Performance Summary

Month	Heat Load	Solar Supplied	Difference
September	0.65M	2.1M	0M
October	1.5M	2.3M	0M
November	1.81M	1.59M	0.22M
December	3.16M	1.54M	1.62M
January	4.09M	1.84M	2.25M
February	3M	2.04M	0.96M
March	2.52M	2.05M	0.47M
April	1.45M	1.49M	0M
May	0.82M	1.3M	0M
Total	**19.02M**	**16.25M**	**5.53M**

Wood Stove Sizing	
Hourly heat loss	9,701
Efficiency of wood stove	0.85
Total BTUs	8,246
Total Yearly Heat Loss	5,526,159
BTUs/Cord of wood	17,000,000
Cords of wood	0.33
20%	0.39

Heat Loss

Desc	Area	U-value	Net Loss (btu/hr*1°F)
First Floor Area	704	0.038	27.077
Wall Area - Glazing & Door	1,070	0.019	20.574
- Gross Wall Area	1,297		
Glazing Area	185	0.200	36.982
Door Area	42	0.250	10.500
Gross Ceiling Area	704	0.014	10.057
Infiltration Loss			6.318
Total			**111.508**
Daily Heat Loss		24	**2,676**
Degree difference -15°-72° (-15 used for Glenn Falls)			87
Hourly heat loss			9,701
Daily Heat Loss		24	**232,829**

Monthly Heat Loss

Month	HDD	Total Heat Loss	**Monthly Heat Loss**
Sep 1, 2009	243	2,676	0.65M
Oct 1, 2009	562	2,676	1.5M
Nov 1, 2009	677	2,676	**1.81M**
Dec 1, 2008	1182	2,676	**3.16M**
Jan 1, 2009	1529	2,676	**4.09M**
Feb 1, 2009	1121	2,676	**3M**
Mar 1, 2009	943	2,676	**2.52M**
Apr 1, 2009	541	2,676	**1.45M**
May 1, 2009	308	2,676	0.82M
		Total Yearly Heat Loss	**19.02M**

Infiltration Loss					
Volume	10,200				
Heat removed	0.018	H constant - energy required to raise 1 cubic foot of air 1 degree Fal			
HRV efficiency	10%	**90%**	Improved efficiency due to heat recovery? (assuming 9		
Air changed/hour (ACH)	0.34	(from below)			
Infiltration Loss	**6.318**	(btu/hr*1°F)			
Conditioned Floor Area	1,200	30			
Req. CFM/100sf	3				
# of occupants	3				
Req. CFM/person	7.5				
Cubic ft/min (CFM)	**58.5**			ACH to CFM	
Air changes/hr (ACH)	**0.34**	CFM*60/volume		volume * ACH/60	
ACH @50 Pa	**0.60**				

Monthly Solar Heat Gain

Month	Days	% Sunshine	Shade Fac	Clearness I	East	South	South x 2	West	East	South	West	Total	**Total Solar Heat Gain**
September	30	0.58	0.57	1	787	672	1344	787	313,069	5,670,202	313,069	6,296,339	**2.1M**
October	31	0.54	0.57	1	623	791	1582	623	256,090	6,896,776	256,090	7,408,957	**2.3M**
November	30	0.39	0.57	1	445	798	1596	445	177,021	6,733,364	177,021	7,087,406	**1.59M**
December	31	0.38	0.57	1	374	775	1550	374	153,736	6,757,272	153,736	7,064,744	**1.54M**
January	31	0.43	0.57	1	452	813	1626	452	185,799	7,088,596	185,799	7,460,194	**1.84M**
February	28	0.51	0.57	1	648	821	1642	648	240,589	6,465,605	240,589	6,946,784	**2.04M**
March	31	0.53	0.57	1	832	694	1388	832	342,002	6,051,028	342,002	6,735,031	**2.05M**
April	30	0.53	0.57	1	957	488	976	957	380,695	4,117,646	380,695	4,879,036	**1.49M**
May	31	0.57	0.57	1	1024	358	716	1024	420,925	3,121,423	420,925	3,963,274	**1.3M**
											23	**Total**	**16.25M**

