

# Residential System Sizing Calculation

## Summary

156 SW Kimberly Lane  
Lake City, FL 32025

Project Title:  
156 SW Kimberly Lane

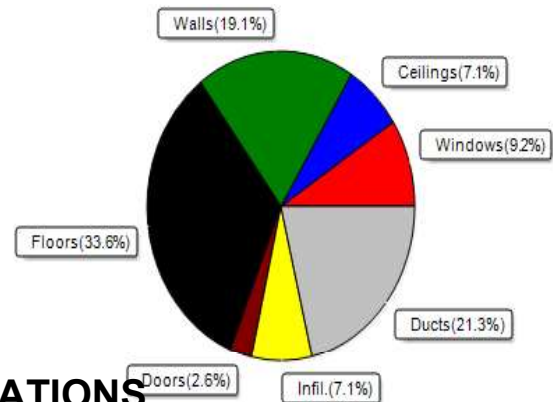
1/29/2024

|                                                                                                       |                   |                                           |                   |
|-------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------|-------------------|
| Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M) |                   |                                           |                   |
| Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)                    |                   |                                           |                   |
| Winter design temperature(MJ8 99%/Cu)33 F                                                             |                   | Summer design temperature(MJ8 99%/Cu)99 F |                   |
| Winter setpoint 70 F                                                                                  |                   | Summer setpoint 75 F                      |                   |
| Winter temperature difference 37 F                                                                    |                   | Summer temperature difference 24 F        |                   |
| <b>Total heating load calculation</b>                                                                 | <b>25722 Btuh</b> | <b>Total cooling load calculation</b>     | <b>24025 Btuh</b> |
| Submitted heating capacity % of calc Btuh                                                             |                   | Submitted cooling capacity % of calc Btuh |                   |
| Total (Electric Heat Pump) 106.3 27350                                                                |                   | Sensible (SHR = 0.75) 83.6 16452          |                   |
| Heat Pump + Auxiliary(0.0kW) 106.3 27350                                                              |                   | Latent 126.4 5484                         |                   |
|                                                                                                       |                   | Total (Electric Heat Pump) 91.3 21936     |                   |

## WINTER CALCULATIONS

Winter Heating Load (for 1841 sqft)

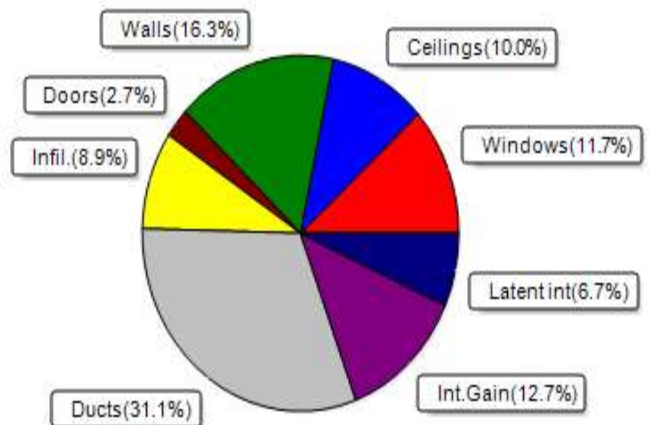
| Load component                  |           | Load         |             |
|---------------------------------|-----------|--------------|-------------|
| Window total                    | 177 sqft  | 2358         | Btuh        |
| Wall total                      | 1496 sqft | 4913         | Btuh        |
| Door total                      | 40 sqft   | 681          | Btuh        |
| Ceiling total                   | 1933 sqft | 1815         | Btuh        |
| Floor total                     | 1841 sqft | 8645         | Btuh        |
| Infiltration                    | 45 cfm    | 1838         | Btuh        |
| Duct loss                       |           | 5473         | Btuh        |
| <b>Subtotal</b>                 |           | <b>25722</b> | <b>Btuh</b> |
| Ventilation Ex:0 cfm; Sup:0 cfm |           | 0            | Btuh        |
| <b>TOTAL HEAT LOSS</b>          |           | <b>25722</b> | <b>Btuh</b> |



