Residential System Sizing Calculation

Summary

Hedrick, Carl & Amanda
279 SW Sysdney Nicole Ct
Lake City, FL

Project Title:
240903 Hedrick

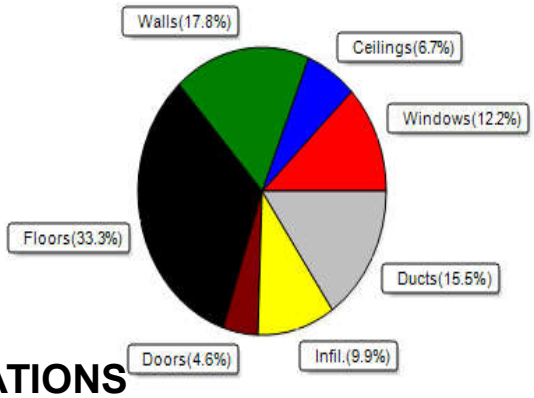
2024-08-15

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	**39268**	**Btuh**	**Total cooling load calculation**	**31159**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	109.5	43000	Sensible (SHR = 0.75)	121.2	32250
Heat Pump + Auxiliary(0.0kW)	109.5	43000	Latent	236.4	10750
			Total (Electric Heat Pump)	138.0	43000

WINTER CALCULATIONS

Winter Heating Load (for 2456 sqft)

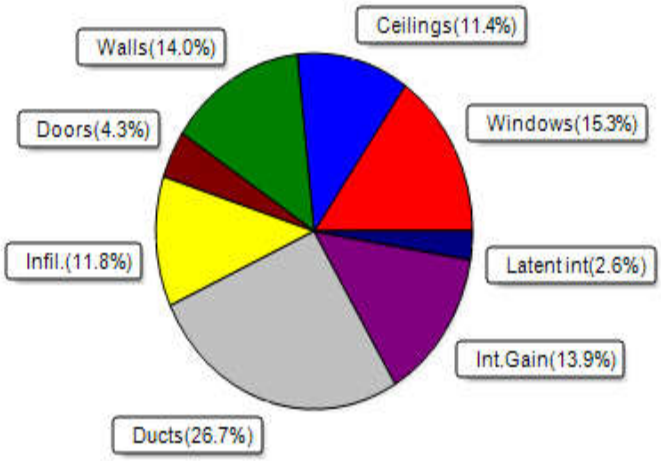
Load component			Load	
Window total	400	sqft	4800	Btuh
Wall total	1972	sqft	7001	Btuh
Door total	112	sqft	1792	Btuh
Ceiling total	2598	sqft	2638	Btuh
Floor total	2456	sqft	13074	Btuh
Infiltration	89	cfm	3892	Btuh
Duct loss			6071	Btuh
Subtotal			**39268**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**39268**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 2456 sqft)

Load component			Load	
Window total	400	sqft	4758	Btuh
Wall total	1972	sqft	4370	Btuh
Door total	112	sqft	1344	Btuh
Ceiling total	2598	sqft	3561	Btuh
Floor total			0	Btuh
Infiltration	67	cfm	1386	Btuh
Internal gain			4320	Btuh
Duct gain			6873	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**26612**	**Btuh**
Latent gain(ducts)			1447	Btuh
Latent gain(infiltration)			2301	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			800	Btuh
Total latent gain			**4547**	**Btuh**
TOTAL HEAT GAIN			**31159**	**Btuh**



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Columbia County Building Department — Plans Reviewed for Code Compliance — State of Florida

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-08-15

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Hedrick, Carl & Amanda
279 SW Sysdney Nicole Ct
Lake City, FL

