

Residential System Sizing Calculation

Summary

Alvin & Patricia Barnett

Project Title:
Barnett Res

Lake City, FL 32055

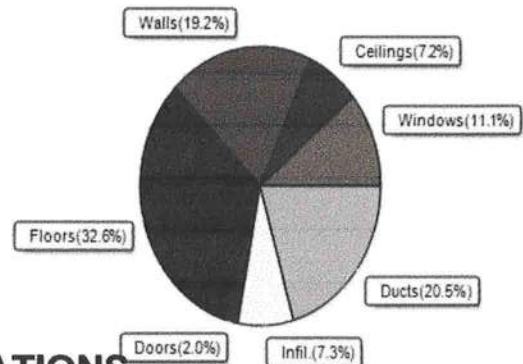
6/22/2021

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	40647 Btuh	Total cooling load calculation	29046 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 40647	Sensible (SHR = 0.70)	86.3 20332
Heat Pump + Auxiliary(0.0kW)	100.0 40647	Latent	158.8 8714
		Total (Electric Heat Pump)	100.0 29046

WINTER CALCULATIONS

Winter Heating Load (for 2742 sqft)

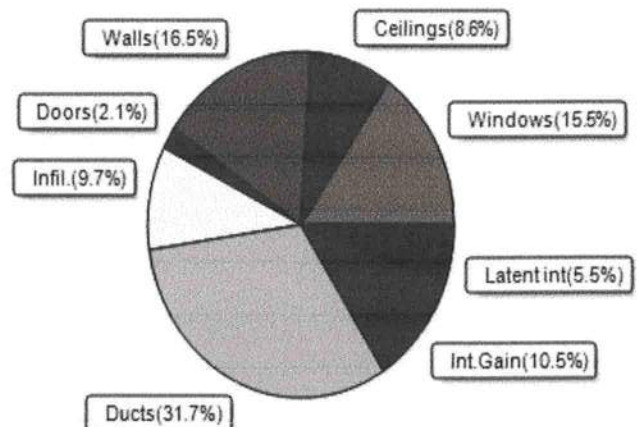
Load component		Load	
Window total	314 sqft	4522	Btuh
Wall total	2203 sqft	7821	Btuh
Door total	44 sqft	810	Btuh
Ceiling total	2879 sqft	2923	Btuh
Floor total	2742 sqft	13263	Btuh
Infiltration	68 cfm	2960	Btuh
Duct loss		8349	Btuh
Subtotal		40647	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		40647	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2742 sqft)

Load component		Load	
Window total	314 sqft	4497	Btuh
Wall total	2203 sqft	4803	Btuh
Door total	44 sqft	607	Btuh
Ceiling total	2879 sqft	2484	Btuh
Floor total		0	Btuh
Infiltration	51 cfm	1054	Btuh
Internal gain		3040	Btuh
Duct gain		7072	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		23558	Btuh
Latent gain(ducts)		2139	Btuh
Latent gain(infiltration)		1750	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		5488	Btuh
TOTAL HEAT GAIN		29046	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

10/16/2021

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Alvin & Patricia Barnett

Project Title:

Barnett Res

Lake City, FL 32055

Building Type: User

6/22/2021

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	6.0		14.4	86 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	36.0		14.4	518 Btuh
3	2, NFRC 0.25	TIM	0.36	S	16.0		14.4	230 Btuh
4	2, NFRC 0.25	Vinyl	0.36	S	15.0		14.4	216 Btuh
5	2, NFRC 0.25	Vinyl	0.36	E	6.0		14.4	86 Btuh
6	2, NFRC 0.25	Vinyl	0.36	E	15.0		14.4	216 Btuh
7	2, NFRC 0.25	Vinyl	0.36	N	15.0		14.4	216 Btuh
8	2, NFRC 0.25	Metal	0.36	N	84.0		14.4	1210 Btuh
9	2, NFRC 0.25	TIM	0.36	E	24.0		14.4	346 Btuh
10	2, NFRC 0.25	Vinyl	0.36	N	72.0		14.4	1037 Btuh
11	2, NFRC 0.25	Vinyl	0.36	N	6.0		14.4	86 Btuh
12	2, NFRC 0.25	Vinyl	0.36	W	16.0		14.4	230 Btuh
13	2, NFRC 0.25	Vinyl	0.36	W	3.0		14.4	43 Btuh
Window Total					314.0(sqft)			4522 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	80		3.55	282 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	159		3.55	563 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	131		3.55	463 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	501		3.55	1779 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	131		3.55	463 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	213		3.55	756 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	101		3.55	359 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	56		3.55	199 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	299		3.55	1060 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	217		3.55	769 Btuh
11	Frame - Wood	- Adj	(0.089)	13.0/0.0	208		3.55	738 Btuh
12	Frame - Wood	- Adj	(0.089)	13.0/0.0	110		3.55	389 Btuh
Wall Total					2203(sqft)			7821 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		24		18.4	442 Btuh
2	Insulated - Garage, n		(0.460)		20		18.4	368 Btuh
Door Total					44(sqft)			810Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	2879		1.0	2923 Btuh
Ceiling Total					2879(sqft)			2923Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	281.0 ft(perim.)		47.2	13263 Btuh
Floor Total					2742 sqft			13263 Btuh
Envelope Subtotal:								29338 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Alvin & Patricia Barnett

