

Residential System Sizing Calculation

Summary

Project Title:
McGriff Residence

, FL

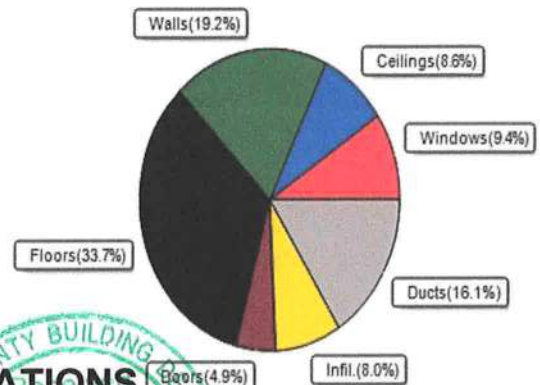
11/4/2020

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	24618	Btuh	Total cooling load calculation	22063	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	121.9	30000	Sensible (SHR = 0.85)	136.5	25500
Heat Pump + Auxiliary(0.0kW)	121.9	30000	Latent	132.9	4500
			Total (Electric Heat Pump)	136.0	30000

WINTER CALCULATIONS

Winter Heating Load (for 1670 sqft)

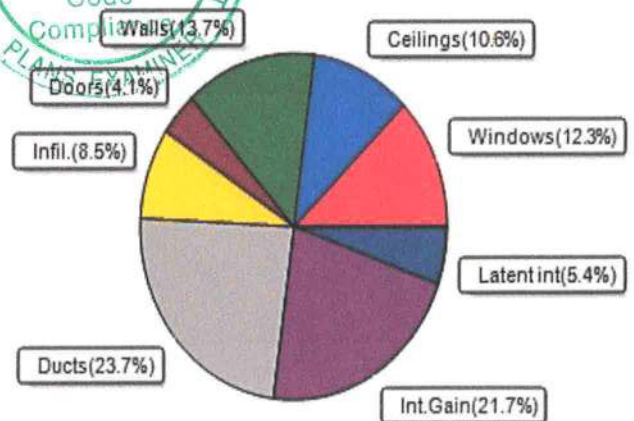
Load component			Load	
Window total	175	sqft	2310	Btuh
Wall total	1371	sqft	4728	Btuh
Door total	72	sqft	1210	Btuh
Ceiling total	1670	sqft	2127	Btuh
Floor total	1670	sqft	8307	Btuh
Infiltration	45	cfm	1979	Btuh
Duct loss			3957	Btuh
Subtotal			24618	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			24618	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1670 sqft)

Load component			Load	
Window total	175	sqft	2720	Btuh
Wall total	1371	sqft	3014	Btuh
Door total	72	sqft	907	Btuh
Ceiling total	1670	sqft	2340	Btuh
Floor total			0	Btuh
Infiltration	34	cfm	705	Btuh
Internal gain			4780	Btuh
Duct gain			4212	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			18678	Btuh
Latent gain(ducts)			1015	Btuh
Latent gain(infiltration)			1170	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			3385	Btuh
TOTAL HEAT GAIN			22063	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