Project Title:
240903 Hedrick
Building Type: User

2024-08-15

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	36.0	12.0	432 Btuh
2	2, NFRC 0.20	Metal	0.30	E	13.3	12.0	160 Btuh
3	2, NFRC 0.20	Metal	0.30	N	64.0	12.0	768 Btuh
4	2, NFRC 0.20	Metal	0.30	W	48.0	12.0	576 Btuh
5	2, NFRC 0.20	Metal	0.30	N	48.0	12.0	576 Btuh
6	2, NFRC 0.20	Metal	0.30	N	32.0	12.0	384 Btuh
7	2, NFRC 0.20	Metal	0.30	N	24.0	12.0	288 Btuh
8	2, NFRC 0.20	Metal	0.30	E	18.7	12.0	224 Btuh
9	2, NFRC 0.20	Metal	0.30	E	20.0	12.0	240 Btuh
10	2, NFRC 0.20	Metal	0.30	E	3.0	12.0	36 Btuh
11	2, NFRC 0.20	Metal	0.30	S	4.0	12.0	48 Btuh
12	2, NFRC 0.20	Metal	0.30	S	16.5	12.0	198 Btuh
13	2, NFRC 0.20	Metal	0.30	S	32.0	12.0	384 Btuh
14	2, NFRC 0.20	Metal	0.30	S	16.5	12.0	198 Btuh
15	2, NFRC 0.20	Metal	0.30	W	8.0	12.0	96 Btuh
16	2, NFRC 0.20	Metal	0.30	W	16.0	12.0	192 Btuh
	Window Total				400.0(sqft)		4800 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	81	3.55	288 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	139	3.55	494 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	30	3.55	107 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	17	3.55	60 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	62	3.55	220 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	128	3.55	453 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	94	3.55	334 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	399	3.55	1418 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	108	3.55	383 Btuh
10	Frame - Wood	- Adj	(0.089)	13.0/0.0	54	3.55	192 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	64	3.55	225 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	42	3.55	149 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	120	3.55	426 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	63	3.55	224 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	122	3.55	431 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	450	3.55	1598 Btuh
	Wall Total				1972(sqft)		7001 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

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Building Type: User

2024-08-15

Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		32	16.0	512 Btuh
2	Insulated - Exterior,	n	(0.400)		16	16.0	256 Btuh
3	Insulated - Exterior,	n	(0.400)		16	16.0	256 Btuh
4	Insulated - Garage,	n	(0.400)		24	16.0	384 Btuh
5	Insulated - Exterior,	n	(0.400)		16	16.0	256 Btuh
6	Insulated - Exterior,	n	(0.400)		8	16.0	128 Btuh
	Door Total				112(sqft)		1792Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	2117	1.0	2149 Btuh
2	Sloped ce/D/Shing		(0.025)	38.0/0.0	380	1.0	386 Btuh
3	Knee wall/D/Shing		(0.025)	38.0/0.0	101	1.0	103 Btuh
	Ceiling Total				2598(sqft)		2638Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	277.0 ft(perim.)	47.2	13074 Btuh
	Floor Total				2456 sqft		13074 Btuh
					Envelope Subtotal:		29305 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.23	22841	1.00	88.7	3892 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.183)	6071 Btuh
All Zones					**Sensible Subtotal All Zones**		**39268 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss		39268 Btuh
	Ventilation Sens. Heat Loss	(Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss		39268 Btuh

EQUIPMENT

1. Electric Heat Pump	#	43000 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Hedrick, Carl & Amanda
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Building Type: User

2024-08-15

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

Hedrick, Carl & Amanda
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Lake City, FL

