

Residential System Sizing Calculation

Summary

Spec House

Project Title:
Bristol Model

Lake City, FL 32024

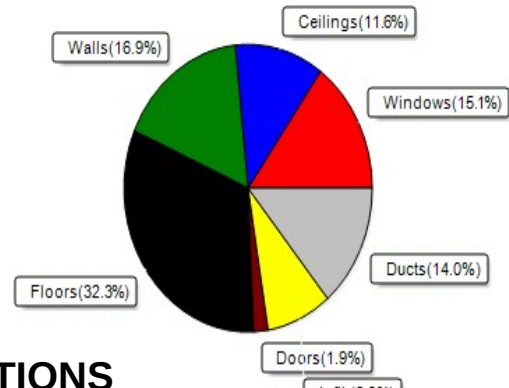
5/5/2021

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	34331 Btuh	Total cooling load calculation	28708 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	174.8 60000	Sensible (SHR = 0.80)	192.1 48000
Heat Pump + Auxiliary(0.0kW)	174.8 60000	Latent	322.8 12000
		Total (Electric Heat Pump)	209.0 60000

WINTER CALCULATIONS

Winter Heating Load (for 3119 sqft)

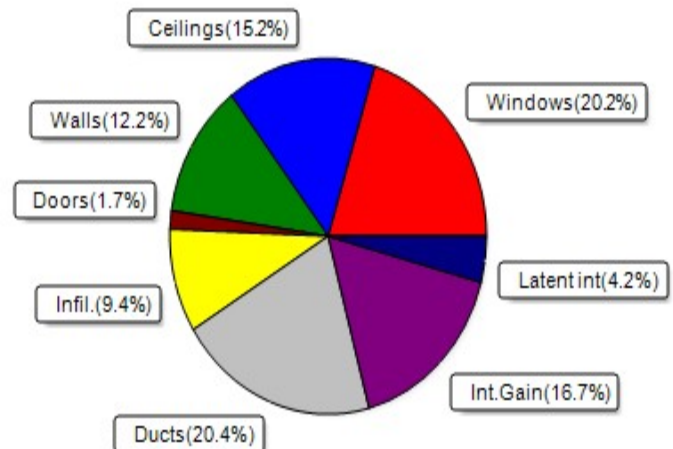
Load component	Load
Window total 393 sqft	5192 Btuh
Wall total 1670 sqft	5790 Btuh
Door total 40 sqft	640 Btuh
Ceiling total 3119 sqft	3973 Btuh
Floor total 3119 sqft	11092 Btuh
Infiltration 65 cfm	2855 Btuh
Duct loss	4790 Btuh
Subtotal	34331 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	34331 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3119 sqft)

Load component	Load
Window total 393 sqft	5812 Btuh
Wall total 1670 sqft	3510 Btuh
Door total 40 sqft	480 Btuh
Ceiling total 3119 sqft	4371 Btuh
Floor total	0 Btuh
Infiltration 49 cfm	1017 Btuh
Internal gain	4780 Btuh
Duct gain	5021 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	24991 Btuh
Latent gain(ducts)	830 Btuh
Latent gain(infiltration)	1688 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3718 Btuh
TOTAL HEAT GAIN	28708 Btuh



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EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 5-5-21

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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Spec House

