20

FORM 405-10

# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

| | | | |
|---|---|---|---|
| Project Name: | 1210078 | Builder Name: | Bryan Zecher |
| Street: | | Permit Office: | |
| City, State, Zip: | , FL , | Permit Number: | |
| Owner: | Parnell Res. | Jurisdiction: | |
| Design Location: | FL, Gainesville | | |

| | | | | |
|---|---|---|---|---|
| 1. New construction or existing | New (From Plans) | | | |
| 2. Single family or multiple family | Single-family | | | |
| 3. Number of units, if multiple family | 1 | | | |
| 4. Number of Bedrooms | 3 | | | |
| 5. Is this a worst case? | Yes | | | |
| 6. Conditioned floor area above grade (ft²) | 1962 | | | |
| Conditioned floor area below grade (ft²) | 0 | | | |
| 7. Windows(388.7 sqft.) | Description | | Area | |
| a. U-Factor: | Dbl, U=0.35 | | 388.67 | ft² |
| SHGC: | SHGC=0.35 | | | |
| b. U-Factor: | N/A | | | ft² |
| SHGC: | | | | |
| c. U-Factor: | N/A | | | ft² |
| SHGC: | | | | |
| d. U-Factor: | N/A | | | ft² |
| SHGC: | | | | |
| Area Weighted Average Overhang Depth: | | | 1.500 | ft. |
| Area Weighted Average SHGC: | | | 0.350 | |
| 8. Floor Types (1962.0 sqft.) | | Insulation | Area | |
| a. Slab-On-Grade Edge Insulation | | R=0.0 | 1962.00 | ft² |
| b. N/A | | R= | | ft² |
| c. N/A | | R= | | ft² |

| | | | |
|---|---|---|---|
| 9. Wall Types (1978.5 sqft.) | Insulation | Area | |
| a. Frame - Wood, Exterior | R=13.0 | 1699.50 | ft² |
| b. Frame - Wood, Adjacent | R=13.0 | 279.00 | ft² |
| c. N/A | R= | | ft² |
| d. N/A | R= | | ft² |
| 10. Ceiling Types (1962.0 sqft.) | Insulation | Area | |
| a. Under Attic (Vented) | R=30.0 | 1962.00 | ft² |
| b. N/A | R= | | ft² |
| c. N/A | R= | | ft² |
| 11. Ducts | | R | ft² |
| a. Sup: Attic, Ret: Attic, AH: Garage | | 6 | 392.4 |
| 12. Cooling systems | kBtu/hr | Efficiency | |
| a. Central Unit | 51.0 | SEER:15.00 | |
| 13. Heating systems | kBtu/hr | Efficiency | |
| a. Electric Heat Pump | 51.0 | HSPF:8.30 | |
| 14. Hot water systems | | | |
| a. Electric | | Cap: 40 gallons | |
| | | EF: 0.920 | |
| b. Conservation features | | | |
| None | | | |
| 15. Credits | | Pstat | |

Glass/Floor Area: 0.198

Total Proposed Modified Loads: 32.71

Total Standard Reference Loads: 42.32

**PASS**

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code.

PREPARED BY: ERAN BEAMSLEY

DATE: 10/24/12

I hereby certify that this building, as designed, is in compliance with the Florida Energy Code.

OWNER/AGENT: _____

DATE: 11/26/12

Review of the plans and specifications covered by this calculation indicates compliance with the Florida Energy Code. Before construction is completed this building will be inspected for compliance with Section 553.908 Florida Statutes.

BUILDING OFFICIAL: _____

DATE: _____

GREAT SEAL OF THE STATE OF FLORIDA * IN GOD WE TRUST *

COLUMBIA COUNTY BUILDING DEPARTMENT Received for FILE COPY Code Compliance PLANS EXAMINER

**- Compliance requires completion of a Florida Air Barrier and Insulation Inspection Checklist**

## PROJECT

| | | | | | |
|---|---|---|---|---|---|
| Title: | 1210078 | Bedrooms: | 3 | Address Type: | Lot Information |
| Building Type: | User | Conditioned Area: | 1962 | Lot # | |
| Owner: | Parnell Res. | Total Stories: | 1 | Block/SubDivision: | |
| # of Units: | 1 | Worst Case: | Yes | PlatBook: | |
| Builder Name: | Bryan Zecher | Rotate Angle: | 90 | Street: | |
| Permit Office: | | Cross Ventilation: | | County: | Columbia |
| Jurisdiction: | | Whole House Fan: | | City, State, Zip: | , FL , |
| Family Type: | Single-family | | | | |
| New/Existing: | New (From Plans) | | | | |
| Comment: | | | | | |

