

Residential System Sizing Calculation

Summary

Spec House

Project Title:

231167 Lot 12 Cannon Creek

Lake City, FL

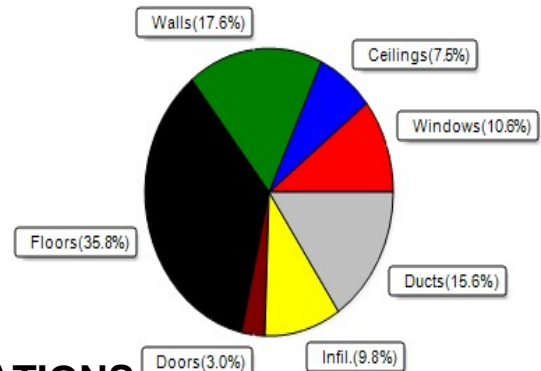
2023-09-26

| | | | | | |
|---|--------------|-------------|---------------------------------------|--------------|--------------|
| Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 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 |
| Total heating load calculation | 26893 | Btuh | Total cooling load calculation | 24006 | Btuh |
| Submitted heating capacity | % of calc | Btuh | Submitted cooling capacity | % of calc | Btuh |
| Total (Electric Heat Pump) | 107.8 | 29000 | Sensible (SHR = 0.75) | 107.5 | 21750 |
| Heat Pump + Auxiliary(0.0kW) | 107.8 | 29000 | Latent | 191.8 | 7250 |
| | | | Total (Electric Heat Pump) | 120.8 | 29000 |

WINTER CALCULATIONS

Winter Heating Load (for 1740 sqft)

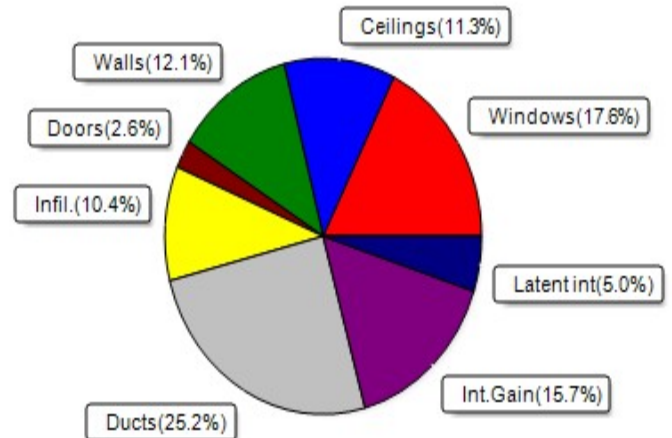
| Load component | Load | |
|------------------------|---------------------|-------------------|
| Window total | 239 sqft | 2863 Btuh |
| Wall total | 1336 sqft | 4744 Btuh |
| Door total | 51 sqft | 818 Btuh |
| Ceiling total | 1986 sqft | 2016 Btuh |
| Floor total | 1740 sqft | 9629 Btuh |
| Infiltration | 60 cfm | 2629 Btuh |
| Duct loss | | 4194 Btuh |
| Subtotal | | 26893 Btuh |
| Ventilation | Ex:0 cfm; Sup:0 cfm | 0 Btuh |
| TOTAL HEAT LOSS | | 26893 Btuh |



SUMMER CALCULATIONS

Summer Cooling Load (for 1740 sqft)

| Load component | Load | |
|---------------------------------------|---------------------|-------------------|
| Window total | 239 sqft | 4233 Btuh |
| Wall total | 1336 sqft | 2911 Btuh |
| Door total | 51 sqft | 613 Btuh |
| Ceiling total | 1986 sqft | 2722 Btuh |
| Floor total | | 0 Btuh |
| Infiltration | 45 cfm | 937 Btuh |
| Internal gain | | 3780 Btuh |
| Duct gain | | 5030 Btuh |
| Sens.Ventilation | Ex:0 cfm; Sup:0 cfm | 0 Btuh |
| Blower Load | | 0 Btuh |
| Total sensible gain | | 20226 Btuh |
| Latent gain(ducts) | | 1026 Btuh |
| Latent gain(infiltration) | | 1554 Btuh |
| Latent gain(ventilation) | | 0 Btuh |
| Latent gain(internal/occupants/other) | | 1200 Btuh |
| Total latent gain | | 3781 Btuh |
| TOTAL HEAT GAIN | | 24006 Btuh |



