

Residential System Sizing Calculation

Summary

Chris & Teresa Wilkey
SW Dyal Ave
Lake City, FL 32024

Project Title:
Wilkey Residence

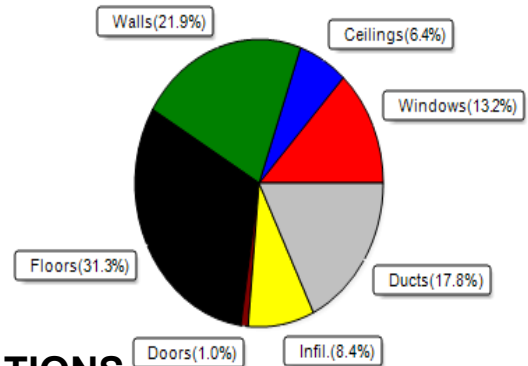
5/9/2022

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	38292 Btuh	Total cooling load calculation	28912 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 38292	Sensible (SHR = 0.70)	85.2 20209
Heat Pump + Auxiliary(0.0kW)	100.0 38292	Latent	166.6 8661
		Total (Electric Heat Pump)	99.9 28870

WINTER CALCULATIONS

Winter Heating Load (for 2316 sqft)

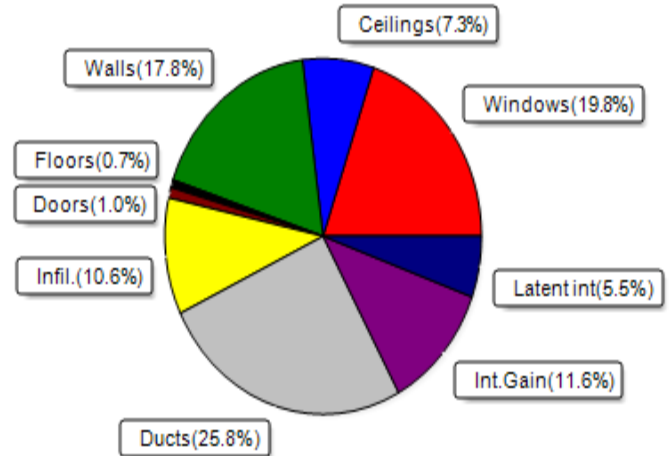
Load component	Load
Window total 350 sqft	5042 Btuh
Wall total 2363 sqft	8389 Btuh
Door total 20 sqft	368 Btuh
Ceiling total 2432 sqft	2469 Btuh
Floor total See detail report	11967 Btuh
Infiltration 74 cfm	3233 Btuh
Duct loss	6823 Btuh
Subtotal	38292 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	38292 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2316 sqft)

Load component	Load
Window total 350 sqft	5732 Btuh
Wall total 2363 sqft	5140 Btuh
Door total 20 sqft	276 Btuh
Ceiling total 2432 sqft	2099 Btuh
Floor total	207 Btuh
Infiltration 55 cfm	1152 Btuh
Internal gain	3340 Btuh
Duct gain	5767 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	23713 Btuh
Latent gain(ducts)	1687 Btuh
Latent gain(infiltration)	1911 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1600 Btuh
Total latent gain	5199 Btuh
TOTAL HEAT GAIN	28912 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 5 / 9 / 2022

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Chris & Teresa Wilkey
SW Dyal Ave
Lake City, FL 32024

