

Residential System Sizing Calculation

Summary

Michael & Diane Otero
SW Barny Street
High Springs, FL 32643

Project Title:
221492 Otero Res

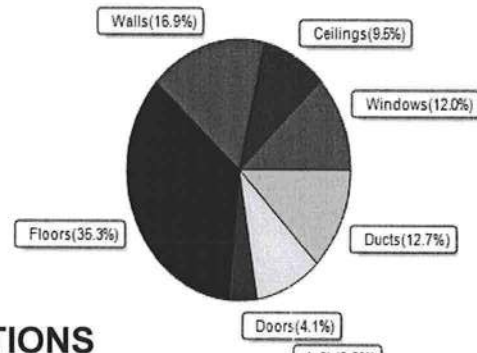
2023-01-17

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	22745 Btuh	Total cooling load calculation	18158 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	101.1 23000	Sensible (SHR = 0.75)	113.5 17250
Heat Pump + Auxiliary(0.0kW)	101.1 23000	Latent	194.5 5750
		Total (Electric Heat Pump)	126.7 23000

WINTER CALCULATIONS

Winter Heating Load (for 1684 sqft)

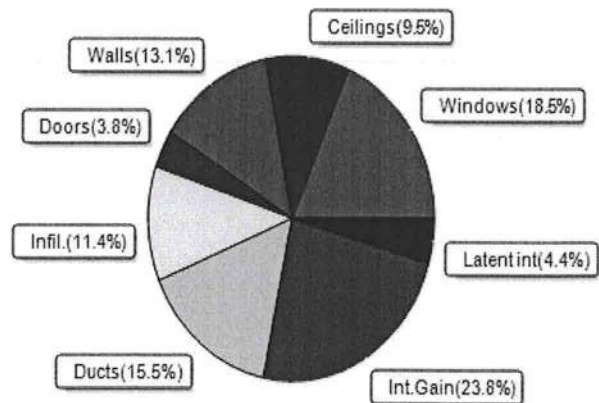
Load component		Load	
Window total	214 sqft	2735	Btuh
Wall total	1082 sqft	3841	Btuh
Door total	58 sqft	924	Btuh
Ceiling total	1790 sqft	2157	Btuh
Floor total	1684 sqft	8024	Btuh
Infiltration	50 cfm	2181	Btuh
Duct loss		2882	Btuh
Subtotal		22745	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		22745	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1684 sqft)

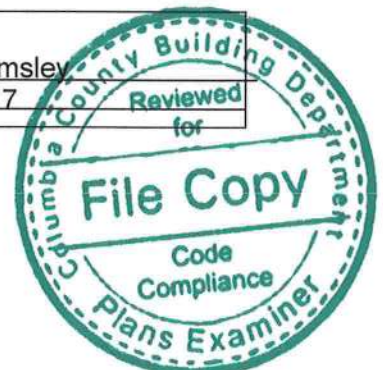
Load component		Load	
Window total	214 sqft	3362	Btuh
Wall total	1082 sqft	2373	Btuh
Door total	58 sqft	693	Btuh
Ceiling total	1790 sqft	1726	Btuh
Floor total		0	Btuh
Infiltration	37 cfm	777	Btuh
Internal gain		4320	Btuh
Duct gain		1952	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		15202	Btuh
Latent gain(ducts)		867	Btuh
Latent gain(infiltration)		1289	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		2956	Btuh
TOTAL HEAT GAIN		18158	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2023-01-17

EnergyGauge® / USRCZB v7.0.00



System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Michael & Diane Otero
SW Barny Street
High Springs, FL 32643

Project Title:
221492 Otero Res
Building Type: User

2023-01-17

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	0.32	N	6.0		12.8	77 Btuh
2	2, NFRC 0.22	Vinyl	0.32	N	26.7		12.8	341 Btuh
3	2, NFRC 0.22	Vinyl	0.32	N	9.0		12.8	115 Btuh
4	2, NFRC 0.22	Vinyl	0.32	E	30.0		12.8	384 Btuh
5	2, NFRC 0.22	Vinyl	0.32	E	15.0		12.8	192 Btuh
6	2, NFRC 0.22	Vinyl	0.32	S	72.0		12.8	922 Btuh
7	2, NFRC 0.22	Vinyl	0.32	S	13.3		12.8	171 Btuh
8	2, NFRC 0.22	Vinyl	0.32	W	26.7		12.8	341 Btuh
9	2, NFRC 0.22	Vinyl	0.32	W	15.0		12.8	192 Btuh
	Window Total				213.7(sqft)			2735 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	227		3.55	805 Btuh
2	Frame - Wood	- Adj	(0.089)	13.0/0.0	132		3.55	469 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	202		3.55	716 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	324		3.55	1150 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	197		3.55	701 Btuh
	Wall Total				1082(sqft)			3841 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		9		16.0	142 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
4	Insulated - Exterior, n		(0.400)		9		16.0	142 Btuh
	Door Total				58(sqft)			924Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/D/Shing		(0.241)	0.0/22.0	1790		1.2	2157 Btuh
	Ceiling Total				1790(sqft)			2157Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	170.0 ft(perim.)		47.2	8024 Btuh
	Floor Total				1684 sqft			8024 Btuh
	Envelope Subtotal:							17681 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.20	15156	1.00	49.8		2181 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Con)						(DLM of 0.145)	2882 Btuh
All Zones	Sensible Subtotal All Zones							22745 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Michael & Diane Otero
SW Barny Street
High Springs, FL 32643

