

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Commission Review of Numeric
Conservation Goals (Duke Energy
Florida, LLC).

Docket No. 20190018-EG

Filed: July 5, 2019

**DUKE ENERGY FLORIDA, LLC'S RESPONSE TO
STAFF'S SEVENTH SET OF INTERROGATORIES (NOS. 84-89)**

Duke Energy Florida, LLC ("DEF") incorporates the objections filed contemporaneously with this response and responds to the Staff of the Florida Public Service Commission's ("Staff") Seventh Set of Interrogatories to DEF (Nos. 84-89) as follows:

INTERROGATORIES

84. Please answer the following questions related to the growth of solar.
- a. Are the solar programs cost-effective?
 - b. Did any growth that occurred in customer-owned solar happen without incentives?

Answer:

- a. DEF's DSM portfolio does not currently include any solar programs. DEF's solar programs through DSM ended after 2015.
- b. All of the growth in customer-owned solar since 2015 occurred without utility incentives.

85. What tools are employed to determine energy performance levels?

Answer:

DEF needs clarification regarding what this question is referring to in order to provide a response.

86. Please use the following charts to identify the number of newly installed Solar PV systems which were interconnected and the number of Solar PV program participants within each of the identified calendar years. The response should be limited to the activity for each year, not cumulative.

Residential Customer-Owned Solar PV systems which were interconnected

Year	Installed Customer-Owned Solar PV systems which were interconnected	Solar PV program participants
2017		
2018		
2019		
Total		

Business/Commercial Customer-Owned Solar PV systems which were interconnected

Year	Installed Customer-Owned Solar PV systems which were interconnected	Solar PV program participants
2017		
2018		
2019		
Total		

Answer:

Please see the below charts for the number of newly installed Solar PV systems for 2017, 2018, and April 2019 YTD.

As DEF did not have any solar DSM programs in 2017, 2018, or YTD 2019, there were no solar PV program participants during this time period.

Residential Customer-Owned Solar PV systems which were interconnected

Year	Installed Customer-Owned Solar PV systems which were interconnected	Solar PV program participants
2017	2,991	0
2018	5,060	0
2019*	2,928	0
Total	10,979	0

*thru April 2019

Business/Commercial Customer-Owned Solar PV systems which were interconnected

Year	Installed Customer-Owned Solar PV systems which were interconnected	Solar PV program participants
2017	34	0
2018	19	0

2019*	21	0
Total	74	0

*thru April 2019

87. Did the Utility, as part of its screening methodology to calculate Economic and/or Achievable Potential, exclude any measure(s) based on a Participants Test screening without first including the benefits of utility incentives? If yes, please perform a new cost-effectiveness screening evaluation of the Economic and Achievable Potential without this screening step, adding back in those measures previously excluded by it. As part of this response, provide the following:

- a. Please explain the reason for originally including that screening step and identify where in the process it was included in each of the cost-effectiveness pathways.
- b. Please state the number of measures originally excluded by the Participants Test screening without incentives, by customer class, for each of the cost-effectiveness pathways. As part of this response, please complete the table below and provide an electronic version in Excel format.

Number of Measures Screened Out by No Incentive PCT Screening Step			
[RIM or TRC]			
Customer Class	Energy Efficiency	Demand Response	Renewable Energy
Residential			
Commercial			
Industrial			
Total			

- c. Provide a list of the measures originally excluded by the Participants Test Screening without incentives for each of the cost-effectiveness pathways and provide each measure's associated technical potential demand and energy savings. As part of this response, please complete the table below and provide an electronic version in Excel format.

Technical Potential - Measures Screened Out by No Incentive PCT Screening Step					
[RIM or TRC]					
Customer Class	Measure Type	Measure Name	Summer Peak (MW)	Winter Peak (MW)	Annual Energy (GWh)

- d. Please provide the revised Economic Potential values by cost-effectiveness pathway, rate class, and demand/energy savings category. As part of this response, please complete the table below and provide an electronic version in Excel format.

2020-2029 Economic Potential – Excluding No Incentive PCT Screening Step						
Customer Class	RIM Portfolio			TRC Portfolio		
	Summer (MW)	Winter (MW)	Energy (GWh)	Summer (MW)	Winter (MW)	Energy (GWh)
Residential						
Com & Ind						
Total						

- e. Please provide the revised Achievable Potential values by cost-effectiveness test, rate class, and demand/energy savings. As part of this response, please complete the table below and provide an electronic version in Excel format.

2020-2029 Achievable Potential – Excluding No Incentive PCT Screening Step						
Customer Class	RIM Portfolio			TRC Portfolio		
	Summer (MW)	Winter (MW)	Energy (GWh)	Summer (MW)	Winter (MW)	Energy (GWh)
Residential						
Com & Ind						
Total						

- f. For those previously excluded measures, provide the number of measures that now pass or fail after exclusion of that screening step at the Economic and/or Achievable Potential for each of the cost-effectiveness pathways by customer class. As part of this response, please complete the table below and provide an electronic version in Excel format.

Status of Measures Previously Excluded By No Incentive PCT Screening Step								
Customer Class	Economic Potential				Achievable Potential			
	RIM		TRC		RIM		TRC	
	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
Residential								
Commercial								
Industrial								

- g. For those previously excluded measures, provide a list of measures that now pass and fail in the Economic and/or Achievable Potential for each of the cost-effectiveness pathways. Please include the customer class of the measure, the measure's name, the cost-effectiveness test results, estimated seasonal peak demand and annual energy savings and reason for failure (if applicable). As part of this response, please complete the table below and provide an electronic version in Excel format.

Previously Excluded Measures							
Passing Measures – Excluding No Incentive PCT Screening Step							
[Economic Potential or Achievable Potential] – [TRC or RIM]							
Customer Class	Measure Name	TRC	RIM	PCT	Summer (MW)	Winter (MW)	Energy (GWh)

Previously Excluded Measures								
Failing Measures – Excluding No Incentive PCT Screening Step								
[Economic Potential or Achievable Potential] – [TRC or RIM]								
Customer Class	Measure Name	TRC	RIM	PCT	Summer (MW)	Winter (MW)	Energy (GWh)	Reason For Failure

- h. Please explain whether the removal of the screening step impacted the savings of any other measures. If so, explain how and provide the revised results of any impacted measures by cost-effectiveness pathway including the customer class of the measure, the measure’s name, the cost-effectiveness test results, estimated seasonal peak demand and annual energy savings and reason for failure (if applicable). As part of this response, please complete the table below and provide an electronic version in Excel format.

Impacted Measures							
Passing Measures – Excluding No Incentive PCT Screening Step							
[Economic Potential or Achievable Potential] – [TRC or RIM]							
Customer Class	Measure Name	TRC	RIM	PCT	Summer (MW)	Winter (MW)	Energy (GWh)

Impacted Measures								
Failing Measures – Excluding No Incentive PCT Screening Step								
[Economic Potential or Achievable Potential] – [TRC or RIM]								
Customer Class	Measure Name	TRC	RIM	PCT	Summer (MW)	Winter (MW)	Energy (GWh)	Reason For Failure

Answer:

- a. Yes, as described in Section 6.1.2 of Nexant’s Market Potential Study for DEF, the Economic Potential (EP) cost-effectiveness measure screening did not include consideration of utility incentives or utility program costs for any of the test perspectives (Ratepayer Impact Measure (RIM), Total Resource Cost (TRC), Participant Cost Test (PCT), or 2-year payback) as the EP assumes 100% market adoption of all cost-effective measures without consideration of the effect of utility-sponsored programs. The PCT screening step was included in both the RIM scenario and TRC scenario as the PCT is one

of the three tests specified in the Florida Cost-Effectiveness Manual for evaluating DSM measures.

As described in DEF’s response to Staff Interrogatory No. 9b and 9c, the Participant Test screening was performed as the second step for both the RIM and TRC scenarios, after the measures were analyzed from the RIM test perspective and TRC test perspective, respectively, and prior to the 2-year payback screening. DEF screened out measures that did not pass the PCT absent the application of incentives in the preliminary economic screening and those measures were not included in the measures provided to Nexant for Economic Potential modeling. DEF believes that it was appropriate to screen these measures out at this point because, as stated above, this treatment was consistent with the other EP screening tests that did not consider utility program costs or incentives. These measures were not re-considered for the AP screening because generally these are not measures that DEF would promote to customers. These measures will not provide economic benefits to program participants unless the cost is subsidized by non-participants and DEF is concerned that including these measures in programs could be misleading to customers as customers may expect higher bill savings than they may actually achieve. It should be noted that almost all of these measures are Heating, Ventilation, and Air-Conditioning (HVAC) measures, and there are other HVAC measures in the goals that are more cost effective for customers.

