Residential System Sizing Calculation

Summary

Tammy Carter Res
318 SW Covey Ct
Lake City, FL 32025

Project Title:
230618 Carter Res

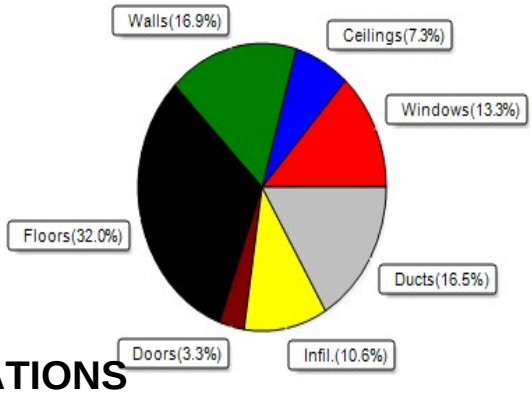
2023-05-16

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 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	**29455**	**Btuh**	**Total cooling load calculation**	**26925**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	108.6	32000	Sensible (SHR = 0.75)	104.0	24000
Heat Pump + Auxiliary(0.0kW)	108.6	32000	Latent	207.9	8000
			Total (Electric Heat Pump)	118.9	32000

WINTER CALCULATIONS

Winter Heating Load (for 2024 sqft)

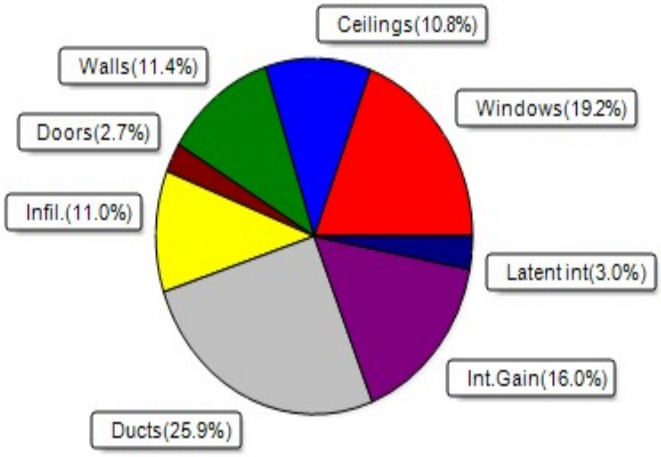
Load component			Load	
Window total	328	sqft	3930	Btuh
Wall total	1404	sqft	4983	Btuh
Door total	60	sqft	960	Btuh
Ceiling total	2114	sqft	2146	Btuh
Floor total	2024	sqft	9440	Btuh
Infiltration	71	cfm	3135	Btuh
Duct loss			4860	Btuh
Subtotal			**29455**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**29455**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 2024 sqft)

Load component			Load	
Window total	328	sqft	5177	Btuh
Wall total	1404	sqft	3065	Btuh
Door total	60	sqft	720	Btuh
Ceiling total	2114	sqft	2897	Btuh
Floor total			0	Btuh
Infiltration	54	cfm	1117	Btuh
Internal gain			4320	Btuh
Duct gain			5781	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**23077**	**Btuh**
Latent gain(ducts)			1194	Btuh
Latent gain(infiltration)			1853	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			800	Btuh
Total latent gain			**3847**	**Btuh**
TOTAL HEAT GAIN			**26925**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2023-05-16

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Tammy Carter Res
318 SW Covey Ct
Lake City, FL 32025

