

Residential System Sizing Calculation

Summary

David & Nancy Gomez

Project Title:
220944 Gomez Res

Lake City, FL 32024

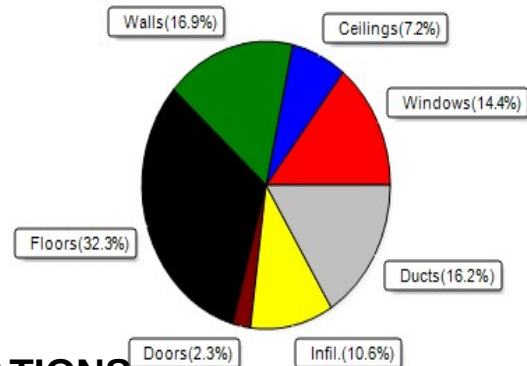
2022-08-09

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	43077 Btuh	Total cooling load calculation	36971 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	109.1 47000	Sensible (SHR = 0.75)	112.1 35250
Heat Pump + Auxiliary(0.0kW)	109.1 47000	Latent	213.1 11750
		Total (Electric Heat Pump)	127.1 47000

WINTER CALCULATIONS

Winter Heating Load (for 2926 sqft)

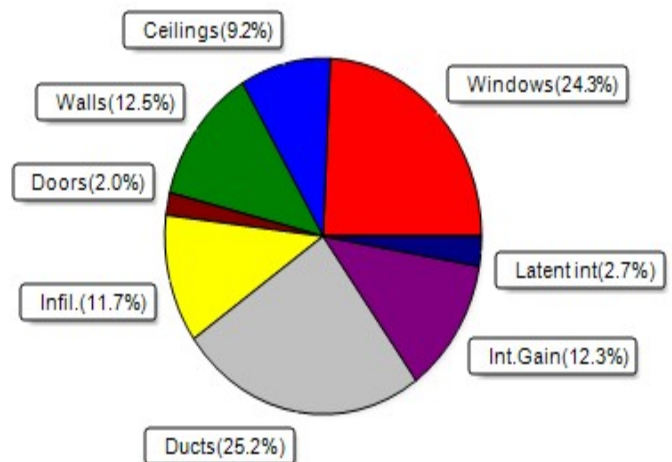
Load component		Load	
Window total	517 sqft	6208	Btuh
Wall total	2049 sqft	7275	Btuh
Door total	84 sqft	1008	Btuh
Ceiling total	3058 sqft	3105	Btuh
Floor total	2926 sqft	13924	Btuh
Infiltration	104 cfm	4560	Btuh
Duct loss		6998	Btuh
Subtotal		43077	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		43077	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2926 sqft)

Load component		Load	
Window total	517 sqft	8975	Btuh
Wall total	2049 sqft	4638	Btuh
Door total	84 sqft	756	Btuh
Ceiling total	3058 sqft	3415	Btuh
Floor total		0	Btuh
Infiltration	78 cfm	1624	Btuh
Internal gain		4550	Btuh
Duct gain		7499	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		31458	Btuh
Latent gain(ducts)		1818	Btuh
Latent gain(infiltration)		2695	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1000	Btuh
Total latent gain		5513	Btuh
TOTAL HEAT GAIN		36971	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2022-08-09

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

David & Nancy Gomez

Project Title:
220944 Gomez Res
Building Type: User

Lake City, FL 32024

2022-08-09

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 0.22	Metal	0.30	NW	15.0		12.0	180 Btuh
2	2, NFRC 0.22	Metal	0.30	N	36.0		12.0	432 Btuh
3	2, NFRC 0.22	Metal	0.30	NE	15.0		12.0	180 Btuh
4	2, NFRC 0.22	Metal	0.30	N	72.0		12.0	864 Btuh
5	2, NFRC 0.22	Metal	0.30	W	48.0		12.0	576 Btuh
6	2, NFRC 0.22	Metal	0.30	N	54.0		12.0	648 Btuh
7	2, NFRC 0.22	Metal	0.30	NW	13.3		12.0	160 Btuh
8	2, NFRC 0.22	Metal	0.30	N	36.0		12.0	432 Btuh
9	2, NFRC 0.22	Metal	0.30	E	8.0		12.0	96 Btuh
10	2, NFRC 0.22	Metal	0.30	E	30.0		12.0	360 Btuh
11	2, NFRC 0.22	Metal	0.30	E	30.0		12.0	360 Btuh
12	2, NFRC 0.22	Metal	0.30	S	45.0		12.0	540 Btuh
13	2, NFRC 0.22	Metal	0.30	W	15.0		12.0	180 Btuh
14	2, NFRC 0.22	Metal	0.30	S	15.0		12.0	180 Btuh
15	2, NFRC 0.22	Metal	0.30	S	32.0		12.0	384 Btuh
16	2, NFRC 0.22	Metal	0.30	S	30.0		12.0	360 Btuh
17	2, NFRC 0.22	Metal	0.30	W	8.0		12.0	96 Btuh
18	2, NFRC 0.22	Metal	0.30	W	15.0		12.0	180 Btuh
Window Total					517.3(sqft)			6208 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	23		3.55	83 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	35		3.55	122 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	23		3.55	83 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	11		3.55	37 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55	85 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	20		3.55	71 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	62		3.55	221 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	13		3.55	47 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	91		3.55	322 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	309 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	626		3.55	2223 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	160 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	12		3.55	43 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	63		3.55	224 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	12		3.55	43 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	160 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	240		3.55	852 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	107		3.55	378 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	53		3.55	186 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	122		3.55	431 Btuh
22	Frame - Wood	- Ext	(0.089)	13.0/0.0	313		3.55	1111 Btuh
Wall Total					2049(sqft)			7275 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