- b. The following table lists the number of unique measures originally excluded during the EP screen based on the PCT results. This table is also provided in the “Staff ROG 87” tab in the attached Microsoft Excel workbook.

Number of Measures Screened Out by No Incentive PCT Screening Step			
[RIM]			
Customer Class	Energy Efficiency	Demand Response	Renewable Energy
Residential	30	0	1
Commercial	18	0	0
Industrial	0	0	0
Total	48	0	1

Number of Measures Screened Out by No Incentive PCT Screening Step			
[TRC]			
Customer Class	Energy Efficiency	Demand Response	Renewable Energy
Residential	8	0	0
Commercial	2	0	0
Industrial	0	0	0
Total	10	0	0

- c. The table listing the measures originally excluded during the EP screen based on the Participant Test results and the Technical Potential (TP) for each is provided in the “Staff ROG 87” tab in the attached Microsoft Excel workbook.
- d. DEF restates and incorporates its objections to this request submitted on July 5, 2019.
- e. DEF restates and incorporates its objections to this request submitted on July 5, 2019.
- f. The following table lists the number of measures originally excluded during the EP screen based on the Participant Cost Test (PCT) results that now pass or fail the EP screening without consideration of the PCT. The number of measures passing or failing the AP screen includes the application of the PCT with the inclusion of the maximum incentive calculated as described in Section 7.1.1 of Nexant’s Market Potential Study for DEF. This table is also provided in the “Staff ROG 87” tab in the attached Microsoft Excel workbook.

Status of Measures Previously Excluded By No Incentive PCT Screening Step								
Customer Class	Economic Potential				Achievable Potential			
	RIM		TRC		RIM		TRC	
	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
Residential	31	0	8	0	7	24	7	1
Commercial	18	0	2	0	2	16	2	0
Industrial	0	0	0	0	0	0	0	0

- g. DEF restates and incorporates its objections to this request submitted on July 5, 2019. Without waiving its objections, the tables for the EP and AP for each of the cost-effectiveness pathways for the previously excluded measures with customer class of the measure, the measure’s name, the cost-effectiveness test results, and reason for failure (where applicable) are provided in the “Staff ROG 87” tab in the attached pdf and Microsoft Excel workbook bearing bates number 20190018-DEF-0041234 through 20190018-DEF-0041346. The AP screen includes the application of the PCT with the inclusion of the maximum incentive calculated as described in Section 7.1.1 of Nexant’s Market Potential Study for DEF.

Because each unique measure was split into measure permutations by segment and vintage for the analysis, and some segments and vintages had varying savings or costs, the measure results provided are for the individual permutations of each measure.

- h. DEF restates and incorporates its objections to this request submitted on July 5, 2019.
88. Please refer to DEF’s response to Interrogatory No. 18 and the tab titled “Staff ROG18_EP” in the Microsoft Excel file submitted as an attachment to DEF’s response to Staff’s First Set of Interrogatories (Nos. 1-33).

- a. Please explain why some measure permutations that pass the Economic Potential screening have zero demand or energy savings. As part of your response, please explain how the TRC, RIM, and PCT cost-effectiveness tests were calculated without demand or energy savings.
- b. Please refer to cells B11 to L11 and B17 to L17. Please explain how the E_SF_Spray Foam Insulation (Base R2) measure permutation, which has demand and energy savings attributed to it, and the N_SF_Spray Foam Insulation (Base R2) measure permutation, which has zero demand and energy savings attributed to it, can have the same TRC, RIM, and PCT test ratios?

RESPONSE

- a. The energy and demand savings that were provided in the tab titled “Staff ROG18_EP” are the TEA-POT model outputs summarizing the total Economic Potential (EP) estimated for each measure permutation. Permutations that passed the EP screening but have zero demand or energy savings may have this result for a few different reasons including:
 - The measures may be competing with other measures for the same end-use or equipment type, and the competing measure captures all of the available potential;
 - The measures may have low or no applicability to the particular vintage or customer segment being modeled

The EP output values listed in the “Staff ROG18_EP” tab are not the measure savings inputs used for the TRC, RIM, and PCT tests. These tests apply the per-unit savings value for each measure permutation, as provided in response to SACE’s first request for Production of Documents No. 2.

- b. As described in the response above, the energy and demand savings that were provided in “Staff ROG18_EP” tab are output values from the TEA-POT model that identify the total EP for each permutation, while the TRC, RIM, and PCT tests were calculated based on per-unit input values. In the case of the Spray Foam Insulation (Base R2) measure, the applicability for new construction was estimated as zero because a R2 baseline is below current Florida Building Code; therefore, there is no potential for this measure as it applies to new construction.
89. Please refer to DEF’s response to Interrogatory No. 18 and the tab titled “Staff ROG18_AP” in the Microsoft Excel file submitted as an attachment to DEF’s response to Staff’s First Set of Interrogatories (Nos. 1-33). Please explain why some measure permutations that pass the Achievable Potential screening have zero demand or energy savings. As part of your response, please explain how the TRC, RIM, and PCT cost-effectiveness tests were calculated without demand or energy savings.

Answer:

The energy and demand savings that were provided in the tab titled “Staff ROG18_AP” are the TEA-POT model outputs summarizing the total Achievable Potential (AP) estimated for each measure permutation. Permutations that passed the AP screening but have zero demand or energy savings may have this result for a few different reasons including:

- The measures may be competing with other measures for the same end-use or equipment type, and the competing measure captures all of the available potential;
- The measures may have low or no applicability to the particular vintage or customer segment being modeled

The AP output values listed in the “Staff ROG18_AP” tab are not inputs used for the TRC, RIM, and PCT tests. These tests apply the per-unit savings value for each measure permutation, as provided in response to SACE’s first request for Production of Documents No. 3.

AFFIDAVIT

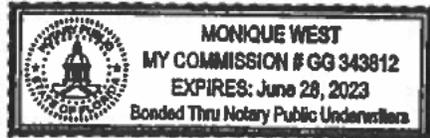
STATE OF FLORIDA

COUNTY OF PINELLAS

I hereby certify that on this 3rd day of July, 2019, before me, an officer duly authorized in the State and County aforesaid to take acknowledgments, personally appeared LORI CROSS, who is personally known to me, and she acknowledged before me that she provided the answers to interrogatory numbers 84, 85, 86, and 87a, from STAFF'S SEVENTH SET OF INTERROGATORIES TO DUKE ENERGY FLORIDA, LLC (NOS. 84-89) in Docket No. 20190018-EG, and that the responses are true and correct based on her personal knowledge.

In Witness Whereof, I have hereunto set my hand and seal in the State and County aforesaid as of this 3rd day of July, 2019.

Lori G. Cross
Lori Cross



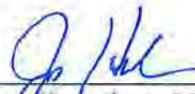
Monique West
Notary Public
State of Florida, at Large

My Commission Expires:

DECLARATION

I sponsored the answers to Interrogatory Nos. 87-89 from the Florida Public Service Commission Staff's Seventh Set of Interrogatories to Duke Energy Florida, LLC in Docket No. 20190018-EG, and the response is true and correct based on my personal knowledge.

Under penalties of perjury, I declare that I have read the foregoing declaration and the interrogatory answers identified above, and that the facts stated therein are true.



Jim Herndon, Vice President, Strategic &
Planning Consulting, Nexant

Date: 7/2/19

87-b.

Number of Measures Screened Out by No Incentive PCT Screening Step			
[RIM]			
Customer Class	Energy Efficiency	Demand Response	Renewable Energy
Residential	30	0	1
Commercial	18	0	0
Industrial	0	0	0
Total	48	0	1

Number of Measures Screened Out by No Incentive PCT Screening Step			
[TRC]			
Customer Class	Energy Efficiency	Demand Response	Renewable Energy
Residential	8	0	0
Commercial	2	0	0
Industrial	0	0	0
Total	10	0	0

87-c.

