

# Residential System Sizing Calculation

## Summary

Rich Fancher  
749 SW Coles Ct  
Ft White, FL

Project Title:  
Rich Fancher Res\_

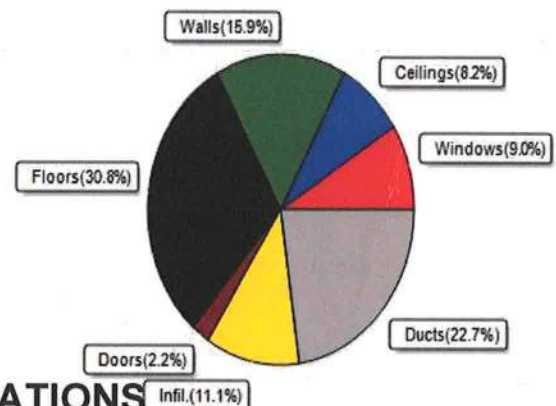
2/14/2024

|                                                                                                       |                   |                                       |                   |
|-------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|-------------------|
| 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>30591 Btuh</b> | <b>Total cooling load calculation</b> | <b>30039 Btuh</b> |
| Submitted heating capacity                                                                            | % of calc Btuh    | Submitted cooling capacity            | % of calc Btuh    |
| Total (Electric Heat Pump)                                                                            | 108.0 33048       | Sensible (SHR = 0.70)                 | 79.2 19203        |
| Heat Pump + Auxiliary(0.0kW)                                                                          | 108.0 33048       | Latent                                | 141.8 8230        |
|                                                                                                       |                   | Total (Electric Heat Pump)            | 91.3 27433        |

## WINTER CALCULATIONS

Winter Heating Load (for 2432 sqft)

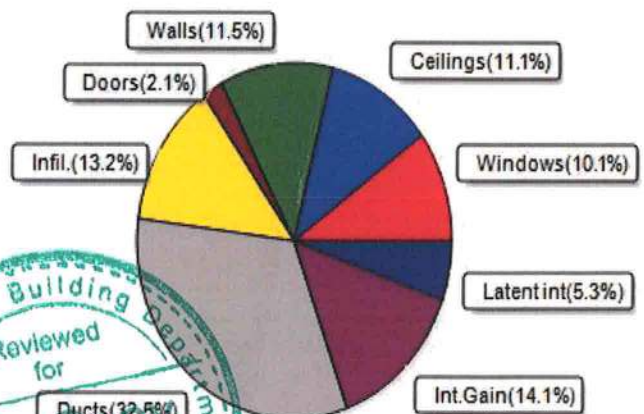
| Load component         |                     | Load         |             |
|------------------------|---------------------|--------------|-------------|
| Window total           | 207 sqft            | 2757         | Btuh        |
| Wall total             | 1697 sqft           | 4852         | Btuh        |
| Door total             | 40 sqft             | 681          | Btuh        |
| Ceiling total          | 2675 sqft           | 2512         | Btuh        |
| Floor total            | 2432 sqft           | 9431         | Btuh        |
| Infiltration           | 84 cfm              | 3399         | Btuh        |
| Duct loss              |                     | 6959         | Btuh        |
| <b>Subtotal</b>        |                     | <b>30591</b> | <b>Btuh</b> |
| Ventilation            | Ex:0 cfm; Sup:0 cfm | 0            | Btuh        |
| <b>TOTAL HEAT LOSS</b> |                     | <b>30591</b> | <b>Btuh</b> |



## SUMMER CALCULATIONS

Summer Cooling Load (for 2432 sqft)

| Load component                        |                     | Load         |             |
|---------------------------------------|---------------------|--------------|-------------|
| Window total                          | 207 sqft            | 3038         | Btuh        |
| Wall total                            | 1697 sqft           | 3462         | Btuh        |
| Door total                            | 40 sqft             | 644          | Btuh        |
| Ceiling total                         | 2675 sqft           | 3327         | Btuh        |
| Floor total                           |                     | 0            | Btuh        |
| Infiltration                          | 63 cfm              | 1654         | Btuh        |
| Internal gain                         |                     | 4240         | Btuh        |
| Duct gain                             |                     | 7870         | Btuh        |
| Sens. Ventilation                     | Ex:0 cfm; Sup:0 cfm | 0            | Btuh        |
| Blower Load                           |                     | 0            | Btuh        |
| <b>Total sensible gain</b>            |                     | <b>24234</b> | <b>Btuh</b> |
| Latent gain(ducts)                    |                     | 1905         | Btuh        |
| Latent gain(infiltration)             |                     | 2300         | Btuh        |
| Latent gain(ventilation)              |                     | 0            | Btuh        |
| Latent gain(internal/occupants/other) |                     | 1600         | Btuh        |
| <b>Total latent gain</b>              |                     | <b>5805</b>  | <b>Btuh</b> |
| <b>TOTAL HEAT GAIN</b>                |                     | <b>30039</b> | <b>Btuh</b> |



