

Residential System Sizing Calculation

Summary

Project Title:
McNutt Residence

, FL

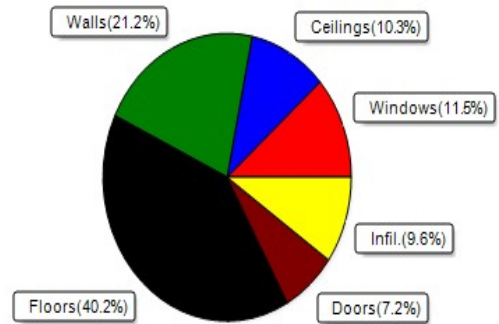
12/21/2020

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	25831 Btuh	Total cooling load calculation	20671 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	139.4 36000	Sensible (SHR = 0.85)	169.9 30600
Heat Pump + Auxiliary(0.0kW)	139.4 36000	Latent	203.1 5400
		Total (Electric Heat Pump)	174.2 36000

WINTER CALCULATIONS

Winter Heating Load (for 2083 sqft)

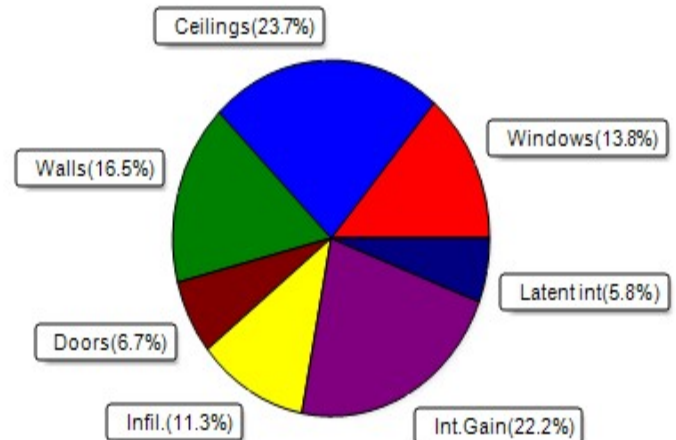
Load component		Load	
Window total	226 sqft	2983	Btuh
Wall total	1591 sqft	5485	Btuh
Door total	116 sqft	1856	Btuh
Ceiling total	2083 sqft	2654	Btuh
Floor total	2083 sqft	10384	Btuh
Infiltration	56 cfm	2469	Btuh
Duct loss		0	Btuh
Subtotal		25831	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		25831	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2083 sqft)

Load component		Load	
Window total	226 sqft	2844	Btuh
Wall total	1591 sqft	3407	Btuh
Door total	116 sqft	1392	Btuh
Ceiling total	2083 sqft	4909	Btuh
Floor total		0	Btuh
Infiltration	42 cfm	879	Btuh
Internal gain		4580	Btuh
Duct gain		0	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		18012	Btuh
Latent gain(ducts)		0	Btuh
Latent gain(infiltration)		1459	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		2659	Btuh
TOTAL HEAT GAIN		20671	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-20-20

