

Manual J Summer Calculations

Residential Load - Component Details (continued)

Richard Evheverri

Project Title:
Echeverri Project

Climate:FL_GAINESVILLE_REGIONAL_A

Lake City, FL 32024

1/17/2024

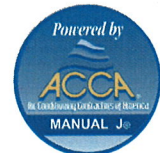
WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13614 Btuh
	Sensible Duct Load	10962 Btuh
	Total Sensible Zone Loads	24576 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	24576 Btuh
	Latent infiltration gain (for 47 gr. humidity difference)	2489 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	2157 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	2400 Btuh
	Latent total gain	7846 Btuh
	TOTAL GAIN	32422 Btuh

EQUIPMENT

1. Central Unit	#	60000 Btuh
2. Central Unit	#	24000 Btuh

*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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Infiltration	Type Natural	Average ACH 0.13	Volume(cuft) 36540	Wall Ratio 1	CFM= 78.3	Load 1456 Btuh
Internal gain		Occupants 4	Btuh/occupant X 230	Appliance +	1200	Load 2120 Btuh
					Sensible Envelope Load:	13614 Btuh
Duct load					(DGMs vary for Mixed ducts)	10962 Btuh
					Sensible Load All Zones	24576 Btuh

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Richard Evheverri

Project Title:
Echeverri Project

Lake City, FL 32024

1/17/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 47gr.

Temperature Difference: 17.0F(MJ8 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	0.21, 0.33	B-L	No	N		18.0ft	2.0ft	72.0	0.0	72.0	8	8	553	Btuh	
2	2 NFRC	0.21, 0.33	B-L	No	N		1.5ft	2.0ft	36.0	0.0	36.0	8	8	276	Btuh	
3	2 NFRC	0.21, 0.33	B-L	No	N		1.5ft	2.0ft	8.0	0.0	8.0	8	8	61	Btuh	
4	2 NFRC	0.21, 0.33	B-L	No	E		1.5ft	2.0ft	30.0	0.0	30.0	8	19	565	Btuh	
5	2 NFRC	0.21, 0.33	B-L	No	S		1.5ft	2.0ft	10.0	10.0	0.0	8	9	77	Btuh	
6	2 NFRC	0.21, 0.33	B-L	No	S		1.5ft	2.0ft	36.0	36.0	0.0	8	9	276	Btuh	
7	2 NFRC	0.21, 0.33	B-L	No	S		8.0ft	2.0ft	36.0	36.0	0.0	8	9	276	Btuh	
8	2 NFRC	0.21, 0.33	B-L	No	S		8.0ft	2.0ft	54.0	54.0	0.0	8	9	414	Btuh	
9	2 NFRC	0.21, 0.33	B-L	No	W		7.6ft	2.0ft	36.0	25.8	10.2	8	19	390	Btuh	
10	2 NFRC	0.21, 0.33	B-L	No	W		1.5ft	2.0ft	16.0	0.0	16.0	8	19	301	Btuh	
	Excursion													494	Btuh	
	Window Total								334 (sqft)					3684 Btuh		
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load			
							Cav/Sheath									
1	Frame - Wood - Ext						0.07	19.0/1.0		199.5		1.4		286	Btuh	
2	Frame - Wood - Ext						0.07	19.0/1.0		267.7		1.4		384	Btuh	
3	Frame - Wood - Ext						0.07	19.0/1.0		343.3		1.4		493	Btuh	
4	Frame - Wood - Ext						0.07	19.0/1.0		271.5		1.4		390	Btuh	
5	Frame - Wood - Ext						0.07	19.0/1.0		202.3		1.4		290	Btuh	
6	Frame - Wood - Int						0.08	19.0/0.0		900.0		0.0		0	Btuh	
7	Frame - Wood - Adj						0.07	19.0/1.0		236.8		1.3		298	Btuh	
8	Frame - Wood - Ext						0.07	19.0/1.0		212.7		1.4		305	Btuh	
9	Frame - Wood - Ext						0.07	19.0/1.0		339.0		1.4		487	Btuh	
10	Frame - Wood - Ext						0.07	19.0/1.0		89.0		1.4		128	Btuh	
	Wall Total								3062 (sqft)					3062 Btuh		
Doors	Type							Area (sqft)			HTM		Load			
1	Insulated - Exterior								96.0			12.9		1236	Btuh	
2	Insulated - Exterior								37.5			12.9		483	Btuh	
3	Insulated - Garage								24.0			12.9		309	Btuh	
	Door Total								158 (sqft)					2029 Btuh		
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load			
1	Vented Attic/DarkShingle						0.014	30.0/38.0		2590.0		0.35		896	Btuh	
2	Vented Attic/DarkShingle						0.014	30.0/38.0		1064.0		0.35		368	Btuh	
	Ceiling Total								3654 (sqft)					1264 Btuh		
Floors	Type						R-Value	Size			HTM		Load			
1	Slab On Grade								0.0			2590 (ft-perimeter)		0.0	0	Btuh
2	Slab On Grade								0.0			1064 (ft-perimeter)		0.0	0	Btuh
	Floor Total								3654.0 (sqft)					0 Btuh		
	Envelope Subtotal:													10038 Btuh		

