

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

11351 SW HWY. 351
, FL

Project Title:
DRAWDY RESIDENCE

3/26/2021

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	0.25, 0.40	B-L	No	S		1.3ft	2.0ft	6.0	6.0	0.0	10	12	60	Btuh
2	2 NFRC	0.25, 0.40	B-L	No	S		9.3ft	1.0ft	50.0	50.0	0.0	10	12	503	Btuh
3	2 NFRC	0.25, 0.40	No	No	E		1.3ft	1.0ft	24.0	0.6	23.4	13	32	749	Btuh
4	2 NFRC	0.25, 0.40	B-L	No	N		1.3ft	1.0ft	30.0	0.0	30.0	10	10	302	Btuh
5	2 NFRC	0.25, 0.40	B-L	No	N		9.3ft	2.0ft	30.0	0.0	30.0	10	10	302	Btuh
6	2 NFRC	0.25, 0.40	B-L	No	N		9.3ft	2.0ft	15.0	0.0	15.0	10	10	151	Btuh
7	2 NFRC	0.25, 0.40	B-L	No	N		1.3ft	2.0ft	15.0	0.0	15.0	10	10	151	Btuh
	Window Total								170 (sqft)					2218 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load	
							Cav/Sheath								
1	Frame - Wood - Ext						0.09	13.0/0.0	58.1			2.3		132	Btuh
2	Frame - Wood - Ext						0.09	13.0/0.0	58.5			2.3		132	Btuh
3	Frame - Wood - Ext						0.09	13.0/0.0	181.0			2.3		410	Btuh
4	Frame - Wood - Ext						0.09	13.0/0.0	58.5			2.3		132	Btuh
5	Frame - Wood - Ext						0.09	13.0/0.0	76.5			2.3		173	Btuh
6	Frame - Wood - Ext						0.09	13.0/0.0	144.8			2.3		328	Btuh
7	Frame - Wood - Ext						0.09	13.0/0.0	189.2			2.3		428	Btuh
8	Frame - Wood - Ext						0.09	13.0/0.0	276.4			2.3		626	Btuh
9	Frame - Steel - Ext						0.11	13.0/0.0	177.0			2.9		507	Btuh
10	Frame - Wood - Ext						0.09	13.0/0.0	180.0			2.3		407	Btuh
11	Frame - Wood - Ext						0.09	13.0/0.0	78.0			2.3		177	Btuh
12	Frame - Wood - Ext						0.09	13.0/0.0	49.5			2.3		112	Btuh
13	Frame - Wood - Ext						0.09	13.0/0.0	64.0			2.3		145	Btuh
14	Frame - Wood - Ext						0.09	13.0/0.0	49.5			2.3		112	Btuh
15	Frame - Wood - Ext						0.09	13.0/0.0	138.0			2.3		312	Btuh
16	Frame - Wood - Ext						0.09	13.0/0.0	250.5			2.3		567	Btuh
	Wall Total								2030 (sqft)					4699 Btuh	
Doors	Type						Area (sqft)			HTM		Load			
1	Insulated - Exterior						33.3			12.0		400	Btuh		
2	Insulated - Exterior						17.8			12.0		213	Btuh		
3	Insulated - Exterior						40.0			13.8		552	Btuh		
4	Insulated - Exterior						40.0			13.8		552	Btuh		
	Door Total								131 (sqft)					1717 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load	
1	Vented Attic/Light/Shingle/RB						0.025	38.0/0.0	2002.0			0.86		1728	Btuh
	Ceiling Total								2002 (sqft)					1728 Btuh	
Floors	Type						R-Value		Size			HTM		Load	
1	Slab On Grade						0.0		2002 (ft-perimeter)			0.0		0	Btuh
	Floor Total								2002.0 (sqft)					0 Btuh	
	Envelope Subtotal:													10362 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

11351 SW HWY. 351
, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
DRAWDY RESIDENCE

3/26/2021

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural(Adjusted for ventilation)	0.12	18018	1	34.8	724 Btuh
Internal gain	Occupants	4	Btuh/occupant		Appliance	Load
			X 230	+	1200	2120 Btuh
	Sensible Envelope Load:					13206 Btuh
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Condi) (DGM of 0.066)					876 Btuh
	Sensible Load All Zones					14083 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

11351 SW HWY. 351
, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
DRAWDY RESIDENCE

3/26/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13206 Btuh
	Sensible Duct Load	876 Btuh
	Total Sensible Zone Loads	14083 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14083 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1201 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	112 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2113 Btuh
	TOTAL GAIN	16196 Btuh

EQUIPMENT

1. Central Unit	#	16196 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

11351 SW HWY. 351
, FL

Project Title:
DRAWDY RESIDENCE
Building Type: User

3/26/2021

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 0.25	Metal	0.40	S	6.0		16.0	96 Btuh
2	2, NFRC 0.25	Metal	0.40	S	50.0		16.0	800 Btuh
3	2, NFRC 0.25	Metal	0.40	E	24.0		16.0	384 Btuh
4	2, NFRC 0.25	Vinyl	0.40	N	30.0		16.0	480 Btuh
5	2, NFRC 0.25	Vinyl	0.40	N	30.0		16.0	480 Btuh
6	2, NFRC 0.25	Vinyl	0.40	N	15.0		16.0	240 Btuh
7	2, NFRC 0.25	Vinyl	0.40	N	15.0		16.0	240 Btuh
	Window Total					170.0(sqft)		2720 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	58		3.55	206 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	59		3.55	208 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	181		3.55	643 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	59		3.55	208 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	77		3.55	272 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	145		3.55	514 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	189		3.55	672 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	276		3.55	981 Btuh
9	Frame - Steel	- Ext	(0.112)	13.0/0.0	177		4.49	795 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	180		3.55	639 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.55	277 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	176 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	64		3.55	227 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	50		3.55	176 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	138		3.55	490 Btuh
16	Frame - Wood	- Ext	(0.089)	13.0/0.0	251		3.55	889 Btuh
	Wall Total					2030(sqft)		7372 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		33		16.0	533 Btuh
2	Insulated - Exterior, n		(0.400)		18		16.0	284 Btuh
3	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
4	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
	Door Total					131(sqft)		2290Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	2002		1.0	2032 Btuh
	Ceiling Total					2002(sqft)		2032Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	259.0 ft(perim.)		47.2	12225 Btuh
	Floor Total					2002 sqft		12225 Btuh
	Envelope Subtotal:							26639 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

11351 SW HWY. 351
, FL

Project Title:
DRAWDY RESIDENCE
Building Type: User

3/26/2021

Infiltration	Type Natural	Wholehouse ACH 0.15	Volume(cuft) 18018	Wall Ratio 1.00	CFM= 46.4	2031 Btuh
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Con) (DLM of 0.037)					1054 Btuh
All Zones	Sensible Subtotal All Zones					29724 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29724 Btuh 0 Btuh 29724 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	29724 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