## CLIMATE

| √ | Design Location | TMY Site | IECC Zone | Design Temp 97.5 % | Design Temp 2.5 % | Int Design Temp Winter | Int Design Temp Summer | Heating Degree Days | Design Moisture | Daily Temp Range |
|---|---|---|---|---|---|---|---|---|---|---|
| _____ | FL, Gainesville | FL_GAINESVILLE_REGI | 2 | 32 | 92 | 70 | 75 | 1305.5 | 51 | Medium |

## BLOCKS

| Number | Name | Area | Volume |
|---|---|---|---|
| 1 | Block1 | 1962 | 17658 |

## SPACES

| Number | Name | Area | Volume | Kitchen | Occupants | Bedrooms | Infil ID | Finished | Cooled | Heate |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Main | 1962 | 17658 | Yes | 6 | 3 | 1 | Yes | Yes | Yes |

## FLOORS

| √ | # | Floor Type | Space | Perimeter | R-Value | Area | | Tile | Wood | Carpet |
|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Slab-On-Grade Edge Insulatio | Main | 220 ft | 0 | 1962 ft² | ---- | 0.3 | 0.3 | 0.4 |

## ROOF

| √ | # | Type | Materials | Roof Area | Gable Area | Roof Color | Solar Absor. | SA Tested | Emitt | Emitt Tested | Deck Insul. | Pitch (deg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Hip | Composition shingles | 2194 ft² | 0 ft² | Dark | 0.96 | No | 0.9 | No | 0 | 26.6 |

## ATTIC

| √ | # | Type | Ventilation | Vent Ratio (1 in) | Area | RBS | IRCC |
|---|---|---|---|---|---|---|---|
| _____ | 1 | Full attic | Vented | 300 | 1962 ft² | N | N |

## CEILING

| √ | # | Ceiling Type | Space | R-Value | Area | Framing Frac | Truss Type |
|---|---|---|---|---|---|---|---|
| _____ | 1 | Under Attic (Vented) | Main | 30 | 1962 ft² | 0.11 | Wood |

## WALLS

| √ | # | Ornt | Adjacent To | Wall Type | Space | Cavity R-Value | Width Ft | Width In | Height Ft | Height In | Area | Sheathing R-Value | Framing Fraction | Solar Absor. | Below Grade% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ___ | 1 | N=>E | Exterior | Frame - Wood | Main | 13 | 54 | 8 | 9 | | 492 ft² | | 0.23 | 0.75 | 0 |
| ___ | 2 | E=>S | Exterior | Frame - Wood | Main | 13 | 46 | 2 | 9 | | 415.5 ft² | | 0.23 | 0.75 | 0 |
| ___ | 3 | S=>W | Exterior | Frame - Wood | Main | 13 | 33 | | 9 | | 297 ft² | | 0.23 | 0.75 | 0 |
| ___ | 4 | W=>N | Exterior | Frame - Wood | Main | 13 | 55 | | 9 | | 495 ft² | | 0.23 | 0.75 | 0 |
| ___ | 5 | S=>W | Garage | Frame - Wood | Main | 13 | 31 | | 9 | | 279 ft² | | 0.23 | 0.75 | 0 |

## DOORS

| √ | # | Ornt | Door Type | Space | Storms | U-Value | Width Ft | Width In | Height Ft | Height In | Area |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ___ | 1 | S=>W | Insulated | Main | None | 0.400000 | 3 | | 6 | 8 | 20 ft² |
| ___ | 2 | S=>W | Insulated | Main | None | 0.400000 | 3 | | 6 | 8 | 13.33333 |

## WINDOWS

Orientation shown is the entered orientation (=>) changed to Worst Case.

