

Residential System Sizing Calculation

Summary

Project Title:
Leech Residence

, FL

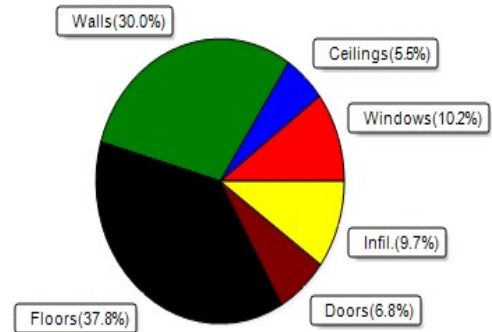
1/26/2023

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	44638 Btuh	Total cooling load calculation	28137 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	161.3 72000	Sensible (SHR = 0.85)	255.2 61200
Heat Pump + Auxiliary(0.0kW)	161.3 72000	Latent	259.9 10800
		Total (Electric Heat Pump)	255.9 72000

WINTER CALCULATIONS

Winter Heating Load (for 3480 sqft)

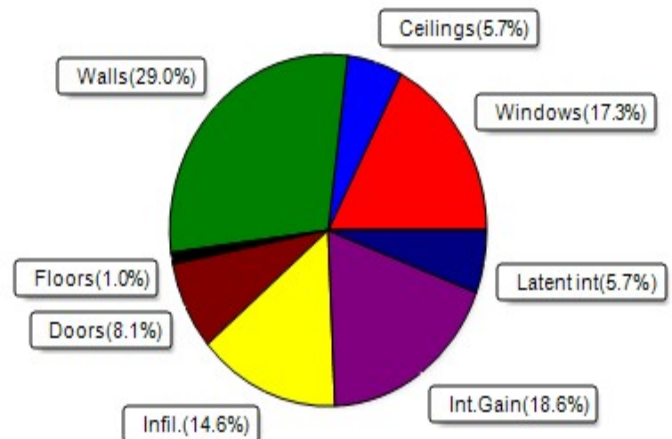
Load component	Load
Window total 436 sqft	4536 Btuh
Wall total 3774 sqft	13400 Btuh
Door total 189 sqft	3029 Btuh
Ceiling total 3480 sqft	2464 Btuh
Floor total See detail report	16886 Btuh
Infiltration 99 cfm	4323 Btuh
Duct loss	0 Btuh
Subtotal	44638 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	44638 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3480 sqft)

Load component	Load
Window total 436 sqft	4873 Btuh
Wall total 3774 sqft	8162 Btuh
Door total 189 sqft	2272 Btuh
Ceiling total 3480 sqft	1601 Btuh
Floor total	293 Btuh
Infiltration 74 cfm	1540 Btuh
Internal gain	5240 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	23981 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	2556 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	4156 Btuh
TOTAL HEAT GAIN	28137 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

1-26-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Leech Residence

, FL

1/26/2023

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	0.20, 0.26	No	No	N	1.5ft	2.3ft	36.0	0.0	36.0	9	9	329	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	15.5f	2.3ft	112.0	0.0	112.0	9	9	1024	Btuh
3	2 NFRC	0.20, 0.26	No	No	W	8.5ft	2.3ft	12.0	12.0	0.0	9	24	110	Btuh
4	2 NFRC	0.20, 0.26	B-L	No	N	1.5ft	2.3ft	48.0	0.0	48.0	7	7	332	Btuh
5	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	24.0	0.0	24.0	9	9	220	Btuh
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	9	11	274	Btuh
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	35.0	30.9	4.1	9	11	326	Btuh
8	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	35.0	30.9	4.1	9	11	326	Btuh
9	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	9	9	274	Btuh
10	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	7.1	0.0	7.1	9	24	172	Btuh
11	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh
12	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	15.0	0.0	15.0	9	9	137	Btuh
13	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	16.0	0.0	16.0	9	24	388	Btuh
	Excursion												87	Btuh
	Window Total							436 (sqft)					4873 Btuh	

