



ENERGY GUIDE

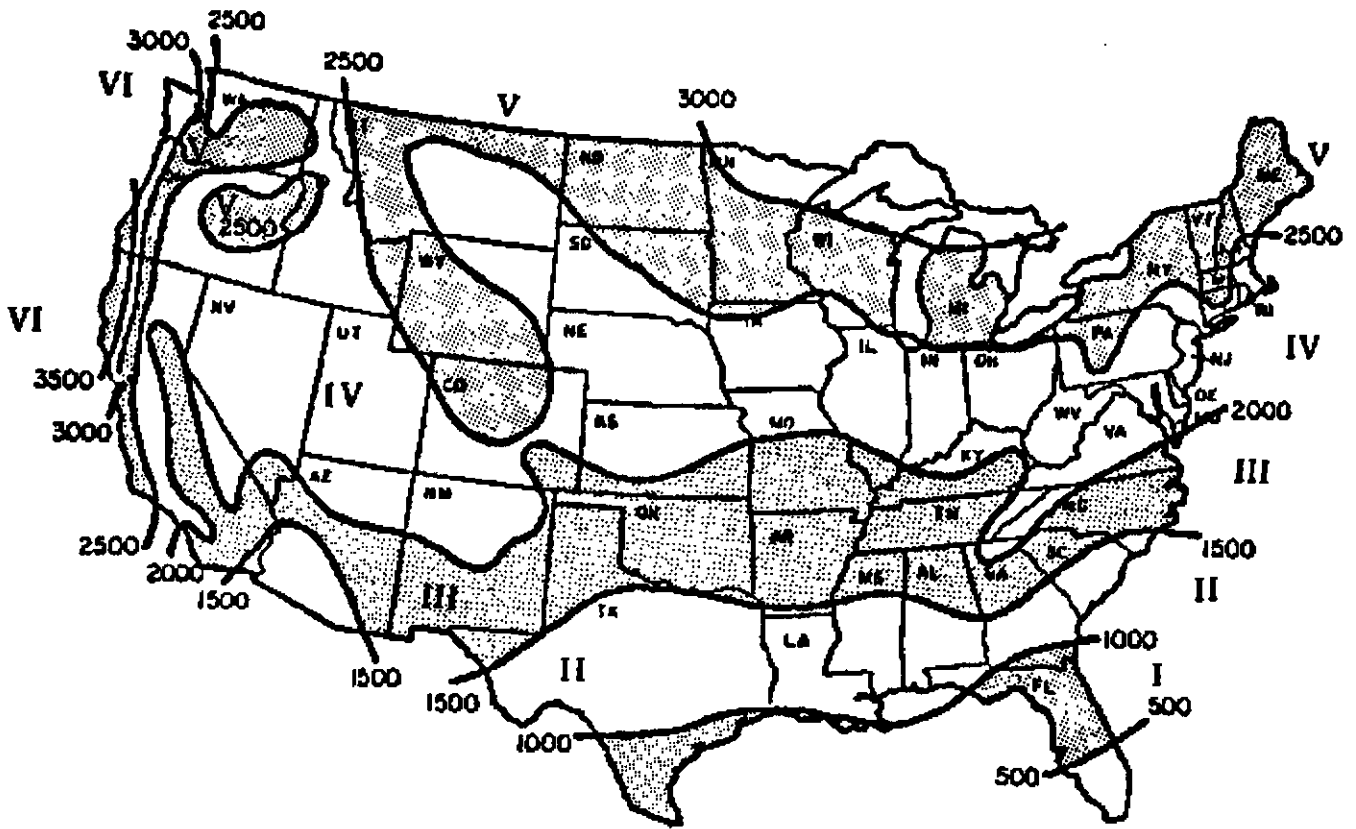
DUAL FUEL ADD-ON HEAT PUMP GUIDE FOR OPERATIONAL COST SAVINGS

REGION 4

BARD MANUFACTURING COMPANY
Bryan, Ohio 43506

Since 1914...Moving, ahead just as planned.