## SUMMER CALCULATIONS

Summer Cooling Load (for 1841 sqft)

| Load component                        |           | Load         |             |
|---------------------------------------|-----------|--------------|-------------|
| Window total                          | 177 sqft  | 2800         | Btuh        |
| Wall total                            | 1496 sqft | 3926         | Btuh        |
| Door total                            | 40 sqft   | 644          | Btuh        |
| Ceiling total                         | 1933 sqft | 2404         | Btuh        |
| Floor total                           |           | 0            | Btuh        |
| Infiltration                          | 34 cfm    | 894          | Btuh        |
| Internal gain                         |           | 3040         | Btuh        |
| Duct gain                             |           | 5980         | Btuh        |
| Sens.Ventilation Ex:0 cfm; Sup:0 cfm  |           | 0            | Btuh        |
| Blower Load                           |           | 0            | Btuh        |
| <b>Total sensible gain</b>            |           | <b>19688</b> | <b>Btuh</b> |
| Latent gain(ducts)                    |           | 1493         | Btuh        |
| Latent gain(infiltration)             |           | 1244         | Btuh        |
| Latent gain(ventilation)              |           | 0            | Btuh        |
| Latent gain(internal/occupants/other) |           | 1600         | Btuh        |
| <b>Total latent gain</b>              |           | <b>4337</b>  | <b>Btuh</b> |
| <b>TOTAL HEAT GAIN</b>                |           | <b>24025</b> | <b>Btuh</b> |



8th Edition

EnergyGauge® System Sizing

PREPARED BY: \_\_\_\_\_

DATE: \_\_\_\_\_ 01 / 29 / 2024

*W. C. Smith*

# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

156 SW Kimberly Lane  
Lake City, FL 32025

Project Title:  
156 SW Kimberly Lane  
Building Type: User

1/29/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)  
Winter Setpoint: 70 °F (Required Manual J default)

### Component Loads for Whole House

| Window             | Panes/Type                                                    | Frame      | U       | Orientation         | Area(sqft)       | X    | HTM= | Load       |
|--------------------|---------------------------------------------------------------|------------|---------|---------------------|------------------|------|------|------------|
| 1                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | N                   | 60.0             |      | 13.3 | 799 Btuh   |
| 2                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | W                   | 16.0             |      | 13.3 | 213 Btuh   |
| 3                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | S                   | 30.0             |      | 13.3 | 400 Btuh   |
| 4                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | S                   | 12.0             |      | 13.3 | 160 Btuh   |
| 5                  | 2, NFRC 0.25                                                  | TIM        | 0.36    | S                   | 40.0             |      | 13.3 | 533 Btuh   |
| 6                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | S                   | 15.0             |      | 13.3 | 200 Btuh   |
| 7                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | E                   | 4.0              |      | 13.3 | 53 Btuh    |
| Window Total       |                                                               |            |         |                     | 177.0(sqft)      |      |      | 2358 Btuh  |
| Walls              | Type                                                          | Ornt.      | Ueff.   | R-Value<br>(Cav/Sh) | Area             | X    | HTM= | Load       |
| 1                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 210              |      | 3.28 | 688 Btuh   |
| 2                  | Frame - Wood                                                  | - Adj      | (0.089) | 13.0/0.0            | 216              |      | 3.28 | 708 Btuh   |
| 3                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 149              |      | 3.28 | 489 Btuh   |
| 4                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 32               |      | 3.28 | 103 Btuh   |
| 5                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 162              |      | 3.28 | 532 Btuh   |
| 6                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 189              |      | 3.28 | 621 Btuh   |
| 7                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 72               |      | 3.28 | 236 Btuh   |
| 8                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 109              |      | 3.28 | 356 Btuh   |
| 9                  | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 99               |      | 3.28 | 325 Btuh   |
| 10                 | Frame - Wood                                                  | - Ext      | (0.089) | 13.0/0.0            | 260              |      | 3.28 | 854 Btuh   |
| Wall Total         |                                                               |            |         |                     | 1496(sqft)       |      |      | 4913 Btuh  |
| Doors              | Type                                                          | Storm      | Ueff.   |                     | Area             | X    | HTM= | Load       |
| 1                  | Insulated - Exterior, n                                       |            | (0.460) |                     | 20               |      | 17.0 | 340 Btuh   |
| 2                  | Insulated - Garage, n                                         |            | (0.460) |                     | 20               |      | 17.0 | 340 Btuh   |
| Door Total         |                                                               |            |         |                     | 40(sqft)         |      |      | 681Btuh    |
| Ceilings           | Type/Color/Surface                                            |            | Ueff.   | R-Value             | Area             | X    | HTM= | Load       |
| 1                  | Flat ceil/D/Shing                                             |            | (0.025) | 38.0/0.0            | 1933             |      | 0.94 | 1815 Btuh  |
| Ceiling Total      |                                                               |            |         |                     | 1933(sqft)       |      |      | 1815Btuh   |
| Floors             | Type                                                          |            | Ueff.   | R-Value             | Size             | X    | HTM= | Load       |
| 1                  | Slab On Grade                                                 |            | (1.180) | 0.0                 | 198.0 ft(perim.) |      | 43.7 | 8645 Btuh  |
| Floor Total        |                                                               |            |         |                     | 1841 sqft        |      |      | 8645 Btuh  |
| Envelope Subtotal: |                                                               |            |         |                     |                  |      |      | 18411 Btuh |
| Infiltration       | Type                                                          | Wholehouse | ACH     | Volume(cuft)        | Wall Ratio       | CFM= |      | Load       |
|                    | Natural                                                       |            | 0.16    | 16569               | 1.00             | 45.4 |      | 1838 Btuh  |
| Duct load          | Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.270) |            |         |                     |                  |      |      | 5473 Btuh  |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

