

Residential System Sizing Calculation

Summary

Project Title:
Lot 29 Turkey Creek

Lake City, FL

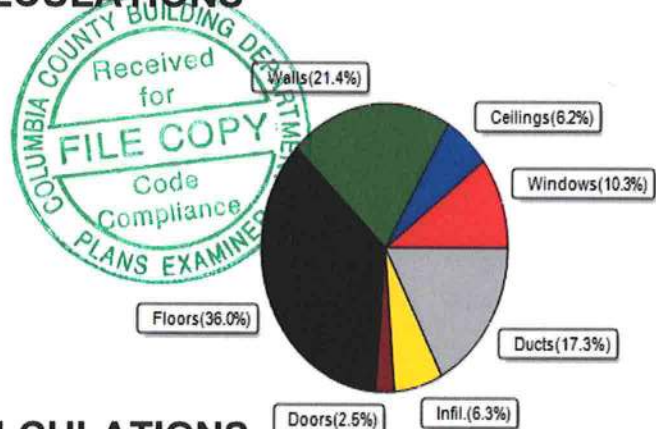
3/8/2021

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	29218 Btuh	Total cooling load calculation	20756 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.6 29383	Sensible (SHR = 0.70)	83.1 14304
Heat Pump + Auxiliary(0.0kW)	100.6 29383	Latent	172.9 6130
		Total (Electric Heat Pump)	98.5 20435

WINTER CALCULATIONS

Winter Heating Load (for 1703 sqft)

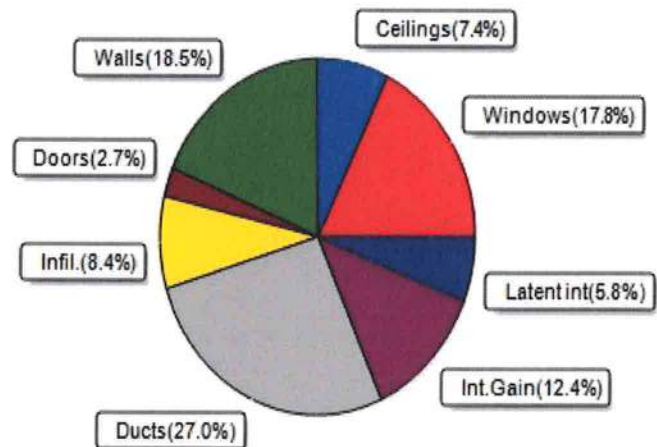
Load component		Load	
Window total	209 sqft	3010	Btuh
Wall total	1758 sqft	6241	Btuh
Door total	40 sqft	736	Btuh
Ceiling total	1788 sqft	1815	Btuh
Floor total	1703 sqft	10526	Btuh
Infiltration	42 cfm	1838	Btuh
Duct loss		5052	Btuh
Subtotal		29218	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		29218	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1703 sqft)

Load component		Load	
Window total	209 sqft	3704	Btuh
Wall total	1758 sqft	3830	Btuh
Door total	40 sqft	552	Btuh
Ceiling total	1788 sqft	1543	Btuh
Floor total		0	Btuh
Infiltration	31 cfm	655	Btuh
Internal gain		2580	Btuh
Duct gain		4347	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		17210	Btuh
Latent gain(ducts)		1260	Btuh
Latent gain(infiltration)		1087	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3546	Btuh
TOTAL HEAT GAIN		20756	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

Revised
3/9/2021
31

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Lake City, FL

Project Title:
Lot 29 Turkey Creek
Building Type: User

3/8/2021

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	W	15.0		14.4	216 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	45.0		14.4	648 Btuh
3	2, NFRC 0.25	Vinyl	0.36	S	15.0		14.4	216 Btuh
4	2, NFRC 0.25	Vinyl	0.36	E	4.0		14.4	58 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	40.0		14.4	576 Btuh
7	2, NFRC 0.25	Vinyl	0.36	N	8.0		14.4	115 Btuh
8	2, NFRC 0.25	Vinyl	0.36	W	15.0		14.4	216 Btuh
9	2, NFRC 0.25	Vinyl	0.36	N	20.0		14.4	288 Btuh
10	2, NFRC 0.25	Vinyl	0.36	N	16.0		14.4	230 Btuh
11	2, NFRC 0.25	Vinyl	0.36	W	16.0		14.4	230 Btuh
Window Total					209.0(sqft)			3010 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	202 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	256 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	115		3.55	408 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	256 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	96		3.55	341 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	296		3.55	1051 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	99		3.55	351 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	147		3.55	522 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	202 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	216		3.55	767 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	182		3.55	646 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	178		3.55	632 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	81		3.55	288 Btuh
Wall Total					1758(sqft)			6241 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	1788		1.0	1815 Btuh
Ceiling Total					1788(sqft)			1815Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	223.0 ft(perim.)		47.2	10526 Btuh
Floor Total					1703 sqft			10526 Btuh
Envelope Subtotal:								22328 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL

