

Residential System Sizing Calculation

Summary

Project Title:
Parks Residence

, FL

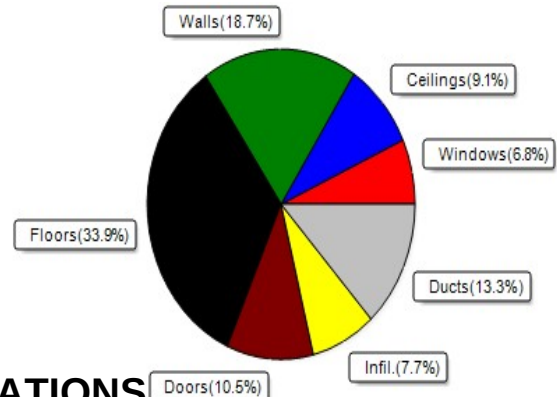
11/13/2024

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	28099 Btuh	Total cooling load calculation	24464 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	128.1 36000	Sensible (SHR = 0.75)	125.8 27000
Heat Pump + Auxiliary(0.0kW)	128.1 36000	Latent	300.6 9000
		Total (Electric Heat Pump)	147.2 36000

WINTER CALCULATIONS

Winter Heating Load (for 2000 sqft)

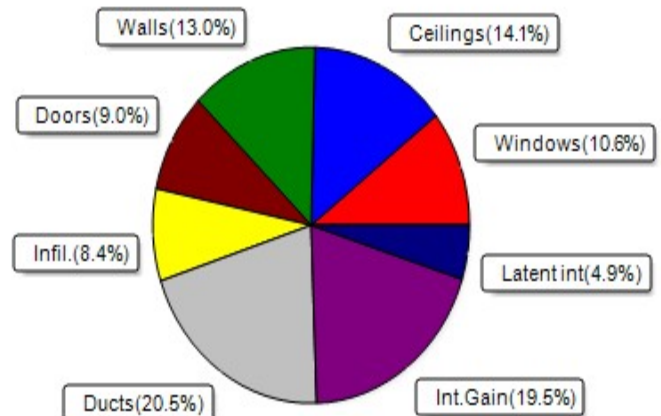
Load component	Load
Window total 184 sqft	1914 Btuh
Wall total 1483 sqft	5264 Btuh
Door total 160 sqft	2944 Btuh
Ceiling total 2000 sqft	2548 Btuh
Floor total 2000 sqft	9534 Btuh
Infiltration 49 cfm	2162 Btuh
Duct loss	3733 Btuh
Subtotal	28099 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	28099 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2000 sqft)

Load component	Load
Window total 184 sqft	2584 Btuh
Wall total 1483 sqft	3192 Btuh
Door total 160 sqft	2208 Btuh
Ceiling total 2000 sqft	3439 Btuh
Floor total	0 Btuh
Infiltration 37 cfm	770 Btuh
Internal gain	4780 Btuh
Duct gain	4496 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	21470 Btuh
Latent gain(ducts)	516 Btuh
Latent gain(infiltration)	1278 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2994 Btuh
TOTAL HEAT GAIN	24464 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 11-13-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Parks Residence

