double pane, low-E, |                | Space Heating   | New construction          | 1.38         | 0.68             |
|      | Improved below-grade insulation  |                | Space Heating   | Renovation                |              |                  |
| JO 1 | improved below-grade insulation  | Health         | Space Heating   | New construction          | 1.60         | 0.75             |

|              | A  | С              | D               | Е                        | F           | G                |
|--------------|--|----------------|-----------------|--------------------------|-------------|------------------|
| 1            |  |                | ial Measures    |                          |             |                  |
| 2            | Total Resource Cost Test                         | Benefit/Co     | st Ratio and    | Levelized Cost of S      | aved Energy | '                |
| 3            |  |                |                 |                          |             |                  |
| 4            |  |                |                 |                          | •           |                  |
|              |  | Measure<br>ID4 |                 | Measure ID6              | Total       | TRC Levelized    |
|              |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5            | Measure Name                                     | type)          | (e.g., End Use) | NC, ROB)                 | BCR         | Therm (\$/Therm) |
| 382          | Improved below-grade insulation                  | Health         | Space Heating   | Renovation               | 1.60        | 0.75             |
| 383          | Improved roof insulation                         | Health         | Space Heating   | New construction         | 1.37        | 0.84             |
| 384          | Improved roof insulation                         | Health         | Space Heating   | Renovation               | 1.37        | 0.84             |
| 385          | Sensible Heat Recovery                           | Health         | Space Heating   | Retrofit                 | 2.17        | 2.33             |
| 386          | Pipe insulation - space heating                  | Health         | Space Heating   | Retrofit                 | 55.09       | 0.05             |
| 387          | Pipe insulation - space heating                  | Health         | Space Heating   | New construction         | 49.45       | 0.02             |
| 388          | Pipe insulation - space heating                  | Health         | Space Heating   | Renovation               | 49.45       | 0.02             |
| 389          | Swimming pool/spa covers                         | Health         | Miscellaneous   | Retrofit                 | 3.97        | 0.38             |
| 390          | Swimming pool/spa covers                         | Health         | Miscellaneous   | New construction         | 3.85        | 0.23             |
|              | Swimming pool/spa covers                         | Health         | Miscellaneous   | Remodel/Replacment       | 3.94        | 0.22             |
| -            | Commissioning                                    | Health         | Total           | New construction         | 2.55        | (0.39)           |
| 393          | Commissioning                                    | Health         | Total           | Renovation               | 2.55        | (0.39)           |
|              | Commissioning                                    | Health         | Total           | Remodel/Replacment       | 2.93        | (0.52)           |
| 395          | Retrocommissioning                               | Health         | Total           | Retrofit                 | 3.23        | (0.20)           |
| 396          | Integrated Design - High Performance (30% > code | Health         | Total           | New construction         | 1.54        | 0.58             |
| -            | Integrated Design - High Performance (50% > code | Health         | Total           | New construction         | 9,999.00    | 0.00             |
|              | Steam trap Maintenance                           | Health         | Space Heating   | Retrofit                 | 2.86        | 0.41             |
| -            | Oxygen Trim                                      | Health         | Space Heating   | Retrofit                 | 40.66       | 0.06             |
|              | Oxygen Trim                                      | Health         | Space Heating   | New construction         | 49.79       | 0.02             |
|              | Oxygen Trim                                      | Health         | Space Heating   | Remodel/Replacment       | 43.31       | 0.03             |
|              | Direct fired convection range/oven               | Lodging        | Cooking         | New construction         | 2.99        | 0.28             |
|              | Direct fired convection range/oven               | Lodging        | Cooking         | Remodel/Replacment       | 2.99        | 0.28             |
|              | Exhaust Hood Makeup Air                          | Lodging        | Space Heating   | New construction         | 11.68       | (0.20)           |
|              | Exhaust Hood Makeup Air                          | Lodging        | Space Heating   | Remodel/Replacment       | 15.00       | (0.22)           |
|              | High efficiency ENERGY STAR fryer                | Lodging        | Cooking         | New construction         | 1.92        | 0.44             |
|              | High efficiency ENERGY STAR fryer                | Lodging        | Cooking         | Remodel/Replacment       | 1.92        | 0.44             |
| -            | High efficiency ENERGY STAR steam cooker         | Lodging        | Cooking         | Retrofit                 | 1.04        | 1.57             |
|              | High efficiency ENERGY STAR steam cooker         | Lodging        | Cooking         | New construction         | 13.25       | (2.23)           |
|              | High efficiency ENERGY STAR steam cooker         | Lodging        | Cooking         | Remodel/Replacment       | 13.25       | (2.23)           |
| 446          | Pre-Rinse Spray Valve                            | Lodging        | Water Heating   | Retrofit                 | 30.75       | 0.00             |
|              | Refrigeration heat recovery                      | Lodging        | Water Heating   | Retrofit                 | 3.12        | 0.53             |
|              | Refrigeration heat recovery                      | Lodging        | Water Heating   | New construction         | 2.51        | 0.31             |
| -            | Refrigeration heat recovery                      | Lodging<br>    | Water Heating   | Remodel/Replacment       | 3.07        | 0.25             |
| -            | Cooling system chilled water reset               | Lodging        | Cooling         | Retrofit                 | 1.12        | 1.43             |
| -            | Cooling system chilled water reset               | Lodging        | Cooling         | Remodel/Replacment       | 1.13        | 0.66             |
| _            | Cooling system water side economizer             | Lodging        | Cooling         | Retrofit                 | 1.19        | 1.04             |
|              | Cooling system water side economizer             | Lodging        | Cooling         | Remodel/Replacment       | 1.20        | 0.47             |
|              | Condensing DHW stand-alone                       | Lodging        | Water Heating   | Retrofit                 | 3.50        | 0.56             |
|              | Condensing DHW stand-alone                       | Lodging        | Water Heating   | New construction         | 3.53        | 0.25             |
|              | Condensing DHW stand-alone                       | Lodging        | Water Heating   | Remodel/Replacment       | 4.52        | 0.19             |
| -            | Faucet aerator                                   | Lodging        | Water Heating   | Retrofit                 | 8.42        | (3.27)           |
| -            | Graywater heat exchanger/GFX                     | Lodging        | Water Heating   | New construction         | 1.00        | 0.87             |
|              | Graywater heat exchanger/GFX                     | Lodging        | Water Heating   | Remodel/Replacment       | 1.29        | 0.68             |
|              | Indirect-fired DHW off space heating boiler      | Lodging        | Water Heating   | Retrofit                 | 2.80        | 0.80             |
|              | Indirect-fired DHW off space heating boiler      | Lodging        | Water Heating   | New construction         | 2.62        | 0.33             |
| -            | Indirect-fired DHW off space heating boiler      | Lodging        | Water Heating   | Remodel/Replacment       | 3.36        | 0.26             |
| 4 <b>2</b> ŏ | Low-flow shower heads                            | Lodging        | Water Heating   | Retrofit                 | 629.57      | (2.41)           |

| Upstate Commercial Measures  Total Resource Cost Test Benefit/Cost Ratio and Levelized Cost of the state of t | Total Resource BCR 5.15 11 6.60 23.08 18.21 18.21 1.70 1.34 1.72 2.88 2.17 2.17                | TRC Levelized Cost per Saved Therm (\$/Therm) (0.71) (0.79) 0.08 0.05 0.05 1.12 0.65 0.51 1.03         |
|--|--|--|
| Total Resource Cost Test Benefit/Cost Ratio and Levelized Cost o    Measure   ID4   (e.g., Bldg type)   (e.g., End Use)   NC, ROB  | Total Resource BCR 5.15 11 6.60 23.08 18.21 18.21 1.70 1.34 1.72 2.88 2.17 2.17                | TRC Levelized Cost per Saved Therm (\$/Therm) (0.71) (0.79) 0.08 0.05 0.05 1.12 0.65 0.51 1.03         |
| Measure   ID4   (e.g., Bldg   type)   (e.g., End Use)   New construction   | Total Resource BCR 5.15 11 6.60 23.08 18.21 18.21 1.70 1.34 1.72 2.88 2.17 2.17                | TRC Levelized Cost per Saved Therm (\$/Therm) (0.71) (0.79) 0.08 0.05 0.05 1.12 0.65 0.51 1.03         |
| Measure ID4 (e.g., Bldg type)  Low-flow shower heads  Lodging Water Heating New construction  Water Heating Remodel/Replacmer  Lodging Water Heating New construction  Water Heating Remodel/Replacmer  Lodging Water Heating Removation  Lodging Water Heating Removation  Lodging Water Heating Removation  Lodging Water Heating Removation  Lodging Water Heating Remodel/Replacmer  Lodging Water Heating Remodel/Replacmer  Lodging Water Heating Remodel/Replacmer  Lodging Water Heating Remodel/Replacmer  Lodging Space Heating Retrofit  Lodging Space Heating Remodel/Replacmer  | tt, Resource BCR 5.15 6.60 23.08 18.21 18.21 1.70 1.34 1.72 2.88 2.17 2.17                     | Cost per Saved<br>Therm (\$/Therm)<br>(0.71)<br>(0.79)<br>0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51 |
| Measure ID4 (e.g., Bldg type) Low-flow shower heads Lodging Water Heating Remodel/Replacmer High Insulation - water heating Lodging Water Heating Removation Water Heating Removation Water Heating Removation Water Heating Removation Water Heating Remodel/Replacmer Under Heating Removation Water Heating Water Heating Water Heating Removation  | tt, Resource BCR 5.15 6.60 23.08 18.21 18.21 1.70 1.34 1.72 2.88 2.17 2.17                     | Cost per Saved<br>Therm (\$/Therm)<br>(0.71)<br>(0.79)<br>0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51 |
| Sealing   Ce.g., Bldg   Measure ID5   (e.g., End Use)   (e.g., End Use)   (e.g., End Use)   NC, ROB   NC, ROB  | tt, Resource BCR 5.15 6.60 23.08 18.21 18.21 1.70 1.34 1.72 2.88 2.17 2.17                     | Cost per Saved<br>Therm (\$/Therm)<br>(0.71)<br>(0.79)<br>0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51 |
| 5Measure Nametype)(e.g., End Use)NC, ROB)429Low-flow shower headsLodgingWater HeatingNew construction430Low-flow shower headsLodgingWater HeatingRemodel/Replacmer431Pipe insulation - water heatingLodgingWater HeatingNew construction432Pipe insulation - water heatingLodgingWater HeatingRenovation433Pipe insulation - water heatingLodgingWater HeatingRetrofit434Tank insulationLodgingWater HeatingNew construction435Tank insulationLodgingWater HeatingRemodel/Replacmer436Tank insulationLodgingSpace HeatingRetrofit438Air SealingLodgingSpace HeatingNew construction439Air SealingLodgingSpace HeatingRenovation440Improved heating system high efficiency unit - Tie LodgingSpace HeatingRetrofit  | BCR<br>5.15<br>6.60<br>23.08<br>18.21<br>18.21<br>1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17 | Therm (\$/Therm)<br>(0.71)<br>(0.79)<br>0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51<br>1.03           |
| 429Low-flow shower headsLodgingWater HeatingNew construction430Low-flow shower headsLodgingWater HeatingRemodel/Replacmer431Pipe insulation - water heatingLodgingWater HeatingNew construction432Pipe insulation - water heatingLodgingWater HeatingNew construction433Pipe insulation - water heatingLodgingWater HeatingRenovation434Tank insulationLodgingWater HeatingNew construction435Tank insulationLodgingWater HeatingRemodel/Replacmer436Tank insulationLodgingSpace HeatingRetrofit438Air SealingLodgingSpace HeatingNew construction439Air SealingLodgingSpace HeatingRenovation440Improved heating system high efficiency unit - Tie LodgingSpace HeatingRetrofit   | 5.15<br>6.60<br>23.08<br>18.21<br>18.21<br>1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17        | (0.71)<br>(0.79)<br>0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51<br>1.03                               |
| 430 Low-flow shower heads 431 Pipe insulation - water heating 432 Pipe insulation - water heating 438 Pipe insulation - water heating 439 Pipe insulation - water heating 430 Lodging 430 Water Heating 431 Pipe insulation - water heating 432 Pipe insulation - water heating 433 Pipe insulation - water heating 434 Tank insulation 435 Tank insulation 436 Tank insulation 437 Air Sealing 438 Air Sealing 439 Air Sealing 430 Lodging 430 Space Heating 431 Pipe insulation - water heating 432 Water Heating 433 New construction 434 Lodging 435 Tank insulation 436 Tank insulation 437 Air Sealing 438 Air Sealing 439 Air Sealing 440 Improved heating system high efficiency unit - Tie Lodging 440 Improved heating system high efficiency unit - Tie Lodging 440 Improved heating system high efficiency unit - Tie Lodging 440 Improved heating system high efficiency unit - Tie Lodging 440 Improved heating system high efficiency unit - Tie Lodging 440 Improved heating Retrofit  | 6.60<br>23.08<br>18.21<br>18.21<br>1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17                | (0.79)<br>0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51<br>1.03   |
| 431 Pipe insulation - water heating Lodging Water Heating Retrofit 432 Pipe insulation - water heating Lodging Water Heating New construction 433 Pipe insulation - water heating Lodging Water Heating Renovation 434 Tank insulation Lodging Water Heating Retrofit 435 Tank insulation Lodging Water Heating New construction 436 Tank insulation Lodging Water Heating Remodel/Replacmer 437 Air Sealing Lodging Space Heating Retrofit 438 Air Sealing Lodging Space Heating New construction 439 Air Sealing Lodging Space Heating Renovation 440 Improved heating system high efficiency unit - Tie Lodging Space Heating Retrofit  | 23.08<br>18.21<br>18.21<br>1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17                        | 0.08<br>0.05<br>0.05<br>1.12<br>0.65<br>0.51<br>1.03   |
| 432Pipe insulation - water heatingLodgingWater HeatingNew construction433Pipe insulation - water heatingLodgingWater HeatingRenovation434Tank insulationLodgingWater HeatingRetrofit435Tank insulationLodgingWater HeatingNew construction436Tank insulationLodgingWater HeatingRemodel/Replacmer437Air SealingLodgingSpace HeatingRetrofit438Air SealingLodgingSpace HeatingNew construction439Air SealingLodgingSpace HeatingRenovation440Improved heating system high efficiency unit - Tie LodgingSpace HeatingRetrofit  | 18.21<br>18.21<br>1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17                                 | 0.05<br>0.05<br>1.12<br>0.65<br>0.51<br>1.03   |
| 433 Pipe insulation - water heatingLodgingWater HeatingRenovation434 Tank insulationLodgingWater HeatingRetrofit435 Tank insulationLodgingWater HeatingNew construction436 Tank insulationLodgingWater HeatingRemodel/Replacmer437 Air SealingLodgingSpace HeatingRetrofit438 Air SealingLodgingSpace HeatingNew construction439 Air SealingLodgingSpace HeatingRenovation440 Improved heating system high efficiency unit - TieSpace HeatingRetrofit  | 18.21<br>1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17  | 0.05<br>1.12<br>0.65<br>0.51<br>1.03   |
| 433 Pipe insulation - water heatingLodgingWater HeatingRenovation434 Tank insulationLodgingWater HeatingRetrofit435 Tank insulationLodgingWater HeatingNew construction436 Tank insulationLodgingWater HeatingRemodel/Replacmer437 Air SealingLodgingSpace HeatingRetrofit438 Air SealingLodgingSpace HeatingNew construction439 Air SealingLodgingSpace HeatingRenovation440 Improved heating system high efficiency unit - TieSpace HeatingRetrofit  | 1.70<br>1.34<br>1.72<br>2.88<br>2.17<br>2.17   | 1.12<br>0.65<br>0.51<br>1.03   |
| 434 Tank insulation     Lodging     Water Heating     Retrofit       435 Tank insulation     Lodging     Water Heating     New construction       436 Tank insulation     Lodging     Water Heating     Remodel/Replacmer       437 Air Sealing     Lodging     Space Heating     Retrofit       438 Air Sealing     Lodging     Space Heating     New construction       439 Air Sealing     Lodging     Space Heating     Renovation       440 Improved heating system high efficiency unit - Tie Lodging     Space Heating     Retrofit   | 1.34<br>1.72<br>2.88<br>2.17<br>2.17   | 1.12<br>0.65<br>0.51<br>1.03   |
| 435Tank insulationLodgingWater HeatingNew construction436Tank insulationLodgingWater HeatingRemodel/Replacmer437Air SealingLodgingSpace HeatingRetrofit438Air SealingLodgingSpace HeatingNew construction439Air SealingLodgingSpace HeatingRenovation440Improved heating system high efficiency unit - Tie LodgingSpace HeatingRetrofit  | 1.72<br>2.88<br>2.17<br>2.17   | 0.65<br>0.51<br>1.03   |
| 436 Tank insulation       Lodging       Water Heating       Remodel/Replacmer         437 Air Sealing       Lodging       Space Heating       Retrofit         438 Air Sealing       Lodging       Space Heating       New construction         439 Air Sealing       Lodging       Space Heating       Renovation         440 Improved heating system high efficiency unit - Tie Lodging       Space Heating       Retrofit   | 2.88<br>2.17<br>2.17   | 0.51<br>1.03   |
| 437 Air Sealing Lodging Space Heating Retrofit 438 Air Sealing Lodging Space Heating New construction 439 Air Sealing Lodging Space Heating Renovation 440 Improved heating system high efficiency unit - Tie Lodging Space Heating Retrofit   | 2.88<br>2.17<br>2.17   | 1.03   |
| 438 Air Sealing       Lodging       Space Heating       New construction         439 Air Sealing       Lodging       Space Heating       Renovation         440 Improved heating system high efficiency unit - Tie       Lodging       Space Heating       Retrofit  | 2.17<br>2.17   |  |
| 439 Air Sealing Lodging Space Heating Renovation 440 Improved heating system high efficiency unit - Tie Lodging Space Heating Retrofit   | 2.17   | 0.55   |
| 440 Improved heating system high efficiency unit - Tie Lodging Space Heating Retrofit  |  | 0.55   |
|  | 0.79   | 3.81   |
|  | 3.51   | 0.34   |
| 441 Improved heating system high efficiency unit - Tid Lodging Space Heating New construction  |  |  |
| 442 Improved heating system high efficiency unit - Tie Lodging   Space Heating   Remodel/Replacmer   |  | 0.27   |
| 443 Improved heating system condensing unit - Tier 2 Lodging   | 6.47   | 0.46   |
| 444 Improved heating system condensing unit - Tier 2 Lodging   | 4.86   | 0.25   |
| 445 Improved heating system condensing unit - Tier 2 Lodging   |  | 0.20   |
| 446 Programmable Thermostat Lodging Space Heating Retrofit   | 4.65   | 0.57   |
| 447 Improved below-grade insulation Lodging Space Heating New construction   | 2.25   | 0.53   |
| 448 Improved below-grade insulation Lodging Space Heating Renovation   | 2.25   | 0.53   |
| 449 Pipe insulation - space heating Lodging Space Heating Retrofit   | 55.15  | 0.05   |
| 450 Pipe insulation - space heating Lodging Space Heating New construction   | 44.35  | 0.03   |
| 451 Pipe insulation - space heating Lodging Space Heating Renovation   | 44.35  | 0.03   |
| 452 Energy Star washer Lodging Water Heating New construction  | 1.63   | (1.87)   |
| 453 Energy Star washer Lodging Water Heating Remodel/Replacmer   | nt 1.92  | (2.55)   |
| 454 Swimming pool/spa covers Lodging Miscellaneous Retrofit  | 3.97   | 0.38   |
| 455 Swimming pool/spa covers Lodging Miscellaneous New construction  | 3.75   | 0.24   |
| 456 Swimming pool/spa covers Lodging Miscellaneous Remodel/Replacmer   | nt 3.94  | 0.22   |
| 457 Commissioning Lodging Total New construction   | 2.47   | (0.48)   |
| 458 Commissioning Lodging Total Renovation   | 2.47   | (0.48)   |
| 459 Commissioning Lodging Total Remodel/Replacmer  |  | (0.73)   |
| 460 Retrocommissioning Lodging Total Retrofit  | 3.41   | (0.39)   |
| 461 Integrated Design - High Performance (30% > codeLodging Total New construction   | 1.60   | 0.51   |
| 100  | 0.48   | 3.17   |
| · · · · · · · · · · · · · · · · · · ·  | 3.09   |  |
| 463 Steam trap Maintenance Lodging Space Heating Retrofit  |  | 0.38   |
| 464 Oxygen Trim Lodging Space Heating Retrofit   | 44.00  | 0.06   |
| 465 Oxygen Trim Lodging Space Heating New construction   | 49.79  | 0.02   |
| 466 Oxygen Trim Lodging Space Heating Remodel/Replacmer  |  | 0.02   |
| 467 Direct fired convection range/oven Restaurant Cooking New construction   | 2.99   | 0.28   |
| 468 Direct fired convection range/oven Restaurant Cooking Remodel/Replacmer  |  | 0.28   |
| 469 Exhaust Hood Makeup Air Restaurant Space Heating New construction  | 12.55  | (0.14)   |
| 470 Exhaust Hood Makeup Air Restaurant Space Heating Remodel/Replacment  |  | (0.13)   |
| 471 High efficiency ENERGY STAR fryer Restaurant Cooking New construction  | 1.92   | 0.44   |
| 472 High efficiency ENERGY STAR fryer Restaurant Cooking Remodel/Replacment  | nt 1.92  | 0.44   |
| 473 High efficiency ENERGY STAR steam cooker Restaurant Cooking Retrofit   | 1.04   | 1.57   |
| 474 High efficiency ENERGY STAR steam cooker Restaurant Cooking New construction   | 13.25  | (2.23)   |
| 475 High efficiency ENERGY STAR steam cooker Restaurant Cooking Remodel/Replacmer  |  | (2.23)   |

|     | А  | С              | D               | Е                        | F           | G                |
|-----|--|----------------|-----------------|--------------------------|-------------|------------------|
| 1   | Upstate  | Commer         | cial Measures   | 3                        |             |                  |
| 2   | Total Resource Cost Test                           | Benefit/Co     | st Ratio and    | Levelized Cost of S      | aved Energy | ,                |
| 3   |  |                |                 |                          |             |                  |
| 4   |  |                |                 |                          |             |                  |
|     |  | Measure<br>ID4 |                 | Measure ID6              | Total       | TRC Levelized    |
|     |  | (e.g., Bldg    | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5   | Measure Name                                       | type)          | (e.g., End Use) | NC, ROB)                 |             | Therm (\$/Therm) |
| 476 | Pre-Rinse Spray Valve                              | Restaurant     | Water Heating   | Retrofit                 | 28.82       | 0.00             |
|     | Refrigeration heat recovery                        | Restaurant     | Water Heating   | Retrofit                 | 3.19        | 0.51             |
| 478 | Refrigeration heat recovery                        | Restaurant     | Water Heating   | New construction         | 2.86        | 0.27             |
| 479 | Refrigeration heat recovery                        | Restaurant     | Water Heating   | Remodel/Replacment       | 2.94        | 0.26             |
| 480 | Cooling system chilled water reset                 | Restaurant     | Cooling         | Retrofit                 | 1.16        | 1.40             |
| 481 | Cooling system chilled water reset                 | Restaurant     | Cooling         | New construction         | 1.01        | 0.71             |
| 482 | Cooling system chilled water reset                 | Restaurant     | Cooling         | Remodel/Replacment       | 1.16        | 0.64             |
| 483 | Cooling system water side economizer               | Restaurant     | Cooling         | Retrofit                 | 1.18        | 1.07             |
|     | Cooling system water side economizer               | Restaurant     | Cooling         | New construction         | 1.06        | 0.64             |
| 485 | Cooling system water side economizer               | Restaurant     | Cooling         | Remodel/Replacment       | 1.19        | 0.48             |
| 486 | Condensing DHW stand-alone                         | Restaurant     | Water Heating   | Retrofit                 | 2.05        | 0.96             |
| 487 | Condensing DHW stand-alone                         | Restaurant     | Water Heating   | New construction         | 2.95        | 0.30             |
| 488 | Condensing DHW stand-alone                         | Restaurant     | Water Heating   | Remodel/Replacment       | 3.39        | 0.26             |
| 489 | Faucet aerator                                     | Restaurant     | Water Heating   | Retrofit                 | 16.44       | (3.62)           |
| 490 | Graywater heat exchanger/GFX                       | Restaurant     | Water Heating   | New construction         | 2.21        | 0.39             |
| 491 | Graywater heat exchanger/GFX                       | Restaurant     | Water Heating   | Remodel/Replacment       | 2.54        | 0.34             |
| 492 | Indirect-fired DHW off space heating boiler        | Restaurant     | Water Heating   | Retrofit                 | 1.80        | 1.25             |
| 493 | Indirect-fired DHW off space heating boiler        | Restaurant     | Water Heating   | New construction         | 2.19        | 0.40             |
| 494 | Indirect-fired DHW off space heating boiler        | Restaurant     | Water Heating   | Remodel/Replacment       | 2.52        | 0.35             |
|     | Pipe insulation - water heating                    | Restaurant     | Water Heating   | Retrofit                 | 23.57       | 0.08             |
| 496 | Pipe insulation - water heating                    | Restaurant     | Water Heating   | New construction         | 20.71       | 0.04             |
| 497 | Pipe insulation - water heating                    | Restaurant     | Water Heating   | Renovation               | 20.71       | 0.04             |
| 498 | Tank insulation                                    | Restaurant     | Water Heating   | Retrofit                 | 1.74        | 1.10             |
| 499 | Tank insulation                                    | Restaurant     | Water Heating   | New construction         | 1.53        | 0.57             |
|     | Tank insulation                                    | Restaurant     | Water Heating   | Remodel/Replacment       | 1.76        | 0.50             |
|     | Air Sealing  | Restaurant     | Space Heating   | Retrofit                 | 3.47        | 0.76             |
|     | Air Sealing  | Restaurant     | Space Heating   | New construction         | 8.32        | 0.10             |
|     | Air Sealing  | Restaurant     | Space Heating   | Renovation               | 8.32        | 0.10             |
|     | Improved heating system high efficiency unit - Tie |                | Space Heating   | New construction         | 1.52        | 0.78             |
| 505 | Improved heating system high efficiency unit - Tie | Restaurant     | Space Heating   | Remodel/Replacment       | 1.70        | 0.71             |
|     | Improved heating system condensing unit - Tier 2   |                | Space Heating   | New construction         | 0.57        | 2.11             |
|     | Improved heating system condensing unit - Tier 2   |                | Space Heating   | Remodel/Replacment       | 0.63        | 1.89             |
|     | Programmable Thermostat                            | Restaurant     | Space Heating   | Retrofit                 | 11.58       | 0.23             |
|     | Programmable Thermostat                            | Restaurant     | Space Heating   | Renovation               | 10.32       | 0.11             |
|     | Programmable Thermostat                            | Restaurant     | Space Heating   | Remodel/Replacment       | 11.85       | 0.10             |
|     | Demand-Controlled Ventilation (controller, sensor  |                | Space Heating   | Retrofit                 | 7.84        | 0.31             |
|     | Demand-Controlled Ventilation (controller, sensor  |                | Space Heating   | New construction         | 5.13        | 0.23             |
|     | Demand-Controlled Ventilation (controller, sensor  | _              | Space Heating   | Remodel/Replacment       | 5.66        | 0.20             |
|     | Improved below-grade insulation                    | Restaurant     | Space Heating   | New construction         | 2.57        | 0.47             |
|     | Improved below-grade insulation                    | Restaurant     | Space Heating   | Renovation               | 2.57        | 0.47             |
|     | Improved roof insulation                           | Restaurant     | Space Heating   | New construction         | 1.46        | 0.79             |
|     | Improved roof insulation                           | Restaurant     | Space Heating   | Renovation               | 1.46        | 0.79             |
|     | Sensible Heat Recovery                             | Restaurant     | Space Heating   | Retrofit                 | 3.20        | 1.80             |
|     | Sensible Heat Recovery                             | Restaurant     | Space Heating   | New construction         | 2.15        | 0.91             |
|     | Sensible Heat Recovery                             | Restaurant     | Space Heating   | Remodel/Replacment       | 2.35        | 0.89             |
|     | Pipe insulation - space heating                    | Restaurant     | Space Heating   | Retrofit                 | 55.57       | 0.05             |
| 522 | Pipe insulation - space heating                    | Restaurant     | Space Heating   | New construction         | 50.04       | 0.02             |

|     | Α   | С              | D                              | Е                        | F           | G                |
|-----|---|----------------|--------------------------------|--------------------------|-------------|------------------|
| 1   | Upstat  | e Commer       | cial Measures                  | S                        |             |                  |
| 2   | Total Resource Cost Test  |                |                                |                          | aved Energy | ,                |
| 3   |   |                |                                |                          |             |                  |
| 4   |   |                |                                |                          |             |                  |
| -4  |   | Measure        |                                | 1                        | 1           |                  |
|     |   | ID4            |                                | Measure ID6              | Total       | TRC Levelized    |
|     |   | (e.g., Bldg    | Measure ID5                    | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5   | Measure Name  | type)          | (e.g., End Use)                | NC, ROB)                 |             | Therm (\$/Therm) |
| 523 | Pipe insulation - space heating                                 | Restaurant     | Space Heating                  | Renovation               | 50.04       | 0.02             |
|     | Commissioning   | Restaurant     | Total                          | Renovation               | 2.55        | (0.39)           |
|     | Commissioning   | Restaurant     | Total                          | Remodel/Replacment       | 2.93        | (0.52)           |
| 526 | Retrocommissioning  | Restaurant     | Total                          | Retrofit                 | 3.21        | (0.18)           |
|     | Steam trap Maintenance  | Restaurant     | Space Heating                  | Retrofit                 | 1.35        | 0.86             |
|     | Oxygen Trim   | Restaurant     | Space Heating                  | Retrofit                 | 19.26       | 0.14             |
| 529 | Oxygen Trim   | Restaurant     | Space Heating                  | New construction         | 49.79       | 0.02             |
| 530 | Oxygen Trim   | Restaurant     | Space Heating                  | Remodel/Replacment       | 29.94       | 0.04             |
| 531 | Exhaust Hood Makeup Air   | Other          | Space Heating                  | New construction         | 9.35        | (0.14)           |
| 532 | Exhaust Hood Makeup Air   | Other          | Space Heating                  | Remodel/Replacment       | 11.85       | (0.17)           |
| 533 | High efficiency ENERGY STAR fryer                               | Other          | Cooking                        | New construction         | 1.92        | 0.44             |
| 534 | High efficiency ENERGY STAR fryer                               | Other          | Cooking                        | Remodel/Replacment       | 1.92        | 0.44             |
| 535 | High efficiency ENERGY STAR steam cooker                        | Other          | Cooking                        | Retrofit                 | 1.04        | 1.57             |
| 536 | High efficiency ENERGY STAR steam cooker                        | Other          | Cooking                        | New construction         | 13.25       | (2.23)           |
| 537 | High efficiency ENERGY STAR steam cooker                        | Other          | Cooking                        | Remodel/Replacment       | 13.25       | (2.23)           |
| -   | Pre-Rinse Spray Valve   | Other          | Water Heating                  | Retrofit                 | 32.24       | 0.00             |
| -   | Refrigeration heat recovery                                     | Other          | Water Heating                  | Retrofit                 | 3.18        | 0.51             |
|     | Refrigeration heat recovery                                     | Other          | Water Heating                  | New construction         | 2.07        | 0.39             |
|     | Refrigeration heat recovery                                     | Other          | Water Heating                  | Remodel/Replacment       | 3.17        | 0.24             |
|     | Cooling system chilled water reset                              | Other          | Cooling                        | Retrofit                 | 1.15        | 1.40             |
|     | Cooling system chilled water reset                              | Other          | Cooling                        | Remodel/Replacment       | 1.16        | 0.64             |
|     | Cooling system water side economizer                            | Other          | Cooling                        | Retrofit                 | 1.18        | 1.06             |
|     | Cooling system water side economizer                            | Other          | Cooling                        | Remodel/Replacment       | 1.19        | 0.48             |
|     | Condensing DHW stand-alone                                      | Other          | Water Heating                  | Retrofit                 | 2.97        | 0.66             |
|     | Condensing DHW stand-alone                                      | Other          | Water Heating                  | New construction         | 2.86        | 0.31             |
|     | Condensing DHW stand-alone                                      | Other          | Water Heating                  | Remodel/Replacment       | 4.52        | 0.19             |
|     | Faucet aerator  | Other          | Water Heating                  | Retrofit                 | 8.68        | (3.30)           |
|     | Graywater heat exchanger/GFX                                    | Other          | Water Heating                  | Remodel/Replacment       | 1.31        | 0.67             |
|     | Indirect-fired DHW off space heating boiler                     | Other          | Water Heating                  | Retrofit                 | 2.53        | 0.89             |
|     | Indirect-fired DHW off space heating boiler                     | Other          | Water Heating                  | New construction         | 2.13        | 0.41             |
|     | Indirect-fired DHW off space heating boiler                     | Other          | Water Heating                  | Remodel/Replacment       | 3.36        | 0.26             |
| -   | Instantaneous. High-Modulating Water Heater                     | Other          | Water Heating                  | Retrofit                 | 2.96        | 0.66             |
|     | Instantaneous. High-Modulating Water Heater                     | Other          | Water Heating                  | New construction         | 4.86        | 0.18             |
|     | Instantaneous. High-Modulating Water Heater                     | Other          | Water Heating                  | Renovation               | 4.86        | 0.18             |
|     | Instantaneous. High-Modulating Water Heater                     | Other          | Water Heating                  | Remodel/Replacment       | 7.68        | 0.13             |
|     | Low-flow shower heads   | Other          | Water Heating                  | Retrofit                 | 43.06       | (2.31)           |
| -   | Low-flow shower heads   | Other          | Water Heating                  | New construction         | 10.34       | (0.90)           |
| -   | Low-flow shower heads   |                |                                | Remodel/Replacment       | 16.32       | (0.90)           |
|     | Pipe insulation - water heating                                 | Other<br>Other | Water Heating<br>Water Heating | Retrofit                 | 23.47       | 0.97)            |
|     | Pipe insulation - water heating                                 |                |                                |                          | 15.01       | 0.06             |
|     | Pipe insulation - water heating Pipe insulation - water heating | Other          | Water Heating                  | New construction         | 15.01       | 0.06             |
|     |   | Other          | Water Heating                  | Renovation               | 1.73        | 1.10             |
| -   | Tank insulation   | Other          | Water Heating                  | Retrofit                 |             |                  |
|     | Tank insulation   | Other          | Water Heating                  | New construction         | 1.11        | 0.79             |
|     | Tank insulation   | Other          | Water Heating                  | Remodel/Replacment       | 1.75        | 0.50             |
| -   | Air Sealing   | Other          | Space Heating                  | Retrofit                 | 9.03        | 0.16             |
|     | Air Sealing   | Other          | Space Heating                  | New construction         | 2.57        | 0.42             |
| 569 | Air Sealing   | Other          | Space Heating                  | Renovation               | 2.57        | 0.42             |

