

Residential System Sizing Calculation

Summary

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title:
240265 Dougherty & Frese

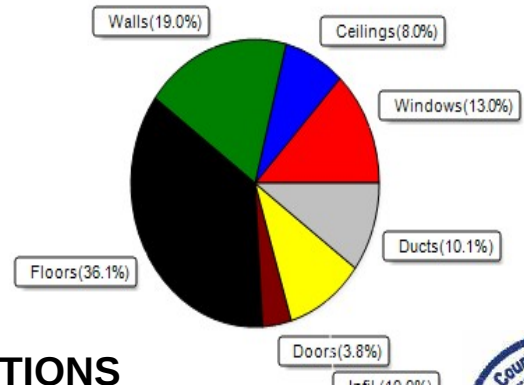
2024-03-08

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		28890 Btuh	Total cooling load calculation		22809 Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	107.3	31000	Sensible (SHR = 0.75)	121.4	23250
Heat Pump + Auxiliary(0.0kW)	107.3	31000	Latent	212.1	7750
			Total (Electric Heat Pump)	135.9	31000

WINTER CALCULATIONS

Winter Heating Load (for 1915 sqft)

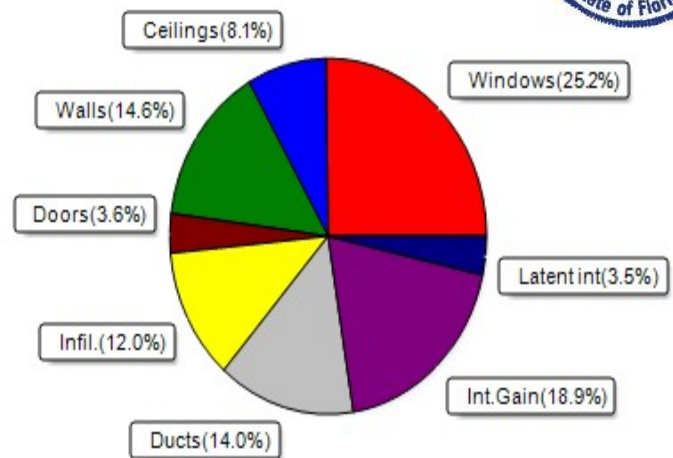
Load component		Load	
Window total	314 sqft	3768	Btuh
Wall total	1566 sqft	5487	Btuh
Door total	68 sqft	1088	Btuh
Ceiling total	1915 sqft	2308	Btuh
Floor total	1915 sqft	10431	Btuh
Infiltration	66 cfm	2898	Btuh
Duct loss		2910	Btuh
Subtotal		28890	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
TOTAL HEAT LOSS		28890	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1915 sqft)

Load component		Load	
Window total	314 sqft	5755	Btuh
Wall total	1566 sqft	3335	Btuh
Door total	68 sqft	816	Btuh
Ceiling total	1915 sqft	1846	Btuh
Floor total		0	Btuh
Infiltration	50 cfm	1033	Btuh
Internal gain		4320	Btuh
Duct gain		2049	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		19154	Btuh
Latent gain(ducts)		1141	Btuh
Latent gain(infiltration)		1713	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		3655	Btuh
TOTAL HEAT GAIN		22809	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-03-08

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title:
240265 Dougherty & Frese
Building Type: User

