

Residential System Sizing Calculation

Summary

982 Gabe Street
Lake City, FL 32024

Project Title:
Stalvey Residence

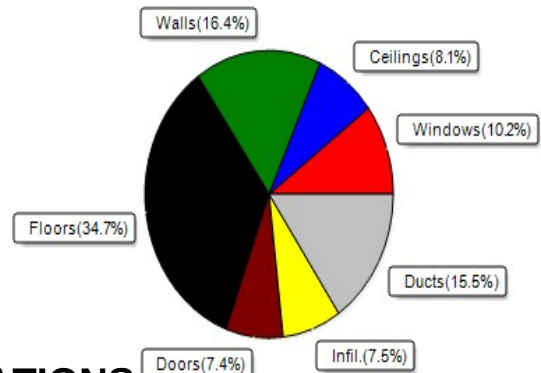
5/13/2020

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	37366 Btuh	Total cooling load calculation	29092 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	112.4 42000	Sensible (SHR = 0.85)	143.8 35700
Heat Pump + Auxiliary(0.0kW)	112.4 42000	Latent	147.9 6300
		Total (Electric Heat Pump)	144.4 42000

WINTER CALCULATIONS

Winter Heating Load (for 2370 sqft)

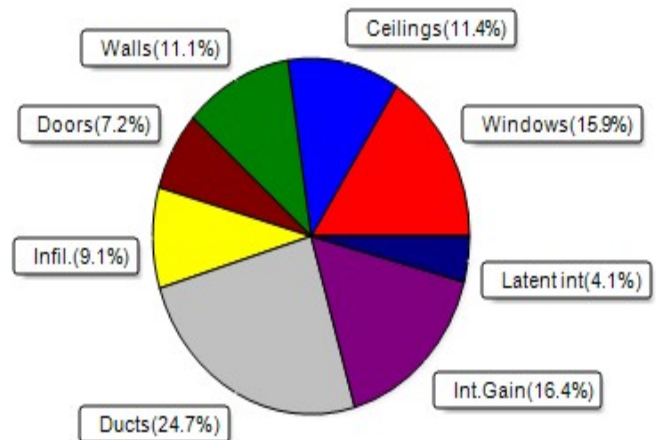
Load component	Load
Window total 290 sqft	3828 Btuh
Wall total 2044 sqft	6143 Btuh
Door total 174 sqft	2780 Btuh
Ceiling total 2370 sqft	3019 Btuh
Floor total 2370 sqft	12980 Btuh
Infiltration 64 cfm	2809 Btuh
Duct loss	5807 Btuh
Subtotal	37366 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	37366 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2370 sqft)

Load component	Load
Window total 290 sqft	4636 Btuh
Wall total 2044 sqft	3219 Btuh
Door total 174 sqft	2085 Btuh
Ceiling total 2370 sqft	3321 Btuh
Floor total	0 Btuh
Infiltration 48 cfm	1001 Btuh
Internal gain	4780 Btuh
Duct gain	5790 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	24832 Btuh
Latent gain(ducts)	1400 Btuh
Latent gain(infiltration)	1660 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	4260 Btuh
TOTAL HEAT GAIN	29092 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

5-13-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

982 Gabe Street
Lake City, FL 32024

Project Title:
Stalvey Residence

5/13/2020

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	0.22, 0.33	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	11	11	392	Btuh				
2	2 NFRC	0.22, 0.33	No	No	E		9.5ft	1.3ft	36.0	36.0	0.0	11	27	392	Btuh				
3	2 NFRC	0.22, 0.33	No	No	N		11.3f	1.3ft	15.0	0.0	15.0	11	11	163	Btuh				
4	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	36.0	0.0	36.0	11	11	392	Btuh				
5	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	36.0	0.0	36.0	11	27	989	Btuh				
6	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh				
7	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh				
8	2 NFRC	0.22, 0.33	No	No	S		8.5ft	1.3ft	72.0	72.0	0.0	11	13	785	Btuh				
9	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	6.0	6.0	0.0	11	13	65	Btuh				
10	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	6.0	0.0	6.0	11	27	165	Btuh				
11	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	8.0	0.0	8.0	11	27	220	Btuh				
12	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	20.0	0.0	20.0	11	27	550	Btuh				
13	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	3.0	0.0	3.0	11	27	82	Btuh				
Window Total									290 (sqft)					4636 Btuh					
Walls	Type	U-Value						R-Value			Area(sqft)			HTM		Load			
							Cav/Sheath												
1	Frame - Wood - Ext						0.08			19.0/0.6			181.5			1.6		292 Btuh	
2	Frame - Wood - Ext						0.08			19.0/0.6			175.0			1.6		281 Btuh	
3	Frame - Wood - Ext						0.08			19.0/0.6			185.7			1.6		299 Btuh	
4	Frame - Wood - Ext						0.08			19.0/0.6			103.5			1.6		166 Btuh	
5	Frame - Wood - Ext						0.08			19.0/0.6			79.5			1.6		128 Btuh	
6	Frame - Wood - Ext						0.08			19.0/0.6			333.5			1.6		536 Btuh	
7	Frame - Wood - Ext						0.08			19.0/0.6			233.0			1.6		375 Btuh	
8	Frame - Wood - Ext						0.08			19.0/0.6			38.3			1.6		62 Btuh	
9	Frame - Wood - Ext						0.08			19.0/0.6			74.0			1.6		119 Btuh	
10	Frame - Wood - Ext						0.08			19.0/0.6			264.5			1.6		425 Btuh	
11	Frame - Wood - Adj						0.08			19.0/0.6			375.2			1.4		536 Btuh	
Wall Total												2044 (sqft)					3219 Btuh		
Doors	Type	U-Value						R-Value			Area (sqft)			HTM		Load			
1	Insulated - Exterior									20.0			12.0			240 Btuh			
2	Insulated - Exterior									96.0			12.0			1152 Btuh			
3	Insulated - Exterior									40.0			12.0			480 Btuh			
4	Insulated - Garage									17.8			12.0			213 Btuh			
Door Total												174 (sqft)					2085 Btuh		
Ceilings	Type/Color/Surface	U-Value						R-Value			Area(sqft)			HTM		Load			
1	Vented Attic/Light/Shingle						0.032			30.0/0.0			2370.0			1.40		3321 Btuh	
Ceiling Total												2370 (sqft)					3321 Btuh		
Floors	Type	U-Value						R-Value			Size			HTM		Load			
1	Slab On Grade									0.0			2370 (ft-perimeter)			0.0		0 Btuh	
Floor Total												2370.0 (sqft)					0 Btuh		
Envelope Subtotal:														13261 Btuh					

