Residential System Sizing Calculation

Summary

N/A

Project Title:
Lot 30 Crosswinds

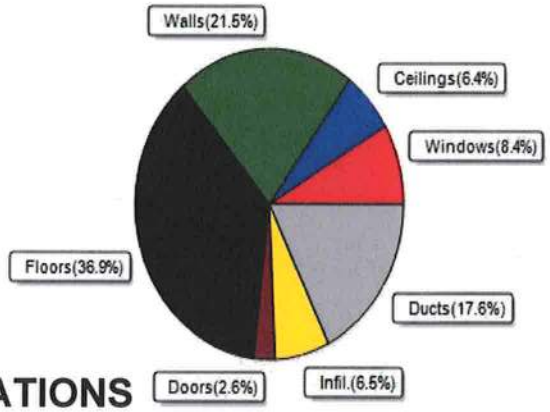
Lake City, FL 32025

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	**27953**	**Btuh**	**Total cooling load calculation**	**18836**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.0	27953	Sensible (SHR = 0.70)	86.2	13186
Heat Pump + Auxiliary(0.0kW)	100.0	27953	Latent	159.7	5651
			Total (Electric Heat Pump)	100.0	18836

WINTER CALCULATIONS

Winter Heating Load (for 1677 sqft)

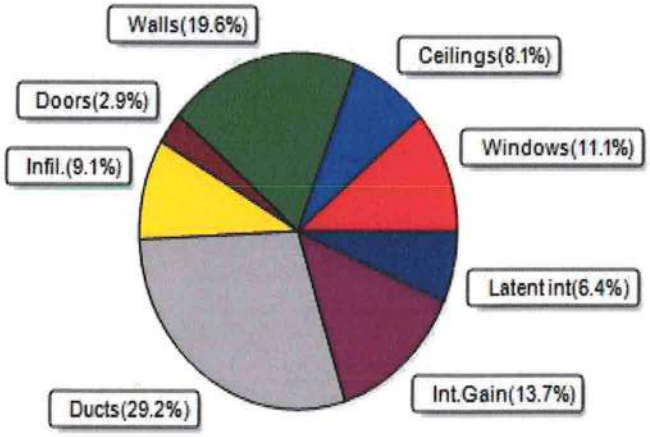
Load component			Load	
Window total	163	sqft	2352	Btuh
Wall total	1696	sqft	6020	Btuh
Door total	40	sqft	736	Btuh
Ceiling total	1760	sqft	1787	Btuh
Floor total	1677	sqft	10321	Btuh
Infiltration	41	cfm	1810	Btuh
Duct loss			4927	Btuh
Subtotal			**27953**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**27953**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1677 sqft)

Load component			Load	
Window total	163	sqft	2090	Btuh
Wall total	1696	sqft	3688	Btuh
Door total	40	sqft	552	Btuh
Ceiling total	1760	sqft	1519	Btuh
Floor total			0	Btuh
Infiltration	31	cfm	645	Btuh
Internal gain			2580	Btuh
Duct gain			4223	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**15297**	**Btuh**
Latent gain(ducts)			1270	Btuh
Latent gain(infiltration)			1070	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			**3540**	**Btuh**
TOTAL HEAT GAIN			**18836**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 12/7/2021

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

N/A

Project Title:
Lot 30 Crosswinds

Lake City, FL 32025

Building Type: User

12/7/2021

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	S	9.0	14.4	130 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	30.0	14.4	432 Btuh
4	2, NFRC 0.25	Vinyl	0.36	S	15.0	14.4	216 Btuh
5	2, NFRC 0.25	Vinyl	0.36	E	4.0	14.4	58 Btuh
6	2, NFRC 0.25	Vinyl	0.36	N	15.0	14.4	216 Btuh
7	2, NFRC 0.25	Vinyl	0.36	N	20.0	14.4	288 Btuh
8	2, NFRC 0.25	Vinyl	0.36	N	9.0	14.4	130 Btuh
9	2, NFRC 0.25	Vinyl	0.36	N	30.0	14.4	432 Btuh
10	2, NFRC 0.25	Vinyl	0.36	N	4.0	14.4	58 Btuh
11	2, NFRC 0.25	Vinyl	0.36	W	4.0	14.4	58 Btuh
12	2, NFRC 0.25	Vinyl	0.36	N	10.0	14.4	144 Btuh
	Window Total				163.3(sqft)		2352 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	60	3.55	213 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	129	3.55	457 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	96	3.55	341 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	302	3.55	1072 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	99	3.55	351 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	108	3.55	383 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	147	3.55	522 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	72	3.55	256 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	248	3.55	880 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	176	3.55	625 Btuh
11	Frame - Wood	- Adj	(0.089)	13.0/0.0	190	3.55	675 Btuh
12	Frame - Wood	- Adj	(0.089)	13.0/0.0	69	3.55	245 Btuh
	Wall Total				1696(sqft)		6020 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	1760	1.0	1787 Btuh
	Ceiling Total			1760(sqft)		1787Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	218.7 ft(perim.)	47.2	10321 Btuh
	Floor Total			1677 sqft		10321 Btuh