Project Title:

Barnett Res

Lake City, FL 32055

Building Type: User

6/22/2021

Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 24678	Wall Ratio 1.00	CFM= 67.6	2960 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.259)					8349 Btuh
All Zones	Sensible Subtotal All Zones					40647 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	40647 Btuh 0 Btuh 40647 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	40647 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

Alvin & Patricia Barnett

Project Title:
Barnett Res

Lake City, FL 32055

6/22/2021

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	Omt	Len	Hgt	Gross	Shaded	Unshaded	Shaded		Unshaded
1	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	6.0	6.0	0.0	12	14	73 Btuh
2	2 NFRC	0.25, 0.36	No	No	S		7.5ft.	1.0ft.	36.0	36.0	0.0	12	14	436 Btuh
3	2 NFRC	0.25, 0.36	No	No	S		7.5ft.	1.0ft.	16.0	16.0	0.0	12	14	194 Btuh
4	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181 Btuh
5	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	6.0	0.5	5.5	12	31	176 Btuh
6	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	15.0	0.7	14.3	12	31	450 Btuh
7	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181 Btuh
8	2 NFRC	0.25, 0.36	No	No	N		14.5f	1.0ft.	84.0	0.0	84.0	12	12	1016 Btuh
9	2 NFRC	0.25, 0.36	No	No	E		12.0f	1.0ft.	24.0	24.0	0.0	12	31	290 Btuh
10	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	72.0	0.0	72.0	12	12	871 Btuh
11	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	6.0	0.0	6.0	12	12	73 Btuh
12	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	16.0	1.0	15.0	12	31	477 Btuh
13	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	3.0	0.7	2.3	12	31	79 Btuh
Window Total									314 (sqft)					4497 Btuh
Walls	Type		U-Value		R-Value		Area(sqft)		HTM		Load			
					Cav/Sheath									
1	Frame - Wood - Ext		0.09		13.0/0.0		79.5		2.3		180 Btuh			
2	Frame - Wood - Ext		0.09		13.0/0.0		158.7		2.3		359 Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		130.5		2.3		295 Btuh			
4	Frame - Wood - Ext		0.09		13.0/0.0		501.0		2.3		1134 Btuh			
5	Frame - Wood - Ext		0.09		13.0/0.0		130.5		2.3		295 Btuh			
6	Frame - Wood - Ext		0.09		13.0/0.0		213.0		2.3		482 Btuh			
7	Frame - Wood - Ext		0.09		13.0/0.0		101.0		2.3		229 Btuh			
8	Frame - Wood - Ext		0.09		13.0/0.0		56.0		2.3		127 Btuh			
9	Frame - Wood - Ext		0.09		13.0/0.0		298.7		2.3		676 Btuh			
10	Frame - Wood - Ext		0.09		13.0/0.0		216.5		2.3		490 Btuh			
11	Frame - Wood - Adj		0.09		13.0/0.0		208.0		1.7		351 Btuh			
12	Frame - Wood - Adj		0.09		13.0/0.0		109.5		1.7		185 Btuh			
Wall Total									2203 (sqft)			4803 Btuh		
Doors	Type		Area (sqft)		HTM		Load							
1	Insulated - Exterior		24.0		13.8		331 Btuh							
2	Insulated - Garage		20.0		13.8		276 Btuh							
Door Total									44 (sqft)			607 Btuh		
Ceilings	Type/Color/Surface		U-Value		R-Value		Area(sqft)		HTM		Load			
1	Vented Attic/Light/Shingle/RB		0.025		38.0/0.0		2879.0		0.86		2484 Btuh			
Ceiling Total									2879 (sqft)			2484 Btuh		
Floors	Type		R-Value		Size		HTM		Load					
1	Slab On Grade		0.0		2742 (ft-perimeter)		0.0		0 Btuh					
Floor Total									2742.0 (sqft)			0 Btuh		
Envelope Subtotal:													12392 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Alvin & Patricia Barnett

Project Title:
Barnett Res

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32055

6/22/2021

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 24678	Wall Ratio 1	CFM= 50.7	Load 1054 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	1200	Load 3040 Btuh
					Sensible Envelope Load:	16486 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.429)	7072 Btuh
					Sensible Load All Zones	23558 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Alvin & Patricia Barnett

Project Title:
Barnett Res

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32055

6/22/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16486 Btuh
	Sensible Duct Load	7072 Btuh
	Total Sensible Zone Loads	23558 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23558 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1750 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	2139 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5488 Btuh
	TOTAL GAIN	29046 Btuh

EQUIPMENT

1. Central Unit	#	29046 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))

(Omt - compass orientation)



Version 8