|       | Α  | С           | D               | E                        | F           | G                |
|-------|--|-------------|-----------------|--------------------------|-------------|------------------|
| 1     | Upstate  | Commerc     | ial Measures    |                          | •           |                  |
| 2     | Total Resource Cost Test                           |             |                 |                          | aved Energy | ,                |
| 3     |  |             |                 |                          |             |                  |
| 4     |  |             |                 |                          |             |                  |
| -     |  | Measure     | I               |                          |             |                  |
|       |  | ID4         |                 | Measure ID6              | Total       | TRC Levelized    |
| l _ l |  | (e.g., Bldg | Measure ID5     | (e.g., Market: Retrofit, | Resource    | Cost per Saved   |
| 5     | Measure Name                                       | type)       | (e.g., End Use) | NC, ROB)                 |             | Therm (\$/Therm) |
|       | Improved heating system high efficiency unit - Tie | Other       | Space Heating   | Retrofit                 | 0.83        | 3.61             |
|       | Improved heating system high efficiency unit - Tie |             | Space Heating   | Remodel/Replacment       | 1.34        | 0.90             |
|       | Improved heating system condensing unit - Tier 2   | Other       | Space Heating   | Retrofit                 | 2.01        | 1.49             |
| 573   | Improved heating system condensing unit - Tier 2   | Other       | Space Heating   | Remodel/Replacment       | 1.91        | 0.63             |
| 574   | Programmable Thermostat                            | Other       | Space Heating   | Retrofit                 | 22.42       | 0.09             |
| 575   | Programmable Thermostat                            | Other       | Space Heating   | Renovation               | 1.65        | 0.71             |
| 576   | Programmable Thermostat                            | Other       | Space Heating   | Remodel/Replacment       | 2.61        | 0.45             |
| 577   | Demand-Controlled Ventilation (controller, sensor  | Other       | Space Heating   | Retrofit                 | 17.64       | (0.11)           |
| 578   | Demand-Controlled Ventilation (controller, sensor  | Other       | Space Heating   | New construction         | 4.43        | 0.17             |
| 579   | Demand-Controlled Ventilation (controller, sensor  | Other       | Space Heating   | Remodel/Replacment       | 6.86        | 0.07             |
| 580   | Improved below-grade insulation                    | Other       | Space Heating   | New construction         | 2.00        | 0.60             |
| 581   | Improved below-grade insulation                    | Other       | Space Heating   | Renovation               | 2.00        | 0.60             |
|       | Sensible Heat Recovery                             | Other       | Space Heating   | Retrofit                 | 4.54        | 1.46             |
|       | Sensible Heat Recovery                             | Other       | Space Heating   | New construction         | 1.55        | 0.96             |
|       | Sensible Heat Recovery                             | Other       | Space Heating   | Remodel/Replacment       | 2.32        | 0.81             |
| -     | Pipe insulation - space heating                    | Other       | Space Heating   | Retrofit                 | 55.38       | 0.05             |
|       | Pipe insulation - space heating                    | Other       | Space Heating   | New construction         | 36.21       | 0.03             |
|       | Pipe insulation - space heating                    | Other       | Space Heating   | Renovation               | 36.21       | 0.03             |
|       | Energy Star washer                                 | Other       | Water Heating   | New construction         | 1.38        | (1.15)           |
|       | Energy Star washer                                 | Other       | Water Heating   | Remodel/Replacment       | 2.04        | (2.87)           |
|       | Swimming pool/spa covers                           | Other       | Miscellaneous   | Retrofit                 | 3.98        | 0.38             |
|       | Swimming pool/spa covers                           | Other       | Miscellaneous   | New construction         | 3.55        | 0.25             |
|       | Swimming pool/spa covers                           | Other       | Miscellaneous   | Remodel/Replacment       | 3.96        | 0.22             |
|       | Commissioning                                      | Other       | Total           | New construction         | 1.90        | (0.07)           |
|       | Commissioning                                      | Other       | Total           | Renovation               | 1.90        | (0.07)           |
|       | Commissioning                                      | Other       | Total           |                          | 3.00        | : : :            |
|       |  |             | Total           | Remodel/Replacment       | 3.00        | (0.58)           |
|       | Retrocommissioning                                 | Other       |                 | Retrofit                 |             | (0.24)           |
|       | Integrated Design - High Performance (30% > code   |             | Total           | New construction         | 1.55        | 0.57             |
|       | Steam trap Maintenance                             | Other       | Space Heating   | Retrofit                 | 1.82        | 0.64             |
|       | Oxygen Trim  | Other       | Space Heating   | Retrofit                 | 26.41       | 0.10             |
|       | Oxygen Trim  | Other       | Space Heating   | New construction         | 49.79       | 0.02             |
|       | Oxygen Trim  | Other       | Space Heating   | Remodel/Replacment       | 31.74       | 0.04             |
|       | Infrared Heater                                    | Other       | Space Heating   | Retrofit                 | 26.69       | 0.11             |
|       | Infrared Heater                                    | Other       | Space Heating   | Remodel/Replacment       | 106.39      | 0.01             |
|       | Faucet aerator                                     | Multifamily | Water Heating   | Retrofit                 | 9.97        | (3.38)           |
|       | Graywater heat exchanger/GFX                       | Multifamily | Water Heating   | New construction         | 1.18        | 0.74             |
|       | Graywater heat exchanger/GFX                       | Multifamily | Water Heating   | Remodel/Replacment       | 1.51        | 0.58             |
| -     | Low-flow shower heads                              | Multifamily | Water Heating   | Retrofit                 | 9,999.00    | (2.44)           |
| 608   | Low-flow shower heads                              | Multifamily | Water Heating   | New construction         | 6.03        | (0.76)           |
| 609   | Low-flow shower heads                              | Multifamily | Water Heating   | Remodel/Replacment       | 7.73        | (0.84)           |
| 610   | Pipe insulation - water heating                    | Multifamily | Water Heating   | Retrofit                 | 27.34       | 0.07             |
| 611   | Pipe insulation - water heating                    | Multifamily | Water Heating   | New construction         | 21.33       | 0.04             |
| 612   | Pipe insulation - water heating                    | Multifamily | Water Heating   | Renovation               | 21.33       | 0.04             |
| 613   | Tank insulation                                    | Multifamily | Water Heating   | Retrofit                 | 2.02        | 0.94             |
| 614   | Tank insulation                                    | Multifamily | Water Heating   | New construction         | 1.57        | 0.56             |
|       | Tank insulation                                    | Multifamily | Water Heating   | Remodel/Replacment       | 2.02        | 0.43             |
|       | Air Sealing  | Multifamily | Space Heating   | Retrofit                 | 2.88        | 1.03             |
| ٠.٠   | y  | aay         | - Page Heating  |                          | 2.00        | 1.00             |

|            | А  | С                  | D             | Е                                       | F                 | G                |
|------------|--|--------------------|---------------|---|-------------------|------------------|
| 1          | Upstate  | Commer             | cial Measures | 3                                       |                   |                  |
| 2          | Total Resource Cost Test                           | Benefit/Co         | st Ratio and  | Levelized Cost of S                     | aved Energy       | •                |
| 3          |  |                    |               |   |                   |                  |
| 4          |  |                    |               |   | ı                 |                  |
|            |  | Measure<br>ID4     |               | Manager IDC                             | Total             | TRC Levelized    |
|            |  | וט4<br>(e.g., Bldg | Measure ID5   | Measure ID6<br>(e.g., Market: Retrofit, | Total<br>Resource | Cost per Saved   |
| 5          | Measure Name                                       | type)              |               | NC, ROB)                                |                   | Therm (\$/Therm) |
|            | Air Sealing  |                    | Space Heating | New construction                        | 2.17              | 0.55             |
|            | Air Sealing  | Multifamily        |               | Renovation                              | 2.17              | 0.55             |
|            | Improved heating system high efficiency unit - Tie | -                  | Space Heating | Retrofit                                | 0.79              | 3.81             |
|            | Improved heating system high efficiency unit - Tie |                    |               | New construction                        | 3.51              | 0.34             |
| 621        | Improved heating system high efficiency unit - Tie | Multifamily        | Space Heating | Remodel/Replacment                      | 4.36              | 0.27             |
| 622        | Improved heating system condensing unit - Tier 2   | Multifamily        | Space Heating | Retrofit                                | 6.47              | 0.46             |
|            | Improved heating system condensing unit - Tier 2   |                    | Space Heating | New construction                        | 4.86              | 0.25             |
| 624        | Improved heating system condensing unit - Tier 2   | Multifamily        | Space Heating | Remodel/Replacment                      | 6.04              | 0.20             |
| 625        | Programmable Thermostat                            | Multifamily        | Space Heating | Retrofit                                | 4.65              | 0.57             |
| 626        | Programmable Thermostat                            | Multifamily        | Space Heating | Renovation                              | 1.97              | 0.60             |
| 627        | Programmable Thermostat                            | Multifamily        | Space Heating | Remodel/Replacment                      | 2.53              | 0.47             |
| 628        | Pipe insulation - space heating                    | Multifamily        | Space Heating | Retrofit                                | 55.15             | 0.05             |
| 629        | Pipe insulation - space heating                    | Multifamily        | Space Heating | New construction                        | 44.35             | 0.03             |
| 630        | Pipe insulation - space heating                    | Multifamily        | Space Heating | Renovation                              | 44.35             | 0.03             |
| 631        | Energy Star washer                                 | Multifamily        | Water Heating | New construction                        | 1.90              | (2.51)           |
| 632        | Energy Star washer                                 | Multifamily        | Water Heating | Remodel/Replacment                      | 2.25              | (3.09)           |
| 633        | Swimming pool/spa covers                           | Multifamily        | Miscellaneous | Retrofit                                | 4.11              | 0.37             |
|            | Swimming pool/spa covers                           | Multifamily        | Miscellaneous | Remodel/Replacment                      | 4.08              | 0.22             |
|            | Commissioning                                      | Multifamily        | Total         | New construction                        | 2.47              | (0.48)           |
| 636        | Commissioning                                      | Multifamily        | Total         | Renovation                              | 2.47              | (0.48)           |
|            | Commissioning                                      | Multifamily        | Total         | Remodel/Replacment                      | 3.16              | (0.73)           |
|            | Retrocommissioning                                 | Multifamily        | Total         | Retrofit                                | 3.41              | (0.39)           |
|            | Integrated Design - High Performance (30% > code   |                    | Total         | New construction                        | 1.60              | 0.51             |
| 640        | Integrated Design - High Performance (50% > code   | Multifamily        | Total         | New construction                        | 0.48              | 3.17             |
|            | Steam trap Maintenance                             | Multifamily        | Space Heating | Retrofit                                | 3.09              | 0.38             |
|            | Oxygen Trim  | Multifamily        | Space Heating | Retrofit                                | 44.00             | 0.06             |
|            | Oxygen Trim  | Multifamily        | Space Heating | New construction                        | 49.79             | 0.02             |
|            | Oxygen Trim  | Multifamily        | Space Heating | Remodel/Replacment                      | 47.58             | 0.02             |
| 645        |  |                    |               |   |                   |                  |
| 646        |  |                    |               |   |                   |                  |
| 647        |  |                    |               |   |                   |                  |
| 648        |  |                    |               |   |                   |                  |
| 649<br>650 |  |                    |               |   |                   |                  |
| 650        |  |                    |               |   |                   |                  |
| 652        |  |                    |               |   |                   |                  |
| 653        |  |                    |               |   |                   |                  |
| 654        |  |                    |               |   |                   |                  |
| 655        |  |                    |               |   |                   |                  |
| 656        |  |                    |               |   |                   |                  |
| 657        |  |                    |               |   |                   |                  |
| 658        |  |                    |               |   |                   |                  |
| 659        |  |                    |               |   |                   |                  |
| 660        |  |                    |               |   |                   |                  |
| 661        |  |                    |               |   |                   |                  |
| 662        |  |                    |               |   |                   |                  |
| 663        |  |                    |               |   |                   |                  |
| 500        |  |                    | I .           |   |                   |                  |

## Subtracted Cost Effective Measures -- Upstate -- Low Avoided Costs

| _   | Subtracted Cost Effective   | ivicasui es                         | Opsiale Lov                    | V AVOIUEU COSIS                                     |                          |   |
|-----|---|-------------------------------------|--------------------------------|---|--------------------------|---|
| #   | Measure Name  | Measure ID4<br>(e.g., Bldg<br>type) | Measure ID5<br>(e.g., End Use) | Measure ID6<br>(e.g., Market: Retrofit,<br>NC, ROB) | Total<br>Resource<br>BCR | TRC Levelized<br>Cost per Saved<br>Therm (\$/Therm) |
| 16  | Cooling system chilled water reset  | Office                              | Cooling                        | Retrofit  | 0.78                     | 1.42  |
| 18  | Cooling system chilled water reset  | Office                              | Cooling                        | Remodel/Replacment                                  | 0.79                     | 0.65  |
| 54  | Improved heating system condensing unit - Tier 2  | Office                              | Space Heating                  | Retrofit  | 0.62                     | 3.60  |
| 70  | Improved wall insulation  | Office                              | Space Heating                  | New construction                                    | 0.80                     | 1.14  |
| 71  | Improved wall insulation  | Office                              | Space Heating                  | Renovation  | 0.80                     | 1.14  |
|     | High efficiency ENERGY STAR steam cooker  | Retail                              | Cooking                        | Retrofit  | 0.97                     | 1.57  |
|     | Cooling system chilled water reset  | Retail                              | Cooling                        | Retrofit  | 0.76                     | 1.44  |
|     | Cooling system chilled water reset  | Retail                              | Cooling                        | Remodel/Replacment                                  | 0.77                     | 0.66  |
|     | Improved heating system high efficiency unit - Tier 1   | Retail                              | Space Heating                  | New construction                                    | 0.77                     | 1.17  |
|     | Improved heating system high efficiency unit - Tier 1   | Retail                              | Space Heating                  | Remodel/Replacment                                  | 0.96                     | 0.93  |
|     | Improved heating system condensing unit - Tier 2  | Retail                              | Space Heating                  | New construction                                    | 0.95                     | 0.94  |
|     | Improved heating system condensing unit - Tier 2  | Retail                              | Space Heating                  | Remodel/Replacment                                  | 1.19                     | 0.75  |
|     | High efficiency ENERGY STAR steam cooker  | Grocery                             | Cooking                        | Retrofit  | 0.97                     | 1.57  |
|     | Cooling system chilled water reset  | Grocery                             | Cooling                        | Retrofit  | 0.83                     | 1.37  |
|     | Cooling system chilled water reset  | Grocery                             | Cooling                        | Remodel/Replacment                                  | 0.83                     | 0.63  |
|     | Improved heating system high efficiency unit - Tier 1   | Grocery                             | Space Heating                  | Retrofit  | 0.77                     | 2.92  |
| _   | Improved heating system condensing unit - Tier 2  | Grocery                             | Space Heating                  | Retrofit  | 2.05                     | 1.10  |
| _   |   | _                                   | Space Heating  Space Heating   |   | 0.39                     | 2.29  |
|     | Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2 | Grocery<br>Grocery                  | Space Heating  Space Heating   | New construction Remodel/Replacment                 | 0.39                     | 1.86  |
|     | 1 9 7 9   | ,                                   | , ,                            |   |                          |   |
|     | Cooling system chilled water reset  | Warehouse                           | Cooling                        | Retrofit  | 0.82                     | 1.38  |
|     | Cooling system chilled water reset  | Warehouse                           | Cooling                        | Remodel/Replacment                                  | 0.83                     | 0.63  |
|     | Improved heating system high efficiency unit - Tier 1   | Warehouse                           | Space Heating                  | Retrofit  | 0.59                     | 3.84  |
| _   | Improved heating system condensing unit - Tier 2  | Warehouse                           | Space Heating                  | Retrofit  | 2.27                     | 0.99  |
|     | Sensible Heat Recovery  | Warehouse                           | Space Heating                  | New construction                                    | 0.96                     | 0.92  |
|     | Integrated Design - High Performance (50% > codes) Tier 2   | Warehouse                           | Total                          | New construction                                    | 0.38                     | 3.26  |
|     | Cooling system chilled water reset  | Education                           | Cooling                        | Retrofit  | 0.70                     | 1.51  |
|     | Cooling system chilled water reset  | Education                           | Cooling                        | Remodel/Replacment                                  | 0.71                     | 0.69  |
|     | Improved heating system high efficiency unit - Tier 1   | Education                           | Space Heating                  | Retrofit  | 0.81                     | 2.78  |
|     | Improved heating system condensing unit - Tier 2  | Education                           | Space Heating                  | Retrofit  | 3.78                     | 0.60  |
|     | Integrated Design - High Performance (50% > codes) Tier 2   | Education                           | Total                          | New construction                                    | 0.40                     | 3.17  |
| 497 | High efficiency ENERGY STAR steam cooker  | Health                              | Cooking                        | Retrofit  | 0.97                     | 1.57  |
| 506 | Cooling system chilled water reset  | Health                              | Cooling                        | Retrofit  | 0.83                     | 1.36  |
| 507 | Cooling system chilled water reset  | Health                              | Cooling                        | New construction                                    | 0.73                     | 0.70  |
| 508 | Cooling system chilled water reset  | Health                              | Cooling                        | Remodel/Replacment                                  | 0.84                     | 0.62  |
| 510 | Cooling system water side economizer  | Health                              | Cooling                        | New construction                                    | 0.92                     | 0.65  |
| 566 | Sensible Heat Recovery  | Health                              | Space Heating                  | Retrofit  | -0.64                    | 2.33  |
| 582 | Integrated Design - High Performance (50% > codes) Tier 2   | Health                              | Total                          | New construction                                    | 9999.00                  | 0.00  |
| 595 | High efficiency ENERGY STAR steam cooker  | Lodging                             | Cooking                        | Retrofit  | 0.97                     | 1.57  |
| 604 | Cooling system chilled water reset  | Lodging                             | Cooling                        | Retrofit  | 0.77                     | 1.43  |
| 606 | Cooling system chilled water reset  | Lodging                             | Cooling                        | Remodel/Replacment                                  | 0.78                     | 0.66  |
| 618 | Graywater heat exchanger/GFX  | Lodging                             | Water Heating                  | New construction                                    | 0.75                     | 0.87  |
| 619 | Graywater heat exchanger/GFX  | Lodging                             | Water Heating                  | Remodel/Replacment                                  | 0.97                     | 0.68  |
| 639 | Improved heating system high efficiency unit - Tier 1   | Lodging                             | Space Heating                  | Retrofit  | 0.59                     | 3.81  |
|     | Improved heating system condensing unit - Tier 2  | Lodging                             | Space Heating                  | Retrofit  | 4.85                     | 0.46  |
| 680 | Integrated Design - High Performance (50% > codes) Tier 2   | Lodging                             | Total                          | New construction                                    | 0.40                     | 3.17  |
| 693 | High efficiency ENERGY STAR steam cooker  | Restaurant                          | Cooking                        | Retrofit  | 0.97                     | 1.57  |
|     | Cooling system chilled water reset  | Restaurant                          | Cooling                        | Retrofit  | 0.80                     | 1.40  |
|     | Cooling system chilled water reset  | Restaurant                          | Cooling                        | New construction                                    | 0.70                     | 0.71  |
| -   | Cooling system chilled water reset  | Restaurant                          | Cooling                        | Remodel/Replacment                                  | 0.81                     | 0.64  |
| _   | Cooling system water side economizer  | Restaurant                          | Cooling                        | New construction                                    | 0.93                     | 0.64  |
|     | Improved heating system condensing unit - Tier 2  | Restaurant                          | Space Heating                  | New construction                                    | 0.43                     | 2.11  |
| _   | Improved heating system condensing unit - Tier 2  | Restaurant                          | Space Heating                  | Remodel/Replacment                                  | 0.47                     | 1.89  |
|     | Sensible Heat Recovery  | Restaurant                          | Space Heating                  | New construction                                    | 0.47                     | 0.91  |
|     | High efficiency ENERGY STAR steam cooker  | Other                               | Cooking                        | Retrofit  | 0.97                     | 1.57  |
|     | Cooling system chilled water reset  | Other                               | Cooling                        | Retrofit  | 0.80                     | 1.40  |
| _   | Cooling system chilled water reset  | Other                               | Cooling                        | Remodel/Replacment                                  | 0.80                     | 0.64  |
|     | 3 7   |                                     | Water Heating                  | Remodel/Replacment                                  | 0.80                     | 0.64  |
|     | Graywater heat exchanger/GFX Tank insulation  | Other                               | ,                              | New construction                                    | 0.98                     | 0.67  |
|     | Tank insulation   | Other                               | Water Heating                  |   |                          |   |
|     | Improved heating system high efficiency unit - Tier 1   | Other                               | Space Heating                  | Retrofit  Remodel/Penlacment                        | 0.62                     | 3.61  |
|     | Improved heating system high efficiency unit - Tier 1   | Other                               | Space Heating                  | Remodel/Replacment                                  | 1.00                     | 0.90  |
|     | Improved heating system condensing unit - Tier 2  | Other                               | Space Heating                  | Retrofit  | 1.51                     | 1.49  |
| _   | Improved heating system condensing unit - Tier 2  | Other                               | Space Heating                  | Remodel/Replacment                                  | 1.43                     | 0.63  |
| 959 | Sensible Heat Recovery  | Other                               | Space Heating                  | New construction                                    | 0.86                     | 0.96  |

## Added Cost Effective Measures -- Upstate -- High Avoided Costs

|     | Added Goot Ellective W                                |                            |                 |   |                   |                              |
|-----|---|----------------------------|-----------------|---|-------------------|------------------------------|
|     |   | Measure ID4<br>(e.g., Bldg | Measure ID5     | Measure ID6<br>(e.g., Market: Retrofit, | Total<br>Resource | TRC Levelized Cost per Saved |
| #   | Measure Name  | type)                      | (e.g., End Use) | NC, ROB)                                | BCR               | Therm (\$/Therm)             |
|     | Graywater heat exchanger/GFX                          | Office                     | · ·             | Remodel/Replacment                      | 1.10              | 0.99                         |
|     | Sensible Heat Recovery                                | Office                     | Space Heating   | Retrofit                                | 2.33              | 2.71                         |
|     | Cooling system chilled water reset                    | Retail                     | Cooling         | New construction                        | 1.15              | 0.81                         |
|     | Cooling system water side economizer                  | Retail                     | Cooling         | New construction                        | 1.09              | 0.77                         |
|     | Cooling system chilled water reset                    | Grocery                    | Cooling         | New construction                        | 1.21              | 0.76                         |
|     | Cooling system water side economizer                  | Grocery                    | Cooling         | New construction                        | 1.08              | 0.77                         |
| 270 | Improved roof insulation                              | Grocery                    | Space Heating   | New construction                        | 1.19              | 1.29                         |
| 271 | Improved roof insulation                              | Grocery                    | Space Heating   | Renovation                              | 1.19              | 1.29                         |
| 311 | Cooling system chilled water reset                    | Warehouse                  | Cooling         | New construction                        | 1.21              | 0.77                         |
| 314 | Cooling system water side economizer                  | Warehouse                  | Cooling         | New construction                        | 1.09              | 0.77                         |
| 325 | Graywater heat exchanger/GFX                          | Warehouse                  | Water Heating   | Remodel/Replacment                      | 1.12              | 0.98                         |
| 409 | Cooling system chilled water reset                    | Education                  | Cooling         | New construction                        | 1.10              | 0.84                         |
| 412 | Cooling system water side economizer                  | Education                  | Cooling         | New construction                        | 1.10              | 0.74                         |
| 560 | Improved wall insulation                              | Health                     | Space Heating   | New construction                        | 1.16              | 1.23                         |
| 561 | Improved wall insulation                              | Health                     | Space Heating   | Renovation                              | 1.16              | 1.23                         |
| 567 | Sensible Heat Recovery                                | Health                     | Space Heating   | New construction                        | 1.31              | 1.37                         |
| 568 | Sensible Heat Recovery                                | Health                     | Space Heating   | Remodel/Replacment                      | 1.45              | 1.33                         |
| 605 | Cooling system chilled water reset                    | Lodging                    | Cooling         | New construction                        | 1.16              | 0.80                         |
| 608 | Cooling system water side economizer                  | Lodging                    | Cooling         | New construction                        | 1.09              | 0.76                         |
| 662 | Improved roof insulation                              | Lodging                    | Space Heating   | New construction                        | 1.09              | 1.37                         |
| 663 | Improved roof insulation                              | Lodging                    | Space Heating   | Renovation                              | 1.09              | 1.37                         |
| 912 | Graywater heat exchanger/GFX                          | Other                      | Water Heating   | New construction                        | 1.04              | 1.05                         |
| 934 | Improved heating system high efficiency unit - Tier 1 | Other                      | Space Heating   | New construction                        | 1.10              | 1.36                         |
| 937 | Improved heating system condensing unit - Tier 2      | Other                      | Space Heating   | New construction                        | 1.56              | 0.96                         |

|                | A   | С                          | D                              | Е                                       | F                | G                | Н                | ı                   | J                |
|----------------|---|----------------------------|--------------------------------|---|------------------|------------------|------------------|---------------------|------------------|
| 1              |   |                            |                                | nomic Potential                         | -                | •                |                  |                     |                  |
| 3              |   |                            | Measure Cum                    | ulative Gas Saving                      | S                |                  |                  |                     |                  |
|                | Results at Program Level by Measure   |                            |                                |   | Cumulative NGa   | s Thousand Deca  | Therm Savings    | (Net of freeriders) |                  |
|                | ,   | Measure ID4<br>(e.g., Bldg | Measure ID5                    | Measure ID6<br>(e.g., Market: Retrofit, | I                |                  |                  | ,                   |                  |
| 5              | Measure Name  | (e.g., blug<br>type)       |                                | NC, ROB)                                | 2007             | 2008             | 2009             | 2010                | 2011             |
| 6              | Exhaust Hood Makeup Air   | Office                     |                                | New construction                        | 0.36             | 0.71             | 1.05             | 1.39                | 1.71             |
|                | Exhaust Hood Makeup Air   | Office                     | Space Heating                  | Remodel/Replacment                      | 2.86             | 5.65             | 8.36             | 11.00               | 13.57            |
|                | High efficiency ENERGY STAR fryer   | Office<br>Office           | Cooking<br>Water Heating       | New construction<br>Retrofit            | 14.49<br>16.82   | 28.78<br>16.82   | 42.88<br>0.00    | 56.62<br>0.00       | 70.00<br>0.00    |
|                | Pre-Rinse Spray Valve Refrigeration heat recovery   | Office                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Refrigeration heat recovery   | Office                     |                                | New construction                        | 0.30             | 0.60             | 0.90             | 1.20                | 1.50             |
|                | Refrigeration heat recovery   | Office                     | Water Heating                  | Remodel/Replacment                      | 3.18             | 6.35             | 9.52             | 12.68               | 15.83            |
|                | Cooling system chilled water reset  | Office                     | Cooling                        | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Cooling system chilled water reset Cooling system water side economizer                               | Office<br>Office           | Cooling<br>Cooling             | Remodel/Replacment<br>Retrofit          | (0.64)<br>0.00   | (1.29)<br>0.00   | (1.96)<br>0.00   | (2.65)<br>0.00      | (3.35)           |
|                | Cooling system water side economizer  | Office                     | Cooling                        | Remodel/Replacment                      | 9.75             | 19.51            | 29.28            | 39.06               | 48.85            |
| 17             | Condensing DHW stand-alone  | Office                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Condensing DHW stand-alone  | Office                     | Water Heating                  | New construction                        | 8.21             | 16.46            | 24.77            | 33.12               | 41.53            |
|                | Condensing DHW stand-alone<br>Faucet aerator  | Office<br>Office           | Water Heating<br>Water Heating | Remodel/Replacment<br>Retrofit          | 87.59<br>327.38  | 175.78<br>327.38 | 264.55<br>327.38 | 353.90<br>327.38    | 443.84<br>327.38 |
|                | Indirect-fired DHW off space heating boiler   | Office                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
| 22             | ndirect-fired DHW off space heating boiler  | Office                     | Water Heating                  | New construction                        | 1.68             | 3.36             | 5.04             | 6.71                | 8.37             |
|                | ndirect-fired DHW off space heating boiler  | Office                     | Water Heating                  | Remodel/Replacment                      | 10.77            | 21.53            | 32.27            | 42.99               | 53.69            |
|                | nstantaneous. High-Modulating Water Heater<br>Instantaneous. High-Modulating Water Heater             | Office<br>Office           | Water Heating<br>Water Heating | Retrofit<br>New construction            | 0.00<br>(0.01)   | 0.00<br>(0.02)   | 0.00<br>(0.03)   | 0.00<br>(0.05)      | 0.00<br>(0.07)   |
|                | nstantaneous. High-Modulating Water Heater Instantaneous. High-Modulating Water Heater                | Office                     |                                | Renovation                              | (0.01)           | (0.02)           | (0.03)           | (0.05)              | (0.37)           |
|                |   | Office                     | Water Heating                  | Remodel/Replacment                      | (0.09)           | (0.21)           | (0.36)           | (0.55)              | (0.79)           |
| 28             | Low-flow shower heads   | Office                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Low-flow shower heads   | Office                     | Water Heating                  | New construction                        | 0.45             | 0.88             | 1.31             | 1.73                | 2.14             |
|                | Low-flow shower heads Pipe insulation - water heating   | Office<br>Office           | Water Heating<br>Water Heating | Remodel/Replacment<br>Retrofit          | 7.15<br>0.00     | 14.15<br>0.00    | 21.00<br>0.00    | 27.71<br>0.00       | 34.26<br>0.00    |
|                | Pipe insulation - water heating   | Office                     | Water Heating                  | New construction                        | 0.34             | 0.68             | 1.02             | 1.36                | 1.71             |
| 33             | Pipe insulation - water heating   | Office                     | Water Heating                  | Renovation                              | 1.67             | 3.36             | 5.06             | 6.77                | 8.50             |
|                | Tank insulation   | Office                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Tank insulation  Tank insulation  | Office<br>Office           | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment  | 0.15<br>1.64     | 0.31<br>3.28     | 0.46<br>4.95     | 0.62<br>6.63        | 0.78<br>8.32     |
|                | Air Sealing   | Office                     | Space Heating                  | Retrofit                                | 5,550.50         | 5,550.50         | 5,550.50         | 5,550.50            | 5,550.50         |
|                | Air Sealing   | Office                     |                                | New construction                        | 41.72            | 83.36            | 124.90           | 166.35              | 207.70           |
| 39             | Air Sealing   | Office                     | Space Heating                  | Renovation                              | 206.94           | 413.60           | 619.94           | 825.96              | 1,031.62         |
|                | mproved heating system high efficiency unit - Tier 1  | Office                     |                                | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Improved heating system condensing unit - Tier 2 Programmable Thermostat                              | Office<br>Office           | Space Heating<br>Space Heating | Retrofit<br>Retrofit                    | 0.00<br>0.00     | 0.00<br>0.00     | 0.00             | 0.00<br>0.00        | 0.00             |
|                | Programmable Thermostat   | Office                     | Space Heating                  | Renovation                              | 9.69             | 19.46            | 29.31            | 39.25               | 49.28            |
|                | Programmable Thermostat   | Office                     | Space Heating                  | Remodel/Replacment                      | 31.26            | 62.80            | 94.61            | 126.69              | 159.06           |
|                | Demand-Controlled Ventilation (controller, sensor)  | Office                     | Space Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Demand-Controlled Ventilation (controller, sensor) Demand-Controlled Ventilation (controller, sensor) | Office<br>Office           | Space Heating<br>Space Heating | New construction<br>Remodel/Replacment  | 0.34<br>3.59     | 0.66<br>7.08     | 0.98<br>10.49    | 1.29<br>13.80       | 1.59<br>17.02    |
|                | Improved wall insulation  | Office                     | Space Heating                  | New construction                        | 6.43             | 12.91            | 19.45            | 26.03               | 32.67            |
|                | mproved wall insulation   | Office                     | Space Heating                  | Renovation                              | 31.89            | 64.07            | 96.52            | 129.25              | 162.27           |
|                | mproved below-grade insulation  | Office                     |                                | New construction                        | 2.77             | 5.56             | 8.37             | 11.20               | 14.06            |
|                | Improved below-grade insulation Pipe insulation - space heating                                       | Office<br>Office           | Space Heating<br>Space Heating | Renovation<br>Retrofit                  | 13.73<br>0.00    | 27.57<br>0.00    | 41.54<br>0.00    | 55.63<br>0.00       | 69.84<br>0.00    |
|                | Pipe insulation - space neating Pipe insulation - space heating                                       | Office                     |                                | New construction                        | 0.46             | 0.00             | 1.36             | 1.80                | 2.23             |
|                | Pipe insulation - space heating   | Office                     |                                | Renovation                              | 2.27             | 4.51             | 6.73             | 8.91                | 11.07            |
|                | Commissioning   | Office                     | Total                          | Renovation                              | 46.27            | 92.47            | 138.60           | 184.66              | 230.17           |
|                | Commissioning   | Office                     | Total                          | Remodel/Replacment                      | 213.35           | 426.40           | 639.14           | 851.53              | 1,061.35         |
|                | Retrocommissioning<br>Steam trap Maintenance  | Office<br>Office           | Total<br>Space Heating         | Retrofit<br>Retrofit                    | 737.54<br>162.42 | 737.54<br>0.00   | 737.54<br>0.00   | 737.54<br>0.00      | 737.54<br>0.00   |
|                | Oxygen Trim   | Office                     | Space Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Oxygen Trim   | Office                     | Space Heating                  | New construction                        | 1.94             | 3.88             | 5.80             | 7.71                | 9.61             |
|                | Oxygen Trim   | Office                     | Space Heating                  | Remodel/Replacment                      | 21.86            | 43.62            | 65.27            | 86.81               | 108.23           |
|                | Direct fired convection range/oven Direct fired convection range/oven                                 | Retail<br>Retail           | Cooking<br>Cooking             | New construction<br>Remodel/Replacment  | 1.58<br>16.17    | 3.15<br>32.13    | 4.69<br>47.89    | 6.19<br>63.26       | 7.66<br>78.24    |
|                | Exhaust Hood Makeup Air   | Retail                     | Space Heating                  | New construction                        | 0.46             | 0.90             | 1.34             | 1.76                | 2.17             |
| 65             | Exhaust Hood Makeup Air   | Retail                     | Space Heating                  | Remodel/Replacment                      | 3.22             | 6.35             | 9.41             | 12.38               | 15.27            |
|                | High efficiency ENERGY STAR fryer   | Retail                     | Cooking                        | New construction                        | 3.95             | 7.85             | 11.70            | 15.45               | 19.10            |
|                | High efficiency ENERGY STAR fryer High efficiency ENERGY STAR steam cooker                            | Retail<br>Retail           |                                | Remodel/Replacment<br>Retrofit          | 40.33<br>0.00    | 80.15<br>0.00    | 119.46<br>0.00   | 157.79<br>0.00      | 195.15<br>0.00   |
|                | High efficiency ENERGY STAR steam cooker  | Retail                     |                                | New construction                        | 0.72             | 1.44             | 2.14             | 2.83                | 3.50             |
|                | High efficiency ENERGY STAR steam cooker  | Retail                     | Cooking                        | Remodel/Replacment                      | 5.90             | 11.73            | 17.49            | 23.10               | 28.57            |
|                | Pre-Rinse Spray Valve   | Retail                     | Water Heating                  | Retrofit                                | 5.55             | 5.55             | 0.00             | 0.00                | 0.00             |
|                | Refrigeration heat recovery Refrigeration heat recovery   | Retail<br>Retail           | Water Heating<br>Water Heating | Retrofit<br>New construction            | 0.00<br>0.07     | 0.00<br>0.15     | 0.00<br>0.22     | 0.00<br>0.30        | 0.00<br>0.37     |
|                | Refrigeration heat recovery   | Retail                     | Water Heating<br>Water Heating | Remodel/Replacment                      | 0.78             | 1.57             | 2.35             | 3.13                | 3.91             |
|                | Cooling system chilled water reset  | Retail                     | Cooling                        | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | Cooling system chilled water reset  | Retail                     | Cooling                        | Remodel/Replacment                      | (0.07)           | (0.14)           | (0.21)           | (0.28)              | (0.35)           |
|                | Cooling system water side economizer  | Retail                     | Cooling                        | Retrofit                                | 0.00             | 0.00<br>2.04     | 0.00<br>3.05     | 0.00<br>4.08        | 0.00<br>5.10     |
|                | Cooling system water side economizer Condensing DHW stand-alone                                       | Retail<br>Retail           | Cooling<br>Water Heating       | Remodel/Replacment<br>Retrofit          | 1.02<br>0.00     | 0.00             | 0.00             | 4.08<br>0.00        | 0.00             |
|                | Condensing DHW stand-alone  | Retail                     | Water Heating                  | New construction                        | 2.65             | 5.32             | 8.00             | 10.70               | 13.41            |
| 81             | Condensing DHW stand-alone  | Retail                     | Water Heating                  | Remodel/Replacment                      | 28.29            | 56.77            | 85.43            | 114.29              | 143.33           |
|                | Faucet aerator  | Retail                     | Water Heating                  | Retrofit                                | 129.75           | 129.75           | 129.75           | 129.75              | 129.75           |
|                | ndirect-fired DHW off space heating boiler  | Retail<br>Retail           | Water Heating<br>Water Heating | Retrofit<br>New construction            | 0.00<br>0.15     | 0.00<br>0.31     | 0.00<br>0.46     | 0.00<br>0.61        | 0.00<br>0.76     |
|                | Indirect-fired DHW off space heating boiler   | Retail                     | Water Heating                  | Remodel/Replacment                      | 0.98             | 1.96             | 2.94             | 3.92                | 4.89             |
| 86             | nstantaneous. High-Modulating Water Heater  | Retail                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                | nstantaneous. High-Modulating Water Heater  | Retail                     | Water Heating                  | New construction                        | (0.00)           | (0.01)           | (0.01)           | (0.02)              | (0.02)           |
|                | Instantaneous, High-Modulating Water Heater   | Retail<br>Retail           | Water Heating                  | Renovation                              | (0.01)           | (0.03)           | (0.05)           | (0.08)              | (0.12)           |
|                | nstantaneous. High-Modulating Water Heater Pipe insulation - water heating                            | Retail<br>Retail           | Water Heating<br>Water Heating | Remodel/Replacment<br>Retrofit          | (0.03)<br>0.00   | (0.07)<br>0.00   | (0.12)<br>0.00   | (0.18)<br>0.00      | (0.25)<br>0.00   |
|                | Pipe insulation - water heating   | Retail                     | Water Heating                  | New construction                        | 0.11             | 0.22             | 0.33             | 0.45                | 0.56             |
| 92             | Pipe insulation - water heating   | Retail                     | Water Heating                  | Renovation                              | 0.55             | 1.10             | 1.66             | 2.22                | 2.79             |
| 93             | Tank insulation   | Retail                     | Water Heating                  | Retrofit                                | 0.00             | 0.00             | 0.00             | 0.00                | 0.00             |
|                |   |                            |                                | New construction                        |                  | 0.10             | 0.15             | 0.20                |                  |
| 94             | Tank insulation   | Retail                     | Water Heating                  |   | 0.05             |                  |                  |                     | 0.26             |
| 94<br>95       | Tank insulation<br>Tank insulation  | Retail<br>Retail<br>Retail | Water Heating                  | Remodel/Replacment                      | 0.54             | 1.08             | 1.62             | 2.18                | 2.73             |
| 94<br>95<br>96 | Tank insulation   | Retail                     | Water Heating<br>Space Heating |   |                  |                  |                  |                     |                  |