Manual:	2100-072 Rev. F
Supersedes:	Rev. E
Date:	May, 1995



REGION HEATING LOAD HOURS

<u>Region</u>	<u>HLHr</u>
I	750
II	1250
III	1750
IV	2250
V	2750
VI	2750

This map is reasonably accurate for the most parts of the United States but is necessarily highly generalized and consequently not too accurate in mountainous regions, particularly in the Rockies.

Copyright April 1995
 Bard Manufacturing Company
 Bryan, Ohio 43506

Contents

GENERAL DESCRIPTION iv
 HOW TO USE DUAL FUEL ADD-ON HEAT PUMP TO ENERGY COST SAVINGS v

Heat Pump Outdoor Model	Heat Pump Indoor Model	Furnace Fuel	Furnace AFUE Efficiency Rating	Page
WQS30A	A36AQ-A	Electric	100%	1
		Natural Gas	78%	2
		Oil	78%	3
		Propane	78%	4
WQS36A	A36AQ-A	Electric	100%	5
		Natural Gas	78%	6
		Oil	78%	7
		Propane	78%	8
WQS42A	A42AQ-A	Electric	100%	9
		Natural Gas	78%	10
		Oil	78%	11
		Propane	78%	12
24UHPQC	A36AQ-A	Electric	100%	13
		Natural Gas	78%	14
		Oil	78%	15
		Propane	78%	16
30UHPQC	A36AQ-A	Electric	100%	17
		Natural Gas	78%	18
		Oil	78%	19
		Propane	78%	20
30UHPQC	A37AQ-A	Electric	100%	21
		Natural Gas	78%	22
		Oil	78%	23
		Propane	78%	24
36UHPQC	A37AQ-A	Electric	100%	25
		Natural Gas	78%	26
		Oil	78%	27
		Propane	78%	28
42UHPQA	A61AQ-A	Electric	100%	29
		Natural Gas	78%	30
		Oil	78%	31
		Propane	78%	32
48UHPQB	A61AQ-A	Electric	100%	33
		Natural Gas	78%	34
		Oil	78%	35
		Propane	78%	36
60UHPQB	A61AQ-A	Electric	100%	37
		Natural Gas	78%	38
		Oil	78%	39
		Propane	78%	40

GENERAL DESCRIPTION

WHAT DOES THIS GUIDE SHOW?

This operational cost savings guide has been prepared to show theoretical cost savings for Bard dual fuel "add-on" heat pumps when used with either existing or new furnaces. It covers add-on applications for electric, oil, propane gas and natural gas type forced air furnaces. It includes both air source heat pumps and ground water source heat pumps at many combinations of gas, oil and electrical rates. It enables the user not only to make a theoretical operating cost comparison at today's fuel costs but also at future estimated higher energy costs.

It is important to understand that this is a theoretical comparison between fuels. Actual operation costs can vary depending on many difficult to predict variables such as the actual design heating or cooling load, air infiltration, and wind effects, solar effect, efficiency of existing furnace, severity of weather for a given heating or cooling season and also individual usage pattern.

SPECIAL FEATURE--FUEL SAVER MODULE

These estimates utilize the Bard Fuel Saver Module which permit the heat pump to operate below the balance point to maximize the energy savings. For each application an analysis should be made to determine the economic balance point which is the outdoor temperature at which it becomes more cost effective to shut the heat pump down with an outdoor thermostat. This temperature varies with each combination of fuel cost and furnace and heat pump efficiency level. Refer to tables included in the instructions with the Fuel Saver Module.

FURNACE EFFICIENCY

For purposes of these cost estimates, furnace efficiency levels of 100% AFUE for electric, 78% AFUE for natural and propane gas and 78% AFUE for oil was chosen. We recognize that any variation in efficiency from these values will change the operating cost somewhat. These values were chosen to best represent typical efficiency levels of most equipment in the field today.

HOW TO USE DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

1. Determine the heating Btuh loss and cooling Btuh gain for structure using a Bard "Whole-House Heat Loss and Gain Work Sheet," Form B008, ACCA "Load Calculation," Manual J.
 - A. Heating house Btuh loss is _____.
 - B. Cooling house Btuh gain is _____.

