

# Residential System Sizing Calculation

## Summary

N/A

Project Title:  
Lot 24 Cannon Creek Place

Lake City, FL 32024

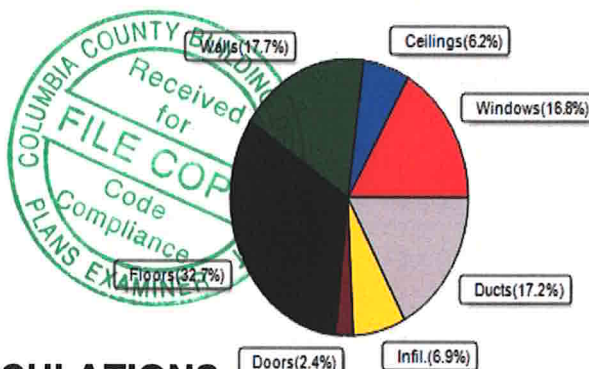
6/3/2020

|                                                                                                       |                   |                                       |                   |
|-------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|-------------------|
| 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              |
| <b>Total heating load calculation</b>                                                                 | <b>30302 Btuh</b> | <b>Total cooling load calculation</b> | <b>21238 Btuh</b> |
| Submitted heating capacity                                                                            | % of calc Btuh    | Submitted cooling capacity            | % of calc Btuh    |
| Total (Electric Heat Pump)                                                                            | 106.3 32200       | Sensible (SHR = 0.85)                 | 108.8 19520       |
| Heat Pump + Auxiliary(0.0kW)                                                                          | 106.3 32200       | Latent                                | 104.3 3445        |
|                                                                                                       |                   | Total (Electric Heat Pump)            | 108.1 22965       |

## WINTER CALCULATIONS

Winter Heating Load (for 1771 sqft)

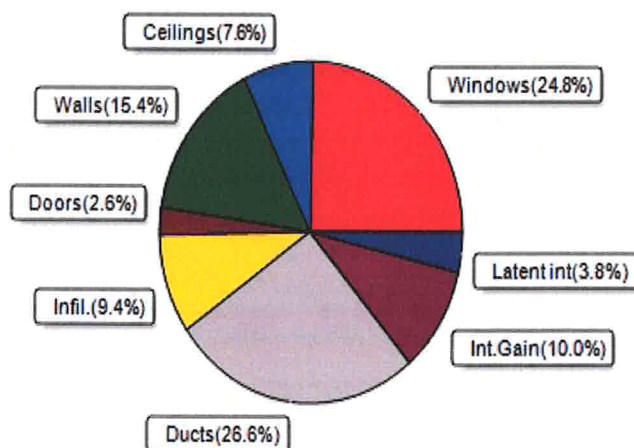
| Load component         |           | Load              |  |
|------------------------|-----------|-------------------|--|
| Window total           | 353 sqft  | 5088 Btuh         |  |
| Wall total             | 1513 sqft | 5373 Btuh         |  |
| Door total             | 40 sqft   | 736 Btuh          |  |
| Ceiling total          | 1860 sqft | 1888 Btuh         |  |
| Floor total            | 1771 sqft | 9912 Btuh         |  |
| Infiltration           | 48 cfm    | 2099 Btuh         |  |
| Duct loss              |           | 5205 Btuh         |  |
| <b>Subtotal</b>        |           | <b>30302 Btuh</b> |  |
| Ventilation            | 0 cfm     | 0 Btuh            |  |
| <b>TOTAL HEAT LOSS</b> |           | <b>30302 Btuh</b> |  |