| ### Massace Controlled Subsequent Federal Subsequent (1987) ### Massace Controlled Subsequent (1987) ### Massace Contro |     | A   | С         | D             | Е                        | F               | G               | Н                | 1                 | J               |
|--|-----|---|-----------|---------------|--------------------------|-----------------|-----------------|------------------|-------------------|-----------------|
| Part   |     |   |           | Upstate Ed    | onomic Potential         |                 | I.              | <u> </u>         |                   |                 |
| Processor   Proc   |     |   |           | Measure Cum   | iulative Gas Saving      | S               |                 |                  |                   |                 |
| Part      |     | Results at Program Level by Measure                   |           |               |                          | Cumulative NGas | s Thousand Deca | Therm Savings (N | et of freeriders) |                 |
| Description of the property    |     |   |           | Measure ID5   | (e.g., Market: Retrofit, |                 |                 |                  |                   |                 |
| Comparison parameters by a minimum variety of the comparison of    | _   |   |           |               |                          |                 |                 |                  |                   | 2011            |
| The process of the    |     |   |           |               |                          |                 |                 |                  |                   | 6.29            |
| The present intermity and according on 1-72   Real   Section 1.00   According   Accordin   | 101 | Improved heating system high efficiency unit - Tier 1 |           |               | Remodel/Replacment       | 8.11            | 16.13           | 23.97            | 31.63             | 39.10           |
| The proof of the   |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| The processors of the processors   Part      |     |   |           |               |                          |                 |                 |                  |                   | 14.29           |
| Fig.   Programme Trestmented   |     | Programmable Thermostat                               | Retail    |               | Retrofit                 |                 |                 |                  | 0.00              | 0.00            |
| The control of the    |     |   |           |               |                          |                 |                 |                  |                   | 14.77           |
| The participant interface and participant    |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| The present allocation   State   Sta   | 109 | Demand-Controlled Ventilation (controller, sensor)    |           |               |                          |                 |                 |                  | 31.12             | 38.37           |
| Text  Second bearing the monators   Nation   Second Second   Nation   Nat   |     |   |           |               |                          |                 |                 |                  |                   | 410.06          |
| Text    Section from from company   Section    |     |   |           |               |                          |                 |                 |                  |                   | 26.19           |
| Tell   | _   |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| Time   Person Marring  | _   |   |           |               |                          |                 |                 |                  |                   | 67.23           |
| The presentation content bearing   |     |   |           |               |                          |                 |                 |                  |                   |                 |
| The commence   Section     |     |   |           |               |                          |                 |                 |                  |                   | 0.72            |
| Fig.   Processor   | _   |   |           |               |                          |                 |                 |                  |                   | 3.56            |
| Fig.   The content of the content    |     | •   |           |               |                          |                 |                 |                  |                   |                 |
| 100    | _   |   |           |               |                          |                 |                 |                  |                   | 272.52          |
| Fig.   Specific   Sp   | 122 | Steam trap Maintenance                                | Retail    | Space Heating | Retrofit                 | 36.40           | 0.00            | 0.00             | 0.00              | 0.00            |
| To Descript the convertion registrows   Receive   Rece   |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| Temporary   Control   Co   |     |   |           |               |                          |                 |                 |                  |                   | 3.06<br>24.59   |
| Total Personal Hook Ratings After  | 126 | Direct fired convection range/oven                    |           | Cooking       | New construction         | 0.65            | 1.29            | 1.92             | 2.54              | 3.14            |
| 1.52   Designation for content of the part of the pa   |     |   |           |               |                          |                 |                 |                  |                   | 33.45           |
| 150   Step Artificancy EMERGY ETAR for year   October    |     |   |           |               |                          |                 |                 |                  |                   | 0.89<br>4.78    |
| 152   Egypt efficiency (PREDY \$TATA states no colour   Consciour   Consciour  |     |   | -         |               |                          |                 |                 |                  |                   | 7.83            |
| 1.53   Specifications (PRESENT STATA states colours   Control      |     |   |           |               |                          |                 |                 |                  |                   | 83.43           |
| 15.5   Partitione print of the control   Control   Partition   C   |     |   |           |               |                          |                 |                 |                  |                   |                 |
| Total Participation laws recovery  |     |   | ,         |               |                          |                 |                 |                  |                   | 12.21           |
| 175   Temperature have recovery  | 135 | Pre-Rinse Spray Valve                                 |           |               |                          |                 |                 |                  |                   | 0.00            |
| 188   Beringerstein heart recovery   Oncerty   Water Heating   Remodel/Replacement   1.00  |     |   |           |               |                          |                 |                 |                  |                   | 0.00<br>4.27    |
| 193   Cooling system childer water reast   |     |   |           |               |                          |                 |                 |                  |                   | 44.60           |
| 141   Cooling system water sole occombates   |     | Cooling system chilled water reset                    |           |               | Retrofit                 | 0.00            |                 | 0.00             |                   | 0.00            |
| 142   Cooling system water aids economizer   |     |   | ,         |               |                          |                 |                 |                  |                   | (0.50)          |
| 145   Condensing DIW stand-allone  |     |   |           |               |                          |                 |                 |                  |                   | 7.29            |
| 145   Generate area of concern   Water Heating   Ramodel/Registeriest   1.60   23.27   35.02   46.85   58.7   147   Indirect-fixed DWW of space heating pole   Grocery   Water Heating   Rarrotit   0.00      |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| 146   Face devator   |     |   | ,         |               |                          |                 |                 |                  |                   | 5.58            |
| 147   Indirect-fined DRW off apose healing poler   |     |   |           |               |                          |                 |                 |                  |                   | 0.77            |
| 149   Indirect-Fined DiPN of Ispace heating boller   |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| 150 Pipe Installation - water healting   |     |   |           |               |                          |                 |                 |                  |                   | 0.86            |
| 151 Pgp Installation - user healting   | _   |   |           |               |                          |                 |                 |                  |                   |                 |
| 155   Tank insulation  | _   |   |           |               |                          |                 |                 |                  |                   | 0.23            |
| 154   Tank Installation  |     |   |           |               |                          |                 |                 |                  |                   | 1.15            |
| 155   Improved heating system high efficiency unit - Tier 1   Grocery   Space Heating   Remodel/Replacement   0.00   0.   |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| 156   Improved heating system high efficiency unit - Tier 1   Grocery   Space Heating   New construction   0.45   0.89   1.32   1.75   1.75   Improved heating system high efficiency unit - Tier 1   Grocery   Space Heating   New construction   0.45   0.89   1.32   1.75   2.11   1.58   Improved heating system condensing unit - Tier 2   Grocery   Space Heating   Remodel/Replacement   2.74   5.45   8.10   10.69   13.2   1.75      |     |   |           |               |                          |                 |                 |                  |                   | 1.11            |
| 158   Improved heating system oxide efficiency unit. Tier 2   Grocery   Space Heating   Renofel/Replacement   2,74   5,45   8,10   10,68   13,21   10,50   1   | 156 | Improved heating system high efficiency unit - Tier 1 |           |               |                          |                 |                 |                  |                   | 0.00            |
| 159   Improved heating system condensing unit - Ter 2   Grecery   Space Heating   New construction   0.07  |     |   |           |               |                          |                 |                 |                  |                   | 2.16            |
|  |     |   | ,         |               |                          |                 |                 |                  |                   | 0.00            |
| 162   Programmable Thermostat   Grocery   Space Heating   Retrofit   0.00   0   | 160 | Improved heating system condensing unit - Tier 2      | Grocery   | Space Heating | New construction         | 0.07            | 0.13            | 0.20             | 0.26              | 0.33            |
| 163 Programmable Thermostat  |     |   |           |               |                          |                 |                 |                  |                   | 2.03            |
| 164   Programmable Thermostat   Grocery   Space Heating   Remodel/Replacment   2.81   5.64   8.49   11.37   14.2   165   Demand-Controlled Ventilation (controller, sensor)   Grocery   Space Heating   New construction   7.62   15.04   22.26   29.28   36.1   167   Demand-Controlled Ventilation (controller, sensor)   Grocery   Space Heating   New construction   7.62   15.04   22.26   29.28   36.1   167   Demand-Controlled Ventilation (controller, sensor)   Grocery   Space Heating   Remodel/Replacment   80.10   158.21   234.28   308.27   380.1   168   Improved below-grade insulation   Grocery   Space Heating   Remodel/Replacment   80.10   158.21   234.28   308.27   380.1   169   Improved below-grade insulation   Grocery   Space Heating   Remodel/Replacment   0.16   0.33   0.50   0.66   0.8   169   Improved below-grade insulation   Grocery   Space Heating   Remodel/Replacment   0.81   1.63   2.46   3.29   4.1   170   Sensible Heat Recovery   Grocery   Space Heating   Remodel/Replacment   0.00   0.0   |     |   | ,         |               |                          |                 |                 |                  |                   | 0.00<br>4.49    |
| 165   Demand-Controlled Ventilation (controller, sensor)   |     | Programmable Thermostat                               |           |               |                          | 2.81            | 5.64            |                  |                   | 14.28           |
| 167   Demand-Controlled Ventilation (controller, sensor)   | 165 | Demand-Controlled Ventilation (controller, sensor)    | Grocery   |               | Retrofit                 |                 |                 |                  |                   | 0.00            |
| 168   Improved below-grade insulation  |     |   |           |               |                          |                 |                 |                  |                   | 36.10<br>380.14 |
| 169   Improved below-grade insulation   Grocery   Space Heating   Renovation   0.81   1.63   2.46   3.29   4.1   |     |   |           |               |                          |                 |                 |                  |                   | 0.83            |
| 171   Sensible Heat Recovery   Grocery   Space Heating   New construction   3.16   6.31   9.41   12.46   15.4     172   Sensible Heat Recovery   Grocery   Space Heating   Remodel/Replacment   32.22   64.33   95.96   127.08   157.6     173   Pipe Insulation - space heating   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     174   Pipe Insulation - space heating   Grocery   Space Heating   New construction   0.05   0.10   0.15   0.20   0.2     175   Pipe Insulation - space heating   Grocery   Space Heating   Renovation   0.25   0.50   0.74   0.99   1.2     176   Commissioning   Grocery   Total   Renovation   6.50   12.98   19.46   25.93   32.3     177   Commissioning   Grocery   Total   Remodel/Replacment   29.51   58.98   88.41   117.79   146.8     178   Retrocommissioning   Grocery   Total   Retrofit   102.03   102.03   102.03   102.03   102.03     179   Steam trap Maintenance   Grocery   Space Heating   Retrofit   9.97   0.00   0.00   0.00   0.00     180   Oxygen Trim   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     181   Oxygen Trim   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     182   Oxygen Trim   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     183   Infrared Heater   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     184   Infrared Heater   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     185   Exhaust Hood Makeup Air   Warehouse   Space Heating   Remodel/Replacment   4.42   8.87   13.37   13.37   13.37   13.31     185   Exhaust Hood Makeup Air   Warehouse   Space Heating   Remodel/Replacment   4.42   8.87   13.37   13.37   13.37   13.31     186   Exhaust Hood Makeup Air   Warehouse   Space Heating   Remodel/Replacment   4.27   4.56   6.76   8.89   10.90     187   High efficiency ENERGY STAR fryer   Warehouse   Warehouse   Water Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     189   Retroficent   New Construction   0.81   1.61   0.00   0.00   0.   | 169 | Improved below-grade insulation                       | Grocery   | Space Heating | Renovation               | 0.81            | 1.63            | 2.46             | 3.29              | 4.13            |
| 172   Sensible Heat Recovery   Grocery   Space Heating   Remodel/Replacment   32.22   64.33   95.96   127.08   157.6     173   Pipe insulation - space heating   Grocery   Space Heating   New construction   0.05   0.10   0.15   0.20   0.2     175   Pipe insulation - space heating   Grocery   Space Heating   New construction   0.05   0.10   0.15   0.20   0.2     176   Commissioning   Grocery   Space Heating   Renovation   0.25   0.50   0.74   0.99   1.2     176   Commissioning   Grocery   Total   Renovation   6.50   1.2 98   19.46   2.5 33   32.3     177   Commissioning   Grocery   Total   Remodel/Replacment   Retrofit   102.03   102.03   102.03   102.03   102.03   102.03     178   Retrocommissioning   Grocery   Space Heating   Retrofit   102.03   102.03   102.03   102.03   102.03   102.03     180   Corygen Trim   Grocery   Space Heating   Retrofit   9.97   0.00   0.00   0.00   0.00     181   Coxygen Trim   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00     182   Coxygen Trim   Grocery   Space Heating   Retrofit   0.21   0.42   0.62   0.83   1.0     182   Coxygen Trim   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00   0.00     183   Coxygen Trim   Grocery   Space Heating   Remodel/Replacment   0.21   0.42   0.62   0.83   1.0     184   Infrared Heater   Grocery   Space Heating   Retrofit   0.00   0.00   0.00   0.00   0.00   0.00     185   Exhaust Hood Makeup Air   Warehouse   Space Heating   Remodel/Replacment   0.35   0.69   1.02   1.35   1.6     186   Exhaust Hood Makeup Air   Warehouse   Space Heating   Remodel/Replacment   0.35   0.69   1.02   1.35   1.6     187   High efficiency ENERGY STAR fryer   Warehouse   Space Heating   Remodel/Replacment   0.96   0.96   0.00   0.00   0.00     188   High efficiency ENERGY STAR fryer   Warehouse   Warehouse   Water Heating   Retrofit   0.96   0.96   0.00   0.00   0.00   0.00   0.00   0.00   0.00     188   High efficiency ENERGY STAR fryer   Warehouse   Water Heating   Retrofit   0.00   0.00   0.00   0.00   0.00   0.00   0.0   |     |   |           |               |                          |                 |                 |                  |                   | 0.00<br>15.46   |
| 173   Pipe insulation - space heating   Grocery   Space Heating   Retrofit   0.00      |     |   |           |               |                          |                 |                 |                  |                   | 157.69          |
| 175   Pipe insulation - space heating   Grocery   Space Heating   Renovation   Commissioning   Grocery   Total   Remodel/Replacment   Commissioning   Grocery   Total   Retrofit   Grocery   Groce   | 173 | Pipe insulation - space heating                       | Grocery   | Space Heating | Retrofit                 | 0.00            | 0.00            | 0.00             | 0.00              | 0.00            |
| Total   Renovation   Grocery   Total   Removation   G.50   12.98   19.46   25.93   32.3   3   |     |   |           |               |                          |                 |                 |                  |                   | 0.25            |
| 177  |     |   |           |               |                          |                 |                 |                  |                   | 1.23<br>32.32   |
| 179   Steam trap Maintenance   Grocery   Space Heating   Retrofit   9,97   0.00   0.   | 177 | Commissioning   | Grocery   | Total         | Remodel/Replacment       | 29.51           | 58.98           | 88.41            | 117.79            | 146.82          |
| 180   Oxygen Trim   Grocery   Space Heating   Retrofit   0.00     |     |   |           |               |                          |                 |                 |                  |                   | 102.03          |
| 181   Oxygen Trim  |     |   | -         |               |                          |                 |                 |                  |                   | 0.00            |
| 182   Divryen Trim   | 181 | Oxygen Trim   |           |               |                          |                 |                 |                  |                   | 1.04            |
| 184   Infrared Heater   Grocery   Space Heating   Remodel/Replacment   4.42   8.87   13.37   13.37   13.3   | 182 | Oxygen Trim   | Grocery   | Space Heating | Remodel/Replacment       | 1.36            | 2.71            | 4.05             | 5.39              | 6.72            |
| 185   Exhaust Hood Makeup Air  |     |   |           |               |                          |                 |                 |                  |                   | 0.00<br>13.37   |
| 186         Exhaust Hood Makeup Air         Warehouse         Space Heating         Remodel/Replacment         2.31         4.56         6.76         8.89         10.9           187         High efficiency ENERGY STAR fryer         Warehouse         Cooking         New construction         0.81         1.61         2.40         3.17         3.9           188         High efficiency ENERGY STAR fryer         Warehouse         Cooking         Remodel/Replacment         2.27         4.50         6.71         8.87         10.9           189         Pre-Rinse Spray Valve         Warehouse         Water Heating         Retrofit         0.96         0.96         0.00         0.00         0.00           190         Refrigeration heat recovery         Warehouse         Water Heating         Retrofit         0.00         0.00         0.00         0.00  |     |   |           |               |                          |                 |                 |                  |                   | 1.66            |
| 188   High efficiency ENERGY STAR fryer         Warehouse         Cooking         Remodel/Replacment         2.27         4.50         6.71         8.87         10.9           189   Pre-Rinse Sprya Valve         Warehouse         Water Heating         Retrofit         0.96         0.96         0.00         0.00         0.00           190   Retrigation heat recovery         Warehouse         Water Heating         Retrofit         0.00         0.00         0.00         0.00   | 186 | Exhaust Hood Makeup Air                               | Warehouse | Space Heating | Remodel/Replacment       | 2.31            | 4.56            | 6.76             | 8.89              | 10.96           |
| 189 Pre-Rinse Spray Valve         Water Heating         Retrofit         0.96         0.96         0.00         0.00         0.0           190 Refrigeration heat recovery         Warehouse         Water Heating         Retrofit         0.00         0.00         0.00         0.00         0.00   |     |   |           |               |                          |                 |                 |                  |                   | 3.92            |
| 190 Refrigeration heat recovery Warehouse Water Heating Retrofit 0.00 0.00 0.00 0.00 0.00 0.00   |     |   |           |               |                          |                 |                 |                  |                   | 0.00            |
| 191 Refrigeration heat recovery         Warehouse         Water Heating         New construction         0.26         0.52         0.77         1.03         1.2   | 190 | Refrigeration heat recovery                           |           |               |                          | 0.00            | 0.00            | 0.00             | 0.00              | 0.00            |
|  | 191 | Refrigeration heat recovery                           | Warehouse | Water Heating | New construction         | 0.26            | 0.52            | 0.77             | 1.03              | 1.28            |

| 5 Mea<br>192 Refr<br>193 Coo<br>194 Coo            | sults at Program Level by Measure   |                        |                                | nomic Potential<br>ulative Gas Saving  | s                 | •               | •                | •               |                 |
|--|---|------------------------|--------------------------------|--|-------------------|-----------------|------------------|-----------------|-----------------|
| 3 4 Res<br>5 Mea<br>192 Refr<br>193 Coo<br>194 Coo | sults at Program Level by Measure   |                        | Measure Cum                    | ulative Gas Saving                     | s                 |                 |                  |                 |                 |
| 5 Mea<br>192 Refr<br>193 Coo<br>194 Coo            | sults at Program Level by Measure   |                        |                                |  |                   |                 |                  |                 |                 |
| 5 Mea<br>192 Refr<br>193 Coo<br>194 Coo            |   |                        |                                |  | Cumulative NGas T | housand DecaThe | erm Savings (Net | of freeriders)  |                 |
| 192 Refr<br>193 Coo<br>194 Coo                     |   | Measure ID4            |                                | Measure ID6                            |                   |                 | om ournigo (not  | 000.140.0,      |                 |
| 193 Coo<br>194 Coo                                 | sure Name   | (e.g., Bldg<br>type)   | Measure ID5<br>(e.g., End Use) | (e.g., Market: Retrofit,<br>NC, ROB)   | 2007              | 2008            | 2009             | 2010            | 2011            |
| 194 Coo  | rigeration heat recovery  | Warehouse              | Water Heating                  | Remodel/Replacment                     | 2.68              | 5.36            | 8.03             | 10.70           | 13.36           |
|  | ling system chilled water reset   | Warehouse              | Cooling                        | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | oling system chilled water reset sling system water side economizer                         | Warehouse<br>Warehouse | Cooling<br>Cooling             | Remodel/Replacment<br>Retrofit         | (0.07)<br>0.00    | (0.14)<br>0.00  | (0.21)<br>0.00   | (0.28)<br>0.00  | (0.35)<br>0.00  |
|  | ling system water side economizer   | Warehouse              | Cooling                        | Remodel/Replacment                     | 1.03              | 2.06            | 3.09             | 4.12            | 5.15            |
|  | densing DHW stand-alone   |                        | Water Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | densing DHW stand-alone   | Warehouse              | Water Heating                  | New construction                       | 0.47              | 0.94            | 1.41             | 1.88            | 2.36            |
|  | densing DHW stand-alone cet aerator   | Warehouse<br>Warehouse | Water Heating<br>Water Heating | Remodel/Replacment<br>Retrofit         | 4.90<br>22.39     | 9.84<br>22.39   | 14.81<br>22.39   | 19.81<br>22.39  | 24.84<br>22.39  |
|  | rect-fired DHW off space heating boiler   |                        | Water Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | rect-fired DHW off space heating boiler   | Warehouse              | Water Heating                  | New construction                       | 0.03              | 0.06            | 0.09             | 0.12            | 0.14            |
|  | rect-fired DHW off space heating boiler   |                        | Water Heating                  | Remodel/Replacment                     | 0.18              | 0.37            | 0.55             | 0.73            | 0.91            |
|  | antaneous. High-Modulating Water Heater antaneous. High-Modulating Water Heater             | Warehouse<br>Warehouse | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>(0.00)    | (0.00)          | 0.00             | (0.00)          | (0.00)          |
|  | antaneous. High-Modulating Water Heater   | Warehouse              | Water Heating                  | Renovation                             | (0.00)            | (0.01)          | (0.01)           | (0.01)          | (0.02)          |
|  | antaneous. High-Modulating Water Heater   | Warehouse              | Water Heating                  | Remodel/Replacment                     | (0.01)            | (0.01)          | (0.02)           | (0.03)          | (0.04)          |
|  | r-flow shower heads   |                        | Water Heating                  | Retrofit                               | 0.00<br>0.02      | 0.00<br>0.05    | 0.00<br>0.07     | 0.00<br>0.09    | 0.00<br>0.11    |
|  | r-flow shower heads   | Warehouse<br>Warehouse | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 0.02              | 0.73            | 1.09             | 1.43            | 1.77            |
| 211 Pipe   | insulation - water heating  | Warehouse              | Water Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | e insulation - water heating  | Warehouse              | Water Heating                  | New construction                       | 0.02              | 0.04            | 0.06             | 0.08            | 0.10            |
|  | e insulation - water heating  | Warehouse              | Water Heating                  | Renovation                             | 0.10<br>0.00      | 0.19<br>0.00    | 0.29<br>0.00     | 0.39<br>0.00    | 0.49<br>0.00    |
|  | k insulation  | Warehouse<br>Warehouse | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
| 216 Tan  | k insulation  | Warehouse              | Water Heating                  | Remodel/Replacment                     | 0.09              | 0.19            | 0.28             | 0.38            | 0.47            |
| 217 Air :  | Sealing   | Warehouse              | Space Heating                  | Retrofit                               | 122.11            | 122.11          | 122.11           | 122.11          | 122.11          |
| 218 Air s  |   | Warehouse<br>Warehouse | Space Heating<br>Space Heating | New construction<br>Renovation         | 1.34<br>6.63      | 2.67<br>13.25   | 4.00<br>19.87    | 5.33<br>26.47   | 6.66<br>33.06   |
|  | roved heating system high efficiency unit - Tier 1  | Warehouse              | Space Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | roved heating system high efficiency unit - Tier 1  | Warehouse              | Space Heating                  | New construction                       | 0.40              | 0.79            | 1.17             | 1.54            | 1.90            |
| 222 Imp  | roved heating system high efficiency unit - Tier 1  | Warehouse              | Space Heating                  | Remodel/Replacment                     | 2.42              | 4.81            | 7.14             | 9.43            | 11.65           |
|  | roved heating system condensing unit - Tier 2 roved heating system condensing unit - Tier 2 | Warehouse<br>Warehouse | Space Heating<br>Space Heating | Retrofit<br>New construction           | 0.00<br>0.14      | 0.00<br>0.28    | 0.00<br>0.41     | 0.00<br>0.55    | 0.00<br>0.70    |
|  |   |                        | Space Heating                  | Remodel/Replacment                     | 0.14              | 1.69            | 2.54             | 3.40            | 4.26            |
|  | grammable Thermostat  | Warehouse              | Space Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | grammable Thermostat  | Warehouse              | Space Heating                  | Renovation                             | 5.43              | 10.91           | 16.44            | 22.02           | 27.64           |
|  | grammable Thermostat nand-Controlled Ventilation (controller, sensor)                       | Warehouse<br>Warehouse | Space Heating<br>Space Heating | Remodel/Replacment<br>Retrofit         | 17.28<br>0.00     | 34.71<br>0.00   | 52.29<br>0.00    | 70.03<br>0.00   | 87.92<br>0.00   |
|  | nand-Controlled Ventilation (controller, sensor)  | Warehouse              | Space Heating                  | New construction                       | 2.40              | 4.73            | 7.00             | 9.21            | 11.36           |
|  | nand-Controlled Ventilation (controller, sensor)  | Warehouse              | Space Heating                  | Remodel/Replacment                     | 25.20             | 49.77           | 73.70            | 96.98           | 119.59          |
|  | roved below-grade insulation  |                        | Space Heating                  | New construction                       | 0.43              | 0.86            | 1.29             | 1.73            | 2.17            |
|  | roved below-grade insulation  | Warehouse<br>Warehouse | Space Heating<br>Space Heating | Renovation<br>New construction         | 2.12<br>1.12      | 4.25<br>2.24    | 6.40<br>3.37     | 8.57<br>4.51    | 10.76<br>5.67   |
| 20 . m.p   | roved roof insulation roved roof insulation   | Warehouse              | Space Heating                  | Renovation                             | 5.53              | 11.11           | 16.74            | 22.42           | 28.14           |
| _  | sible Heat Recovery   | Warehouse              | Space Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | sible Heat Recovery   | Warehouse              | Space Heating                  | New construction                       | 1.69              | 3.38            | 5.04             | 6.67            | 8.27            |
|  | sible Heat Recovery<br>e insulation - space heating   | Warehouse<br>Warehouse | Space Heating<br>Space Heating | Remodel/Replacment<br>Retrofit         | 17.24<br>0.00     | 34.42<br>0.00   | 51.34<br>0.00    | 68.00<br>0.00   | 84.37<br>0.00   |
|  | e insulation - space heating  | Warehouse              | Space Heating                  | New construction                       | 0.04              | 0.09            | 0.13             | 0.17            | 0.00            |
|  | insulation - space heating  | Warehouse              | Space Heating                  | Renovation                             | 0.22              | 0.44            | 0.65             | 0.87            | 1.08            |
|  | nmissioning   | Warehouse              | Total                          | New construction                       | 0.02              | 0.03            | 0.05             | 0.07            | 0.08            |
|  | nmissioning<br>nmissioning  | Warehouse<br>Warehouse | Total<br>Total                 | Renovation<br>Remodel/Replacment       | 4.21<br>19.12     | 8.41<br>38.21   | 12.61<br>57.27   | 16.80<br>76.31  | 20.93<br>95.11  |
|  | rocommissioning   | Warehouse              | Total                          | Retrofit                               | 66.09             | 66.09           | 66.09            | 66.09           | 66.09           |
|  | grated Design - High Performance (30% > codes) - Tier 1                                     | Warehouse              | Total                          | New construction                       | 0.14              | 0.29            | 0.43             | 0.57            | 0.71            |
|  | grated Design - High Performance (50% > codes) Tier 2                                       | Warehouse              | Total                          | New construction                       | 0.01              | 0.01            | 0.02             | 0.02            | 0.03            |
|  | am trap Maintenance<br>gen Trim   | Warehouse<br>Warehouse | Space Heating<br>Space Heating | Retrofit<br>Retrofit                   | 10.08<br>0.00     | 0.00            | 0.00             | 0.00            | 0.00            |
| _  | gen Trim  | Warehouse              | Space Heating                  | New construction                       | 0.18              | 0.37            | 0.55             | 0.73            | 0.91            |
| 251 Оху  | gen Trim  | Warehouse              | Space Heating                  | Remodel/Replacment                     | 1.65              | 3.28            | 4.92             | 6.54            | 8.15            |
|  | ared Heater   |                        | Space Heating                  | Retrofit                               | 0.00<br>11.01     | 0.00<br>22.11   | 0.00<br>33.31    | 0.00<br>33.31   | 0.00<br>33.31   |
|  | ared Heater<br>act fired convection range/oven  | Warehouse<br>Education | Space Heating<br>Cooking       | Remodel/Replacment<br>New construction | 11.01<br>2.66     | 5.28            | 7.86             | 33.31<br>10.38  | 12.84           |
| 255 Dire   | ect fired convection range/oven   | Education              | Cooking                        | Remodel/Replacment                     | 21.23             | 42.20           | 62.89            | 83.08           | 102.74          |
|  | aust Hood Makeup Air  | Education              | Space Heating                  | New construction                       | 0.31              | 0.62            | 0.92             | 1.21            | 1.49            |
|  | aust Hood Makeup Air<br>h efficiency ENERGY STAR fryer                                      | Education<br>Education | Space Heating<br>Cooking       | Remodel/Replacment<br>New construction | 1.89<br>6.63      | 3.73<br>13.16   | 5.52<br>19.61    | 7.26<br>25.90   | 8.95<br>32.02   |
|  | h efficiency ENERGY STAR fryer  | Education              | Cooking                        | Remodel/Replacment                     | 52.96             | 105.25          | 156.87           | 207.22          | 256.27          |
| 260 Pre-   | Rinse Spray Valve   | Education              | Water Heating                  | Retrofit                               | 16.85             | 16.85           | 0.00             | 0.00            | 0.00            |
|  | rigeration heat recovery  | Education              | Water Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | rigeration heat recovery  | Education<br>Education | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 0.94<br>9.35      | 1.88<br>18.69   | 2.82<br>28.00    | 3.76<br>37.30   | 4.69<br>46.57   |
|  | ling system chilled water reset   | Education              | Cooling                        | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | ling system chilled water reset   | Education              | Cooling                        | Remodel/Replacment                     | (0.12)            | (0.25)          | (0.37)           | (0.50)          | (0.64)          |
|  | ling system water side economizer   | Education<br>Education | Cooling                        | Retrofit                               | 0.00<br>1.86      | 0.00<br>3.71    | 0.00<br>5.57     | 0.00<br>7.43    | 0.00<br>9.30    |
|  | oling system water side economizer  |                        | Cooling<br>Water Heating       | Remodel/Replacment<br>Retrofit         | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
| 269 Con  | densing DHW stand-alone   |                        | Water Heating                  | New construction                       | 4.44              | 8.91            | 13.41            | 17.93           | 22.48           |
|  | densing DHW stand-alone   | Education              | Water Heating                  | Remodel/Replacment                     | 47.42             | 95.16           | 143.22           | 191.60          | 240.29          |
|  | cet aerator<br>ywater heat exchanger/GFX  | Education<br>Education | Water Heating<br>Water Heating | Retrofit<br>New construction           | 17.27<br>2.14     | 17.27<br>4.29   | 17.27<br>6.45    | 17.27<br>8.63   | 17.27<br>10.80  |
|  | ywater neat exchanger/GFX ywater heat exchanger/GFX   | Education              | Water Heating Water Heating    | Remodel/Replacment                     | 17.13             | 34.37           | 51.70            | 69.12           | 86.60           |
| 274 Indi   | rect-fired DHW off space heating boiler   | Education              | Water Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
| 275 Indi   | rect-fired DHW off space heating boiler   | Education              | Water Heating                  | New construction                       | 1.41              | 2.81            | 4.21             | 5.60            | 7.00            |
|  | rect-fired DHW off space heating boiler antaneous. High-Modulating Water Heater             | Education              | Water Heating<br>Water Heating | Remodel/Replacment<br>Retrofit         | 9.00<br>0.00      | 17.99<br>0.00   | 26.96<br>0.00    | 35.92<br>0.00   | 44.86<br>0.00   |
|  | antaneous. High-Modulating Water Heater antaneous. High-Modulating Water Heater             | Education<br>Education | Water Heating                  | New construction                       | (0.00)            | (0.01)          | (0.02)           | (0.03)          | (0.04)          |
| 279 Inst   | antaneous. High-Modulating Water Heater   | Education              | Water Heating                  | Renovation                             | (0.02)            | (0.05)          | (0.09)           | (0.14)          | (0.20)          |
|  | antaneous. High-Modulating Water Heater   | Education              | Water Heating                  | Remodel/Replacment                     | (0.05)            | (0.12)          | (0.20)           | (0.30)          | (0.43)          |
| 281 Low  | r-flow shower heads   | Education              | Water Heating                  | Retrofit                               | 0.00              | 0.00            | 0.00             | 0.00            | 0.00            |
|  | r-flow shower heads   | Education<br>Education | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 3.36<br>53.87     | 6.66<br>106.66  | 9.88<br>158.34   | 13.03<br>208.89 | 16.11<br>258.28 |
| 282 Low  | r-flow shower heads   |                        |                                |  | 0.00              | 0.00            |                  |                 |                 |