Project Title:
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2024-08-15

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

Window	Type* Panes	SHGC	U	InSh	IS	Ornt	Overhang Len	Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	Unshaded	Load
1	2 NFRC	0.20,	0.30	No	No	N	1.5ft	0.7ft	36.0	36.0	0.0	10	11	357 Btuh
2	2 NFRC	0.20,	0.30	No	No	E	14.0f	0.0ft	13.3	13.3	0.0	10	25	132 Btuh
3	2 NFRC	0.20,	0.30	No	No	N	15.7f	0.0ft	64.0	64.0	0.0	10	11	634 Btuh
4	2 NFRC	0.20,	0.30	No	No	W	14.0f	0.0ft	48.0	48.0	0.0	10	25	476 Btuh
5	2 NFRC	0.20,	0.30	No	No	N	16.7f	0.0ft	48.0	48.0	0.0	10	11	476 Btuh
6	2 NFRC	0.20,	0.30	No	No	N	1.5ft	0.7ft	32.0	32.0	0.0	10	11	317 Btuh
7	2 NFRC	0.20,	0.30	No	No	N	1.5ft	0.7ft	24.0	24.0	0.0	10	11	238 Btuh
8	2 NFRC	0.20,	0.30	No	No	E	1.5ft	0.7ft	18.7	2.7	16.0	10	25	426 Btuh
9	2 NFRC	0.20,	0.30	No	No	E	1.5ft	0.7ft	20.0	2.3	17.7	10	25	465 Btuh
10	2 NFRC	0.20,	0.30	No	No	E	1.5ft	0.7ft	3.0	1.7	1.3	10	25	49 Btuh
11	2 NFRC	0.20,	0.30	No	No	S	1.5ft	0.7ft	4.0	0.0	4.0	10	10	40 Btuh
12	2 NFRC	0.20,	0.30	No	No	S	11.0f	0.5ft	16.5	0.0	16.5	10	10	163 Btuh
13	2 NFRC	0.20,	0.30	No	No	S	11.0f	0.5ft	32.0	0.0	32.0	10	10	317 Btuh
14	2 NFRC	0.20,	0.30	No	No	S	1.5ft	0.7ft	16.5	0.0	16.5	10	10	163 Btuh
15	2 NFRC	0.20,	0.30	No	No	W	1.5ft	0.7ft	8.0	4.6	3.4	10	25	130 Btuh
16	2 NFRC	0.20,	0.30	No	No	W	1.5ft	0.7ft	16.0	1.5	14.5	10	25	376 Btuh
	Window Total								400 (sqft)					4758 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	81.0	2.3	183 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	139.2	2.3	315 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	30.0	2.3	68 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	17.0	2.3	38 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	62.0	2.3	140 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	127.5	2.3	289 Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	94.0	2.3	213 Btuh
8	Frame - Wood - Ext	0.09	13.0/0.0	399.3	2.3	904 Btuh
9	Frame - Wood - Adj	0.09	13.0/0.0	108.0	1.7	182 Btuh
10	Frame - Wood - Adj	0.09	13.0/0.0	54.0	1.7	91 Btuh
11	Frame - Wood - Ext	0.09	13.0/0.0	63.5	2.3	144 Btuh
12	Frame - Wood - Ext	0.09	13.0/0.0	42.0	2.3	95 Btuh
13	Frame - Wood - Ext	0.09	13.0/0.0	120.0	2.3	272 Btuh
14	Frame - Wood - Ext	0.09	13.0/0.0	63.0	2.3	143 Btuh
15	Frame - Wood - Ext	0.09	13.0/0.0	121.5	2.3	275 Btuh
16	Frame - Wood - Ext	0.09	13.0/0.0	450.0	2.3	1019 Btuh
	Wall Total			1972 (sqft)		4370 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	32.0	12.0	384 Btuh
2	Insulated - Exterior	16.0	12.0	192 Btuh
3	Insulated - Exterior	16.0	12.0	192 Btuh
4	Insulated - Garage	24.0	12.0	288 Btuh
5	Insulated - Exterior	16.0	12.0	192 Btuh
6	Insulated - Exterior	8.0	12.0	96 Btuh
	Door Total	112 (sqft)		1344 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

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279 SW Sysdney Nicole Ct
Lake City, FL

Project Title: 240903 Hedrick

Climate:FL_GAINESVILLE_REGIONAL_A

2024-08-15

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/DarkShingle	0.025	38.0/0.0	2117.0	1.37	2901 Btuh
2	Vented Attic/DarkShingle	0.025	38.0/0.0	380.0	1.37	521 Btuh
3	Knee wall to attic/DarkShingle	0.025	38.0/0.0	101.0	1.37	138 Btuh
	Ceiling Total			2598 (sqft)		3561 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	2456 (ft-perimeter)	0.0	0 Btuh
	Floor Total			2456.0 (sqft)		0 Btuh
				Envelope Subtotal:		14033 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.17	22841	1	66.5	1386 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		4	X 230	+	3400	4320 Btuh
				Sensible Envelope Load:		19739 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)			(DGM of 0.348)		6873 Btuh
				Sensible Load All Zones		**26612 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

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Lake City, FL

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Climate:FL_GAINESVILLE_REGIONAL_A

2024-08-15

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**19739**	**Btuh**
	Sensible Duct Load	6873	Btuh
	Total Sensible Zone Loads	**26612**	**Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0	Btuh
	Blower	0	Btuh
	Total sensible gain	**26612**	**Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	2301	Btuh
	Latent ventilation gain	0	Btuh
	Latent duct gain	1447	Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800	Btuh
	Latent other gain	0	Btuh
	Latent total gain	**4547**	**Btuh**
	TOTAL GAIN	**31159**	**Btuh**

EQUIPMENT

1. Central Unit	#	43000 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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