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FORM 405-10

# FLORIDA ENERGY EFFICIENCY CODE FOR BUILDING CONSTRUCTION

Florida Department of Business and Professional Regulation - Residential Performance Method

Project Name: 1206113	Builder Name: Bryan Zecher
Street:	Permit Office: 30617
City, State, Zip: lake City, FL,	Permit Number:
Owner: Dowd / Knee	Jurisdiction: 221006
Design Location: FL, Gainesville	

<p>1. New construction or existing: New (From Plans)</p> <p>2. Single family or multiple family: Single-family</p> <p>3. Number of units, if multiple family: 1</p> <p>4. Number of Bedrooms: 3</p> <p>5. Is this a worst case?: Yes</p> <p>6. Conditioned floor area above grade (ft²): 2406 Conditioned floor area below grade (ft²): 0</p> <p>7. Windows (342.8 sqft.)</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Area</th> </tr> </thead> <tbody> <tr> <td>a. U-Factor: Dbl, U=0.35 SHGC: SHGC=0.35</td> <td>302.78 ft²</td> </tr> <tr> <td>b. U-Factor: Dbl, U=0.87 SHGC: SHGC=0.66</td> <td>40.00 ft²</td> </tr> <tr> <td>c. U-Factor: N/A SHGC:</td> <td>ft²</td> </tr> <tr> <td>d. U-Factor: N/A SHGC:</td> <td>ft²</td> </tr> </tbody> </table> <p>Area Weighted Average Overhang Depth: 4.517 ft. Area Weighted Average SHGC: 0.386</p> <p>8. Floor Types (2406.0 sqft.)</p> <table border="1"> <thead> <tr> <th>Insulation</th> <th>Area</th> </tr> </thead> <tbody> <tr> <td>a. Slab-On-Grade Edge Insulation: R=0.0</td> <td>2406.00 ft²</td> </tr> <tr> <td>b. N/A</td> <td>ft²</td> </tr> <tr> <td>c. N/A</td> <td>ft²</td> </tr> </tbody> </table>	Description	Area	a. U-Factor: Dbl, U=0.35 SHGC: SHGC=0.35	302.78 ft²	b. U-Factor: Dbl, U=0.87 SHGC: SHGC=0.66	40.00 ft²	c. U-Factor: N/A SHGC:	ft²	d. U-Factor: N/A SHGC:	ft²	Insulation	Area	a. Slab-On-Grade Edge Insulation: R=0.0	2406.00 ft²	b. N/A	ft²	c. N/A	ft²	<p>9. Wall Types (1929.0 sqft.)</p> <table border="1"> <thead> <tr> <th>Insulation</th> <th>Area</th> </tr> </thead> <tbody> <tr> <td>a. Frame - Wood, Exterior: R=13.0</td> <td>1624.50 ft²</td> </tr> <tr> <td>b. Frame - Wood, Adjacent: R=13.0</td> <td>304.50 ft²</td> </tr> <tr> <td>c. N/A</td> <td>ft²</td> </tr> <tr> <td>d. N/A</td> <td>ft²</td> </tr> </tbody> </table> <p>10. Ceiling Types (2406.0 sqft.)</p> <table border="1"> <thead> <tr> <th>Insulation</th> <th>Area</th> </tr> </thead> <tbody> <tr> <td>a. Under Attic (Vented): R=30.0</td> <td>2406.00 ft²</td> </tr> <tr> <td>b. N/A</td> <td>ft²</td> </tr> <tr> <td>c. N/A</td> <td>ft²</td> </tr> </tbody> </table> <p>11. Ducts: R ft² a. Sup: Attic, Ret: Attic, AH: Main: 6 481.2</p> <p>12. Cooling systems: kBtu/hr Efficiency a. Central Unit: 55.0 SEER:13.00</p> <p>13. Heating systems: kBtu/hr Efficiency a. Electric Heat Pump: 55.0 HSPF:7.70</p> <p>14. Hot water systems: Cap: 40 gallons EF: 0.920 a. Electric b. Conservation features: None</p> <p>15. Credits: Pstat</p>	Insulation	Area	a. Frame - Wood, Exterior: R=13.0	1624.50 ft²	b. Frame - Wood, Adjacent: R=13.0	304.50 ft²	c. N/A	ft²	d. N/A	ft²	Insulation	Area	a. Under Attic (Vented): R=30.0	2406.00 ft²	b. N/A	ft²	c. N/A	ft²
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c. N/A	ft²																																				

