Residential System Sizing Calculation

Summary

Project Title:
Lot 33 Jewel Lake II

Lake City, FL 32025

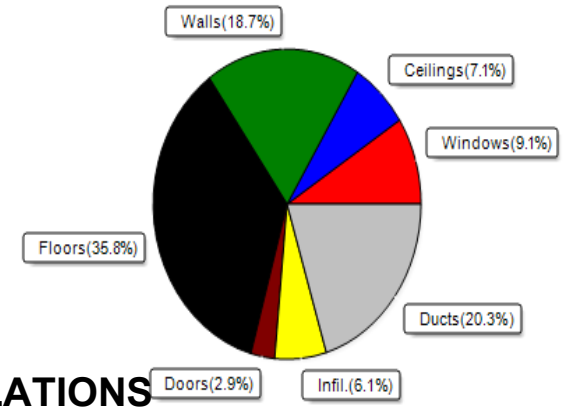
3/8/2022

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	**24162**	**Btuh**	**Total cooling load calculation**	**20294**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	100.0	24162	Sensible (SHR = 0.70)	81.3	13510
Heat Pump + Auxiliary(0.0kW)	100.0	24162	Latent	157.2	5790
			Total (Electric Heat Pump)	95.1	19300

WINTER CALCULATIONS

Winter Heating Load (for 1607 sqft)

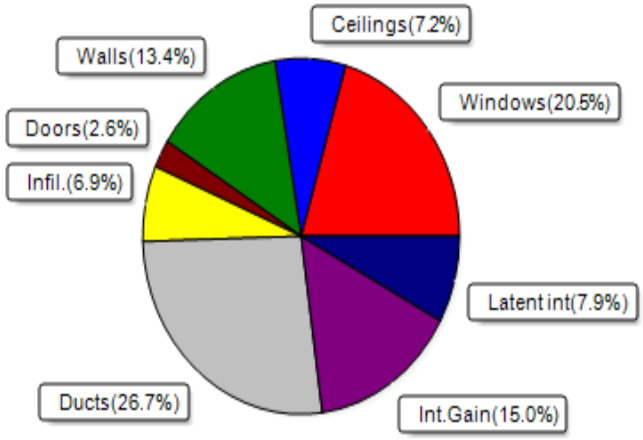
Load component			Load	
Window total	153	sqft	2208	Btuh
Wall total	1273	sqft	4519	Btuh
Door total	38	sqft	695	Btuh
Ceiling total	1687	sqft	1713	Btuh
Floor total	1607	sqft	8653	Btuh
Infiltration	34	cfm	1471	Btuh
Duct loss			4903	Btuh
Subtotal			**24162**	**Btuh**
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			**24162**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 1607 sqft)

Load component			Load	
Window total	153	sqft	4156	Btuh
Wall total	1273	sqft	2717	Btuh
Door total	38	sqft	521	Btuh
Ceiling total	1687	sqft	1456	Btuh
Floor total			0	Btuh
Infiltration	25	cfm	524	Btuh
Internal gain			3040	Btuh
Duct gain			4196	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			**16610**	**Btuh**
Latent gain(ducts)			1214	Btuh
Latent gain(infiltration)			869	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1600	Btuh
Total latent gain			**3683**	**Btuh**
TOTAL HEAT GAIN			**20294**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 3 / 8 / 2022

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Lot 33 Jewel Lake II
Lake City, FL 32025 Building Type: User

3/8/2022

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	30.0	14.4	432 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	15.0	14.4	216 Btuh
3	2, NFRC 0.25	Vinyl	0.36	E	60.0	14.4	864 Btuh
4	2, NFRC 0.25	Metal	0.36	W	33.3	14.4	480 Btuh
5	2, NFRC 0.25	Vinyl	0.36	S	15.0	14.4	216 Btuh
	Window Total				153.3(sqft)		2208 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	91	3.55	324 Btuh
2	Frame - Wood	- Adj	(0.089)	13.0/0.0	126	3.55	448 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	157	3.55	559 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	273	3.55	969 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	169	3.55	601 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	64	3.55	227 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	39	3.55	137 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	353	3.55	1253 Btuh
	Wall Total				1273(sqft)		4519 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)		18	18.4	327 Btuh
	Door Total				38(sqft)		695Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	1687	1.0	1713 Btuh
	Ceiling Total				1687(sqft)		1713Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	183.3 ft(perim.)	47.2	8653 Btuh
	Floor Total				1607 sqft		8653 Btuh
					Envelope Subtotal:		17788 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.16	12856	1.00	33.6	1471 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.255)	4903 Btuh
All Zones				**Sensible Subtotal All Zones**			**24162 Btuh**

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Lot 33 Jewel Lake II
Lake City, FL 32025 Building Type: User

3/8/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	24162 Btuh 0 Btuh 24162 Btuh

EQUIPMENT

1. Electric Heat Pump	#	24162 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)

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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Lot 33 Jewel Lake II

Lake City, FL 32025

3/8/2022

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	W	1.0ft.	3.0ft.	30.0	0.0	30.0	12	31	928	Btuh
2	2 NFRC	0.25, 0.36	No	No	S	1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181	Btuh
3	2 NFRC	0.25, 0.36	No	No	E	1.5ft.	1.0ft.	60.0	2.9	57.1	12	31	1801	Btuh
4	2 NFRC	0.25, 0.36	No	No	W	9.5ft.	1.0ft.	33.3	33.3	0.0	12	31	403	Btuh
5	2 NFRC	0.25, 0.36	No	No	S	1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181	Btuh
	Excursion												660	Btuh
	Window Total								153 (sqft)				4156	Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	91.3	2.3	207 Btuh
2	Frame - Wood - Adj	0.09	13.0/0.0	126.2	1.7	213 Btuh
3	Frame - Wood - Adj	0.09	13.0/0.0	157.3	1.7	265 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	273.0	2.3	618 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	169.3	2.3	383 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	64.0	2.3	145 Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	38.7	2.3	88 Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	353.0	2.3	799 Btuh
	Wall Total			1273 (sqft)		2717 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	13.8	276 Btuh
2	Insulated - Garage	17.8	13.8	245 Btuh
	Door Total	38 (sqft)		521 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	1687.0	0.86	1456 Btuh
	Ceiling Total			1687 (sqft)		1456 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	1607 (ft-perimeter)	0.0	0 Btuh
	Floor Total		1607.0 (sqft)		0 Btuh

	Envelope Subtotal:	8850 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	12856	1	25.2	524 Btuh

Internal gain	Occupants	Btuh/occupant		Appliance	Load
	8	X 230	+	1200	3040 Btuh

	Sensible Envelope Load:	12414 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.338)	4196 Btuh
	Sensible Load All Zones	**16610 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 33 Jewel Lake II

Lake City, FL 32025

3/8/2022

WHOLE HOUSE TOTALS

	Sensible Envelope Load All Zones	**12414 Btuh**
	Sensible Duct Load	4196 Btuh
	Total Sensible Zone Loads	**16610 Btuh**
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
Whole House	**Total sensible gain**	**16610 Btuh**
Totals for Cooling	Latent infiltration gain (for 51 gr. humidity difference)	869 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1214 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**3683 Btuh**
	TOTAL GAIN	**20294 Btuh**

EQUIPMENT

1. Central Unit	#	19300 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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