8th Edition

EnergyGauge® System Sizing
 PREPARED BY: Evan Beamsley
 DATE: 2023-09-26

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Spec House

Project Title:

231167 Lot 12 Cannon Creek

Lake City, FL

Building Type: User

2023-09-26

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 | Metal | 0.30 | N | 30.0 | | 12.0 | 360 Btuh |
| 2 | 2, NFRC 0.20 | Metal | 0.30 | E | 11.1 | | 12.0 | 133 Btuh |
| 3 | 2, NFRC 0.20 | Metal | 0.30 | N | 45.0 | | 12.0 | 540 Btuh |
| 4 | 2, NFRC 0.20 | Metal | 0.30 | W | 17.8 | | 12.0 | 213 Btuh |
| 5 | 2, NFRC 0.20 | Metal | 0.30 | N | 30.0 | | 12.0 | 360 Btuh |
| 6 | 2, NFRC 0.20 | Metal | 0.30 | E | 30.0 | | 12.0 | 360 Btuh |
| 7 | 2, NFRC 0.20 | Metal | 0.30 | E | 6.0 | | 12.0 | 72 Btuh |
| 8 | 2, NFRC 0.20 | Metal | 0.30 | S | 30.0 | | 12.0 | 360 Btuh |
| 9 | 2, NFRC 0.20 | Metal | 0.30 | S | 30.0 | | 12.0 | 360 Btuh |
| 10 | 2, NFRC 0.20 | Metal | 0.30 | S | 6.7 | | 12.0 | 80 Btuh |
| 11 | 2, NFRC 0.20 | Metal | 0.30 | W | 2.0 | | 12.0 | 24 Btuh |
| Window Total | | | | | 238.6(sqft) | | | 2863 Btuh |
| Walls | Type | Ornt. | Ueff. | R-Value (Cav/Sh) | Area | X | HTM= | Load |
| 1 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 135 | | 3.55 | 478 Btuh |
| 2 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 24 | | 3.55 | 84 Btuh |
| 3 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 90 | | 3.55 | 318 Btuh |
| 4 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 17 | | 3.55 | 60 Btuh |
| 5 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 67 | | 3.55 | 237 Btuh |
| 6 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 341 | | 3.55 | 1212 Btuh |
| 7 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 67 | | 3.55 | 237 Btuh |
| 8 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 45 | | 3.55 | 161 Btuh |
| 9 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 57 | | 3.55 | 204 Btuh |
| 10 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 55 | | 3.55 | 194 Btuh |
| 11 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 21 | | 3.55 | 73 Btuh |
| 12 | Frame - Wood | - Adj | (0.089) | 13.0/0.0 | 51 | | 3.55 | 180 Btuh |
| 13 | Frame - Wood | - Adj | (0.089) | 13.0/0.0 | 147 | | 3.55 | 522 Btuh |
| 14 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 221 | | 3.55 | 786 Btuh |
| Wall Total | | | | | 1336(sqft) | | | 4744 Btuh |
| Doors | Type | Storm | Ueff. | R-Value | Area | X | HTM= | Load |
| 1 | Insulated - Exterior, | n | (0.400) | | 7 | | 16.0 | 107 Btuh |
| 2 | Insulated - Exterior, | n | (0.400) | | 7 | | 16.0 | 107 Btuh |
| 3 | Insulated - Exterior, | n | (0.400) | | 20 | | 16.0 | 320 Btuh |
| 4 | Insulated - Garage, | n | (0.400) | | 18 | | 16.0 | 284 Btuh |
| Door Total | | | | | 51(sqft) | | | 818Btuh |
| Ceilings | Type/Color/Surface | Ueff. | R-Value | Area | X | HTM= | Load | |
| 1 | Flat ceil/D/Shing | (0.025) | 38.0/0.0 | 1986 | | 1.0 | 2016 Btuh | |
| Ceiling Total | | | | | 1986(sqft) | | | 2016Btuh |
| Floors | Type | Ueff. | R-Value | Size | X | HTM= | Load | |
| 1 | Slab On Grade | (1.180) | 0.0 | 204.0 ft(perim.) | | 47.2 | 9629 Btuh | |
| Floor Total | | | | | 1740 sqft | | | 9629 Btuh |