Project Title:
Bristol Model

Lake City, FL 32024

5/5/2021

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	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded			
1	2 NFRC	0.22, 0.33	No	No	N		17.8f	1.3ft	18.0	0.0	18.0	11	11	196	Btuh	
2	2 NFRC	0.22, 0.33	No	No	N		9.5ft	1.3ft	144.0	0.0	144.0	11	11	1569	Btuh	
3	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	54.0	0.0	54.0	11	11	588	Btuh	
4	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	36.0	0.0	36.0	11	27	989	Btuh	
5	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	16.0	0.0	16.0	11	27	440	Btuh	
6	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	4.0	0.0	4.0	11	27	110	Btuh	
7	2 NFRC	0.22, 0.33	No	No	S		12.2f	1.3ft	13.3	13.3	0.0	11	13	145	Btuh	
8	2 NFRC	0.22, 0.33	No	No	S		7.5ft	1.3ft	36.0	36.0	0.0	11	13	392	Btuh	
9	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	36.0	36.0	0.0	11	13	392	Btuh	
10	2 NFRC	0.22, 0.33	No	No	E		1.5ft	1.3ft	36.0	0.0	36.0	11	27	989	Btuh	
	Window Total								393 (sqft)							5812 Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load			
								Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.6	105.0		2.2		231 Btuh			
2	Frame - Wood - Ext						0.09	13.0/0.6	75.0		2.2		165 Btuh			
3	Frame - Wood - Ext						0.09	13.0/0.6	120.0		2.2		264 Btuh			
4	Frame - Wood - Ext						0.09	13.0/0.6	147.0		2.2		323 Btuh			
5	Frame - Wood - Ext						0.09	13.0/0.6	78.0		2.2		171 Btuh			
6	Frame - Wood - Ext						0.09	13.0/0.6	298.0		2.2		655 Btuh			
7	Frame - Wood - Ext						0.09	13.0/0.6	41.7		2.2		92 Btuh			
8	Frame - Wood - Ext						0.09	13.0/0.6	42.0		2.2		92 Btuh			
9	Frame - Wood - Ext						0.09	13.0/0.6	87.0		2.2		191 Btuh			
10	Frame - Wood - Ext						0.09	13.0/0.6	9.0		2.2		20 Btuh			
11	Frame - Wood - Ext						0.09	13.0/0.6	87.0		2.2		191 Btuh			
12	Frame - Wood - Ext						0.09	13.0/0.6	267.0		2.2		587 Btuh			
13	Frame - Wood - Adj						0.09	13.0/0.0	313.0		1.7		528 Btuh			
	Wall Total								1670 (sqft)						3510 Btuh	
Doors	Type								Area (sqft)		HTM		Load			
1	Insulated - Exterior								20.0		12.0		240 Btuh			
2	Insulated - Garage								20.0		12.0		240 Btuh			
	Door Total								40 (sqft)						480 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load			
1	Vented Attic/Light/Shingle						0.032	30.0/0.0	3119.0		1.40		4371 Btuh			
	Ceiling Total								3119 (sqft)						4371 Btuh	
Floors	Type								R-Value		Size		HTM		Load	
1	Slab On Grade								0.0		3119 (ft-perimeter)		0.0		0 Btuh	
	Floor Total								3119.0 (sqft)						0 Btuh	
	Envelope Subtotal:													14173 Btuh		



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Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House

Project Title:
Bristol Model

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

5/5/2021

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 24952	Wall Ratio 1	CFM= 48.9	Load 1017 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
					Sensible Envelope Load:	19970 Btuh
Duct load	Extremely sealed, Supply(R8.0-Attic), Return(R8.0-Attic) (DGM of 0.251)					5021 Btuh
					Sensible Load All Zones	24991 Btuh



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Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House

Project Title:
Bristol Model

Climate: FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

5/5/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	19970 Btuh
	Sensible Duct Load	5021 Btuh
	Total Sensible Zone Loads	24991 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24991 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1688 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	830 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3718 Btuh
	TOTAL GAIN	28708 Btuh

EQUIPMENT

1. Central Unit	#	60000 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)



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System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Spec House

Project Title:
Bristol Model
Building Type: User

Lake City, FL 32024

5/5/2021

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 0.22	Vinyl	0.33	N	18.0		13.2	238 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	144.0		13.2	1901 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	54.0		13.2	713 Btuh
4	2, NFRC 0.22	Vinyl	0.33	E	36.0		13.2	475 Btuh
5	2, NFRC 0.22	Vinyl	0.33	E	16.0		13.2	211 Btuh
6	2, NFRC 0.22	Vinyl	0.33	E	4.0		13.2	53 Btuh
7	2, NFRC 0.22	Vinyl	0.33	S	13.3		13.2	176 Btuh
8	2, NFRC 0.22	Vinyl	0.33	S	36.0		13.2	475 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	36.0		13.2	475 Btuh
10	2, NFRC 0.22	Vinyl	0.33	E	36.0		13.2	475 Btuh
Window Total					393.3(sqft)			5192 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	105		3.45	362 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	75		3.45	259 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	120		3.45	414 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	147		3.45	507 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	78		3.45	269 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	298		3.45	1028 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	42		3.45	144 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	42		3.45	145 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	87		3.45	300 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	9		3.45	31 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	87		3.45	300 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	267		3.45	921 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	313		3.55	1111 Btuh
Wall Total					1670(sqft)			5790 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					40(sqft)			640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	3119		1.3	3973 Btuh
Ceiling Total					3119(sqft)			3973Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	235.0 ft(perim.)		47.2	11092 Btuh
Floor Total					3119 sqft			11092 Btuh
Envelope Subtotal:								26687 Btuh



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Manual J Winter Calculations

Residential Load - Component Details (continued)

Spec House

Lake City, FL 32024

Project Title:
Bristol Model
Building Type: User

5/5/2021

Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 24952	Wall Ratio 1.00	CFM= 65.2	2855 Btuh
Duct load	Extremely sealed, R8.0, Supply(Att), Return(Att) (DLM of 0.162)					4790 Btuh
All Zones	Sensible Subtotal All Zones					34331 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	34331 Btuh 0 Btuh 34331 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	60000 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)



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