

# Residential System Sizing Calculation

## Summary

Project Title:  
Curtis Jones Barndo

, FL

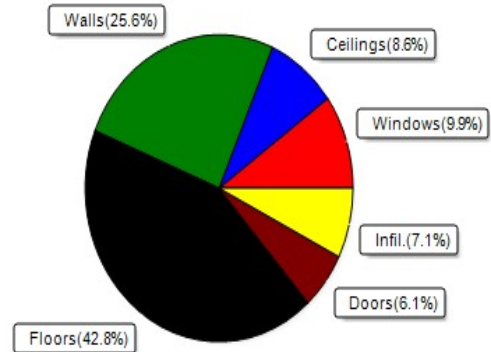
9/13/2024

|                                                                                                       |           |                   |                                       |              |                  |
|-------------------------------------------------------------------------------------------------------|-----------|-------------------|---------------------------------------|--------------|------------------|
| Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 ft.) Temp Range(M) |           |                   |                                       |              |                  |
| Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)                    |           |                   |                                       |              |                  |
| Winter design temperature(TMY3 99%)                                                                   | 30        | F                 | Summer design temperature(TMY3 99%)   | 94           | F                |
| Winter setpoint                                                                                       | 70        | F                 | Summer setpoint                       | 75           | F                |
| Winter temperature difference                                                                         | 40        | F                 | Summer temperature difference         | 19           | F                |
| <b>Total heating load calculation</b>                                                                 |           | <b>12137 Btuh</b> | <b>Total cooling load calculation</b> |              | <b>8957 Btuh</b> |
| Submitted heating capacity                                                                            | % of calc | Btuh              | Submitted cooling capacity            | % of calc    | Btuh             |
| Total (Electric Heat Pump)                                                                            | 197.7     | 24000             | Sensible (SHR = 0.75)                 | 223.8        | 18000            |
| Heat Pump + Auxiliary(0.0kW)                                                                          | 197.7     | 24000             | Latent                                | 657.6        | 6000             |
|                                                                                                       |           |                   | <b>Total (Electric Heat Pump)</b>     | <b>268.0</b> | <b>24000</b>     |

## WINTER CALCULATIONS

Winter Heating Load (for 765 sqft)

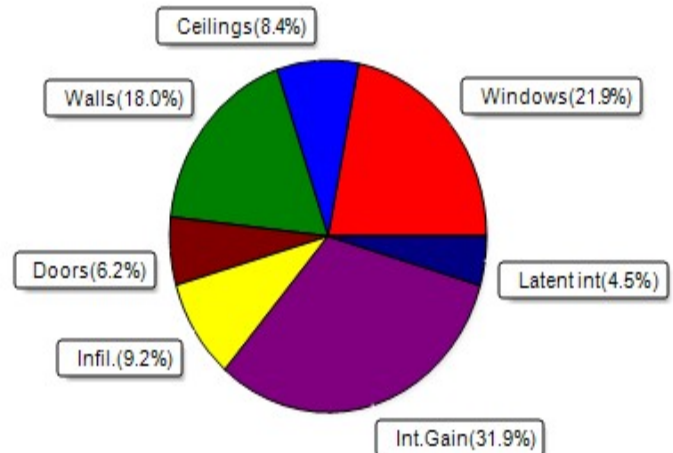
| Load component                  | Load |      |                   |
|---------------------------------|------|------|-------------------|
| Window total                    | 115  | sqft | 1199 Btuh         |
| Wall total                      | 835  | sqft | 3102 Btuh         |
| Door total                      | 40   | sqft | 736 Btuh          |
| Ceiling total                   | 765  | sqft | 1040 Btuh         |
| Floor total                     | 765  | sqft | 5192 Btuh         |
| Infiltration                    | 20   | cfm  | 867 Btuh          |
| Duct loss                       |      |      | 0 Btuh            |
| <b>Subtotal</b>                 |      |      | <b>12137 Btuh</b> |
| Ventilation Ex:0 cfm; Sup:0 cfm |      |      | 0 Btuh            |
| <b>TOTAL HEAT LOSS</b>          |      |      | <b>12137 Btuh</b> |