Glass/Floor Area: 0.142

Total Proposed Modified Loads: 37.37  
Total Standard Reference Loads: 46.71

## PASS

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

PREPARED BY: EVAN BEANSLEY  
DATE: 10/29/12

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

OWNER/AGENT: [Signature]  
DATE: 11/2/12

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: \_\_\_\_\_

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



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**PROJECT**

Title:	1206113	Bedrooms:	3	Address Type:	Lot Information
Building Type:	User	Conditioned Area:	2406	Lot #	
Owner:	Dowd / Knee	Total Stories:	1	Block/SubDivision:	oaks
# of Units:	1	Worst Case:	Yes	PlatBook:	
Builder Name:	Bryan Zecher	Rotate Angle:	270	Street:	
Permit Office:		Cross Ventilation:		County:	Columbia
Jurisdiction:		Whole House Fan:		City, State, Zip:	lake City , 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	2406	19248

**SPACES**

Number	Name	Area	Volume	Kitchen	Occupants	Bedrooms	Infil ID	Finished	Cooled	Heated
1	Main	2406	19248	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	214 ft	0	2406 ft²	----	0.3	0.3	0.4

**ROOF**

✓	#	Type	Materials	Roof Area	Gable Area	Roof Color	Solar Absor.	SA Tested	Emitt Tested	Emitt Insul.	Deck Insul.	Pitch (deg)
_____	1	Gable or shed	Composition shingles	2691 ft²	602 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	2406 ft²	N	N

**CEILING**

✓	#	Ceiling Type	Space	R-Value	Area	Framing Frac	Truss Type
_____	1	Under Attic (Vented)	Main	30	2406 ft²	0.11	Wood

## WALLS

✓ #	Ornt	Adjacent To	Wall Type	Space	Cavity R-Value	Width Ft	In	Height Ft	In	Area	Sheathing R-Value	Framing Fraction	Solar Absor.	Below Grade%
1	N=>W	Exterior	Frame - Wood	Main	13	66		9		594 ft <sup>2</sup>		0.23	0.75	0
2	E=>N	Exterior	Frame - Wood	Main	13	37		9		333 ft <sup>2</sup>		0.23	0.75	0
3	S=>E	Exterior	Frame - Wood	Main	13	40	6	9		364.5 ft <sup>2</sup>		0.23	0.75	0
4	E=>N	Exterior	Frame - Wood	Main	13	37		9		333 ft <sup>2</sup>		0.23	0.75	0
5	S=>E	Garage	Frame - Wood	Main	13	33	10	9		304.5 ft <sup>2</sup>		0.23	0.75	0

## DOORS

✓ #	Ornt	Door Type	Space	Storms	U-Value	Width Ft	In	Height Ft	In	Area
1	N=>W	Insulated	Main	None	0.400000	3		6	8	20 ft <sup>2</sup>
2	S=>E	Insulated	Main	None	0.400000	3		6	8	20 ft <sup>2</sup>
3	S=>E	Insulated	Main	None	0.400000	3		6	8	20 ft <sup>2</sup>

## WINDOWS

Orientation shown is the entered orientation (=&gt;) changed to Worst Case.

✓ #	Ornt	Wall ID	Frame	Panels	NFRC	U-Factor	SHGC	Area	Overhang Depth	Separation	Int Shade	Screening
1	N=>W	1	Metal	Low-E Double	Yes	0.35	0.35	100 ft <sup>2</sup>	1 ft 6 in	1 ft 0 in	None	None
2	N=>W	1	Metal	Low-E Double	Yes	0.35	0.35	75 ft <sup>2</sup>	1 ft 6 in	1 ft 0 in	None	None
3	N=>W	1	Metal	Low-E Double	Yes	0.35	0.35	20 ft <sup>2</sup>	1 ft 6 in	1 ft 0 in	None	None
4	E=>N	2	Metal	Low-E Double	Yes	0.35	0.35	6 ft <sup>2</sup>	1 ft 6 in	1 ft 0 in	None	None
5	E=>N	2	Metal	Low-E Double	Yes	0.35	0.35	12.5 ft <sup>2</sup>	1 ft 6 in	1 ft 0 in	None	None
6	S=>E	3	Metal	Low-E Double	Yes	0.35	0.35	50 ft <sup>2</sup>	9 ft 6 in	1 ft 0 in	None	None
7	S=>E	3	Metal	Low-E Double	Yes	0.35	0.35	17.77777	9 ft 6 in	1 ft 0 in	None	None
8	E=>N	4	Metal	Low-E Double	Yes	0.35	0.35	12.5 ft <sup>2</sup>	9 ft 6 in	1 ft 0 in	None	None
9	E=>N	4	Metal	Low-E Double	Yes	0.35	0.35	9 ft <sup>2</sup>	9 ft 6 in	1 ft 0 in	None	None
10	E=>N	4	Metal	Low-E Double	Yes	0.87	0.66	40 ft <sup>2</sup>	9 ft 6 in	1 ft 0 in	None	None