Manual J Winter Calculations

Residential Load - Component Details (continued)

Richard Evheverri
Lake City, FL 32024

Project Title:
Echeverri Project
Building Type: User

1/17/2024

Infiltration	Type Natural	Wholehouse ACH 0.17	Volume(cuft) 36540	Wall Ratio 1.00	CFM= 104.4	4226 Btuh
Duct load	(DLM of Mixed ducts)					8325 Btuh
All Zones	Sensible Subtotal All Zones					41010 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	41010 Btuh 0 Btuh 41010 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	60000 Btuh
2. Electric Heat Pump	#	24000 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)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Richard Evheverri
Lake City, FL 32024

Project Title:
Echeverri Project
Building Type: User

1/17/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.21	Metal	0.33	N	72.0		12.2	879 Btuh
2	2, NFRC 0.21	Metal	0.33	N	36.0		12.2	440 Btuh
3	2, NFRC 0.21	Metal	0.33	N	8.0		12.2	98 Btuh
4	2, NFRC 0.21	Metal	0.33	E	30.0		12.2	366 Btuh
5	2, NFRC 0.21	Metal	0.33	S	10.0		12.2	122 Btuh
6	2, NFRC 0.21	Metal	0.33	S	36.0		12.2	440 Btuh
7	2, NFRC 0.21	Metal	0.33	S	36.0		12.2	440 Btuh
8	2, NFRC 0.21	Metal	0.33	S	54.0		12.2	659 Btuh
9	2, NFRC 0.21	Metal	0.33	W	36.0		12.2	440 Btuh
10	2, NFRC 0.21	Metal	0.33	W	16.0		12.2	195 Btuh
Window Total					334.0(sqft)			4078 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.074)	19.0/1.0	200		2.74	546 Btuh
2	Frame - Wood	- Ext	(0.074)	19.0/1.0	268		2.74	733 Btuh
3	Frame - Wood	- Ext	(0.074)	19.0/1.0	343		2.74	940 Btuh
4	Frame - Wood	- Ext	(0.074)	19.0/1.0	272		2.74	743 Btuh
5	Frame - Wood	- Ext	(0.074)	19.0/1.0	202		2.74	554 Btuh
6	Frame - Wood	- Int	(0.077)	19.0/0.0	900		0.00	0 Btuh
7	Frame - Wood	- Adj	(0.074)	19.0/1.0	237		2.74	649 Btuh
8	Frame - Wood	- Ext	(0.074)	19.0/1.0	213		2.74	582 Btuh
9	Frame - Wood	- Ext	(0.074)	19.0/1.0	339		2.74	928 Btuh
10	Frame - Wood	- Ext	(0.074)	19.0/1.0	89		2.74	244 Btuh
Wall Total					3062(sqft)			5920 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		96		17.0	1634 Btuh
2	Insulated - Exterior, n		(0.460)		38		17.0	638 Btuh
3	Insulated - Garage, n		(0.460)		24		17.0	408 Btuh
Door Total					158(sqft)			2681 Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/D/Shing		(0.014)	30.0/38.0	2590		0.53	1381 Btuh
2	Flat ceil/D/Shing		(0.014)	30.0/38.0	1064		0.53	567 Btuh
Ceiling Total					3654(sqft)			1948 Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	205.5 ft(perim.)		43.7	8972 Btuh
2	Slab On Grade		(1.180)	0.0	111.3 ft(perim.)		43.7	4859 Btuh
Floor Total					3654 sqft			13831 Btuh
Envelope Subtotal:								28458 Btuh