11-4-20

EnergyGauge® / USRCZB v6.1.04

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
McGriff Residence

, FL

11/4/2020

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	13.5f	1.3ft	15.0	0.0	15.0	11	11	163	Btuh
2	2 NFRC	0.22, 0.33	No	No	N	13.5f	1.3ft	9.0	0.0	9.0	11	11	98	Btuh
3	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	16.0	0.0	16.0	11	27	440	Btuh
4	2 NFRC	0.22, 0.33	No	No	S	1.5ft	1.3ft	15.0	15.0	0.0	11	13	163	Btuh
5	2 NFRC	0.22, 0.33	No	No	S	7.5ft	1.3ft	72.0	72.0	0.0	11	13	785	Btuh
6	2 NFRC	0.22, 0.33	No	No	S	1.5ft	1.3ft	15.0	15.0	0.0	11	13	163	Btuh
7	2 NFRC	0.22, 0.33	No	No	W	1.5ft	1.3ft	30.0	0.0	30.0	11	27	824	Btuh
8	2 NFRC	0.22, 0.33	No	No	W	1.5ft	1.3ft	3.0	0.0	3.0	11	27	82	Btuh
	Window Total							175 (sqft)					2720 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Frame - Wood - Ext	0.09		13.0/0.6		247.5		2.2		544 Btuh				
2	Frame - Wood - Ext	0.09		13.0/0.6		70.5		2.2		155 Btuh				
3	Frame - Wood - Ext	0.09		13.0/0.6		169.5		2.2		373 Btuh				
4	Frame - Wood - Ext	0.09		13.0/0.6		218.0		2.2		479 Btuh				
5	Frame - Wood - Ext	0.09		13.0/0.6		90.0		2.2		198 Btuh				
6	Frame - Wood - Ext	0.09		13.0/0.6		214.0		2.2		470 Btuh				
7	Frame - Wood - Ext	0.09		13.0/0.6		90.0		2.2		198 Btuh				
8	Frame - Wood - Ext	0.09		13.0/0.6		271.5		2.2		597 Btuh				
	Wall Total							1371 (sqft)			3014 Btuh			
Doors	Type	Area (sqft)		HTM		Load								
1	Insulated - Exterior	24.0		12.0		288 Btuh								
2	Wood - Exterior	24.0		13.8		331 Btuh								
3	Insulated - Exterior	24.0		12.0		288 Btuh								
	Door Total							72 (sqft)			907 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Vented Attic/Light/Shingle	0.032		30.0/0.0		1670.0		1.40		2340 Btuh				
	Ceiling Total							1670 (sqft)			2340 Btuh			
Floors	Type	R-Value		Size		HTM		Load						
1	Slab On Grade	0.0		1670 (ft-perimeter)		0.0		0 Btuh						
	Floor Total							1670.0 (sqft)			0 Btuh			
	Envelope Subtotal:											8981 Btuh		
Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load				
	Natural													
		0.14		15030		1		33.9		705 Btuh				
Internal gain		Occupants		Btuh/occupant		Appliance		Load						
		6		X 230		+		3400		4780 Btuh				
	Sensible Envelope Load:											14466 Btuh		
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.291)											4212 Btuh		
	Sensible Load All Zones											18678 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
McGriff Residence

, FL

11/4/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14466 Btuh
	Sensible Duct Load	4212 Btuh
	Total Sensible Zone Loads	18678 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18678 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1170 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1015 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3385 Btuh
	TOTAL GAIN	22063 Btuh

EQUIPMENT

1. Central Unit	#	30000 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

Project Title:
McGriff Residence
Building Type: User

, FL

11/4/2020

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=
1	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2
2	2, NFRC 0.22	Vinyl	0.33	N	9.0		13.2
3	2, NFRC 0.22	Vinyl	0.33	E	16.0		13.2
4	2, NFRC 0.22	Vinyl	0.33	S	15.0		13.2
5	2, NFRC 0.22	Vinyl	0.33	S	72.0		13.2
6	2, NFRC 0.22	Vinyl	0.33	S	15.0		13.2
7	2, NFRC 0.22	Vinyl	0.33	W	30.0		13.2
8	2, NFRC 0.22	Vinyl	0.33	W	3.0		13.2
Window Total					175.0(sqft)		2310 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	248		3.45
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	71		3.45
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	170		3.45
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	218		3.45
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	90		3.45
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	214		3.45
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	90		3.45
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	272		3.45
Wall Total					1371(sqft)		4728 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=
1	Insulated - Exterior,	n	(0.400)		24		16.0
2	Wood - Exterior,	n	(0.460)		24		18.4
3	Insulated - Exterior,	n	(0.400)		24		16.0
Door Total					72(sqft)		1210Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	1670		1.3
Ceiling Total					1670(sqft)		2127Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=
1	Slab On Grade		(1.180)	0.0	176.0 ft(perim.)		47.2
Floor Total					1670 sqft		8307 Btuh
Envelope Subtotal:							18682 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.18	15030	1.00	45.2	1979 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.192)	3957 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
McGriff Residence
Building Type: User

, FL

11/4/2020

All Zones	Sensible Subtotal All Zones	24618 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	24618 Btuh 0 Btuh 24618 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	30000 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