Project Title:
230618 Carter Res
Building Type: User

2023-05-16

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.20	Metal	0.30	N	15.0	12.0	180 Btuh
2	2, NFRC 0.20	Metal	0.30	N	36.0	12.0	432 Btuh
3	2, NFRC 0.20	Metal	0.30	E	36.0	12.0	432 Btuh
4	2, NFRC 0.20	Metal	0.30	N	72.0	12.0	864 Btuh
5	2, NFRC 0.20	Metal	0.30	N	32.0	12.0	384 Btuh
6	2, NFRC 0.20	Metal	0.30	E	12.5	12.0	150 Btuh
7	2, NFRC 0.20	Metal	0.30	E	6.0	12.0	72 Btuh
8	2, NFRC 0.20	Metal	0.30	S	4.0	12.0	48 Btuh
9	2, NFRC 0.20	Metal	0.30	S	12.0	12.0	144 Btuh
10	2, NFRC 0.20	Metal	0.30	S	32.0	12.0	384 Btuh
11	2, NFRC 0.20	Metal	0.30	S	36.0	12.0	432 Btuh
12	2, NFRC 0.20	Metal	0.30	W	30.0	12.0	360 Btuh
13	2, NFRC 0.20	Metal	0.30	W	4.0	12.0	48 Btuh
	Window Total				327.5(sqft)		3930 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	197	3.55	700 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	48	3.55	170 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	110	3.55	390 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	291	3.55	1031 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	116	3.55	412 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	17	3.55	59 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	18	3.55	64 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	71	3.55	250 Btuh
10	Frame - Wood	- Adj	(0.089)	13.0/0.0	33	3.55	117 Btuh
11	Frame - Wood	- Adj	(0.089)	13.0/0.0	160	3.55	568 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	326	3.55	1157 Btuh
	Wall Total				1404(sqft)		4983 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)	24	16.0	384 Btuh
2	Insulated - Exterior,	n	(0.400)	16	16.0	256 Btuh
3	Insulated - Garage,	n	(0.400)	20	16.0	320 Btuh
	Door Total			60(sqft)		960Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing	(0.025)	38.0/0.0	2024	1.0	2055 Btuh
2	Knee wall/D/Shing	(0.025)	38.0/0.0	90	1.0	91 Btuh
	Ceiling Total			2114(sqft)		2146Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	200.0 ft(perim.)	47.2	9440 Btuh
	Floor Total			2024 sqft		9440 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Tammy Carter Res
318 SW Covey Ct
Lake City, FL 32025

Project Title:
230618 Carter Res
Building Type: User

2023-05-16

	Envelope Subtotal:	21459 Btuh
Infiltration	Type Wholehouse ACH Volume(cuft) Wall Ratio CFM= Natural 0.23 18520 1.00 71.5	3135 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.198)	4860 Btuh
All Zones	**Sensible Subtotal All Zones**	**29455 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	29455 Btuh 0 Btuh 29455 Btuh

