

Residential System Sizing Calculation



Terry Wayne
SW Kimberly Lane
Lake City, FL

Summary
Project Title:
241103 Wayne Res

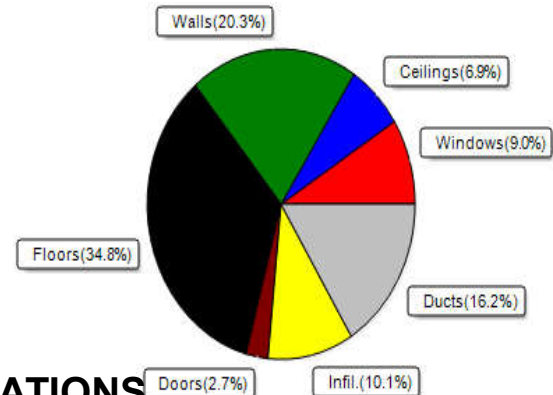
2024-10-17

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	27968	Btuh	Total cooling load calculation 25407 Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity % of calc Btuh
Total (Electric Heat Pump)	107.3	30000	Sensible (SHR = 0.75) 103.0 22500
Heat Pump + Auxiliary(0.0kW)	107.3	30000	Latent 210.0 7500
			Total (Electric Heat Pump) 118.1 30000

WINTER CALCULATIONS

Winter Heating Load (for 1854 sqft)

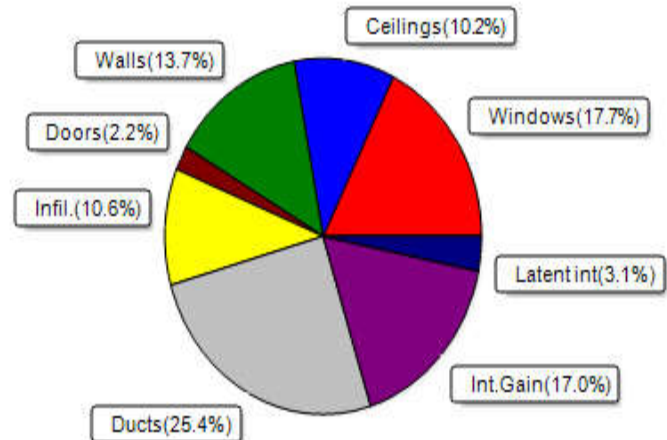
Load component		Load	
Window total	209 sqft	2512	Btuh
Wall total	1599 sqft	5676	Btuh
Door total	47 sqft	747	Btuh
Ceiling total	1900 sqft	1929	Btuh
Floor total	1854 sqft	9723	Btuh
Infiltration	65 cfm	2837	Btuh
Duct loss		4544	Btuh
Subtotal		27968	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
TOTAL HEAT LOSS		27968	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1854 sqft)

Load component		Load	
Window total	209 sqft	4495	Btuh
Wall total	1599 sqft	3483	Btuh
Door total	47 sqft	560	Btuh
Ceiling total	1900 sqft	2604	Btuh
Floor total		0	Btuh
Infiltration	49 cfm	1011	Btuh
Internal gain		4320	Btuh
Duct gain		5362	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		21835	Btuh
Latent gain(ducts)		1095	Btuh
Latent gain(infiltration)		1677	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		3572	Btuh
TOTAL HEAT GAIN		25407	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2024-10-17

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res
Building Type: User

2024-10-17

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	108.0		12.0	1296 Btuh
2	2, NFRC 0.22	Metal	0.30	E	13.3		12.0	160 Btuh
3	2, NFRC 0.22	Metal	0.30	N	30.0		12.0	360 Btuh
4	2, NFRC 0.22	Metal	0.30	E	4.0		12.0	48 Btuh
5	2, NFRC 0.22	Metal	0.30	S	24.0		12.0	288 Btuh
6	2, NFRC 0.22	Metal	0.30	S	24.0		12.0	288 Btuh
7	2, NFRC 0.22	Metal	0.30	W	6.0		12.0	72 Btuh
Window Total					209.3(sqft)			2512 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	180		3.55	639 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	16		3.55	57 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	150		3.55	533 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	173		3.55	612 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	96 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	55		3.55	196 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	27		3.55	96 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	216		3.55	767 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	19		3.55	67 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	34		3.55	121 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	256 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	66		3.55	234 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	298 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	426		3.55	1512 Btuh
Wall Total					1599(sqft)			5676 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)		20		16.0	320 Btuh
Door Total					47(sqft)			747Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.025)	38.0/0.0	1854		1.0	1882 Btuh
2	Knee wall/D/Shing		(0.025)	38.0/0.0	46		1.0	47 Btuh
Ceiling Total					1900(sqft)			1929Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	206.0 ft(perim.)		47.2	9723 Btuh
Floor Total					1854 sqft			9723 Btuh
Envelope Subtotal:								20587 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res
Building Type: User