Project Title:
Wilkey Residence
Building Type: User

5/9/2022

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 0.25	Vinyl	0.36	S	70.0		14.4	1008 Btuh
2	2, NFRC 0.25	TIM	0.36	S	42.7		14.4	614 Btuh
3	2, NFRC 0.25	Vinyl	0.36	E	6.0		14.4	86 Btuh
4	2, NFRC 0.25	Vinyl	0.36	E	20.0		14.4	288 Btuh
5	2, NFRC 0.25	Vinyl	0.36	N	12.5		14.4	180 Btuh
6	2, NFRC 0.25	Vinyl	0.36	N	30.0		14.4	432 Btuh
7	2, NFRC 0.25	Vinyl	0.36	W	30.0		14.4	432 Btuh
8	2, NFRC 0.25	TIM	0.36	W	24.0		14.4	346 Btuh
9	2, NFRC 0.25	Vinyl	0.36	N	15.0		14.4	216 Btuh
10	2, NFRC 0.25	TIM	0.36	N	48.0		14.4	691 Btuh
11	2, NFRC 0.25	Vinyl	0.36	N	16.0		14.4	230 Btuh
12	2, NFRC 0.25	Vinyl	0.36	W	6.0		14.4	86 Btuh
13	2, NFRC 0.25	Vinyl	0.36	N	15.0		14.4	216 Btuh
14	2, NFRC 0.25	Vinyl	0.36	E	15.0		14.4	216 Btuh
Window Total					350.2(sqft)			5042 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	178		3.55	633 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	45		3.55	160 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	87		3.55	309 Btuh
4	Frame - Wood	- Adj	(0.089)	13.0/0.0	155		3.55	549 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	205		3.55	728 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	213		3.55	754 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	183		3.55	648 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	66		3.55	234 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	296		3.55	1051 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	276		3.55	980 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	70		3.55	250 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	178 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	57		3.55	204 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	65		3.55	231 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	71		3.55	253 Btuh
17	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	256 Btuh
18	Frame - Wood	- Ext	(0.089)	13.0/0.0	214		3.55	760 Btuh
Wall Total					2363(sqft)			8389 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Garage, n		(0.460)		20		18.4	368 Btuh
Door Total					20(sqft)			368Btuh
Ceilings	Type/Color/Surface	Ueff.	R-Value		Area	X	HTM=	Load
1	Vented Attic/L/Shing	(0.025)	38.0/0.0		2122		1.0	2154 Btuh
2	Vented Attic/L/Shing	(0.025)	38.0/0.0		310		1.0	315 Btuh
Ceiling Total					2432(sqft)			2469Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Chris & Teresa Wilkey
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Lake City, FL 32024

Project Title:
Wilkey Residence
Building Type: User

5/9/2022

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	241.0 ft(perim.)	47.2	11375 Btuh
2	Raised Wood - Adj	(0.050)	19.0	295.0 sqft	2.0	592 Btuh
	Floor Total			2316 sqft		11967 Btuh
	Envelope Subtotal:					28235 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=
	Natural		0.22	20549	1.00	73.8
						3233 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)				(DLM of 0.217)	6823 Btuh
All Zones	Sensible Subtotal All Zones					38292 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	38292 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	38292 Btuh

EQUIPMENT

1. Electric Heat Pump	#	38292 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Chris & Teresa Wilkey
SW Dyal Ave
Lake City, FL 32024