Walls	Type	U-Value	R-Value	Area(sqft)	HTM	Load
			Cav/Sheath			
1	Frame - Wood - Ext	0.09	13.0/0.0	156.0	2.3	353 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	166.0	2.3	376 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	182.0	2.3	412 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	142.0	2.3	321 Btuh
5	Frame - Wood - Ext	0.09	13.0/0.0	32.0	2.3	72 Btuh
6	Frame - Wood - Ext	0.09	13.0/0.0	190.0	2.3	430 Btuh
7	Frame - Wood - Ext	0.09	13.0/0.0	136.0	2.3	308 Btuh
8	Frame - Wood - Adj	0.09	13.0/0.0	240.0	1.7	405 Btuh
9	Frame - Wood - Ext	0.09	13.0/0.0	530.7	2.3	1201 Btuh
10	Frame - Wood - Ext	0.09	13.0/0.0	135.0	2.3	306 Btuh
11	Frame - Wood - Ext	0.09	13.0/0.0	66.0	2.3	149 Btuh
12	Frame - Wood - Ext	0.09	13.0/0.0	109.0	2.3	247 Btuh
13	Frame - Wood - Ext	0.09	13.0/0.0	54.0	2.3	122 Btuh
14	Frame - Wood - Ext	0.09	13.0/0.0	48.0	2.3	109 Btuh
15	Frame - Wood - Ext	0.09	13.0/0.0	54.0	2.3	122 Btuh
16	Frame - Wood - Ext	0.09	13.0/0.0	109.0	2.3	247 Btuh
17	Frame - Wood - Ext	0.09	13.0/0.0	44.0	2.3	100 Btuh
18	Frame - Wood - Ext	0.09	13.0/0.0	129.5	2.3	293 Btuh
19	Frame - Wood - Ext	0.09	13.0/0.0	344.9	2.3	781 Btuh
20	Frame - Wood - Ext	0.09	13.0/0.0	22.0	2.3	50 Btuh
21	Frame - Wood - Ext	0.09	13.0/0.0	194.0	2.3	439 Btuh
22	Frame - Wood - Adj	0.09	13.0/0.0	210.0	1.7	354 Btuh
23	Frame - Wood - Ext	0.09	13.0/0.0	60.0	2.3	136 Btuh
24	Frame - Wood - Ext	0.09	13.0/0.0	43.7	2.3	99 Btuh
25	Frame - Wood - Ext	0.09	13.0/0.0	60.0	2.3	136 Btuh
26	Frame - Wood - Ext	0.09	13.0/0.0	106.7	2.3	241 Btuh
27	Frame - Wood - Adj	0.09	13.0/0.0	210.0	1.7	354 Btuh
	Wall Total			3774 (sqft)		8162 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Leech Residence

, FL

1/26/2023

Doors	Type			Area (sqft)	HTM	Load	
	1	Insulated - Exterior		48.0	12.0	576 Btuh	
	2	Insulated - Exterior		24.0	12.0	288 Btuh	
	3	Wood - Garage		24.0	12.0	288 Btuh	
	4	Insulated - Exterior		21.3	12.0	256 Btuh	
	5	Insulated - Exterior		24.0	12.0	288 Btuh	
	6	Insulated - Exterior		48.0	12.0	576 Btuh	
	Door Total			189 (sqft)		2272 Btuh	
Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load	
	1	SnglAsmb no airsp/DarkShingle	0.018	30.0/30.0	2896.0	0.46	1333 Btuh
	2	SnglAsmb no airsp/DarkShingle	0.018	30.0/30.0	584.0	0.46	269 Btuh
	Ceiling Total			3480 (sqft)		1601 Btuh	
Floors	Type		R-Value	Size	HTM	Load	
	1	Slab On Grade	0.0	2896 (ft-perimeter)	0.0	0 Btuh	
	2	Raised Wood - Adj	30.0	584 (sqft)	0.5	293 Btuh	
	Floor Total			3480.0 (sqft)		293 Btuh	
	Envelope Subtotal:					17201 Btuh	
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural	0.11	39424	1	73.9	1540 Btuh	
Internal gain		Occupants	Btuh/occupant		Appliance	Load	
		8	X 230	+	3400	5240 Btuh	
	Sensible Envelope Load:					23981 Btuh	
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh	
	Sensible Load All Zones					23981 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Leech Residence