2. Determine the type of fuel available at structure (what type of (fuel) heating system is already there).
 - A. Electricity
 - B. Natural gas
 - C. Propane gas
 - D. Fuel oil
 - E. Good water supply and disposal

3. Call local utilities and determine area energy costs.
 - A. Electricity _____ \$/Kilowatt-hour
 - B. Natural gas _____ \$/Therm
 - C. Propane gas _____ \$/Gallon
 - D. Fuel Oil _____ \$/Gallon

4. Tentatively select an add-on heat pump system using Bard Manual 2100-057, "Heat Pump Sizing" as a guide, and a Bard equipment catalog.
 - A. Air to air heat pump

Model _____	Indoor Coil _____
Btuh _____ Heat	Btuh _____ Cool

 - B. Water to air

Model _____	Indoor Coil _____
Btuh _____ Heat	Btuh _____ Cool

5. Determine heating region where the structure is located. To do this, find the geographic location of house on regional heating load hours map. A map is located inside the front cover of this guide.
 - A. Region structure is located.

YOU ARE NOW READY TO USE THE "DUAL FUEL ADD-ON HEAT PUMP GUIDE"

6. Select the "Dual Fuel Add-On Heat Pump Guide" for the region the structure is located. (See Step 5 above)
7. Locate the add-on heat pump model or models you tentatively selected (Step 4) in the "Guide". Refer to Contents.

Example 36UHPQA w/A36AQ-A Indoor Coil

BARD MANUFACTURING COMPANY
DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4		36UHPQA/A36AQ-A		INDOOR A36AQ-A	
HEAT PUMP MODEL	OUTDOOR	<u>36UHPQA</u>			
ARI RATED COOLING CAP.		BTUH (95)	<u>33000</u>	SEER	<u>8.69</u>
ARI RATED HEATING CAP.		BTUH (47)	<u>33600</u>	COP (47)	<u>2.90</u>
		BTUH (17)	<u>20000</u>	HSPF	<u>6.90</u>
				MIN DHR	REG IV
				COP (17)	<u>2.20</u>

8. Now locate the furnace type by fuel used (Step 2).

EXAMPLE: A fuel oil furnace with AFUE of 78%.

FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00% AFUE

9. You now have located the page or pages that will help you determine annual operating cost. See example--Figure 1.

- A. Locate the closest structure loss in Btuh column on left side of page (step 1).

EXAMPLE: 70,000 Btuh Heat Loss

- B. Locate the heating cost per unit at top of page (step 3).

EXAMPLE: \$1.40 per gallon fuel oil

- C. Now read down the fuel cost column until directly across from the structure heat loss in Btuh. This will be the theoretical annual heating cost using only the furnace.

EXAMPLE: 70,000 Btuh heat loss @ \$1.40 per gallon fuel oil, the annual cost will be \$1,568.

- D. Next locate the electric cost \$/KW under Heat Loss Btuh for structure (step 3).

EXAMPLE: \$.06 KW rate

- E. Now once again read down the fuel cost column until directly across the electric cost \$/KW. You now have located the annual heating cost for the house using an add-on heat pump with the furnace.

EXAMPLE: 70,000 Btuh structure heat loss, with \$.06 cost and \$1.40 per gallon fuel oil. The annual cost using a 36UHPQA Bard heat pump with the oil furnace would be \$1,292 for an annual savings of \$276 (\$1,568 minus \$1,292).

Now repeat steps 8 through 9 for each type fuel and/or heat pump selected. This will enable you to select the best combination of furnace and heat pump to use for a structure.

10. The balance point (the outdoor temperature at which the heat pump is running 100% of the time and just meeting structure heat loss requirements) is located on right side of page.

EXAMPLE: For a structure with a 70,000 Btuh with a 36UHPQA heat pump has a balance point of 36°F. Below this theoretical balance point, the heating load is automatically transferred between the heat pump and the furnace by the wall thermostat to maintain the desired temperature. This is accomplished with the Fuel Saver Module.