Technical Potential - Measures Screened Out by No Incentive PCT Screening S		
[RIM]		
Customer Class	Measure Type	Measure Name
Residential	HVAC	15 SEER Air Source Heat Pump
Residential	HVAC	15 SEER Central AC
Residential	HVAC	16 SEER Air Source Heat Pump
Residential	HVAC	16 SEER Central AC
Residential	HVAC	17 SEER Air Source Heat Pump
Residential	HVAC	17 SEER Central AC
Residential	HVAC	18 SEER Air Source Heat Pump
Residential	HVAC	18 SEER Central AC
Residential	HVAC	21 SEER Air Source Heat Pump
Residential	HVAC	21 SEER Air Source Heat Pump from base electric resistance heating
Residential	HVAC	21 SEER Central AC
Residential	HVAC	Ground Source Heat Pump (GSHP)
Residential	HVAC	Variable Refrigerant Flow (VRF) HVAC Systems
Residential	HVAC	Ceiling Insulation (R19 to R38)
Residential	HVAC	Ceiling Insulation (R30 to R38)
Residential	HVAC	Duct Insulation
Residential	HVAC	Energy Star Certified Roof Products
Residential	HVAC	Energy Star Door
Residential	HVAC	Energy Star Windows
Residential	HVAC	Floor Insulation
Residential	HVAC	Green Roof
Residential	HVAC	HVAC ECM Motor
Residential	HVAC	Radiant Barrier
Residential	HVAC	Sealed crawlspace
Residential	HVAC	Spray Foam Insulation (Base: R12)
Residential	HVAC	Spray Foam Insulation (Base: R19)
Residential	HVAC	Spray Foam Insulation (Base: R2)
Residential	HVAC	Spray Foam Insulation (Base: R30)
Residential	HVAC	Storm Door
Residential	HVAC	Wall Insulation
Commercial	HVAC	Geothermal Heat Pump
Commercial	HVAC	High Efficiency Chiller (Water cooled-centrifugal, 200 tons)
Commercial	HVAC	High Efficiency Chiller (Water cooled-positive displacement, 100 tons)
Commercial	HVAC	High Efficiency DX 135k- less than 240k BTU
Commercial	Domestic Hot Water	Drain Water Heat Recovery

Commerial	HVAC	Ceiling Insulation(R12 to R38)
Commerial	HVAC	Ceiling Insulation(R19 to R38)
Commerial	HVAC	Ceiling Insulation(R30 to R38)
Commerial	HVAC	Cool Roof
Commerial	HVAC	Duct Insulation
Commerial	HVAC	Energy Recovery Ventilation System (ERV)
Commerial	HVAC	Floor Insulation
Commerial	HVAC	Green Roof
Commerial	HVAC	Infiltration Reduction - Air Sealing
Commerial	HVAC	Low U-Value Windows
Commerial	HVAC	Roof Insulation
Commerial	HVAC	Waterside Economizer
Commerial	HVAC	Window Sun Protection

Residential	Storage	Battery Storage from PV System
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Technical Potential - Measures Screened Out by No Incentive PCT Screening S		
[TRC]		
Customer Class	Measure Type	Measure Name
Residential	HVAC	15 SEER Central AC
Residential	HVAC	16 SEER Central AC
Residential	HVAC	Variable Refrigerant Flow (VRF) HVAC Systems
Residential	HVAC	Ceiling Insulation (R19 to R38)
Residential	HVAC	Energy Star Door
Residential	HVAC	Energy Star Windows
Residential	HVAC	Radiant Barrier
Residential	HVAC	Spray Foam Insulation (Base: R2)
Commercial	HVAC	High Efficiency DX 135k- less than 240k BTU
Commercial	HVAC	Energy Recovery Ventilation System (ERV)

Commercial
Residential

rtial - RIM

Previously Excluded Measures									
Passing Measures – Excluding No Incentive PCT Screening Step									
[Economic Potential] – [RIM]									
Measure Name	Segment	Vintage	*Measure Name	TRC	RIM	PCT	Summer (MW)	Winter (MW)	Energy (GWh)
15 SEER Air Source Heat Pump	Multi-Family	Turnover	T MF 15 SE	0.97	1.22	0.79			
15 SEER Air Source Heat Pump	Manufactured	Turnover	T MH 15 SE	0.93	1.22	0.76			
15 SEER Air Source Heat Pump	Multi-Family	New	N MF 15 SE	0.97	1.22	0.79			
15 SEER Air Source Heat Pump	Manufactured	New	N MH 15 SE	0.93	1.22	0.76			
15 SEER Central AC	Multi-Family	Turnover	T MF 15 SE	1.09	1.10	0.99			
15 SEER Central AC	Manufactured	Turnover	T MH 15 SE	0.99	1.10	0.90			
15 SEER Central AC	Multi-Family	New	N MF 15 SE	1.09	1.10	0.99			
15 SEER Central AC	Manufactured	New	N MH 15 SE	0.99	1.10	0.90			
16 SEER Air Source Heat Pump	Single Family	Turnover	T SF 16 SE	0.99	1.22	0.81			
16 SEER Air Source Heat Pump	Multi-Family	Turnover	T MF 16 SE	0.73	1.22	0.59			
16 SEER Air Source Heat Pump	Manufactured	Turnover	T MH 16 SE	0.61	1.22	0.50			
16 SEER Air Source Heat Pump	Single Family	New	N SF 16 SE	0.99	1.22	0.81			
16 SEER Air Source Heat Pump	Multi-Family	New	N MF 16 SE	0.73	1.22	0.59			
16 SEER Air Source Heat Pump	Manufactured	New	N MH 16 SE	0.61	1.22	0.50			
16 SEER Central AC	Multi-Family	Turnover	T MF 16 SE	1.04	1.10	0.95			
16 SEER Central AC	Manufactured	Turnover	T MH 16 SE	0.95	1.10	0.86			
16 SEER Central AC	Multi-Family	New	N MF 16 SE	1.04	1.10	0.95			
16 SEER Central AC	Manufactured	New	N MH 16 SE	0.95	1.10	0.86			
17 SEER Air Source Heat Pump	Single Family	Turnover	T SF 17 SE	0.86	1.22	0.71			
17 SEER Air Source Heat Pump	Multi-Family	Turnover	T MF 17 SE	0.65	1.22	0.53			
17 SEER Air Source Heat Pump	Manufactured	Turnover	T MH 17 SE	0.54	1.22	0.44			
17 SEER Air Source Heat Pump	Single Family	New	N SF 17 SE	0.86	1.22	0.71			
17 SEER Air Source Heat Pump	Multi-Family	New	N MF 17 SE	0.65	1.22	0.53			
17 SEER Air Source Heat Pump	Manufactured	New	N MH 17 SE	0.54	1.22	0.44			
17 SEER Central AC	Single Family	Turnover	T SF 17 SE	0.67	1.10	0.61			
17 SEER Central AC	Multi-Family	Turnover	T MF 17 SE	0.61	1.10	0.56			
17 SEER Central AC	Manufactured	Turnover	T MH 17 SE	0.41	1.10	0.38			
17 SEER Central AC	Single Family	New	N SF 17 SE	0.67	1.10	0.61			
17 SEER Central AC	Multi-Family	New	N MF 17 SE	0.61	1.10	0.56			
17 SEER Central AC	Manufactured	New	N MH 17 SE	0.41	1.10	0.38			
18 SEER Air Source Heat Pump	Single Family	Turnover	T SF 18 SE	0.80	1.22	0.65			
18 SEER Air Source Heat Pump	Multi-Family	Turnover	T MF 18 SE	0.54	1.22	0.44			
18 SEER Air Source Heat Pump	Manufactured	Turnover	T MH 18 SE	0.49	1.22	0.40			
18 SEER Air Source Heat Pump	Single Family	New	N SF 18 SE	0.80	1.22	0.65			
18 SEER Air Source Heat Pump	Multi-Family	New	N MF 18 SE	0.54	1.22	0.44			

Economic Potential - RIM

Previously Excluded Measures				
Failing Measures – Excluding No Incentive PCT Screening Step				
[Economic Potential] – [RIM]				
Customer Class	Measure Name	Segment	Vintage	*Measure Name
	NONE			