| √ | # | Ornt | Wall ID | Frame | Panes | NFRC | U-Factor | SHGC | Area | Overhang Depth | Overhang Separation | Int Shade | Screening |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ___ | 1 | N=>E | 1 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 72 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 2 | E=>S | 2 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 18 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 3 | N=>E | 1 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 96 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 4 | W=>N | 4 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 64 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 5 | N=>E | 1 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 15 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 6 | E=>S | 2 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 4 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 7 | E=>S | 2 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 15 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 8 | S=>W | 3 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 12 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 9 | S=>W | 3 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 26.66666 | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 10 | S=>W | 3 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 36 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 11 | S=>W | 3 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 4 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 12 | S=>W | 3 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 20 ft² | 1 ft 6 in | 1 ft 0 in | None | None |
| ___ | 13 | S=>W | 3 | Metal | Low-E Double | Yes | 0.35 | 0.35 | 6 ft² | 1 ft 6 in | 1 ft 0 in | None | None |

## GARAGE

| √ | # | Floor Area | Ceiling Area | Exposed Wall Perimeter | Avg. Wall Height | Exposed Wall Insulation |
|---|---|---|---|---|---|---|
| ___ | 1 | 481.000061 ft² | 481.000061 ft² | 57 ft | 9 ft | 1 |

## INFILTRATION

| # | Scope | Method | SLA | CFM 50 | ELA | EqLA | ACH | ACH 50 |
|---|---|---|---|---|---|---|---|---|
| 1 | Wholehouse | Best Guess | 0.000699 | 3602.4 | 197.76 | 371.93 | 0.5389 | 12.240 |

## HEATING SYSTEM

| √ | # | System Type | Subtype | Efficiency | Capacity | Block | Ducts |
|---|---|---|---|---|---|---|---|
| _____ | 1 | Electric Heat Pump | None | HSPF: 8.3 | 51 kBtu/hr | 1 | sys#1 |

## COOLING SYSTEM

| √ | # | System Type | Subtype | Efficiency | Capacity | Air Flow | SHR | Block | Ducts |
|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Central Unit | None | SEER: 15 | 51 kBtu/hr | 1530 cfm | 0.75 | 1 | sys#1 |

## HOT WATER SYSTEM

| √ | # | System Type | SubType | Location | EF | Cap | Use | SetPnt | Conservation |
|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Electric | None | Garage | 0.92 | 40 gal | 60 gal | 120 deg | None |

## SOLAR HOT WATER SYSTEM

| √ | FSEC Cert # | Company Name | System Model # | Collector Model # | Collector Area | Storage Volume | FEF |
|---|---|---|---|---|---|---|---|
| _____ | None | None | | | ft² | | |

## DUCTS

| √ | # | ---- Supply ---- Location | R-Value | Area | ---- Return ---- Location | Area | Leakage Type | Air Handler | CFM 25 | Percent Leakage | QN | RLF | HVAC # Heat | Cool |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| _____ | 1 | Attic | 6 | 392.4 ft | Attic | 98.1 ft² | Default Leakage | Garage | (Default) | (Default) % | | | 1 | 1 |

## TEMPERATURES

Programable Thermostat: Y  Ceiling Fans:

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling | [ ] | [ ] | [ ] | [ ] | [ ] | [X] | [X] | [X] | [X] | [ ] | [ ] | [ ] |
| Heating | [X] | [X] | [X] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [X] | [X] |
| Venting | [ ] | [ ] | [X] | [X] | [ ] | [ ] | [ ] | [ ] | [ ] | [X] | [X] | [ ] |

Thermostat Schedule: HERS 2006 Reference

| Schedule Type | | Hours 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling (WD) | AM | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 80 | 80 | 80 | 80 |
| | PM | 80 | 80 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Cooling (WEH) | AM | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| | PM | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Heating (WD) | AM | 66 | 66 | 66 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | PM | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 66 |
| Heating (WEH) | AM | 66 | 66 | 66 | 66 | 66 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | PM | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 66 | 66 |

FORM 405-10

# Florida Code Compliance Checklist

Florida Department of Business and Professional Regulations
Residential Whole Building Performance Method