70,000	\$	784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014	←THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	767	835	902	970	1032	1100	1168	1235	1303	1371	1438	1500	
.06	\$	823	891	959	1026	1089	1156	1224	1292	1359	1427	1495	1557	←THEORETICAL HEATING COST * FURN + HEAT PUMP \$ PER YEAR
.07	\$	885	953	1021	1089	1151	1218	1286	1354	1421	1489	1557	1619	
.08	\$	942	1010	1077	1145	1207	1275	1342	1410	1478	1546	1613	1675	
.09	\$	1004	1072	1139	1207	1269	1337	1405	1472	1540	1608	1675	1737	
.10	\$	1060	1128	1196	1263	1326	1393	1461	1529	1596	1664	1732	1794	
.12	\$	1179	1247	1314	1382	1444	1512	1579	1647	1715	1783	1850	1912	
.14	\$	1297	1365	1433	1500	1563	1630	1698	1766	1833	1901	1969	2031	
.16	\$	1416	1484	1551	1619	1681	1749	1816	1884	1952	2020	2087	2149	

BALANCE POINT 36 Deg F → 10

11. To find annual cooling cost of heat pump, look at the bottom of page under annual air conditioning cost. Directly under the electric rate \$/KW (step 3) line, is located the annual cooling cost.

EXAMPLE: At .06 \$/KW rate for electricity, the cooling cost would be \$182.00 annually.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

.05	.06	.07	.08	.09	.10	.12	.14	.16	←ELECTRIC RATE \$/KWH
\$ 151	182	212	243	273	303	364	425	486	←THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

NOTE: The accuracy of the "Dual Fuel-Add-On Heat Pump Guide to Energy Cost Savings," is directly affected by how accurately you estimate the structure's heat loss and heat gain in step 1. Because of uncontrollable variables, Bard Manufacturing Company is not responsible for any variation in actual operating costs from these theoretical estimates.