|     | A   | С                      | D                                | E                                      | F                   | G               | Н                   | 1 1                 | J                   |
|-----|---|------------------------|----------------------------------|--|---------------------|-----------------|---------------------|---------------------|---------------------|
| 1   |   | Ü                      | _                                | nomic Potential                        |                     |                 |                     | <u> </u>            | ·                   |
| 2   |   |                        | Measure Cum                      | ulative Gas Saving                     | s                   |                 |                     |                     |                     |
| 3   | Describe at Description I areal by Massaura   |                        |                                  |  | Compulation NG as 7 | Theweard DeceTh | ann Carrings (Na    | 4 -4 f=-==i-l===)   |                     |
| 4   | Results at Program Level by Measure   | Measure ID4            | I                                | Measure ID6                            | Cumulative NGas     | nousand Decain  | erm Savings (Ne     | t of freeriders)    |                     |
| _   |   | (e.g., Bldg            | Measure ID5                      | (e.g., Market: Retrofit,               | 0007                | 2000            |                     | 2012                | 2044                |
|     | Measure Name<br>Pipe insulation - water heating   | type)<br>Education     | (e.g., End Use)<br>Water Heating | NC, ROB)<br>New construction           | <b>2007</b><br>0.18 | 2008<br>0.36    | <b>2009</b><br>0.54 | <b>2010</b><br>0.73 | <b>2011</b><br>0.92 |
|     | Pipe insulation - water heating   | Education              | Water Heating                    | Renovation                             | 0.89                | 1.79            | 2.70                | 3.62                | 4.55                |
|     | Tank insulation   | Education              | Water Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
| 288 | Tank insulation   | Education              | Water Heating                    | New construction                       | 0.08                | 0.16            | 0.25                | 0.33                | 0.42                |
|     | Tank insulation   | Education              | Water Heating                    | Remodel/Replacment                     | 0.87                | 1.76            | 2.64                | 3.54                | 4.45                |
|     | Air Sealing   | Education              | Space Heating                    | Retrofit                               | 1,155.63            | 1,155.63        | 1,155.63            | 1,155.63            | 1,155.63            |
|     | Air Sealing   | Education              | Space Heating                    | New construction                       | 12.99               | 25.95           | 38.88               | 51.78               | 64.65               |
|     | Air Sealing<br>Improved heating system high efficiency unit - Tier 1  | Education<br>Education | Space Heating<br>Space Heating   | Renovation<br>Retrofit                 | 64.41<br>0.00       | 128.74<br>0.00  | 192.96<br>0.00      | 257.09<br>0.00      | 321.11<br>0.00      |
|     | Improved heating system high efficiency unit - Tier 1   | Education              | Space Heating                    | New construction                       | 2.68                | 5.32            | 7.90                | 10.42               | 12.88               |
|     | Improved heating system high efficiency unit - Tier 1   | Education              | Space Heating                    | Remodel/Replacment                     | 16.60               | 33.01           | 49.05               | 64.72               | 80.02               |
|     | Improved heating system condensing unit - Tier 2  | Education              | Space Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Improved heating system condensing unit - Tier 2  | Education              | Space Heating                    | New construction                       | 0.76                | 1.53            | 2.30                | 3.07                | 3.85                |
|     | Improved heating system condensing unit - Tier 2  | Education              | Space Heating                    | Remodel/Replacment                     | 4.72                | 9.47            | 14.25               | 19.07               | 23.91               |
|     | Programmable Thermostat<br>Programmable Thermostat  | Education<br>Education | Space Heating<br>Space Heating   | Retrofit<br>Renovation                 | 0.00<br>9.45        | 0.00<br>18.99   | 0.00<br>28.60       | 0.00<br>38.30       | 0.00<br>48.09       |
|     | Programmable Thermostat   | Education              | Space Heating                    | Remodel/Replacment                     | 30.51               | 61.28           | 92.33               | 123.64              | 155.22              |
|     | Demand-Controlled Ventilation (controller, sensor)  | Education              | Space Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Demand-Controlled Ventilation (controller, sensor)  | Education              | Space Heating                    | New construction                       | 24.51               | 48.38           | 71.62               | 94.21               | 116.14              |
| 304 | Demand-Controlled Ventilation (controller, sensor)  | Education              | Space Heating                    | Remodel/Replacment                     | 261.55              | 516.59          | 764.97              | 1,006.56            | 1,241.23            |
|     | Improved below-grade insulation   | Education              | Space Heating                    | New construction                       | 0.81                | 1.62            | 2.45                | 3.27                | 4.11                |
|     | Improved below-grade insulation   | Education              | Space Heating                    | Renovation                             | 4.01                | 8.06            | 12.14               | 16.26               | 20.41               |
|     | Sensible Heat Recovery Sensible Heat Recovery   | Education<br>Education | Space Heating<br>Space Heating   | Retrofit<br>New construction           | 0.00<br>9.89        | 0.00<br>19.74   | 0.00<br>29.43       | 0.00<br>38.96       | 0.00<br>48.33       |
|     | Sensible Heat Recovery  | Education              | Space Heating                    | Remodel/Replacment                     | 102.25              | 204.17          | 304.53              | 403.29              | 500.43              |
|     | Pipe insulation - space heating   | Education              | Space Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
| 311 | Pipe insulation - space heating   | Education              | Space Heating                    | New construction                       | 0.22                | 0.43            | 0.64                | 0.85                | 1.06                |
|     | Pipe insulation - space heating   | Education              | Space Heating                    | Renovation                             | 1.08                | 2.15            | 3.20                | 4.24                | 5.27                |
|     | Energy Star washer  | Education              | Water Heating                    | New construction                       | 0.11                | 0.18            | 0.24                | 0.29                | 0.34                |
|     | Energy Star washer<br>Swimming pool/spa covers  | Education              | Water Heating                    | Remodel/Replacment<br>Retrofit         | 1.42<br>0.00        | 2.32<br>0.00    | 3.13<br>0.00        | 3.86<br>0.00        | 4.50<br>0.00        |
|     | Swimming pool/spa covers Swimming pool/spa covers   | Education<br>Education | Miscellaneous<br>Miscellaneous   | New construction                       | 0.00                | 0.00            | 0.63                | 0.82                | 1.01                |
|     | Swimming pool/spa covers  | Education              | Miscellaneous                    | Remodel/Replacment                     | 19.53               | 38.43           | 56.71               | 74.34               | 91.32               |
|     | Commissioning   | Education              | Total                            | New construction                       | 0.12                | 0.24            | 0.36                | 0.48                | 0.59                |
| 319 | Commissioning   | Education              | Total                            | Renovation                             | 26.40               | 52.76           | 79.08               | 105.35              | 131.31              |
|     | Commissioning   | Education              | Total                            | Remodel/Replacment                     | 121.72              | 243.27          | 364.63              | 485.80              | 605.51              |
|     | Retrocommissioning  | Education              | Total                            | Retrofit                               | 420.78              | 420.78          | 420.78              | 420.78              | 420.78              |
|     | Integrated Design - High Performance (30% > codes) - Tier 1 Integrated Design - High Performance (50% > codes) Tier 2 | Education<br>Education | Total<br>Total                   | New construction New construction      | 1.02<br>0.11        | 2.04<br>0.22    | 3.06<br>0.33        | 4.08<br>0.45        | 5.08<br>0.56        |
|     | Steam trap Maintenance  | Education              | Space Heating                    | Retrofit                               | 48.93               | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Oxygen Trim   | Education              | Space Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Oxygen Trim   | Education              | Space Heating                    | New construction                       | 0.93                | 1.84            | 2.76                | 3.67                | 4.57                |
|     | Oxygen Trim   | Education              | Space Heating                    | Remodel/Replacment                     | 7.14                | 14.25           | 21.33               | 28.37               | 35.37               |
|     | Direct fired convection range/oven  | Health                 | Cooking                          | New construction                       | 3.05                | 6.05            | 9.01                | 11.90               | 14.72               |
|     | Direct fired convection range/oven  | Health                 | Cooking                          | Remodel/Replacment                     | 18.99               | 37.74           | 56.24               | 74.29               | 91.88               |
|     | Exhaust Hood Makeup Air<br>Exhaust Hood Makeup Air  | Health<br>Health       | Space Heating<br>Space Heating   | New construction<br>Remodel/Replacment | 0.20<br>1.42        | 0.39<br>2.79    | 0.58<br>4.14        | 0.76<br>5.45        | 0.94<br>6.72        |
|     | High efficiency ENERGY STAR fryer   | Health                 | Cooking                          | New construction                       | 7.60                | 15.09           | 22.48               | 29.69               | 36.71               |
|     | High efficiency ENERGY STAR fryer   | Health                 | Cooking                          | Remodel/Replacment                     | 47.36               | 94.12           | 140.28              | 185.30              | 229.17              |
|     | High efficiency ENERGY STAR steam cooker  | Health                 | Cooking                          | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
| 335 | High efficiency ENERGY STAR steam cooker  | Health                 | Cooking                          | New construction                       | 1.39                | 2.76            | 4.11                | 5.43                | 6.72                |
|     | High efficiency ENERGY STAR steam cooker  | Health                 | Cooking                          | Remodel/Replacment                     | 6.93                | 13.78           | 20.54               | 27.13               | 33.55               |
|     | Pre-Rinse Spray Valve   | Health<br>Health       | Water Heating                    | Retrofit<br>Retrofit                   | 20.50<br>0.00       | 20.50<br>0.00   | 0.00                | 0.00<br>0.00        | 0.00                |
| 000 | Refrigeration heat recovery Refrigeration heat recovery   | Health                 | Water Heating<br>Water Heating   | New construction                       | 0.68                | 1.36            | 2.03                | 2.70                | 3.38                |
|     | Refrigeration heat recovery   | Health                 | Water Heating                    | Remodel/Replacment                     | 6.37                | 12.72           | 19.07               | 25.39               | 31.71               |
|     | Cooling system chilled water reset  | Health                 | Cooling                          | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
| 342 | Cooling system chilled water reset  | Health                 | Cooling                          | New construction                       | (0.19)              | (0.38)          | (0.58)              | (0.78)              | (0.98)              |
|     | Cooling system chilled water reset  | Health                 | Cooling                          | Remodel/Replacment                     | (0.22)              | (0.45)          | (0.68)              | (0.92)              | (1.17)              |
|     | Cooling system water side economizer  | Health                 | Cooling                          | Retrofit                               | 0.00<br>2.86        | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Cooling system water side economizer Cooling system water side economizer   | Health<br>Health       | Cooling<br>Cooling               | New construction<br>Remodel/Replacment | 2.86<br>3.40        | 5.73<br>6.80    | 8.59<br>10.20       | 11.46<br>13.61      | 14.33<br>17.02      |
|     | Condensing DHW stand-alone  | Health                 | Water Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Condensing DHW stand-alone  | Health                 | Water Heating                    | New construction                       | 5.73                | 11.49           | 17.28               | 23.11               | 28.98               |
|     | Condensing DHW stand-alone  | Health                 | Water Heating                    | Remodel/Replacment                     | 54.36               | 109.09          | 164.18              | 219.64              | 275.46              |
|     | Faucet aerator  | Health                 | Water Heating                    | Retrofit                               | 10.50               | 10.50           | 10.50               | 10.50               | 10.50               |
|     | Graywater heat exchanger/GFX  | Health<br>Health       | Water Heating<br>Water Heating   | New construction                       | 0.17<br>1.19        | 0.33<br>2.38    | 0.50<br>3.58        | 0.67<br>4.78        | 0.84<br>5.99        |
|     | Graywater heat exchanger/GFX Indirect-fired DHW off space heating boiler  | Health                 | Water Heating Water Heating      | Remodel/Replacment<br>Retrofit         | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Indirect-fired DHW off space heating boiler   | Health                 | Water Heating                    | New construction                       | 2.01                | 4.02            | 6.02                | 8.02                | 10.02               |
|     | Indirect-fired DHW off space heating boiler   | Health                 | Water Heating                    | Remodel/Replacment                     | 11.46               | 22.91           | 34.34               | 45.75               | 57.14               |
| 356 | Instantaneous. High-Modulating Water Heater   | Health                 | Water Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Instantaneous. High-Modulating Water Heater   | Health                 | Water Heating                    | New construction                       | (0.01)              | (0.01)          | (0.02)              | (0.04)              | (0.05)              |
| 000 | Instantaneous, High-Modulating Water Heater   | Health                 | Water Heating                    | Renovation                             | (0.03)              | (0.07)          | (0.12)              | (0.18)              | (0.26)              |
|     | Instantaneous. High-Modulating Water Heater Low-flow shower heads   | Health<br>Health       | Water Heating<br>Water Heating   | Remodel/Replacment<br>Retrofit         | (0.06)<br>0.00      | (0.13)<br>0.00  | (0.22)<br>0.00      | (0.34)<br>0.00      | (0.49)<br>0.00      |
|     | Low-flow shower neads Low-flow shower heads   | Health                 | Water Heating                    | New construction                       | 0.28                | 0.55            | 0.82                | 1.08                | 1.33                |
|     | Low-flow shower heads   | Health                 | Water Heating                    | Remodel/Replacment                     | 3.97                | 7.85            | 11.66               | 15.38               | 19.02               |
| 363 | Pipe insulation - water heating   | Health                 | Water Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Pipe insulation - water heating   | Health                 | Water Heating                    | New construction                       | 0.23                | 0.46            | 0.70                | 0.94                | 1.18                |
|     | Pipe insulation - water heating   | Health                 | Water Heating                    | Renovation                             | 1.15                | 2.30            | 3.47                | 4.65                | 5.84                |
|     | Tank insulation   | Health                 | Water Heating                    | Retrofit                               | 0.00<br>0.11        | 0.00<br>0.21    | 0.00<br>0.32        | 0.00<br>0.43        | 0.00<br>0.53        |
|     | Tank insulation<br>Tank insulation  | Health<br>Health       | Water Heating<br>Water Heating   | New construction<br>Remodel/Replacment | 1.00                | 2.00            | 3.02                | 4.04                | 5.08                |
|     | Air Sealing   | Health                 | Space Heating                    | Retrofit                               | 213.91              | 213.91          | 213.91              | 213.91              | 213.91              |
|     | Air Sealing   | Health                 | Space Heating                    | New construction                       | 1.74                | 3.48            | 5.21                | 6.94                | 8.66                |
| 371 | Air Sealing   | Health                 | Space Heating                    | Renovation                             | 8.63                | 17.25           | 25.86               | 34.45               | 43.03               |
|     | Improved heating system high efficiency unit - Tier 1   | Health                 | Space Heating                    | Retrofit                               | 0.00                | 0.00            | 0.00                | 0.00                | 0.00                |
|     | Improved heating system high efficiency unit - Tier 1   | Health                 | Space Heating                    | New construction                       | 1.69                | 3.36            | 4.99                | 6.59                | 8.14                |
|     | Improved heating system high efficiency unit - Tier 1   | Health                 | Space Heating                    | Remodel/Replacment                     | 9.33                | 18.56           | 27.58               | 36.39               | 44.99               |
|     | Improved heating system condensing unit - Tier 2  | Health<br>Health       | Space Heating                    | Retrofit                               | 0.00<br>0.48        | 0.00<br>0.96    | 0.00<br>1.45        | 0.00<br>1.94        | 0.00<br>2.43        |
|     | Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2                     | Health<br>Health       | Space Heating<br>Space Heating   | New construction<br>Remodel/Replacment | 0.48<br>2.65        | 5.32            | 1.45<br>8.01        | 1.94                | 13.43               |
| 911 |   | . roustii              | I-base reaming                   |  | 2.00                | 0.02            | 0.01                | 10.71               | 10.40               |

| 1          | A   | С                     | D<br>Upstate Eco               | E<br>pnomic Potential                  | F                 | G              | Н                | I               | J               |
|------------|---|-----------------------|--------------------------------|--|-------------------|----------------|------------------|-----------------|-----------------|
| 3          |   |                       |                                | nulative Gas Saving                    | s                 |                |                  |                 |                 |
|            | Results at Program Level by Measure   | IMeasure ID4          | 1                              | IMeasure ID6                           | Cumulative NGas T | housand DecaTh | erm Savings (Net | of freeriders)  |                 |
| 5          | Measure Name  | (e.g., Bldg<br>type)  | Measure ID5<br>(e.g., End Use) | (e.g., Market: Retrofit,<br>NC, ROB)   | 2007              | 2008           | 2009             | 2010            | 2011            |
|            | Outdoor Air Reset   | Health                | Space Heating                  | Retrofit                               | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
|            | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1  | Health                | Space Heating                  | New construction                       | 2.43              | 4.81           | 7.15             | 9.44            | 11.65           |
|            | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1  | Health<br>Health      | Space Heating<br>Space Heating | Renovation<br>New construction         | 12.04<br>0.25     | 23.87<br>0.50  | 35.48<br>0.76    | 46.87<br>1.01   | 57.86<br>1.27   |
|            | improved below-grade insulation   | Health                | Space Heating                  | Renovation                             | 1.24              | 2.49           | 3.75             | 5.03            | 6.31            |
| -          | improved roof insulation  | Health                | Space Heating                  | New construction                       | 1.20              | 2.40           | 3.62             | 4.84            | 6.08            |
|            | mproved roof insulation Sensible Heat Recovery  | Health<br>Health      | Space Heating<br>Space Heating | Renovation<br>Retrofit                 | 5.93<br>0.00      | 11.92<br>0.00  | 17.96<br>0.00    | 24.05<br>0.00   | 30.19<br>0.00   |
|            | Pipe insulation - space heating   | Health                | Space Heating                  | Retrofit                               | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
| 387        | Pipe insulation - space heating   | Health                | Space Heating                  | New construction                       | 0.14<br>0.68      | 0.27<br>1.36   | 0.41<br>2.02     | 0.54            | 0.67            |
|            | Pipe insulation - space heating<br>Swimming pool/spa covers   | Health<br>Health      | Space Heating<br>Miscellaneous | Renovation<br>Retrofit                 | 0.00              | 0.00           | 0.00             | 2.68<br>0.00    | 3.33<br>0.00    |
| 390        | Swimming pool/spa covers  | Health                | Miscellaneous                  | New construction                       | 0.13              | 0.25           | 0.37             | 0.48            | 0.59            |
|            | Swimming pool/spa covers  | Health                | Miscellaneous                  | Remodel/Replacment                     | 3.76<br>0.09      | 7.40           | 10.92            | 14.31           | 17.58           |
|            | Commissioning<br>Commissioning  | Health<br>Health      | Total<br>Total                 | New construction<br>Renovation         | 22.50             | 0.18<br>44.97  | 0.27<br>67.40    | 0.36<br>89.80   | 0.45<br>111.92  |
| 394        | Commissioning   | Health                | Total                          | Remodel/Replacment                     | 92.27             | 184.41         | 276.42           | 368.28          | 459.02          |
| 395<br>396 | Retrocommissioning  | Health                | Total                          | Retrofit                               | 318.98<br>0.43    | 318.98<br>0.86 | 318.98<br>1.29   | 318.98<br>1.72  | 318.98<br>2.15  |
|            | integrated Design - High Performance (30% > codes) - Tier 1 Integrated Design - High Performance (50% > codes) Tier 2 | Health<br>Health      | Total<br>Total                 | New construction New construction      | 0.43              | 0.00           | 0.00             | 0.00            | 0.00            |
| 398        | Steam trap Maintenance  | Health                | Space Heating                  | Retrofit                               | 52.59             | 0.00           | 0.00             | 0.00            | 0.00            |
|            | Oxygen Trim   | Health<br>Health      | Space Heating<br>Space Heating | Retrofit<br>New construction           | 0.00<br>0.52      | 0.00<br>1.04   | 0.00<br>1.55     | 0.00<br>2.06    | 0.00<br>2.57    |
| -          | Oxygen Trim<br>Oxygen Trim  | Health                | Space Heating<br>Space Heating | Remodel/Replacment                     | 5.61              | 11.19          | 16.74            | 2.06            | 27.75           |
| 402        | Direct fired convection range/oven  | Lodging               | Cooking                        | New construction                       | 1.15              | 2.28           | 3.39             | 4.48            | 5.54            |
|            | Direct fired convection range/oven  | Lodging               | Cooking                        | Remodel/Replacment                     | 4.56              | 9.05           | 13.49            | 17.82           | 22.04           |
| 404        | Exhaust Hood Makeup Air<br>Exhaust Hood Makeup Air  | Lodging<br>Lodging    | Space Heating<br>Space Heating | New construction<br>Remodel/Replacment | 0.09<br>0.69      | 0.17<br>1.35   | 0.25<br>2.00     | 0.33<br>2.64    | 0.41<br>3.25    |
| 406        | High efficiency ENERGY STAR fryer   | Lodging               | Cooking                        | New construction                       | 2.86              | 5.68           | 8.46             | 11.17           | 13.81           |
|            | High efficiency ENERGY STAR fryer   | Lodging               | Cooking                        | Remodel/Replacment                     | 11.36             | 22.58          | 33.65            | 44.46           | 54.98           |
|            | High efficiency ENERGY STAR steam cooker High efficiency ENERGY STAR steam cooker                                     | Lodging<br>Lodging    | Cooking<br>Cooking             | Retrofit<br>New construction           | 0.00<br>0.45      | 0.00<br>0.89   | 0.00<br>1.33     | 0.00<br>1.75    | 0.00<br>2.17    |
| -          | High efficiency ENERGY STAR steam cooker  | Lodging               | Cooking                        | Remodel/Replacment                     | 1.43              | 2.84           | 4.23             | 5.58            | 6.91            |
|            | Pre-Rinse Spray Valve   | Lodging               | Water Heating                  | Retrofit                               | 7.46              | 7.46           | 0.00             | 0.00            | 0.00            |
| 412        | Refrigeration heat recovery Refrigeration heat recovery   | Lodging<br>Lodging    | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>0.08      | 0.00<br>0.15   | 0.00<br>0.23     | 0.00<br>0.31    | 0.00<br>0.38    |
| 414        | Refrigeration heat recovery   | Lodging               | Water Heating                  | Remodel/Replacment                     | 0.77              | 1.55           | 2.32             | 3.09            | 3.86            |
|            | Cooling system chilled water reset  | Lodging               | Cooling                        | Retrofit                               | 0.00<br>(0.05)    | 0.00<br>(0.10) | 0.00<br>(0.15)   | 0.00<br>(0.20)  | 0.00<br>(0.26)  |
| _          | Cooling system chilled water reset Cooling system water side economizer   | Lodging<br>Lodging    | Cooling                        | Remodel/Replacment<br>Retrofit         | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
| 418        | Cooling system water side economizer  | Lodging               | Cooling                        | Remodel/Replacment                     | 0.75              | 1.49           | 2.24             | 2.99            | 3.73            |
| 419        | Condensing DHW stand-alone Condensing DHW stand-alone   | Lodging               | Water Heating                  | Retrofit                               | 0.00<br>1.93      | 0.00<br>3.87   | 0.00<br>5.83     | 0.00<br>7.79    | 0.00<br>9.77    |
|            | Condensing DHW stand-alone  | Lodging<br>Lodging    | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 20.45             | 41.04          | 61.76            | 82.62           | 103.62          |
| 422        | Faucet aerator  | Lodging               | Water Heating                  | Retrofit                               | 3.82              | 3.82           | 3.82             | 3.82            | 3.82            |
|            | Graywater heat exchanger/GFX Graywater heat exchanger/GFX   | Lodging<br>Lodging    | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 0.56<br>4.47      | 1.13<br>8.97   | 1.70<br>13.50    | 2.27<br>18.05   | 2.84<br>22.61   |
| _          | ndirect-fired DHW off space heating boiler  | Lodging               | Water Heating                  | Retrofit                               | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
|            | ndirect-fired DHW off space heating boiler  | Lodging               | Water Heating                  | New construction                       | 0.63              | 1.25           | 1.88             | 2.50            | 3.12            |
|            | ndirect-fired DHW off space heating boiler Low-flow shower heads  | Lodging<br>Lodging    | Water Heating<br>Water Heating | Remodel/Replacment<br>Retrofit         | 3.99<br>0.00      | 7.97<br>0.00   | 11.94<br>0.00    | 15.91<br>0.00   | 19.87<br>0.00   |
| 429        | Low-flow shower heads   | Lodging               | Water Heating                  | New construction                       | 0.91              | 1.80           | 2.67             | 3.52            | 4.35            |
| 430<br>431 | Low-flow shower heads   | Lodging               | Water Heating                  | Remodel/Replacment                     | 14.44             | 28.59          | 42.45            | 56.00           | 69.24           |
| 432        | Pipe insulation - water heating Pipe insulation - water heating   | Lodging<br>Lodging    | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>0.08      | 0.00<br>0.16   | 0.00<br>0.24     | 0.00<br>0.32    | 0.00<br>0.40    |
| 433        | Pipe insulation - water heating   | Lodging               | Water Heating                  | Renovation                             | 0.39              | 0.78           | 1.17             | 1.57            | 1.97            |
| 434        | Tank insulation   | Lodging               | Water Heating                  | Retrofit                               | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
| -          | Tank insulation<br>Tank insulation  | Lodging<br>Lodging    | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 0.04<br>0.38      | 0.07<br>0.76   | 0.11<br>1.14     | 0.14<br>1.53    | 0.18<br>1.92    |
| 437        | Air Sealing   | Lodging               | Space Heating                  | Retrofit                               | 253.09            | 253.09         | 253.09           | 253.09          | 253.09          |
| 438        | Air Sealing   | Lodging               | Space Heating                  | New construction                       | 1.85              | 3.69           | 5.53<br>27.43    | 7.36<br>36.55   | 9.19            |
| 440        | Air Sealing improved heating system high efficiency unit - Tier 1   | Lodging<br>Lodging    | Space Heating<br>Space Heating | Retrofit                               | 9.16<br>0.00      | 18.30<br>0.00  | 0.00             | 0.00            | 45.65<br>0.00   |
| 441        | mproved heating system high efficiency unit - Tier 1  | Lodging               | Space Heating                  | New construction                       | 0.70              | 1.40           | 2.08             | 2.74            | 3.39            |
|            | mproved heating system high efficiency unit - Tier 1 mproved heating system condensing unit - Tier 2                  | Lodging               | Space Heating<br>Space Heating | Remodel/Replacment<br>Retrofit         | 4.33<br>0.00      | 8.62<br>0.00   | 12.81<br>0.00    | 16.90<br>0.00   | 20.90<br>0.00   |
|            | mproved heating system condensing unit - 11er 2  Improved heating system condensing unit - Tier 2                     | Lodging<br>Lodging    | Space Heating Space Heating    | New construction                       | 0.00              | 0.42           | 0.63             | 0.84            | 1.05            |
| 445        | mproved heating system condensing unit - Tier 2   | Lodging               | Space Heating                  | Remodel/Replacment                     | 1.28              | 2.57           | 3.87             | 5.18            | 6.50            |
|            | Programmable Thermostat improved below-grade insulation   | Lodging<br>Lodging    | Space Heating<br>Space Heating | Retrofit<br>New construction           | 0.00<br>0.33      | 0.00<br>0.67   | 0.00<br>1.00     | 0.00<br>1.34    | 0.00<br>1.69    |
|            | mproved below-grade insulation  | Lodging               | Space Heating                  | Renovation                             | 1.65              | 3.31           | 4.98             | 6.67            | 8.38            |
| 449        | Pipe insulation - space heating   | Lodging               | Space Heating                  | Retrofit                               | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
|            | Pipe insulation - space heating Pipe insulation - space heating   | Lodging<br>Lodging    | Space Heating<br>Space Heating | New construction<br>Renovation         | 0.06<br>0.30      | 0.12<br>0.59   | 0.18<br>0.88     | 0.23<br>1.16    | 0.29<br>1.44    |
| 452        | Energy Star washer  | Lodging               | Water Heating                  | New construction                       | 0.05              | 0.08           | 0.10             | 0.13            | 0.15            |
|            | Energy Star washer  | Lodging               | Water Heating                  | Remodel/Replacment                     | 0.63              | 1.02           | 1.38             | 1.71            | 1.99            |
|            | Swimming pool/spa covers Swimming pool/spa covers   | Lodging<br>Lodging    | Miscellaneous<br>Miscellaneous | Retrofit<br>New construction           | 0.00<br>0.11      | 0.00<br>0.22   | 0.00<br>0.33     | 0.00<br>0.43    | 0.00<br>0.53    |
| -          | Swimming pool/spa covers  | Lodging               | Miscellaneous                  | Remodel/Replacment                     | 10.26             | 20.20          | 29.80            | 39.07           | 47.99           |
| 457        | Commissioning   | Lodging               | Total                          | New construction                       | 0.05              | 0.10           | 0.15             | 0.20            | 0.24            |
| 458<br>459 | Commissioning<br>Commissioning  | Lodging<br>Lodging    | Total<br>Total                 | Renovation<br>Remodel/Replacment       | 8.18<br>37.43     | 16.34<br>74.81 | 24.50<br>112.13  | 32.64<br>149.39 | 40.68<br>186.20 |
| -          | Retrocommissioning  | Lodging               | Total                          | Retrofit                               | 129.39            | 129.39         | 129.39           | 129.39          | 129.39          |
|            | ntegrated Design - High Performance (30% > codes) - Tier 1  | Lodging               | Total                          | New construction                       | 0.42              | 0.84           | 1.25             | 1.67            | 2.08            |
|            | Integrated Design - High Performance (50% > codes) Tier 2 Steam trap Maintenance                                      | Lodging<br>Lodging    | Total<br>Space Heating         | New construction<br>Retrofit           | 0.03<br>27.53     | 0.06<br>0.00   | 0.09<br>0.00     | 0.13<br>0.00    | 0.16<br>0.00    |
| 464        | Oxygen Trim   | Lodging               | Space Heating                  | Retrofit                               | 0.00              | 0.00           | 0.00             | 0.00            | 0.00            |
| 465        | Oxygen Trim   | Lodging               | Space Heating                  | New construction                       | 0.25              | 0.50           | 0.75             | 1.00            | 1.24            |
|            | Oxygen Trim<br>Direct fired convection range/oven   | Lodging<br>Restaurant | Space Heating<br>Cooking       | Remodel/Replacment<br>New construction | 2.98<br>1.21      | 5.94<br>2.40   | 8.90<br>3.58     | 11.83<br>4.72   | 14.75<br>5.84   |
|            | Direct fired convection range/oven  | Restaurant            | Cooking                        | Remodel/Replacment                     | 25.83             | 51.34          | 76.52            | 101.07          | 125.00          |
|            | Exhaust Hood Makeup Air   | Restaurant            | Space Heating                  | New construction                       | 1.59              | 3.13           | 4.63             | 6.10            | 7.51            |
| 470        | Exhaust Hood Makeup Air   | Restaurant            | Space Heating                  | Remodel/Replacment                     | 9.33              | 18.42          | 27.28            | 35.90           | 44.26           |