| ADDRESS: | PERMIT #: |
|---|---|
| , FL, | |

**MANDATORY REQUIREMENTS SUMMARY - See individual code sections for full details.**

| COMPONENT | SECTION | SUMMARY OF REQUIREMENT(S) | CHECK |
|---|---|---|---|
| Air leakage | 402.4 | To be caulked, gasketed, weatherstripped or otherwise sealed. Recessed lighting IC-rated as meeting ASTM E 283. Windows and doors = 0.30 cfm/sq.ft. Testing or visual inspection required. Fireplaces: gasketed doors & outdoor combustion air. Must complete envelope leakage report or visually verify Table 402.4.2. | |
| Thermostat & controls | 403.1 | At least one thermostat shall be provided for each separate heating and cooling system. Where forced-air furnace is primary system, programmable thermostat is required. Heat pumps with supplemental electric heat must prevent supplemental heat when compressor can meet the load. | |
| Ducts | 403.2.2<br><br>403.3.3 | All ducts, air handlers, filter boxes and building cavities which form the primary air containment passageways for air distribution systems shall be considered ducts or plenum chambers, shall be constructed and sealed in accordance with Section 503.2.7.2 of this code.<br><br>Building framing cavities shall not be used as supply ducts. | |
| Water heaters | 403.4 | Heat trap required for vertical pipe risers. Comply with efficiencies in Table 403.4.3.2. Provide switch or clearly marked circuit breaker (electric) or shutoff (gas). Circulating system pipes insulated to = R-2 + accessible manual OFF switch. | |
| Mechanical ventilation | 403.5 | Homes designed to operate at positive pressure or with mechanical ventilation systems shall not exceed the minimum ASHRAE 62 level. No make-up air from attics, crawlspaces, garages or outdoors adjacent to pools or spas. | |
| Swimming Pools & Spas | 403.9 | Pool pumps and pool pump motors with a total horsepower (HP) of = 1 HP shall have the capability of operating at two or more speeds. Spas and heated pools must have vapor-retardant covers or a liquid cover or other means proven to reduce heat loss except if 70% of heat from site-recovered energy. Off/timer switch required. Gas heaters minimum thermal efficiency=78% (82% after 4/16/13). Heat pump pool heaters minimum COP= 4.0. | |
| Cooling/heating equipment | 403.6 | Sizing calculation performed & attached. Minimum efficiencies per Tables 503.2.3. Equipment efficiency verification required. Special occasion cooling or heating capacity requires separate system or variable capacity system. Electric heat >10kW must be divided into two or more stages. | |
| Ceilings/knee walls | 405.2.1 | R-19 space permitting. | |

# ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

## ESTIMATED ENERGY PERFORMANCE INDEX* = 77

The lower the EnergyPerformance Index, the more efficient the home.

, , FL,

| | | |
|---|---|---|
| 1. New construction or existing | | New (From Plans) |
| 2. Single family or multiple family | | Single-family |
| 3. Number of units, if multiple family | | 1 |
| 4. Number of Bedrooms | | 3 |
| 5. Is this a worst case? | | Yes |
| 6. Conditioned floor area (ft²) | | 1962 |
| 7. Windows** | Description | Area |
| a. U-Factor: | Dbl, U=0.35 | 388.67 ft² |
| SHGC: | SHGC=0.35 | |
| b. U-Factor: | N/A | ft² |
| SHGC: | | |
| c. U-Factor: | N/A | ft² |
| SHGC: | | |
| d. U-Factor: | N/A | ft² |
| SHGC: | | |
| Area Weighted Average Overhang Depth: | | 1.500 ft. |
| Area Weighted Average SHGC: | | 0.350 |

| 8. Floor Types | Insulation | Area |
|---|---|---|
| a. Slab-On-Grade Edge Insulation | R=0.0 | 1962.00 ft² |
| b. N/A | R= | ft² |
| c. N/A | R= | ft² |

| 9. Wall Types | Insulation | Area |
|---|---|---|
| a. Frame - Wood, Exterior | R=13.0 | 1699.50 ft² |
| b. Frame - Wood, Adjacent | R=13.0 | 279.00 ft² |
| c. N/A | R= | ft² |
| d. N/A | R= | ft² |

| 10. Ceiling Types | Insulation | Area |
|---|---|---|
| a. Under Attic (Vented) | R=30.0 | 1962.00 ft² |
| b. N/A | R= | ft² |
| c. N/A | R= | ft² |

| 11. Ducts | R | ft² |
|---|---|---|
| a. Sup: Attic, Ret: Attic, AH: Garage | 6 | 392.4 |

| 12. Cooling systems | kBtu/hr | Efficiency |
|---|---|---|
| a. Central Unit | 51.0 | SEER:15.00 |

| 13. Heating systems | kBtu/hr | Efficiency |
|---|---|---|
| a. Electric Heat Pump | 51.0 | HSPF:8.30 |

| | |
|---|---|
| 14. Hot water systems | |
| a. Electric | Cap: 40 gallons |
| | EF: 0.92 |
| b. Conservation features | |
| None | |
| 15. Credits | Pstat |

I certify that this home has complied with the Florida Energy Efficiency Code for Building Construction through the above energy saving features which will be installed (or exceeded) in this home before final inspection. Otherwise, a new EPL Display Card will be completed based on installed Code compliant features.

