

Project Information

For: Canyon Drive Project, Steve Mackay
 6980 Canyon Drive, Park City, UT

Email: stevemackay@comcast.net

Design Information

	Htg	Clg	Method	Infiltration
Outside db (°F)	0	93		Simplified
Inside db (°F)	68	75	Construction quality	Tight
Design TD (°F)	68	18	Fireplaces	2 (Average)
Daily range	-	H		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	33	-33		

HEATING EQUIPMENT

Make	Lennox
Trade	LENNOX
Model	EL296UH090XV48C-*
AHRI ref	4988513
Efficiency	96 AFUE
Heating input	88000 Btuh
Heating output	85000 Btuh
Temperature rise	50 °F
Actual air flow	2000 cfm
Air flow factor	0.037 cfm/Btuh
Static pressure	0.63 in H2O
Space thermostat	

COOLING EQUIPMENT

Make	Lennox
Trade	LENNOX
Cond	XC16-048-230-04
Coil	CX34-62C+EL296UH090XV48C*+TDR
AHRI ref	6685329
Efficiency	12.0 EER, 16 SEER
Sensible cooling	45590 Btuh
Latent cooling	1410 Btuh
Total cooling	47000 Btuh
Actual air flow	2000 cfm
Air flow factor	0.054 cfm/Btuh
Static pressure	0.63 in H2O
Load sensible heat ratio	1.00

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master 1 zone	778	19310	10936	724	589
Master 2 zone	590	11040	7255	414	390
Great/Kitch zone	1248	23028	20574	863	1107
Main Floor	2615	53379	37162	2000	2000
Other equip loads		0	0		
Equip. @ 0.98 RSM			36382		
Latent cooling			0		
TOTALS	2615	53379	36382	2000	2000

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

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Notes: Email: stevemackay@comcast.net
Residence requires 87.61 cfm of outside ventilation air to meet ASHRAE 62.2 requirements, if needed in your area. We recommend a 200 cfm HRV be installed cycling in 15 minute increments - 15 on/15 off. See HRV schematic.

Design Information

Weather: Park City, UT, US

Winter Design Conditions

Outside db	0 °F
Inside db	68 °F
Design TD	68 °F

Summer Design Conditions

Outside db	93 °F
Inside db	75 °F
Design TD	18 °F
Daily range	H
Relative humidity	50 %
Moisture difference	-33 gr/lb

Heating Summary

Structure	46343 Btuh
Ducts	7036 Btuh
Central vent (0 cfm) (none)	0 Btuh
Humidification	0 Btuh
Piping	0 Btuh
Equipment load	53379 Btuh

Sensible Cooling Equipment Load Sizing

Structure	33775 Btuh
Ducts	3387 Btuh
Central vent (0 cfm) (none)	0 Btuh
Blower	0 Btuh
Use manufacturer's data	n
Rate/swing multiplier	0.98
Equipment sensible load	36382 Btuh

Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	2 (Average)

Latent Cooling Equipment Load Sizing

Structure	-10875 Btuh
Ducts	-166 Btuh
Central vent (0 cfm) (none)	0 Btuh
Equipment latent load	0 Btuh

	Heating	Cooling
Area (ft ²)	2615	2615
Volume (ft ³)	33225	33225
Air changes/hour	0.44	1.01
Equip. AVF (cfm)	245	560

Equipment Total Load (Sen+Lat)	36382 Btuh
Req. total capacity at 0.97 SHR	3.1 ton

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Cooling Equipment Summary

Make	Lennox
Trade	LENNOX
Cond	XC16-048-230-04
Coil	CX34-62C+EL296UH090XV48C*+TDR
AHRI ref	6685329
Efficiency	12.0 EER, 16 SEER
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Total cooling	47000 Btuh
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Static pressure	0.63 in H2O
Load sensible heat ratio	1.00