| 1          | A   | С                        | D<br>Upstate Ed                | E<br>conomic Potential                 | F                 | G                | Н                | ı                | J                |
|------------|---|--------------------------|--------------------------------|--|-------------------|------------------|------------------|------------------|------------------|
| 2          |   |                          |                                | nulative Gas Saving                    | ıs                |                  |                  |                  |                  |
|            | Results at Program Level by Measure   | Measure ID4              | 1                              | IMeasure ID6                           | Cumulative NGas 1 | housand DecaTh   | erm Savings (Net | of freeriders)   |                  |
| 5          | Measure Name  | (e.g., Bldg<br>type)     | Measure ID5<br>(e.g., End Use) | (e.g., Market: Retrofit,<br>NC, ROB)   | 2007              | 2008             | 2009             | 2010             | 2011             |
| _          | High efficiency ENERGY STAR fryer   | Restaurant               | Cooking                        | New construction                       | 3.01              | 5.99             | 8.92             | 11.78            | 14.56            |
|            | High efficiency ENERGY STAR fryer   | Restaurant               | Cooking                        | Remodel/Replacment                     | 64.43             | 128.05           | 190.85           | 252.10           | 311.78           |
|            | High efficiency ENERGY STAR steam cooker High efficiency ENERGY STAR steam cooker                     | Restaurant<br>Restaurant | Cooking<br>Cooking             | Retrofit<br>New construction           | 0.00<br>0.55      | 0.00<br>1.10     | 0.00<br>1.63     | 0.00<br>2.15     | 0.00<br>2.66     |
| _          | High efficiency ENERGY STAR steam cooker  | Restaurant               | Cooking                        | Remodel/Replacment                     | 9.43              | 18.75            | 27.94            | 36.91            | 45.64            |
| -          | Pre-Rinse Spray Valve   | Restaurant               | Water Heating                  | Retrofit                               | 150.66            | 150.66           | 0.00             | 0.00             | 0.00             |
|            | Refrigeration heat recovery Refrigeration heat recovery   | Restaurant<br>Restaurant | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>6.12      | 0.00<br>12.23    | 0.00<br>18.33    | 0.00<br>24.40    | 0.00<br>30.46    |
| -          | Refrigeration heat recovery   | Restaurant               | Water Heating                  | Remodel/Replacment                     | 52.10             | 104.10           | 156.00           | 207.78           | 259.45           |
|            | Cooling system chilled water reset  | Restaurant               | Cooling                        | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
| _          | Cooling system chilled water reset Cooling system chilled water reset                                 | Restaurant<br>Restaurant | Cooling<br>Cooling             | New construction<br>Remodel/Replacment | (0.26)<br>(0.10)  | (0.52)<br>(0.21) | (0.78)<br>(0.32) | (1.06)<br>(0.43) | (1.34)<br>(0.55) |
| 483        | Cooling system water side economizer  | Restaurant               | Cooling                        | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
| -          | Cooling system water side economizer  | Restaurant               | Cooling                        | New construction                       | 3.90<br>1.59      | 7.79<br>3.19     | 11.69<br>4.79    | 15.59<br>6.38    | 19.49<br>7.98    |
|            | Cooling system water side economizer Condensing DHW stand-alone                                       | Restaurant<br>Restaurant | Cooling<br>Water Heating       | Remodel/Replacment<br>Retrofit         | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
| 487        | Condensing DHW stand-alone  | Restaurant               | Water Heating                  | New construction                       | 2.27              | 4.56             | 6.85             | 9.17             | 11.49            |
|            | Condensing DHW stand-alone  | Restaurant               | Water Heating                  | Remodel/Replacment                     | 21.56<br>1.29     | 43.27<br>1.29    | 65.12<br>1.29    | 87.11<br>1.29    | 109.25<br>1.29   |
| -          | Faucet aerator Graywater heat exchanger/GFX   | Restaurant<br>Restaurant | Water Heating<br>Water Heating | Retrofit<br>New construction           | 1.69              | 3.39             | 5.09             | 6.80             | 8.52             |
| 491        | Graywater heat exchanger/GFX  | Restaurant               | Water Heating                  | Remodel/Replacment                     | 12.02             | 24.11            | 36.27            | 48.49            | 60.75            |
|            | Indirect-fired DHW off space heating boiler   | Restaurant               | Water Heating                  | Retrofit                               | 0.00<br>0.36      | 0.00<br>0.71     | 0.00<br>1.06     | 0.00<br>1.42     | 0.00             |
|            | ndirect-fired DHW off space heating boiler Indirect-fired DHW off space heating boiler                | Restaurant<br>Restaurant | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 2.02              | 4.05             | 6.06             | 8.08             | 1.77<br>10.09    |
| 495        | Pipe insulation - water heating   | Restaurant               | Water Heating                  | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
|            | Pipe insulation - water heating Pipe insulation - water heating                                       | Restaurant<br>Restaurant | Water Heating<br>Water Heating | New construction<br>Renovation         | 0.09<br>0.47      | 0.19<br>0.93     | 0.28<br>1.41     | 0.38<br>1.89     | 0.48<br>2.37     |
|            | Pipe insulation - water neating  Tank insulation  | Restaurant               | Water Heating<br>Water Heating | Retrofit                               | 0.00              | 0.93             | 0.00             | 0.00             | 0.00             |
| 499        | Tank insulation   | Restaurant               | Water Heating                  | New construction                       | 0.04              | 0.09             | 0.13             | 0.17             | 0.22             |
|            | Tank insulation   | Restaurant<br>Restaurant | Water Heating<br>Space Heating | Remodel/Replacment<br>Retrofit         | 0.40<br>279.72    | 0.81<br>279.72   | 1.22<br>279.72   | 1.64<br>279.72   | 2.06<br>279.72   |
|            | Air Sealing<br>Air Sealing  | Restaurant               | Space Heating                  | New construction                       | 3.31              | 6.62             | 9.92             | 13.21            | 16.50            |
| 503        | Air Sealing   | Restaurant               | Space Heating                  | Renovation                             | 16.44             | 32.85            | 49.24            | 65.61            | 81.94            |
|            | mproved heating system high efficiency unit - Tier 1  | Restaurant               | Space Heating                  | New construction                       | 0.50<br>2.79      | 1.00<br>5.54     | 1.49<br>8.23     | 1.97<br>10.87    | 2.43<br>13.43    |
|            | mproved heating system high efficiency unit - Tier 1 mproved heating system condensing unit - Tier 2  | Restaurant<br>Restaurant | Space Heating<br>Space Heating | Remodel/Replacment<br>New construction | 0.07              | 0.15             | 0.22             | 0.30             | 0.37             |
| 507        | mproved heating system condensing unit - Tier 2   | Restaurant               | Space Heating                  | Remodel/Replacment                     | 0.41              | 0.82             | 1.23             | 1.65             | 2.06             |
|            | Programmable Thermostat<br>Programmable Thermostat  | Restaurant<br>Restaurant | Space Heating<br>Space Heating | Retrofit<br>Renovation                 | 0.00<br>1.00      | 0.00<br>2.02     | 0.00<br>3.04     | 0.00<br>4.07     | 0.00<br>5.11     |
|            | Programmable Thermostat   | Restaurant               | Space Heating                  | Remodel/Replacment                     | 2.88              | 5.79             | 8.72             | 11.68            | 14.66            |
| 511        | Demand-Controlled Ventilation (controller, sensor)  | Restaurant               | Space Heating                  | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
| _          | Demand-Controlled Ventilation (controller, sensor) Demand-Controlled Ventilation (controller, sensor) | Restaurant<br>Restaurant | Space Heating<br>Space Heating | New construction                       | 4.60<br>43.70     | 9.09<br>86.31    | 13.45<br>127.80  | 17.70<br>168.16  | 21.82<br>207.37  |
| -          | Improved below-grade insulation   | Restaurant               | Space Heating                  | Remodel/Replacment<br>New construction | 0.44              | 0.89             | 1.34             | 1.80             | 2.26             |
| 515        | mproved below-grade insulation  | Restaurant               | Space Heating                  | Renovation                             | 2.20              | 4.43             | 6.67             | 8.93             | 11.22            |
|            | Improved roof insulation Improved roof insulation   | Restaurant<br>Restaurant | Space Heating<br>Space Heating | New construction<br>Renovation         | 0.70<br>3.46      | 1.40<br>6.95     | 2.11<br>10.47    | 2.82<br>14.02    | 3.54<br>17.61    |
|            | 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                       | 5.20              | 10.37            | 15.46            | 20.47            | 25.39            |
|            | Sensible Heat Recovery Pipe insulation - space heating  | Restaurant<br>Restaurant | Space Heating<br>Space Heating | Remodel/Replacment<br>Retrofit         | 47.78<br>0.00     | 95.41<br>0.00    | 142.30<br>0.00   | 188.45<br>0.00   | 233.84<br>0.00   |
| -          | Pipe insulation - space heating   | Restaurant               | Space Heating                  | New construction                       | 0.06              | 0.11             | 0.17             | 0.22             | 0.28             |
| 523<br>524 | Pipe insulation - space heating   | Restaurant               | Space Heating                  | Renovation                             | 0.28              | 0.56             | 0.84             | 1.11             | 1.38             |
| 525        | Commissioning<br>Commissioning  | Restaurant<br>Restaurant | Total<br>Total                 | Renovation<br>Remodel/Replacment       | 12.11<br>49.68    | 24.21<br>99.29   | 36.29<br>148.82  | 48.35<br>198.28  | 60.26<br>247.13  |
|            | Retrocommissioning  | Restaurant               | Total                          | Retrofit                               | 171.74            | 171.74           | 171.74           | 171.74           | 171.74           |
|            | Steam trap Maintenance  | Restaurant               | Space Heating                  | Retrofit                               | 10.20             | 0.00             | 0.00             | 0.00             | 0.00             |
|            | Dxygen Trim<br>Dxygen Trim  | Restaurant<br>Restaurant | Space Heating<br>Space Heating | Retrofit<br>New construction           | 0.00<br>0.21      | 0.00<br>0.42     | 0.00<br>0.63     | 0.00<br>0.84     | 0.00<br>1.05     |
| 530        | Oxygen Trim   | Restaurant               | Space Heating                  | Remodel/Replacment                     | 1.59              | 3.17             | 4.74             | 6.30             | 7.86             |
| E22        | Exhaust Hood Makeup Air   | Other                    | Space Heating                  | New construction                       | 0.18<br>1.38      | 0.35             | 0.51<br>4.04     | 0.68             | 0.83             |
|            | Exhaust Hood Makeup Air<br>High efficiency ENERGY STAR fryer  | Other                    | Space Heating<br>Cooking       | New construction                       | 1.38<br>9.80      | 2.73<br>19.47    | 4.04<br>29.00    | 5.31<br>38.30    | 6.55<br>47.35    |
| 534        | High efficiency ENERGY STAR fryer   | Other                    | Cooking                        | Remodel/Replacment                     | 107.78            | 214.22           | 319.26           | 421.73           | 521.57           |
|            | High efficiency ENERGY STAR steam cooker High efficiency ENERGY STAR steam cooker                     | Other<br>Other           | Cooking<br>Cooking             | Retrofit<br>New construction           | 0.00<br>0.90      | 0.00<br>1.78     | 0.00<br>2.65     | 0.00<br>3.50     | 0.00<br>4.33     |
|            | High efficiency ENERGY STAR steam cooker  | Other                    | Cooking                        | Remodel/Replacment                     | 7.89              | 15.68            | 23.37            | 30.87            | 38.18            |
| 538        | Pre-Rinse Spray Valve   | Other                    | Water Heating                  | Retrofit                               | 7.69              | 7.69             | 0.00             | 0.00             | 0.00             |
|            | Refrigeration heat recovery Refrigeration heat recovery   | Other<br>Other           | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>0.05      | 0.00<br>0.11     | 0.00<br>0.16     | 0.00<br>0.21     | 0.00<br>0.26     |
|            | Refrigeration heat recovery   | Other                    | Water Heating                  | Remodel/Replacment                     | 0.67              | 1.33             | 2.00             | 2.66             | 3.32             |
| 542        | Cooling system chilled water reset  | Other                    | Cooling                        | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
|            | Cooling system chilled water reset Cooling system water side economizer                               | Other                    | Cooling<br>Cooling             | Remodel/Replacment<br>Retrofit         | (0.17)<br>0.00    | (0.35)<br>0.00   | (0.53)<br>0.00   | (0.72)<br>0.00   | (0.91)<br>0.00   |
| -          | Cooling system water side economizer  | Other                    | Cooling                        | Remodel/Replacment                     | 2.65              | 5.29             | 7.95             | 10.60            | 13.26            |
| 546        | Condensing DHW stand-alone  | Other                    | Water Heating                  | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
|            | Condensing DHW stand-alone<br>Condensing DHW stand-alone  | Other                    | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 3.13<br>40.86     | 6.28<br>81.99    | 9.45<br>123.40   | 12.64<br>165.07  | 15.84<br>207.02  |
|            | Faucet aerator  | Other                    | Water Heating                  | Retrofit                               | 40.25             | 40.25            | 40.25            | 40.25            | 40.25            |
|            | Graywater heat exchanger/GFX  | Other                    | Water Heating                  | Remodel/Replacment                     | 5.98              | 11.99            | 18.04            | 24.11            | 30.21            |
|            | ndirect-fired DHW off space heating boiler Indirect-fired DHW off space heating boiler                | Other<br>Other           | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>0.60      | 0.00<br>1.19     | 0.00<br>1.78     | 0.00<br>2.38     | 0.00<br>2.97     |
| 553        | Indirect-fired DHW off space heating boiler   | Other                    | Water Heating                  | Remodel/Replacment                     | 4.67              | 9.33             | 13.98            | 18.63            | 23.27            |
| 554        | nstantaneous. High-Modulating Water Heater  | Other                    | Water Heating                  | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
|            | nstantaneous. High-Modulating Water Heater<br>Instantaneous. High-Modulating Water Heater             | Other<br>Other           | Water Heating<br>Water Heating | New construction<br>Renovation         | (0.00)<br>(0.02)  | (0.01)<br>(0.04) | (0.01)<br>(0.06) | (0.02)<br>(0.10) | (0.03)<br>(0.14) |
| 557        | Instantaneous. High-Modulating Water Heater   | Other                    | Water Heating                  | Remodel/Replacment                     | (0.04)            | (0.10)           | (0.17)           | (0.26)           | (0.37)           |
| 558        | Low-flow shower heads   | Other                    | Water Heating                  | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
| 559<br>560 | Low-flow shower heads Low-flow shower heads   | Other<br>Other           | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 1.00<br>19.56     | 1.98<br>38.73    | 2.94<br>57.50    | 3.87<br>75.85    | 4.78<br>93.79    |
|            | Pipe insulation - water heating   | Other                    | Water Heating                  | Retrofit                               | 0.00              | 0.00             | 0.00             | 0.00             | 0.00             |
|            | Pipe insulation - water heating   | Other                    | Water Heating                  | New construction                       | 0.13              | 0.26             | 0.39             | 0.52             | 0.65             |
| 563        | Pipe insulation - water heating   | Other                    | Water Heating                  | Renovation                             | 0.64              | 1.28             | 1.93             | 2.59             | 3.25             |

|              | A  | С                          | D                              | F F                                    | F               | G                | Н                | <u> </u>        | J               |
|--------------|--|----------------------------|--------------------------------|--|-----------------|------------------|------------------|-----------------|-----------------|
| 1            |  |                            | _                              | onomic Potential                       |                 | -                |                  | · · · · · ·     |                 |
| 2            |  |                            | Measure Cum                    | ulative Gas Saving                     | ıs              |                  |                  |                 |                 |
| 3            | Results at Program Level by Measure  |                            |                                |  | Cumulative NGa  | Thousand DocaT   | herm Savings (Ne | of fragridate)  |                 |
| 4            | Results at Program Level by Measure  | Measure ID4                | 1                              | Measure ID6                            | Cumulative NGas | s inousand Decai | nerm Savings (Ne | or freeriders)  |                 |
| 5            | Measure Name   | (e.g., Bldg<br>type)       | Measure ID5<br>(e.g., End Use) | (e.g., Market: Retrofit,<br>NC, ROB)   | 2007            | 2008             | 2009             | 2010            | 2011            |
|              | Tank insulation  | Other                      | Water Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
|              | Tank insulation  | Other                      | Water Heating                  | New construction                       | 0.06            | 0.12             | 0.18             | 0.24            | 0.30            |
|              | Tank insulation  | Other                      | Water Heating                  | Remodel/Replacment                     | 0.76            | 1.53             | 2.31             | 3.10            | 3.89            |
|              | Air Sealing Air Sealing  | Other<br>Other             | Space Heating<br>Space Heating | Retrofit<br>New construction           | 899.27<br>6.33  | 899.27<br>12.64  | 899.27<br>18.94  | 899.27<br>25.23 | 899.27<br>31.50 |
|              | Air Sealing  | Other                      | Space Heating                  | Renovation                             | 31.39           | 62.73            | 94.03            | 125.28          | 156.47          |
| 570          | Improved heating system high efficiency unit - Tier 1  | Other                      | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 571          | Improved heating system high efficiency unit - Tier 1  | Other                      | Space Heating                  | Remodel/Replacment                     | 8.08            | 16.06            | 23.87            | 31.50           | 38.94           |
|              | Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2      | Other<br>Other             | Space Heating<br>Space Heating | Retrofit<br>Remodel/Replacment         | 0.00<br>2.00    | 0.00<br>4.01     | 0.00<br>6.04     | 0.00<br>8.08    | 0.00<br>10.14   |
|              | Programmable Thermostat  | Other                      | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
|              | Programmable Thermostat  | Other                      | Space Heating                  | Renovation                             | 2.75            | 5.53             | 8.33             | 11.16           | 14.01           |
|              | Programmable Thermostat  Demand-Controlled Ventilation (controller, sensor)                            | Other<br>Other             | Space Heating                  | Remodel/Replacment<br>Retrofit         | 10.87<br>0.00   | 21.83<br>0.00    | 32.89<br>0.00    | 44.05<br>0.00   | 55.30<br>0.00   |
| 4            | Demand-Controlled Ventilation (controller, sensor)  Demand-Controlled Ventilation (controller, sensor) | Other                      | Space Heating<br>Space Heating | New construction                       | 9.57            | 18.89            | 27.96            | 36.78           | 45.34           |
| 579          | Demand-Controlled Ventilation (controller, sensor)   | Other                      | Space Heating                  | Remodel/Replacment                     | 124.84          | 246.58           | 365.13           | 480.45          | 592.46          |
|              | Improved below-grade insulation  | Other                      | Space Heating                  | New construction                       | 0.49            | 0.97             | 1.47             | 1.96            | 2.47            |
|              | Improved below-grade insulation  | Other                      | Space Heating                  | Renovation                             | 2.41<br>0.00    | 4.83<br>0.00     | 7.28<br>0.00     | 9.75<br>0.00    | 12.24<br>0.00   |
|              | Sensible Heat Recovery Sensible Heat Recovery  | Other<br>Other             | Space Heating<br>Space Heating | Retrofit<br>New construction           | 6.58            | 13.14            | 19.59            | 25.94           | 32.17           |
| 584          | Sensible Heat Recovery   | Other                      | Space Heating                  | Remodel/Replacment                     | 83.22           | 166.18           | 247.87           | 328.26          | 407.32          |
|              | Pipe insulation - space heating  | Other                      | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 586<br>587   | Pipe insulation - space heating  | Other<br>Other             | Space Heating                  | New construction<br>Renovation         | 0.11<br>0.52    | 0.21<br>1.04     | 0.31<br>1.55     | 0.41<br>2.06    | 0.51<br>2.55    |
|              | Pipe insulation - space heating Energy Star washer   | Other                      | Space Heating<br>Water Heating | Renovation<br>New construction         | 0.52            | 0.04             | 0.05             | 0.06            | 0.07            |
| 589          | Energy Star washer   | Other                      | Water Heating                  | Remodel/Replacment                     | 0.39            | 0.63             | 0.85             | 1.05            | 1.23            |
| 590          | Swimming pool/spa covers   | Other                      | Miscellaneous                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 591<br>592   | Swimming pool/spa covers   | Other<br>Other             | Miscellaneous                  | New construction                       | 0.07<br>1.89    | 0.14<br>3.72     | 0.21<br>5.49     | 0.28<br>7.19    | 0.34<br>8.83    |
| 592          | Swimming pool/spa covers Commissioning   | Other                      | Miscellaneous<br>Total         | Remodel/Replacment<br>New construction | 0.03            | 0.07             | 0.10             | 7.19<br>0.13    | 0.16            |
| 594          | Commissioning  | Other                      | Total                          | Renovation                             | 15.77           | 31.52            | 47.25            | 62.95           | 78.47           |
|              | Commissioning  | Other                      | Total                          | Remodel/Replacment                     | 88.93           | 177.74           | 266.42           | 354.95          | 442.42          |
|              | Retrocommissioning   | Other                      | Total                          | Retrofit                               | 307.44          | 307.44           | 307.44           | 307.44          | 307.44          |
|              | Integrated Design - High Performance (30% > codes) - Tier 1 Steam trap Maintenance                     | Other<br>Other             | Total<br>Space Heating         | New construction<br>Retrofit           | 0.43<br>35.04   | 0.85<br>0.00     | 1.28<br>0.00     | 1.70<br>0.00    | 2.12<br>0.00    |
|              | Oxygen Trim  | Other                      | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
|              | Oxygen Trim  | Other                      | Space Heating                  | New construction                       | 0.54            | 1.09             | 1.62             | 2.16            | 2.69            |
|              | Oxygen Trim Infrared Heater  | Other<br>Other             | Space Heating                  | Remodel/Replacment<br>Retrofit         | 4.30<br>0.00    | 8.59<br>0.00     | 12.85<br>0.00    | 17.09<br>0.00   | 21.31<br>0.00   |
|              | Infrared Heater  | Other                      | Space Heating<br>Space Heating | Remodel/Replacment                     | 7.27            | 14.61            | 22.01            | 22.01           | 22.01           |
|              | Faucet aerator   | Multifamily                | Water Heating                  | Retrofit                               | 2.72            | 2.72             | 2.72             | 2.72            | 2.72            |
|              | Graywater heat exchanger/GFX   | Multifamily                | Water Heating                  | New construction                       | 0.40            | 0.80             | 1.20             | 1.60            | 2.00            |
|              | Graywater heat exchanger/GFX   | Multifamily                | Water Heating                  | Remodel/Replacment                     | 3.15            | 6.33             | 9.52             | 12.73           | 15.94           |
| 607          | Low-flow shower heads Low-flow shower heads  | Multifamily<br>Multifamily | Water Heating<br>Water Heating | Retrofit<br>New construction           | 0.00<br>0.64    | 0.00<br>1.27     | 0.00<br>1.88     | 0.00<br>2.48    | 0.00<br>3.07    |
| 609          | Low-flow shower heads  | Multifamily                | Water Heating                  | Remodel/Replacment                     | 10.18           | 20.16            | 29.93            | 39.49           | 48.83           |
|              | Pipe insulation - water heating  | Multifamily                | Water Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
|              | Pipe insulation - water heating  | Multifamily                | Water Heating                  | New construction                       | 0.06            | 0.11             | 0.17             | 0.22            | 0.28            |
|              | Pipe insulation - water heating Tank insulation  | Multifamily<br>Multifamily | Water Heating<br>Water Heating | Renovation<br>Retrofit                 | 0.27<br>0.00    | 0.55<br>0.00     | 0.83<br>0.00     | 1.11<br>0.00    | 1.39<br>0.00    |
| 4.4          | Tank insulation  | Multifamily                | Water Heating                  | New construction                       | 0.03            | 0.05             | 0.08             | 0.10            | 0.13            |
|              | Tank insulation  | Multifamily                | Water Heating                  | Remodel/Replacment                     | 0.27            | 0.53             | 0.80             | 1.08            | 1.35            |
|              | Air Sealing Air Sealing  | Multifamily<br>Multifamily | Space Heating<br>Space Heating | Retrofit<br>New construction           | 290.90<br>2.12  | 290.90<br>4.24   | 290.90<br>6.35   | 290.90<br>8.46  | 290.90<br>10.56 |
|              | Air Sealing Air Sealing  | Multifamily                | Space Heating                  | Renovation                             | 10.53           | 21.04            | 31.53            | 42.01           | 52.47           |
|              | Improved heating system high efficiency unit - Tier 1  | Multifamily                | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 620          | Improved heating system high efficiency unit - Tier 1  | Multifamily                | Space Heating                  | New construction                       | 0.81            | 1.61             | 2.39             | 3.15            | 3.89            |
| 621          | Improved heating system high efficiency unit - Tier 1  | Multifamily                | Space Heating                  | Remodel/Replacment                     | 4.98<br>0.00    | 9.91<br>0.00     | 14.72<br>0.00    | 19.43<br>0.00   | 24.02           |
| _            | Improved heating system condensing unit - Tier 2 Improved heating system condensing unit - Tier 2      | Multifamily<br>Multifamily | Space Heating<br>Space Heating | Retrofit<br>New construction           | 0.00            | 0.48             | 0.72             | 0.97            | 0.00<br>1.21    |
| 624          | Improved heating system condensing unit - Tier 2   | Multifamily                | Space Heating                  | Remodel/Replacment                     | 1.47            | 2.96             | 4.45             | 5.96            | 7.47            |
|              | Programmable Thermostat  | Multifamily                | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
|              | Programmable Thermostat Programmable Thermostat  | Multifamily<br>Multifamily | Space Heating<br>Space Heating | Renovation<br>Remodel/Replacment       | 0.03<br>0.10    | 0.06<br>0.20     | 0.09<br>0.30     | 0.12<br>0.40    | 0.16<br>0.50    |
|              | Pipe insulation - space heating  | Multifamily                | Space Heating                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 629          | Pipe insulation - space heating  | Multifamily                | Space Heating                  | New construction                       | 0.07            | 0.14             | 0.20             | 0.27            | 0.33            |
|              | Pipe insulation - space heating  | Multifamily                | Space Heating                  | Renovation                             | 0.34            | 0.68             | 1.01             | 1.34            | 1.66            |
|              | Energy Star washer Energy Star washer  | Multifamily<br>Multifamily | Water Heating<br>Water Heating | New construction<br>Remodel/Replacment | 0.03<br>0.44    | 0.05<br>0.72     | 0.07<br>0.98     | 0.09<br>1.20    | 0.11<br>1.40    |
|              | Swimming pool/spa covers   | Multifamily                | Miscellaneous                  | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 634          | Swimming pool/spa covers   | Multifamily                | Miscellaneous                  | Remodel/Replacment                     | 2.07            | 4.07             | 6.01             | 7.88            | 9.68            |
|              | Commissioning  | Multifamily                | Total                          | New construction<br>Renovation         | 0.01            | 0.02             | 0.03             | 0.03            | 0.04<br>34.23   |
| 636<br>637   | Commissioning Commissioning  | Multifamily<br>Multifamily | Total<br>Total                 | Renovation<br>Remodel/Replacment       | 6.88<br>31.49   | 13.75<br>62.94   | 20.61<br>94.35   | 27.46<br>125.70 | 34.23<br>156.67 |
| 638          | Retrocommissioning   | Multifamily                | Total                          | Retrofit                               | 108.87          | 108.87           | 108.87           | 108.87          | 108.87          |
| 639          | Integrated Design - High Performance (30% > codes) - Tier 1  | Multifamily                | Total                          | New construction                       | 0.07            | 0.14             | 0.22             | 0.29            | 0.36            |
|              | Integrated Design - High Performance (50% > codes) Tier 2 Steam trap Maintenance                       | Multifamily<br>Multifamily | Total                          | New construction<br>Retrofit           | 0.01<br>31.65   | 0.01<br>0.00     | 0.02<br>0.00     | 0.02<br>0.00    | 0.03            |
|              | Oxygen Trim  | Multifamily                | Space Heating<br>Space Heating | Retrofit                               | 0.00            | 0.00             | 0.00             | 0.00            | 0.00            |
| 643          | Oxygen Trim  | Multifamily                | Space Heating                  | New construction                       | 0.29            | 0.58             | 0.86             | 1.15            | 1.43            |
|              | Oxygen Trim  | Multifamily                | Space Heating                  | Remodel/Replacment                     | 3.42            | 6.83             | 10.22            | 13.60           | 16.95           |
| 1234<br>1235 |  |                            |                                |  | 1               |                  |                  |                 |                 |
| 1235         |  | 1                          |                                |  | 1               |                  |                  |                 |                 |
| 1237         |  |                            |                                |  |                 |                  |                  |                 |                 |
| 1238         |  |                            |                                |  |                 |                  |                  |                 |                 |
| 1239<br>1240 |  | 1                          |                                |  | 1               |                  |                  |                 |                 |
| 1241         |  |                            |                                |  | 1               |                  |                  |                 |                 |
| 1242         |  |                            |                                |  |                 |                  |                  |                 |                 |
| 1243<br>1244 |  | -                          |                                |  |                 |                  |                  |                 |                 |
| 1244         |  |                            |                                |  |                 |                  |                  |                 |                 |
|              |  |                            |                                |  |                 |                  |                  |                 |                 |