18 SEER Air Source Heat Pump	Manufactured	New	N MH 18 SE	0.49	1.22	0.40			
18 SEER Central AC	Single Family	Turnover	T SF 18 SE	0.59	1.10	0.54			
18 SEER Central AC	Multi-Family	Turnover	T MF 18 SE	0.50	1.10	0.45			
18 SEER Central AC	Manufactured	Turnover	T MH 18 SE	0.37	1.10	0.33			
18 SEER Central AC	Single Family	New	N SF 18 SE	0.59	1.10	0.54			
18 SEER Central AC	Multi-Family	New	N MF 18 SE	0.50	1.10	0.45			
18 SEER Central AC	Manufactured	New	N MH 18 SE	0.37	1.10	0.33			
21 SEER Air Source Heat Pump	Single Family	Turnover	T SF 21 SE	0.75	1.22	0.61			
21 SEER Air Source Heat Pump	Multi-Family	Turnover	T MF 21 SE	0.48	1.22	0.39			
21 SEER Air Source Heat Pump	Manufactured	Turnover	T MH 21 SE	0.47	1.22	0.38			
21 SEER Air Source Heat Pump	Single Family	New	N SF 21 SE	0.75	1.22	0.61			
21 SEER Air Source Heat Pump	Multi-Family	New	N MF 21 SE	0.48	1.22	0.39			
21 SEER Air Source Heat Pump	Manufactured	New	N MH 21 SE	0.47	1.22	0.38			
21 SEER ASHP from base electric resistance heating	Single Family	Turnover	T_SF_21 SE	1.00	1.22	0.82			
21 SEER ASHP from base electric resistance heating	Multi-Family	Turnover	T_MF_21 SE	0.65	1.22	0.53			
21 SEER ASHP from base electric resistance heating	Manufactured	Turnover	T_MH_21 SE	0.62	1.22	0.51			
21 SEER ASHP from base electric resistance heating	Single Family	New	N_SF_21 SE	1.00	1.22	0.82			
21 SEER ASHP from base electric resistance heating	Multi-Family	New	N_MF_21 SE	0.65	1.22	0.53			
21 SEER ASHP from base electric resistance heating	Manufactured	New	N_MH_21 SE	0.62	1.22	0.51			
21 SEER Central AC	Single Family	Turnover	T SF 21 SE	0.57	1.10	0.52			
21 SEER Central AC	Multi-Family	Turnover	T MF 21 SE	0.43	1.10	0.39			
21 SEER Central AC	Manufactured	Turnover	T MH 21 SE	0.35	1.10	0.32			
21 SEER Central AC	Single Family	New	N SF 21 SE	0.57	1.10	0.52			
21 SEER Central AC	Multi-Family	New	N MF 21 SE	0.43	1.10	0.39			
21 SEER Central AC	Manufactured	New	N MH 21 SE	0.35	1.10	0.32			
Ground Source Heat Pump	Single Family	Turnover	T SF Groun	0.35	1.28	0.27			
Ground Source Heat Pump	Multi-Family	Turnover	T MF Groun	0.37	1.28	0.29			
Ground Source Heat Pump	Manufactured	Turnover	T MH Groun	0.35	1.28	0.27			
Ground Source Heat Pump	Single Family	New	N SF Groun	0.35	1.28	0.27			
Ground Source Heat Pump	Multi-Family	New	N MF Groun	0.37	1.28	0.29			
Ground Source Heat Pump	Manufactured	New	N MH Groun	0.35	1.28	0.27			
Variable Refrigerant Flow (VRF) HVAC Systems	Single Family	Turnover	T_SF_Variab	0.81	1.19	0.68			
Variable Refrigerant Flow (VRF) HVAC Systems	Multi-Family	Turnover	T_MF_Variat	0.66	1.19	0.55			
Variable Refrigerant Flow (VRF) HVAC Systems	Manufactured	Turnover	T_MH_Variat	0.81	1.19	0.68			
Variable Refrigerant Flow (VRF) HVAC Systems	Single Family	New	N_SF_Variat	1.03	1.19	0.87			

Variable Refrigerant Flow (VRF) HVAC Systems	Multi-Family	New	N_MF_Varia	0.89	1.19	0.75		
Variable Refrigerant Flow (VRF) HVAC Systems	Manufactured	New	N_MH_Varia	1.03	1.19	0.87		
Ceiling Insulation(R19 to R38)	Multi-Family	Existing	E_MF_Ceilin	1.01	1.27	0.79		
Ceiling Insulation(R19 to R38)	Manufactured	Existing	E_MH_Ceilin	0.92	1.27	0.72		
Ceiling Insulation(R19 to R38)	Multi-Family	New	N_MF_Ceilin	1.01	1.27	0.79		
Ceiling Insulation(R19 to R38)	Manufactured	New	N_MH_Ceilin	0.92	1.27	0.72		
Ceiling Insulation(R30 to R38)	Single Family	Existing	E_SF_Ceiling	0.53	1.27	0.42		
Ceiling Insulation(R30 to R38)	Multi-Family	Existing	E_MF_Ceilin	0.39	1.27	0.30		
Ceiling Insulation(R30 to R38)	Manufactured	Existing	E_MH_Ceilin	0.35	1.27	0.28		
Ceiling Insulation(R30 to R38)	Single Family	New	N_SF_Ceilin	0.53	1.27	0.42		
Ceiling Insulation(R30 to R38)	Multi-Family	New	N_MF_Ceilin	0.39	1.27	0.30		
Ceiling Insulation(R30 to R38)	Manufactured	New	N_MH_Ceilin	0.35	1.27	0.28		
Duct Insulation	Single Family	Existing	E_SF_Duct I	0.16	1.22	0.13		
Duct Insulation	Multi-Family	Existing	E_MF_Duct I	0.12	1.22	0.10		
Duct Insulation	Manufactured	Existing	E_MH_Duct	0.18	1.22	0.14		
Energy Star Certified Roof Products	Single Family	Existing	E_SF_Energy	0.00	1.27	0.00		
Energy Star Certified Roof Products	Multi-Family	Existing	E_MF_Energ	0.00	1.27	0.00		
Energy Star Certified Roof Products	Manufactured	Existing	E_MH_Energ	0.00	1.27	0.00		
Energy Star Certified Roof Products	Single Family	New	N_SF_Energy	0.00	1.27	0.00		
Energy Star Certified Roof Products	Multi-Family	New	N_MF_Energ	0.00	1.27	0.00		
Energy Star Certified Roof Products	Manufactured	New	N_MH_Energ	0.00	1.27	0.00		
Energy Star Door	Single Family	Existing	E_SF_Energy	1.15	1.27	0.90		
Energy Star Door	Multi-Family	Existing	E_MF_Energ	1.15	1.27	0.90		
Energy Star Door	Manufactured	Existing	E_MH_Energ	1.15	1.27	0.90		
Energy Star Door	Single Family	New	N_SF_Energy	0.82	1.27	0.64		
Energy Star Door	Multi-Family	New	N_MF_Energ	0.82	1.27	0.64		
Energy Star Door	Manufactured	New	N_MH_Energ	0.82	1.27	0.64		
Energy Star Windows	Single Family	New	N_SF_Energy	1.24	1.27	0.97		
Energy Star Windows	Multi-Family	New	N_MF_Energ	1.24	1.27	0.97		
Energy Star Windows	Manufactured	New	N_MH_Energ	1.24	1.27	0.97		
Floor Insulation	Single Family	Existing	E_SF_Floor I	0.08	1.27	0.06		
Floor Insulation	Multi-Family	Existing	E_MF_Floor	0.04	1.27	0.03		
Floor Insulation	Manufactured	Existing	E_MH_Floor	0.07	1.27	0.05		
Green Roof	Single Family	Existing	E_SF_Green	0.09	1.27	0.07		
Green Roof	Multi-Family	Existing	E_MF_Green	0.07	1.27	0.05		
Green Roof	Manufactured	Existing	E_MH_Green	0.10	1.27	0.07		
Green Roof	Single Family	New	N_SF_Green	0.09	1.27	0.07		

