

Residential System Sizing Calculation

Summary

N/A

Project Title:
Lot 7 Emerald Cove

Lake City, FL 32025

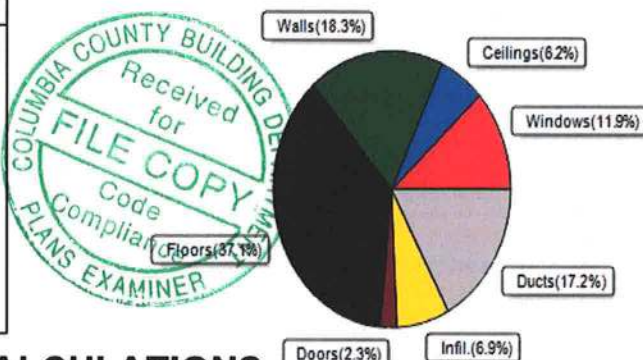
8/12/2020

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
Total heating load calculation	32067 Btuh	Total cooling load calculation	21117 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 32067	Sensible (SHR = 0.85)	101.9 17950
Heat Pump + Auxiliary(0.0kW)	100.0 32067	Latent	90.5 3168
		Total (Electric Heat Pump)	100.0 21117

WINTER CALCULATIONS

Winter Heating Load (for 1880 sqft)

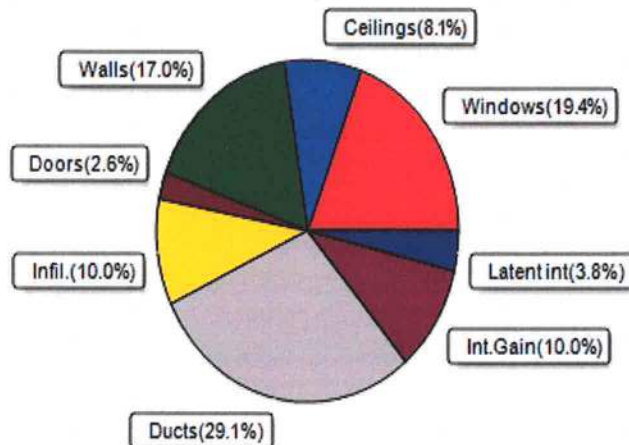
Load component		Load	
Window total	266 sqft	3823	Btuh
Wall total	1654 sqft	5870	Btuh
Door total	40 sqft	736	Btuh
Ceiling total	1974 sqft	2004	Btuh
Floor total	1880 sqft	11894	Btuh
Infiltration	51 cfm	2228	Btuh
Duct loss		5511	Btuh
Subtotal		32067	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		32067	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1880 sqft)

Load component		Load	
Window total	266 sqft	4095	Btuh
Wall total	1654 sqft	3586	Btuh
Door total	40 sqft	552	Btuh
Ceiling total	1974 sqft	1703	Btuh
Floor total		0	Btuh
Infiltration	38 cfm	794	Btuh
Internal gain		2120	Btuh
Duct gain		4767	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		17617	Btuh
Latent gain(ducts)		1383	Btuh
Latent gain(infiltration)		1317	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		3500	Btuh
TOTAL HEAT GAIN		21117	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY:

DATE:

8/14/2020

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

N/A

Lake City, FL 32025

Project Title:
Lot 7 Emerald Cove
Building Type: User

8/12/2020

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	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	3.0	14.4	43 Btuh
3	2, NFRC 0.25	Vinyl	0.36	S	36.0	14.4	518 Btuh
4	2, NFRC 0.25	Vinyl	0.36	E	15.0	14.4	216 Btuh
5	2, NFRC 0.25	Vinyl	0.36	N	15.0	14.4	216 Btuh
6	2, NFRC 0.25	Vinyl	0.36	N	62.5	14.4	900 Btuh
7	2, NFRC 0.25	Vinyl	0.36	W	20.0	14.4	288 Btuh
8	2, NFRC 0.25	Vinyl	0.36	N	72.0	14.4	1037 Btuh
9	2, NFRC 0.25	Vinyl	0.36	E	20.0	14.4	288 Btuh
10	2, NFRC 0.25	Vinyl	0.36	W	6.0	14.4	86 Btuh
	Window Total				265.5(sqft)		3823 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	113	3.55	401 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	40	3.55	143 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	93	3.55	330 Btuh
4	Frame - Wood	- Adj	(0.089)	13.0/0.0	178	3.55	632 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	258	3.55	916 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	281	3.55	998 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	45	3.55	160 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	93	3.55	330 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	60	3.55	213 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	332	3.55	1177 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	101	3.55	357 Btuh
	Wall Total				1653(sqft)		5870 Btuh
Doors	Type	Storm	Ueff.		Area	X	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	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	1974	1.0	2004 Btuh
	Ceiling Total				1974(sqft)		2004Btuh
Floors	Type		Ueff.	R-Value	Size	X	Load
1	Slab On Grade		(1.180)	0.0	252.0 ft(perim.)	47.2	11894 Btuh
	Floor Total				1880 sqft		11894 Btuh
	Envelope Subtotal:						24328 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.18	16920	1.00	50.9	2228 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