2024-03-08

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 0.22	Metal	0.30	N	8.0		12.0	96 Btuh
2	2, NFRC 0.22	Metal	0.30	N	30.0		12.0	360 Btuh
3	2, NFRC 0.22	Metal	0.30	E	25.0		12.0	300 Btuh
4	2, NFRC 0.22	Metal	0.30	N	40.0		12.0	480 Btuh
5	2, NFRC 0.22	Metal	0.30	N	25.0		12.0	300 Btuh
6	2, NFRC 0.22	Metal	0.30	N	8.0		12.0	96 Btuh
7	2, NFRC 0.22	Metal	0.30	E	40.0		12.0	480 Btuh
8	2, NFRC 0.22	Metal	0.30	E	4.0		12.0	48 Btuh
9	2, NFRC 0.22	Metal	0.30	E	15.0		12.0	180 Btuh
10	2, NFRC 0.22	Metal	0.30	S	8.0		12.0	96 Btuh
11	2, NFRC 0.22	Metal	0.30	S	25.0		12.0	300 Btuh
12	2, NFRC 0.22	Metal	0.30	S	24.0		12.0	288 Btuh
13	2, NFRC 0.22	Metal	0.30	W	12.0		12.0	144 Btuh
14	2, NFRC 0.22	Metal	0.30	W	6.0		12.0	72 Btuh
15	2, NFRC 0.22	Metal	0.30	W	4.0		12.0	48 Btuh
16	2, NFRC 0.22	Metal	0.30	SW	12.5		12.0	150 Btuh
17	2, NFRC 0.22	Metal	0.30	S	15.0		12.0	180 Btuh
18	2, NFRC 0.22	Metal	0.30	NW	12.5		12.0	150 Btuh
Window Total					314.0(sqft)			3768 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	127		3.55	451 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	43		3.55	152 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	69		3.55	245 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	38		3.55	135 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	105		3.09	325 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	224 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	121		3.55	430 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	52		3.09	161 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	152		3.55	540 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	192		3.55	682 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	68		3.55	241 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	33		3.55	117 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	196		3.55	696 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	227		3.55	806 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	25		3.55	89 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	21		3.55	75 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	25		3.55	89 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	9		3.55	32 Btuh
Wall Total					1566(sqft)			5487 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title:
240265 Dougherty & Frese
Building Type: User

2024-03-08

Doors	Type	Storm Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n	(0.400)		16	16.0	256 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)		20	16.0	320 Btuh
	Door Total			68(sqft)		1088Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing	(0.241)	0.0/22.0	1915	1.2	2308 Btuh
	Ceiling Total			1915(sqft)		2308Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	221.0 ft(perim.)	47.2	10431 Btuh
	Floor Total			1915 sqft		10431 Btuh
	Envelope Subtotal:					23082 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.23	17235	1.00	66.1	2898 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.112)					2910 Btuh
All Zones	Sensible Subtotal All Zones					28890 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	28890 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	28890 Btuh

EQUIPMENT

1. Electric Heat Pump	#	31000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title:
240265 Dougherty & Frese
Building Type: User

2024-03-08

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

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title:
240265 Dougherty & Frese