Builder Signature: _____ Date: 11/26/12

Address of New Home: 1724 NW Tark Glen City/FL Zip: LC, FL 32055

*Note: This is not a Building Energy Rating. If your Index is below 70, your home may qualify for energy efficient mortgage (EEM) incentives if you obtain a Florida EnergyGauge Rating. Contact the EnergyGauge Hotline at (321) 638-1492 or see the EnergyGauge web site at energygauge.com for information and a list of certified Raters. For information about the Florida Building Code, Energy Conservation, contact the Florida Building Commission's support staff.

**Label required by Section 303.1.3 of the Florida Building Code, Energy Conservation, if not DEFAULT.

# Residential System Sizing Calculation

## Summary

Parnell Res.

Project Title:
1210078

, FL

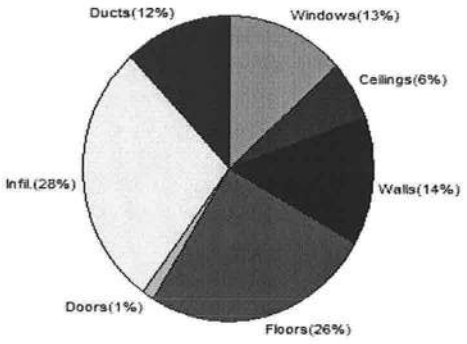
10/29/2012

| 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(54gr.) | | | | | |
|---|---|---|---|---|---|
| Winter design temperature(MJ8 99%) | 33 | F | Summer design temperature(MJ8 99%) | 92 | F |
| Winter setpoint | 70 | F | Summer setpoint | 75 | F |
| Winter temperature difference | 37 | F | Summer temperature difference | 17 | F |
| **Total heating load calculation** | **37305** | **Btuh** | **Total cooling load calculation** | **43112** | **Btuh** |
| Submitted heating capacity | % of calc | Btuh | Submitted cooling capacity | % of calc | Btuh |
| Total (Electric Heat Pump) | 136.7 | 51000 | Sensible (SHR = 0.75) | 113.4 | 38250 |
| Heat Pump + Auxiliary(0.0kW) | 136.7 | 51000 | Latent | 135.9 | 12750 |
| | | | Total (Electric Heat Pump) | 118.3 | 51000 |

## WINTER CALCULATIONS

Winter Heating Load (for 1962 sqft)

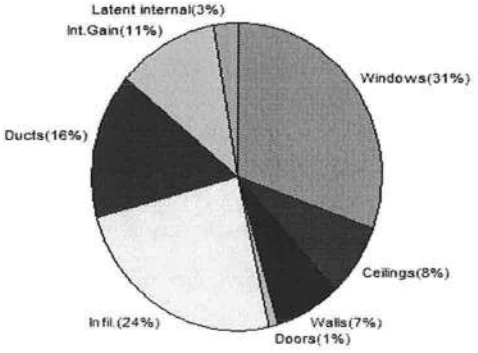
| Load component | | | Load | |
|---|---|---|---|---|
| Window total | 389 | sqft | 5033 | Btuh |
| Wall total | 1557 | sqft | 5112 | Btuh |
| Door total | 33 | sqft | 493 | Btuh |
| Ceiling total | 1962 | sqft | 2312 | Btuh |
| Floor total | 1962 | sqft | 9605 | Btuh |
| Infiltration | 254 | cfm | 10281 | Btuh |
| Duct loss | | | 4469 | Btuh |
| **Subtotal** | | | **37305** | **Btuh** |
| Ventilation | 0 | cfm | 0 | Btuh |
| **TOTAL HEAT LOSS** | | | **37305** | **Btuh** |