156 SW Kimberly Lane  
Lake City, FL 32025

Project Title:  
156 SW Kimberly Lane  
Building Type: User

1/29/2024

|                  |                                    |                   |
|------------------|------------------------------------|-------------------|
| <b>All Zones</b> | <b>Sensible Subtotal All Zones</b> | <b>25722 Btuh</b> |
|------------------|------------------------------------|-------------------|

### WHOLE HOUSE TOTALS

|                           |                                                                                                     |                                    |
|---------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|
| <b>Totals for Heating</b> | Subtotal Sensible Heat Loss<br>Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)<br>Total Heat Loss | 25722 Btuh<br>0 Btuh<br>25722 Btuh |
|---------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|

### EQUIPMENT

|                       |   |            |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 27350 Btuh |
|-----------------------|---|------------|

Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)  
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)

U - (Window U-Factor)

HTM - (ManualJ Heat Transfer Multiplier)



Version 8

# System Sizing Calculations - Summer

## Residential Load - Whole House Component Details

156 SW Kimberly Lane  
Lake City, FL 32025

Project Title:  
156 SW Kimberly Lane

1/29/2024

Reference City: Gainesville, FL (Defaults)  
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)  
Summer Setpoint: 75 °F (Required Manual J default)

### Component Loads for Whole House

| Window                  | Type*                       |             |    |      |    |               | Overhang     |        | Window Area(sqft)   |            |           | HTM    |          | Load       |      |
|-------------------------|-----------------------------|-------------|----|------|----|---------------|--------------|--------|---------------------|------------|-----------|--------|----------|------------|------|
|                         | Panes                       | SHGC        | U  | InSh | IS | Ornt          | Len          | Hgt    | Gross               | Shaded     | Unshaded  | Shaded | Unshaded |            |      |
| 1                       | 2 NFRC                      | 0.25, 0.36  | No | No   | N  |               | 4.5ft.       | 1.0ft. | 60.0                | 0.0        | 60.0      | 14     | 14       | 834        | Btuh |
| 2                       | 2 NFRC                      | 0.25, 0.36  | No | No   | W  |               | 1.5ft.       | 1.0ft. | 16.0                | 1.0        | 15.0      | 14     | 33       | 505        | Btuh |
| 3                       | 2 NFRC                      | 0.25, 0.36  | No | No   | S  |               | 1.5ft.       | 1.0ft. | 30.0                | 30.0       | 0.0       | 14     | 16       | 417        | Btuh |
| 4                       | 2 NFRC                      | 0.25, 0.36  | No | No   | S  |               | 1.5ft.       | 1.0ft. | 12.0                | 12.0       | 0.0       | 14     | 16       | 167        | Btuh |
| 5                       | 2 NFRC                      | 0.25, 0.36  | No | No   | S  |               | 9.5ft.       | 1.0ft. | 40.0                | 40.0       | 0.0       | 14     | 16       | 556        | Btuh |
| 6                       | 2 NFRC                      | 0.25, 0.36  | No | No   | S  |               | 1.5ft.       | 1.0ft. | 15.0                | 15.0       | 0.0       | 14     | 16       | 208        | Btuh |
| 7                       | 2 NFRC                      | 0.25, 0.36  | No | No   | E  |               | 1.5ft.       | 1.0ft. | 4.0                 | 1.0        | 3.0       | 14     | 33       | 113        | Btuh |
| Window Total            |                             |             |    |      |    |               |              |        | 177 (sqft)          |            |           |        |          | 2800 Btuh  |      |
| Walls                   | Type                        | U-Value     |    |      |    |               | R-Value      |        | Area(sqft)          |            |           | HTM    |          | Load       |      |
|                         |                             |             |    |      |    |               | Cav/Sheath   |        |                     |            |           |        |          |            |      |
| 1                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 209.5               |            |           | 2.7    |          | 567 Btuh   |      |
| 2                       | Frame - Wood - Adj          | 0.09        |    |      |    |               | 13.0/0.0     |        | 215.5               |            |           | 2.1    |          | 459 Btuh   |      |
| 3                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 149.0               |            |           | 2.7    |          | 403 Btuh   |      |
| 4                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 31.5                |            |           | 2.7    |          | 85 Btuh    |      |
| 5                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 162.0               |            |           | 2.7    |          | 439 Btuh   |      |
