

Residential System Sizing Calculation

Summary

Deborah Taylor

Project Title:
241023 Taylor Res

Lake City, FL

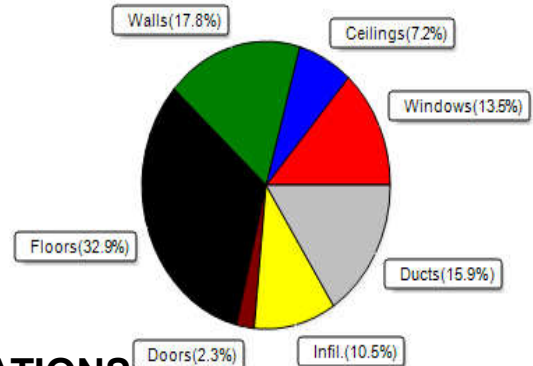
2024-09-18

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	25258 Btuh	Total cooling load calculation	22826 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	106.9 27000	Sensible (SHR = 0.75)	104.0 20250
Heat Pump + Auxiliary(0.0kW)	106.9 27000	Latent	200.8 6750
		Total (Electric Heat Pump)	118.3 27000

WINTER CALCULATIONS

Winter Heating Load (for 1694 sqft)

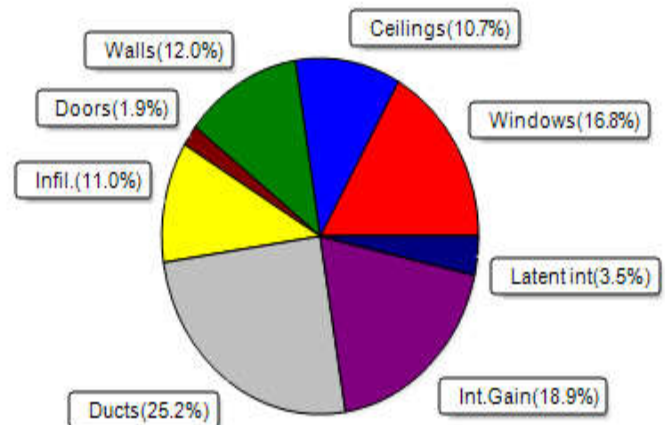
Load component	Load
Window total 284 sqft	3412 Btuh
Wall total 1263 sqft	4484 Btuh
Door total 37 sqft	587 Btuh
Ceiling total 1785 sqft	1812 Btuh
Floor total 1694 sqft	8307 Btuh
Infiltration 60 cfm	2644 Btuh
Duct loss	4012 Btuh
Subtotal	25258 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	25258 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1694 sqft)

Load component	Load
Window total 284 sqft	3832 Btuh
Wall total 1263 sqft	2730 Btuh
Door total 37 sqft	440 Btuh
Ceiling total 1785 sqft	2446 Btuh
Floor total	0 Btuh
Infiltration 45 cfm	942 Btuh
Internal gain	4320 Btuh
Duct gain	4754 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	19465 Btuh
Latent gain(ducts)	998 Btuh
Latent gain(infiltration)	1563 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	800 Btuh
Total latent gain	3361 Btuh
TOTAL HEAT GAIN	22826 Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-09-18

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Deborah Taylor

Project Title:
241023 Taylor Res
Building Type: User

Lake City, FL

2024-09-18

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	Vinyl	0.30	N	36.0		12.0	432 Btuh
2	2, NFRC 0.22	Vinyl	0.30	N	13.3		12.0	160 Btuh
3	2, NFRC 0.22	Vinyl	0.30	N	45.0		12.0	540 Btuh
4	2, NFRC 0.22	Vinyl	0.30	E	6.0		12.0	72 Btuh
5	2, NFRC 0.22	Vinyl	0.30	S	126.0		12.0	1512 Btuh
6	2, NFRC 0.22	Vinyl	0.30	S	10.0		12.0	120 Btuh
7	2, NFRC 0.22	Vinyl	0.30	W	18.0		12.0	216 Btuh
8	2, NFRC 0.22	Vinyl	0.30	W	30.0		12.0	360 Btuh
Window Total					284.3(sqft)			3412 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	367		3.55	1303 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	192		3.55	682 Btuh
3	Frame - Wood	- Adj	(0.089)	13.0/0.0	117		3.55	415 Btuh
4	Frame - Wood	- Adj	(0.089)	13.0/0.0	106		3.55	376 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	205		3.55	728 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	276		3.55	980 Btuh
Wall Total					1263(sqft)			4484 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		7		16.0	107 Btuh
2	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior,	n	(0.400)		10		16.0	160 Btuh
Door Total					37(sqft)			587Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	1388		1.0	1409 Btuh
2	Sloped ce/D/Shing		(0.025)	38.0/0.0	342		1.0	347 Btuh
3	Knee wall/D/Shing		(0.025)	38.0/0.0	55		1.0	56 Btuh
Ceiling Total					1785(sqft)			1812Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	176.0 ft(perim.)		47.2	8307 Btuh
Floor Total					1694 sqft			8307 Btuh
Envelope Subtotal:								18602 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	Natural		0.23	15585	1.00	60.3		2644 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.189)							4012 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Deborah Taylor
Lake City, FL

