

Residential System Sizing Calculation

Summary

The Culverhouses
138 SW Mossy Oak Way
Lake City, FL 32025

Project Title:
Culverhouse Res

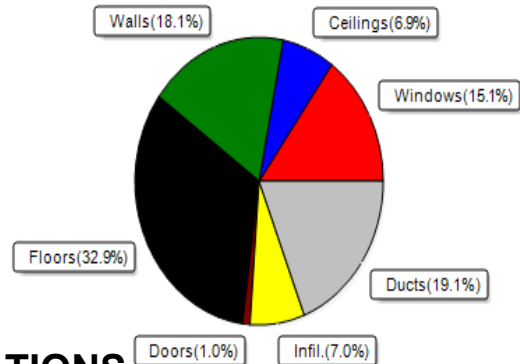
3/30/2022

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	37843 Btuh	Total cooling load calculation	26524 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 37843	Sensible (SHR = 0.70)	84.9 18567
Heat Pump + Auxiliary(0.0kW)	100.0 37843	Latent	171.1 7957
		Total (Electric Heat Pump)	100.0 26524

WINTER CALCULATIONS

Winter Heating Load (for 2438 sqft)

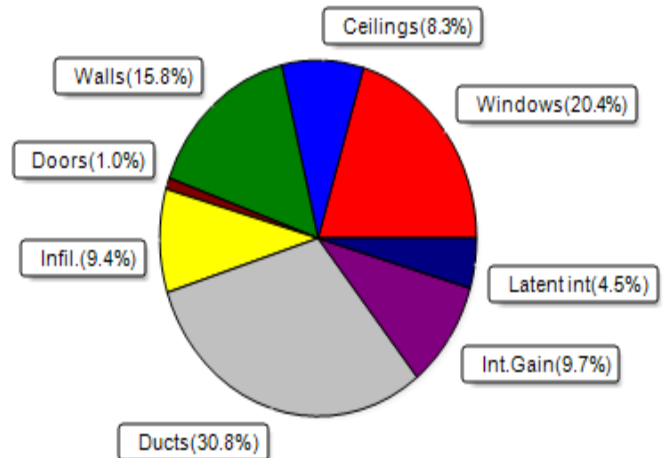
Load component		Load	
Window total	396 sqft	5702	Btuh
Wall total	1930 sqft	6852	Btuh
Door total	20 sqft	368	Btuh
Ceiling total	2560 sqft	2599	Btuh
Floor total	2438 sqft	12461	Btuh
Infiltration	60 cfm	2631	Btuh
Duct loss		7229	Btuh
Subtotal		37843	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		37843	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2438 sqft)

Load component		Load	
Window total	396 sqft	5406	Btuh
Wall total	1930 sqft	4188	Btuh
Door total	20 sqft	276	Btuh
Ceiling total	2560 sqft	2209	Btuh
Floor total		0	Btuh
Infiltration	45 cfm	937	Btuh
Internal gain		2580	Btuh
Duct gain		6277	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		21873	Btuh
Latent gain(ducts)		1896	Btuh
Latent gain(infiltration)		1556	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		4652	Btuh
TOTAL HEAT GAIN		26524	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 3 / 30 / 2022