FIGURE 1

HEAT LOSS BTU/H	ELEC COST \$/KWH	HEATING OIL COST - \$/GALLON											
		70	80	90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70		1.80
35,000	\$ 389	445	502	558	615	671	727	784	835	891	947	1004	← THEORETICAL HEATING COST * FURNACE ONLY
.05	\$ 406	417	428	434	445	457	468	479	490	502	507	519	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR
.06	\$ 468	479	490	496	507	519	530	541	552	564	569	581	
.07	\$ 536	547	558	564	575	586	598	609	620	631	637	648	BALANCE POINT 19 DEG. F
.08	\$ 603	615	626	631	643	654	665	677	688	699	705	716	
.09	\$ 671	682	694	699	710	722	733	744	756	767	773	784	BALANCE POINT 19 DEG. F
.10	\$ 733	744	756	761	773	784	795	806	818	829	835	846	
.12	\$ 868	880	891	897	908	919	931	942	953	964	970	981	BALANCE POINT 19 DEG. F
.14	\$ 998	1010	1021	1026	1038	1049	1060	1072	1083	1094	1100	1111	
.16	\$ 1134	1145	1156	1162	1173	1184	1196	1207	1218	1230	1235	1247	
40,000	\$ 445	507	575	637	699	767	829	891	959	1021	1083	1151	← THEORETICAL HEATING COST * FURNACE ONLY
.05	\$ 457	473	490	507	530	547	564	581	598	620	637	654	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR
.06	\$ 519	536	552	569	592	609	626	643	660	682	699	716	
.07	\$ 586	603	620	637	660	677	694	710	727	750	767	784	BALANCE POINT 22 DEG. F.
.08	\$ 654	671	688	705	727	744	761	778	795	818	835	852	
.09	\$ 716	733	750	767	789	806	823	840	857	880	897	914	BALANCE POINT 22 DEG. F.
.10	\$ 784	801	818	835	857	874	891	908	925	947	964	981	
.12	\$ 914	931	947	964	987	1004	1021	1038	1055	1077	1094	1111	BALANCE POINT 22 DEG. F.
.14	\$ 1043	1060	1077	1094	1117	1134	1151	1168	1184	1207	1224	1241	
.16	\$ 1173	1190	1207	1224	1247	1263	1280	1297	1314	1337	1354	1371	
50,000	\$ 558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	← THEORETICAL HEATING COST * FURNACE ONLY
.05	\$ 558	592	626	660	694	727	761	795	829	863	897	931	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR
.06	\$ 620	654	688	722	756	789	823	857	891	925	959	993	
.07	\$ 682	716	750	784	818	852	885	919	953	987	1021	1055	BALANCE POINT 28 DEG. F.
.08	\$ 744	778	812	846	880	914	947	981	1015	1049	1083	1117	
.09	\$ 812	846	880	914	947	981	1015	1049	1083	1117	1151	1184	BALANCE POINT 28 DEG. F.
.10	\$ 874	908	942	976	1010	1043	1077	1111	1145	1179	1213	1247	
.12	\$ 1004	1038	1072	1105	1139	1173	1207	1241	1275	1309	1342	1376	BALANCE POINT 28 DEG. F.
.14	\$ 1128	1162	1196	1230	1263	1297	1331	1365	1399	1433	1467	1500	
.16	\$ 1258	1292	1326	1359	1393	1427	1461	1495	1529	1563	1596	1630	
60,000	\$ 671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	← THEORETICAL HEATING COST * FURNACE ONLY
.05	\$ 660	716	773	835	891	947	1004	1060	1117	1179	1235	1292	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR
.06	\$ 710	767	823	885	942	998	1055	1111	1168	1230	1286	1342	
.07	\$ 767	823	880	942	998	1055	1111	1168	1224	1286	1342	1399	BALANCE POINT 33 DEG. F.
.08	\$ 818	874	931	993	1049	1105	1162	1218	1275	1337	1393	1450	
.09	\$ 868	925	981	1043	1100	1156	1213	1269	1326	1388	1444	1500	BALANCE POINT 33 DEG. F.
.10	\$ 919	976	1032	1094	1151	1207	1263	1320	1376	1438	1495	1551	
.12	\$ 1026	1083	1139	1201	1258	1314	1371	1427	1484	1546	1602	1658	BALANCE POINT 33 DEG. F.
.14	\$ 1128	1184	1241	1303	1359	1416	1472	1529	1585	1647	1704	1760	
.16	\$ 1235	1292	1348	1410	1467	1523	1579	1636	1692	1754	1811	1867	
^A 70,000	\$ 784	891	1004	1117	1230	1342	1455	^C 1568	1675	1788	1901	2014	← THEORETICAL HEATING COST * FURNACE ONLY
.05	\$ 767	835	902	970	1032	1100	1168	1235	1303	1371	1438	1500	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR
^D .06	\$ 823	891	959	1026	1089	1156	1224	^E 1292	1359	1427	1495	1557	
.07	\$ 885	953	1021	1089	1151	1218	1286	1354	1421	1489	1557	1619	BALANCE POINT 36 DEG. F.
.08	\$ 942	1010	1077	1145	1207	1275	1342	1410	1478	1546	1613	1675	
.09	\$ 1004	1072	1139	1207	1269	1337	1405	1472	1540	1608	1675	1737	BALANCE POINT 36 DEG. F.
.10	\$ 1060	1128	1196	1263	1326	1393	1461	1529	1596	1664	1732	1794	
.12	\$ 1179	1247	1314	1382	1444	1512	1579	1647	1715	1783	1850	1912	BALANCE POINT 36 DEG. F.
.14	\$ 1297	1365	1433	1500	1563	1630	1698	1766	1833	1901	1969	2031	
.16	\$ 1416	1484	1551	1619	1681	1749	1816	1884	1952	2020	2087	2149	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
	\$ 151	182	212	243	273	303	364	425	486	← ELECTRIC RATE \$/KWH
										← THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATION COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION MOS30A INDOOR A36A0-A
 COOLING CAPACITY AT 53 DEG.F. ENTERING WATER TEMP.: 30770 BTUH, 16.34 SEER
 HEATING CAPACITY AT 53 DEG.F. ENTERING WATER TEMP.: 27710 BTUH, 3.62 COP
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
30,000			
.05	\$	253	756
.06	\$	299	908
.07	\$	349	1060
.08	\$	400	1213
.09	\$	451	1365
.10	\$	496	1517
.12	\$	603	1822
.14	\$	705	2127
.16	\$	801	2431

BALANCE POINT 7- DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
35,000			
.05	\$	287	885
.06	\$	344	1060
.07	\$	400	1241
.08	\$	457	1416
.09	\$	519	1596
.10	\$	575	1771
.12	\$	688	2127
.14	\$	806	2482
.16	\$	919	2838

