

Residential System Sizing Calculation

Summary

Project Title:
Mowry Residence

, FL

10/31/2024

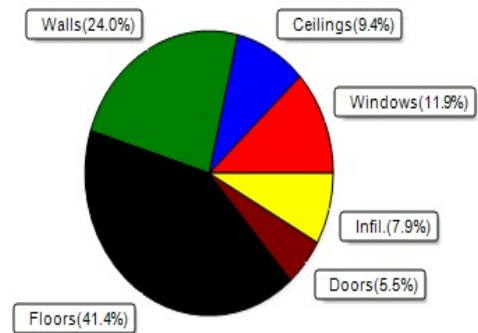


Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)					
Winter design temperature(TMY3 99%)	30	F	Summer design temperature(TMY3 99%)	94	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	40	F	Summer temperature difference	19	F
Total heating load calculation	32404	Btuh	Total cooling load calculation	18780	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	148.1	48000	Sensible (SHR = 0.75)	210.9	36000
Heat Pump + Auxiliary(0.0kW)	148.1	48000	Latent	702.7	12000
			Total (Electric Heat Pump)	255.6	48000

WINTER CALCULATIONS

Winter Heating Load (for 2251 sqft)

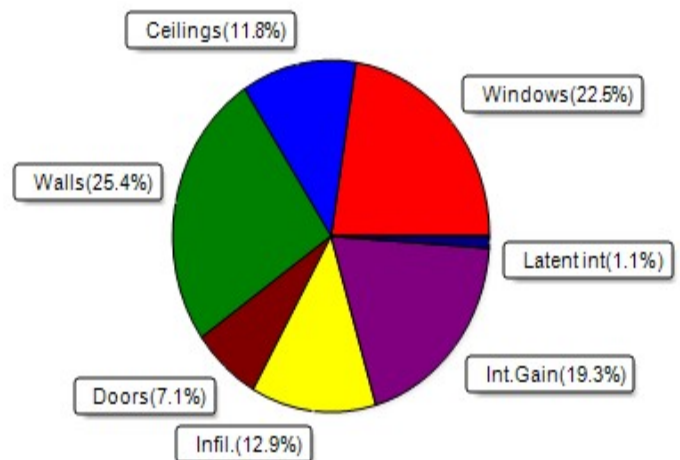
Load component	Load
Window total 370 sqft	3843 Btuh
Wall total 2191 sqft	7778 Btuh
Door total 96 sqft	1766 Btuh
Ceiling total 2251 sqft	3062 Btuh
Floor total 2251 sqft	13405 Btuh
Infiltration 58 cfm	2551 Btuh
Duct loss	0 Btuh
Subtotal	32404 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	32404 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2251 sqft)

Load component	Load
Window total 370 sqft	4222 Btuh
Wall total 2191 sqft	4767 Btuh
Door total 96 sqft	1325 Btuh
Ceiling total 2251 sqft	2220 Btuh
Floor total	0 Btuh
Infiltration 44 cfm	909 Btuh
Internal gain	3630 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	17072 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1508 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	200 Btuh
Total latent gain	1708 Btuh
TOTAL HEAT GAIN	18780 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 10-31-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Mowry Residence