Project Title:
221492 Otero Res
Building Type: User

2023-01-17

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	22745 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	22745 Btuh

EQUIPMENT

1. Electric Heat Pump	#	23000 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

Michael & Diane Otero
SW Barny Street
High Springs, FL 32643

Project Title:
221492 Otero Res

2023-01-17

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, 0.32	No	No	N		13.5f	0.5ft	6.0	6.0	0.0	11	12	64	Btuh
2	2 NFRC	0.22, 0.32	No	No	N		13.5f	0.5ft	26.7	26.7	0.0	11	12	286	Btuh
3	2 NFRC	0.22, 0.32	No	No	N		13.5f	0.5ft	9.0	9.0	0.0	11	12	96	Btuh
4	2 NFRC	0.22, 0.32	No	No	E		1.5ft	7.0ft	30.0	0.0	30.0	11	27	819	Btuh
5	2 NFRC	0.22, 0.32	No	No	E		1.5ft	7.0ft	15.0	0.0	15.0	11	27	409	Btuh
6	2 NFRC	0.22, 0.32	No	No	S		9.5ft	1.0ft	72.0	0.0	72.0	11	11	771	Btuh
7	2 NFRC	0.22, 0.32	No	No	S		9.5ft	3.0ft	13.3	0.0	13.3	11	11	143	Btuh
8	2 NFRC	0.22, 0.32	No	No	W		13.5f	0.5ft	26.7	26.7	0.0	11	27	286	Btuh
9	2 NFRC	0.22, 0.32	No	No	W		13.5f	0.5ft	15.0	15.0	0.0	11	27	161	Btuh
	Excursion													328	Btuh
	Window Total								214 (sqft)					3362 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Frame - Wood - Ext		0.09		13.0/0.0		226.8		2.3		513 Btuh				
2	Frame - Wood - Adj		0.09		13.0/0.0		132.0		1.7		223 Btuh				
3	Frame - Wood - Ext		0.09		13.0/0.0		201.7		2.3		456 Btuh				
4	Frame - Wood - Ext		0.09		13.0/0.0		324.0		2.3		733 Btuh				
5	Frame - Wood - Ext		0.09		13.0/0.0		197.4		2.3		447 Btuh				
	Wall Total						1082 (sqft)				2373 Btuh				
Doors	Type	U-Value		R-Value		Area (sqft)		HTM		Load					
1	Insulated - Exterior						8.9		12.0		107 Btuh				
2	Insulated - Garage						20.0		12.0		240 Btuh				
3	Insulated - Exterior						20.0		12.0		240 Btuh				
4	Insulated - Exterior						8.9		12.0		107 Btuh				
	Door Total						58 (sqft)				693 Btuh				
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Unvented Attic/DarkShingle		0.241		0.0/22.0		1790.0		0.96		1726 Btuh				
	Ceiling Total						1790 (sqft)				1726 Btuh				
Floors	Type	U-Value		R-Value		Size		HTM		Load					
1	Slab On Grade				0.0		1684 (ft-perimeter)		0.0		0 Btuh				
	Floor Total						1684.0 (sqft)				0 Btuh				
	Envelope Subtotal:											8153 Btuh			
Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load					
	Natural		0.15		15156		1		37.4		777 Btuh				
Internal gain		Occupants		Btuh/occupant		Appliance		Load							
			4		X 230		+		3400		4320 Btuh				
	Sensible Envelope Load:											13250 Btuh			
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi) (DGM of 0.147)											1952 Btuh			
	Sensible Load All Zones											15202 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Michael & Diane Otero
SW Barny Street
High Springs, FL 32643

Project Title:
221492 Otero Res

Climate:FL_GAINESVILLE_REGIONAL_A

2023-01-17

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13250 Btuh
	Sensible Duct Load	1952 Btuh
	Total Sensible Zone Loads	15202 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15202 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1289 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	867 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2956 Btuh
	TOTAL GAIN	18158 Btuh

EQUIPMENT

1. Central Unit	#	23000 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