## GARAGE

✓ #	Floor Area	Ceiling Area	Exposed Wall Perimeter	Avg. Wall Height	Exposed Wall Insulation
1	826.999935 ft <sup>2</sup>	826.999935 ft <sup>2</sup>	87 ft	9 ft	1

## INFILTRATION

#	Scope	Method	SLA	CFM 50	ELA	EqLA	ACH	ACH 50
1	Wholehouse	Best Guess	0.000699	4417.6	242.52	456.10	0.5389	13.770

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**HEATING SYSTEM**

✓	#	System Type	Subtype	Efficiency	Capacity	Block	Ducts
✓	1	Electric Heat Pump	None	HSPF: 7.7	55 kBtu/hr	1	sys#1

**COOLING SYSTEM**

✓	#	System Type	Subtype	Efficiency	Capacity	Air Flow	SHR	Block	Ducts
✓	1	Central Unit	None	SEER: 13	55 kBtu/hr	1650 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 ---		--- Return ---		Leakage Type	Air Handler	CFM 25	Percent Leakage	QN	RLF	HVAC #	
		Location	R-Value	Area	Location	Area						Heat	Cool
✓	1	Attic	6	481.2 ft	Attic	120.3 ft	Default Leakage	Main	(Default)	(Default) %		1	1

**TEMPERATURES**

Programable Thermostat: Y				Ceiling Fans:																					
Cooling	<input type="checkbox"/>	Jan	<input type="checkbox"/>	Feb	<input type="checkbox"/>	Mar	<input type="checkbox"/>	Apr	<input type="checkbox"/>	May	<input checked="" type="checkbox"/>	Jun	<input checked="" type="checkbox"/>	Jul	<input checked="" type="checkbox"/>	Aug	<input checked="" type="checkbox"/>	Sep	<input type="checkbox"/>	Oct	<input type="checkbox"/>	Nov	<input checked="" type="checkbox"/>	Dec	<input type="checkbox"/>
Heating	<input checked="" type="checkbox"/>	Jan	<input checked="" type="checkbox"/>	Feb	<input checked="" type="checkbox"/>	Mar	<input checked="" type="checkbox"/>	Apr	<input type="checkbox"/>	May	<input type="checkbox"/>	Jun	<input type="checkbox"/>	Jul	<input type="checkbox"/>	Aug	<input type="checkbox"/>	Sep	<input type="checkbox"/>	Oct	<input type="checkbox"/>	Nov	<input checked="" type="checkbox"/>	Dec	<input checked="" type="checkbox"/>
Venting	<input type="checkbox"/>	Jan	<input type="checkbox"/>	Feb	<input type="checkbox"/>	Mar	<input type="checkbox"/>	Apr	<input type="checkbox"/>	May	<input type="checkbox"/>	Jun	<input type="checkbox"/>	Jul	<input type="checkbox"/>	Aug	<input type="checkbox"/>	Sep	<input type="checkbox"/>	Oct	<input checked="" type="checkbox"/>	Nov	<input checked="" type="checkbox"/>	Dec	<input type="checkbox"/>
Thermostat Schedule: HERS 2006 Reference														Hours											
Schedule Type				1	2	3	4	5	6	7	8	9	10	11	12										
Cooling (WD)		AM	78	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	78										
Cooling (WEH)		AM	78	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	78										
Heating (WD)		AM	66	66	66	66	66	66	68	68	68	68	68	68	68										
		PM	68	68	68	68	68	68	68	68	68	68	68	68	66	66									
Heating (WEH)		AM	66	66	66	66	66	66	68	68	68	68	68	68	68										
		PM	68	68	68	68	68	68	68	68	68	68	68	68	66	66									

**Florida Code Compliance Checklist**  
 Florida Department of Business and Professional Regulations  
 Residential Whole Building Performance Method

ADDRESS: lake City, FL,	PERMIT #:
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**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	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.	
	403.3.3	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.	