## SUMMER CALCULATIONS

Summer Cooling Load (for 1962 sqft)

| Load component | | | Load | |
|---|---|---|---|---|
| Window total | 389 | sqft | 13193 | Btuh |
| Wall total | 1557 | sqft | 3097 | Btuh |
| Door total | 33 | sqft | 373 | Btuh |
| Ceiling total | 1962 | sqft | 3249 | Btuh |
| Floor total | | | 0 | Btuh |
| Infiltration | 190 | cfm | 3543 | Btuh |
| Internal gain | | | 4780 | Btuh |
| Duct gain | | | 5494 | Btuh |
| Sens. Ventilation | 0 | cfm | 0 | Btuh |
| Blower Load | | | 0 | Btuh |
| **Total sensible gain** | | | **33729** | **Btuh** |
| Latent gain(ducts) | | | 1226 | Btuh |
| Latent gain(infiltration) | | | 6957 | Btuh |
| Latent gain(ventilation) | | | 0 | Btuh |
| Latent gain(internal/occupants/other) | | | 1200 | Btuh |
| **Total latent gain** | | | **9383** | **Btuh** |
| **TOTAL HEAT GAIN** | | | **43112** | **Btuh** |




Powered by ACCA MANUAL J 8th Edition

EnergyGauge® System Sizing
PREPARED BY: EVAN BENNETT
DATE: 10/29/12

# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

Parnell Res.
, FL

Project Title:
1210078
Building Type: User

10/29/2012

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 F (MJ8 99%)
**This calculation is for Worst Case. The house has been rotated 270 degrees.**

**Component Loads for Whole House**

| **Window** | Panes/Type | Frame | U | Orientation | Area(sqft) X | HTM= | Load |
|---|---|---|---|---|---|---|---|
| 1 | 2, NFRC 0.35 | Metal | 0.35 | W | 72.0 | 12.9 | 932 Btuh |
| 2 | 2, NFRC 0.35 | Metal | 0.35 | N | 18.0 | 12.9 | 233 Btuh |
| 3 | 2, NFRC 0.35 | Metal | 0.35 | W | 96.0 | 12.9 | 1243 Btuh |
| 4 | 2, NFRC 0.35 | Metal | 0.35 | S | 64.0 | 12.9 | 829 Btuh |
| 5 | 2, NFRC 0.35 | Metal | 0.35 | W | 15.0 | 12.9 | 194 Btuh |
| 6 | 2, NFRC 0.35 | Metal | 0.35 | N | 4.0 | 12.9 | 52 Btuh |
| 7 | 2, NFRC 0.35 | Metal | 0.35 | N | 15.0 | 12.9 | 194 Btuh |
| 8 | 2, NFRC 0.35 | Metal | 0.35 | E | 12.0 | 12.9 | 155 Btuh |
| 9 | 2, NFRC 0.35 | Metal | 0.35 | E | 26.7 | 12.9 | 345 Btuh |
| 10 | 2, NFRC 0.35 | Metal | 0.35 | E | 36.0 | 12.9 | 466 Btuh |
| 11 | 2, NFRC 0.35 | Metal | 0.35 | E | 4.0 | 12.9 | 52 Btuh |
| 12 | 2, NFRC 0.35 | Metal | 0.35 | E | 20.0 | 12.9 | 259 Btuh |
| 13 | 2, NFRC 0.35 | Metal | 0.35 | E | 6.0 | 12.9 | 78 Btuh |
| | Window Total | | | | 388.7(sqft) | | 5033 Btuh |
| **Walls** | Type | Ornt. | Ueff. | R-Value (Cav/Sh) | Area X | HTM= | Load |
| 1 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 309 | 3.28 | 1015 Btuh |
| 2 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 379 | 3.28 | 1243 Btuh |
| 3 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 179 | 3.28 | 588 Btuh |
| 4 | Frame - Wood | - Ext | (0.089) | 13.0/0.0 | 431 | 3.28 | 1415 Btuh |
| 5 | Frame - Wood | - Adj | (0.089) | 13.0/0.0 | 259 | 3.28 | 851 Btuh |
| | Wall Total | | | | 1557(sqft) | | 5112 Btuh |
| **Doors** | Type | Storm | Ueff. | | Area X | HTM= | Load |
| 1 | Insulated - Garage, | n | (0.400) | | 20 | 14.8 | 296 Btuh |
| 2 | Insulated - Exterior, | n | (0.400) | | 13 | 14.8 | 197 Btuh |
| | Door Total | | | | 33(sqft) | | 493Btuh |
| **Ceilings** | Type/Color/Surface | | Ueff. | R-Value | Area X | HTM= | Load |
| 1 | Vented Attic/D/Shing | | (0.032) | 30.0/0.0 | 1962 | 1.2 | 2312 Btuh |
| | Ceiling Total | | | | 1962(sqft) | | 2312Btuh |
| **Floors** | Type | | Ueff. | R-Value | Size X | HTM= | Load |
| 1 | Slab On Grade | | (1.180) | 0.0 | 220.0 ft(perim.) | 43.7 | 9605 Btuh |
| | Floor Total | | | | 1962 sqft | | 9605 Btuh |
| | | | | | Envelope Subtotal: | | 22555 Btuh |
| **Infiltration** | Type | Wholehouse | ACH | Volume(cuft) | Wall Ratio | CFM= | |
| | Natural | | 0.86 | 17658 | 1.00 | 253.8 | 10281 Btuh |
| **Duct load** | Average sealed, R6.0, Supply(Att), Return(Att) | | | | | (DLM of 0.136) | 4469 Btuh |