David & Nancy Gomez

Project Title:
220944 Gomez Res
Building Type: User

Lake City, FL 32024

2022-08-09

Doors	Type	Storm Ueff.		Area X	HTM=	Load	
	1	Insulated - Exterior, n	(0.300)	24	12.0	288 Btuh	
	2	Insulated - Exterior, n	(0.300)	16	12.0	192 Btuh	
	3	Insulated - Exterior, n	(0.300)	8	12.0	96 Btuh	
	4	Insulated - Exterior, n	(0.300)	20	12.0	240 Btuh	
	5	Insulated - Exterior, n	(0.300)	16	12.0	192 Btuh	
	Door Total			84(sqft)		1008Btuh	
Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load	
	1	Vented Attic/L/Shing	(0.025)	38.0/0.0	2926	1.0	2971 Btuh
	2	Knee Wall/L/Shing	(0.025)	38.0/0.0	132	1.0	134 Btuh
	Ceiling Total			3058(sqft)		3105Btuh	
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load	
	1	Slab On Grade	(1.180)	0.0	295.0 ft(perim.)	47.2	13924 Btuh
	Floor Total			2926 sqft		13924 Btuh	
	Envelope Subtotal:					31520 Btuh	
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural	0.23	26919	1.00	104.1	4560 Btuh	
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.194)					6998 Btuh	
All Zones	Sensible Subtotal All Zones					43077 Btuh	

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	43077 Btuh 0 Btuh 43077 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	47000 Btuh
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Manual J Winter Calculations

Residential Load - Component Details (continued)