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# ENERGY PERFORMANCE LEVEL (EPL) DISPLAY CARD

ESTIMATED ENERGY PERFORMANCE INDEX\* = 80

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

, lake City, FL,

1. New construction or existing	New (From Plans)	9. Wall Types	Insulation	Area
2. Single family or multiple family	Single-family	a. Frame - Wood, Exterior	R=13.0	1624.50 ft <sup>2</sup>
3. Number of units, if multiple family	1	b. Frame - Wood, Adjacent	R=13.0	304.50 ft <sup>2</sup>
4. Number of Bedrooms	3	c. N/A	R=	ft <sup>2</sup>
5. Is this a worst case?	Yes	d. N/A	R=	ft <sup>2</sup>
6. Conditioned floor area (ft <sup>2</sup> )	2406	10. Ceiling Types	Insulation	Area
7. Windows**	Description	a. Under Attic (Vented)	R=30.0	2406.00 ft <sup>2</sup>
a. U-Factor:	Dbl, U=0.35	b. N/A	R=	ft <sup>2</sup>
SHGC:	SHGC=0.35	c. N/A	R=	ft <sup>2</sup>
b. U-Factor:	Dbl, U=0.87	11. Ducts		R
SHGC:	SHGC=0.66	a. Sup: Attic, Ret: Attic, AH: Main		ft <sup>2</sup>
c. U-Factor:	N/A			6 481.2
SHGC:	N/A	12. Cooling systems	kBtu/hr	Efficiency
d. U-Factor:	N/A	a. Central Unit	55.0	SEER:13.00
SHGC:	N/A			
Area Weighted Average Overhang Depth:	4.517 ft.	13. Heating systems	kBtu/hr	Efficiency
Area Weighted Average SHGC:	0.386	a. Electric Heat Pump	55.0	HSPF:7.70
8. Floor Types	Insulation	Area		
a. Slab-On-Grade Edge Insulation	R=0.0	2406.00 ft <sup>2</sup>		Cap: 40 gallons
b. N/A	R=	ft <sup>2</sup>		EF: 0.92
c. N/A	R=	ft <sup>2</sup>		
		14. Hot water systems		
		a. Electric		
		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: 11/12/12

Address of New Home: \_\_\_\_\_

01134 SW Cushman Mode C City/FL Zip: LC, FL 32024



\*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.

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# Residential System Sizing Calculation

## Summary

Dowd / Knee  
lake City, FL

Project Title:  
1206113

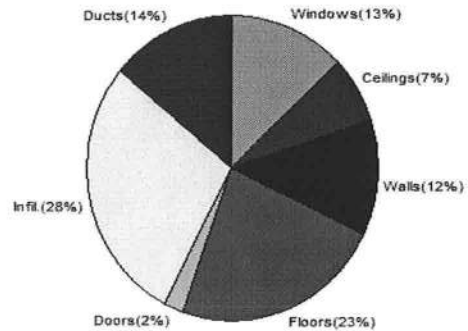
10/29/2012

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
<b>Total heating load calculation</b>	<b>40162 Btuh</b>	<b>Total cooling load calculation</b>	<b>46400 Btuh</b>
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	136.9 55000	Sensible (SHR = 0.75)	114.1 41250
Heat Pump + Auxiliary(0.0kW)	136.9 55000	Latent	134.3 13750
		Total (Electric Heat Pump)	118.5 55000

### WINTER CALCULATIONS

Winter Heating Load (for 2406 sqft)

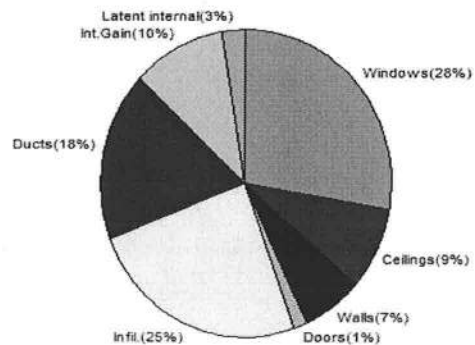
Load component		Load	
Window total	343 sqft	5209	Btuh
Wall total	1526 sqft	5012	Btuh
Door total	60 sqft	888	Btuh
Ceiling total	2406 sqft	2835	Btuh
Floor total	2406 sqft	9343	Btuh
Infiltration	277 cfm	11206	Btuh
Duct loss		5668	Btuh
<b>Subtotal</b>		<b>40162</b>	<b>Btuh</b>
Ventilation	0 cfm	0	Btuh
<b>TOTAL HEAT LOSS</b>		<b>40162</b>	<b>Btuh</b>