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Parnell Res.
, FL

Project Title:
1210078
Building Type: User

10/29/2012

| | | |
|---|---|---|
| **All Zones** | **Sensible Subtotal All Zones** | **37305 Btuh** |

**WHOLE HOUSE TOTALS**

| | | |
|---|---|---|
| **Totals for Heating** | Subtotal Sensible Heat Loss<br>Ventilation Sensible Heat Loss<br>Total Heat Loss | 37305 Btuh<br>0 Btuh<br>37305 Btuh |

**EQUIPMENT**

| | | |
|---|---|---|
| 1. Electric Heat Pump | # | 51000 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

Parnell Res.

Project Title:
1210078

, FL

10/29/2012

Reference City: Gainesville, FL  Temperature Difference: 17.0F(MJ8 99%)  Humidity difference: 54gr.
**This calculation is for Worst Case. The house has been rotated 270 degrees.**

### Component Loads for Whole House

| Window | Type* Panes | SHGC | U | InSh | IS | Ornt | Overhang Len | Hgt | Window Area(sqft) Gross | Shaded | Unshaded | HTM Shaded | Unshaded | Load |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 NFRC | 0.35, 0.35 | | No | No | W | 1.5ft | 1.0ft | 72.0 | 2.9 | 69.1 | 13 | 40 | 2780 Btuh |
| 2 | 2 NFRC | 0.35, 0.35 | | No | No | N | 1.5ft | 1.0ft | 18.0 | 0.0 | 18.0 | 13 | 13 | 240 Btuh |
| 3 | 2 NFRC | 0.35, 0.35 | | No | No | W | 1.5ft | 1.0ft | 96.0 | 2.9 | 93.1 | 13 | 40 | 3733 Btuh |
| 4 | 2 NFRC | 0.35, 0.35 | | No | No | S | 1.5ft | 1.0ft | 64.0 | 60.2 | 3.8 | 13 | 16 | 862 Btuh |
| 5 | 2 NFRC | 0.35, 0.35 | | No | No | W | 1.5ft | 1.0ft | 15.0 | 0.7 | 14.3 | 13 | 40 | 576 Btuh |
| 6 | 2 NFRC | 0.35, 0.35 | | No | No | N | 1.5ft | 1.0ft | 4.0 | 0.0 | 4.0 | 13 | 13 | 53 Btuh |
| 7 | 2 NFRC | 0.35, 0.35 | | No | No | N | 1.5ft | 1.0ft | 15.0 | 0.0 | 15.0 | 13 | 13 | 200 Btuh |
| 8 | 2 NFRC | 0.35, 0.35 | | No | No | E | 1.5ft | 1.0ft | 12.0 | 0.5 | 11.5 | 13 | 40 | 463 Btuh |
| 9 | 2 NFRC | 0.35, 0.35 | | No | No | E | 1.5ft | 1.0ft | 26.7 | 1.0 | 25.7 | 13 | 40 | 1033 Btuh |
| 10 | 2 NFRC | 0.35, 0.35 | | No | No | E | 1.5ft | 1.0ft | 36.0 | 1.5 | 34.5 | 13 | 40 | 1390 Btuh |
| 11 | 2 NFRC | 0.35, 0.35 | | No | No | E | 1.5ft | 1.0ft | 4.0 | 0.5 | 3.5 | 13 | 40 | 146 Btuh |
| 12 | 2 NFRC | 0.35, 0.35 | | No | No | E | 1.5ft | 1.0ft | 20.0 | 1.0 | 19.0 | 13 | 40 | 768 Btuh |
| 13 | 2 NFRC | 0.35, 0.35 | | No | No | E | 1.5ft | 1.0ft | 6.0 | 0.5 | 5.5 | 13 | 40 | 225 Btuh |
| | Excursion | | | | | | | | | | | | | 723 Btuh |
| | Window Total | | | | | | | | 389 (sqft) | | | | | 13193 Btuh |