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

The Culverhouses
138 SW Mossy Oak Way
Lake City, FL 32025

Project Title:
Culverhouse Res
Building Type: User

3/30/2022

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 0.25	Vinyl	0.36	S	8.0		14.4	115 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	72.0		14.4	1037 Btuh
3	2, NFRC 0.25	TIM	0.36	S	48.0		14.4	691 Btuh
4	2, NFRC 0.25	Vinyl	0.36	S	10.0		14.4	144 Btuh
5	2, NFRC 0.25	Vinyl	0.36	E	8.0		14.4	115 Btuh
6	2, NFRC 0.25	Vinyl	0.36	E	8.0		14.4	115 Btuh
7	2, NFRC 0.25	Vinyl	0.36	E	10.0		14.4	144 Btuh
8	2, NFRC 0.25	Vinyl	0.36	N	12.0		14.4	173 Btuh
9	2, NFRC 0.25	Vinyl	0.36	N	36.0		14.4	518 Btuh
10	2, NFRC 0.25	TIM	0.36	W	24.0		14.4	346 Btuh
11	2, NFRC 0.25	Vinyl	0.36	N	24.0		14.4	346 Btuh
12	2, NFRC 0.25	Vinyl	0.36	N	96.0		14.4	1382 Btuh
13	2, NFRC 0.25	Vinyl	0.36	N	36.0		14.4	518 Btuh
14	2, NFRC 0.25	Vinyl	0.36	W	4.0		14.4	58 Btuh
Window Total					396.0(sqft)			5702 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	46		3.55	163 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	186		3.55	660 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	92		3.55	327 Btuh
6	Frame - Wood	- Adj	(0.089)	13.0/0.0	117		3.55	415 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	196		3.55	696 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	301		3.55	1069 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	168		3.55	596 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	192		3.55	682 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	252		3.55	895 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 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	182		3.55	646 Btuh
Wall Total					1930(sqft)			6852 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Garage, n		(0.460)		20		18.4	368 Btuh
Door Total					20(sqft)			368Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Metal		(0.025)	38.0/0.0	2560		1.0	2599 Btuh
Ceiling Total					2560(sqft)			2599Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	264.0 ft(perim.)		47.2	12461 Btuh
Floor Total					2438 sqft			12461 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

The Culverhouses
138 SW Mossy Oak Way
Lake City, FL 32025

Project Title:
Culverhouse Res
Building Type: User

3/30/2022

	Envelope Subtotal:					27982 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.16	21942	1.00	60.1	2631 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.236)					7229 Btuh
All Zones	Sensible Subtotal All Zones					37843 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	37843 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	37843 Btuh

EQUIPMENT

1. Electric Heat Pump	#	37843 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

The Culverhouses
138 SW Mossy Oak Way
Lake City, FL 32025

Project Title:
Culverhouse Res

3/30/2022

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	0.25, 0.36	No	No	S		14.0f	0.3ft.	8.0	8.0	0.0	12	14	97 Btuh	
2	2 NFRC	0.25, 0.36	No	No	S		8.5ft.	0.3ft.	72.0	72.0	0.0	12	14	871 Btuh	
3	2 NFRC	0.25, 0.36	No	No	S		8.5ft.	0.3ft.	48.0	48.0	0.0	12	14	581 Btuh	
4	2 NFRC	0.25, 0.36	No	No	S		12.5f	0.3ft.	10.0	10.0	0.0	12	14	121 Btuh	
5	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	8.0	1.0	7.0	12	31	229 Btuh	
6	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	8.0	2.0	6.0	12	31	211 Btuh	
7	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	10.0	0.5	9.5	12	31	300 Btuh	
8	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	12.0	0.0	12.0	12	12	145 Btuh	
9	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	36.0	0.0	36.0	12	12	436 Btuh	
10	2 NFRC	0.25, 0.36	No	No	W		6.0ft.	0.3ft.	24.0	13.9	10.1	12	31	480 Btuh	
11	2 NFRC	0.25, 0.36	No	No	N		8.5ft.	0.3ft.	24.0	0.0	24.0	12	12	290 Btuh	
12	2 NFRC	0.25, 0.36	No	No	N		8.5ft.	0.3ft.	96.0	0.0	96.0	12	12	1161 Btuh	
13	2 NFRC	0.25, 0.36	No	No	N		8.5ft.	0.3ft.	36.0	0.0	36.0	12	12	436 Btuh	
14	2 NFRC	0.25, 0.36	No	No	W		8.5ft.	0.3ft.	4.0	4.0	0.0	12	31	48 Btuh	
	Window Total									396 (sqft)					5406 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext		0.09		13.0/0.0		46.0		2.3		104 Btuh				
2	Frame - Wood - Ext		0.09		13.0/0.0		54.0		2.3		122 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.0		186.0		2.3		421 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.0		36.0		2.3		81 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.0		92.0		2.3		208 Btuh				
6	Frame - Wood - Adj		0.09		13.0/0.0		117.0		1.7		197 Btuh				
7	Frame - Wood - Adj		0.09		13.0/0.0		196.0		1.7		331 Btuh				
8	Frame - Wood - Ext		0.09		13.0/0.0		301.0		2.3		681 Btuh				
9	Frame - Wood - Ext		0.09		13.0/0.0		168.0		2.3		380 Btuh				
10	Frame - Wood - Ext		0.09		13.0/0.0		192.0		2.3		435 Btuh				
11	Frame - Wood - Ext		0.09		13.0/0.0		252.0		2.3		570 Btuh				
12	Frame - Wood - Ext		0.09		13.0/0.0		54.0		2.3		122 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		182.0		2.3		412 Btuh				
	Wall Total									1930 (sqft)			4188 Btuh		
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Garage		20.0		13.8	276 Btuh									
	Door Total		20 (sqft)		276 Btuh										
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load									
1	Vented Attic/Light/Metal/RB	0.025	38.0/0.0	2560.0	0.86	2209 Btuh									
	Ceiling Total				2560 (sqft)	2209 Btuh									
Floors	Type	R-Value		Size	HTM	Load									
1	Slab On Grade	0.0		2438 (ft-perimeter)	0.0	0 Btuh									
	Floor Total				2438.0 (sqft)	0 Btuh									
	Envelope Subtotal:					12079 Btuh									

