**Commercial Measure Savings Estimate Template**

***You may use this Energy Savings Estimate Supporting Documentation tool to submit supporting documentation for the energy savings estimates indicated in your application’s proposed measure(s) to meet the supporting documentation requirement.***

|  |  |  |
| --- | --- | --- |
| *Description of Measure* | | |
| *Equation(s) Used to Calculate Energy Savings*  … | | |
| *Source and/or Justification of Above Equation(s)*  … | | |
| *Calculated Result*  … | | |
| *List of Variables* | *Description of Variable’s Meaning* | *Quantity Assumed/Used, Justification* |
| … | … | … |
| … | … | … |
| … | … | … |
| … | … | … |
| … | Add more rows if necessary… | … |

|  |  |  |
| --- | --- | --- |
| *Materials Cost* | *Labor Cost* | *Total Measure Cost* |
| … | … | … |

|  |
| --- |
| *Simple Payback (years)* |
| … |

***Below are examples of two different measures (boiler tune-up, attic insulation) to assist you with completing the Commercial Measure Savings Estimate Template.***

**Commercial Measure Savings Estimate: Sample HVAC Project**

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| *Description of Measure*  Boiler Tune-up | | |
| *Equation(s) Used to Calculate Energy Savings*  ΔMMBTU = CAP \* HOURS \* (1/EFFbase – 1/EFFee) / 1,000,000 | | |
| *Source and/or Justification of Above Equation(s)*  Mid-Atlantic TRM v9, pg 443  This equation is prescribed for use when a boiler is replaced, but a boiler tune-up can be modeled mathematically as a replacement. | | |
| *Calculated Result*  ΔMMBTU = 600,000 \* 256 \* (1/0.56 – 1/0.8) / 1,000,000 = **82.29 MMBTU/yr** | | |
| *List of Variables* | *Description of Variable’s Meaning* | *Quantity Assumed/Used, Justification* |
| CAP | Equipment capacity [BTU/h] | 600,000; equipment specification |
| HOURS | Full load heating hours | 256; TRM pg 590: multifamily, common area; Baltimore, MD |
| EFFbase | Efficiency before tune-up; expressed in Et (Thermal efficiency) | 56%; measured w/ combustion analyzer |
| EFFee | Efficiency after tune-up; expressed in Et (Thermal efficiency) | 80%; measured w/ combustion analyzer |
| 1,000,000 | Conversion between BTU and MMBTU | - |

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| --- | --- | --- |
| *Materials Cost* | *Labor Cost* | *Total Measure Cost* |
|  |  |  |

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| --- |
| *Simple Payback (years)* |
|  |

**Sample Weatherization Project**

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| --- | --- | --- |
| *Description of Measure*  Attic Insulation | | |
| *Month of Installation*  January 2023 | | |
| *Equation(s) Used to Calculate Energy Savings*  ΔkWh(cooling) = ((1/Rexist – 1/Rnew) \* CDH \* DUA \* Area) / 1,000 / ηCool \* Adjcool  ΔMMBTU = ((1/Rexist – 1/Rnew) \* HDD \* 24 \* Area) / 1,000,000 / ηHeat \* Adjheat | | |
| *Source and/or Justification of Above Equation(s)*  Mid-Atlantic TRM pg 264  Equation intended for residential use, but choosing to use for this commercial application | | |
| *Calculated Result*  ΔkWh(cooling) = ((1/5 – 1/56) \* 9616 \* 0.75 \* 9000) / 1,000 / 9 \* 0.8 = 1050.9 kWh  ΔMMBTU = ((1/5 – 1/56) \* 3457 \* 24 \* 9000) / 1,000,000 / 0.4368 \* 0.6 = 186.8 MMBTU | | |
| *List of Variables* | *Description of Variable’s Meaning* | *Quantity Assumed/Used, Justification* |
| Rexist | R value of insulation present before retrofit | 5; preexisting insulation not present, so R5 is assumed |
| Rnew | R value of insulation installed | 56; 16 inches blown-in cellulose |
| CDH | Cooling Degree Hours | 9,616; given for Baltimore on TRM pg 261 |
| DUA | Discretionary Use Adjustment… | 0.75; recommended on pg 261 |
| Area | Square footage covered by new insulation | 9,000; taken from floor plan, verified via volume of insulation used |
| ηCool | Efficiency in SEER of AC equipment | 9; known unit specifications |
| Adjcool | “Adjusts savings derived through engineering algorithms to actual savings measured in field.” | 0.8; TRM pg 261 |
| HDD | Heating Degree Days | 3,457; given for Baltimore on TRM pg 262 |
| ηHeat | Efficiency in of Heating Equipment (equipment efficiency \* distribution efficiency) | 56% \* 78% = 43.68%  56% equipment efficiency (measured)  78% dist. efficiency (assumed, TRM pg 264) |
| Adjheat | “Factor adjusts predicted values from engineering estimates to better match the actual values as measured in the field.” | 0.60; assumption supplied on pg 265 of TRM |

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| *Materials Cost* | *Labor Cost* | *Total Measure Cost* |
| … | … | … |

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| --- |
| *Simple Payback (years)* |
| … |