| Walls | Type | U-Value | R-Value Cav/Sheath | Area(sqft) | HTM | Load |
|---|---|---|---|---|---|---|
| 1 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 309.0 | 2.1 | 645 Btuh |
| 2 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 378.5 | 2.1 | 789 Btuh |
| 3 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 179.0 | 2.1 | 373 Btuh |
| 4 | Frame - Wood - Ext | 0.09 | 13.0/0.0 | 431.0 | 2.1 | 899 Btuh |
| 5 | Frame - Wood - Adj | 0.09 | 13.0/0.0 | 259.0 | 1.5 | 391 Btuh |
| | Wall Total | | | 1557 (sqft) | | 3097 Btuh |

| Doors | Type | Area (sqft) | HTM | Load |
|---|---|---|---|---|
| 1 | Insulated - Garage | 20.0 | 11.2 | 224 Btuh |
| 2 | Insulated - Exterior | 13.3 | 11.2 | 149 Btuh |
| | Door Total | 33 (sqft) | | 373 Btuh |

| Ceilings | Type/Color/Surface | U-Value | R-Value | Area(sqft) | HTM | Load |
|---|---|---|---|---|---|---|
| 1 | Vented Attic/DarkShingle | 0.032 | 30.0/0.0 | 1962.0 | 1.66 | 3249 Btuh |
| | Ceiling Total | | | 1962 (sqft) | | 3249 Btuh |

| Floors | Type | R-Value | Size | HTM | Load |
|---|---|---|---|---|---|
| 1 | Slab On Grade | 0.0 | 1962 (ft-perimeter) | 0.0 | 0 Btuh |
| | Floor Total | | 1962.0 (sqft) | | 0 Btuh |

| | | |
|---|---|---|
| | Envelope Subtotal: | 19912 Btuh |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Parnell Res.

Project Title: 1210078

Climate:FL_GAINESVILLE_REGIONAL_A

, FL

10/29/2012

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Infiltration** | Type<br>Natural | Average ACH<br>0.65 | Volume(cuft)<br>17658 | Wall Ratio<br>1 | | CFM=<br>190.4 | Load<br>3543 | Btuh |
| **Internal gain** | | Occupants<br>6 | Btuh/occupant<br>X 230 | | + | Appliance<br>3400 | Load<br>4780 | Btuh |
| | | | | | Sensible Envelope Load: | | 28235 | Btuh |
| **Duct load** | Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) | | | | (DGM of 0.195) | | 5494 | Btuh |
| | | | | | **Sensible Load All Zones** | | **33729** | **Btuh** |

# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Parnell Res.
, FL

Project Title: 1210078

Climate:FL_GAINESVILLE_REGIONAL_A

10/29/2012

### WHOLE HOUSE TOTALS

| | | |
|---|---|---|
| **Whole House Totals for Cooling** | **Sensible Envelope Load All Zones** | **28235 Btuh** |
| | Sensible Duct Load | 5494 Btuh |
| | **Total Sensible Zone Loads** | **33729 Btuh** |
| | Sensible ventilation | 0 Btuh |
| | Blower | 0 Btuh |
| | **Total sensible gain** | **33729 Btuh** |
| | Latent infiltration gain (for 54 gr. humidity difference) | 6957 Btuh |
| | Latent ventilation gain | 0 Btuh |
| | Latent duct gain | 1226 Btuh |
| | Latent occupant gain (6.0 people @ 200 Btuh per person) | 1200 Btuh |
| | Latent other gain | 0 Btuh |
| | **Latent total gain** | **9383 Btuh** |
| | **TOTAL GAIN** | **43112 Btuh** |

### EQUIPMENT

| | | |
|---|---|---|
| 1. Central Unit | # | 51000 Btuh |

*Key: Window types (Panes - 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