EQUIPMENT

1. Electric Heat Pump	#	32000 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

Tammy Carter Res
318 SW Covey Ct
Lake City, FL 32025

Project Title:
230618 Carter Res

2023-05-16

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

	Type*					Overhang		Window Area(sqft)			HTM		Load	
Window	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
1	2 NFRC	0.20, 0.30		No	No	N	1.5ft	0.7ft	15.0	1.7	13.3	10	25	349	Btuh
2	2 NFRC	0.20, 0.30		No	No	N	1.5ft	0.7ft	36.0	3.5	32.5	10	25	847	Btuh
3	2 NFRC	0.20, 0.30		No	No	E	27.9f	0.5ft	36.0	36.0	0.0	10	11	357	Btuh
4	2 NFRC	0.20, 0.30		No	No	N	10.8f	0.0ft	72.0	72.0	0.0	10	25	713	Btuh
5	2 NFRC	0.20, 0.30		No	No	N	10.8f	0.5ft	32.0	32.0	0.0	10	25	317	Btuh
6	2 NFRC	0.20, 0.30		No	No	E	1.5ft	0.7ft	12.5	12.5	0.0	10	11	124	Btuh
7	2 NFRC	0.20, 0.30		No	No	E	1.5ft	0.7ft	6.0	6.0	0.0	10	11	59	Btuh
8	2 NFRC	0.20, 0.30		No	No	S	1.5ft	0.7ft	4.0	1.2	2.8	10	25	82	Btuh
9	2 NFRC	0.20, 0.30		No	No	S	1.5ft	0.7ft	12.0	1.2	10.8	10	25	282	Btuh
10	2 NFRC	0.20, 0.30		No	No	S	6.0ft	0.7ft	32.0	17.3	14.7	10	25	539	Btuh
11	2 NFRC	0.20, 0.30		No	No	S	1.5ft	0.7ft	36.0	3.5	32.5	10	25	847	Btuh
12	2 NFRC	0.20, 0.30		No	No	W	1.5ft	0.7ft	30.0	0.0	30.0	10	10	297	Btuh
13	2 NFRC	0.20, 0.30		No	No	W	1.5ft	0.7ft	4.0	0.0	4.0	10	10	40	Btuh
	Excursion													323	Btuh
	Window Total								328 (sqft)					5177	Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load	
1	Frame - Wood - Ext	0.09	13.0/0.0	197.3	2.3	446	Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	48.0	2.3	109	Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	109.8	2.3	248	Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	290.5	2.3	657	Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	116.0	2.3	263	Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	18.0	2.3	41	Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	16.5	2.3	37	Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	18.0	2.3	41	Btuh
9	Frame - Wood - Ext	0.09	13.0/0.0	70.5	2.3	160	Btuh
10	Frame - Wood - Adj	0.09	13.0/0.0	33.0	1.7	56	Btuh
11	Frame - Wood - Adj	0.09	13.0/0.0	160.0	1.7	270	Btuh
12	Frame - Wood - Ext	0.09	13.0/0.0	326.0	2.3	738	Btuh
	Wall Total			1404 (sqft)		3065	Btuh

Doors	Type	Area (sqft)	HTM	Load	
1	Insulated - Exterior	24.0	12.0	288	Btuh
2	Insulated - Exterior	16.0	12.0	192	Btuh
3	Insulated - Garage	20.0	12.0	240	Btuh
	Door Total	60 (sqft)		720	Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load	
1	Vented Attic/DarkShingle	0.025	38.0/0.0	2024.0	1.37	2774	Btuh
2	Knee wall to attic/DarkShingle	0.025	38.0/0.0	90.0	1.37	123	Btuh
	Ceiling Total			2114 (sqft)		2897	Btuh

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	2024 (ft-perimeter)	0.0	0	Btuh
	Floor Total		2024.0 (sqft)		0	Btuh
			Envelope Subtotal:		11859	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Tammy Carter Res
318 SW Covey Ct
Lake City, FL 32025

Project Title: 230618 Carter Res

Climate:FL_GAINESVILLE_REGIONAL_A

2023-05-16

Infiltration	Type	Average ACH	Volume(cuft)		Wall Ratio		CFM=	Load	
	Natural	0.17	18520		1		53.6	1117	Btuh
Internal gain		Occupants	Btuh/occupant				Appliance	Load	
		4	X	230	+		3400	4320	Btuh
						Sensible Envelope Load:		17296	Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)					(DGM of 0.334)		5781	Btuh
						Sensible Load All Zones		**23077**	**Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Tammy Carter Res
318 SW Covey Ct
Lake City, FL 32025

Project Title: 230618 Carter Res

Climate:FL_GAINESVILLE_REGIONAL_A

2023-05-16

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**17296**	**Btuh**
	Sensible Duct Load	5781	Btuh
	Total Sensible Zone Loads	**23077**	**Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0	Btuh
	Blower	0	Btuh
	Total sensible gain	**23077**	**Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	1853	Btuh
	Latent ventilation gain	0	Btuh
	Latent duct gain	1194	Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800	Btuh
	Latent other gain	0	Btuh
	Latent total gain	**3847**	**Btuh**
	TOTAL GAIN	**26925**	**Btuh**

EQUIPMENT

1. Central Unit	#	32000 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)

Version 8