2024-10-17

Infiltration	Type Natural	Wholehouse ACH 0.23	Volume(cuft) 16816	Wall Ratio 1.00	CFM= 64.7	2837 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.194)					4544 Btuh
All Zones	Sensible Subtotal All Zones					27968 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	27968 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	27968 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res

2024-10-17

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	108.0	26.4	81.6	10	21	2024	Btuh
2	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.0ft	13.3	0.0	13.3	10	20	273	Btuh
3	2 NFRC	0.22, 0.30	No	No	N		1.5ft	1.0ft	30.0	8.8	21.2	10	21	546	Btuh
4	2 NFRC	0.22, 0.30	No	No	E		1.5ft	1.0ft	4.0	0.0	4.0	10	20	82	Btuh
5	2 NFRC	0.22, 0.30	No	No	S		7.0ft	0.5ft	24.0	0.0	24.0	10	20	492	Btuh
6	2 NFRC	0.22, 0.30	No	No	S		1.5ft	4.0ft	24.0	0.0	24.0	10	20	492	Btuh
7	2 NFRC	0.22, 0.30	No	No	W		1.5ft	1.0ft	6.0	2.9	3.1	10	21	96	Btuh
	Excursion													491	Btuh
	Window Total								209 (sqft)					4495 Btuh	
Walls	Type	U-Value					R-Value		Area(sqft)			HTM		Load	
							Cav/Sheath								
1	Frame - Wood - Ext	0.09					13.0/0.0		180.0			2.3		407 Btuh	
2	Frame - Wood - Ext	0.09					13.0/0.0		16.0			2.3		36 Btuh	
3	Frame - Wood - Ext	0.09					13.0/0.0		150.0			2.3		340 Btuh	
4	Frame - Wood - Ext	0.09					13.0/0.0		172.5			2.3		390 Btuh	
5	Frame - Wood - Ext	0.09					13.0/0.0		27.0			2.3		61 Btuh	
6	Frame - Wood - Ext	0.09					13.0/0.0		55.3			2.3		125 Btuh	
7	Frame - Wood - Ext	0.09					13.0/0.0		27.0			2.3		61 Btuh	
8	Frame - Wood - Adj	0.09					13.0/0.0		216.0			1.7		364 Btuh	
9	Frame - Wood - Adj	0.09					13.0/0.0		19.0			1.7		32 Btuh	
10	Frame - Wood - Ext	0.09					13.0/0.0		34.0			2.3		77 Btuh	
11	Frame - Wood - Ext	0.09					13.0/0.0		72.0			2.3		163 Btuh	
12	Frame - Wood - Ext	0.09					13.0/0.0		66.0			2.3		149 Btuh	
13	Frame - Wood - Ext	0.09					13.0/0.0		54.0			2.3		122 Btuh	
14	Frame - Wood - Ext	0.09					13.0/0.0		84.0			2.3		190 Btuh	
15	Frame - Wood - Ext	0.09					13.0/0.0		426.0			2.3		964 Btuh	
	Wall Total								1599 (sqft)					3483 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						20.0			12.0		240 Btuh			
	Door Total								47 (sqft)					560 Btuh	
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)			HTM		Load	
1	Vented Attic/DarkShingle	0.025					38.0/0.0		1854.0			1.37		2541 Btuh	
2	Knee wall to attic/DarkShingle	0.025					38.0/0.0		46.0			1.37		63 Btuh	
	Ceiling Total								1900 (sqft)					2604 Btuh	
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						0.0		1854 (ft-perimeter)			0.0		0 Btuh	
	Floor Total								1854.0 (sqft)					0 Btuh	
	Envelope Subtotal:													11142 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res

Climate:FL_GAINESVILLE_REGIONAL_A

2024-10-17

Infiltration	Type Natural	Average ACH 0.17	Volume(cuft) 16816	Wall Ratio 1	CFM= 48.5	Load 1011 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	3400	Load 4320 Btuh
					Sensible Envelope Load:	16473 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.326)	5362 Btuh
					Sensible Load All Zones	21835 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Terry Wayne
SW Kimberly Lane
Lake City, FL

Project Title:
241103 Wayne Res

Climate:FL_GAINESVILLE_REGIONAL_A

2024-10-17

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16473 Btuh
	Sensible Duct Load	5362 Btuh
	Total Sensible Zone Loads	21835 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21835 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1677 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1095 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3572 Btuh
	TOTAL GAIN	25407 Btuh

EQUIPMENT

1. Central Unit	#	30000 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