, FL

1/26/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	23981 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	23981 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23981 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2556 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4156 Btuh
	TOTAL GAIN	28137 Btuh

EQUIPMENT

1. Central Unit	#	48000 Btuh
2. PTAC and Room 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)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Leech Residence
Building Type: User

, FL

1/26/2023

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 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 0.20	Vinyl	0.26	N	36.0		10.4	374 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	112.0		10.4	1165 Btuh
3	2, NFRC 0.20	Vinyl	0.26	W	12.0		10.4	125 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	48.0		10.4	499 Btuh
5	2, NFRC 0.20	Vinyl	0.26	N	24.0		10.4	250 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	35.0		10.4	364 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	35.0		10.4	364 Btuh
9	2, NFRC 0.20	Vinyl	0.26	N	30.0		10.4	312 Btuh
10	2, NFRC 0.20	Vinyl	0.26	W	7.1		10.4	74 Btuh
11	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
12	2, NFRC 0.20	Vinyl	0.26	N	15.0		10.4	156 Btuh
13	2, NFRC 0.20	Vinyl	0.26	E	16.0		10.4	166 Btuh
Window Total					436.1(sqft)			4536 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	156		3.55	554 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	166		3.55	589 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	182		3.55	646 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	142		3.55	504 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	32		3.55	114 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	190		3.55	675 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	136		3.55	483 Btuh
8	Frame - Wood	- Adj	(0.089)	13.0/0.0	240		3.55	852 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	531		3.55	1884 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	135		3.55	479 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	66		3.55	234 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	109		3.55	387 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.55	170 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	109		3.55	387 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	44		3.55	156 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	130		3.55	460 Btuh
19	Frame - Wood	- Ext	(0.089)	13.0/0.0	345		3.55	1224 Btuh
20	Frame - Wood	- Ext	(0.089)	13.0/0.0	22		3.55	78 Btuh
21	Frame - Wood	- Ext	(0.089)	13.0/0.0	194		3.55	689 Btuh
22	Frame - Wood	- Adj	(0.089)	13.0/0.0	210		3.55	746 Btuh
23	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
24	Frame - Wood	- Ext	(0.089)	13.0/0.0	44		3.55	155 Btuh
25	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
26	Frame - Wood	- Ext	(0.089)	13.0/0.0	107		3.55	379 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Leech Residence
Building Type: User

1/26/2023

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
27	Frame - Wood	- Adj	(0.089)	13.0/0.0	210	3.55	746 Btuh
	Wall Total				3774(sqft)		13400 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)		24	16.0	384 Btuh
3	Wood - Garage,	n	(0.400)		24	16.0	384 Btuh
4	Insulated - Exterior,	n	(0.400)		21	16.0	341 Btuh
5	Insulated - Exterior,	n	(0.400)		24	16.0	384 Btuh
6	Insulated - Exterior,	n	(0.400)		48	16.0	768 Btuh
	Door Total				189(sqft)		3029Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Single as/D/Shing		(0.018)	30.0/30.0	2896	0.71	2050 Btuh
2	Single as/D/Shing		(0.018)	30.0/30.0	584	0.71	413 Btuh
	Ceiling Total				3480(sqft)		2464Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	340.0 ft(perim.)	47.2	16048 Btuh
2	Raised Wood - Adj		(0.036)	30.0	584.0 sqft	1.4	838 Btuh
	Floor Total				3480 sqft		16886 Btuh
	Envelope Subtotal:						40315 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.15	39424	1.00	98.6	4323 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)						0 Btuh
All Zones	Sensible Subtotal All Zones						44638 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	44638 Btuh 0 Btuh 44638 Btuh
---------------------------	---	-----------------------	------------------------------------

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Leech Residence
Building Type: User

1/26/2023

EQUIPMENT

1. Electric Heat Pump	#	48000 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