Manual J Summer Calculations

Residential Load - Component Details (continued)

The Culverhouses
138 SW Mossy Oak Way
Lake City, FL 32025

Project Title: Culverhouse Res

Climate: FL_GAINESVILLE_REGIONAL_A

3/30/2022

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 21942	Wall Ratio 1	CFM= 45.1	Load 937 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	1200	Load 2580 Btuh
					Sensible Envelope Load:	15596 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.402)	6277 Btuh
					Sensible Load All Zones	21873 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

The Culverhouses
138 SW Mossy Oak Way
Lake City, FL 32025

Project Title: Culverhouse Res

Climate: FL_GAINESVILLE_REGIONAL_A

3/30/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15596 Btuh
	Sensible Duct Load	6277 Btuh
	Total Sensible Zone Loads	21873 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21873 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1556 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1896 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4652 Btuh
	TOTAL GAIN	26524 Btuh

EQUIPMENT

1. Central Unit	#	26524 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

Envelope Leakage Test Report (Blower Door Test)
Residential Prescriptive, Performance or ERI Method Compliance
2020 Florida Building Code, Energy Conservation, 7th Edition

Jurisdiction:	Permit #:
Job Information	
Builder: Sparks Construction Community: Lot: NA	
Address: 138 SW Mossy Oak Way	
City: Lake City State: FL Zip: 32025	
Air Leakage Test Results <i>Passing results must meet either the Performance, Prescriptive, or ERI Method</i>	
☐ PRESCRIPTIVE METHOD-The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 7 air changes per hour at a pressure of 0.2 inch w.g. (50 Pascals) in Climate Zones 1 and 2. ☐ PERFORMANCE or ERI METHOD-The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding the selected ACH(50) value, as shown on Form R405-2020 (Performance) or R406-2020 (ERI), section labeled as infiltration, sub-section ACH50. ACH(50) specified on Form R405-2020-Energy Calc (Performance) or R406-2020 (ERI): 5.000	
$\frac{\text{CFM}(50)}{\text{Building Volume}} \times 60 \div \frac{21942}{\text{ACH}(50)} =$ PASS ☐ When ACH(50) is less than 3, Mechanical Ventilation installation must be verified by building department. Method for calculating building volume: ☐ Retrieved from architectural plans ☒ Code software calculated ☐ Field measured and calculated	
R402.4.1.2 Testing. Testing shall be conducted in accordance with ANSI/RESNET/ICC 380 and reported at a pressure of 0.2 inch w.g. (50 Pascals). Testing shall be conducted by either individuals as defined in Section 553.993(5) or (7), <i>Florida Statutes</i>, or individuals licensed as set forth in Section 489.105(3)(f), (g), or (i) or an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the <i>code official</i>. Testing shall be performed at any time after creation of all penetrations of the <i>building thermal envelope</i>. During testing: 1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures. 2. Dampers including exhaust, intake, makeup air, back draft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures. 3. Interior doors, if installed at the time of the test, shall be open. 4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed. 5. Heating and cooling systems, if installed at the time of the test, shall be turned off. 6. Supply and return registers, if installed at the time of the test, shall be fully open.	
Testing Company	
Company Name: _____ Phone: _____ I hereby verify that the above Air Leakage results are in accordance with the 2020 7th Edition Florida Building Code Energy Conservation requirements according to the compliance method selected above. Signature of Tester: _____ Date of Test: _____ Printed Name of Tester: _____ License/Certification #: _____ Issuing Authority: _____	