Manual J Winter Calculations

Residential Load - Component Details (continued)

Spec House
Lake City, FL

Project Title:
231167 Lot 12 Cannon Creek
Building Type: User

2023-09-26

| | | |
|---------------------|---|---|
| | Envelope Subtotal: | 20070 Btuh |
| Infiltration | Type Natural | Wholehouse ACH Volume(cuft) Wall Ratio CFM= 0.23 15660 1.00 60.0 |
| Duct load | Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.185) | |
| All Zones | Sensible Subtotal All Zones | 26893 Btuh |

WHOLE HOUSE TOTALS

| | | |
|---------------------------|---|------------------------------------|
| Totals for Heating | Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss | 26893 Btuh 0 Btuh 26893 Btuh |
|---------------------------|---|------------------------------------|

EQUIPMENT

| | | |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 29000 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

Spec House

Project Title:

231167 Lot 12 Cannon Creek

Lake City, FL

2023-09-26

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, 0.30 | No | No | N | 1.5ft | 0.5ft | 30.0 | 11.8 | 18.2 | 10 | 20 | 481 | Btuh |
| 2 | 2 NFRC | 0.20, 0.30 | No | No | E | 99.0f | 0.5ft | 11.1 | 0.0 | 11.1 | 10 | 19 | 213 | Btuh |
| 3 | 2 NFRC | 0.20, 0.30 | No | No | N | 6.7ft | 1.0ft | 45.0 | 45.0 | 0.0 | 10 | 20 | 446 | Btuh |
| 4 | 2 NFRC | 0.20, 0.30 | No | No | W | 99.0f | 1.0ft | 17.8 | 17.8 | 0.0 | 10 | 20 | 176 | Btuh |
| 5 | 2 NFRC | 0.20, 0.30 | No | No | N | 1.5ft | 0.5ft | 30.0 | 11.8 | 18.2 | 10 | 20 | 481 | Btuh |
| 6 | 2 NFRC | 0.20, 0.30 | No | No | E | 1.5ft | 0.5ft | 30.0 | 0.0 | 30.0 | 10 | 19 | 574 | Btuh |
| 7 | 2 NFRC | 0.20, 0.30 | No | No | E | 1.5ft | 0.5ft | 6.0 | 0.0 | 6.0 | 10 | 19 | 115 | Btuh |
| 8 | 2 NFRC | 0.20, 0.30 | No | No | S | 1.5ft | 4.0ft | 30.0 | 0.0 | 30.0 | 10 | 19 | 574 | Btuh |
| 9 | 2 NFRC | 0.20, 0.30 | No | No | S | 1.5ft | 0.5ft | 30.0 | 0.0 | 30.0 | 10 | 19 | 574 | Btuh |
| 10 | 2 NFRC | 0.20, 0.30 | No | No | S | 8.3ft | 0.5ft | 6.7 | 0.0 | 6.7 | 10 | 19 | 128 | Btuh |
| 11 | 2 NFRC | 0.20, 0.30 | No | No | W | 1.5ft | 0.5ft | 2.0 | 2.0 | 0.0 | 10 | 20 | 20 | Btuh |
| | Excursion | | | | | | | | | | | | 450 | Btuh |
| | Window Total | | | | | | | 239 (sqft) | | | | | 4233 Btuh | |
| Walls | Type | U-Value | R-Value | Area(sqft) | | HTM | | Load | | | | | | |
| | | | | Cav/Sheath | | | | | | | | | | |
| 1 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 134.7 | | 2.3 | | 305 Btuh | | | | | | |
| 2 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 23.6 | | 2.3 | | 53 Btuh | | | | | | |
| 3 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 89.7 | | 2.3 | | 203 Btuh | | | | | | |
| 4 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 16.9 | | 2.3 | | 38 Btuh | | | | | | |
| 5 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 66.7 | | 2.3 | | 151 Btuh | | | | | | |
| 6 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 341.3 | | 2.3 | | 773 Btuh | | | | | | |
| 7 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 66.7 | | 2.3 | | 151 Btuh | | | | | | |
| 8 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 45.3 | | 2.3 | | 103 Btuh | | | | | | |
| 9 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 57.3 | | 2.3 | | 130 Btuh | | | | | | |
| 10 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 54.7 | | 2.3 | | 124 Btuh | | | | | | |
| 11 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 20.7 | | 2.3 | | 47 Btuh | | | | | | |
| 12 | Frame - Wood - Adj | 0.09 | 13.0/0.0 | 50.7 | | 1.7 | | 85 Btuh | | | | | | |
| 13 | Frame - Wood - Adj | 0.09 | 13.0/0.0 | 146.9 | | 1.7 | | 248 Btuh | | | | | | |
| 14 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 221.3 | | 2.3 | | 501 Btuh | | | | | | |
| | Wall Total | | | 1336 (sqft) | | | | 2911 Btuh | | | | | | |
| Doors | Type | Area (sqft) | HTM | | Load | | | | | | | | | |
| 1 | Insulated - Exterior | 6.7 | 12.0 | | 80 Btuh | | | | | | | | | |
| 2 | Insulated - Exterior | 6.7 | 12.0 | | 80 Btuh | | | | | | | | | |
| 3 | Insulated - Exterior | 20.0 | 12.0 | | 240 Btuh | | | | | | | | | |
| 4 | Insulated - Garage | 17.8 | 12.0 | | 213 Btuh | | | | | | | | | |
| | Door Total | | 51 (sqft) | | 613 Btuh | | | | | | | | | |
| Ceilings | Type/Color/Surface | U-Value | R-Value | Area(sqft) | HTM | Load | | | | | | | | |
| 1 | Vented Attic/DarkShingle | 0.025 | 38.0/0.0 | 1986.0 | 1.37 | 2722 Btuh | | | | | | | | |
| | Ceiling Total | | | 1986 (sqft) | | 2722 Btuh | | | | | | | | |
| Floors | Type | R-Value | Size | HTM | Load | | | | | | | | | |
| 1 | Slab On Grade | 0.0 | 1740 (ft-perimeter) | 0.0 | 0 Btuh | | | | | | | | | |
| | Floor Total | | 1740.0 (sqft) | | 0 Btuh | | | | | | | | | |
| Envelope Subtotal: | | | | | 10479 Btuh | | | | | | | | | |

Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
231167 Lot 12 Cannon Creek

2023-09-26

| | | | | | | |
|----------------------|--|---------------------|--------------------------------|-----------------|-------------------|-------------------|
| Infiltration | Type Natural | Average ACH 0.17 | Volume(cuft) 15660 | Wall Ratio 1 | CFM= 45.0 | Load 937 Btuh |
| Internal gain | | Occupants 6 | Btuh/occupant X 230 | + | Appliance 2400 | Load 3780 Btuh |
| | | | Sensible Envelope Load: | | | 15195 Btuh |
| Duct load | Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) | | | (DGM of 0.331) | | 5030 Btuh |
| | | | Sensible Load All Zones | | | 20226 Btuh |

Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
231167 Lot 12 Cannon Creek

2023-09-26

WHOLE HOUSE TOTALS

| | | |
|---|---|-------------------|
| Whole House Totals for Cooling | Sensible Envelope Load All Zones | 15195 Btuh |
| | Sensible Duct Load | 5030 Btuh |
| | Total Sensible Zone Loads | 20226 Btuh |
| | Sensible ventilation (Ex:0 cfm; Sup:0 cfm) | 0 Btuh |
| | Blower | 0 Btuh |
| | Total sensible gain | 20226 Btuh |
| | Latent infiltration gain (for 51 gr. humidity difference) | 1554 Btuh |
| | Latent ventilation gain | 0 Btuh |
| | Latent duct gain | 1026 Btuh |
| | Latent occupant gain (6.0 people @ 200 Btuh per person) | 1200 Btuh |
| | Latent other gain | 0 Btuh |
| | Latent total gain | 3781 Btuh |
| | TOTAL GAIN | 24006 Btuh |

EQUIPMENT

| | | |
|-----------------|---|------------|
| 1. Central Unit | # | 29000 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