Project Title:
241023 Taylor Res
Building Type: User

2024-09-18

All Zones	Sensible Subtotal All Zones	25258 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	25258 Btuh 0 Btuh 25258 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	27000 Btuh
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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

Deborah Taylor

Project Title:
241023 Taylor Res

Lake City, FL

2024-09-18

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	1.5ft	36.0	36.0	0.0	10	12	372	Btuh
2	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.5ft	13.3	13.3	0.0	10	12	138	Btuh
3	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.5ft	45.0	45.0	0.0	10	12	465	Btuh
4	2 NFRC	0.22, 0.30	No	No	E		1.5ft	3.0ft	6.0	0.0	6.0	10	27	161	Btuh
5	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.5ft	126.0	0.0	126.0	10	10	1301	Btuh
6	2 NFRC	0.22, 0.30	No	No	S		1.5ft	1.5ft	10.0	0.0	10.0	10	10	103	Btuh
7	2 NFRC	0.22, 0.30	No	No	W		1.5ft	2.0ft	18.0	0.0	18.0	10	27	484	Btuh
8	2 NFRC	0.22, 0.30	No	No	W		1.5ft	4.0ft	30.0	0.0	30.0	10	27	807	Btuh
Window Total									284 (sqft)					3832 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
							Cav/Sheath								
	1	Frame - Wood - Ext					0.09	13.0/0.0	367.0			2.3		831 Btuh	
	2	Frame - Wood - Ext					0.09	13.0/0.0	192.0			2.3		435 Btuh	
	3	Frame - Wood - Adj					0.09	13.0/0.0	117.0			1.7		197 Btuh	
	4	Frame - Wood - Adj					0.09	13.0/0.0	106.0			1.7		179 Btuh	
	5	Frame - Wood - Ext					0.09	13.0/0.0	205.0			2.3		464 Btuh	
	6	Frame - Wood - Ext					0.09	13.0/0.0	276.0			2.3		625 Btuh	
	Wall Total									1263 (sqft)					2730 Btuh
Doors	Type						Area (sqft)			HTM		Load			
	1	Insulated - Exterior					6.7			12.0		80 Btuh			
	2	Insulated - Garage					20.0			12.0		240 Btuh			
	3	Insulated - Exterior					10.0			12.0		120 Btuh			
	Door Total									37 (sqft)					440 Btuh
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load	
	1	Vented Attic/DarkShingle					0.025	38.0/0.0	1388.0			1.37		1902 Btuh	
	2	Vented Attic/DarkShingle					0.025	38.0/0.0	342.0			1.37		469 Btuh	
	3	Knee wall to attic/DarkShingle					0.025	38.0/0.0	55.0			1.37		75 Btuh	
	Ceiling Total									1785 (sqft)					2446 Btuh
Floors	Type						R-Value		Size			HTM		Load	
	1	Slab On Grade					0.0		1694 (ft-perimeter)			0.0		0 Btuh	
	Floor Total									1694.0 (sqft)					0 Btuh
	Envelope Subtotal:													9448 Btuh	
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=	Load	
	Natural						0.17		15585		1		45.2	942 Btuh	
Internal gain							Occupants		Btuh/occupant		Appliance		Load		
							4		X 230		+		3400	4320 Btuh	
	Sensible Envelope Load:													14710 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Deborah Taylor
Lake City, FL

Project Title:
241023 Taylor Res

Climate:FL_GAINESVILLE_REGIONAL_A

2024-09-18

Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.323)	4754 Btuh
	Sensible Load All Zones	19465 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Deborah Taylor
Lake City, FL

Project Title:
241023 Taylor Res

Climate:FL_GAINESVILLE_REGIONAL_A

2024-09-18

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14710 Btuh
	Sensible Duct Load	4754 Btuh
	Total Sensible Zone Loads	19465 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	19465 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1563 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	998 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3361 Btuh
	TOTAL GAIN	22826 Btuh

EQUIPMENT

1. Central Unit	#	27000 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