Residential System Sizing Calculation

Summary

Richard Evheverri

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Lake City, FL 32024

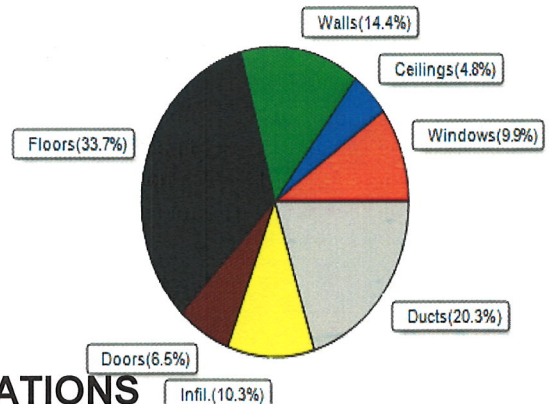
1/17/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(30) Altitude(164 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (76F) Humidity difference(47gr.)					
Winter design temperature(MJ8 99%)	33	F	Summer design temperature(MJ8 99%)	92	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	17	F
Total heating load calculation			41010	Btuh	
Total cooling load calculation			32422	Btuh	
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	204.8	84000	Sensible (SHR = 0.75)	256.3	63000
Heat Pump + Auxiliary(0.0kW)	204.8	84000	Latent	267.6	21000
			Total (Electric Heat Pump)	259.1	84000

WINTER CALCULATIONS

Winter Heating Load (for 3654 sqft)

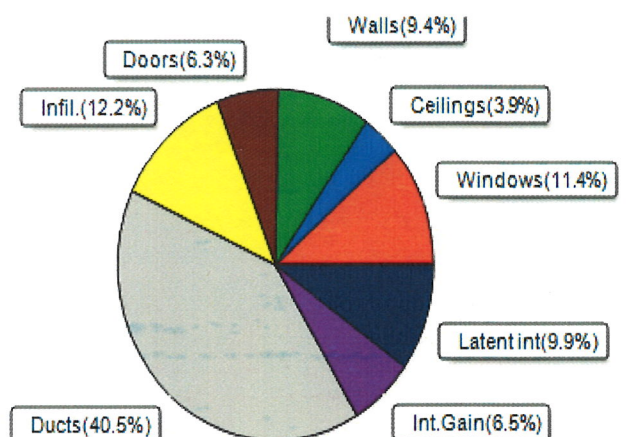
Load component		Load	
Window total	334 sqft	4078	Btuh
Wall total	3062 sqft	5920	Btuh
Door total	158 sqft	2681	Btuh
Ceiling total	3654 sqft	1948	Btuh
Floor total	See detail report	13831	Btuh
Infiltration	104 cfm	4226	Btuh
Duct loss		8325	Btuh
Subtotal		41010	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
TOTAL HEAT LOSS		41010	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3654 sqft)

Load component		Load	
Window total	334 sqft	3684	Btuh
Wall total	3062 sqft	3062	Btuh
Door total	158 sqft	2029	Btuh
Ceiling total	3654 sqft	1264	Btuh
Floor total		0	Btuh
Infiltration	78 cfm	1456	Btuh
Internal gain		2120	Btuh
Duct gain		10962	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		24576	Btuh
Latent gain(ducts)		2157	Btuh
Latent gain(infiltration)		2489	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		3200	Btuh
Total latent gain		7846	Btuh
TOTAL HEAT GAIN		32422	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: *[Signature]*

DATE: *1/19/24*

EnergyGauge® / USRCZB v8.1.00