| 6                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 189.0               |            |           | 2.7    |          | 512 Btuh   |      |
| 7                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 72.0                |            |           | 2.7    |          | 195 Btuh   |      |
| 8                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 108.5               |            |           | 2.7    |          | 294 Btuh   |      |
| 9                       | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 99.0                |            |           | 2.7    |          | 268 Btuh   |      |
| 10                      | Frame - Wood - Ext          | 0.09        |    |      |    |               | 13.0/0.0     |        | 260.0               |            |           | 2.7    |          | 704 Btuh   |      |
| Wall Total              |                             |             |    |      |    |               |              |        | 1496 (sqft)         |            |           |        |          | 3926 Btuh  |      |
| Doors                   | Type                        | U-Value     |    |      |    |               | R-Value      |        | Area (sqft)         |            |           | HTM    |          | Load       |      |
|                         |                             |             |    |      |    |               |              |        |                     |            |           |        |          |            |      |
| 1                       | Insulated - Exterior        |             |    |      |    |               |              |        | 20.0                |            |           | 16.1   |          | 322 Btuh   |      |
| 2                       | Insulated - Garage          |             |    |      |    |               |              |        | 20.0                |            |           | 16.1   |          | 322 Btuh   |      |
| Door Total              |                             |             |    |      |    |               |              |        | 40 (sqft)           |            |           |        |          | 644 Btuh   |      |
| Ceilings                | Type/Color/Surface          | U-Value     |    |      |    |               | R-Value      |        | Area(sqft)          |            |           | HTM    |          | Load       |      |
|                         |                             |             |    |      |    |               |              |        |                     |            |           |        |          |            |      |
| 1                       | Vented Attic/DarkShingle/RB | 0.025       |    |      |    |               | 38.0/0.0     |        | 1933.0              |            |           | 1.24   |          | 2404 Btuh  |      |
| Ceiling Total           |                             |             |    |      |    |               |              |        | 1933 (sqft)         |            |           |        |          | 2404 Btuh  |      |
| Floors                  | Type                        | U-Value     |    |      |    |               | R-Value      |        | Size                |            |           | HTM    |          | Load       |      |
|                         |                             |             |    |      |    |               |              |        |                     |            |           |        |          |            |      |
| 1                       | Slab On Grade               |             |    |      |    |               | 0.0          |        | 1841 (ft-perimeter) |            |           | 0.0    |          | 0 Btuh     |      |
| Floor Total             |                             |             |    |      |    |               |              |        | 1841.0 (sqft)       |            |           |        |          | 0 Btuh     |      |
| Envelope Subtotal:      |                             |             |    |      |    |               |              |        |                     |            |           |        |          | 9774 Btuh  |      |
| Infiltration            | Type                        | Average ACH |    |      |    |               | Volume(cuft) |        |                     | Wall Ratio |           | CFM=   |          | Load       |      |
|                         | Natural                     | 0.12        |    |      |    |               | 16569        |        |                     | 1          |           | 34.0   |          | 894 Btuh   |      |
| Internal gain           | Occupants                   |             |    |      |    | Btuh/occupant |              |        | Appliance           |            | Load      |        |          |            |      |
|                         | 8                           |             |    |      |    | X 230         |              |        | + 1200              |            | 3040 Btuh |        |          |            |      |
| Sensible Envelope Load: |                             |             |    |      |    |               |              |        |                     |            |           |        |          | 13708 Btuh |      |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