Manual J Summer Calculations

Residential Load - Component Details (continued)

982 Gabe Street
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Stalvey Residence

5/13/2020

Infiltration	Type Natural	Average ACH 0.14	Volume(cuft) 21330	Wall Ratio 1	CFM= 48.1	Load 1001 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
					Sensible Envelope Load:	19042 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.304)					5790 Btuh
					Sensible Load All Zones	24832 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

982 Gabe Street
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Stalvey Residence

5/13/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19042 Btuh
	Sensible Duct Load	5790 Btuh
	Total Sensible Zone Loads	24832 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24832 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1660 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1400 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4260 Btuh
	TOTAL GAIN	29092 Btuh

EQUIPMENT

1. Central Unit	#	42000 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

982 Gabe Street
Lake City, FL 32024

Project Title:
Stalvey Residence
Building Type: User

5/13/2020

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 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
2	2, NFRC 0.22	Vinyl	0.33	E	36.0		13.2	475 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
5	2, NFRC 0.22	Vinyl	0.33	E	36.0		13.2	475 Btuh
6	2, NFRC 0.22	Vinyl	0.33	E	8.0		13.2	106 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	8.0		13.2	106 Btuh
8	2, NFRC 0.22	Vinyl	0.33	S	72.0		13.2	950 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	6.0		13.2	79 Btuh
10	2, NFRC 0.22	Vinyl	0.33	W	6.0		13.2	79 Btuh
11	2, NFRC 0.22	Vinyl	0.33	W	8.0		13.2	106 Btuh
12	2, NFRC 0.22	Vinyl	0.33	W	20.0		13.2	264 Btuh
13	2, NFRC 0.22	Vinyl	0.33	W	3.0		13.2	40 Btuh
Window Total					290.0(sqft)			3828 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.075)	19.0/0.6	182		3.01	546 Btuh
2	Frame - Wood	- Ext	(0.075)	19.0/0.6	175		3.01	526 Btuh
3	Frame - Wood	- Ext	(0.075)	19.0/0.6	186		3.01	558 Btuh
4	Frame - Wood	- Ext	(0.075)	19.0/0.6	104		3.01	311 Btuh
5	Frame - Wood	- Ext	(0.075)	19.0/0.6	80		3.01	239 Btuh
6	Frame - Wood	- Ext	(0.075)	19.0/0.6	334		3.01	1002 Btuh
7	Frame - Wood	- Ext	(0.075)	19.0/0.6	233		3.01	700 Btuh
8	Frame - Wood	- Ext	(0.075)	19.0/0.6	38		3.01	115 Btuh
9	Frame - Wood	- Ext	(0.075)	19.0/0.6	74		3.01	222 Btuh
10	Frame - Wood	- Ext	(0.075)	19.0/0.6	265		3.01	795 Btuh
11	Frame - Wood	- Adj	(0.075)	19.0/0.6	375		3.01	1128 Btuh
Wall Total					2044(sqft)			6143 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior, n		(0.400)		96		16.0	1536 Btuh
3	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
4	Insulated - Garage, n		(0.400)		18		16.0	284 Btuh
Door Total					174(sqft)			2780Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	2370		1.3	3019 Btuh
Ceiling Total					2370(sqft)			3019Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	275.0 ft(perim.)		47.2	12980 Btuh
Floor Total					2370 sqft			12980 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

982 Gabe Street
Lake City, FL 32024

Project Title:
Stalvey Residence
Building Type: User

5/13/2020

	Envelope Subtotal:						28750 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.18	21330	1.00	64.1	2809 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.184)	5807 Btuh
All Zones	Sensible Subtotal All Zones						37366 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	37366 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	37366 Btuh

EQUIPMENT

1. Electric Heat Pump	#	42000 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