### SUMMER CALCULATIONS

Summer Cooling Load (for 2406 sqft)

Load component		Load	
Window total	343 sqft	12885	Btuh
Wall total	1526 sqft	3019	Btuh
Door total	60 sqft	672	Btuh
Ceiling total	2406 sqft	3984	Btuh
Floor total		0	Btuh
Infiltration	207 cfm	3862	Btuh
Internal gain		4780	Btuh
Duct gain		6958	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
<b>Total sensible gain</b>		<b>36160</b>	<b>Btuh</b>
Latent gain(ducts)		1457	Btuh
Latent gain(infiltration)		7583	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
<b>Total latent gain</b>		<b>10240</b>	<b>Btuh</b>
<b>TOTAL HEAT GAIN</b>		<b>46400</b>	<b>Btuh</b>



8th Edition

EnergyGauge® System Sizing

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

DATE: \_\_\_\_\_

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# System Sizing Calculations - Winter

## Residential Load - Whole House Component Details

Dowd / Knee  
lake City, FL

Project Title:  
1206113  
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 225 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	SW	100.0		12.9	1295 Btuh	
2	2, NFRC 0.35	Metal	0.35	SW	75.0		12.9	971 Btuh	
3	2, NFRC 0.35	Metal	0.35	SW	20.0		12.9	259 Btuh	
4	2, NFRC 0.35	Metal	0.35	NW	6.0		12.9	78 Btuh	
5	2, NFRC 0.35	Metal	0.35	NW	12.5		12.9	162 Btuh	
6	2, NFRC 0.35	Metal	0.35	NE	50.0		12.9	648 Btuh	
7	2, NFRC 0.35	Metal	0.35	NE	17.8		12.9	230 Btuh	
8	2, NFRC 0.35	Metal	0.35	NW	12.5		12.9	162 Btuh	
9	2, NFRC 0.35	Metal	0.35	NW	9.0		12.9	117 Btuh	
10	2, NFRC 0.66	Metal	0.87	NW	40.0		32.2	1288 Btuh	
	Window Total					342.8(sqft)			5209 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load	
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	379		3.28	1245 Btuh	
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	315		3.28	1033 Btuh	
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	277		3.28	909 Btuh	
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	272		3.28	892 Btuh	
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	285		3.28	934 Btuh	
	Wall Total					1526(sqft)			5012 Btuh
Doors	Type	Storm	Ueff.	R-Value	Area	X	HTM=	Load	
1	Insulated - Exterior,	n	(0.400)		20		14.8	296 Btuh	
2	Insulated - Exterior,	n	(0.400)		20		14.8	296 Btuh	
3	Insulated - Garage,	n	(0.400)		20		14.8	296 Btuh	
	Door Total					60(sqft)			888Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area	X	HTM=	Load		
1	Vented Attic/D/Shing	(0.032)	30.0/0.0	2406		1.2	2835 Btuh		
	Ceiling Total					2406(sqft)		2835Btuh	
Floors	Type	Ueff.	R-Value	Size	X	HTM=	Load		
1	Slab On Grade	(1.180)	0.0	214.0 ft(perim.)		43.7	9343 Btuh		
	Floor Total					2406 sqft		9343 Btuh	
Envelope Subtotal:								23287 Btuh	
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	Load		
	Natural		0.86	19248	1.00	276.7	11206 Btuh		
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.164)		5668 Btuh	
All Zones	<b>Sensible Subtotal All Zones</b>							<b>40162 Btuh</b>	

# Manual J Winter Calculations

## Residential Load - Component Details (continued)

Dowd / Knee

Project Title:

1206113

lake City, FL

Building Type: User

10/29/2012

### WHOLE HOUSE TOTALS

<b>Totals for Heating</b>	Subtotal Sensible Heat Loss	40162 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	40162 Btuh

### EQUIPMENT

1. Electric Heat Pump	#	55000 Btuh
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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

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# System Sizing Calculations - Summer

## Residential Load - Whole House Component Details

Dowd / Knee

Project Title:  
1206113

lake City, 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 225 degrees.

