Design Heat Loss Report

General

Date of Reporting:	1/18/2023
Date of Rating:	1/9/2023
Client:	Report Sample
Home Address:	
Home City:	, AK
AkWarm File Name:	C:\Users\rober\Dropbox\Wisdom's shared workspace\HOMES\Finished Ratings\Petska, Bruce - 288 Tulin Terrace, Homer.hm2

Temperatures / Wind Speed

Indoor Temperature:	70	deg F
Design Air Temperature:	-0.01	deg F
Deep Ground Temperature:	39	deg F
Garage Temperature:	55	deg F
Airport Design Wind Speed:	4.0	mph

Main Home Heat Loss

Heat Loss from Shell Components

Shell Component Type	ID Name	Net Area, sq. ft.	Total R-Value	UA to Air, Btu/hr/deg-F	UA to Ground, Btu/hr/deg-F	Design Heat Loss, Btu/hour
Below grade Floor Perimeter	House	396	17.1	0.4	22.9	725
Below grade Floor Center	House	721	45.1	0.0	16.0	490
Above grade Wall	House-2X8	280	24.3	11.4	0.0	795
Above grade Wall	House-2X6	2,890	19.2	148.3	0.0	10,382
Above grade Wall	House/Rim Joist	301	21.7	13.7	0.0	959
External Door	House	20	3.2	5.7	0.0	397
Window	House/south slider	65	3.7	16.1	0.0	1,129
Window	House/slider	139	3.7	34.6	0.0	2,424
Window	House/south fixed	240	4.3	51.7	0.0	3,618
Window	House/fixed	29	4.3	6.2	0.0	433
Window	House/casement	17	4.0	3.8	0.0	269
Window	House/south sgd	105	3.8	25.2	0.0	1,768
Ceiling with Attic	House	1,526	52.1	29.3	0.0	2,053
Total		**6,727**		**346.4**	**38.9**	**25,443**

Heat Loss due to Natural Air Leakage and Mechanical Ventilation

Mechanical Ventilation Flow, Unbalanced	118	cfm
Effective Mechanical Ventilation:	74	cfm
Mechanical Ventilation Heat Recovery Effectiveness:	0	%
Natural Air Leakage at Design Conditions:	57	cfm
Total Ventilation:	132	cfm
	0.23	ACH
Heat Loss per deg F:	141	Btu/hr/deg-F
Heat Loss from Air Leakage/Ventilation:	**9,837**	**Btu/hour**

Total Design Heat Loss for Main Home

Home Shell Components:	25,443	Btu/hour
Air Leakage + Mechanical Ventilation:	9,837	Btu/hour
Loss to Garage:	0	Btu/hour
Heating System Distribution Loss (100% efficiency):	0	Btu/hour
Required Heating System Output:	**35,280**	**Btu/hour**

Garage Heat Loss

Heat Loss from Shell Components

Shell Component Type	ID Name	Net Area, sq. ft.	Total R-Value	UA to Air, Btu/hr/deg-F	UA to Ground, Btu/hr/deg-F	Design Heat Loss, Btu/hour
Below grade Floor Perimeter	Garage	284	17.1	0.3	16.4	270
Below grade Floor Center	Garage	441	45.1	0.0	9.8	153
Above grade Wall	Garage-2X8	540	24.3	21.9	0.0	1,205
External Door	Garage	20	3.2	5.7	0.0	312
Garage Door	Garage	160	7.1	21.5	0.0	1,183
Window	Garage/south slider	18	3.7	4.4	0.0	241
Ceiling with Attic	Garage	319	52.1	6.1	0.0	337
Total		**1,781**		**59.8**	**26.2**	**3,701**

Heat Loss due to Natural Air Leakage and Mechanical Ventilation

Natural Air Leakage at Design Conditions:	10.8	cfm
Mechanical Ventilation at Design Conditions:	0.00	cfm
Total Ventilation:	10.8	cfm
Heat Loss per deg F:	11.5	Btu/hr/deg-F
Heat Loss from Air Leakage/Ventilation:	**633**	**Btu/hour**

Total Design Heat Loss for Garage

Garage Shell Components:	3,701	Btu/hour
Air Leakage + Mechanical Ventilation:	633	Btu/hour

Gain from Home:	0	Btu/hour
Heating System Distribution Loss (100% efficiency):	0.00	Btu/hour
Required Heating System Output:	**4,334**	**Btu/hour**

Domestic Hot Water Heat Load

The DHW Load is Served by the Primary Heating System

DHW Storage Tank Size	70	gallons
Peak 2 Hour Usage of 140 F Water	95	gallons
Peak 2 Hour DHW Heat Load	19,165	Btu/hour
Extra Heating System Capacity Required	9,248	Btu/hour

NOTE: DHW Load calculation assumes *no* large DHW loads such as Spa tubs.

Required Heating System Output

The table below shows the amount of heat required to be supplied by the heating systems.

Required Output, Btu/hour	No Safety Margin	10% Safety Margin	20% Safety Margin	25% Safety Margin
Primary System serving Main Home, Garage, DHW	48,863	53,749	58,635	61,078

The design heat load falls within the output range of the primary heating system, which is 13,750 - 99,000 Btu/hour.

NOTE: DHW Load calculation assumes *no* large DHW loads such as Spa tubs.

If you need to determine the required *Input Rating* of the heating system, you must divide the Output Requirement by the efficiency of the system. For example, if the heating system is 85% efficient and the Output Requirement is 56,000 Btu/hour, the needed Input Rating is 56,000 Btu/hour / 0.85 = 65,900 Btu/hour