| SALES_   | A                             | 1            | 2            | 3                | 4                | 5                | 6                | 7                | 8                | 9                | 10               |                  |                  |
|----------|-------------------------------|--------------|--------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|          |                               | Office       | Retail       | Grocery          | Warehouse        | Education        | Health           | Lodging          | Restaurant       | Multifamily      | Other            |                  | TOTAL            |
|          | G END USE SALE                |              |              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|          | 1 Space Heating               | 31,872       | 10,163       | 3,435            | 3,028            | 15,168           | 8,523            | 4,124            | 3,490            | 4,739            | 8,928            |                  | 93469.6483       |
|          | 2 Water Heating               | 11,339       | 3,662        | 1,501            | 635              | 6,139            | 7,037            | 2,647            | 2,791            | 1,593            | 5,289            |                  | 42633.3828       |
|          | 3 Cooking                     | 0            | 2,410        | 1,031            | 114              | 3,165            | 2,831            | 679              | 3,851            | 156              | 3,754            |                  | 17991.7007       |
|          | 4 Cooling                     | 1,015        | 106          | 152              | 107              | 193              | 354              | 78               | 166              | 0                | 276              |                  | 2445.91981       |
|          | 5 Miscellaneous               | 0            | 0            | 0                | 79               | 566              | 383              | 232              | 0                | 40               | 189              |                  | 1489.27026       |
|          | 6 Total                       | 44,227       | 16,342       | 6,118            | 3,963            | 25,232           | 19,127           | 7,759            | 10,298           | 6,529            | 18,436           |                  | 158,03           |
| New Cor  | nstruction Sales in 2         | 2007 ('000 d | Th): NSAL    | ES UP            |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|          | 1 Space Heating               | 257.0        | 82.0         | 27.7             | 24.4             | 122.3            | 68.7             | 33.3             | 28.1             | 38.2             | 72.0             |                  | 753.787486       |
|          | 2 Water Heating               | 91.4         | 29.5         | 12.1             | 5.1              | 49.5             | 56.8             | 21.3             | 22.5             | 12.8             | 42.7             |                  | 343.817603       |
|          | 4 Cooling                     | 0.0          | 19.4         | 8.3              | 0.9              | 25.5             | 22.8             | 5.5              | 31.1             | 1.3              | 30.3             |                  | 145.094360       |
|          | 5 Miscellaneous               | 8.2          | 0.9          | 1.2              | 0.9              | 1.6              | 2.9              | 0.6              | 1.3              | 0.0              | 2.2              |                  | 19.7251597       |
|          | 6 Total                       | 0.0          | 0.0          | 0.0              | 0.6              | 4.6              | 3.1              | 1.9              | 0.0              | 0.3              | 1.5              |                  | 1                |
|          | 5 Miscellaneous               | 356.6659     | 131.7884     | 49.3379317       | 31.96188064      | 203.4809852      | 154.2536933      | 62.5734866       | 83.04896566      | 52.64964715      | 148.6738813      |                  | 1,274<br>159,304 |
| Growth F | actors — Annual p             | ercents app  | ly to 2007 ( | gas sales to ge  | t each years new | and existing sal | es.              |                  |                  |                  |                  |                  | 159,304          |
| Existing | -                             |              | Year         | 200800.0%        | 200900.0%        | 201000.0%        | 201100.0%        | 201200.0%        | 201300.0%        | 201400.0%        | 201500.0%        | 201600.0%        | 201              |
|          | 1 Office                      |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 2 Retail                      |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 3 Grocery                     |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 4 Warehouse                   |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 5 Education                   |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 6 Health                      |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 7 Lodging                     |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 8 Restaurant                  |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | 9 Multifamily                 |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
|          | % Other                       |              |              | 100.9%           | 101.7%           | 102.6%           | 103.5%           | 104.4%           | 105.3%           | 106.3%           | 107.2%           | 108.1%           |                  |
| NC       |                               |              |              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|          | 1 Office                      |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 2 Retail                      |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 3 Grocery                     |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 4 Warehouse                   |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 5 Education                   |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 6 Health                      |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 7 Lodging                     |              |              | 100.8%           | 101.6%           | 102.4%           | 103.2%           | 104.1%           | 105.1%           | 106.2%           | 107.2%           | 108.3%           |                  |
|          | 8 Restaurant<br>9 Multifamily |              |              | 100.8%<br>100.8% | 101.6%<br>101.6% | 102.4%<br>102.4% | 103.2%<br>103.2% | 104.1%<br>104.1% | 105.1%<br>105.1% | 106.2%<br>106.2% | 107.2%<br>107.2% | 108.3%<br>108.3% |                  |
|          |                               |              |              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |

| MEASURES<br># | Measure  | Life | Enduse        | Existing<br>Life | NG Loadshape<br>Name | Elec Loadshape<br>Name |
|---------------|--|------|---------------|------------------|----------------------|------------------------|
| 1             | Direct fired convection range/oven   | 8    | Cooking       | 8                | NG Base              | None                   |
| 2             | Exhaust Hood Makeup Air  | 20   | Space Heating | 20               | NG Com Space Heat    | Com Cooling            |
| 3             | High efficiency ENERGY STAR fryer  | 8    | Cooking       | 8                | NG Base              | None                   |
| 4             | High efficiency ENERGY STAR steam cooker                                     | 10   | Cooking       | 10               | NG Base              | None                   |
| 5             | High efficiency griddle  | 8    | Cooking       | 8                | NG Base              | None                   |
| 6             | Pre-Rinse Spray Valve  | 5    | Water Heating | 5                | NG DHW               | None                   |
| 7             | Refrigeration heat recovery  | 15   | Water Heating | 15               | NG DHW               | Com Refrigeration      |
| 8             |  |      |               |                  |                      | None                   |
| 9             | Cooling system chilled water reset   | 15   | Cooling       | 15               | NG Cooling           | Com Cooling            |
| 10            | Cooling system water side economizer   | 15   | Cooling       | 15               | NG Cooling           | Com Cooling            |
| 11            | Cooling system oversized cooling tower                                       | 20   | Cooling       | 20               | NG Cooling           | Com Cooling            |
| 12            | Condensing DHW stand-alone   | 15   | Water Heating | 15               | NG DHW               | None                   |
| 13            | Faucet aerator   | 10   | Water Heating | 10               | NG DHW               | None                   |
| 14            | Graywater heat exchanger/GFX   | 20   | Water Heating | 20               | NG DHW               | None                   |
| 15            | Indirect-fired DHW off space heating boiler                                  | 25   | Water Heating | 25               | NG DHW               | None                   |
| 16            | Instantaneous. High-Modulating Water Heater                                  | 15   | Water Heating | 15               | NG DHW               | None                   |
| 17            | Low-flow shower heads  | 10   | Water Heating | 10               | NG DHW               | None                   |
| 18            | Pipe insulation - water heating  | 15   | Water Heating | 15               | NG DHW               | None                   |
| 19            | Tank insulation  | 15   | Water Heating | 15               | NG DHW               | None                   |
| 20            | Air Sealing  | 20   | Space Heating | 20               | NG Com Space Heat    | Com Ventilation        |
| 21            | Improved heating system high efficiency unit - Tier 1                        | 25   | Space Heating | 25               | NG Com Space Heat    | Com Heating            |
| 22            | Improved heating system condensing unit - Tier 2                             | 25   | Space Heating | 25               | NG Com Space Heat    | None                   |
| 23            | Programmable Thermostat  | 10   | Space Heating | 10               | NG Com Space Heat    | Com Cooling            |
| 24            | Demand-Controlled Ventilation (controller, sensor)                           | 15   | Space Heating | 15               | NG Com Space Heat    | Com Cooling            |
| 25            | Outdoor Air Reset  | 2    | Space Heating | 2                | NG Com Space Heat    | None                   |
| 26            | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 30   | Space Heating | 30               | NG Com Space Heat    | Com Cooling            |
| 27            | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 30   | Space Heating | 30               | NG Com Space Heat    | Com Cooling            |
| 28            | Improved wall insulation   | 30   | Space Heating | 30               | NG Com Space Heat    | Com Cooling            |
| 29            | Improved below-grade insulation  | 30   | Space Heating | 30               | NG Com Space Heat    | None                   |
| 30            | Improved roof insulation   | 30   | Space Heating | 30               | NG Com Space Heat    | Com Cooling            |
| 31            | Sensible Heat Recovery   | 15   | Space Heating | 15               | NG Com Space Heat    | Com Economizer         |
| 32            | Pipe insulation - space heating  | 15   | Space Heating | 15               | NG Com Space Heat    | None                   |
| 33            | Energy Star washer   | 11   | Water Heating | 11               | NG DHW               | Com Water Heating      |
| 34            | Swimming pool/spa covers   | 5    | Miscellaneous | 5                | NG DHW               | None                   |
| 35            | Commissioning  | 7    | Total         | 7                | NG Com Space Heat    | Com Total Building     |
| 36            | Retrocommissioning   | 7    | Total         | 7                | NG Com Space Heat    | Com Total Building     |
| 37            | Integrated Design - High Performance (30% > codes) - Tier 1                  | 25   | Total         | 25               | NG Com Space Heat    | Com Total Building     |
| 38            | Integrated Design - High Performance (50% > codes) Tier 2                    | 25   | Total         | 25               | NG Com Space Heat    | Com Total Building     |
| 39            | Steam trap Maintenance   | 1    | Space Heating | 1                | NG Com Space Heat    | None                   |
| 40            | Oxygen Trim  | 10   | Space Heating | 10               | NG Com Space Heat    | None                   |
| 41            | 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 | BILITY   | 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%        | 1%        | 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%        | 0%        | 6%     | 5%      | 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%        | 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%         | 48%   |
| 22      | Improved heating system condensing unit - Tier 2                             | 48%    | 48%    | 48%     | 48%       | 48%       | 48%    | 48%     | 48%        | 48%         | 48%   |
| 23      | Programmable Thermostat  | 74%    | 74%    | 74%     | 74%       | 74%       | 74%    | 74%     | 74%        | 74%         | 74%   |
| 24      | Demand-Controlled Ventilation (controller, sensor)                           | 10%    | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 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 | 100%   | 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%        | 100%  |
| 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%        | 100%  |
| 31      | Sensible Heat Recovery   | 74%    | 74%    | 74%     | 74%       | 74%       | 74%    | 74%     | 74%        | 74%         | 74%   |
| 32      | Pipe insulation - space heating  | 48%    | 48%    | 48%     | 48%       | 48%       | 48%    | 48%     | 48%        | 48%         | 48%   |
| 33      | Energy Star washer   | 0%     | 0%     | 0%      | 0%        | 1%        | 0%     | 1%      | 0%         | 1%          | 0%    |
| 34      | Swimming pool/spa covers   | 0%     | 0%     | 0%      | 0%        | 70%       | 20%    | 90%     | 0%         | 90%         | 20%   |
| 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                  | 93%    | 93%    | 93%     | 93%       | 93%       | 93%    | 93%     | 93%        | 93%         | 93%   |
| 38      | Integrated Design - High Performance (50% > codes) Tier 2                    | 93%    | 93%    | 93%     | 93%       | 93%       | 93%    | 93%     | 93%        | 93%         | 93%   |
| 39      | Steam trap Maintenance   | 26%    | 26%    | 26%     | 26%       | 26%       | 26%    | 26%     | 26%        | 26%         | 26%   |
| 40      | Oxygen Trim  | 48%    | 48%    | 48%     | 48%       | 48%       | 48%    | 48%     | 48%        | 48%         | 48%   |
| 41      | Infrared Heater  | 0%     | 0%     | 50%     | 75%       | 0%        | 0%     | 0%      | 0%         | 0%          | 50%   |

| <b>FEASIBIL</b> | 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%       | 100%        | 100%  |
| 2               | Exhaust Hood Makeup Air  | 100%   | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 100%  |
| 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  | 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%         | 21%   |
| 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%     | 0%      | 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%   | 100%    | 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%   | 0%      | 100%       | 0%          | 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%   |

|      | Direct fired convection range/oven   | Office    |        |           |           |           |           |           |            |             | 10    |
|------|--|-----------|--------|-----------|-----------|-----------|-----------|-----------|------------|-------------|-------|
|      | Direct fired convection range/oven   |           | Retail | Grocery   | Warehouse | Education | Health    | Lodging   | Restaurant | Multifamily | Other |
| 2 E  |  | 13%       | 13%    | 13%       | 13%       | 13%       | 13%       | 13%       | 13%        | 13%         |       |
|      | Exhaust Hood Makeup Air  | 5%        | 5%     | 5%        | 5%        | 5%        | 5%        | 5%        | 5%         | 5%          | 5%    |
| 3 F  | High efficiency ENERGY STAR fryer  | 13%       | 13%    | 13%       | 13%       | 13%       | 13%       | 13%       | 13%        | 13%         |       |
| 4 F  | High efficiency ENERGY STAR steam cooker                                     | 10%       | 10%    | 10%       | 10%       | 10%       | 10%       | 10%       | 10%        | 10%         | 10%   |
| 5 F  | High efficiency griddle  | 13%       | 13%    | 13%       | 13%       | 13%       | 13%       | 13%       | 13%        | 13%         | 13%   |
| 6 F  | Pre-Rinse Spray Valve  | 20%       | 20%    | 20%       | 20%       | 20%       | 20%       | 20%       | 20%        | 20%         | 20%   |
| 7 F  | 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 C | 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%    |
|      | Faucet aerator   | 10%       | 10%    | 10%       | 10%       | 10%       | 10%       | 10%       | 10%        | 10%         |       |
| 14   | Graywater heat exchanger/GFX   | 5%        | 5%     | 5%        | 5%        | 5%        | 5%        | 5%        | 5%         | 5%          | 5%    |
|      | ndirect-fired DHW off space heating boiler                                   | 4%        | 4%     | 4%        | 4%        | 4%        | 4%        | 4%        | 4%         | 4%          |       |
|      | nstantaneous. High-Modulating Water Heater                                   | 7%        | 7%     | 7%        | 7%        | 7%        | 7%        | 7%        | 7%         | 7%          |       |
|      | Low-flow shower heads  | 10%       | 10%    | 10%       | 10%       | 10%       | 10%       | 10%       | 10%        | 10%         |       |
| 18 F | Pipe insulation - water heating  | 7%        | 7%     | 7%        | 7%        | 7%        | 7%        | 7%        | 7%         | 7%          |       |
|      | Tank insulation  | 7%        | 7%     | 7%        | 7%        | 7%        | 7%        | 7%        | 7%         | 7%          |       |
|      | Air Sealing  | 5%        | 5%     | 5%        | 5%        | 5%        | 5%        | 5%        | 5%         | 5%          |       |
|      | Improved heating system high efficiency unit - Tier 1                        | 4%        | 4%     | 4%        | 4%        | 4%        | 4%        | 4%        | 4%         | 4%          |       |
|      | Improved heating system condensing unit - Tier 2                             | 4%        | 4%     | 4%        | 4%        | 4%        | 4%        | 4%        | 4%         | 4%          |       |
|      | Programmable Thermostat  | 10%       | 10%    | 10%       | 10%       | 10%       | 10%       | 10%       | 10%        | 10%         |       |
|      | Demand-Controlled Ventilation (controller, sensor)                           | 7%        | 7%     | 7%        | 7%        | 7%        | 7%        | 7%        | 7%         | 7%          |       |
|      | Outdoor Air Reset  | 50%       | 50%    | 50%       | 50%       | 50%       | 50%       | 50%       | 50%        | 50%         |       |
|      | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 3%        | 3%     | 3%        | 3%        | 3%        | 3%        | 3%        | 3%         | 3%          |       |
|      | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 3%        | 3%     | 3%        | 3%        | 3%        | 3%        | 3%        | 3%         | 3%          |       |
|      | mproved wall insulation  | 3%        | 3%     | 3%        | 3%        | 3%        | 3%        | 3%        | 3%         | 3%          |       |
|      | mproved below-grade insulation   | 3%        | 3%     | 3%        | 3%        | 3%        | 3%        | 3%        | 3%         | 3%          |       |
|      | mproved roof insulation  | 3%        | 3%     | 3%        | 3%        | 3%        | 3%        | 3%        | 3%         | 3%          |       |
|      | Sensible Heat Recovery   | 7%        | 7%     | 7%        | 7%        | 7%        | 7%        | 7%        | 7%         | 7%          |       |
|      | Pipe insulation - space heating  | 7%        | 7%     | 7%        | 7%        | 7%        | 7%        | 7%        | 7%         | 7%          |       |
|      | Energy Star washer   | 9%        | 9%     | 9%        | 9%        | 9%        | 9%        | 9%        | 9%         | 9%          |       |
|      | Swimming pool/spa covers   | 20%       | 20%    | 20%       | 20%       | 20%       | 20%       | 20%       | 20%        | 20%         |       |
|      | Commissioning  | 14%       | 14%    | 14%       | 14%       | 14%       | 14%       | 14%       | 14%        | 14%         |       |
|      | Retrocommissioning   | 14%       | 14%    | 14%       | 14%       | 14%       | 14%       | 14%       | 14%        | 14%         |       |
|      | Integrated Design - High Performance (30% > codes) - Tier 1                  | 4%        | 4%     | 4%        | 4%        | 4%        | 4%        | 4%        | 4%         | 4%          |       |
|      | Integrated Design - High Performance (50% > codes) - Her 1                   | 4%        | 4%     | 4%        | 4%        | 4%        | 4%        | 4%        | 4%         | 4%          |       |
|      | Steam trap Maintenance   | 100%      | 100%   | 100%      | 100%      | 100%      | 100%      | 100%      | 100%       | 100%        |       |
|      | Oxygen Trim  | 100%      | 100%   | 100%      | 100%      | 100%      | 100%      | 100%      | 100%       | 100%        |       |
|      | oxygen min   | 10%<br>5% | 5%     | 10%<br>5% | 10%<br>5% | 10%<br>5% | 10%<br>5% | 10%<br>5% | 10%<br>5%  | 10%<br>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 ENER | 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%         |       |
| 4       | High efficiency ENERGY STAR steam cooker                                     | 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%          |       |
| 10      | Cooling system water side economizer   | 22%    | 22%    | 22%     | 22%       | 22%       | 22%    | 22%     | 22%        | 22%         |       |
| 11      | Cooling system oversized cooling tower                                       | 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%         |       |
| 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  | 22%    | 13%    | 1%      | 8%        | 14%       | 3%     | 7%      | 14%        | 7%          | 14%   |
| 21      | Improved heating system high efficiency unit - Tier 1                        | 6%     | 4%     | 4%      | 4%        | 6%        | 6%     | 6%      | 4%         | 6%          |       |
| 22      | Improved heating system condensing unit - Tier 2                             | 7%     | 7%     | 3%      | 7%        | 8%        | 8%     | 8%      | 3%         | 8%          | 6%    |
| 23      | Programmable Thermostat  | 6%     | 6%     | 5%      | 35%       | 13%       | 0%     | 0%      | 5%         | 0%          |       |
| 24      | Demand-Controlled Ventilation (controller, sensor)                           | 2%     | 15%    | 41%     | 15%       | 31%       | 0%     | 0%      | 22%        | 0%          | 25%   |
| 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 | 7%     | 2%     | 0%      | 1%        | 4%        | 8%     | 6%      | 7%         | 6%          | 5%    |
| 27      | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 15%    | 5%     | 0%      | 0%        | 9%        | 12%    | 6%      | 10%        | 13%         |       |
| 28      | Improved wall insulation   | 3%     | 3%     | 2%      | 3%        | 1%        | 4%     | 2%      | 2%         | 2%          |       |
| 29      | Improved below-grade insulation  | 1%     | 2%     | 1%      | 3%        | 1%        | 0%     | 1%      | 2%         | 1%          |       |
| 30      | Improved roof insulation   | 3%     | 2%     | 5%      | 7%        | 4%        | 2%     | 2%      | 4%         | 2%          |       |
| 31      | Sensible Heat Recovery   | 7%     | 41%    | 35%     | 17%       | 23%       | 16%    | 15%     | 42%        | 15%         |       |
| 32      | Pipe insulation - space heating  | 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%         |       |
| 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%   |

|    | 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   | 35%    | 35%    | 35%     | 35%       | 35%       | 35%    | 35%     | 35%        | 35%         | 35%   |
|    | Faucet aerator   | 75%    | 75%    | 50%     | 75%       | 50%       | 50%    | 75%     | 50%        | 75%         | 50%   |
|    | 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%   |
|    | Instantaneous. High-Modulating Water Heater                                  | 21%    | 21%    | 21%     | 21%       | 21%       | 21%    | 21%     | 21%        | 21%         | 21%   |
|    | 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%    |
|    | Tank insulation  | 2%     | 2%     | 2%      | 2%        | 2%        | 2%     | 2%      | 2%         | 2%          | 2%    |
| 20 | Air Sealing  | 22%    | 13%    | 1%      | 8%        | 14%       | 3%     | 7%      | 14%        | 7%          | 14%   |
|    | Improved heating system high efficiency unit - Tier 1                        | 6%     | 4%     | 4%      | 4%        | 6%        | 6%     | 6%      | 4%         | 6%          | 5%    |
|    | Improved heating system condensing unit - Tier 2                             | 7%     | 7%     | 8%      |           | 8%        | 8%     | 8%      | 7%         | 8%          |       |
|    | Programmable Thermostat  | 6%     | 6%     | 5%      |           | 13%       | 0%     | 0%      | 5%         | 0%          |       |
|    | Demand-Controlled Ventilation (controller, sensor)                           | 2%     | 15%    | 41%     |           | 31%       | 0%     | 0%      | 29%        | 0%          |       |
|    | Outdoor Air Reset  | 2%     | 2%     | 2%      |           | 2%        | 2%     | 2%      | 2%         | 2%          |       |
|    | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | _,,    |        | _,,     |           | _,,       |        | _,,     | -,,        |             |       |
|    | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 |        |        |         |           |           |        |         |            |             |       |
|    | Improved wall insulation   |        |        |         |           |           |        |         |            |             |       |
|    | Improved below-grade insulation  |        |        |         |           |           |        |         |            |             |       |
|    | Improved roof insulation   |        |        |         |           |           |        |         |            |             |       |
| 31 | Sensible Heat Recovery   | 7%     | 41%    | 35%     | 17%       | 23%       | 16%    | 15%     | 42%        | 15%         | 30%   |
|    | Pipe insulation - space heating  | 2%     | 2%     | 2%      |           | 2%        | 2%     | 2%      | 2%         | 2%          |       |
|    | Energy Star washer   | -/-    |        | _,,     |           | _,,       |        | _,,     | -/-        | -/-         | _,-   |
|    | Swimming pool/spa covers   | 60%    | 60%    | 60%     | 60%       | 60%       | 60%    | 60%     | 60%        | 60%         | 60%   |
|    | Commissioning  | 0070   | 0070   | 0070    | 0070      | 0070      | 0070   | 0070    | 0070       | 0070        | 0070  |
|    | Retrocommissioning   | 6%     | 6%     | 6%      | 6%        | 6%        | 6%     | 6%      | 6%         | 6%          | 6%    |
|    | Integrated Design - High Performance (30% > codes) - Tier 1                  | 070    | 070    | 070     | 070       | 070       | 070    | 070     | 070        | 070         | 070   |
|    | Integrated Design - High Performance (50% > codes) - Her 1                   |        |        |         |           |           |        |         |            |             |       |
|    | Steam trap Maintenance   | 3%     | 3%     | 3%      | 3%        | 3%        | 3%     | 3%      | 3%         | 3%          | 3%    |
|    | Oxygen Trim  | 5%     | 5%     | 5%      |           | 5%        | 5%     | 5%      | 5%         | 5%<br>5%    | 5%    |
|    | Infrared Heater  | 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  | 10070   | 10070     | 10070     | 10070  | 10070   | 10070      | 10070       | 10070 |
| 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                  | 100 /6 | 10076  | 10076   | 10076     | 10076     | 10078  | 10076   | 10076      | 100 /6      | 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      | Oxygen i rim Infrared Heater   | 100%   |        | 100%    |           |           |        | 100%    | 100%       |             |       |
| 41      | initaleu nealei  | 100%   | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 100%  |

| kWh kW    | Th saved/Peak day dTH saved  | 1           | 2           | 3           | 4           | 5           | 6           | 7            | 8               | 9           | 10          |
|-----------|--|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-----------------|-------------|-------------|
| KVVII_KVV | ratio  | Office      | Retail      | Grocery     | Warehouse   | Education   | Health      | ,<br>Lodging | o<br>Restaurant | Multifamily | Other       |
| - 1       | Direct fired convection range/oven   | 268         | 351         | 363         | 281         | 226         | 351         | 365          | 363             | 365         |             |
| 2         | Exhaust Hood Makeup Air  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          |             |
| 3         | High efficiency ENERGY STAR fryer  | 268         | 351         | 363         | 281         | 226         | 351         | 365          | 363             | 365         | 343         |
| ٥         | High efficiency ENERGY STAR flyer High efficiency ENERGY STAR steam cooker   | 268         | 351         | 363         | 281         | 226         | 351         | 365          | 363             | 365         | 343         |
| -         |  |             | 351         | 363         | 281         | 226         | 351         | 365          | 363             | 365         |             |
| 5         | High efficiency griddle  | 268<br>261  | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         | 258         |
| 6         | Pre-Rinse Spray Valve  |             |             | 267<br>267  | 571<br>571  | 201         | 260         | 266          | 267             | 266         |             |
| /<br>8    | Refrigeration heat recovery  | 261         | 464         | 267         | 5/1         | 201         | 260         | 200          | 267             | 200         | 230         |
| 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 |
| 10        | Cooling system crimed water reset  Cooling system water side economizer      | 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 |
| 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   | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         | 258         |
| 13        | Faucet aerator   | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         | 258         |
| 14        | Graywater heat exchanger/GFX   | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         |             |
| 15        | Indirect-fired DHW off space heating boiler                                  | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         |             |
|           | Instantaneous. High-Modulating Water Heater                                  | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         |             |
| 16        | Low-flow shower heads  | 261         | 464<br>464  | 267         | 571         | 201         | 260         | 266          | 267             | 266         | 258         |
| 17        |  |             |             |             | 571<br>571  | 201         | 260         | 266          | 267             | 266         |             |
| 18        | Pipe insulation - water heating  | 261<br>261  | 464<br>464  | 267<br>267  | 571         | 201         | 260         | 266          | 267             | 266         | 258         |
| 19        | Tank insulation  |             |             |             | 102         | 201<br>75   | 260<br>95   | 200<br>85    | 267<br>96       | 266<br>85   | 101         |
| 20        | Air Sealing  | 95          | 81          | 90          | 102         | 75<br>75    |             |              | 96              | 85          |             |
| 21        | Improved heating system high efficiency unit - Tier 1                        | 95          | 81          | 90          |             | 75<br>75    | 95<br>95    | 85           | 96              |             | 101         |
| 22        | Improved heating system condensing unit - Tier 2                             | 95          | 81          | 90          | 102         |             |             | 85           | 96<br>96        | 85<br>85    | 101         |
| 23        | Programmable Thermostat  | 95          | 81          | 90          | 102         | 75          | 95<br>95    | 85           | 96              |             | 101         |
| 24        | Demand-Controlled Ventilation (controller, sensor)                           | 95          | 81          | 90          | 102<br>102  | 75<br>75    |             | 85           | 96<br>96        | 85<br>85    | 101         |
| 25        | Outdoor Air Reset  | 95          | 81          | 90          |             | 75          | 95          | 85           |                 |             |             |
| 26        | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101<br>101  |
| 27        | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96<br>96        | 85          | 101         |
| 28        | Improved wall insulation   | 95          | 81          | 90          | 102         | 75          | 95          | 85           |                 | 85          | 101         |
| 29        | Improved below-grade insulation  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          |             |
| 30        | Improved roof insulation   | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 31        | Sensible Heat Recovery   | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 32        | Pipe insulation - space heating  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 33        | Energy Star washer   | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         |             |
| 34        | Swimming pool/spa covers   | 261         | 464         | 267         | 571         | 201         | 260         | 266          | 267             | 266         | 258         |
| 35        | Commissioning  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 36        | Retrocommissioning   | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 37        | Integrated Design - High Performance (30% > codes) - Tier 1                  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 38        | Integrated Design - High Performance (50% > codes) Tier 2                    | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 39        | Steam trap Maintenance   | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 40        | Oxygen Trim  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |
| 41        | Infrared Heater  | 95          | 81          | 90          | 102         | 75          | 95          | 85           | 96              | 85          | 101         |

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       |
|-----------|--|----------|----------|----------|-----------|-----------|---------------------|---------|---------------------|-------------|----------|
| KVVII_D11 |  | 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   | (19.15)  | (19.15)  | (19.15)  | (19.15)   | (19.15)   | (19.15)             | (19.15) | (19.15)             | (19.15)     | (19.15)  |
| 10        | Cooling system water side economizer   | 15.31    | 15.31    | 15.31    | 15.31     | 15.31     | `15.31 <sup>´</sup> | 15.31   | `15.31 <sup>´</sup> | 15.31       | 15.31    |
| 11        | Cooling system oversized cooling tower                                       | (48.22)  | (48.22)  | (48.22)  | (48.22)   | (48.22)   | (48.22)             | (48.22) | (48.22)             | (48.22)     | (48.22)  |
| 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  | 12.10    | 7.23     | 3.25     | 7.23      | 2.18      | 30.70               | 0.00    | 4.50                | 0.00        | 7.23     |
| 21        | Improved heating system high efficiency unit - Tier 1                        | 0.00     | 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  | 1.63     | 0.25     | 0.25     | 0.00      | 3.20      | 0.00                | 0.00    | 0.00                | 0.00        | 2.70     |
| 24        | Demand-Controlled Ventilation (controller, sensor)                           | 10.70    | 10.70    | 10.70    | 0.00      | 1.70      | 10.70               | 0.00    | 2.50                | 0.00        | 10.70    |
| 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 | 12.30    | (5.80)   | (7.80)   | 2.30      | 1.50      | 45.00               | 0.00    | (4.90)              | 0.00        | 5.25     |
| 27        | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 9.00     | 0.00     | 0.00     | 0.00      | 4.74      | 2.88                | 0.00    | (4.90)              | 0.00        | 2.40     |
| 28        | Improved wall insulation   | 4.04     | 7.50     | 9.87     | 1.30      | 4.10      | 48.09               | 0.00    | 2.10                | 0.00        | 8.50     |
| 29        | Improved below-grade insulation  | 0.00     | (25.50)  | (28.00)  | 1.70      | (3.80)    | 0.00                | 0.00    | (26.00)             | 0.00        | (9.90)   |
| 30        | Improved roof insulation   | 3.67     | 13.30    | (20.29)  | 1.90      | 0.25      | 15.53               | 0.00    | 8.70                | 0.00        | 3.40     |
| 31        | Sensible Heat Recovery   | (215.33) | (100.10) | (100.10) | (100.10)  | (49.20)   | (202.05)            | 0.00    | (141.18)            | 0.00        | (110.57) |
| 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  | 285.71   | 285.71   | 285.71   | 285.71    | 285.71    | 285.71              | 285.71  | 285.71              | 285.71      | 285.71   |
| 36        | Retrocommissioning   | 130.77   | 130.77   | 130.77   | 130.77    | 130.77    | 130.77              | 130.77  | 130.77              | 130.77      | 130.77   |
| 37        | Integrated Design - High Performance (30% > codes) - Tier 1                  | 92.86    | 92.86    | 92.86    | 92.86     | 92.86     | 92.86               | 92.86   | 92.86               | 92.86       | 92.86    |
| 38        | Integrated Design - High Performance (50% > codes) Tier 2                    | 92.86    | 92.86    | 92.86    | 92.86     | 92.86     | 92.86               | 92.86   | 92.86               | 92.86       | 92.86    |
| 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 |  | 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  | 0.04   | 0.02   | 0.02    | 0.01      | 0.03      | 0.02   | 0.02    | 0.01       | 0.02        | 0.02   |
| 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      | 0.01      | 0.00   | 0.01    | 0.01       | 0.01        | 0.01   |
| 11     | Cooling system oversized cooling tower                                       | (0.03) | (0.03) | (0.02)  | (0.02)    | (0.04)    | (0.02) | (0.03)  | (0.02)     | (0.03)      | (0.02) |
| 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  | 0.02   | 0.01   | (0.01)  | 0.00      | 0.01      | 0.05   | 0.00    | 0.00       | 0.00        | 0.01   |
| 21     | Improved heating system high efficiency unit - Tier 1                        | 0.00   | 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  | 0.00   | 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   | 0.03   | 0.02    | 0.00      | 0.00      | 0.02   | 0.00    | 0.00       | 0.00        | 0.01   |
| 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   | 0.01   | 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 | 0.00   | 0.00   | 0.00    | 0.00      | 0.00      | 0.00   | 0.00    | (0.00)     | 0.00        | 0.00   |
| 28     | Improved wall insulation   | 0.01   | 0.01   | 0.01    | 0.00      | 0.00      | 0.04   | 0.00    | 0.00       | 0.00        | 0.01   |
| 29     | Improved below-grade insulation  | 0.00   | (0.02) | (0.03)  | 0.00      | (0.01)    | 0.00   | 0.00    | (0.01)     | 0.00        | (0.01) |
| 30     | Improved roof insulation   | 0.01   | 0.01   | (0.02)  | 0.00      | 0.00      | 0.01   | 0.00    | 0.01       | 0.00        | 0.01   |
| 31     | Sensible Heat Recovery   | (0.04) | (0.03) | (0.02)  | (0.02)    | 0.02      | (0.03) | (0.02)  | (0.02)     | (0.02)      | (0.01) |
| 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  | 0.09   | 0.11   | 0.05    | 0.07      | 0.10      | 0.07   | 0.10    | 0.07       | 0.10        | 0.08   |
| 36     | Retrocommissioning   | 0.05   | 0.06   | 0.03    | 0.03      | 0.05      | 0.04   | 0.05    | 0.04       | 0.05        | 0.04   |
| 37     | Integrated Design - High Performance (30% > codes) - Tier 1                  | 0.04   | 0.04   | 0.02    | 0.02      | 0.04      | 0.03   | 0.04    | 0.03       | 0.04        | 0.03   |
| 38     | Integrated Design - High Performance (50% > codes) Tier 2                    | 0.04   | 0.04   | 0.02    | 0.02      | 0.04      | 0.03   | 0.04    | 0.03       | 0.04        | 0.03   |
| 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   | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    | 1,547.33    |
| 11    | Cooling system oversized cooling tower                                       | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) | (16,266.73) |
| 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        |