## SUMMER CALCULATIONS

Summer Cooling Load (for 1771 sqft)

| Load component                        |           | Load              |  |
|---------------------------------------|-----------|-------------------|--|
| Window total                          | 353 sqft  | 5259 Btuh         |  |
| Wall total                            | 1513 sqft | 3269 Btuh         |  |
| Door total                            | 40 sqft   | 552 Btuh          |  |
| Ceiling total                         | 1860 sqft | 1605 Btuh         |  |
| Floor total                           |           | 0 Btuh            |  |
| Infiltration                          | 36 cfm    | 748 Btuh          |  |
| Internal gain                         |           | 2120 Btuh         |  |
| Duct gain                             |           | 4383 Btuh         |  |
| Sens. Ventilation                     | 0 cfm     | 0 Btuh            |  |
| Blower Load                           |           | 0 Btuh            |  |
| <b>Total sensible gain</b>            |           | <b>17937 Btuh</b> |  |
| Latent gain(ducts)                    |           | 1261 Btuh         |  |
| Latent gain(infiltration)             |           | 1241 Btuh         |  |
| Latent gain(ventilation)              |           | 0 Btuh            |  |
| Latent gain(internal/occupants/other) |           | 800 Btuh          |  |
| <b>Total latent gain</b>              |           | <b>3302 Btuh</b>  |  |
| <b>TOTAL HEAT GAIN</b>                |           | <b>21238 Btuh</b> |  |



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

6/10/2020

# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

N/A

Lake City, FL 32024

Project Title:  
Lot 24 Cannon Creek Place  
Building Type: User

6/3/2020

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

| 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                   | 16.0             |   | 14.4 | 230 Btuh  |
| 2                               | 2, NFRC 0.25            | Vinyl | 0.36    | S                   | 13.3             |   | 14.4 | 192 Btuh  |
| 3                               | 2, NFRC 0.25            | Vinyl | 0.36    | S                   | 5.0              |   | 14.4 | 72 Btuh   |
| 4                               | 2, NFRC 0.25            | Vinyl | 0.36    | S                   | 36.0             |   | 14.4 | 518 Btuh  |
| 5                               | 2, NFRC 0.25            | Vinyl | 0.36    | E                   | 20.0             |   | 14.4 | 288 Btuh  |
| 6                               | 2, NFRC 0.25            | Vinyl | 0.36    | E                   | 6.0              |   | 14.4 | 86 Btuh   |
| 7                               | 2, NFRC 0.25            | Vinyl | 0.36    | N                   | 45.0             |   | 14.4 | 648 Btuh  |
| 8                               | 2, NFRC 0.25            | Vinyl | 0.36    | N                   | 25.0             |   | 14.4 | 360 Btuh  |
| 9                               | 2, NFRC 0.25            | Vinyl | 0.36    | N                   | 45.0             |   | 14.4 | 648 Btuh  |
| 10                              | 2, NFRC 0.25            | Vinyl | 0.36    | N                   | 15.0             |   | 14.4 | 216 Btuh  |
| 11                              | 2, NFRC 0.25            | Vinyl | 0.36    | W                   | 20.0             |   | 14.4 | 288 Btuh  |
| 12                              | 2, NFRC 0.25            | Vinyl | 0.36    | E                   | 20.0             |   | 14.4 | 288 Btuh  |
| 13                              | 2, NFRC 0.25            | Vinyl | 0.36    | N                   | 72.0             |   | 14.4 | 1037 Btuh |
| 14                              | 2, NFRC 0.25            | Vinyl | 0.36    | W                   | 15.0             |   | 14.4 | 216 Btuh  |
| Window Total                    |                         |       |         |                     | 353.3(sqft)      |   |      | 5088 Btuh |
| Walls                           | Type                    | Ornt. | Ueff.   | R-Value<br>(Cav/Sh) | Area             | X | HTM= | Load      |
| 1                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 91               |   | 3.55 | 322 Btuh  |
| 2                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 42               |   | 3.55 | 148 Btuh  |
| 3                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 23               |   | 3.55 | 83 Btuh   |
| 4                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 80               |   | 3.55 | 284 Btuh  |
| 5                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 294              |   | 3.55 | 1042 Btuh |
| 6                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 208              |   | 3.55 | 737 Btuh  |
| 7                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 34               |   | 3.55 | 121 Btuh  |
| 8                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 60               |   | 3.55 | 213 Btuh  |
| 9                               | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 96               |   | 3.55 | 342 Btuh  |
| 10                              | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 50               |   | 3.55 | 178 Btuh  |
| 11                              | Frame - Wood            | - Ext | (0.089) | 13.0/0.0            | 266              |   | 3.55 | 943 Btuh  |
| 12                              | Frame - Wood            | - Adj | (0.089) | 13.0/0.0            | 93               |   | 3.55 | 330 Btuh  |
| 13                              | Frame - Wood            | - Adj | (0.089) | 13.0/0.0            | 178              |   | 3.55 | 632 Btuh  |
| Wall Total                      |                         |       |         |                     | 1514(sqft)       |   |      | 5373 Btuh |
| Doors                           | Type                    | Storm | Ueff.   |                     | Area             | X | HTM= | Load      |
| 1                               | Insulated - Exterior, n |       | (0.460) |                     | 20               |   | 18.4 | 368 Btuh  |
| 2                               | Insulated - Garage, 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                               | Vented Attic/L/Shing    |       | (0.025) | 38.0/0.0            | 1860             |   | 1.0  | 1888 Btuh |
| Ceiling Total                   |                         |       |         |                     | 1860(sqft)       |   |      | 1888Btuh  |
| Floors                          | Type                    |       | Ueff.   | R-Value             | Size             | X | HTM= | Load      |
| 1                               | Slab On Grade           |       | (1.180) | 0.0                 | 210.0 ft(perim.) |   | 47.2 | 9912 Btuh |
| Floor Total                     |                         |       |         |                     | 1771 sqft        |   |      | 9912 Btuh |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