, FL

11/13/2024

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

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

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	0.33, 0.26	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	12	12	356	Btuh
2	2 NFRC	0.33, 0.26	No	No	N	1.5ft	2.3ft	12.0	0.0	12.0	12	12	143	Btuh
3	2 NFRC	0.33, 0.26	No	No	N	1.5ft	2.3ft	6.0	0.0	6.0	12	12	71	Btuh
4	2 NFRC	0.33, 0.26	No	No	N	1.5ft	2.3ft	45.0	0.0	45.0	12	12	535	Btuh
5	2 NFRC	0.33, 0.26	No	No	E	1.5ft	2.3ft	10.0	0.0	10.0	12	37	368	Btuh
6	2 NFRC	0.33, 0.26	No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	12	14	178	Btuh
7	2 NFRC	0.33, 0.26	No	No	S	1.5ft	2.3ft	60.0	60.0	0.0	12	14	713	Btuh
8	2 NFRC	0.33, 0.26	No	No	W	1.5ft	2.3ft	6.0	0.0	6.0	12	37	221	Btuh
	Window Total							184 (sqft)					2584 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load	
								Cav/Sheath						
1	Frame - Wood - Ext						0.09	13.0/0.0	268.0		2.3		607 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	57.3		2.3		130 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	67.0		2.3		152 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	112.0		2.3		253 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	80.0		2.3		181 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	84.7		2.3		192 Btuh	
7	Frame - Wood - Adj						0.09	13.0/0.0	284.0		1.7		479 Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.0	65.0		2.3		147 Btuh	
9	Frame - Wood - Ext						0.09	13.0/0.0	16.0		2.3		36 Btuh	
10	Frame - Wood - Ext						0.09	13.0/0.0	196.0		2.3		444 Btuh	
11	Frame - Wood - Ext						0.09	13.0/0.0	252.7		2.3		572 Btuh	
	Wall Total							1483 (sqft)					3192 Btuh	
Doors	Type								Area (sqft)		HTM		Load	
1	Insulated - Exterior								40.0		13.8		552 Btuh	
2	Insulated - Exterior								20.0		13.8		276 Btuh	
3	Insulated - Exterior								40.0		13.8		552 Btuh	
4	Insulated - Garage								20.0		13.8		276 Btuh	
5	Insulated - Exterior								40.0		13.8		552 Btuh	
	Door Total							160 (sqft)					2208 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load	
1	Vented Attic/DarkShingle						0.032	30.0/0.0	2000.0		1.72		3439 Btuh	
	Ceiling Total							2000 (sqft)					3439 Btuh	
Floors	Type						R-Value		Size		HTM		Load	
1	Slab On Grade						0.0		2000 (ft-perimeter)		0.0		0 Btuh	
	Floor Total							2000.0 (sqft)					0 Btuh	
	Envelope Subtotal:												11424 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Parks Residence

, FL

11/13/2024

Infiltration	Type Natural	Average ACH 0.14	Volume(cuft) 16000	Wall Ratio 1	CFM= 37.0	Load 770 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
	Sensible Envelope Load:					16974 Btuh
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.265)					4496 Btuh
	Sensible Load All Zones					21470 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Parks Residence

, FL

11/13/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16974 Btuh
	Sensible Duct Load	4496 Btuh
	Total Sensible Zone Loads	21470 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21470 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1278 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	516 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2994 Btuh
	TOTAL GAIN	24464 Btuh

EQUIPMENT

1. Central Unit	#	36000 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 - Room by Room Component Details

, FL

Project Title:
Parks Residence
Building Type: User

11/13/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Room #1: Main								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.33	Vinyl	0.26	N	30.0		10.4	312 Btuh
2	2, NFRC 0.33	Vinyl	0.26	N	12.0		10.4	125 Btuh
3	2, NFRC 0.33	Vinyl	0.26	N	6.0		10.4	62 Btuh
4	2, NFRC 0.33	Vinyl	0.26	N	45.0		10.4	468 Btuh
5	2, NFRC 0.33	Vinyl	0.26	E	10.0		10.4	104 Btuh
6	2, NFRC 0.33	Vinyl	0.26	S	15.0		10.4	156 Btuh
7	2, NFRC 0.33	Vinyl	0.26	S	60.0		10.4	624 Btuh
8	2, NFRC 0.33	Vinyl	0.26	W	6.0		10.4	62 Btuh
	Window Total				184.0(sqft)			1914 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	268		3.55	951 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	204 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	67		3.55	238 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	112		3.55	398 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	80		3.55	284 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	85		3.55	301 Btuh
7	Frame - Wood	- Adj	(0.089)	13.0/0.0	284		3.55	1008 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	65		3.55	231 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	16		3.55	57 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	196		3.55	696 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	253		3.55	897 Btuh
	Wall Total				1483(sqft)			5264 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
2	Insulated - Exterior,	n	(0.460)		20		18.4	368 Btuh
3	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
4	Insulated - Garage,	n	(0.460)		20		18.4	368 Btuh
5	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
	Door Total				160(sqft)			2944Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.032)	30.0/0.0	2000		1.3	2548 Btuh
	Ceiling Total				2000(sqft)			2548Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	202.0 ft(perim.)		47.2	9534 Btuh
	Floor Total				2000 sqft			9534 Btuh
	Room Envelope Subtotal:							22204 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Parks Residence
Building Type: User

11/13/2024

Infiltration	Type Natural	Wholehouse ACH 0.18	Room Volume 16000	Wall Ratio 1.00	CFM= 49.3	2162 Btuh
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DLM of 0.153)					3733 Btuh
Room #1	Sensible Room Subtotal					28099 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	28099 Btuh 0 Btuh 28099 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	36000 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