Green Roof	Multi-Family	New	N MF Green	0.07	1.27	0.05			
Green Roof	Manufactured	New	N MH Green	0.10	1.27	0.07			
HVAC ECM Motor	Single Family	Existing	E SF HVAC	0.30	1.22	0.24			
HVAC ECM Motor	Multi-Family	Existing	E MF HVAC	0.30	1.22	0.24			
HVAC ECM Motor	Manufactured	Existing	E MH HVAC	0.30	1.22	0.24			
HVAC ECM Motor	Single Family	New	N SF HVAC	0.30	1.22	0.24			
HVAC ECM Motor	Multi-Family	New	N MF HVAC	0.30	1.22	0.24			
HVAC ECM Motor	Manufactured	New	N MH HVAC	0.30	1.22	0.24			
Radiant Barrier	Single Family	Existing	E SF Radiant	1.07	1.27	0.84			
Radiant Barrier	Multi-Family	Existing	E MF Radiant	0.85	1.27	0.67			
Radiant Barrier	Manufactured	Existing	E MH Radiant	1.24	1.27	0.98			
Radiant Barrier	Single Family	New	N SF Radiant	1.07	1.27	0.84			
Radiant Barrier	Multi-Family	New	N MF Radiant	0.85	1.27	0.67			
Radiant Barrier	Manufactured	New	N MH Radiant	1.24	1.27	0.98			
Sealed crawlspace	Single Family	Existing	E SF Sealed	0.04	1.13	0.03			
Sealed crawlspace	Multi-Family	Existing	E MF Sealed	0.02	1.13	0.02			
Sealed crawlspace	Manufactured	Existing	E MH Sealed	0.03	1.13	0.03			
Spray Foam Insulation(Base R12)	Single Family	Existing	E SF Spray	0.55	1.27	0.43			
Spray Foam Insulation(Base R12)	Multi-Family	Existing	E MF Spray	0.44	1.27	0.35			
Spray Foam Insulation(Base R12)	Manufactured	Existing	E MH Spray	0.52	1.27	0.41			
Spray Foam Insulation(Base R12)	Single Family	New	N SF Spray	0.55	1.27	0.43			
Spray Foam Insulation(Base R12)	Multi-Family	New	N MF Spray	0.44	1.27	0.35			
Spray Foam Insulation(Base R12)	Manufactured	New	N MH Spray	0.52	1.27	0.41			
Spray Foam Insulation(Base R19)	Single Family	Existing	E SF Spray	0.39	1.27	0.30			
Spray Foam Insulation(Base R19)	Multi-Family	Existing	E MF Spray	0.32	1.27	0.25			
Spray Foam Insulation(Base R19)	Manufactured	Existing	E MH Spray	0.40	1.27	0.31			
Spray Foam Insulation(Base R19)	Single Family	New	N SF Spray	0.39	1.27	0.30			
Spray Foam Insulation(Base R19)	Multi-Family	New	N MF Spray	0.32	1.27	0.25			
Spray Foam Insulation(Base R19)	Manufactured	New	N MH Spray	0.40	1.27	0.31			
Spray Foam Insulation(Base R2)	Multi-Family	Existing	E MF Spray	1.14	1.27	0.90			
Spray Foam Insulation(Base R2)	Manufactured	Existing	E MH Spray	1.23	1.27	0.96			
Spray Foam Insulation(Base R2)	Multi-Family	New	N MF Spray	1.14	1.27	0.90			
Spray Foam Insulation(Base R2)	Manufactured	New	N MH Spray	1.23	1.27	0.96			
Spray Foam Insulation(Base R30)	Single Family	Existing	E SF Spray	0.27	1.27	0.21			
Spray Foam Insulation(Base R30)	Multi-Family	Existing	E MF Spray	0.23	1.27	0.18			
Spray Foam Insulation(Base R30)	Manufactured	Existing	E MH Spray	0.32	1.27	0.25			
Spray Foam Insulation(Base R30)	Single Family	New	N SF Spray	0.33	1.27	0.26			
Spray Foam Insulation(Base R30)	Multi-Family	New	N MF Spray	0.23	1.27	0.18			
Spray Foam Insulation(Base R30)	Manufactured	New	N MH Spray	0.34	1.27	0.27			
Storm Door	Single Family	Existing	E SF Storm	0.84	1.27	0.66			
Storm Door	Multi-Family	Existing	E MF Storm	0.84	1.27	0.66			
Storm Door	Manufactured	Existing	E MH Storm	0.84	1.27	0.66			
Storm Door	Single Family	New	N SF Storm	0.55	1.27	0.43			
Storm Door	Multi-Family	New	N MF Storm	0.55	1.27	0.43			
Storm Door	Manufactured	New	N MH Storm	0.55	1.27	0.43			

Wall Insulation	Multi-Family	Existing	E MF Wall	0.73	1.27	0.57		
Geothermal Heat Pump	Assembly	Turnover	T AS Geoth	0.08	1.19	0.06		
Geothermal Heat Pump	Grocery	Turnover	T GR Geoth	0.04	1.19	0.04		
Geothermal Heat Pump	Healthcare	Turnover	T HC Geoth	0.16	1.19	0.14		
Geothermal Heat Pump	Institutional	Turnover	T IN Geoth	0.04	1.19	0.03		
Geothermal Heat Pump	Lodging/Hos	Turnover	T LG Geoth	0.12	1.19	0.10		
Geothermal Heat Pump	Miscellaneous	Turnover	T MS Geoth	0.04	1.19	0.04		
Geothermal Heat Pump	Offices	Turnover	T OF Geoth	0.08	1.19	0.07		
Geothermal Heat Pump	Restaurants	Turnover	T RS Geoth	0.12	1.19	0.10		
Geothermal Heat Pump	Retail	Turnover	T RT Geoth	0.10	1.19	0.08		
Geothermal Heat Pump	Schools K-12	Turnover	T SC Geoth	0.08	1.19	0.07		
Geothermal Heat Pump	Warehouse	Turnover	T WR Geoth	0.02	1.19	0.02		
Geothermal Heat Pump	Assembly	New	N AS Geoth	0.08	1.19	0.06		
Geothermal Heat Pump	Grocery	New	N GR Geoth	0.04	1.19	0.04		
Geothermal Heat Pump	Healthcare	New	N HC Geoth	0.16	1.19	0.14		
Geothermal Heat Pump	Institutional	New	N IN Geoth	0.04	1.19	0.03		
Geothermal Heat Pump	Lodging/Hos	New	N LG Geoth	0.12	1.19	0.10		
Geothermal Heat Pump	Miscellaneous	New	N MS Geoth	0.04	1.19	0.04		
Geothermal Heat Pump	Offices	New	N OF Geoth	0.08	1.19	0.07		
Geothermal Heat Pump	Restaurants	New	N RS Geoth	0.12	1.19	0.10		
Geothermal Heat Pump	Retail	New	N RT Geoth	0.10	1.19	0.08		
Geothermal Heat Pump	Schools K-12	New	N SC Geoth	0.08	1.19	0.07		
Geothermal Heat Pump	Warehouse	New	N WR Geot	0.02	1.19	0.02		
High Efficiency Chiller (Water cooled-centrifugal, 200 tons)	Warehouse	Turnover	T_WR_High	0.62	1.17	0.53		
High Efficiency Chiller (Water cooled-centrifugal, 200 tons)	Warehouse	New	N_WR_High	0.62	1.17	0.53		
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Grocery	Turnover	T_GR_High	0.82	1.17	0.70		
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Institutional	Turnover	T_IN_High	0.80	1.17	0.69		
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Miscellaneous	Turnover	T_MS_High	0.83	1.17	0.71		
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Warehouse	Turnover	T_WR_High	0.36	1.17	0.31		
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Grocery	New	N_GR_High	0.82	1.17	0.70		
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Institutional	New	N_IN_High	0.80	1.17	0.69		

High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Miscellaneous	New	N_MS_High	0.83	1.17	0.71			
High Efficiency Chiller (Water cooled-positive displacement, 100 tons)	Warehouse	New	N_WR_High	0.36	1.17	0.31			
High Efficiency DX 135k- less than 240k BTU	Assembly	Turnover	T_AS_High	0.69	1.18	0.59			
High Efficiency DX 135k- less than 240k BTU	College and U	Turnover	T_CU_High	0.77	1.18	0.65			
High Efficiency DX 135k- less than 240k BTU	Grocery	Turnover	T_GR_High	0.38	1.18	0.33			
High Efficiency DX 135k- less than 240k BTU	Institutional	Turnover	T_IN_High	0.37	1.18	0.32			
High Efficiency DX 135k- less than 240k BTU	Lodging/Hos	Turnover	T_LG_High	1.15	1.18	0.97			
High Efficiency DX 135k- less than 240k BTU	Miscellaneous	Turnover	T_MS_High	0.39	1.18	0.33			
High Efficiency DX 135k- less than 240k BTU	Offices	Turnover	T_OF_High	0.78	1.18	0.66			
High Efficiency DX 135k- less than 240k BTU	Restaurants	Turnover	T_RS_High	1.12	1.18	0.96			
High Efficiency DX 135k- less than 240k BTU	Retail	Turnover	T_RT_High	0.88	1.18	0.75			
High Efficiency DX 135k- less than 240k BTU	Schools K-12	Turnover	T_SC_High	0.77	1.18	0.65			
High Efficiency DX 135k- less than 240k BTU	Warehouse	Turnover	T_WR_High	0.17	1.18	0.14			
High Efficiency DX 135k- less than 240k BTU	Assembly	New	N_AS_High	0.69	1.18	0.59			
High Efficiency DX 135k- less than 240k BTU	College and U	New	N_CU_High	0.77	1.18	0.65			
High Efficiency DX 135k- less than 240k BTU	Grocery	New	N_GR_High	0.38	1.18	0.33			
High Efficiency DX 135k- less than 240k BTU	Institutional	New	N_IN_High	0.37	1.18	0.32			
High Efficiency DX 135k- less than 240k BTU	Lodging/Hos	New	N_LG_High	1.15	1.18	0.97			
High Efficiency DX 135k- less than 240k BTU	Miscellaneous	New	N_MS_High	0.39	1.18	0.33			
High Efficiency DX 135k- less than 240k BTU	Offices	New	N_OF_High	0.78	1.18	0.66			
High Efficiency DX 135k- less than 240k BTU	Restaurants	New	N_RS_High	1.12	1.18	0.96			
High Efficiency DX 135k- less than 240k BTU	Retail	New	N_RT_High	0.88	1.18	0.75			