## \$/dTh saved

| \$/dTh sav |  |    | 1      |    | 2           |    | 3           |    | 4             |    | 5             |    | 6           |    | 7           | 8           |       |    | 9                |    | 10     |
|------------|--|----|--------|----|-------------|----|-------------|----|---------------|----|---------------|----|-------------|----|-------------|-------------|-------|----|------------------|----|--------|
| INID_COS   | 15<br>   |    | office |    | Z<br>Retail | G  | irocerv     | w  | 4<br>arehouse | F  | อ<br>ducation |    | o<br>Health | Lo | ,<br>odging | o<br>Restau | rant  | Mı | ıltifamily       | ,  | Other  |
| 1          | Direct fired convection range/oven   | \$ | 19.31  |    | 19.31       | \$ | 19.31       | \$ | 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            |    | 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            |    | 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      | \$ 2        | 44.00 |    | 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   | \$ | 54.62  | \$ | 54.62       | \$ | 54.62       | \$ | 54.62         | \$ | 54.62         | \$ | 54.62       | \$ | 54.62       | \$          | 54.62 | \$ | 54.62            | \$ | 54.62  |
| 10         | Cooling system water side economizer   | \$ | 110.88 |    |             |    |             |    | 110.88        |    | 110.88        |    |             |    |             |             | 10.88 |    | 110.88           |    | 110.88 |
| 11         | Cooling system oversized cooling tower                                       | \$ | 235.26 |    | 235.26      |    |             |    | 235.26        |    | 235.26        |    | 235.26      |    |             |             | 35.26 |    | 235.26           |    | 235.26 |
| 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         |    |               |    | 41.44       |    | 41.44       |             | 55.25 |    | 41.44            |    | 41.44  |
| 16         | Instantaneous. High-Modulating Water Heater                                  | \$ | 12.95  |    | 12.95       |    | 17.26       |    |               | \$ | 20.72         |    | 12.95       |    |             |             | 17.26 |    | 12.95            |    | 12.95  |
| 17         | Low-flow shower heads  | \$ | 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  |
| 20         | Air Sealing  | \$ | 37.60  |    | 23.28       |    | 422.40      |    | 52.76         | \$ |               |    | 57.42       |    | 57.69       |             | 17.56 |    | 57.69            |    | 41.73  |
| 21         | Improved heating system high efficiency unit - Tier 1                        | \$ | 335.85 |    | 144.14      |    |             |    | 78.98         |    | 71.04         |    | 49.05       |    | 42.32       |             |       |    | 42.32            |    | 135.51 |
| 22         | Improved heating system condensing unit - Tier 2                             | \$ | 233.44 |    | 116.13      |    | 286.49      |    | 63.66         |    | 79.31         |    | 31.15       |    | 30.58       |             | 92.30 |    | 30.58            |    | 96.69  |
| 23         | Programmable Thermostat  | \$ | 20.16  |    | 8.78        |    |             |    | 2.92          |    | 7.59          |    | -           |    | 547.02      |             | 7.85  |    | 36.43            |    | 35.86  |
| 24         | Demand-Controlled Ventilation (controller, sensor)                           | \$ | 52.76  |    | 17.28       | \$ |             |    | 46.41         |    | 39.34         |    | _           | \$ | 68.93       |             | 15.99 |    | 68.93            |    | 19.57  |
| 25         | Outdoor Air Reset  | \$ | 84.01  |    | 235.65      |    | 29.37       |    | 88.83         | \$ | 29.02         |    | 29.37       | \$ | 70.59       |             | 89.06 |    | 70.59            |    | 44.54  |
| 26         | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | \$ | 328.28 |    | 331.90      |    | 211.09      |    | 200.42        |    | 150.00        |    | 194.19      |    |             |             | 45.44 |    | 288.31           |    | 201.37 |
| 27         | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | \$ | 451.43 |    | 431.76      |    |             | \$ |               | \$ |               |    |             | \$ |             |             | 40.82 |    | 391.24           |    | 236.55 |
| 28         | Improved wall insulation   | \$ | 152.64 |    | 603.78      |    | 340.57      | \$ | 580.82        | \$ | 456.00        |    | 242.17      |    | 499.19      |             | 48.13 |    | 499.19           |    | 225.23 |
| 29         | Improved below-grade insulation  | \$ | 73.32  |    | 84.65       |    |             | \$ | 45.91         | \$ | 45.91         |    | 107.34      | \$ | 68.57       | \$          | 56.33 | \$ | 68.57            |    | 51.14  |
| 30         | Improved roof insulation   | \$ | 211.50 | \$ | 301.34      | \$ | 98.05       | \$ | 101.22        | \$ | 200.00        | \$ | 141.43      |    | 176.45      | \$ 1        | 06.62 | \$ | 176.45           | \$ | 134.99 |
| 31         | Sensible Heat Recovery   | \$ | 49.85  | \$ | 20.30       | \$ | 21.48       | \$ | 25.51         |    | 21.00         | \$ | 37.03       | \$ | 22.62       |             | 16.13 |    | 22.62            | \$ | 23.18  |
| 32         | Pipe insulation - space heating  | \$ | 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      | \$ 2        | 60.00 |    | 260.00           |    | 260.00 |
| 34         | Swimming pool/spa covers   | \$ | 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      | \$ 1        | 71.56 | \$ | 171.56           | \$ | 171.56 |
| 38         | Integrated Design - High Performance (50% > codes) Tier 2                    | \$ | 571.87 |    |             |    | 571.87      |    | 571.87        |    | 571.87        |    | 571.87      |    | 571.87      |             | 71.87 |    | 571.87           |    | 571.87 |
| 39         | Steam trap Maintenance   | ,  | 2      | 7  |             | -  | <del></del> | -  |               | +  | 2             | -  |             | -  |             | . •         |       | -  | , <del>.</del> . | -  |        |
| 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   |

## \$/dTH saved

| RET_COS |  |    | 1       |    | 2        |      | 3        |    | 4        |    | 5        |    | 6        |    | 7        |    | 8         |    | 9          |      | 10       |
|---------|--|----|---------|----|----------|------|----------|----|----------|----|----------|----|----------|----|----------|----|-----------|----|------------|------|----------|
|         |  |    | Office  |    | Retail   | G    | rocery   | W  | arehouse | Ec | ducation |    | Health   | L  | .odging  | R  | estaurant | Мι | 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    | \$ | 457.97     | \$   | 457.97   |
| 5       | High efficiency griddle  |    |         |    |          |      |          |    |          |    |          |    |          |    |          |    |           |    |            |      |          |
| 6       | Pre-Rinse Spray Valve  | \$ | 1.82    | \$ | 1.82     | \$   | 1.82     |    | 1.82     |    | 1.82     |    | 1.82     |    | 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   | \$ | 54.62   | \$ | 54.62    | \$   | 54.62    | \$ | 54.62    | \$ | 54.62    | \$ | 54.62    | \$ | 54.62    | \$ | 54.62     | \$ | 54.62      | \$   | 54.62    |
| 10      | Cooling system water side economizer   | \$ | 110.88  | \$ | 110.88   | \$   | 110.88   | \$ | 110.88   | \$ | 110.88   | \$ | 110.88   | \$ | 110.88   | \$ | 110.88    | \$ | 110.88     | \$   | 110.88   |
| 11      | Cooling system oversized cooling tower                                       | \$ | ,082.89 | \$ | 1,082.89 | \$ 1 | 1,082.89 | \$ | 1,082.89 | \$ | 1,082.89 | \$ | 1,082.89 | \$ | 1,082.89 | \$ | 1,082.89  | \$ | 1,082.89   | \$ 1 | 1,082.89 |
| 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   | \$ | 156.00  | \$ | 156.00   | \$   | 156.00   | \$ | 156.00   | \$ | 156.00   | \$ | 156.00   | \$ | 156.00   | \$ | 156.00    | \$ | 156.00     | \$   | 156.00   |
| 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  | \$ | 12.86   | \$ | 12.86    | \$   | 250.00   | \$ | 33.59    | \$ | 32.69    | \$ | 50.56    | \$ | 53.45    | \$ | 31.84     | \$ | 53.45      | \$   | 15.14    |
| 21      | Improved heating system high efficiency unit - Tier 1                        | \$ | 328.36  | \$ | 328.36   | \$   | 328.36   | \$ | 328.36   | \$ | 328.36   | \$ | 46.16    | \$ | 291.39   | \$ | 555.96    | \$ | 291.39     | \$   | 328.36   |
| 22      | Improved heating system condensing unit - Tier 2                             | \$ | 225.11  | \$ | 112.67   | \$   | 68.66    | \$ | 61.76    | \$ | 37.19    | \$ | 28.78    | \$ | 28.93    | \$ | 85.15     | \$ | 28.93      | \$   | 93.16    |
| 23      | Programmable Thermostat  | \$ | 10.53   | \$ | 1.32     | \$   | 12.83    | \$ | 1.66     | \$ | 4.29     | \$ | -        | \$ | 20.00    | \$ | 8.09      | \$ | 20.00      | \$   | 4.20     |
| 24      | Demand-Controlled Ventilation (controller, sensor)                           | \$ | 17.15   | \$ | 47.46    |      | 8.37     |    | 27.28    |    | 24.22    |    | -        | \$ | 68.93    | \$ | 9.32      |    |            | \$   | 6.64     |
| 25      | Outdoor Air Reset  | \$ | 36.78   | \$ | 28.05    | \$   | 22.65    | \$ | 61.21    | \$ | 27.56    | \$ | 6.66     | \$ | 70.59    | \$ | 73.30     | \$ | 70.59      | \$   | 36.02    |
| 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   | \$ | 12.99   | \$ | 1.43     | \$   | 13.65    | \$ | 14.52    | \$ | 23.41    | \$ | 9.40     | \$ | 22.62    | \$ | 7.69      | \$ | 22.62      | \$   | 9.92     |
| 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   | \$ | 35.70   | \$ | 35.70    | \$   | 35.70    | \$ | 35.70    | \$ | 35.70    | \$ | 35.70    | \$ | 35.70    | \$ | 35.70     | \$ | 35.70      | \$   | 35.70    |
| 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      |    | 1.97       |      | 1.97     |
| 41      | Infrared Heater  | \$ | 8.48    |    |          |      | 8.48     |    | 8.48     |    | 8.48     |    | 8.48     |    | 8.48     |    | 8.48      |    | 8.48       |      | 8.48     |

## \$/dTh saved

| RET_BAS | E_COSTS  |    | 1      |    | 2      |    | 3       |    | 4         |    | 5        |    | 6      |    | 7      | 8          |      | 9           |      | 10     |
|---------|--|----|--------|----|--------|----|---------|----|-----------|----|----------|----|--------|----|--------|------------|------|-------------|------|--------|
|         |  |    | Office | F  | Retail | G  | Procery | W  | /arehouse | E  | ducation | Н  | lealth | L  | odging | Restaurant |      | Multifamily | Ot   | ther   |
| 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 | \$ 431.8   | 7 \$ | 431.87      | \$ 4 | 131.87 |
| 5       | High efficiency griddle  |    |        |    |        |    |         |    |           |    |          |    |        |    |        |            |      |             |      |        |
| 6       | Pre-Rinse Spray Valve  | \$ |        | \$ | 1.36   |    | 1.36    |    | 1.36      |    | 1.36     |    | 1.36   | \$ | 1.36   |            | 6 \$ | 1.36        | \$   | 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                                       | \$ | 814.88 | \$ | 814.88 | \$ | 814.88  | \$ | 814.88    | \$ | 814.88   | \$ | 814.88 | \$ | 814.88 | \$ 814.8   | 8 \$ | 814.88      | \$ 8 | 314.88 |
| 12      | Condensing DHW stand-alone   | \$ | 30.54  | \$ | 120.07 | \$ | 33.66   | \$ | 39.50     | \$ | 37.39    | \$ | 23.83  | \$ | 39.34  | \$ 29.7    | 6 \$ | 39.34       | \$   | 28.68  |
| 13      | Faucet aerator   | \$ | -      | \$ | -      | \$ | -       | \$ | -         | \$ | -        | \$ | -      | \$ | -      | \$ -       | \$   | -           | \$   | -      |
| 14      | Graywater heat exchanger/GFX   | \$ | -      | \$ | -      | \$ | -       | \$ | -         | \$ | -        | \$ | -      | \$ | -      | \$ -       | \$   | -           | \$   | -      |
| 15      | Indirect-fired DHW off space heating boiler                                  | \$ | 36.86  | \$ | 144.91 | \$ | 40.62   | \$ | 47.67     | \$ | 45.13    | \$ | 28.76  | \$ | 47.48  | \$ 35.9    | 2 \$ | 47.48       | \$   | 34.61  |
| 16      | Instantaneous. High-Modulating Water Heater                                  | \$ | 53.45  | \$ | 210.12 | \$ | 58.90   | \$ | 69.12     | \$ | 65.44    | \$ | 41.71  | \$ | 68.85  | \$ 52.0    | 8 \$ | 68.85       | \$   | 50.19  |
| 17      | Low-flow shower heads  | \$ | 3.74   | \$ | 3.74   | \$ | 3.74    | \$ | 3.74      | \$ | 2.93     | \$ | 14.07  | \$ | 14.07  | \$ 3.7     | 4 \$ | 14.07       | \$   | 5.85   |
| 18      | Pipe insulation - water heating  | \$ | -      | \$ | -      | \$ | -       | \$ | -         | \$ | -        | \$ | -      | \$ | -      | \$ -       | \$   | -           | \$   | -      |
| 19      | Tank insulation  | \$ | -      | \$ | -      | \$ | -       | \$ | -         | \$ | -        | \$ | -      | \$ | -      | \$ -       | \$   | -           | \$   | -      |
| 20      | Air Sealing  | \$ | -      | \$ | -      | \$ | -       | \$ | -         | \$ | -        | \$ | -      | \$ | -      | \$ -       | \$   | -           | \$   | -      |
| 21      | Improved heating system high efficiency unit - Tier 1                        | \$ | 714.36 | \$ | 597.92 | \$ | 372.63  | \$ | 225.25    | \$ | 393.56   | \$ | 47.09  | \$ | 135.97 | \$ 451.7   | 3 \$ | 135.97      | \$ 2 | 270.66 |
| 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                  | Ŧ  |        | -  |        | -  |         | -  |           | -  |          | -  |        | -  |        | •          | *    |             | -    |        |
| 38      | Integrated Design - High Performance (50% > codes) Tier 2                    |    |        |    |        |    |         |    |           |    |          |    |        |    |        |            |      |             |      |        |
| 39      | Steam trap Maintenance   |    |        |    |        |    |         |    |           |    |          |    |        |    |        |            |      |             |      |        |
| 40      | Oxygen Trim  | \$ | _      | \$ | _      | \$ | _       | \$ | _         | \$ | _        | \$ | _      | \$ | -      | \$ -       | \$   | _           | \$   | _      |
| 41      | Infrared Heater  | \$ | 7.27   |    | 7.27   |    | 7.27    |    | 7.27      |    | 7.27     |    | 7.27   |    | 7.27   |            | 7 \$ | 7.27        |      | 7.27   |

|        |  |             | _           | _            |                | _              |             | _            | _               | _                |             | rank  | interact   |
|--------|--|-------------|-------------|--------------|----------------|----------------|-------------|--------------|-----------------|------------------|-------------|-------|------------|
| D_Inte | ractions   | 1<br>Office | 2<br>Retail | 3<br>Grocery | 4<br>Warehouse | 5<br>Education | 6<br>Health | 7<br>Lodging | 8<br>Restaurant | 9<br>Multifamily | 10<br>Other | order | wit        |
| 1      | Direct fired convection range/oven   | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             | 100%        | 0     |            |
| 2      | Exhaust Hood Makeup Air  | 93%         | 83%         | 65%          | 79%            | 70%            | 94%         | 94%          | 78%             | 94%              | 76%         | 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%        | ō     |            |
| 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%             |             |       |            |
| 7      | Refrigeration heat recovery  | 85%         | 87%         | 86%          | 87%            | 79%            | 84%         | 81%          | 78%             | 95%              | 84%         | 8     | ,1,2,4,6   |
| 8      | , g ,  |             |             |              |                |                |             |              |                 |                  |             |       |            |
| 9      | Cooling system chilled water reset   | 95%         | 95%         | 95%          | 95%            | 95%            | 95%         | 95%          | 95%             | 95%              | 95%         | 5     | ,2a,       |
| 10     | Cooling system water side economizer   | 95%         | 95%         | 95%          | 95%            | 95%            | 95%         | 95%          | 95%             | 95%              | 95%         | 4     | ,2a,       |
| 11     | Cooling system oversized cooling tower                                       | 97%         | 97%         | 97%          | 97%            | 97%            | 97%         | 97%          | 97%             | 97%              | 97%         | 3     | ,2         |
| 12     | Condensing DHW stand-alone   | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             | 100%        | 1     | ,          |
| 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%         | 4     | ,1,        |
| 15     | Indirect-fired DHW off space heating boiler                                  | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             | 100%        | 2     |            |
| 16     | Instantaneous. High-Modulating Water Heater                                  | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             |             | 3     |            |
| 17     | Low-flow shower heads  | 86%         | 88%         | 87%          | 88%            | 80%            | 85%         | 82%          | 79%             | 96%              | 84%         | 5     | ,1,2       |
| 18     | Pipe insulation - water heating  | 87%         | 88%         | 87%          | 88%            | 85%            | 85%         | 85%          | 87%             | 100%             | 87%         | 7     | ,1,        |
| 19     | Tank insulation  | 87%         | 88%         | 87%          | 88%            | 85%            | 85%         | 85%          | 87%             | 100%             | 87%         | 6     | ,1,        |
| 20     | Air Sealing  | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             | 100%        | 0     | , ,        |
| 21     | Improved heating system high efficiency unit - Tier 1                        | 97%         | 97%         | 97%          | 97%            | 97%            | 97%         | 97%          | 97%             | 97%              | 97%         | 3     | 2          |
| 22     | Improved heating system condensing unit - Tier 2                             | 97%         | 97%         | 97%          | 97%            | 97%            | 97%         | 97%          | 97%             | 97%              | 97%         | 3     | 2          |
| 23     | Programmable Thermostat  | 94%         | 94%         | 95%          | 94%            | 94%            | 94%         | 94%          | 95%             | 94%              | 94%         | 4     | ,2a        |
| 24     | Demand-Controlled Ventilation (controller, sensor)                           | 94%         | 94%         | 95%          | 94%            | 94%            | 94%         | 94%          | 95%             | 94%              | 94%         | 5     | ,2a        |
| 25     | Outdoor Air Reset  | 93%         | 83%         | 65%          | 79%            | 70%            | 94%         | 94%          | 78%             | 94%              | 76%         | 7     | ,2a,3,4,   |
| 26     | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 92%         | 83%         | 64%          | 79%            | 70%            | 94%         | 94%          | 78%             | 94%              | 75%         | 12    | ,2a,3,5,   |
| 27     | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 92%         | 83%         | 64%          | 79%            | 70%            | 94%         | 94%          | 78%             | 94%              | 75%         | 12    | ,2a,3,5,   |
| 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%             | 100%        |       |            |
| 31     | Sensible Heat Recovery   | 92%         | 82%         | 64%          | 78%            | 69%            | 93%         | 93%          | 77%             | 93%              | 75%         | 8     | 2a,3,4,5   |
| 32     | Pipe insulation - space heating  | 92%         | 82%         | 64%          | 78%            | 69%            | 93%         | 93%          | 77%             | 93%              | 75%         | 9     | 2a,3,4,5   |
| 33     | Energy Star washer   | 83%         | 85%         | 84%          | 84%            | 77%            | 81%         | 79%          | 76%             | 92%              | 81%         | 9     | 2a,1,2,4,6 |
| 34     | Swimming pool/spa covers   | 83%         | 85%         | 84%          | 84%            | 82%            | 82%         | 82%          | 84%             | 96%              | 83%         | 10    |            |
| 35     | Commissioning  | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             | 100%        |       | , - ,, -   |
| 36     | Retrocommissioning   | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             |             | 0     |            |
| 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%        | n     |            |
| 39     | Steam trap Maintenance   | 100%        | 100%        | 100%         | 100%           | 100%           | 100%        | 100%         | 100%            | 100%             | 100%        | ٥     |            |
| 40     | Oxygen Trim  | 91%         | 65%         | 52%          | 72%            | 62%            | 87%         | 96%          | 60%             | 96%              | 64%         | 11    | 2a,4,5,7,8 |
| 41     | Infrared Heater  | 96%         | 85%         | 66%          | 81%            | 73%            | 97%         | 97%          | 80%             | 97%              | 78%         | 13    | 2a,4,3,7,0 |

| MD interim | interactions                     | 1      | 2      | 3   | 4         | 5   | 6      | 7   | 8            | 9   | 10    |
|------------|----------------------------------|--------|--------|-----|-----------|-----|--------|-----|--------------|-----|-------|
|            |                                  | Office | Retail |     | Warehouse |     | Health |     | Restaurant M |     | Other |
|            | Direct fired convection range/ov | 0%     | 5%     | 5%  |           | 5%  | 5%     | 5%  |              | 0%  | 09    |
|            | Exhaust Hood Makeup Air          | 0%     | 1%     | 1%  |           | 0%  | 0%     | 0%  |              | 0%  | 0%    |
|            | High efficiency ENERGY STAR      | 14%    | 12%    | 12% |           | 12% | 12%    | 12% |              | 0%  | 20%   |
|            | High efficiency ENERGY STAR      | 0%     | 2%     | 2%  |           | 0%  | 2%     | 2%  |              | 0%  | 29    |
|            | High efficiency griddle          | 3%     | 1%     | 1%  | 3%        | 1%  | 1%     | 1%  | 1%           | 0%  | 19    |
|            | Pre-Rinse Spray Valve            |        |        |     |           |     |        |     |              |     |       |
|            | Refrigeration heat recovery      | 0%     | 0%     | 10% | 7%        | 3%  | 2%     | 1%  | 34%          | 0%  | 0     |
| 8          |                                  |        |        |     |           |     |        |     |              |     |       |
|            | Cooling system chilled water re  | -1%    | -1%    | -1% |           | -1% | -1%    | -1% |              | -1% | -19   |
|            | Cooling system water side ecor   | 15%    | 15%    | 15% |           | 15% | 15%    | 15% |              | 15% | 15    |
|            | Cooling system oversized cooli   | 2%     | 2%     | 2%  |           | 2%  | 2%     | 2%  |              | 2%  | 2     |
|            | Condensing DHW stand-alone       | 11%    | 11%    | 11% | 11%       | 11% | 11%    | 11% | 11%          | 0%  | 119   |
|            | Faucet aerator                   |        |        |     |           |     |        |     |              |     |       |
|            | Graywater heat exchanger/GF)     | 0%     | 0%     | 0%  |           | 6%  | 0%     | 4%  |              | 4%  | 3'    |
|            | Indirect-fired DHW off space he  | 2%     | 1%     | 2%  |           | 4%  | 4%     | 4%  |              | 0%  | 2     |
|            | Instantaneous. High-Modulating   | -0.04% | 0%     | 0%  |           | 0%  | 0%     | 0%  |              | 0%  | 0     |
|            | Low-flow shower heads            | 1%     | 0%     | 0%  |           | 10% | 1%     | 6%  |              | 6%  | 4     |
|            | Pipe insulation - water heating  | 1%     | 1%     | 1%  |           | 1%  | 1%     | 1%  |              | 1%  | 1     |
|            | Tank insulation                  | 0%     | 0%     | 0%  |           | 0%  | 0%     | 0%  |              | 0%  | 0'    |
|            | Air Sealing                      | 21%    | 12%    | 1%  |           | 14% | 3%     | 7%  |              | 7%  | 14    |
|            | Improved heating system high     | 3%     | 2%     | 2%  |           | 2%  | 2%     | 2%  |              | 2%  | 2     |
|            | Improved heating system condi    | 1%     | 1%     | 0%  |           | 1%  | 1%     | 1%  |              | 1%  | 1     |
|            | Programmable Thermostat          | 1%     | 1%     | 1%  |           | 2%  | 0%     | 0%  |              | 0%  | 1     |
|            | Demand-Controlled Ventilation    | 0%     | 11%    | 31% |           | 23% | 0%     | 0%  |              | 0%  | 19    |
|            | Outdoor Air Reset                | 1%     | 1%     | 1%  |           | 1%  | 1%     | 1%  |              | 1%  | 1     |
|            | High Performance Glazing dou     | 3%     | 1%     | 0%  |           | 2%  | 4%     | 3%  |              | 3%  | 3     |
|            | High Performance Glazing triple  | 11%    | 4%     | 0%  |           | 7%  | 9%     | 4%  |              | 10% | 6     |
|            | Improved wall insulation         | 3%     | 3%     | 2%  |           | 1%  | 4%     | 2%  |              | 2%  | 3'    |
|            | Improved below-grade insulatic   | 1%     | 2%     | 1%  |           | 1%  | 0%     | 1%  |              | 0%  | 1     |
|            | Improved roof insulation         | 3%     | 2%     | 5%  |           | 4%  | 2%     | 2%  |              | 2%  | . 3   |
|            | Sensible Heat Recovery           | 4%     | 23%    | 20% |           | 13% | 9%     | 0%  |              | 0%  | 17    |
|            | Pipe insulation - space heating  | 0%     | 0%     | 0%  |           | 0%  | 0%     | 0%  |              | 0%  | 0     |
|            | Energy Star washer               | 0%     | 0%     | 0%  |           | 0%  | 0%     | 0%  |              | 0%  | 0     |
|            | Swimming pool/spa covers         | 0%     | 0%     | 0%  |           | 17% | 5%     | 22% |              | 22% | 5     |
|            | Commissioning                    | 3%     | 3%     | 3%  |           | 3%  | 3%     | 3%  |              | 3%  | 3     |
|            | Retrocommissioning               | 0%     | 0%     | 0%  |           | 0%  | 0%     | 0%  |              | 0%  | 0     |
|            | Integrated Design - High Perfor  | 21%    | 21%    | 21% |           | 21% | 13%    | 21% |              | 21% | 26    |
|            | Integrated Design - High Perfor  | 2%     | 2%     | 1%  |           | 2%  | 0%     | 2%  |              | 2%  | 15    |
|            | Steam trap Maintenance           | 0%     | 0%     | 0%  |           | 0%  | 0%     | 0%  |              | 0%  | 0     |
|            | Oxygen Trim                      | 1%     | 1%     | 1%  |           | 1%  | 1%     | 1%  |              | 1%  | 1     |
| 41         | Infrared Heater                  | 0%     | 0%     | 1%  | 3%        | 0%  | 0%     | 0%  | 0%           | 0%  |       |

| NC Inte | ractions   | 1      | 2      | 3       | 4         | 5         | 6      | 7       | 8          | 9           | 10    | rank order     | interacts 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%  | 0              |                |
| 2       | Exhaust Hood Makeup Air  | 72%    | 73%    | 74%     | 74%       | 72%       | 81%    | 73%     | 82%        | 73%         | 60%   | 10             | 1,2,3,9        |
| 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  | 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%   | 3              | 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%  |                |                |
| 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%   | 2              | 1a             |
| 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%   | 5              | 1a,1,2,4       |
| 18      | Pipe insulation - water heating  | 67%    | 68%    | 68%     | 69%       | 66%       | 74%    | 67%     | 76%        | 78%         | 55%   | 7              | 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%     | 72%       | 73%       | 84%    | 76%     | 85%        | 76%         | 61%   | 6              | 1,3,4          |
| 21      | Improved heating system high efficiency unit - Tier 1                        | 77%    | 77%    | 79%     | 79%       | 77%       | 87%    | 78%     | 87%        | 78%         | 63%   | 3              |                |
| 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%     | 74%       | 73%       | 82%    | 73%     | 83%        | 73%         | 60%   |                | 1,2,3          |
| 24      | Demand-Controlled Ventilation (controller, sensor)                           | 73%    | 73%    | 75%     | 74%       | 73%       | 82%    | 73%     | 83%        | 73%         | 60%   |                | 1,2,3          |
| 25      | Outdoor Air Reset  | 72%    | 64%    | 51%     | 62%       | 54%       | 82%    | 73%     | 68%        | 73%         | 48%   |                | 1,2,3,4,5      |
| 26      | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 72%    | 65%    | 51%     | 66%       | 55%       | 81%    | 73%     | 69%        | 73%         |       | interacts with |                |
| 27      | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 72%    | 65%    | 51%     | 66%       | 55%       | 81%    | 73%     | 69%        | 73%         | 48%   | interacts with | 1,2,3,5,9      |
| 28      | Improved wall insulation   | 72%    | 65%    | 51%     | 66%       | 55%       | 81%    | 73%     | 69%        | 73%         |       | interacts with |                |
| 29      | Improved below-grade insulation  | 72%    | 65%    | 51%     | 66%       | 55%       | 81%    | 73%     | 69%        | 73%         |       | interacts with |                |
| 30      | Improved roof insulation   | 72%    | 65%    | 51%     | 66%       | 55%       | 81%    | 73%     | 69%        | 73%         |       | interacts with |                |
| 31      | Sensible Heat Recovery   | 73%    | 65%    | 52%     | 63%       | 55%       | 83%    | 75%     | 69%        | 75%         | 49%   |                | 1,3,4,5,7      |
| 32      | Pipe insulation - space heating  | 74%    | 75%    | 76%     | 76%       | 74%       | 83%    | 75%     | 84%        | 75%         | 61%   |                | 1,3,7          |
| 33      | Energy Star washer   | 67%    | 68%    | 68%     | 69%       | 66%       | 74%    | 67%     | 76%        | 78%         | 55%   |                | 1a,1,2         |
| 34      | Swimming pool/spa covers   | 67%    | 68%    | 68%     | 69%       | 66%       | 74%    | 67%     | 76%        | 78%         | 55%   | 10             | 1a,1,2         |
| 35      | Commissioning  | 77%    | 77%    | 79%     | 79%       | 77%       | 87%    | 78%     | 87%        | 78%         | 63%   | 2              | 1a             |
| 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%  |                |                |
| 38      | Integrated Design - High Performance (50% > codes) Tier 2                    | 100%   | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 100%  | 1a             | l              |
| 39      | Steam trap Maintenance   | 100%   | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 100%  |                |                |
| 40      | Oxygen Trim  | 100%   | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 100%  |                |                |
| 41      | Infrared Heater  | 100%   | 100%   | 100%    | 100%      | 100%      | 100%   | 100%    | 100%       | 100%        | 100%  |                | l              |