	Envelope Subtotal:	21216 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

N/A

Project Title:
Lot 30 Crosswinds
Building Type: User

Lake City, FL 32025

12/7/2021

Infiltration	Type Natural	Wholehouse	ACH 0.16	Volume(cuft) 15093	Wall Ratio 1.00	CFM= 41.3	1810 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.214)		4927 Btuh
All Zones				**Sensible Subtotal All Zones**			**27953 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	27953 Btuh 0 Btuh 27953 Btuh

EQUIPMENT

1. Electric Heat Pump	#	27953 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 30 Crosswinds

Lake City, FL 32025

12/7/2021

Reference City: Gainesville, FL Temperature Difference: 19.0F(TMY3 99%) Humidity difference: 51gr.

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	0.25, 0.36	No	No	S	1.5ft.	1.0ft.	9.0	9.0	0.0	12	14	109	Btuh
2	2 NFRC	0.25, 0.36	No	No	S	6.5ft.	1.0ft.	13.3	13.3	0.0	12	14	161	Btuh
3	2 NFRC	0.25, 0.36	No	No	S	6.5ft.	1.0ft.	30.0	30.0	0.0	12	14	363	Btuh
4	2 NFRC	0.25, 0.36	No	No	S	1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181	Btuh
5	2 NFRC	0.25, 0.36	No	No	E	1.5ft.	1.0ft.	4.0	1.0	3.0	12	31	105	Btuh
6	2 NFRC	0.25, 0.36	No	No	N	1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181	Btuh
7	2 NFRC	0.25, 0.36	No	No	N	9.5ft.	1.0ft.	20.0	0.0	20.0	12	12	242	Btuh
8	2 NFRC	0.25, 0.36	No	No	N	9.5ft.	1.0ft.	9.0	0.0	9.0	12	12	109	Btuh
9	2 NFRC	0.25, 0.36	No	No	N	1.5ft.	1.0ft.	30.0	0.0	30.0	12	12	363	Btuh
10	2 NFRC	0.25, 0.36	No	No	N	1.5ft.	1.0ft.	4.0	0.0	4.0	12	12	48	Btuh
11	2 NFRC	0.25, 0.36	No	No	W	1.5ft.	1.0ft.	4.0	1.0	3.0	12	31	105	Btuh
12	2 NFRC	0.25, 0.36	No	No	N	9.5ft.	1.0ft.	10.0	0.0	10.0	12	12	121	Btuh
	Window Total								163 (sqft)					2090 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	60.0	2.3	136 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	128.7	2.3	291 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	96.0	2.3	217 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	302.0	2.3	684 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	99.0	2.3	224 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	108.0	2.3	244 Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	147.0	2.3	333 Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	72.0	2.3	163 Btuh
9	Frame - Wood - Ext	0.09	13.0/0.0	248.0	2.3	561 Btuh
10	Frame - Wood - Ext	0.09	13.0/0.0	176.0	2.3	398 Btuh
11	Frame - Wood - Adj	0.09	13.0/0.0	190.0	1.7	320 Btuh
12	Frame - Wood - Adj	0.09	13.0/0.0	69.0	1.7	116 Btuh
	Wall Total			1696 (sqft)		3688 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	1760.0	0.86	1519 Btuh
	Ceiling Total			1760 (sqft)		1519 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	1677 (ft-perimeter)	0.0	0 Btuh
	Floor Total		1677.0 (sqft)		0 Btuh

		Envelope Subtotal:	7849 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

N/A

Project Title: Lot 30 Crosswinds

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32025

12/7/2021

Infiltration	Type	Average ACH	Volume(cuft)		Wall Ratio		CFM=	Load	
	Natural	0.12	15093		1		31.0	645	Btuh
Internal gain		Occupants	Btuh/occupant				Appliance	Load	
		6	X	230	+		1200	2580	Btuh
						Sensible Envelope Load:		11074	Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)					(DGM of 0.381)		4223	Btuh
						Sensible Load All Zones		**15297**	**Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

N/A

Project Title: Lot 30 Crosswinds

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32025

12/7/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**11074 Btuh**
	Sensible Duct Load	4223 Btuh
	Total Sensible Zone Loads	**15297 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**15297 Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	1070 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1270 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**3540 Btuh**
	TOTAL GAIN	**18836 Btuh**

EQUIPMENT

1. Central Unit	#	18836 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)

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