Project Title:
Wilkey Residence

5/9/2022

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	0.25, 0.36	No	No	S		9.5ft.	1.0ft.	70.0	70.0	0.0	12	14	847	Btuh
2	2 NFRC	0.25, 0.36	No	No	S		9.5ft.	1.0ft.	42.7	42.7	0.0	12	14	516	Btuh
3	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	6.0	0.5	5.5	12	31	176	Btuh
4	2 NFRC	0.25, 0.36	No	No	E		1.5ft.	1.0ft.	20.0	1.0	19.0	12	31	600	Btuh
5	2 NFRC	0.25, 0.36	No	No	N		1.0ft.	2.0ft.	12.5	0.0	12.5	12	12	151	Btuh
6	2 NFRC	0.25, 0.36	No	No	N		1.0ft.	2.0ft.	30.0	0.0	30.0	12	12	363	Btuh
7	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	30.0	1.5	28.5	12	31	901	Btuh
8	2 NFRC	0.25, 0.36	No	No	W		9.0ft.	1.0ft.	24.0	19.4	4.6	12	31	377	Btuh
9	2 NFRC	0.25, 0.36	No	No	N		11.5f	1.0ft.	15.0	0.0	15.0	12	12	181	Btuh
10	2 NFRC	0.25, 0.36	No	No	N		11.5f	1.0ft.	48.0	0.0	48.0	12	12	581	Btuh
11	2 NFRC	0.25, 0.36	No	No	N		11.5f	1.0ft.	16.0	0.0	16.0	12	12	194	Btuh
12	2 NFRC	0.25, 0.36	No	No	W		1.5ft.	1.0ft.	6.0	0.5	5.5	12	31	176	Btuh
13	2 NFRC	0.25, 0.36	No	No	N		1.0ft.	2.0ft.	15.0	0.0	15.0	12	12	181	Btuh
14	2 NFRC	0.25, 0.36	No	No	E		1.0ft.	0.5ft.	15.0	1.0	14.0	12	31	445	Btuh
	Excursion													41	Btuh
	Window Total								350 (sqft)					5732 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load		
								Cav/Sheath							
1	Frame - Wood - Ext						0.09	13.0/0.0	178.3		2.3		404 Btuh		
2	Frame - Wood - Ext						0.09	13.0/0.0	45.0		2.3		102 Btuh		
3	Frame - Wood - Ext						0.09	13.0/0.0	87.0		2.3		197 Btuh		
4	Frame - Wood - Adj						0.09	13.0/0.0	154.5		1.7		261 Btuh		
5	Frame - Wood - Adj						0.09	13.0/0.0	205.0		1.7		346 Btuh		
6	Frame - Wood - Ext						0.09	13.0/0.0	212.5		2.3		481 Btuh		
7	Frame - Wood - Ext						0.09	13.0/0.0	182.5		2.3		413 Btuh		
8	Frame - Wood - Ext						0.09	13.0/0.0	60.0		2.3		136 Btuh		
9	Frame - Wood - Ext						0.09	13.0/0.0	66.0		2.3		149 Btuh		
10	Frame - Wood - Ext						0.09	13.0/0.0	296.0		2.3		670 Btuh		
11	Frame - Wood - Ext						0.09	13.0/0.0	276.0		2.3		625 Btuh		
12	Frame - Wood - Ext						0.09	13.0/0.0	70.3		2.3		159 Btuh		
13	Frame - Wood - Ext						0.09	13.0/0.0	50.0		2.3		113 Btuh		
14	Frame - Wood - Ext						0.09	13.0/0.0	57.3		2.3		130 Btuh		
15	Frame - Wood - Ext						0.09	13.0/0.0	65.0		2.3		147 Btuh		
16	Frame - Wood - Ext						0.09	13.0/0.0	71.3		2.3		161 Btuh		
17	Frame - Wood - Ext						0.09	13.0/0.0	72.0		2.3		163 Btuh		
18	Frame - Wood - Ext						0.09	13.0/0.0	214.0		2.3		484 Btuh		
	Wall Total								2363 (sqft)					5140 Btuh	
Doors	Type								Area (sqft)		HTM		Load		
1	Insulated - Garage								20.0		13.8		276 Btuh		
	Door Total								20 (sqft)					276 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load		
1	Vented AtticLight/Shingle/RB						0.025	38.0/0.0	2122.0		0.86		1831 Btuh		
2	Vented AtticLight/Shingle/RB						0.025	38.0/0.0	310.0		0.86		268 Btuh		
	Ceiling Total								2432 (sqft)					2099 Btuh	
Floors	Type						R-Value		Size		HTM		Load		
1	Slab On Grade						0.0		2021 (ft-perimeter)		0.0		0 Btuh		
2	Raised Wood - Adj						19.0		295 (sqft)		0.7		207 Btuh		
	Floor Total								2316.0 (sqft)					207 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Chris & Teresa Wilkey
SW Dyal Ave
Lake City, FL 32024

Project Title: Wilkey Residence

Climate:FL_GAINESVILLE_REGIONAL_A

5/9/2022

	Envelope Subtotal:					13454 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.16	20549	1	55.4	1152 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		8	X 230	+	1500	3340 Btuh
	Sensible Envelope Load:					17946 Btuh
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.321)					5767 Btuh
	Sensible Load All Zones					23713 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Chris & Teresa Wilkey
SW Dyal Ave
Lake City, FL 32024

Project Title:
Wilkey Residence

Climate:FL_GAINESVILLE_REGIONAL_A

5/9/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17946 Btuh
	Sensible Duct Load	5767 Btuh
	Total Sensible Zone Loads	23713 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	23713 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1911 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1687 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	5199 Btuh
	TOTAL GAIN	28912 Btuh

EQUIPMENT

1. Central Unit	#	28870 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