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1		Room name		Main Floor 274.9 ft						Master 1 zone 96.4 ft							
2		Exposed wall		12.7 ft						11.4 ft							
3		Room height		2615.3 ft²						778.0 ft²							
4		Room dimensions		U-value (Btuh/ft²-°F)		Or		HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
5		Room area															
		Ty		Construction number		Heat		Cool		Gross		N/P/S		Heat		Cool	
6	W	Bg wall, light dry s	0.053	n	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.320	n	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	D	11DO	0.390	n	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
11	W	Frm wall, cmnt brd e	0.033	n	2.24	0.29	926	814	1826	234	557	505	1133	145			
	G	2 glazing, clr low-e	0.310	n	21.08	9.98	55	0	1159	549	10	0	211	100			
	G	2 glazing, clr low-e	0.320	n	21.76	9.58	57	0	1240	546	42	0	914	402			
	W	Bg wall, light dry s	0.053	e	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.300	e	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.310	e	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.320	e	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	D	11DO	0.390	e	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	W	Frm wall, cmnt brd e	0.033	e	2.24	0.29	809	428	961	123	200	77	173	22			
	G	2 glazing, clr low-e	0.300	e	20.40	27.05	90	0	1836	2434	54	0	1102	1461			
	G	2 glazing, clr low-e	0.310	e	21.08	24.40	27	0	569	659	27	0	569	659			
	G	2 glazing, clr low-e	0.310	e	21.08	27.23	9	0	190	245	9	0	190	245			
	G	2 glazing, clr low-e	0.320	e	21.76	24.58	66	0	1436	1622	0	0	0	0			
	G	2 glazing, clr low-e	0.320	e	21.76	26.46	132	0	2872	3493	0	0	0	0			
	G	2 glazing, clr low-e	0.330	e	22.44	23.81	57	0	1279	1357	33	0	741	786			
	W	Bg wall, light dry s	0.053	s	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.300	s	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.310	s	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.340	s	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	W	Frm wall, cmnt brd e	0.033	s	2.24	0.29	946	860	1930	247	161	161	361	46			
	G	2 glazing, clr low-e	0.300	s	20.40	14.94	54	0	1102	807	0	0	0	0			
	G	2 glazing, clr low-e	0.310	s	21.08	13.87	24	0	506	333	0	0	0	0			
	G	2 glazing, clr low-e	0.310	s	21.08	15.11	8	0	169	121	0	0	0	0			
	W	Bg wall, light dry s	0.053	w	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	W	Frm wall, cmnt brd e	0.033	w	2.24	0.29	846	633	1420	182	192	156	350	45			
	G	2 glazing, clr low-e	0.250	w	17.00	25.21	132	0	2244	3328	0	0	0	0			
	G	2 glazing, clr low-e	0.310	w	21.08	27.23	45	0	949	1225	0	0	0	0			
	G	2 glazing, clr low-e	0.320	w	21.76	24.58	36	0	772	873	36	0	772	873			
	P	Frm wall, r-23 cav i	0.043	-	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0
	C	Rf/clg ceiling, asph	0.016	-	1.09	0.31	2615	2615	2845	808	778	778	846	240			
	F	21A-32c	0.020	-	0.00	0.00	0	0	0	0	0	0	0	0			
	F	21A-32c	0.020	-	1.36	0.00	245	245	333	0	245	245	333	0			
	F	Flr floor, frm flr,	0.022	-	0.75	0.16	69	69	51	11	69	69	51	11			
	F	Flr floor, frm flr,	0.022	-	0.75	0.16	453	453	339	73	210	210	157	34			
	F	Flr floor, frm flr,	0.022	-	0.75	0.16	257	257	192	41	242	242	181	39			
6	c) AED excursion																87
	Envelope loss/gain								26222	19309			8085	5194			
12	a) Infiltration								14283	8609			4494	2708			
	b) Room ventilation								5838	1537			1751	461			
13	Internal gains:		Occupants @		230		4			920		2		460			0
			Appliances/other							3400				0			
	Subtotal (lines 6 to 13)								46343	33775			14330	8824			
	Less external load								0	0			0	0			
	Less transfer								0	0			0	0			
	Redistribution								0	0			0	0			
14	Subtotal								46343	33775			14330	8824			
15	Duct loads							15%	10%	7036	3387	35%	24%	4980	2112		
	Total room load								53379	37162			19310	10936			
	Air required (cfm)								2000	2000			724	589			