David & Nancy Gomez

Project Title:
220944 Gomez Res
Building Type: User

Lake City, FL 32024

2022-08-09

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

David & Nancy Gomez

Project Title:
220944 Gomez Res

Lake City, FL 32024

2022-08-09

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

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	NW		1.5ft	1.0ft	15.0	0.6	14.4	10	27	393	Btuh
2	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.0ft	36.0	8.8	27.2	10	21	675	Btuh
3	2 NFRC	0.22, 0.30	No	No	NE		1.5ft	1.0ft	15.0	15.0	0.0	10	12	155	Btuh
4	2 NFRC	0.22, 0.30	No	No	N		15.2f	0.5ft	72.0	72.0	0.0	10	21	744	Btuh
5	2 NFRC	0.22, 0.30	No	No	W		15.5f	0.5ft	48.0	0.0	48.0	10	20	983	Btuh
6	2 NFRC	0.22, 0.30	No	No	N		14.3f	1.0ft	54.0	54.0	0.0	10	21	558	Btuh
7	2 NFRC	0.22, 0.30	No	No	NW		17.0f	0.5ft	13.3	13.3	0.0	10	27	138	Btuh
8	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.0ft	36.0	8.8	27.2	10	21	675	Btuh
9	2 NFRC	0.22, 0.30	No	No	E		1.5ft	7.0ft	8.0	0.0	8.0	10	21	172	Btuh
10	2 NFRC	0.22, 0.30	No	No	E		1.5ft	8.0ft	30.0	0.0	30.0	10	21	644	Btuh
11	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.0ft	30.0	7.3	22.7	10	21	562	Btuh
12	2 NFRC	0.22, 0.30	No	No	S		1.5ft	0.5ft	45.0	0.0	45.0	10	20	922	Btuh
13	2 NFRC	0.22, 0.30	No	No	W		1.5ft	1.0ft	15.0	0.0	15.0	10	20	307	Btuh
14	2 NFRC	0.22, 0.30	No	No	S		10.5f	1.0ft	15.0	0.0	15.0	10	20	307	Btuh
15	2 NFRC	0.22, 0.30	No	No	S		10.5f	1.0ft	32.0	0.0	32.0	10	20	655	Btuh
16	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.0ft	30.0	0.0	30.0	10	20	615	Btuh
17	2 NFRC	0.22, 0.30	No	No	W		1.5ft	7.0ft	8.0	0.0	8.0	10	20	164	Btuh
18	2 NFRC	0.22, 0.30	No	No	W		1.5ft	8.0ft	15.0	0.0	15.0	10	20	307	Btuh
Window Total									517 (sqft)					8975 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.0	23.3		2.3		53 Btuh		
2	Frame - Wood - Ext						0.09	13.0/0.0	34.5		2.3		78 Btuh		
3	Frame - Wood - Ext						0.09	13.0/0.0	23.3		2.3		53 Btuh		
4	Frame - Wood - Ext						0.09	13.0/0.0	10.5		2.3		24 Btuh		
5	Frame - Wood - Ext						0.09	13.0/0.0	24.0		2.3		54 Btuh		
6	Frame - Wood - Ext						0.09	13.0/0.0	24.0		2.3		54 Btuh		
7	Frame - Wood - Ext						0.09	13.0/0.0	20.0		2.3		45 Btuh		
8	Frame - Wood - Ext						0.09	13.0/0.0	62.3		2.3		141 Btuh		
9	Frame - Wood - Ext						0.09	13.0/0.0	13.2		2.3		30 Btuh		
10	Frame - Wood - Ext						0.09	13.0/0.0	90.8		2.3		205 Btuh		
11	Frame - Wood - Ext						0.09	13.0/0.0	87.0		2.3		197 Btuh		
12	Frame - Wood - Ext						0.09	13.0/0.0	626.0		2.3		1417 Btuh		
13	Frame - Wood - Ext						0.09	13.0/0.0	45.0		2.3		102 Btuh		
14	Frame - Wood - Ext						0.09	13.0/0.0	12.0		2.3		27 Btuh		
15	Frame - Wood - Ext						0.09	13.0/0.0	63.0		2.3		143 Btuh		
16	Frame - Wood - Ext						0.09	13.0/0.0	12.0		2.3		27 Btuh		
17	Frame - Wood - Ext						0.09	13.0/0.0	45.0		2.3		102 Btuh		
18	Frame - Wood - Ext						0.09	13.0/0.0	240.0		2.3		543 Btuh		
19	Frame - Wood - Ext						0.09	13.0/0.0	106.5		2.3		241 Btuh		
20	Frame - Wood - Ext						0.09	13.0/0.0	52.5		2.3		119 Btuh		
21	Frame - Wood - Ext						0.09	13.0/0.0	121.5		2.3		275 Btuh		
22	Frame - Wood - Ext						0.09	13.0/0.0	313.0		2.3		708 Btuh		
Wall Total									2049 (sqft)					4638 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

David & Nancy Gomez

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
220944 Gomez Res

Lake City, FL 32024

2022-08-09

Doors	Type			Area (sqft)	HTM	Load	
	1	Insulated - Exterior		24.0	9.0	216 Btuh	
	2	Insulated - Exterior		16.0	9.0	144 Btuh	
	3	Insulated - Exterior		8.0	9.0	72 Btuh	
	4	Insulated - Exterior		20.0	9.0	180 Btuh	
	5	Insulated - Exterior		16.0	9.0	144 Btuh	
	Door Total			84 (sqft)		756 Btuh	
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load	
	1	Vented Attic/Light/Shingle	0.025	38.0/0.0	2926.0	1.12	3268 Btuh
	2	Knee Wall/Light/Shingle	0.025	38.0/0.0	132.0	1.12	147 Btuh
		Ceiling Total			3058 (sqft)		3415 Btuh
Floors	Type		R-Value	Size	HTM	Load	
	1	Slab On Grade	0.0	2926 (ft-perimeter)	0.0	0 Btuh	
		Floor Total		2926.0 (sqft)		0 Btuh	
	Envelope Subtotal:					17784 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural	0.17	26919	1	78.1	1624 Btuh	
Internal gain		Occupants	Btuh/occupant	Appliance		Load	
		5	X 230	+	3400	4550 Btuh	
	Sensible Envelope Load:					23958 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.313)					7499 Btuh	
	Sensible Load All Zones					31458 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

David & Nancy Gomez

Project Title: 220944 Gomez Res

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

2022-08-09

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	23958 Btuh
	Sensible Duct Load	7499 Btuh
	Total Sensible Zone Loads	31458 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	31458 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2695 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1818 Btuh
	Latent occupant gain (5.0 people @ 200 Btuh per person)	1000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5513 Btuh
	TOTAL GAIN	36971 Btuh

EQUIPMENT

1. Central Unit	#	47000 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