Residential System Sizing Calculation

Summary

Steven & Karen Beals
282 SW Breezy Dr
Lake City, FL

Project Title:
250778 Beals Pool House

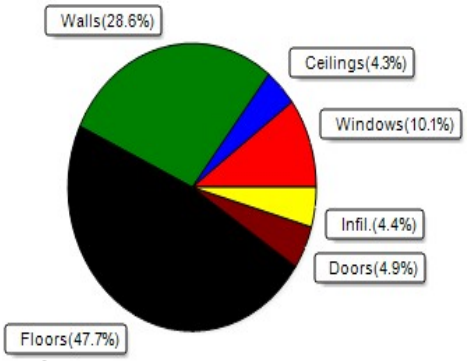
8/15/2025

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	**5937**	**Btuh**	**Total cooling load calculation**	**5146**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	151.6	9000	Sensible (SHR = 0.75)	147.0	6750
Heat Pump + Auxiliary(0.0kW)	151.6	9000	Latent	406.6	2250
			Total (Electric Heat Pump)	174.9	9000

WINTER CALCULATIONS

Winter Heating Load (for 200 sqft)

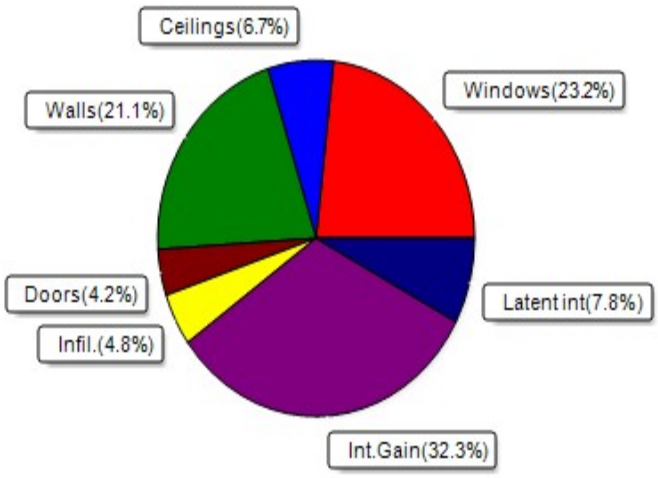
Load component			Load	
Window total	43	sqft	602	Btuh
Wall total	479	sqft	1701	Btuh
Door total	18	sqft	288	Btuh
Ceiling total	200	sqft	255	Btuh
Floor total	200	sqft	2832	Btuh
Infiltration	6	cfm	259	Btuh
Duct loss			0	Btuh
Subtotal			**5937**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**5937**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 200 sqft)

Load component			Load	
Window total	43	sqft	1196	Btuh
Wall total	479	sqft	1084	Btuh
Door total	18	sqft	216	Btuh
Ceiling total	200	sqft	344	Btuh
Floor total			0	Btuh
Infiltration	4	cfm	92	Btuh
Internal gain			1660	Btuh
Duct gain			0	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**4593**	**Btuh**
Latent gain(ducts)			0	Btuh
Latent gain(infiltration)			153	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			400	Btuh
Total latent gain			**553**	**Btuh**
TOTAL HEAT GAIN			**5146**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2025-08-15

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Steven & Karen Beals
282 SW Breezy Dr
Lake City, FL

Project Title:
250778 Beals Pool House
Building Type: User

8/15/2025

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)
This calculation is for Worst Case. The house has been rotated 45 degrees.

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.25	Vinyl	0.35	NE	11.0	14.0	154 Btuh
2	2, NFRC 0.25	Vinyl	0.35	SW	6.0	14.0	84 Btuh
3	2, NFRC 0.25	Vinyl	0.35	SW	11.0	14.0	154 Btuh
4	2, NFRC 0.25	Vinyl	0.35	NW	15.0	14.0	210 Btuh
	Window Total				43.0(sqft)		602 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	160	3.55	568 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	90	3.55	320 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	154	3.55	547 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	75	3.55	266 Btuh
	Wall Total				479(sqft)		1701 Btuh
Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		9	16.0	144 Btuh
2	Insulated - Exterior,	n	(0.400)		9	16.0	144 Btuh
	Door Total				18(sqft)		288Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Flat ceil/D/Shing		(0.032)	30.0/0.0	200	1.3	255 Btuh
	Ceiling Total				200(sqft)		255Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	60.0 ft(perim.)	47.2	2832 Btuh
	Floor Total				200 sqft		2832 Btuh
					Envelope Subtotal:		5677 Btuh

Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.20	1800	1.00	5.9	259 Btuh
Duct load	NA, R0.0, Supply(), Return()				(DLM of 0.000)		0 Btuh
All Zones				**Sensible Subtotal All Zones**			**5937 Btuh**

Manual J Winter Calculations

Residential Load - Component Details (continued)

Steven & Karen Beals
282 SW Breezy Dr
Lake City, FL

Project Title:
250778 Beals Pool House
Building Type: User

8/15/2025

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	5937 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	5937 Btuh

EQUIPMENT

1. Electric Heat Pump	#	9000 Btuh

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)

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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Steven & Karen Beals
282 SW Breezy Dr
Lake City, FL

Project Title:
250778 Beals Pool House

8/15/2025

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

This calculation is for Worst Case. The house has been rotated 45 degrees.

Component Loads for Whole House

	Type*					Overhang		Window Area(sqft)			HTM		Load
Window	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded	
1	2 NFRC	0.25, 0.35		No	No	NE	1.5ft	1.5ft	11.0	0.0	11.0	12	23	258 Btuh
2	2 NFRC	0.25, 0.35		No	No	SW	1.5ft	1.5ft	6.0	1.9	4.1	12	25	123 Btuh
3	2 NFRC	0.25, 0.35		No	No	SW	1.5ft	1.5ft	11.0	2.9	8.1	12	25	233 Btuh
4	2 NFRC	0.25, 0.35		No	No	NW	1.5ft	1.5ft	15.0	0.0	15.0	12	23	352 Btuh
	Excursion													230 Btuh
	Window Total										43 (sqft)			1196 Btuh

Walls	Type	U-Value	R-Value	Area(sqft)	HTM	Load
			Cav/Sheath			
1	Frame - Wood - Ext	0.09	13.0/0.0	160.0	2.3	362 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	90.0	2.3	204 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	154.0	2.3	349 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	75.0	2.3	170 Btuh
	Wall Total			479 (sqft)		1084 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	9.0	12.0	108 Btuh
2	Insulated - Exterior	9.0	12.0	108 Btuh
	Door Total	18 (sqft)		216 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/DarkShingle	0.032	30.0/0.0	200.0	1.72	344 Btuh
	Ceiling Total			200 (sqft)		344 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Slab On Grade	0.0	200 (ft-perimeter)	0.0	0 Btuh
	Floor Total		200.0 (sqft)		0 Btuh
			Envelope Subtotal:		2841 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.15	1800	1	4.4	92 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		2	X 230	+	1200	1660 Btuh
				Sensible Envelope Load:		4593 Btuh
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)			(DGM of 0.000)		0 Btuh
				Sensible Load All Zones		**4593 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Steven & Karen Beals
282 SW Breezy Dr
Lake City, FL

Project Title: 250778 Beals Pool House

Climate:FL_GAINESVILLE_REGIONAL_A

8/15/2025

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**4593 Btuh**
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	**4593 Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**4593 Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	153 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (2.0 people @ 200 Btuh per person)	400 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**553 Btuh**
	TOTAL GAIN	**5146 Btuh**

EQUIPMENT

1. Central Unit	#	9000 Btuh

*Key: Window types (Panes - 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)

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