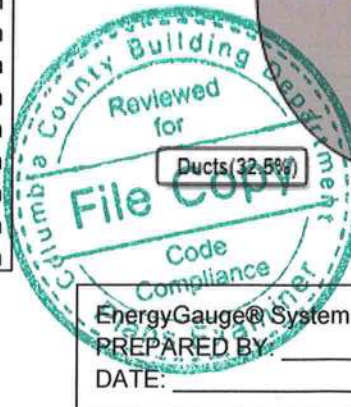
8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

2 / 14 / 2024



# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

Rich Fancher  
749 SW Coles Ct  
Ft White, FL

Project Title:  
Rich Fancher Res\_  
Building Type: User

2/14/2024

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    | S                   | 105.0            |      | 13.3 | 1399 Btuh  |
| 2                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | S                   | 4.0              |      | 13.3 | 53 Btuh    |
| 3                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | E                   | 4.0              |      | 13.3 | 53 Btuh    |
| 4                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | E                   | 6.0              |      | 13.3 | 80 Btuh    |
| 5                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | N                   | 16.0             |      | 13.3 | 213 Btuh   |
| 6                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | N                   | 12.0             |      | 13.3 | 160 Btuh   |
| 7                  | 2, NFRC 0.25                                                  | Vinyl      | 0.36    | N                   | 60.0             |      | 13.3 | 799 Btuh   |
| Window Total       |                                                               |            |         |                     | 207.0(sqft)      |      |      | 2757 Btuh  |
| Walls              | Type                                                          | Ornt.      | Ueff.   | R-Value<br>(Cav/Sh) | Area             | X    | HTM= | Load       |
| 1                  | Frame - Wood                                                  | - Ext      | (0.077) | 19.0/0.0            | 555              |      | 2.86 | 1587 Btuh  |
| 2                  | Frame - Wood                                                  | - Ext      | (0.077) | 19.0/0.0            | 278              |      | 2.86 | 795 Btuh   |
| 3                  | Frame - Wood                                                  | - Ext      | (0.077) | 19.0/0.0            | 576              |      | 2.86 | 1647 Btuh  |
| 4                  | Frame - Wood                                                  | - Ext      | (0.077) | 19.0/0.0            | 288              |      | 2.86 | 823 Btuh   |
| Wall Total         |                                                               |            |         |                     | 1697(sqft)       |      |      | 4852 Btuh  |
| Doors              | Type                                                          | Storm      | Ueff.   |                     | Area             | X    | HTM= | Load       |
| 1                  | Insulated - Exterior, n                                       |            | (0.460) |                     | 20               |      | 17.0 | 340 Btuh   |
| 2                  | Insulated - Exterior, n                                       |            | (0.460) |                     | 20               |      | 17.0 | 340 Btuh   |
| Door Total         |                                                               |            |         |                     | 40(sqft)         |      |      | 681 Btuh   |
| Ceilings           | Type/Color/Surface                                            |            | Ueff.   | R-Value             | Area             | X    | HTM= | Load       |
| 1                  | Flat ceil/D/Shing                                             |            | (0.025) | 38.0/0.0            | 2675             |      | 0.94 | 2512 Btuh  |
| Ceiling Total      |                                                               |            |         |                     | 2675(sqft)       |      |      | 2512 Btuh  |
| Floors             | Type                                                          |            | Ueff.   | R-Value             | Size             | X    | HTM= | Load       |
| 1                  | Slab On Grade                                                 |            | (1.180) | 0.0                 | 216.0 ft(perim.) |      | 43.7 | 9431 Btuh  |
| Floor Total        |                                                               |            |         |                     | 2432 sqft        |      |      | 9431 Btuh  |
| Envelope Subtotal: |                                                               |            |         |                     |                  |      |      | 20233 Btuh |
| Infiltration       | Type                                                          | Wholehouse | ACH     | Volume(cuft)        | Wall Ratio       | CFM= |      |            |
|                    | Natural                                                       |            | 0.23    | 21888               | 1.00             | 83.9 |      | 3399 Btuh  |
| Duct load          | Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.294) |            |         |                     |                  |      |      | 6959 Btuh  |
| All Zones          | Sensible Subtotal All Zones                                   |            |         |                     |                  |      |      | 30591 Btuh |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Rich Fancher  
749 SW Coles Ct  
Ft White, FL