156 SW Kimberly Lane  
Lake City, FL 32025

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
156 SW Kimberly Lane

1/29/2024

|                  |                                                                      |                   |
|------------------|----------------------------------------------------------------------|-------------------|
| <b>Duct load</b> | Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.436) | 5980 Btuh         |
|                  | <b>Sensible Load All Zones</b>                                       | <b>19688 Btuh</b> |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

156 SW Kimberly Lane  
Lake City, FL 32025

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
156 SW Kimberly Lane

1/29/2024

### WHOLE HOUSE TOTALS

|                                           |                                                           |                   |
|-------------------------------------------|-----------------------------------------------------------|-------------------|
| <b>Whole House<br/>Totals for Cooling</b> | <b>Sensible Envelope Load All Zones</b>                   | <b>13708 Btuh</b> |
|                                           | Sensible Duct Load                                        | 5980 Btuh         |
|                                           | <b>Total Sensible Zone Loads</b>                          | <b>19688 Btuh</b> |
|                                           | Sensible ventilation (Ex:0 cfm; Sup:0 cfm)                | 0 Btuh            |
|                                           | Blower                                                    | 0 Btuh            |
|                                           | <b>Total sensible gain</b>                                | <b>19688 Btuh</b> |
|                                           | Latent infiltration gain (for 54 gr. humidity difference) | 1244 Btuh         |
|                                           | Latent ventilation gain                                   | 0 Btuh            |
|                                           | Latent duct gain                                          | 1493 Btuh         |
|                                           | Latent occupant gain (8.0 people @ 200 Btuh per person)   | 1600 Btuh         |
|                                           | Latent other gain                                         | 0 Btuh            |
|                                           | <b>Latent total gain</b>                                  | <b>4337 Btuh</b>  |
|                                           | <b>TOTAL GAIN</b>                                         | <b>24025 Btuh</b> |

### EQUIPMENT

|                 |   |            |
|-----------------|---|------------|
| 1. Central Unit | # | 21936 Btuh |
|-----------------|---|------------|

\*Key: Window types (Panels - Number and type of panes of glass)  
(SHGC - Shading coefficient of glass as SHGC numerical value)  
(U - Window U-Factor)  
(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))  
- For Blinds: Assume medium color, half closed  
For Draperies: Assume medium weave, half closed  
For Roller shades: Assume translucent, half closed  
(IS - Insect screen: none(N), Full(F) or Half(½))  
(Ornt - compass orientation)



Version 8