High Efficiency DX 135k- less than 240k BTU	Schools K-12	New	N_SC_High	0.77	1.18	0.65		
High Efficiency DX 135k- less than 240k BTU	Warehouse	New	N_WR_High	0.17	1.18	0.14		
Drain Water Heat Recovery	Grocery	Existing	E_GR_Drain	0.30	1.10	0.27		
Drain Water Heat Recovery	Lodging/Hos	Existing	E_LG_Drain	0.47	1.10	0.43		
Drain Water Heat Recovery	Restaurants	Existing	E_RS_Drain	0.25	1.10	0.22		
Drain Water Heat Recovery	Retail	Existing	E_RT_Drain	0.29	1.10	0.27		
Drain Water Heat Recovery	Grocery	New	N_GR_Drain	0.28	1.10	0.26		
Drain Water Heat Recovery	Lodging/Hos	New	N_LG_Drain	0.45	1.10	0.41		
Drain Water Heat Recovery	Restaurants	New	N_RS_Drain	0.24	1.10	0.21		
Drain Water Heat Recovery	Retail	New	N_RT_Drain	0.28	1.10	0.25		
Ceiling Insulation(R12 to R38)	Assembly	Existing	E_AS_Ceilin	0.68	1.22	0.56		
Ceiling Insulation(R12 to R38)	College and U	Existing	E_CU_Ceilin	0.67	1.21	0.56		
Ceiling Insulation(R12 to R38)	Grocery	Existing	E_GR_Ceilin	0.69	1.25	0.56		
Ceiling Insulation(R12 to R38)	Healthcare	Existing	E_HC_Ceilin	0.68	1.22	0.56		
Ceiling Insulation(R12 to R38)	Hospitals	Existing	E_HS_Ceilin	0.67	1.21	0.56		
Ceiling Insulation(R12 to R38)	Institutional	Existing	E_IN_Ceilin	0.68	1.22	0.56		
Ceiling Insulation(R12 to R38)	Lodging/Hos	Existing	E_LG_Ceilin	0.67	1.21	0.56		
Ceiling Insulation(R12 to R38)	Miscellaneous	Existing	E_MS_Ceilin	0.68	1.22	0.56		
Ceiling Insulation(R12 to R38)	Offices	Existing	E_OF_Ceilin	0.68	1.22	0.56		
Ceiling Insulation(R12 to R38)	Restaurants	Existing	E_RS_Ceilin	0.69	1.25	0.56		
Ceiling Insulation(R12 to R38)	Retail	Existing	E_RT_Ceilin	0.69	1.25	0.56		
Ceiling Insulation(R12 to R38)	Schools K-12	Existing	E_SC_Ceilin	0.68	1.22	0.56		
Ceiling Insulation(R12 to R38)	Assembly	New	N_AS_Ceilin	0.66	1.22	0.55		
Ceiling Insulation(R12 to R38)	College and U	New	N_CU_Ceilin	0.66	1.21	0.55		
Ceiling Insulation(R12 to R38)	Grocery	New	N_GR_Ceilin	0.68	1.25	0.55		
Ceiling Insulation(R12 to R38)	Healthcare	New	N_HC_Ceilin	0.66	1.22	0.55		
Ceiling Insulation(R12 to R38)	Hospitals	New	N_HS_Ceilin	0.66	1.21	0.55		
Ceiling Insulation(R12 to R38)	Institutional	New	N_IN_Ceilin	0.66	1.22	0.55		
Ceiling Insulation(R12 to R38)	Lodging/Hos	New	N_LG_Ceilin	0.66	1.21	0.55		
Ceiling Insulation(R12 to R38)	Miscellaneous	New	N_MS_Ceilin	0.66	1.22	0.55		
Ceiling Insulation(R12 to R38)	Offices	New	N_OF_Ceilin	0.66	1.22	0.55		
Ceiling Insulation(R12 to R38)	Restaurants	New	N_RS_Ceilin	0.68	1.25	0.55		
Ceiling Insulation(R12 to R38)	Retail	New	N_RT_Ceilin	0.68	1.25	0.55		
Ceiling Insulation(R12 to R38)	Schools K-12	New	N_SC_Ceilin	0.66	1.22	0.55		
Ceiling Insulation(R19 to R38)	Assembly	Existing	E_AS_Ceilin	0.36	1.22	0.30		
Ceiling Insulation(R19 to R38)	College and U	Existing	E_CU_Ceilin	0.36	1.21	0.30		
Ceiling Insulation(R19 to R38)	Grocery	Existing	E_GR_Ceilin	0.37	1.25	0.30		
Ceiling Insulation(R19 to R38)	Healthcare	Existing	E_HC_Ceilin	0.36	1.22	0.30		
Ceiling Insulation(R19 to R38)	Hospitals	Existing	E_HS_Ceilin	0.36	1.21	0.30		
Ceiling Insulation(R19 to R38)	Institutional	Existing	E_IN_Ceilin	0.36	1.22	0.30		
Ceiling Insulation(R19 to R38)	Lodging/Hos	Existing	E_LG_Ceilin	0.36	1.21	0.30		
Ceiling Insulation(R19 to R38)	Miscellaneous	Existing	E_MS_Ceilin	0.36	1.22	0.30		
Ceiling Insulation(R19 to R38)	Offices	Existing	E_OF_Ceilin	0.36	1.22	0.30		

Ceiling Insulation(R19 to R38)	Restaurants	Existing	E RS Ceilin	0.37	1.25	0.30			
Ceiling Insulation(R19 to R38)	Retail	Existing	E RT Ceilin	0.37	1.25	0.30			
Ceiling Insulation(R19 to R38)	Schools K-12	Existing	E SC Ceilin	0.36	1.22	0.30			
Ceiling Insulation(R19 to R38)	Assembly	New	N AS Ceilin	0.36	1.22	0.29			
Ceiling Insulation(R19 to R38)	College and U	New	N CU Ceilin	0.36	1.21	0.29			
Ceiling Insulation(R19 to R38)	Grocery	New	N GR Ceilin	0.37	1.25	0.29			
Ceiling Insulation(R19 to R38)	Healthcare	New	N HC Ceilin	0.36	1.22	0.29			
Ceiling Insulation(R19 to R38)	Hospitals	New	N HS Ceilin	0.36	1.21	0.29			
Ceiling Insulation(R19 to R38)	Institutional	New	N IN Ceiling	0.36	1.22	0.29			
Ceiling Insulation(R19 to R38)	Lodging/Hos	New	N LG Ceilin	0.36	1.21	0.29			
Ceiling Insulation(R19 to R38)	Miscellaneous	New	N_MS Ceilin	0.36	1.22	0.29			
Ceiling Insulation(R19 to R38)	Offices	New	N OF Ceilin	0.36	1.22	0.29			
Ceiling Insulation(R19 to R38)	Restaurants	New	N RS Ceilin	0.37	1.25	0.29			
Ceiling Insulation(R19 to R38)	Retail	New	N RT Ceilin	0.37	1.25	0.29			
Ceiling Insulation(R19 to R38)	Schools K-12	New	N SC Ceilin	0.36	1.22	0.29			
Ceiling Insulation(R30 to R38)	Assembly	Existing	E AS Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	College and U	Existing	E CU Ceilin	0.13	1.21	0.10			
Ceiling Insulation(R30 to R38)	Grocery	Existing	E GR Ceilin	0.13	1.25	0.10			
Ceiling Insulation(R30 to R38)	Healthcare	Existing	E HC Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Hospitals	Existing	E HS Ceilin	0.13	1.21	0.10			
Ceiling Insulation(R30 to R38)	Institutional	Existing	E IN Ceiling	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Lodging/Hos	Existing	E LG Ceilin	0.13	1.21	0.10			
Ceiling Insulation(R30 to R38)	Miscellaneous	Existing	E MS Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Offices	Existing	E OF Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Restaurants	Existing	E RS Ceilin	0.13	1.25	0.10			
Ceiling Insulation(R30 to R38)	Retail	Existing	E RT Ceilin	0.13	1.25	0.10			
Ceiling Insulation(R30 to R38)	Schools K-12	Existing	E SC Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Assembly	New	N AS Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	College and U	New	N CU Ceilin	0.12	1.21	0.10			
Ceiling Insulation(R30 to R38)	Grocery	New	N GR Ceilin	0.13	1.25	0.10			
Ceiling Insulation(R30 to R38)	Healthcare	New	N HC Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Hospitals	New	N HS Ceilin	0.12	1.21	0.10			
Ceiling Insulation(R30 to R38)	Institutional	New	N IN Ceiling	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Lodging/Hos	New	N LG Ceilin	0.12	1.21	0.10			
Ceiling Insulation(R30 to R38)	Miscellaneous	New	N_MS Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Offices	New	N OF Ceilin	0.13	1.22	0.10			
Ceiling Insulation(R30 to R38)	Restaurants	New	N_RS Ceilin	0.13	1.25	0.10			
Ceiling Insulation(R30 to R38)	Retail	New	N RT Ceilin	0.13	1.25	0.10			
Ceiling Insulation(R30 to R38)	Schools K-12	New	N SC Ceilin	0.13	1.22	0.10			
Cool Roof	Assembly	Existing	E AS Cool R	0.15	1.18	0.12			
Cool Roof	College and U	Existing	E CU Cool R	0.15	1.18	0.12			
Cool Roof	Grocery	Existing	E GR Cool R	0.15	1.18	0.12			
Cool Roof	Healthcare	Existing	E HC Cool R	0.15	1.18	0.12			
Cool Roof	Hospitals	Existing	E HS Cool R	0.15	1.18	0.12			
Cool Roof	Institutional	Existing	E IN Cool R	0.15	1.18	0.12			