## SUMMER CALCULATIONS

Summer Cooling Load (for 765 sqft)

| Load component                        | Load |      |                  |
|---------------------------------------|------|------|------------------|
| Window total                          | 115  | sqft | 1959 Btuh        |
| Wall total                            | 835  | sqft | 1610 Btuh        |
| Door total                            | 40   | sqft | 552 Btuh         |
| Ceiling total                         | 765  | sqft | 754 Btuh         |
| Floor total                           |      |      | 0 Btuh           |
| Infiltration                          | 15   | cfm  | 309 Btuh         |
| Internal gain                         |      |      | 2860 Btuh        |
| Duct gain                             |      |      | 0 Btuh           |
| Sens.Ventilation Ex:0 cfm; Sup:0 cfm  |      |      | 0 Btuh           |
| Blower Load                           |      |      | 0 Btuh           |
| <b>Total sensible gain</b>            |      |      | <b>8044 Btuh</b> |
| Latent gain(ducts)                    |      |      | 0 Btuh           |
| Latent gain(infiltration)             |      |      | 512 Btuh         |
| Latent gain(ventilation)              |      |      | 0 Btuh           |
| Latent gain(internal/occupants/other) |      |      | 400 Btuh         |
| <b>Total latent gain</b>              |      |      | <b>912 Btuh</b>  |
| <b>TOTAL HEAT GAIN</b>                |      |      | <b>8957 Btuh</b> |