N/A

Lake City, FL 32025

Project Title:
Lot 7 Emerald Cove
Building Type: User

8/12/2020

Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.208)	5511 Btuh
All Zones	Sensible Subtotal All Zones	32067 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	32067 Btuh 0 Btuh 32067 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	32067 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

N/A

Project Title:
Lot 7 Emerald Cove

Lake City, FL 32025

8/12/2020

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.	0.5ft.	3.0	3.0	0.0	12	14	36	Btuh
3	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	36.0	36.0	0.0	12	14	436	Btuh
4	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	15.0	0.7	14.3	12	31	450	Btuh
5	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181	Btuh
6	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	62.5	0.0	62.5	12	12	756	Btuh
7	2 NFRC	0.25, 0.36	No	No	W		6.0ft.	1.0ft.	20.0	11.9	8.1	12	31	394	Btuh
8	2 NFRC	0.25, 0.36	No	No	N		9.5ft.	1.0ft.	72.0	0.0	72.0	12	12	871	Btuh
9	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	20.0	1.0	19.0	12	31	600	Btuh
10	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	6.0	0.5	5.5	12	31	176	Btuh
Window Total									266 (sqft)					4095 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)			HTM		Load				
1	Frame - Wood - Ext	0.09		13.0/0.0		113.0			2.3		256 Btuh				
2	Frame - Wood - Ext	0.09		13.0/0.0		40.3			2.3		91 Btuh				
3	Frame - Wood - Adj	0.09		13.0/0.0		93.0			1.7		157 Btuh				
4	Frame - Wood - Adj	0.09		13.0/0.0		178.0			1.7		300 Btuh				
5	Frame - Wood - Ext	0.09		13.0/0.0		258.0			2.3		584 Btuh				
6	Frame - Wood - Ext	0.09		13.0/0.0		281.0			2.3		636 Btuh				
7	Frame - Wood - Ext	0.09		13.0/0.0		45.0			2.3		102 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		93.0			2.3		210 Btuh				
10	Frame - Wood - Ext	0.09		13.0/0.0		60.0			2.3		136 Btuh				
11	Frame - Wood - Ext	0.09		13.0/0.0		331.5			2.3		750 Btuh				
12	Frame - Wood - Ext	0.09		13.0/0.0		100.7			2.3		228 Btuh				
Wall Total									1654 (sqft)			3586 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		1974.0			0.86		1703 Btuh				
Ceiling Total									1974 (sqft)			1703 Btuh			
Floors	Type	R-Value			Size			HTM		Load					
1	Slab On Grade	0.0			1880 (ft-perimeter)			0.0		0 Btuh					
Floor Total									1880.0 (sqft)			0 Btuh			
Envelope Subtotal:													9937 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

N/A

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 7 Emerald Cove

Lake City, FL 32025

8/12/2020

Infiltration	Type Natural	Average ACH 0.14	Volume(cuft) 16920	Wall Ratio 1	CFM= 38.2	Load 794 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	1200	Load 2120 Btuh
					Sensible Envelope Load:	12850 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.371)	4767 Btuh
					Sensible Load All Zones	17617 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

N/A

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 7 Emerald Cove

Lake City, FL 32025

8/12/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12850 Btuh
	Sensible Duct Load	4767 Btuh
	Total Sensible Zone Loads	17617 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17617 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1317 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1383 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3500 Btuh
	TOTAL GAIN	21117 Btuh

EQUIPMENT

1. Central Unit	#	21117 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)



Version 8