Project Title:  
Rich Fancher Res\_  
Building Type: User

2/14/2024

### 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 | 30591 Btuh<br>0 Btuh<br>30591 Btuh |
|---------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|

### EQUIPMENT

|                       |   |            |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 33048 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

Rich Fancher  
749 SW Coles Ct  
Ft White, FL

Project Title:  
Rich Fancher Res\_

2/14/2024

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   | S  |      | 1.5ft.      | 1.0ft. | 105.0             | 105.0  | 0.0                 | 14            | 16                                  | 1459                    | Btuh      |            |  |
| 2             | 2 NFRC                                                | 0.25, 0.36 | No | No   | S  |      | 1.5ft.      | 1.0ft. | 4.0               | 4.0    | 0.0                 | 14            | 16                                  | 56                      | Btuh      |            |  |
| 3             | 2 NFRC                                                | 0.25, 0.36 | No | No   | E  |      | 1.5ft.      | 1.0ft. | 4.0               | 1.0    | 3.0                 | 14            | 33                                  | 113                     | Btuh      |            |  |
| 4             | 2 NFRC                                                | 0.25, 0.36 | No | No   | E  |      | 1.5ft.      | 1.0ft. | 6.0               | 0.5    | 5.5                 | 14            | 33                                  | 187                     | Btuh      |            |  |
| 5             | 2 NFRC                                                | 0.25, 0.36 | No | No   | N  |      | 1.5ft.      | 1.0ft. | 16.0              | 0.0    | 16.0                | 14            | 14                                  | 222                     | Btuh      |            |  |
| 6             | 2 NFRC                                                | 0.25, 0.36 | No | No   | N  |      | 1.5ft.      | 1.0ft. | 12.0              | 0.0    | 12.0                | 14            | 14                                  | 167                     | Btuh      |            |  |
| 7             | 2 NFRC                                                | 0.25, 0.36 | No | No   | N  |      | 1.5ft.      | 1.0ft. | 60.0              | 0.0    | 60.0                | 14            | 14                                  | 834                     | Btuh      |            |  |
| Window Total  |                                                       |            |    |      |    |      |             |        | 207 (sqft)        |        |                     |               |                                     | 3038 Btuh               |           |            |  |
| Walls         | Type                                                  |            |    |      |    |      | U-Value     |        | R-Value           |        | Area(sqft)          |               | HTM                                 |                         | Load      |            |  |
|               |                                                       |            |    |      |    |      |             |        | Cav/Sheath        |        |                     |               |                                     |                         |           |            |  |
| 1             | Frame - Wood - Ext                                    |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 555.0               |               | 2.0                                 |                         | 1132 Btuh |            |  |
| 2             | Frame - Wood - Ext                                    |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 278.0               |               | 2.0                                 |                         | 567 Btuh  |            |  |
| 3             | Frame - Wood - Ext                                    |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 576.0               |               | 2.0                                 |                         | 1175 Btuh |            |  |
| 4             | Frame - Wood - Ext                                    |            |    |      |    |      | 0.08        |        | 19.0/0.0          |        | 288.0               |               | 2.0                                 |                         | 588 Btuh  |            |  |
| Wall Total    |                                                       |            |    |      |    |      |             |        |                   |        |                     | 1697 (sqft)   |                                     | 3462 Btuh               |           |            |  |
| Doors         | Type                                                  |            |    |      |    |      |             |        |                   |        | Area (sqft)         |               | HTM                                 |                         | Load      |            |  |
|               |                                                       |            |    |      |    |      |             |        |                   |        |                     |               |                                     |                         |           |            |  |
| 1             | Insulated - Exterior                                  |            |    |      |    |      |             |        |                   |        | 20.0                |               | 16.1                                |                         | 322 Btuh  |            |  |
| 2             | Insulated - Exterior                                  |            |    |      |    |      |             |        |                   |        | 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 AtticDarkShingle/RB                            |            |    |      |    |      | 0.025       |        | 38.0/0.0          |        | 2675.0              |               | 1.24                                |                         | 3327 Btuh |            |  |
| Ceiling Total |                                                       |            |    |      |    |      |             |        |                   |        |                     | 2675 (sqft)   |                                     | 3327 Btuh               |           |            |  |
| Floors        | Type                                                  |            |    |      |    |      |             |        | R-Value           |        | Size                |               | HTM                                 |                         | Load      |            |  |
|               |                                                       |            |    |      |    |      |             |        |                   |        |                     |               |                                     |                         |           |            |  |
| 1             | Slab On Grade                                         |            |    |      |    |      |             |        | 0.0               |        | 2432 (ft-perimeter) |               | 0.0                                 |                         | 0 Btuh    |            |  |
| Floor Total   |                                                       |            |    |      |    |      |             |        |                   |        |                     | 2432.0 (sqft) |                                     | 0 Btuh                  |           |            |  |
|               | Envelope Subtotal:                                    |            |    |      |    |      |             |        |                   |        |                     |               |                                     | 10470 Btuh              |           |            |  |
| Infiltration  | Type                                                  |            |    |      |    |      | Average ACH |        | Volume(cuft)      |        | Wall Ratio          |               | CFM=                                |                         | Load      |            |  |
|               | Natural                                               |            |    |      |    |      | 0.17        |        | 21888             |        | 1                   |               | 62.9                                |                         | 1654 Btuh |            |  |
| Internal gain |                                                       |            |    |      |    |      | Occupants   |        | Btuh/occupant     |        |                     |               | Appliance                           |                         | Load      |            |  |
|               |                                                       |            |    |      |    |      | 8           |        | X 230             |        | +                   |               | 2400 <td colspan="2">4240 Btuh</td> |                         | 4240 Btuh |            |  |
|               | Sensible Envelope Load:                               |            |    |      |    |      |             |        |                   |        |                     |               |                                     | 16364 Btuh              |           |            |  |
| Duct load     | Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) |            |    |      |    |      |             |        |                   |        |                     |               |                                     | (DGM of 0.481)          |           | 7870 Btuh  |  |
|               |                                                       |            |    |      |    |      |             |        |                   |        |                     |               |                                     | Sensible Load All Zones |           | 24234 Btuh |  |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Rich Fancher  
749 SW Coles Ct  
Ft White, FL