Cool Roof	Lodging/Hos	Existing	E LG Cool I	0.18	1.47	0.12		
Cool Roof	Offices	Existing	E OF Cool I	0.15	1.18	0.12		
Cool Roof	Restaurants	Existing	E RS Cool I	0.15	1.18	0.12		
Cool Roof	Retail	Existing	E RT Cool I	0.15	1.18	0.12		
Cool Roof	Schools K-12	Existing	E SC Cool I	0.15	1.18	0.12		
Cool Roof	Assembly	New	N AS Cool I	0.15	1.18	0.12		
Cool Roof	College and U	New	N CU Cool I	0.15	1.18	0.12		
Cool Roof	Grocery	New	N GR Cool I	0.15	1.18	0.12		
Cool Roof	Healthcare	New	N HC Cool I	0.15	1.18	0.12		
Cool Roof	Hospitals	New	N HS Cool I	0.15	1.18	0.12		
Cool Roof	Institutional	New	N IN Cool I	0.15	1.18	0.12		
Cool Roof	Lodging/Hos	New	N LG Cool I	0.18	1.47	0.12		
Cool Roof	Offices	New	N OF Cool I	0.15	1.18	0.12		
Cool Roof	Restaurants	New	N RS Cool I	0.15	1.18	0.12		
Cool Roof	Retail	New	N RT Cool I	0.15	1.18	0.12		
Cool Roof	Schools K-12	New	N SC Cool I	0.15	1.18	0.12		
Duct Insulation	Assembly	Existing	E AS Duct I	0.08	1.42	0.06		
Duct Insulation	College and U	Existing	E CU Duct I	0.13	1.42	0.09		
Duct Insulation	Grocery	Existing	E GR Duct I	0.82	1.42	0.58		
Duct Insulation	Healthcare	Existing	E HC Duct I	0.34	1.42	0.24		
Duct Insulation	Hospitals	Existing	E HS Duct I	0.34	1.42	0.24		
Duct Insulation	Institutional	Existing	E IN Duct I	0.38	1.42	0.27		
Duct Insulation	Lodging/Hos	Existing	E LG Duct I	0.19	1.42	0.13		
Duct Insulation	Miscellaneous	Existing	E MS Duct I	0.26	1.42	0.18		
Duct Insulation	Offices	Existing	E OF Duct I	0.35	1.42	0.24		
Duct Insulation	Restaurants	Existing	E RS Duct I	0.79	1.42	0.56		
Duct Insulation	Retail	Existing	E RT Duct I	0.15	1.42	0.11		
Duct Insulation	Schools K-12	Existing	E SC Duct I	0.13	1.42	0.09		
Duct Insulation	Warehouse	Existing	E WR Duct I	0.04	1.42	0.03		
Duct Insulation	Assembly	New	N AS Duct I	0.08	1.42	0.06		
Duct Insulation	College and U	New	N CU Duct I	0.13	1.42	0.09		
Duct Insulation	Grocery	New	N GR Duct I	0.82	1.42	0.58		
Duct Insulation	Healthcare	New	N HC Duct I	0.34	1.42	0.24		
Duct Insulation	Hospitals	New	N HS Duct I	0.34	1.42	0.24		
Duct Insulation	Institutional	New	N IN Duct I	0.38	1.42	0.27		
Duct Insulation	Lodging/Hos	New	N LG Duct I	0.19	1.42	0.13		
Duct Insulation	Miscellaneous	New	N MS Duct I	0.26	1.42	0.18		
Duct Insulation	Offices	New	N OF Duct I	0.35	1.42	0.24		
Duct Insulation	Restaurants	New	N RS Duct I	0.79	1.42	0.56		
Duct Insulation	Retail	New	N RT Duct I	0.15	1.42	0.11		
Duct Insulation	Schools K-12	New	N SC Duct I	0.13	1.42	0.09		
Duct Insulation	Warehouse	New	N WR Duct I	0.04	1.42	0.03		
Energy Recovery Ventilation System (ERV)	Assembly	Existing	E_AS_Energ	0.29	4.05	0.07		

Energy Recovery Ventilation System (ERV)	College and U	Existing	E_CU_Energy	0.24	4.05	0.06			
Energy Recovery Ventilation System (ERV)	Grocery	Existing	E_GR_Energy	1.54	4.05	0.38			
Energy Recovery Ventilation System (ERV)	Healthcare	Existing	E_HC_Energy	0.63	4.05	0.16			
Energy Recovery Ventilation System (ERV)	Hospitals	Existing	E_HS_Energy	0.63	4.05	0.16			
Energy Recovery Ventilation System (ERV)	Institutional	Existing	E_IN_Energy	0.71	4.05	0.18			
Energy Recovery Ventilation System (ERV)	Lodging/Hos	Existing	E_LG_Energy	0.36	4.05	0.09			
Energy Recovery Ventilation System (ERV)	Miscellaneous	Existing	E_MS_Energy	0.48	4.05	0.12			
Energy Recovery Ventilation System (ERV)	Offices	Existing	E_OF_Energy	0.40	4.05	0.10			
Energy Recovery Ventilation System (ERV)	Restaurants	Existing	E_RS_Energy	1.63	4.05	0.40			
Energy Recovery Ventilation System (ERV)	Retail	Existing	E_RT_Energy	0.36	4.05	0.09			
Energy Recovery Ventilation System (ERV)	Schools K-12	Existing	E_SC_Energy	0.24	4.05	0.06			
Energy Recovery Ventilation System (ERV)	Warehouse	Existing	E_WR_Energy	0.08	4.05	0.02			
Energy Recovery Ventilation System (ERV)	Assembly	New	N_AS_Energy	0.29	4.05	0.07			
Energy Recovery Ventilation System (ERV)	College and U	New	N_CU_Energy	0.24	4.05	0.06			
Energy Recovery Ventilation System (ERV)	Grocery	New	N_GR_Energy	1.54	4.05	0.38			
Energy Recovery Ventilation System (ERV)	Healthcare	New	N_HC_Energy	0.63	4.05	0.16			
Energy Recovery Ventilation System (ERV)	Hospitals	New	N_HS_Energy	0.63	4.05	0.16			
Energy Recovery Ventilation System (ERV)	Institutional	New	N_IN_Energy	0.71	4.05	0.18			
Energy Recovery Ventilation System (ERV)	Lodging/Hos	New	N_LG_Energy	0.36	4.05	0.09			
Energy Recovery Ventilation System (ERV)	Miscellaneous	New	N_MS_Energy	0.48	4.05	0.12			
Energy Recovery Ventilation System (ERV)	Offices	New	N_OF_Energy	0.40	4.05	0.10			
Energy Recovery Ventilation System (ERV)	Restaurants	New	N_RS_Energy	1.63	4.05	0.40			
Energy Recovery Ventilation System (ERV)	Retail	New	N_RT_Energy	0.36	4.05	0.09			