704	First Floor Area							**Door Area**	42		
1,297	- Gross Wall Area			South and North	546				sf/window	# of windows	total
704	Gross Ceiling Area			East and West	750.75			South 1st floor	11.96	7	83.72
1,200	Conditioned floor area							North 1st floor	6.63	2	13.26
185	Glazing Area	26.27%	of gross floor area	**Gross Wall Are**	1,296.75			East 2nd floor	6.63	2	13.26
		14.26%	of gross wall area					West 2nd floor	6.63	2	13.26
42	Door Area	5.97%	of gross floor area	Length	22			South 2nd floor	8.13	7	56.91
		3.24%	of gross wall area	Width	32			North 2nd floor	2.25	2	4.5
227	Total Fenestration	32.23%	of gross floor area	**Gross Roof Are**	704			**Glazing Area**			184.91
10200	Volume (c.f.)										
0.25	Door U-factor										
0.2	Fenestration U-Factor (Serious Windows 1125 Series)			0.13							
0.57	Shade coefficient SC							Width	30		
0.5	Glazed Fenestration SHGC			0.2				Depth	20		
70	Ceiling R-value			75	18	3		Height	17		
52	Wall R-value			49.5	21	6		**Volume**	10200		
26	Floor R-value			30	10	2					
	Basement R-value				49	11					
	Slab R-value										

Alternate - Walls - 9"			
Material	R-factor/inch	Thickness	Total
HDF	6	3	18
Cellulose	4	6	24
XPF	5	2	10
			52

Alternate - Walls - 12"			
Material	R-factor/inch	Thickness	Total
HDF	6	3	18
Cellulose	4	9	36
			54

Roof			
Material	R-factor/inch	Thickness	Total
HDF	6	0	0
Cellulose (loose	3.5	20	70
			70

Wall assemblies	RH 35%=40°, 30%=37°, 25%=32°, 20%=28°									
	Ts° >= 40, 37,	Ti°	Delta T°	Rc = Cavity	Rt = Wall	To°	Rs = Sheathing	Tdec°	Tjan°	Tfeb°
Alternate - Walls - 9"	35.33	70	52	**36**	54	18	**18**	18	18	18
Alternate - Walls - 12"	46.00	70	52	**24**	52	18	**28**	18	18	18
	46.00	70	52	**24**	52	18	**28**	18	18	18
	46.00	70	52	**24**	52	18	**28**	18	18	18

Unvented Roof assemblies	Tcs° = condens	R above conde	Total R	Ratio	Ti°	To°	Delta T°
	35.96	24	69.5	0.345323741	70	18	52

HDD & CDD

Description:	Farenheit-based heating	Farenheit-based heating	Farenheit-based heating		Farenheit-based cooling
Source:	www.degreed	www.degreed	www.degreed		www.degreed
Accuracy:	No problems	No problems	No problems		No problems
Station:	Airport: Bennington,	Airport: Glens Falls, NY, US	Airport: Albany, NY,		Airport: Bennington,
Station ID:	KDDH	KGFL	KALB		KDDH
	Bennington	**Glens Falls**	Albany	**Average of the 3**	
Month starting	HDD	HDD	HDD	HDD	CDD
Dec 1, 2008	1166	1254	1126	1182	0
Jan 1, 2009	1526	1619	1442	1529	0
Feb 1, 2009	1111	1206	1045	1121	0
Mar 1, 2009	954	990	884	943	1
Apr 1, 2009	555	580	489	541	29
May 1, 2009	329	332	263	308	34
Jun 1, 2009	134	136	82	117	73
Jul 1, 2009	100	93	50	81	112
Aug 1, 2009	87	84	40	70	158
Sep 1, 2009	267	271	191	243	43
Oct 1, 2009	576	584	526	562	4
Nov 1, 2009	677	709	645	677	1
Total	**7482**	**7858**	6783	**7374**	455

Percentage Wall Framing	sq inches
48"x48"x12.875"	29,664.000
6- 2x4	1,512.00
% wall framing	5.10%