

Residential System Sizing Calculation

Summary

Project Title:
Owens Residence

, FL

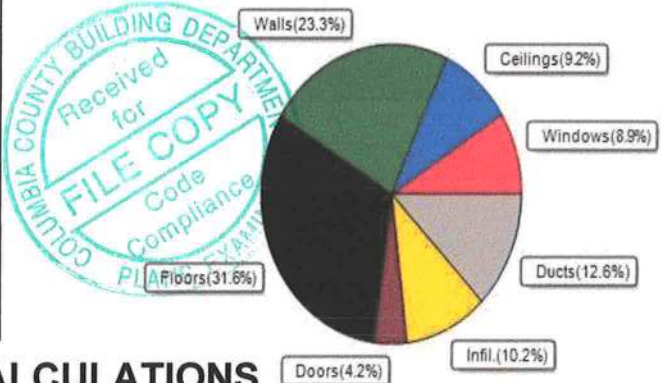
5/17/2024

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	33084 Btuh	Total cooling load calculation	32014 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	145.1 48000	Sensible (SHR = 0.75)	131.1 36000
Heat Pump + Auxiliary(0.0kW)	145.1 48000	Latent	264.0 12000
		Total (Electric Heat Pump)	149.9 48000

WINTER CALCULATIONS

Winter Heating Load (for 2304 sqft)

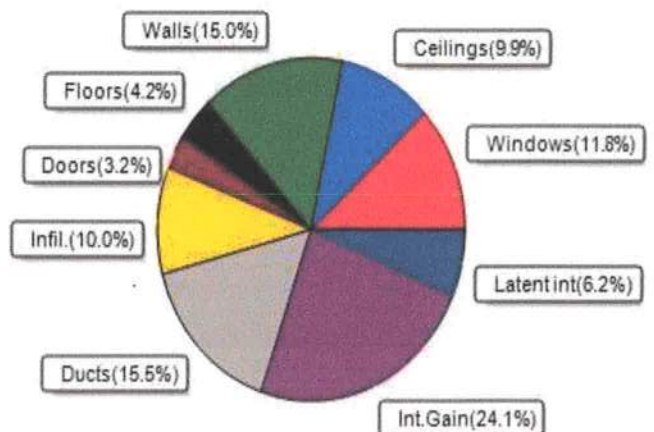
Load component	Load
Window total 284 sqft	2954 Btuh
Wall total 2174 sqft	7717 Btuh
Door total 75 sqft	1382 Btuh
Ceiling total 2304 sqft	3027 Btuh
Floor total See detail report	10455 Btuh
Infiltration 77 cfm	3373 Btuh
Duct loss	4176 Btuh
Subtotal	33084 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	33084 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2304 sqft)

Load component	Load
Window total 284 sqft	3787 Btuh
Wall total 2174 sqft	4812 Btuh
Door total 75 sqft	1037 Btuh
Ceiling total 2304 sqft	3177 Btuh
Floor total	1330 Btuh
Infiltration 58 cfm	1201 Btuh
Internal gain	7700 Btuh
Duct gain	4424 Btuh
Sens. Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	27468 Btuh
Latent gain(ducts)	553 Btuh
Latent gain(infiltration)	1994 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	2000 Btuh
Total latent gain	4546 Btuh
TOTAL HEAT GAIN	32014 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

[Signature]
5-16-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Owens Residence

, FL

5/17/2024

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	8.0	0.0	8.0	9	9	73	Btuh
2	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	9.0	0.0	9.0	9	9	82	Btuh
3	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	72.0	72.0	0.0	9	11	659	Btuh
4	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	24.0	21.6	2.4	9	11	223	Btuh
5	2 NFRC	0.20, 0.26	No	No	W		1.5ft	1.3ft	18.0	0.0	18.0	9	24	436	Btuh
6	2 NFRC	0.20, 0.26	No	No	W		1.5ft	1.3ft	30.0	0.0	30.0	9	24	727	Btuh
7	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	9	9	329	Btuh
8	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	15.0	15.0	0.0	9	11	137	Btuh
9	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	36.0	36.0	0.0	9	11	329	Btuh
10	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	15.0	15.0	0.0	9	11	137	Btuh
11	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	6.0	6.0	0.0	9	11	55	Btuh
12	2 NFRC	0.20, 0.26	No	No	E		1.5ft	1.3ft	15.0	0.0	15.0	9	24	363	Btuh
Excursion														236	Btuh
Window Total									284 (sqft)					3787	Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext		0.09		13.0/0.0		252.7		2.3		572	Btuh			
2	Frame - Wood - Adj		0.09		13.0/0.0		186.2		1.7		314	Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		126.0		2.3		285	Btuh			
4	Frame - Wood - Ext		0.09		13.0/0.0		183.0		2.3		414	Btuh			
5	Frame - Wood - Ext		0.09		13.0/0.0		282.0		2.3		638	Btuh			
6	Frame - Wood - Ext		0.09		13.0/0.0		86.7		2.3		196	Btuh			
7	Frame - Wood - Ext		0.09		13.0/0.0		89.3		2.3		202	Btuh			
8	Frame - Wood - Ext		0.09		13.0/0.0		60.0		2.3		136	Btuh			
9	Frame - Wood - Ext		0.09		13.0/0.0		89.3		2.3		202	Btuh			
10	Frame - Wood - Ext		0.09		13.0/0.0		86.7		2.3		196	Btuh			
11	Frame - Wood - Ext		0.09		13.0/0.0		140.0		2.3		317	Btuh			
12	Frame - Wood - Ext		0.09		13.0/0.0		71.7		2.3		162	Btuh			
13	Frame - Wood - Ext		0.09		13.0/0.0		89.3		2.3		202	Btuh			
14	Frame - Wood - Ext		0.09		13.0/0.0		60.0		2.3		136	Btuh			
15	Frame - Wood - Ext		0.09		13.0/0.0		89.3		2.3		202	Btuh			
16	Frame - Wood - Ext		0.09		13.0/0.0		86.7		2.3		196	Btuh			
17	Frame - Wood - Ext		0.09		13.0/0.0		119.0		2.3		269	Btuh			
18	Frame - Wood - Ext		0.09		13.0/0.0		75.7		2.3		171	Btuh			
Wall Total							2174 (sqft)					4812	Btuh		
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior		33.3		13.8		460	Btuh							
2	Insulated - Garage		17.8		13.8		245	Btuh							
3	Insulated - Exterior		24.0		13.8		331	Btuh							
Door Total							75 (sqft)					1037	Btuh		
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Vented Attic/DarkMetal		0.032		30.0/0.0		411.0		1.72		707	Btuh			
2	SnglAsmb w airsp/DarkMetal		0.034		30.0/0.0		823.0		0.99		812	Btuh			
3	Vented Attic/DarkMetal		0.032		30.0/0.0		823.0		1.72		1415	Btuh			
4	SnglAsmb no airsp/DarkMetal		0.034		30.0/0.0		247.0		0.99		244	Btuh			
Ceiling Total							2304 (sqft)					3177	Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Owens Residence