Interaction interim factors (prod of %savings, applicability, feasibility, and max pen)

| interir | n Interactions                   | 1      | 2      | 3   | 4         | 5   | 6      | . 7 | - 8        | 9   | 10    |
|---------|----------------------------------|--------|--------|-----|-----------|-----|--------|-----|------------|-----|-------|
|         | <u></u>                          | Office | Retail |     | Warehouse |     | Health |     | Restaurant |     | Other |
| 1       | Direct fired convection range/ov | 0%     | 5%     | 5%  |           | 5%  | 5%     | 5%  |            | 0%  | 0%    |
| 2       | Exhaust Hood Makeup Air          | 0%     | 1%     | 1%  |           | 0%  | 0%     | 0%  |            | 0%  | 0%    |
| 3       | High efficiency ENERGY STAR      | 14%    | 12%    | 12% |           | 12% | 12%    | 12% |            | 0%  | 20%   |
| 4       | High efficiency ENERGY STAR      | 0%     | 2%     | 2%  |           | 0%  | 2%     | 2%  |            | 0%  | 2%    |
| 5       | High efficiency griddle          | 3%     | 1%     | 1%  | 3%        | 1%  | 1%     | 1%  | 1%         | 0%  | 1%    |
| 6       | Pre-Rinse Spray Valve            |        |        |     |           |     |        |     |            |     |       |
| 7       | Refrigeration heat recovery      | 0%     | 0%     | 10% | 7%        | 3%  | 2%     | 1%  | 34%        | 0%  | 0%    |
| 8       | <u></u>                          |        |        |     |           |     |        |     |            |     |       |
| 9       | Cooling system chilled water re  | -1%    | -1%    | -1% |           | -1% | -1%    | -1% |            | -1% | -1%   |
| 10      | Cooling system water side ecor   | 15%    | 15%    | 15% |           | 15% | 15%    | 15% |            | 15% | 15%   |
| 11      | Cooling system oversized cooling | 2%     | 2%     | 2%  |           | 2%  | 2%     | 2%  |            | 2%  | 2%    |
| 12      | Condensing DHW stand-alone       | 11%    | 11%    | 11% | 11%       | 11% | 11%    | 11% | 11%        | 0%  | 11%   |
| 13      | Faucet aerator                   |        |        |     |           |     |        |     |            |     |       |
| 14      | Graywater heat exchanger/GF>     | 0%     | 0%     | 0%  |           | 6%  | 0%     | 4%  |            | 4%  | 3%    |
| 15      | Indirect-fired DHW off space he  | 2%     | 1%     | 2%  | 1%        | 4%  | 4%     | 4%  | 2%         | 0%  | 2%    |
| 16      | Instantaneous. High-Modulatinç   | -0.04% | 0%     | 0%  | 0%        | 0%  | 0%     | 0%  | 0%         | 0%  | 0%    |
| 17      | Low-flow shower heads            | 1%     | 0%     | 0%  | 1%        | 10% | 1%     | 6%  | 0%         | 6%  | 4%    |
| 18      | Pipe insulation - water heating  | 1%     | 1%     | 1%  | 1%        | 1%  | 1%     | 1%  | 1%         | 1%  | 1%    |
| 19      | Tank insulation                  | 0%     | 0%     | 0%  | 0%        | 0%  | 0%     | 0%  | 0%         | 0%  | 0%    |
| 20      | Air Sealing                      | 21%    | 12%    | 1%  | 7%        | 14% | 3%     | 7%  | 13%        | 7%  | 14%   |
| 21      | Improved heating system high (   | 3%     | 2%     | 2%  | 2%        | 2%  | 2%     | 2%  | 2%         | 2%  | 2%    |
| 22      | Improved heating system conde    | 1%     | 1%     | 0%  | 1%        | 1%  | 1%     | 1%  | 0%         | 1%  | 1%    |
| 23      | Programmable Thermostat          | 1%     | 1%     | 1%  | 6%        | 2%  | 0%     | 0%  | 1%         | 0%  | 1%    |
| 24      | Demand-Controlled Ventilation    | 0%     | 11%    | 31% | 11%       | 23% | 0%     | 0%  | 17%        | 0%  | 19%   |
| 25      | Outdoor Air Reset                | 1%     | 1%     | 1%  | 1%        | 1%  | 1%     | 1%  | 1%         | 1%  | 1%    |
| 26      | High Performance Glazing doul    | 3%     | 1%     | 0%  | 1%        | 2%  | 4%     | 3%  | 3%         | 3%  | 3%    |
| 27      | High Performance Glazing triple  | 11%    | 4%     | 0%  |           | 7%  | 9%     | 4%  |            | 10% | 6%    |
| 28      | Improved wall insulation         | 3%     | 3%     | 2%  |           | 1%  | 4%     | 2%  |            | 2%  | 3%    |
| 29      | Improved below-grade insulatio   | 1%     | 2%     | 1%  |           | 1%  | 0%     | 1%  |            | 0%  | 1%    |
| 30      | Improved roof insulation         | 3%     | 2%     | 5%  |           | 4%  | 2%     | 2%  |            | 2%  | 3%    |
| 31      | Sensible Heat Recovery           | 4%     | 23%    | 20% |           | 13% | 9%     | 0%  |            | 0%  | 17%   |
| 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% |            | 22% | 5%    |
| 35      | Commissioning                    | 3%     | 3%     | 3%  |           | 3%  | 3%     | 3%  |            | 3%  | 3%    |
| 36      | Retrocommissioning               | 0%     | 0%     | 0%  |           | 0%  | 0%     | 0%  |            | 0%  | 0%    |
| 37      | Integrated Design - High Perfor  | 21%    | 21%    | 21% |           | 21% | 13%    | 21% |            | 21% | 26%   |
| 38      | Integrated Design - High Perfor  | 2%     | 2%     | 1%  |           | 2%  | 0%     | 2%  |            | 2%  | 15%   |
| 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%  |           | 0%  | 0%     | 0%  |            | 0%  | 1%    |
| 41      | IIIII ai cu Healei               | 0%     | 0%     | 1%  | 3%        | 0%  | 0%     | 0%  | 0%         | 0%  | 170   |

|           | interaction or overlap factor  |        |        |            |            |            |            |            |            |             |       |            | 1                      |
|-----------|--|--------|--------|------------|------------|------------|------------|------------|------------|-------------|-------|------------|------------------------|
| RET_Inter | ractions   | 1      | 2      | 3          | 4          | 5          | 6          | . 7        | . 8        | 9           | 10    | rank order | interacts with         |
|           |  | Office | Retail | Grocery    | Warehouse  | Education  | Health     | Lodging    | Restaurant | Multifamily | Other | ļ          |                        |
| 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%  |            | 0                      |
| 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  | 84%    | 86%    | 84%        | 85%        | 77%        | 82%        | 79%        | 76%        | 94%         | 82%   |            |                        |
| 7         | Refrigeration heat recovery  | 84%    | 86%    | 84%        | 85%        | 83%        | 82%        | 83%        | 84%        | 98%         | 84%   | 9          | ,1,2,7,8               |
| 8         |  |        |        |            |            |            |            |            |            |             |       |            |                        |
| 9         | Cooling system chilled water reset   | 95%    | 95%    | 95%        | 95%        | 95%        | 95%        | 95%        | 95%        | 95%         | 95%   | 3          | 1a,1                   |
| 10        | Cooling system water side economizer   | 95%    | 95%    | 95%        | 95%        | 95%        | 95%        | 95%        | 95%        | 95%         | 95%   | 2          | 1a,1                   |
| 11        | Cooling system oversized cooling tower                                       | 98%    | 98%    | 98%        | 98%        | 98%        | 98%        | 98%        | 98%        | 98%         | 98%   |            | 1a                     |
| 12        | Condensing DHW stand-alone   | 100%   | 100%   | 100%       | 100%       | 100%       | 100%       | 100%       | 100%       | 100%        | 100%  | 1          |                        |
| 13        | Faucet aerator   | 85%    | 87%    | 86%        | 87%        | 79%        | 84%        | 81%        | 78%        | 96%         | 84%   | 6          | ,1,2,3,4               |
| 14        | Graywater heat exchanger/GFX   | 86%    | 87%    | 86%        | 87%        | 84%        | 84%        | 84%        | 86%        | 100%        | 86%   | 4          | ,1,2                   |
| 15        | Indirect-fired DHW off space heating boiler                                  | 100%   | 100%   | 100%       | 100%       | 100%       | 100%       | 100%       | 100%       | 100%        | 100%  | 2          |                        |
| 16        | Instantaneous. High-Modulating Water Heater                                  | 100%   | 100%   | 100%       | 100%       | 100%       | 100%       | 100%       | 100%       | 100%        | 100%  | 3          |                        |
| 17        | Low-flow shower heads  | 85%    | 87%    | 86%        | 87%        | 79%        | 84%        | 81%        | 78%        | 96%         | 84%   | 5          | ,1,2,4                 |
| 18        | Pipe insulation - water heating  | 86%    | 87%    | 86%        | 87%        | 84%        | 84%        | 84%        | 86%        | 100%        | 86%   | 8          | ,1,2                   |
| 19        | Tank insulation  | 86%    | 87%    | 86%        | 87%        | 84%        | 84%        | 84%        | 86%        | 100%        | 86%   | 7          | ,1,2                   |
| 20        | Air Sealing  | 88%    | 76%    | 53%        | 59%        | 58%        | 93%        | 93%        | 64%        | 93%         | 78%   | 6          | 1a,2,3,4,5             |
| 21        | Improved heating system high efficiency unit - Tier 1                        | 98%    | 98%    | 98%        | 98%        | 98%        | 98%        | 98%        | 98%        | 98%         | 98%   | 2          | 1a                     |
| 22        | Improved heating system condensing unit - Tier 2                             | 98%    | 98%    | 98%        | 98%        | 98%        | 98%        | 98%        | 98%        | 98%         | 98%   | 2          | 1a                     |
| 23        | Programmable Thermostat  | 95%    | 96%    | 95%        | 96%        | 95%        | 95%        | 95%        | 96%        | 95%         | 95%   | 3          | 1a,2                   |
| 24        | Demand-Controlled Ventilation (controller, sensor)                           | 90%    | 91%    | 92%        | 70%        | 86%        | 95%        | 95%        | 92%        | 95%         | 90%   |            | 1a,2,3                 |
| 25        | Outdoor Air Reset  | 90%    | 78%    | 54%        | 60%        | 60%        | 95%        | 95%        | 65%        | 95%         | 79%   |            | 1a,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   | 69%    | 66%    | 53%        | 54%        | 50%        | 90%        | 86%        | 55%        | 86%         | 66%   |            | 1a,2,3,4,5,6           |
| 32        | Pipe insulation - space heating  | 93%    | 94%    | 93%        | 94%        | 93%        | 93%        | 93%        | 94%        | 93%         | 93%   |            | 1a,2,5                 |
| 33        | Energy Star washer   | 100%   | 100%   | 100%       | 100%       | 100%       | 100%       | 100%       | 100%       | 100%        | 100%  |            | 0                      |
| 34        | Swimming pool/spa covers   | 86%    | 87%    | 86%        | 87%        | 84%        | 84%        | 84%        | 86%        | 100%        | 86%   |            | 1,2                    |
| 35        | Commissioning  | 100%   | 100%   | 100%       | 100%       | 100%       | 100%       | 100%       | 100%       | 100%        | 100%  |            | 1,2                    |
| 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%  |            | ۱ ،                    |
| 38        | Integrated Design - High Performance (50% > codes) Tier 2                    | 100%   | 100%   | 100%       | 100%       | 100%       | 100%       | 100%       | 100%       | 100%        | 100%  |            | 1 0                    |
| 39        | Steam trap Maintenance   | 69%    | 48%    | 39%        | 45%        | 44%        | 83%        | 90%        | 39%        | 90%         | 53%   |            | 1a,3,4,6,7,8,9         |
| 40        | Oxygen Trim  | 67%    | 47%    | 40%        | 48%        | 43%        | 82%        | 88%        | 39%        | 88%         | 53%   |            | 1a,3,4,5,6,7,8         |
| 40        | Infrared Heater  | 94%    | 94%    | 40%<br>95% | 48%<br>72% | 43%<br>89% | 82%<br>98% | 88%<br>98% | 39%<br>95% | 88%<br>98%  | 93%   | 11         | 1a,3,4,5,6,7,8<br>1a,3 |

| RET interir | m interactions                     | 1      | 2      | 3       | 4         | 5         | 6      | 7       | 8            | 9                  | 10    |
|-------------|------------------------------------|--------|--------|---------|-----------|-----------|--------|---------|--------------|--------------------|-------|
|             |                                    | Office | Retail | Grocery | Warehouse | Education | Health | Lodging | Restaurant N | <b>Nultifamily</b> | Other |
| 1           | Direct fired convection range/over | en     |        |         |           |           |        |         |              |                    |       |
| 2           | Exhaust Hood Makeup Air            | 0%     | 0%     | 0%      |           | 0%        | 0%     | 0%      |              | 0%                 | 0%    |
| 3           | High efficiency ENERGY STAR        | 0%     | 0%     | 0%      | 0%        | 0%        | 0%     | 0%      | 0%           | 0%                 | 0%    |
| 4           | High efficiency ENERGY STAR        | 0%     | 3%     | 3%      | 0%        | 0%        | 3%     | 2%      | 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           | <del>-</del> "                     |        |        |         |           |           |        |         |              |                    |       |
| 9           | Cooling system chilled water re    | 0%     | 0%     | 0%      | 0%        | 0%        | 0%     | 0%      | 0%           | 0%                 | 0%    |
| 10          | Cooling system water side ecor     | 22%    | 22%    | 22%     | 22%       | 22%       | 22%    | 22%     | 22%          | 22%                | 22%   |
| 11          | Cooling system oversized cooli     | 4%     | 4%     | 4%      | 4%        | 4%        | 4%     | 4%      | 4%           | 4%                 | 4%    |
| 12          | Condensing DHW stand-alone         | 12%    | 12%    | 12%     | 12%       | 12%       | 12%    | 12%     | 12%          | 0%                 | 12%   |
| 13          | Faucet aerator                     | 35%    | 43%    | 1%      | 43%       | 4%        | 2%     | 2%      | 1%           | 2%                 | 10%   |
| 14          | Graywater heat exchanger/GF)       | 0%     | 0%     | 0%      | 0%        | 7%        | 0%     | 4%      | 10%          | 4%                 | 3%    |
| 15          | Indirect-fired DHW off space he    | 2%     | 1%     | 2%      | 1%        | 4%        | 4%     | 4%      | 2%           | 0%                 | 29    |
| 16          | Instantaneous. High-Modulating     | 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%                 | 19    |
| 19          | Tank insulation                    | 1%     | 1%     | 1%      | 1%        | 1%        | 1%     | 1%      | 1%           | 1%                 | 19    |
| 20          | Air Sealing                        | 22%    | 13%    | 1%      |           | 14%       | 3%     | 7%      |              | 7%                 | 149   |
| 21          | Improved heating system high       | 3%     | 2%     | 2%      | 2%        | 3%        | 3%     | 3%      | 2%           | 3%                 | 29    |
| 22          | Improved heating system condi      | 1%     | 1%     | 1%      | 1%        | 1%        | 1%     | 1%      | 1%           | 1%                 | 19    |
| 23          | Programmable Thermostat            | 5%     | 4%     | 4%      | 26%       | 9%        | 0%     | 0%      | 4%           | 0%                 | 6%    |
| 24          | Demand-Controlled Ventilation      | 0%     | 15%    | 41%     |           | 31%       | 0%     | 0%      |              | 0%                 | 12%   |
| 25          | Outdoor Air Reset                  | 2%     | 2%     | 2%      |           | 2%        | 2%     | 2%      |              | 2%                 | 29    |
| 26          | High Performance Glazing dou       | 0%     | 0%     | 0%      |           | 0%        | 0%     | 0%      |              | 0%                 | 0%    |
| 27          | High Performance Glazing triple    | 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%                 | 09    |
| 30          | Improved roof insulation           | 0%     | 0%     | 0%      |           | 0%        | 0%     | 0%      |              | 0%                 | 09    |
| 31          | Sensible Heat Recovery             | 5%     | 30%    | 26%     |           | 17%       | 12%    | 0%      |              | 0%                 | 22%   |
| 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%                | 129   |
| 35          | Commissioning                      | 0%     | 0%     | 0%      |           | 0%        | 0%     | 0%      |              | 0%                 | 09    |
| 36          | Retrocommissioning                 | 2%     | 2%     | 2%      |           | 2%        | 2%     | 2%      |              | 2%                 | 2%    |
| 37          | Integrated Design - High Perfor    | 0%     | 0%     | 0%      |           | 0%        | 0%     | 0%      |              | 0%                 | 09    |
| 38          | Integrated Design - High Perfor    | 0%     | 0%     | 0%      |           | 0%        | 0%     | 0%      |              | 0%                 | 09    |
| 39          | Steam trap Maintenance             | 1%     | 1%     | 1%      |           | 1%        | 1%     | 1%      |              | 1%                 | 1%    |
| 40          | Oxygen Trim                        | 1%     | 1%     | 1%      |           | 1%        | 1%     | 1%      |              | 1%                 | 1%    |
| 41          | Infrared Heater                    | 0%     | 0%     | 4%      |           | 0%        | 0%     | 0%      |              | 0%                 | 2%    |

| Elect_Load | dshapes            |             | % of        | Annual Ene | ergy Savings       |             |          | Coincidend | 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     | <b>Peak Energy</b> | 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%        |

| MD PEN | iven Baseline Penetrations   | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11      |
|--------|--|------|------|------|------|------|------|------|------|------|------|---------|
|        |  | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |      | 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%  | 49%     |
| 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%  | 18%     |
| 5      | High efficiency griddle  | 5%   | 7%   | 9%   | 12%  | 15%  | 18%  | 22%  | 26%  | 30%  | 34%  | 18%     |
| 6      | Pre-Rinse Spray Valve  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%      |
| 7      | Refrigeration heat recovery  | 5%   | 6%   | 7%   | 8%   | 9%   | 10%  | 11%  | 12%  | 13%  | 14%  | 10%     |
| 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%   | 6%      |
| 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%  | 24%     |
| 25     | Outdoor Air Reset  | 35%  | 36%  | 37%  | 39%  | 41%  | 43%  | 45%  | 48%  | 51%  | 54%  | 43%     |
| 26     | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 24%  | 26%  | 28%  | 30%  | 33%  | 36%  | 39%  | 43%  | 47%  | 51%  | 36%     |
| 27     | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 1%   | 1%   | 2%   | 2%   | 2%   | 3%   | 4%   | 5%   | 6%   | 7%   | 3%      |
| 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   | 15%  | 16%  | 18%  | 20%  | 22%  | 24%  | 27%  | 30%  | 33%  | 37%  | 24%     |
| 32     | Pipe insulation - space heating  | 75%  | 76%  | 76%  | 77%  | 77%  | 78%  | 78%  | 79%  | 79%  | 80%  | 77%     |
| 33     | Energy Star washer   | 20%  | 50%  | 55%  | 60%  | 65%  | 75%  | 100% | 100% | 100% | 100% | 73%     |
| 34     | Swimming pool/spa covers   | 50%  | 52%  | 54%  | 56%  | 58%  | 60%  | 62%  | 64%  | 66%  | 68%  | 59%     |
| 35     | Commissioning  | 0%   | 1%   | 2%   | 3%   | 5%   | 7%   | 10%  | 13%  | 16%  | 20%  | 8%      |
| 36     | Retrocommissioning   | 0%   | 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%  | 8%      |
| 38     | Integrated Design - High Performance (50% > codes) Tier 2                    | 0%   | 1%   | 1%   | 2%   | 2%   | 3%   | 3%   | 4%   | 4%   | 5%   | 2%      |
| 39     | Steam trap Maintenance   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%      |
| 40     | Oxygen Trim  | 25%  | 26%  | 27%  | 28%  | 29%  | 30%  | 31%  | 32%  | 33%  | 34%  | 30%     |
| 41     | Infrared Heater  | 0%   | 0%   | 0%   | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 70%     |

|         | aseline Penetrations  |      |      |      |      |      |      |      |      |      |      |         |
|---------|---|------|------|------|------|------|------|------|------|------|------|---------|
| RET_PEN |   | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11      |
|         | Discretification and a second in the second | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | Avg 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%   |         |
| 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%   | 0%   | 0%      |
| 5       | High efficiency griddle   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   |         |
|         | Pre-Rinse Spray Valve   | 5%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 1%      |
| 7       | Refrigeration heat recovery   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   |         |
| 8       |   | 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%   | 5%   |         |
| 11      | Cooling system oversized cooling tower  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   |         |
| 12      | Condensing DHW stand-alone  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 13      | Faucet aerator  | 5%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 1%      |
| 14      | Graywater heat exchanger/GFX  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 15      | Indirect-fired DHW off space heating boiler   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 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%   | 0%   | 0%      |
| 18      | Pipe insulation - water heating   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 19      | Tank insulation   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 20      | Air Sealing   | 5%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 1%      |
| 21      | Improved heating system high efficiency unit - Tier 1   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 22      | Improved heating system condensing unit - Tier 2  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 23      | Programmable Thermostat   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   |         |
| 24      | Demand-Controlled Ventilation (controller, sensor)  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 25      | Outdoor Air Reset   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%      |
| 26      | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1  | 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%   |         |
| 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%   |         |
| 31      | Sensible Heat Recovery  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |
| 32      | Pipe insulation - space heating   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   |         |
| 33      | Energy Star washer  | 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%      |
| 35      | Commissioning   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%      |
| 36      | Retrocommissioning  | 5%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   |         |
| 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  | 5%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   |         |
| 40      | Oxygen Trim   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   |         |
| 41      | Infrared Heater   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 5%   | 1%      |

| Market Dr | iven Achievable Penetrations   | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | <scaler< th=""></scaler<> |
|-----------|--|------|------|------|------|------|------|------|------|------|------|---------------------------|
| 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   | 6%   | 9%   | 12%  | 16%  | 20%  | 21%  | 25%  | 29%  | 33%  | 37%  | 37% H                     |
| 2         | Exhaust Hood Makeup Air  | 41%  | 44%  | 47%  | 50%  | 53%  | 53%  | 56%  | 58%  | 60%  | 63%  | 63% H                     |
| 3         | High efficiency ENERGY STAR fryer  | 6%   | 9%   | 12%  | 16%  | 20%  | 21%  | 25%  | 29%  | 33%  | 37%  | 37% H                     |
| 4         | High efficiency ENERGY STAR steam cooker                                     | 6%   | 9%   | 12%  | 16%  | 20%  | 21%  | 25%  | 29%  | 33%  | 37%  | 37% H                     |
| 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%                        |
| 7         | Refrigeration heat recovery  | 5%   | 7%   | 8%   | 9%   | 11%  | 10%  | 12%  | 13%  | 14%  | 15%  | 15% L                     |
| 8         |  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 9         | Cooling system chilled water reset   | 33%  | 34%  | 36%  | 37%  | 38%  | 36%  | 37%  | 38%  | 38%  | 39%  | 39% M                     |
| 10        | Cooling system water side economizer   | 33%  | 34%  | 36%  | 37%  | 38%  | 36%  | 37%  | 38%  | 38%  | 39%  | 39% M                     |
| 11        | Cooling system oversized cooling tower                                       | 50%  | 51%  | 52%  | 53%  | 54%  | 55%  | 56%  | 57%  | 58%  | 59%  | 59% L                     |
| 12        | Condensing DHW stand-alone   | 6%   | 7%   | 8%   | 9%   | 11%  | 9%   | 9%   | 9%   | 10%  | 10%  | 11% H                     |
| 13        | Faucet aerator   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 14        | Graywater heat exchanger/GFX   | 1%   | 2%   | 3%   | 3%   | 4%   | 3%   | 4%   | 5%   | 7%   | 8%   | 8% L                      |
| 15        | Indirect-fired DHW off space heating boiler                                  | 1%   | 3%   | 5%   | 7%   | 9%   | 8%   | 9%   | 10%  | 11%  | 12%  | 12% H                     |
| 16        | Instantaneous. High-Modulating Water Heater                                  | 1%   | 2%   | 3%   | 3%   | 4%   | 3%   | 4%   | 5%   | 7%   | 8%   | 8% L                      |
| 17        | Low-flow shower heads  | 31%  | 33%  | 36%  | 39%  | 41%  | 41%  | 44%  | 46%  | 48%  | 50%  | 50% M                     |
| 18        | Pipe insulation - water heating  | 46%  | 46%  | 47%  | 48%  | 48%  | 47%  | 47%  | 47%  | 48%  | 48%  | 48% M                     |
| 19        | Tank insulation  | 76%  | 76%  | 76%  | 77%  | 77%  | 76%  | 76%  | 77%  | 77%  | 77%  | 77% M                     |
| 20        | Air Sealing  | 1%   | 2%   | 4%   | 6%   | 7%   | 6%   | 8%   | 9%   | 10%  | 11%  | 11% M                     |
| 21        | Improved heating system high efficiency unit - Tier 1                        | 1%   | 4%   | 8%   | 12%  | 16%  | 17%  | 20%  | 23%  | 26%  | 29%  | 29% H                     |
| 22        | Improved heating system condensing unit - Tier 2                             | 6%   | 7%   | 8%   | 9%   | 11%  | 9%   | 9%   | 9%   | 10%  | 10%  | 11% H                     |
| 23        | Programmable Thermostat  | 78%  | 78%  | 78%  | 79%  | 79%  | 78%  | 78%  | 79%  | 79%  | 79%  | 79% H                     |
| 24        | Demand-Controlled Ventilation (controller, sensor)                           | 11%  | 15%  | 19%  | 23%  | 27%  | 28%  | 31%  | 34%  | 37%  | 40%  | 40% H                     |
| 25        | Outdoor Air Reset  | 36%  | 38%  | 40%  | 43%  | 46%  | 46%  | 48%  | 51%  | 54%  | 57%  | 57% H                     |
| 26        | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 25%  | 28%  | 31%  | 34%  | 38%  | 39%  | 42%  | 46%  | 50%  | 54%  | 54% H                     |
| 27        | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 1%   | 2%   | 3%   | 3%   | 4%   | 3%   | 4%   | 5%   | 7%   | 8%   | 8% L                      |
| 28        | Improved wall insulation   | 0%   | 0%   | 1%   | 1%   | 1%   | 0%   | 0%   | 1%   | 1%   | 1%   | 1% VL                     |
| 29        | Improved below-grade insulation  | 0%   | 0%   | 1%   | 1%   | 1%   | 0%   | 0%   | 1%   | 1%   | 1%   | 1% VL                     |
| 30        | Improved roof insulation   | 0%   | 0%   | 1%   | 1%   | 1%   | 0%   | 0%   | 1%   | 1%   | 1%   | 1% VL                     |
| 31        | Sensible Heat Recovery   | 16%  | 17%  | 20%  | 23%  | 25%  | 25%  | 29%  | 32%  | 35%  | 39%  | 39% M                     |
| 32        | Pipe insulation - space heating  | 76%  | 76%  | 77%  | 78%  | 79%  | 79%  | 79%  | 80%  | 81%  | 81%  | 81% M                     |
| 33        | Energy Star washer   | 21%  | 52%  | 58%  | 64%  | 70%  | 78%  | 100% | 100% | 100% | 100% | 100% H                    |
| 34        | Swimming pool/spa covers   | 51%  | 53%  | 55%  | 58%  | 60%  | 61%  | 63%  | 65%  | 67%  | 70%  | 70% LM                    |
| 35        | Commissioning  | 0%   | 2%   | 3%   | 4%   | 7%   | 7%   | 11%  | 14%  | 17%  | 21%  | 21% L                     |
| 36        | Retrocommissioning   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 37        | Integrated Design - High Performance (30% > codes) - Tier 1                  | 1%   | 2%   | 3%   | 5%   | 7%   | 8%   | 11%  | 14%  | 17%  | 22%  | 22% LM                    |
| 38        | Integrated Design - High Performance (50% > codes) Tier 2                    | 0%   | 1%   | 2%   | 2%   | 3%   | 3%   | 3%   | 4%   | 5%   | 5%   | 5% VL                     |
| 39        | Steam trap Maintenance   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 40        | Oxygen Trim  | 26%  | 27%  | 29%  | 31%  | 32%  | 31%  | 33%  | 34%  | 35%  | 36%  | 36% M                     |
| 41        | Infrared Heater  | 1%   | 2%   | 3%   | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% H                    |

|        | iven Achievable Penetrations   | Net Penetrati | ons (Penetr | ation 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  | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | <scaler< th=""></scaler<> |
|----------|--|------|------|------|------|------|------|------|------|------|------|---------------------------|
| NC_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 Acceptant         |
| 1        | Direct fired convection range/oven   | 6%   | 9%   | 13%  | 18%  | 22%  | 22%  | 26%  | 30%  | 34%  | 39%  | 39% H                     |
| 2        | Exhaust Hood Makeup Air  | 41%  | 44%  | 48%  | 52%  | 55%  | 55%  | 57%  | 60%  | 62%  | 65%  | 65% H                     |
| 3        | High efficiency ENERGY STAR fryer  | 6%   | 9%   | 13%  | 18%  | 22%  | 22%  | 26%  | 30%  | 34%  | 39%  | 39% H                     |
| 4        | High efficiency ENERGY STAR steam cooker                                     | 6%   | 9%   | 13%  | 18%  | 22%  | 22%  | 26%  | 30%  | 34%  | 39%  | 39% H                     |
| 5        | High efficiency griddle  | 5%   | 8%   | 10%  | 14%  | 17%  | 18%  | 23%  | 27%  | 31%  | 35%  | 35% nce                   |
| 6        | Pre-Rinse Spray Valve  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 7        | Refrigeration heat recovery  | 5%   | 7%   | 8%   | 10%  | 11%  | 10%  | 12%  | 13%  | 14%  | 15%  | 15% L                     |
| 8        |  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 9        | Cooling system chilled water reset   | 34%  | 35%  | 37%  | 40%  | 42%  | 39%  | 39%  | 40%  | 41%  | 42%  | 42% H                     |
| 10       | Cooling system water side economizer   | 34%  | 35%  | 37%  | 40%  | 42%  | 39%  | 39%  | 40%  | 41%  | 42%  | 42% H                     |
| 11       | Cooling system oversized cooling tower                                       | 50%  | 52%  | 53%  | 55%  | 56%  | 55%  | 57%  | 58%  | 59%  | 60%  | 60% L                     |
| 12       | Condensing DHW stand-alone   | 6%   | 8%   | 9%   | 11%  | 13%  | 10%  | 10%  | 11%  | 11%  | 11%  | 13% H                     |
| 13       | Faucet aerator   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 14       | Graywater heat exchanger/GFX   | 2%   | 3%   | 4%   | 6%   | 7%   | 5%   | 6%   | 7%   | 9%   | 10%  | 10% M                     |
| 15       | Indirect-fired DHW off space heating boiler                                  | 1%   | 3%   | 6%   | 9%   | 11%  | 9%   | 10%  | 11%  | 12%  | 14%  | 14% H                     |
| 16       | Instantaneous, High-Modulating Water Heater                                  | 1%   | 2%   | 3%   | 4%   | 5%   | 4%   | 5%   | 6%   | 7%   | 9%   | 9% L                      |
| 17       | Low-flow shower heads  | 31%  | 34%  | 37%  | 40%  | 43%  | 42%  | 44%  | 46%  | 49%  | 51%  | 51% M                     |
| 18       | Pipe insulation - water heating  | 46%  | 47%  | 49%  | 51%  | 52%  | 49%  | 49%  | 49%  | 49%  | 50%  | 52% H                     |
| 19       | Tank insulation  | 76%  | 76%  | 77%  | 77%  | 78%  | 77%  | 77%  | 77%  | 77%  | 77%  | 78% H                     |
| 20       | Air Sealing  | 1%   | 3%   | 6%   | 9%   | 11%  | 9%   | 10%  | 11%  | 12%  | 14%  | 14% H                     |
| 21       | Improved heating system high efficiency unit - Tier 1                        | 1%   | 4%   | 9%   | 14%  | 18%  | 18%  | 21%  | 24%  | 27%  | 31%  | 31% H                     |
| 22       | Improved heating system condensing unit - Tier 2                             | 6%   | 8%   | 9%   | 11%  | 13%  | 10%  | 10%  | 11%  | 11%  | 11%  | 13% H                     |
| 23       | Programmable Thermostat  | 78%  | 78%  | 79%  | 79%  | 80%  | 79%  | 79%  | 79%  | 79%  | 79%  | 80% H                     |
| 24       | Demand-Controlled Ventilation (controller, sensor)                           | 11%  | 15%  | 20%  | 25%  | 29%  | 29%  | 32%  | 35%  | 38%  | 42%  | 42% H                     |
| 25       | Outdoor Air Reset  | 36%  | 38%  | 41%  | 45%  | 48%  | 47%  | 49%  | 52%  | 55%  | 59%  | 59% H                     |
| 26       | High Performance Glazing double pane, low-E, low conductivity frame - Tier 1 | 25%  | 28%  | 32%  | 36%  | 40%  | 40%  | 43%  | 47%  | 51%  | 56%  | 56% H                     |
| 27       | High Performance Glazing triple pane, low-E, low conductivity frame - Tier 2 | 1%   | 2%   | 3%   | 4%   | 5%   | 4%   | 5%   | 6%   | 7%   | 9%   | 9% L                      |
| 28       | Improved wall insulation   | 0%   | 1%   | 1%   | 2%   | 2%   | 0%   | 1%   | 1%   | 1%   | 1%   | 2% L                      |
| 29       | Improved below-grade insulation  | 1%   | 2%   | 3%   | 5%   | 6%   | 3%   | 3%   | 3%   | 4%   | 4%   | 6% MH                     |
| 30       | Improved roof insulation   | 0%   | 1%   | 1%   | 2%   | 2%   | 0%   | 1%   | 1%   | 1%   | 1%   | 2% L                      |
| 31       | Sensible Heat Recovery   | 16%  | 18%  | 21%  | 24%  | 27%  | 26%  | 29%  | 32%  | 36%  | 40%  | 40% M                     |
| 32       | Pipe insulation - space heating  | 76%  | 77%  | 78%  | 79%  | 80%  | 79%  | 80%  | 81%  | 81%  | 82%  | 82% H                     |
| 33       | Energy Star washer   | 21%  | 52%  | 59%  | 66%  | 72%  | 79%  | 100% | 100% | 100% | 100% | 100% H                    |
| 34       | Swimming pool/spa covers   | 51%  | 53%  | 56%  | 59%  | 61%  | 61%  | 63%  | 66%  | 68%  | 70%  | 70% LM                    |
| 35       | Commissioning  | 0%   | 2%   | 3%   | 5%   | 7%   | 7%   | 11%  | 14%  | 17%  | 21%  | 21% L                     |
| 36       | Retrocommissioning   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 37       | Integrated Design - High Performance (30% > codes) - Tier 1                  | 1%   | 3%   | 5%   | 7%   | 10%  | 9%   | 12%  | 15%  | 19%  | 23%  | 23% M                     |
| 38       | Integrated Design - High Performance (50% > codes) Tier 2                    | 0%   | 1%   | 2%   | 2%   | 3%   | 3%   | 3%   | 4%   | 5%   | 6%   | 6% VL                     |
| 39       | Steam trap Maintenance   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                        |
| 40       | Oxygen Trim  | 26%  | 28%  | 30%  | 32%  | 34%  | 32%  | 33%  | 34%  | 36%  | 37%  | 37% M                     |
| 41       | Infrared Heater  | 1%   | 2%   | 4%   | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% H                    |

|        | struction Achievable Penetrations  | Net Penetrati | ons (Peneti | ation above | 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 |

|         | chievable Penetrations   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |    | <scaler< th=""><th>1</th></scaler<> | 1          |
|---------|--|------|------|------|------|------|------|------|------|------|----|-------------------------------------|------------|
| RET_PEN | _TECH  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 | 11                                  | 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%                                  |            |
| 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%   | 0% | 0%                                  | VL         |
| 5       | High efficiency griddle  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 6       | 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%                                  |            |
| 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%                                  |            |
| 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%   | 0% | 0%                                  |            |
| 18      | Pipe insulation - water heating  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 19      | Tank insulation  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  | Н          |
| 20      | Air Sealing  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 21      | Improved heating system high efficiency unit - Tier 1                        | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 22      | Improved heating system condensing unit - Tier 2                             | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 23      | Programmable Thermostat  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  | Н          |
| 24      | Demand-Controlled Ventilation (controller, sensor)                           | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 25      | Outdoor Air Reset  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  | Н          |
| 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%                                  |            |
| 32      | Pipe insulation - space heating  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 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%                                  | l          |
| 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%                                  | 1          |
| 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%                                  |            |
| 40      | Oxygen Trim  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  |            |
| 41      | Infrared Heater  | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0%   | 0% | 0%                                  | JL         |

| Retrofit Ac | chievable Penetrations   | Net Penetral | tions (Penet | ration above | e baseline) |        |
|-------------|--|--------------|--------------|--------------|-------------|--------|
| RET_PEN_    | TECH   | 1            | 2            | 3            | 4           | 5      |
|             |  | 2007         | 2008         | 2009         | 2010        | 2011   |
|             | Direct fired convection range/oven   |              |              |              |             |        |
|             | Exhaust Hood Makeup Air  |              |              |              |             |        |
|             | High efficiency ENERGY STAR fryer  |              |              |              |             |        |
|             | High efficiency ENERGY STAR steam cooker                                     | 0.00125      | 0.0025       | 0.0035       | 0.005       | 0.0075 |
|             | High efficiency griddle  |              |              |              |             |        |
| 6           | Pre-Rinse Spray Valve  | 0.005        | 0.01         | 0.015        | 0.02        | 0.03   |
| 7           | Refrigeration heat recovery  | 0.0025       | 0.0035       | 0.0045       | 0.005       | 0.005  |
| 8           |  |              |              |              |             |        |
| 9           | Cooling system chilled water reset   | 0.005        | 0.01         | 0.015        | 0.02        | 0.03   |
| 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  |              |              |              |             |        |
| 36          | Retrocommissioning   | 0.005        | 0.01         | 0.015        | 0.02        | 0.03   |
| 37          | Integrated Design - High Performance (30% > codes) - Tier 1                  |              |              |              |             |        |
| 38          | Integrated Design - High Performance (50% > codes) Tier 2                    |              |              |              |             |        |
|             | Steam trap Maintenance   | 0.005        | 0.01         | 0.015        | 0.02        | 0.03   |
| 40          | Oxygen Trim  | 0.0035       | 0.005        | 0.0075       | 0.01        | 0.0125 |
| 41          | Infrared Heater  | 0.0025       | 0.0035       | 0.0045       | 0.005       | 0.005  |