Project Title:
Lot 29 Turkey Creek
Building Type: User

3/8/2021

Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 15327	Wall Ratio 1.00	CFM= 42.0	1838 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.209)					5052 Btuh
All Zones	Sensible Subtotal All Zones					29218 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29218 Btuh 0 Btuh 29218 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	29383 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

Project Title:
Lot 29 Turkey Creek

Lake City, FL

3/8/2021

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	W		1.5ft.	1.0ft.	15.0	0.7	14.3	12	31	450	Btuh
2	2 NFRC	0.25, 0.36	No	No	S		6.8ft.	1.0ft.	45.0	45.0	0.0	12	14	544	Btuh
3	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181	Btuh
4	2 NFRC	0.25, 0.36	No	No	E		1.0ft.	5.0ft.	4.0	0.0	4.0	12	31	124	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		9.5ft.	1.0ft.	40.0	0.0	40.0	12	12	484	Btuh
7	2 NFRC	0.25, 0.36	No	No	N		9.5ft.	1.0ft.	8.0	0.0	8.0	12	12	97	Btuh
8	2 NFRC	0.25, 0.36	No	No	W		5.5ft.	1.0ft.	15.0	10.7	4.3	12	31	263	Btuh
9	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	20.0	0.0	20.0	12	12	242	Btuh
10	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	16.0	0.0	16.0	12	12	194	Btuh
11	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	16.0	1.0	15.0	12	31	477	Btuh
	Excursion													467	Btuh
	Window Total								209 (sqft)					3704 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext						0.09	13.0/0.0	57.0			2.3		129	Btuh
2	Frame - Wood - Ext						0.09	13.0/0.0	72.0			2.3		163	Btuh
3	Frame - Wood - Ext						0.09	13.0/0.0	115.0			2.3		260	Btuh
4	Frame - Wood - Ext						0.09	13.0/0.0	72.0			2.3		163	Btuh
5	Frame - Wood - Ext						0.09	13.0/0.0	96.0			2.3		217	Btuh
6	Frame - Wood - Ext						0.09	13.0/0.0	296.0			2.3		670	Btuh
7	Frame - Wood - Ext						0.09	13.0/0.0	99.0			2.3		224	Btuh
8	Frame - Wood - Ext						0.09	13.0/0.0	90.0			2.3		204	Btuh
9	Frame - Wood - Ext						0.09	13.0/0.0	147.0			2.3		333	Btuh
10	Frame - Wood - Ext						0.09	13.0/0.0	57.0			2.3		129	Btuh
11	Frame - Wood - Ext						0.09	13.0/0.0	216.0			2.3		489	Btuh
12	Frame - Wood - Ext						0.09	13.0/0.0	182.0			2.3		412	Btuh
13	Frame - Wood - Adj						0.09	13.0/0.0	178.0			1.7		300	Btuh
14	Frame - Wood - Adj						0.09	13.0/0.0	81.0			1.7		137	Btuh
	Wall Total								1758 (sqft)					3830 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 Attic/Light/Shingle/RB						0.025	38.0/0.0	1788.0			0.86		1543	Btuh
	Ceiling Total									1788 (sqft)			1543 Btuh		
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						0.0		1703 (ft-perimeter)			0.0		0	Btuh
	Floor Total									1703.0 (sqft)			0 Btuh		
	Envelope Subtotal:													9628 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
 Lot 29 Turkey Creek

Lake City, FL

3/8/2021

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 15327	Wall Ratio 1	CFM= 31.5	Load 655 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	1200	Load 2580 Btuh
					Sensible Envelope Load:	12863 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.338)	4347 Btuh
					Sensible Load All Zones	17210 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 29 Turkey Creek

Lake City, FL

3/8/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12863 Btuh
	Sensible Duct Load	4347 Btuh
	Total Sensible Zone Loads	17210 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17210 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1087 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1260 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3546 Btuh
	TOTAL GAIN	20756 Btuh

EQUIPMENT

1. Central Unit	#	20435 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(1/2))
(Ornt - compass orientation)



Version 8