Energy Recovery Ventilation System (ERV)	Schools K-12	New	N_SC_Energ	0.24	4.05	0.06			
Energy Recovery Ventilation System (ERV)	Warehouse	New	N_WR_Energ	0.08	4.05	0.02			
Floor Insulation	Assembly	Existing	E_AS_Floor	0.08	1.22	0.07			
Floor Insulation	College and U	Existing	E_CU_Floor	0.08	1.21	0.07			
Floor Insulation	Grocery	Existing	E_GR_Floor	0.08	1.25	0.07			
Floor Insulation	Healthcare	Existing	E_HC_Floor	0.08	1.22	0.07			
Floor Insulation	Hospitals	Existing	E_HS_Floor	0.08	1.21	0.07			
Floor Insulation	Institutional	Existing	E_IN_Floor I	0.08	1.22	0.07			
Floor Insulation	Lodging/Hos	Existing	E_LG_Floor	0.08	1.21	0.07			
Floor Insulation	Miscellaneous	Existing	E_MS_Floor	0.08	1.22	0.07			
Floor Insulation	Offices	Existing	E_OF_Floor	0.08	1.22	0.07			
Floor Insulation	Restaurants	Existing	E_RS_Floor	0.08	1.25	0.07			
Floor Insulation	Retail	Existing	E_RT_Floor	0.08	1.25	0.07			
Floor Insulation	Schools K-12	Existing	E_SC_Floor	0.08	1.22	0.07			
Floor Insulation	Assembly	New	N_AS_Floor	0.08	1.22	0.07			
Floor Insulation	College and U	New	N_CU_Floor	0.08	1.21	0.07			
Floor Insulation	Grocery	New	N_GR_Floor	0.08	1.25	0.07			
Floor Insulation	Healthcare	New	N_HC_Floor	0.08	1.22	0.07			
Floor Insulation	Hospitals	New	N_HS_Floor	0.08	1.21	0.07			
Floor Insulation	Institutional	New	N_IN_Floor I	0.08	1.22	0.07			
Floor Insulation	Lodging/Hos	New	N_LG_Floor	0.08	1.21	0.07			
Floor Insulation	Miscellaneous	New	N_MS_Floor	0.08	1.22	0.07			
Floor Insulation	Offices	New	N_OF_Floor	0.08	1.22	0.07			
Floor Insulation	Restaurants	New	N_RS_Floor	0.08	1.25	0.07			
Floor Insulation	Retail	New	N_RT_Floor	0.08	1.25	0.07			
Floor Insulation	Schools K-12	New	N_SC_Floor	0.08	1.22	0.07			
Green Roof	Assembly	Existing	E_AS_Green	0.01	1.18	0.01			
Green Roof	College and U	Existing	E_CU_Green	0.01	1.18	0.01			
Green Roof	Grocery	Existing	E_GR_Green	0.01	1.18	0.01			
Green Roof	Healthcare	Existing	E_HC_Green	0.01	1.18	0.01			
Green Roof	Hospitals	Existing	E_HS_Green	0.01	1.18	0.01			
Green Roof	Institutional	Existing	E_IN_Green	0.01	1.18	0.01			
Green Roof	Lodging/Hos	Existing	E_LG_Green	0.02	1.47	0.01			
Green Roof	Offices	Existing	E_OF_Green	0.01	1.18	0.01			
Green Roof	Restaurants	Existing	E_RS_Green	0.01	1.18	0.01			
Green Roof	Retail	Existing	E_RT_Green	0.01	1.18	0.01			
Green Roof	Schools K-12	Existing	E_SC_Green	0.01	1.18	0.01			
Green Roof	Assembly	New	N_AS_Green	0.01	1.18	0.01			
Green Roof	College and U	New	N_CU_Green	0.01	1.18	0.01			
Green Roof	Grocery	New	N_GR_Green	0.01	1.18	0.01			
Green Roof	Healthcare	New	N_HC_Green	0.01	1.18	0.01			
Green Roof	Hospitals	New	N_HS_Green	0.01	1.18	0.01			
Green Roof	Institutional	New	N_IN_Green	0.01	1.18	0.01			

Green Roof	Lodging/Hos	New	N LG Green	0.02	1.47	0.01		
Green Roof	Offices	New	N OF Green	0.01	1.18	0.01		
Green Roof	Restaurants	New	N RS Green	0.01	1.18	0.01		
Green Roof	Retail	New	N RT Green	0.01	1.18	0.01		
Green Roof	Schools K-12	New	N SC Green	0.01	1.18	0.01		
Infiltration Reduction - Air Sealing	Assembly	Existing	E AS Infiltra	0.16	1.44	0.11		
Infiltration Reduction - Air Sealing	College and U	Existing	E CU Infiltra	0.08	1.44	0.05		
Infiltration Reduction - Air Sealing	Grocery	Existing	E GR Infiltra	0.54	1.44	0.37		
Infiltration Reduction - Air Sealing	Healthcare	Existing	E HC Infiltra	0.15	1.44	0.10		
Infiltration Reduction - Air Sealing	Hospitals	Existing	E HS Infiltra	0.08	1.44	0.05		
Infiltration Reduction - Air Sealing	Institutional	Existing	E_IN Infiltra	0.48	1.44	0.34		
Infiltration Reduction - Air Sealing	Lodging/Hos	Existing	E LG Infiltra	0.36	1.44	0.25		
Infiltration Reduction - Air Sealing	Miscellaneous	Existing	E MS Infiltra	0.10	1.44	0.07		
Infiltration Reduction - Air Sealing	Offices	Existing	E OF Infiltra	0.70	1.44	0.49		
Infiltration Reduction - Air Sealing	Restaurants	Existing	E RS Infiltra	0.52	1.44	0.36		
Infiltration Reduction - Air Sealing	Retail	Existing	E RT Infiltra	0.23	1.44	0.16		
Infiltration Reduction - Air Sealing	Schools K-12	Existing	E SC Infiltra	0.05	1.44	0.04		
Infiltration Reduction - Air Sealing	Warehouse	Existing	E WR Infiltra	0.14	1.44	0.10		
Infiltration Reduction - Air Sealing	Assembly	New	N AS Infiltra	0.16	1.44	0.11		
Infiltration Reduction - Air Sealing	College and U	New	N CU Infiltra	0.08	1.44	0.05		
Infiltration Reduction - Air Sealing	Grocery	New	N GR Infiltra	0.53	1.44	0.37		
Infiltration Reduction - Air Sealing	Healthcare	New	N HC Infiltra	0.15	1.44	0.10		
Infiltration Reduction - Air Sealing	Hospitals	New	N HS Infiltra	0.08	1.44	0.05		
Infiltration Reduction - Air Sealing	Institutional	New	N_IN Infiltra	0.48	1.44	0.33		
Infiltration Reduction - Air Sealing	Lodging/Hos	New	N LG Infiltra	0.36	1.44	0.25		
Infiltration Reduction - Air Sealing	Miscellaneous	New	N MS Infiltra	0.10	1.44	0.07		
Infiltration Reduction - Air Sealing	Offices	New	N OF Infiltra	0.69	1.44	0.48		
Infiltration Reduction - Air Sealing	Restaurants	New	N RS Infiltra	0.51	1.44	0.36		
Infiltration Reduction - Air Sealing	Retail	New	N RT Infiltra	0.22	1.44	0.16		
Infiltration Reduction - Air Sealing	Schools K-12	New	N SC Infiltra	0.05	1.44	0.04		
Infiltration Reduction - Air Sealing	Warehouse	New	N WR Infiltra	0.14	1.44	0.10		
Low U-Value Windows	Assembly	New	N AS Low U	0.19	1.12	0.17		
Low U-Value Windows	College and U	New	N CU Low U	0.19	1.12	0.17		
Low U-Value Windows	Grocery	New	N GR Low U	0.19	1.12	0.17		
Low U-Value Windows	Healthcare	New	N_HC Low U	0.19	1.12	0.17		
Low U-Value Windows	Hospitals	New	N HS Low U	0.19	1.12	0.17		
Low U-Value Windows	Institutional	New	N_IN Low U	0.19	1.12	0.17		
Low U-Value Windows	Lodging/Hos	New	N LG Low U	0.22	1.27	0.17		
Low U-Value Windows	Miscellaneous	New	N MS Low U	0.18	1.06	0.17		
Low U-Value Windows	Offices	New	N OF Low U	0.19	1.12	0.17		
Low U-Value Windows	Restaurants	New	N RS Low U	0.19	1.12	0.17		
Low U-Value Windows	Retail	New	N RT Low U	0.19	1.12	0.17		
Low U-Value Windows	Schools K-12	New	N SC Low U	0.19	1.12	0.17		
Low U-Value Windows	Warehouse	New	N WR Low U	0.18	1.06	0.17		
Roof Insulation	Assembly	Existing	E AS Roof I	0.65	1.22	0.53		