, FL

5/17/2024

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	1234 (ft-perimeter)	0.0	0 Btuh	
2	Interior	0.0	823 (sqft)	0.0	0 Btuh	
3	Raised Wood - Adj	0.0	247 (sqft)	5.4	1330 Btuh	
	Floor Total		2304.0 (sqft)		1330 Btuh	
	Envelope Subtotal:				14143 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.18	19666	1	57.7	1201 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		10	X 230	+	5400	7700 Btuh
	Sensible Envelope Load:					23044 Btuh
Duct load	(DGMs vary for Mixed ducts)					4424 Btuh
	Sensible Load All Zones					27468 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Owens Residence

, FL

5/17/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	23044 Btuh
	Sensible Duct Load	4424 Btuh
	Total Sensible Zone Loads	27468 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	27468 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1994 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	553 Btuh
	Latent occupant gain (10.0 people @ 200 Btuh per person)	2000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4546 Btuh
	TOTAL GAIN	32014 Btuh

EQUIPMENT

1. Central Unit	#	24000 Btuh
2. Central Unit	#	24000 Btuh

*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:
Owens Residence
Building Type: User

, FL

5/17/2024

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	8.0		10.4	83 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	9.0		10.4	94 Btuh
3	2, NFRC 0.20	Vinyl	0.26	S	72.0		10.4	749 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	24.0		10.4	250 Btuh
5	2, NFRC 0.20	Vinyl	0.26	W	18.0		10.4	187 Btuh
6	2, NFRC 0.20	Vinyl	0.26	W	30.0		10.4	312 Btuh
7	2, NFRC 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
9	2, NFRC 0.20	Vinyl	0.26	S	36.0		10.4	374 Btuh
10	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
11	2, NFRC 0.20	Vinyl	0.26	S	6.0		10.4	62 Btuh
12	2, NFRC 0.20	Vinyl	0.26	E	15.0		10.4	156 Btuh
Window Total					284.0(sqft)			2954 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	253		3.55	897 Btuh
2	Frame - Wood	- Adj	(0.089)	13.0/0.0	186		3.55	661 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	126		3.55	447 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	183		3.55	650 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	282		3.55	1001 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	308 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	89		3.55	317 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	89		3.55	317 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	308 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	140		3.55	497 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	254 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	89		3.55	317 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	89		3.55	317 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	308 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	119		3.55	422 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	76		3.55	269 Btuh
Wall Total					2174(sqft)			7717 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		33		18.4	613 Btuh
2	Insulated - Garage, n		(0.460)		18		18.4	327 Btuh
3	Insulated - Exterior, n		(0.460)		24		18.4	442 Btuh
Door Total					75(sqft)			1382Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Owens Residence
Building Type: User

, FL

5/17/2024

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Metal	(0.032)	30.0/0.0	411	1.3	524 Btuh
2	Single as/D/Metal	(0.034)	30.0/0.0	823	1.4	1119 Btuh
3	Flat ceil/D/Metal	(0.032)	30.0/0.0	823	1.3	1048 Btuh
4	Single as/D/Metal	(0.034)	30.0/0.0	247	1.4	336 Btuh
	Ceiling Total			2304(sqft)		3027Btuh
Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	141.0 ft(perim.)	47.2	6655 Btuh
2	Interior	(1.180)	0.0	823.0 sqft	0.0	0 Btuh
3	Raised Wood - Adj	(0.385)	0.0	247.0 sqft	15.4	3800 Btuh
	Floor Total			2304 sqft		10455 Btuh
Envelope Subtotal:						25535 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.23	19666	1.00	76.9	3373 Btuh
Duct load	(DLM of Mixed ducts)					4176 Btuh
All Zones	Sensible Subtotal All Zones					33084 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	33084 Btuh 0 Btuh 33084 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	24000 Btuh
2. Electric Heat Pump	#	24000 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Owens Residence
Building Type: User

, FL

5/17/2024

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