N/A

Lake City, FL 32024

Project Title:  
Lot 24 Cannon Creek Place  
Building Type: User

6/3/2020

|                     |                                                               |                        |                       |                    |              |                   |
|---------------------|---------------------------------------------------------------|------------------------|-----------------------|--------------------|--------------|-------------------|
|                     | Envelope Subtotal:                                            |                        |                       |                    |              | 22998 Btuh        |
| <b>Infiltration</b> | Type<br>Natural                                               | Wholehouse ACH<br>0.18 | Volume(cuft)<br>15939 | Wall Ratio<br>1.00 | CFM=<br>47.9 | 2099 Btuh         |
| <b>Duct load</b>    | Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.207) |                        |                       |                    |              | 5205 Btuh         |
| <b>All Zones</b>    | <b>Sensible Subtotal All Zones</b>                            |                        |                       |                    |              | <b>30302 Btuh</b> |

### WHOLE HOUSE TOTALS

|                           |                                |  |  |  |  |            |
|---------------------------|--------------------------------|--|--|--|--|------------|
| <b>Totals for Heating</b> | Subtotal Sensible Heat Loss    |  |  |  |  | 30302 Btuh |
|                           | Ventilation Sensible Heat Loss |  |  |  |  | 0 Btuh     |
|                           | Total Heat Loss                |  |  |  |  | 30302 Btuh |

### EQUIPMENT

|                       |   |            |
|-----------------------|---|------------|
| 1. Electric Heat Pump | # | 32200 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

N/A

Project Title:

Lot 24 Cannon Creek Place

Lake City, FL 32024

6/3/2020

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

### 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                      | 1.0ft.      | 1.0ft. | 16.0              | 16.0       | 0.0      | 12        | 14        | 194 Btuh |
| 2                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | S                      | 7.5ft.      | 1.5ft. | 13.3              | 13.3       | 0.0      | 12        | 14        | 161 Btuh |
| 3                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | S                      | 7.5ft.      | 0.5ft. | 5.0               | 5.0        | 0.0      | 12        | 14        | 60 Btuh  |
| 4                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | S                      | 1.5ft.      | 1.0ft. | 36.0              | 36.0       | 0.0      | 12        | 14        | 436 Btuh |
| 5                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | E                      | 1.5ft.      | 1.0ft. | 20.0              | 1.0        | 19.0     | 12        | 31        | 600 Btuh |
| 6                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | E                      | 1.5ft.      | 1.0ft. | 6.0               | 0.5        | 5.5      | 12        | 31        | 176 Btuh |
| 7                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | N                      | 1.5ft.      | 1.0ft. | 45.0              | 0.0        | 45.0     | 12        | 12        | 544 Btuh |
| 8                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | N                      | 1.5ft.      | 0.5ft. | 25.0              | 0.0        | 25.0     | 12        | 12        | 302 Btuh |
| 9                  | 2 NFRC                       | 0.25, 0.36  | No       | No                  | N                      | 1.5ft.      | 0.5ft. | 45.0              | 0.0        | 45.0     | 12        | 12        | 544 Btuh |
| 10                 | 2 NFRC                       | 0.25, 0.36  | No       | No                  | N                      | 1.5ft.      | 0.5ft. | 15.0              | 0.0        | 15.0     | 12        | 12        | 181 Btuh |
| 11                 | 2 NFRC                       | 0.25, 0.36  | No       | No                  | W                      | 5.5ft.      | 0.5ft. | 20.0              | 12.2       | 7.8      | 12        | 31        | 389 Btuh |
| 12                 | 2 NFRC                       | 0.25, 0.36  | No       | No                  | E                      | 7.5ft.      | 0.5ft. | 20.0              | 17.2       | 2.8      | 12        | 31        | 295 Btuh |
| 13                 | 2 NFRC                       | 0.25, 0.36  | No       | No                  | N                      | 9.5ft.      | 0.5ft. | 72.0              | 0.0        | 72.0     | 12        | 12        | 871 Btuh |
| 14                 | 2 NFRC                       | 0.25, 0.36  | No       | No                  | W                      | 1.5ft.      | 0.5ft. | 15.0              | 2.2        | 12.8     | 12        | 31        | 422 Btuh |
| Excursion          |                              |             |          |                     |                        |             |        |                   |            |          |           | 81 Btuh   |          |
| Window Total       |                              |             |          |                     |                        |             |        |                   | 353 (sqft) |          |           | 5259 Btuh |          |
| Walls              | Type                         | U-Value     |          | R-Value             |                        | Area(sqft)  |        | HTM               |            | Load     |           |           |          |
|                    |                              |             |          |                     |                        |             |        |                   |            |          |           |           |          |
| 1                  | Frame - Wood - Ext           |             | 0.09     |                     | Cav/Sheath<br>13.0/0.0 |             | 90.7   |                   | 2.3        |          | 205 Btuh  |           |          |
| 2                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 41.7   |                   | 2.3        |          | 94 Btuh   |           |          |
| 3                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 23.3   |                   | 2.3        |          | 53 Btuh   |           |          |
| 4                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 80.0   |                   | 2.3        |          | 181 Btuh  |           |          |
| 5                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 293.5  |                   | 2.3        |          | 664 Btuh  |           |          |
| 6                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 207.5  |                   | 2.3        |          | 470 Btuh  |           |          |
| 7                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 34.0   |                   | 2.3        |          | 77 Btuh   |           |          |
| 8                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 60.0   |                   | 2.3        |          | 136 Btuh  |           |          |
| 9                  | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 96.3   |                   | 2.3        |          | 218 Btuh  |           |          |
| 10                 | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 50.0   |                   | 2.3        |          | 113 Btuh  |           |          |
| 11                 | Frame - Wood - Ext           |             | 0.09     |                     | 13.0/0.0               |             | 265.5  |                   | 2.3        |          | 601 Btuh  |           |          |
| 12                 | Frame - Wood - Adj           |             | 0.09     |                     | 13.0/0.0               |             | 93.0   |                   | 1.7        |          | 157 Btuh  |           |          |
| 13                 | Frame - Wood - Adj           |             | 0.09     |                     | 13.0/0.0               |             | 178.0  |                   | 1.7        |          | 300 Btuh  |           |          |
| Wall Total         |                              |             |          |                     |                        | 1513 (sqft) |        |                   |            |          | 3269 Btuh |           |          |
| Doors              | Type                         | Area (sqft) |          | HTM                 |                        | Load        |        |                   |            |          |           |           |          |
|                    |                              |             |          |                     |                        |             |        |                   |            |          |           |           |          |
| 1                  | Insulated - Exterior         |             | 20.0     |                     | 13.8                   | 276 Btuh    |        |                   |            |          |           |           |          |
| 2                  | Insulated - Garage           |             | 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                  | Vented AtticLight/Shingle/RB | 0.025       | 38.0/0.0 | 1860.0              | 0.86                   | 1605 Btuh   |        |                   |            |          |           |           |          |
| Ceiling Total      |                              |             |          | 1860 (sqft)         | 1605 Btuh              |             |        |                   |            |          |           |           |          |
| Floors             | Type                         | R-Value     |          | Size                | HTM                    | Load        |        |                   |            |          |           |           |          |
|                    |                              |             |          |                     |                        |             |        |                   |            |          |           |           |          |
| 1                  | Slab On Grade                |             | 0.0      | 1771 (ft-perimeter) | 0.0                    | 0 Btuh      |        |                   |            |          |           |           |          |
| Floor Total        |                              |             |          | 1771.0 (sqft)       | 0 Btuh                 |             |        |                   |            |          |           |           |          |
| Envelope Subtotal: |                              |             |          |                     |                        | 10686 Btuh  |        |                   |            |          |           |           |          |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