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1		Room name				Master 2 zone				Great/Kitch zone				
2		Exposed wall				11.8 ft				88.5 ft				
3		Room height				13.9 ft				90.0 ft				
4		Room dimensions				589.8 ft²				1247.5 ft²				
5		Room area												
	Ty	Construction number	U-value (Btuh/ft²·°F)	Or	HTM (Btuh/ft²)		Area (ft²) or perimeter (ft)		Load (Btuh)		Area (ft²) or perimeter (ft)		Load (Btuh)	
					Heat	Cool	Gross	N/P/S	Heat	Cool	Gross	N/P/S	Heat	Cool
6	W	Bg wall, light dry s	0.053	n	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.320	n	0.00	0.00	0	0	0	0	0	0	0	0
	D	11DO	0.390	n	0.00	0.00	0	0	0	0	0	0	0	0
11	W	Frm wall, cmnt brd e	0.033	n	2.24	0.29	144	129	289	37	225	180	404	52
	G	2 glazing, clr low-e	0.310	n	21.08	9.98	0	0	0	0	45	0	949	449
	G	2 glazing, clr low-e	0.320	n	21.76	9.58	15	0	326	144	0	0	0	0
	W	Bg wall, light dry s	0.053	e	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.300	e	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.310	e	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.320	e	0.00	0.00	0	0	0	0	0	0	0	0
	D	11DO	0.390	e	0.00	0.00	0	0	0	0	0	0	0	0
	W	Frm wall, cmnt brd e	0.033	e	2.24	0.29	186	108	242	31	423	243	545	70
	G	2 glazing, clr low-e	0.300	e	20.40	27.05	36	0	734	974	0	0	0	0
	G	2 glazing, clr low-e	0.310	e	21.08	24.40	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.310	e	21.08	27.23	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.320	e	21.76	24.58	18	0	392	442	48	0	1044	1180
	G	2 glazing, clr low-e	0.320	e	21.76	26.46	0	0	0	0	132	0	2872	3493
	G	2 glazing, clr low-e	0.330	e	22.44	23.81	24	0	539	572	0	0	0	0
	W	Bg wall, light dry s	0.053	s	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.300	s	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.310	s	0.00	0.00	0	0	0	0	0	0	0	0
	G	2 glazing, clr low-e	0.340	s	0.00	0.00	0	0	0	0	0	0	0	0
	W	Frm wall, cmnt brd e	0.033	s	2.24	0.29	487	455	1020	131	298	244	548	70
	G	2 glazing, clr low-e	0.300	s	20.40	14.94	0	0	0	0	54	0	1102	807
	G	2 glazing, clr low-e	0.310	s	21.08	13.87	24	0	506	333	0	0	0	0
	G	2 glazing, clr low-e	0.310	s	21.08	15.11	8	0	169	121	0	0	0	0
	W	Bg wall, light dry s	0.053	w	0.00	0.00	0	0	0	0	0	0	0	0
	W	Frm wall, cmnt brd e	0.033	w	2.24	0.29	235	223	500	64	419	254	570	73
	G	2 glazing, clr low-e	0.250	w	17.00	25.21	0	0	0	0	132	0	2244	3328
	G	2 glazing, clr low-e	0.310	w	21.08	27.23	12	0	253	327	33	0	696	898
	G	2 glazing, clr low-e	0.320	w	21.76	24.58	0	0	0	0	0	0	0	0
	P	Frm wall, r-23 cav i	0.043	-	0.00	0.00	0	0	0	0	0	0	0	0
	C	Rf/clg ceiling, asph	0.016	-	1.09	0.31	590	590	642	182	1248	1248	1357	385
	F	21A-32c	0.020	-	0.00	0.00	0	0	0	0	0	0	0	0
	F	21A-32c	0.020	-	1.36	0.00	0	0	0	0	0	0	0	0
	F	Flr floor, frm flr,	0.022	-	0.75	0.16	0	0	0	0	0	0	0	0
	F	Flr floor, frm flr,	0.022	-	0.75	0.16	0	0	0	0	243	243	182	39
	F	Flr floor, frm flr,	0.022	-	0.75	0.16	0	0	0	0	15	15	11	2
6	c) AED excursion													1103
	Envelope loss/gain								5613	3650			12524	11949
12	a) Infiltration								4260	2568			5530	3333
	b) Room ventilation								1168	307			2919	768
13	Internal gains:		Occupants @		230		1		230		1		230	
			Appliances/other						500				2900	
	Subtotal (lines 6 to 13)								11040	7255			20973	19180
	Less external load								0	0			0	0
	Less transfer								0	0			0	0
	Redistribution								0	0			0	0
14	Subtotal								11040	7255			20973	19180
15	Duct loads								0	0	10%	7%	2056	1394
	Total room load								11040	7255			23028	20574
	Air required (cfm)								414	390			863	1107

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