, FL

10/31/2024

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	0.20, 0.26	No	No	N		1.5ft	1.3ft	30.0	0.0	30.0	9	9	274 Btuh
2	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	9	9	329 Btuh
3	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	24.0	0.0	24.0	9	9	220 Btuh
4	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	9	9	329 Btuh
5	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	24.0	0.0	24.0	9	9	220 Btuh
6	2 NFRC	0.20, 0.26	No	No	W		1.5ft	1.3ft	18.0	0.0	18.0	9	24	436 Btuh
7	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	24.0	0.0	24.0	9	9	220 Btuh
8	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	6.0	0.0	6.0	9	9	55 Btuh
9	2 NFRC	0.20, 0.26	No	No	E		1.5ft	1.3ft	12.0	0.0	12.0	9	24	291 Btuh
10	2 NFRC	0.20, 0.26	No	No	E		1.5ft	1.3ft	7.5	0.0	7.5	9	24	182 Btuh
11	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	72.0	72.0	0.0	9	11	659 Btuh
12	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	32.0	28.8	3.2	9	11	298 Btuh
13	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	30.0	30.0	0.0	9	11	274 Btuh
14	2 NFRC	0.20, 0.26	No	No	W		1.5ft	1.3ft	12.0	0.0	12.0	9	24	291 Btuh
15	2 NFRC	0.20, 0.26	No	No	W		1.5ft	1.3ft	6.0	0.0	6.0	9	24	145 Btuh
	Window Total							370 (sqft)					4222 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Frame - Wood - Ext		0.09		13.0/0.0		78.0		2.3		177 Btuh			
2	Frame - Wood - Ext		0.09		13.0/0.0		108.0		2.3		244 Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		166.7		2.3		377 Btuh			
4	Frame - Wood - Ext		0.09		13.0/0.0		23.3		2.3		53 Btuh			
5	Frame - Wood - Ext		0.09		13.0/0.0		89.3		2.3		202 Btuh			
6	Frame - Wood - Ext		0.09		13.0/0.0		204.0		2.3		462 Btuh			
7	Frame - Wood - Ext		0.09		13.0/0.0		186.0		2.3		421 Btuh			
8	Frame - Wood - Ext		0.09		13.0/0.0		279.0		2.3		631 Btuh			
9	Frame - Wood - Adj		0.09		13.0/0.0		331.5		1.7		559 Btuh			
10	Frame - Wood - Ext		0.09		13.0/0.0		272.0		2.3		616 Btuh			
11	Frame - Wood - Ext		0.09		13.0/0.0		42.0		2.3		95 Btuh			
12	Frame - Wood - Ext		0.09		13.0/0.0		78.0		2.3		177 Btuh			
13	Frame - Wood - Ext		0.09		13.0/0.0		333.0		2.3		754 Btuh			
	Wall Total							2191 (sqft)			4767 Btuh			
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior		24.0		13.8	331 Btuh								
2	Insulated - Exterior		24.0		13.8	331 Btuh								
3	Insulated - Garage		24.0		13.8	331 Btuh								
4	Insulated - Exterior		24.0		13.8	331 Btuh								
	Door Total							96 (sqft)			1325 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	SnglAsmb no airsp/DarkShingle		0.034		0.0/30.0		2251.0		0.99		2220 Btuh			
	Ceiling Total							2251 (sqft)			2220 Btuh			
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade		0.0		2251 (ft-perimeter)		0.0		0 Btuh					
	Floor Total							2251.0 (sqft)			0 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Mowry Residence

, FL

10/31/2024

	Envelope Subtotal:					12533 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.13	20259	1	43.6	909 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		1	X 230	+	3400	3630 Btuh
	Sensible Envelope Load:					17072 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					17072 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Mowry Residence

, FL

10/31/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17072 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	17072 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	17072 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1508 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (1.0 people @ 200 Btuh per person)	200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1708 Btuh
	TOTAL GAIN	18780 Btuh

EQUIPMENT

1. Central Unit	#	48000 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

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Mowry Residence
Building Type: User

, FL

10/31/2024

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	Vinyl	0.26	N	30.0		10.4	312 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
6	2, NFRC 0.20	Vinyl	0.26	W	18.0		10.4	187 Btuh
7	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
8	2, NFRC 0.20	Vinyl	0.26	N	6.0		10.4	62 Btuh
9	2, NFRC 0.20	Vinyl	0.26	E	12.0		10.4	125 Btuh
10	2, NFRC 0.20	Vinyl	0.26	E	7.5		10.4	78 Btuh
11	2, NFRC 0.20	Vinyl	0.26	S	72.0		10.4	749 Btuh
12	2, NFRC 0.20	Vinyl	0.26	S	32.0		10.4	333 Btuh
13	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
14	2, NFRC 0.20	Vinyl	0.26	W	12.0		10.4	125 Btuh
15	2, NFRC 0.20	Vinyl	0.26	W	6.0		10.4	62 Btuh
Window Total					369.5(sqft)			3843 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.55	277 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	108		3.55	383 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	167		3.55	592 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	23		3.55	83 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	89		3.55	317 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	204		3.55	724 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	186		3.55	660 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	279		3.55	991 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	332		3.55	1177 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	272		3.55	966 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	42		3.55	149 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.55	277 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	333		3.55	1182 Btuh
Wall Total					2191(sqft)			7778 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
2	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
3	Insulated - Garage,	n	(0.460)		24		18.4	442 Btuh
4	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
Door Total					96(sqft)			1766Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing		(0.034)	0.0/30.0	2251		1.4	3062 Btuh
Ceiling Total					2251(sqft)			3062Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Mowry Residence
Building Type: User

10/31/2024

Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 284.0 ft(perim.) 2251 sqft	HTM= 47.2	Load 13405 Btuh 13405 Btuh
	Envelope Subtotal:					29854 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.17	Volume(cuft) 20259	Wall Ratio 1.00	CFM= 58.2	2551 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)					0 Btuh
All Zones	Sensible Subtotal All Zones					32404 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	32404 Btuh 0 Btuh 32404 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 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