N/A

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
Lot 24 Cannon Creek Place

Lake City, FL 32024

6/3/2020

|                      |                                                       |                     |                        |                 |                                |                   |
|----------------------|-------------------------------------------------------|---------------------|------------------------|-----------------|--------------------------------|-------------------|
| <b>Infiltration</b>  | Type<br>Natural                                       | Average ACH<br>0.14 | Volume(cuft)<br>15939  | Wall Ratio<br>1 | CFM=<br>35.9                   | Load<br>748 Btuh  |
| <b>Internal gain</b> |                                                       | Occupants<br>4      | Btuh/occupant<br>X 230 | Appliance<br>+  | 1200                           | Load<br>2120 Btuh |
|                      |                                                       |                     |                        |                 | Sensible Envelope Load:        | 13553 Btuh        |
| <b>Duct load</b>     | Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) |                     |                        |                 | (DGM of 0.323)                 | 4383 Btuh         |
|                      |                                                       |                     |                        |                 | <b>Sensible Load All Zones</b> | <b>17937 Btuh</b> |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

N/A

Project Title: Climate:FL\_GAINESVILLE\_REGIONAL\_A  
Lot 24 Cannon Creek Place

Lake City, FL 32024

6/3/2020

### WHOLE HOUSE TOTALS

|                                           |                                                           |                   |
|-------------------------------------------|-----------------------------------------------------------|-------------------|
| <b>Whole House<br/>Totals for Cooling</b> | <b>Sensible Envelope Load All Zones</b>                   | <b>13553 Btuh</b> |
|                                           | Sensible Duct Load                                        | 4383 Btuh         |
|                                           | <b>Total Sensible Zone Loads</b>                          | <b>17937 Btuh</b> |
|                                           | Sensible ventilation                                      | 0 Btuh            |
|                                           | Blower                                                    | 0 Btuh            |
|                                           | <b>Total sensible gain</b>                                | <b>17937 Btuh</b> |
|                                           | Latent infiltration gain (for 51 gr. humidity difference) | 1241 Btuh         |
|                                           | Latent ventilation gain                                   | 0 Btuh            |
|                                           | Latent duct gain                                          | 1261 Btuh         |
|                                           | Latent occupant gain (4.0 people @ 200 Btuh per person)   | 800 Btuh          |
|                                           | Latent other gain                                         | 0 Btuh            |
|                                           | <b>Latent total gain</b>                                  | <b>3302 Btuh</b>  |
|                                           | <b>TOTAL GAIN</b>                                         | <b>21238 Btuh</b> |

### EQUIPMENT

|                 |   |            |
|-----------------|---|------------|
| 1. Central Unit | # | 22965 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