2024-03-08

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*						Overhang		Window Area(sqft)			HTM		Load	
	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
1	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.0ft	8.0	1.5	6.5	10	27	191	Btuh
2	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.0ft	30.0	1.5	28.5	10	27	783	Btuh
3	2 NFRC	0.22, 0.30	No	No	E		20.7f	0.0ft	25.0	0.0	25.0	10	10	258	Btuh
4	2 NFRC	0.22, 0.30	No	No	N		8.5ft	0.0ft	40.0	35.3	4.7	10	27	491	Btuh
5	2 NFRC	0.22, 0.30	No	No	N		8.5ft	0.5ft	25.0	25.0	0.0	10	27	258	Btuh
6	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.0ft	8.0	1.5	6.5	10	27	191	Btuh
7	2 NFRC	0.22, 0.30	No	No	E		3.0ft	0.0ft	40.0	0.0	40.0	10	10	413	Btuh
8	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.0ft	4.0	0.0	4.0	10	10	41	Btuh
9	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.0ft	15.0	0.0	15.0	10	10	155	Btuh
10	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.0ft	8.0	1.5	6.5	10	27	191	Btuh
11	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.0ft	25.0	1.2	23.8	10	27	652	Btuh
12	2 NFRC	0.22, 0.30	No	No	S		7.5ft	0.0ft	24.0	18.7	5.3	10	27	336	Btuh
13	2 NFRC	0.22, 0.30	No	No	W		1.5ft	1.0ft	12.0	12.0	0.0	10	12	124	Btuh
14	2 NFRC	0.22, 0.30	No	No	W		1.5ft	1.0ft	6.0	6.0	0.0	10	12	62	Btuh
15	2 NFRC	0.22, 0.30	No	No	W		1.5ft	1.0ft	4.0	4.0	0.0	10	12	41	Btuh
16	2 NFRC	0.22, 0.30	No	No	SW		1.5ft	1.0ft	12.5	3.7	8.8	10	21	227	Btuh
17	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.0ft	15.0	0.7	14.3	10	27	391	Btuh
18	2 NFRC	0.22, 0.30	No	No	NW		1.5ft	1.0ft	12.5	3.7	8.8	10	21	227	Btuh
Excursion														720	Btuh
Window Total									314 (sqft)					5755 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.0	127.0		2.3		287 Btuh		
2	Frame - Wood - Ext						0.09	13.0/0.0	42.8		2.3		97 Btuh		
3	Frame - Wood - Ext						0.09	13.0/0.0	69.0		2.3		156 Btuh		
4	Frame - Wood - Ext						0.09	13.0/0.0	38.0		2.3		86 Btuh		
5	Frame - Wood - Ext						0.08	19.0/0.0	105.0		1.7		174 Btuh		
6	Frame - Wood - Ext						0.09	13.0/0.0	63.0		2.3		143 Btuh		
7	Frame - Wood - Ext						0.09	13.0/0.0	121.0		2.3		274 Btuh		
8	Frame - Wood - Ext						0.08	19.0/0.0	52.0		1.7		86 Btuh		
9	Frame - Wood - Ext						0.09	13.0/0.0	152.0		2.3		344 Btuh		
10	Frame - Wood - Ext						0.09	13.0/0.0	192.0		2.3		435 Btuh		
11	Frame - Wood - Ext						0.09	13.0/0.0	68.0		2.3		154 Btuh		
12	Frame - Wood - Ext						0.09	13.0/0.0	33.0		2.3		75 Btuh		
13	Frame - Wood - Adj						0.09	13.0/0.0	196.0		1.7		331 Btuh		
14	Frame - Wood - Ext						0.09	13.0/0.0	227.0		2.3		514 Btuh		
15	Frame - Wood - Ext						0.09	13.0/0.0	25.0		2.3		57 Btuh		
16	Frame - Wood - Ext						0.09	13.0/0.0	21.0		2.3		48 Btuh		
17	Frame - Wood - Ext						0.09	13.0/0.0	25.0		2.3		57 Btuh		
18	Frame - Wood - Ext						0.09	13.0/0.0	9.0		2.3		20 Btuh		
Wall Total									1566 (sqft)					3335 Btuh	
Doors	Type								Area (sqft)		HTM		Load		
1	Insulated - Exterior								16.0		12.0		192 Btuh		
2	Insulated - Exterior								16.0		12.0		192 Btuh		
3	Insulated - Exterior								16.0		12.0		192 Btuh		
4	Insulated - Garage								20.0		12.0		240 Btuh		
Door Total									68 (sqft)					816 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
240265 Dougherty & Frese

2024-03-08

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Unvented Attic/DarkShingle	0.241	0.0/22.0	1915.0	0.96	1846 Btuh
	Ceiling Total			1915 (sqft)		1846 Btuh
Floors	Type		R-Value	Size	HTM	Load
1	Slab On Grade		0.0	1915 (ft-perimeter)	0.0	0 Btuh
	Floor Total			1915.0 (sqft)		0 Btuh
	Envelope Subtotal:					11752 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.17	17235	1	49.6	1033 Btuh
Internal gain		Occupants	Btuh/occupant	Appliance		Load
		4	X 230	+	3400	4320 Btuh
	Sensible Envelope Load:					17105 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.120)					2049 Btuh
	Sensible Load All Zones					19154 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Mc Dougherty & Carla Frese
979 SW Hunter Rd
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
240265 Dougherty & Frese

2024-03-08

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17105 Btuh
	Sensible Duct Load	2049 Btuh
	Total Sensible Zone Loads	19154 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	19154 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1713 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1141 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3655 Btuh
	TOTAL GAIN	22809 Btuh

EQUIPMENT

1. Central Unit	#	31000 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(½))

(Ornt - compass orientation)



Version 8