8th Edition



EnergyGauge® System Sizing

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

DATE: 9-13-24

# System Sizing Calculations - Summer

## Residential Load - Whole House Component Details

Project Title:  
Curtis Jones Barndo

, FL

9/13/2024

Reference City: Gainesville, FL (Defaults)  
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)  
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                                                   | 0.20, 0.26  | No | No   | N       | 1.5ft    | 1.3ft         | 6.0                | 0.0         | 6.0      | 9              | 9        | 55 Btuh   |
| 2             | 2 NFRC                                                   | 0.20, 0.26  | No | No   | E       | 1.5ft    | 1.3ft         | 60.0               | 0.0         | 60.0     | 9              | 24       | 1453 Btuh |
| 3             | 2 NFRC                                                   | 0.20, 0.26  | No | No   | S       | 1.5ft    | 1.3ft         | 36.0               | 36.0        | 0.0      | 9              | 11       | 329 Btuh  |
| 4             | 2 NFRC                                                   | 0.20, 0.26  | No | No   | S       | 1.5ft    | 1.3ft         | 13.3               | 13.3        | 0.0      | 9              | 11       | 122 Btuh  |
| Window Total  |                                                          |             |    |      |         |          |               | 115 (sqft)         |             |          |                |          | 1959 Btuh |
| Walls         | Type                                                     |             |    |      |         |          | U-Value       | R-Value            | Area(sqft)  |          | HTM            |          | Load      |
|               |                                                          |             |    |      |         |          |               | Cav/Sheath         |             |          |                |          |           |
| 1             | Frame - Steel - Ext                                      |             |    |      |         | 0.10     | 19.0/0.0      | 199.0              |             | 2.1      |                | 428 Btuh |           |
| 2             | Frame - Steel - Ext                                      |             |    |      |         | 0.10     | 19.0/0.0      | 210.0              |             | 2.1      |                | 451 Btuh |           |
| 3             | Frame - Steel - Ext                                      |             |    |      |         | 0.10     | 19.0/0.0      | 155.7              |             | 2.1      |                | 334 Btuh |           |
| 4             | Frame - Wood - Adj                                       |             |    |      |         | 0.08     | 19.0/0.0      | 270.0              |             | 1.5      |                | 396 Btuh |           |
| Wall Total    |                                                          |             |    |      |         |          |               | 835 (sqft)         |             |          |                |          | 1610 Btuh |
| Doors         | Type                                                     |             |    |      |         |          |               |                    | Area (sqft) |          | HTM            |          | Load      |
|               |                                                          |             |    |      |         |          |               |                    |             |          |                |          |           |
| 1             | Insulated - Exterior                                     |             |    |      |         |          |               | 20.0               |             | 13.8     |                | 276 Btuh |           |
| 2             | Insulated - Exterior                                     |             |    |      |         |          |               | 20.0               |             | 13.8     |                | 276 Btuh |           |
| Door Total    |                                                          |             |    |      |         |          |               | 40 (sqft)          |             |          |                |          | 552 Btuh  |
| Ceilings      | Type/Color/Surface                                       |             |    |      |         | U-Value  | R-Value       | Area(sqft)         |             | HTM      |                | Load     |           |
|               |                                                          |             |    |      |         |          |               |                    |             |          |                |          |           |
| 1             | SnglAsmb no airsp/DarkMetal                              |             |    |      |         | 0.034    | 0.0/30.0      | 765.0              |             | 0.99     |                | 754 Btuh |           |
| Ceiling Total |                                                          |             |    |      |         |          |               | 765 (sqft)         |             |          |                |          | 754 Btuh  |
| Floors        | Type                                                     |             |    |      |         |          | R-Value       |                    | Size        |          | HTM            |          | Load      |
|               |                                                          |             |    |      |         |          |               |                    |             |          |                |          |           |
| 1             | Slab On Grade                                            |             |    |      |         | 0.0      |               | 765 (ft-perimeter) |             | 0.0      |                | 0 Btuh   |           |
| Floor Total   |                                                          |             |    |      |         |          |               | 765.0 (sqft)       |             |          |                |          | 0 Btuh    |
|               | Envelope Subtotal:                                       |             |    |      |         |          |               |                    |             |          |                |          | 4875 Btuh |
| Infiltration  | Type                                                     | Average ACH |    |      |         |          | Volume(cuft)  |                    | Wall Ratio  |          | CFM=           |          | Load      |
|               | Natural                                                  | 0.13        |    |      |         |          | 6885          |                    | 1           |          | 14.8           |          |           |
| Internal gain | Occupants                                                |             |    |      |         |          | Btuh/occupant |                    | Appliance   |          | Load           |          |           |
|               | 2                                                        |             |    |      |         |          | X 230         |                    | +           |          | 2400           |          |           |
|               | Sensible Envelope Load:                                  |             |    |      |         |          |               |                    |             |          |                |          | 8044 Btuh |
| Duct load     | Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) |             |    |      |         |          |               |                    |             |          | (DGM of 0.000) |          | 0 Btuh    |
|               | Sensible Load All Zones                                  |             |    |      |         |          |               |                    |             |          |                |          | 8044 Btuh |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
Curtis Jones Barndo

, FL

9/13/2024

### WHOLE HOUSE TOTALS

|                                   |                                                           |                  |
|-----------------------------------|-----------------------------------------------------------|------------------|
| Whole House<br>Totals for Cooling | <b>Sensible Envelope Load All Zones</b>                   | <b>8044 Btuh</b> |
|                                   | Sensible Duct Load                                        | 0 Btuh           |
|                                   | <b>Total Sensible Zone Loads</b>                          | <b>8044 Btuh</b> |
|                                   | Sensible ventilation (Ex:0 cfm; Sup:0 cfm)                | 0 Btuh           |
|                                   | Blower                                                    | 0 Btuh           |
|                                   | <b>Total sensible gain</b>                                | <b>8044 Btuh</b> |
|                                   | Latent infiltration gain (for 51 gr. humidity difference) | 512 Btuh         |
|                                   | Latent ventilation gain                                   | 0 Btuh           |
|                                   | Latent duct gain                                          | 0 Btuh           |
|                                   | Latent occupant gain (2.0 people @ 200 Btuh per person)   | 400 Btuh         |
|                                   | Latent other gain                                         | 0 Btuh           |
|                                   | <b>Latent total gain</b>                                  | <b>912 Btuh</b>  |
|                                   | <b>TOTAL GAIN</b>                                         | <b>8957 Btuh</b> |

### EQUIPMENT

|                 |   |            |
|-----------------|---|------------|
| 1. Central Unit | # | 24000 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

# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

Project Title:  
Curtis Jones Barndo  
Building Type: User

, FL

9/13/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)  
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 0.20                                     | Vinyl      | 0.26    | N                   | 6.0              |      | 10.4           | 62 Btuh    |
| 2                               | 2, NFRC 0.20                                     | Vinyl      | 0.26    | E                   | 60.0             |      | 10.4           | 624 Btuh   |
| 3                               | 2, NFRC 0.20                                     | Vinyl      | 0.26    | S                   | 36.0             |      | 10.4           | 374 Btuh   |
| 4                               | 2, NFRC 0.20                                     | Vinyl      | 0.26    | S                   | 13.3             |      | 10.4           | 139 Btuh   |
|                                 | Window Total                                     |            |         |                     | 115.3(sqft)      |      |                | 1199 Btuh  |
| Walls                           | Type                                             | Ornt.      | Ueff.   | R-Value<br>(Cav/Sh) | Area             | X    | HTM=           | Load       |
| 1                               | Frame - Steel                                    | - Ext      | (0.100) | 19.0/0.0            | 199              |      | 4.02           | 799 Btuh   |
| 2                               | Frame - Steel                                    | - Ext      | (0.100) | 19.0/0.0            | 210              |      | 4.02           | 843 Btuh   |
| 3                               | Frame - Steel                                    | - Ext      | (0.100) | 19.0/0.0            | 156              |      | 4.02           | 625 Btuh   |
| 4                               | Frame - Wood                                     | - Adj      | (0.077) | 19.0/0.0            | 270              |      | 3.09           | 835 Btuh   |
|                                 | Wall Total                                       |            |         |                     | 835(sqft)        |      |                | 3102 Btuh  |
| Doors                           | Type                                             | Storm      | Ueff.   |                     | Area             | X    | HTM=           | Load       |
| 1                               | Insulated - Exterior, n                          |            | (0.460) |                     | 20               |      | 18.4           | 368 Btuh   |
| 2                               | Insulated - Exterior, n                          |            | (0.460) |                     | 20               |      | 18.4           | 368 Btuh   |
|                                 | Door Total                                       |            |         |                     | 40(sqft)         |      |                | 736Btuh    |
| Ceilings                        | Type/Color/Surface                               |            | Ueff.   | R-Value             | Area             | X    | HTM=           | Load       |
| 1                               | Single as/D/Metal                                |            | (0.034) | 0.0/30.0            | 765              |      | 1.4            | 1040 Btuh  |
|                                 | Ceiling Total                                    |            |         |                     | 765(sqft)        |      |                | 1040Btuh   |
| Floors                          | Type                                             |            | Ueff.   | R-Value             | Size             | X    | HTM=           | Load       |
| 1                               | Slab On Grade                                    |            | (1.180) | 0.0                 | 110.0 ft(perim.) |      | 47.2           | 5192 Btuh  |
|                                 | Floor Total                                      |            |         |                     | 765 sqft         |      |                | 5192 Btuh  |
|                                 | Envelope Subtotal:                               |            |         |                     |                  |      |                | 11270 Btuh |
| Infiltration                    | Type                                             | Wholehouse | ACH     | Volume(cuft)        | Wall Ratio       | CFM= |                |            |
|                                 | Natural                                          |            | 0.17    | 6885                | 1.00             | 19.8 |                | 867 Btuh   |
| Duct load                       | Extremely sealed, R6.0, Supply(Con), Return(Con) |            |         |                     |                  |      | (DLM of 0.000) | 0 Btuh     |
| All Zones                       | Sensible Subtotal All Zones                      |            |         |                     |                  |      |                | 12137 Btuh |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

, FL

Project Title:  
Curtis Jones Barndo  
Building Type: User

9/13/2024

### WHOLE HOUSE TOTALS

|                           |                                                   |            |
|---------------------------|---------------------------------------------------|------------|
| <b>Totals for Heating</b> | Subtotal Sensible Heat Loss                       | 12137 Btuh |
|                           | Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) | 0 Btuh     |
|                           | Total Heat Loss                                   | 12137 Btuh |

### EQUIPMENT

|                       |   |            |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 24000 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