### 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	0.35, 0.35	No	No	SW	1.5ft	1.0ft	100.0	29.4	70.6	13	31	2583	Btuh		
2	2 NFRC	0.35, 0.35	No	No	SW	1.5ft	1.0ft	75.0	22.0	53.0	13	31	1937	Btuh		
3	2 NFRC	0.35, 0.35	No	No	SW	1.5ft	1.0ft	20.0	7.3	12.7	13	31	491	Btuh		
4	2 NFRC	0.35, 0.35	No	No	NW	1.5ft	1.0ft	6.0	0.0	6.0	13	29	177	Btuh		
5	2 NFRC	0.35, 0.35	No	No	NW	1.5ft	1.0ft	12.5	0.0	12.5	13	29	368	Btuh		
6	2 NFRC	0.35, 0.35	No	No	NE	9.5ft	1.0ft	50.0	0.0	50.0	13	29	1473	Btuh		
7	2 NFRC	0.35, 0.35	No	No	NE	9.5ft	1.0ft	17.8	0.0	17.8	13	29	524	Btuh		
8	2 NFRC	0.35, 0.35	No	No	NW	9.5ft	1.0ft	12.5	0.0	12.5	13	29	368	Btuh		
9	2 NFRC	0.35, 0.35	No	No	NW	9.5ft	1.0ft	9.0	0.0	9.0	13	29	265	Btuh		
10	2 NFRC	0.66, 0.87	No	No	NW	9.5ft	1.0ft	40.0	0.0	40.0	29	59	2366	Btuh		
	Excursion													2333	Btuh	
	Window Total							343 (sqft)							12885	Btuh
<b>Walls</b>	Type		U-Value		R-Value		Area(sqft)		HTM		Load					
					Cav/Sheath											
1	Frame - Wood - Ext		0.09	13.0/0.0		379.0		2.1		791		Btuh				
2	Frame - Wood - Ext		0.09	13.0/0.0		314.5		2.1		656		Btuh				
3	Frame - Wood - Ext		0.09	13.0/0.0		276.7		2.1		577		Btuh				
4	Frame - Wood - Ext		0.09	13.0/0.0		271.5		2.1		566		Btuh				
5	Frame - Wood - Adj		0.09	13.0/0.0		284.5		1.5		429		Btuh				
	Wall Total						1526 (sqft)				3019		Btuh			
<b>Doors</b>	Type		Area (sqft)		HTM		Load									
1	Insulated - Exterior		20.0		11.2		224		Btuh							
2	Insulated - Exterior		20.0		11.2		224		Btuh							
3	Insulated - Garage		20.0		11.2		224		Btuh							
	Door Total						60 (sqft)				672		Btuh			
<b>Ceilings</b>	Type/Color/Surface		U-Value		R-Value		Area(sqft)		HTM		Load					
1	Vented Attic/DarkShingle		0.032	30.0/0.0		2406.0		1.66		3984		Btuh				
	Ceiling Total						2406 (sqft)				3984		Btuh			
<b>Floors</b>	Type		R-Value		Size		HTM		Load							
1	Slab On Grade		0.0		2406 (ft-perimeter)		0.0		0		Btuh					
	Floor Total						2406.0 (sqft)				0		Btuh			
Envelope Subtotal:												20561 Btuh				
<b>Infiltration</b>	Type		Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load					
	Natural		0.65		19248		1		207.5		3862		Btuh			
<b>Internal gain</b>	Occupants		Btuh/occupant		Appliance		Load									
	6		X 230		+		3400		4780		Btuh					
Sensible Envelope Load:												29202 Btuh				
<b>Duct load</b>	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)								(DGM of 0.238)		6958 Btuh					
<b>Sensible Load All Zones</b>												<b>36160 Btuh</b>				

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# Manual J Summer Calculations

## Residential Load - Component Details (continued)

Dowd / Knee  
lake City, FL

Project Title:  
1206113

Climate: FL\_GAINESVILLE\_REGIONAL\_A

10/29/2012

### WHOLE HOUSE TOTALS

<b>Whole House Totals for Cooling</b>	<b>Sensible Envelope Load All Zones</b>	<b>29202 Btuh</b>
	Sensible Duct Load	6958 Btuh
	<b>Total Sensible Zone Loads</b>	<b>36160 Btuh</b>
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	<b>Total sensible gain</b>	<b>36160 Btuh</b>
	Latent infiltration gain (for 54 gr. humidity difference)	7583 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1457 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	<b>Latent total gain</b>	<b>10240 Btuh</b>
	<b>TOTAL GAIN</b>	<b>46400 Btuh</b>

### EQUIPMENT

1. Central Unit	#	55000 Btuh
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\*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)



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