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
Rich Fancher Res\_

2/14/2024

### WHOLE HOUSE TOTALS

|                                           |                                                           |                   |
|-------------------------------------------|-----------------------------------------------------------|-------------------|
| <b>Whole House<br/>Totals for Cooling</b> | <b>Sensible Envelope Load All Zones</b>                   | <b>16364 Btuh</b> |
|                                           | Sensible Duct Load                                        | 7870 Btuh         |
|                                           | <b>Total Sensible Zone Loads</b>                          | <b>24234 Btuh</b> |
|                                           | Sensible ventilation (Ex:0 cfm; Sup:0 cfm)                | 0 Btuh            |
|                                           | Blower                                                    | 0 Btuh            |
|                                           | <b>Total sensible gain</b>                                | <b>24234 Btuh</b> |
|                                           | Latent infiltration gain (for 54 gr. humidity difference) | 2300 Btuh         |
|                                           | Latent ventilation gain                                   | 0 Btuh            |
|                                           | Latent duct gain                                          | 1905 Btuh         |
|                                           | Latent occupant gain (8.0 people @ 200 Btuh per person)   | 1600 Btuh         |
|                                           | Latent other gain                                         | 0 Btuh            |
|                                           | <b>Latent total gain</b>                                  | <b>5805 Btuh</b>  |
|                                           | <b>TOTAL GAIN</b>                                         | <b>30039 Btuh</b> |

### EQUIPMENT

|                 |   |            |
|-----------------|---|------------|
| 1. Central Unit | # | 27433 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