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
McNutt Residence

, FL

12/21/2020

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		10.5f	1.3ft	30.0	0.0	30.0	11	11	327	Btuh	
2	2 NFRC	0.22, 0.33	No	No	N		10.5f	1.3ft	50.0	0.0	50.0	11	11	545	Btuh	
3	2 NFRC	0.22, 0.33	No	No	N		10.5f	1.3ft	9.0	0.0	9.0	11	11	98	Btuh	
4	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	15.0	0.0	15.0	11	11	163	Btuh	
5	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	15.0	0.0	15.0	11	11	163	Btuh	
6	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	3.0	0.0	3.0	11	11	33	Btuh	
7	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	9.0	0.0	9.0	11	11	98	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		7.5ft	1.3ft	36.0	36.0	0.0	11	13	392	Btuh	
10	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	3.0	0.0	3.0	11	27	82	Btuh	
11	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	20.0	0.0	20.0	11	27	550	Btuh	
	Window Total									226 (sqft)					2844 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load			
								Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.6	190.0		2.2		418 Btuh			
2	Frame - Wood - Ext						0.09	13.0/0.6	183.0		2.2		402 Btuh			
3	Frame - Wood - Ext						0.09	13.0/0.6	342.0		2.2		752 Btuh			
4	Frame - Wood - Ext						0.09	13.0/0.6	18.0		2.2		40 Btuh			
5	Frame - Wood - Ext						0.09	13.0/0.6	39.0		2.2		86 Btuh			
6	Frame - Wood - Ext						0.09	13.0/0.6	93.7		2.2		206 Btuh			
7	Frame - Wood - Ext						0.09	13.0/0.6	46.7		2.2		103 Btuh			
8	Frame - Wood - Ext						0.09	13.0/0.6	37.3		2.2		82 Btuh			
9	Frame - Wood - Ext						0.09	13.0/0.6	42.0		2.2		92 Btuh			
10	Frame - Wood - Ext						0.09	13.0/0.6	127.5		2.2		280 Btuh			
11	Frame - Wood - Ext						0.09	13.0/0.6	73.5		2.2		162 Btuh			
12	Frame - Wood - Ext						0.09	13.0/0.6	18.0		2.2		40 Btuh			
13	Frame - Wood - Ext						0.09	13.0/0.6	76.0		2.2		167 Btuh			
14	Frame - Wood - Ext						0.09	13.0/0.6	18.0		2.2		40 Btuh			
15	Frame - Wood - Ext						0.09	13.0/0.6	126.0		2.2		277 Btuh			
16	Frame - Wood - Adj						0.09	13.0/0.6	160.0		1.6		262 Btuh			
	Wall Total									1591 (sqft)					3407 Btuh	
Doors	Type								Area (sqft)		HTM		Load			
1	Insulated - Exterior								48.0		12.0		576 Btuh			
2	Insulated - Exterior								48.0		12.0		576 Btuh			
3	Insulated - Garage								20.0		12.0		240 Btuh			
	Door Total									116 (sqft)					1392 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load			
1	Unvented Attic/Light/Shingle						0.032	30.0/0.0	2083.0		2.36		4909 Btuh			
	Ceiling Total									2083 (sqft)					4909 Btuh	
Floors	Type						R-Value		Size		HTM		Load			
1	Slab On Grade						0.0		2083 (ft-perimeter)		0.0		0 Btuh			
	Floor Total									2083.0 (sqft)					0 Btuh	
	Envelope Subtotal:													12553 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
McNutt Residence

, FL

12/21/2020

Infiltration	Type Natural	Average ACH 0.14	Volume(cuft) 18747	Wall Ratio 1	CFM= 42.3	Load 879 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3200	Load 4580 Btuh
	Sensible Envelope Load:					18012 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					18012 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
McNutt Residence

, FL

12/21/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	18012 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	18012 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18012 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1459 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2659 Btuh
	TOTAL GAIN	20671 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 - Whole House Component Details

, FL

Project Title:
McNutt Residence
Building Type: User

12/21/2020

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	30.0		13.2	396 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	50.0		13.2	660 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	9.0		13.2	119 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
5	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
6	2, NFRC 0.22	Vinyl	0.33	N	3.0		13.2	40 Btuh
7	2, NFRC 0.22	Vinyl	0.33	N	9.0		13.2	119 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	W	3.0		13.2	40 Btuh
11	2, NFRC 0.22	Vinyl	0.33	W	20.0		13.2	264 Btuh
	Window Total				226.0(sqft)			2983 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	190		3.45	655 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	183		3.45	631 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	342		3.45	1179 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	18		3.45	62 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	39		3.45	134 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	94		3.45	323 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	47		3.45	161 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	37		3.45	129 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	42		3.45	145 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	128		3.45	440 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	74		3.45	253 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	18		3.45	62 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	76		3.45	262 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	18		3.45	62 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	126		3.45	435 Btuh
16	Frame - Wood	- Adj	(0.086)	13.0/0.6	160		3.45	552 Btuh
	Wall Total				1591(sqft)			5485 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
2	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
3	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
	Door Total				116(sqft)			1856Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/L/Shing		(0.032)	30.0/0.0	2083		1.3	2654 Btuh
	Ceiling Total				2083(sqft)			2654Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	220.0 ft(perim.)		47.2	10384 Btuh
	Floor Total				2083 sqft			10384 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
McNutt Residence
Building Type: User

12/21/2020

	Envelope Subtotal:						23362 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.18	18747	1.00	56.4	2469 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)						0 Btuh
All Zones	Sensible Subtotal All Zones						25831 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	25831 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	25831 Btuh

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