BALANCE POINT 3 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
40,000			
.05	\$	321	1010
.06	\$	389	1213
.07	\$	451	1416
.08	\$	519	1619
.09	\$	581	1822
.10	\$	648	2025
.12	\$	778	2431
.14	\$	914	2838
.16	\$	1038	3244

BALANCE POINT 11 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
50,000			
.05	\$	417	1263
.06	\$	502	1517
.07	\$	586	1771
.08	\$	671	2025
.09	\$	756	2279
.10	\$	840	2533
.12	\$	1004	3041
.14	\$	1173	3549
.16	\$	1337	4057

BALANCE POINT 22 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
60,000			
.05	\$	547	1517
.06	\$	654	1822
.07	\$	767	2127
.08	\$	874	2431
.09	\$	981	2736
.10	\$	1094	3041
.12	\$	1309	3650
.14	\$	1523	4260
.16	\$	1743	4869

BALANCE POINT 29 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	75	90	105	120	135	150	180	210	241	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY
DUAL PURL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
HEAT PUMP MODEL: COMPRESSOR SECTION MOS30A INDOOR A36AO-A
COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 30770 BTUH, 16.34 SEER
HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 27710 BTUH, 3.62 COP
FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00	
30,000	\$	231	265	299	332	361	394	428	462	496	530	598	665	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 248	248	248	248	248	248	248	248	248	248	248	253	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 293	293	293	293	293	293	293	293	293	293	293	299	
	.07	\$ 344	344	344	344	344	344	344	344	344	344	344	349	
	.08	\$ 389	389	389	389	389	389	389	389	389	389	389	394	
	.09	\$ 440	440	440	440	440	440	440	440	440	440	440	445	
	.10	\$ 485	485	485	485	485	485	485	485	485	485	485	490	
	.12	\$ 581	581	581	581	581	581	581	581	581	581	581	586	
	.14	\$ 677	677	677	677	677	677	677	677	677	677	677	682	
	.16	\$ 778	778	778	778	778	778	778	778	778	778	778	784	
35,000	\$	270	310	344	383	423	462	502	541	581	620	694	773	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 276	276	282	282	282	282	282	282	287	287	287	287	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 332	332	338	338	338	338	338	338	344	344	344	344	
	.07	\$ 389	389	394	394	394	394	394	394	400	400	400	400	
	.08	\$ 440	440	445	445	445	445	445	445	451	451	451	451	
	.09	\$ 496	496	502	502	502	502	502	502	507	507	507	507	
	.10	\$ 552	552	558	558	558	558	558	558	564	564	564	564	
	.12	\$ 660	660	665	665	665	665	665	665	671	671	671	671	
	.14	\$ 767	767	773	773	773	773	773	773	778	778	778	778	
	.16	\$ 874	874	880	880	880	880	880	880	885	885	885	885	
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 315	321	321	321	327	327	332	332	338	338	344	349	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 372	378	378	378	383	383	389	389	394	394	400	406	
	.07	\$ 434	440	440	440	445	445	451	451	457	457	462	468	
	.08	\$ 490	496	496	496	502	502	507	507	513	513	519	524	
	.09	\$ 552	558	558	558	564	564	569	569	575	575	581	586	
	.10	\$ 609	615	615	615	620	620	626	626	631	631	637	643	
	.12	\$ 727	733	733	733	739	739	744	744	750	750	756	761	
	.14	\$ 846	852	852	852	857	857	863	863	868	868	874	880	
	.16	\$ 964	970	970	970	976	976	981	981	987	987	993	998	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 389	400	417	434	451	468	479	496	513	530	558	592	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 445	457	473	490	507	524	536	552	569	586	615	648	
	.07	\$ 502	513	530	547	564	581	592	609	626	643	671	705	
	.08	\$ 558	569	586	603	620	637	648	665	682	699	727	761	
	.09	\$ 615	626	643	660	677	694	705	722	739	756	784	818	
	.10	\$ 671	682	699	716	733	750	761	778	795	812	840	874	
	.12	\$ 778	789	806	823	840	857	868	885	902	919	947	981	
	.14	\$ 891	902	919	936	953	970	981	998	1015	1032	1060	1094	
	.16	\$ 1004	1015	1032	1049	1066	1083	1094	1111	1128	1145	1173	1207	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 462	490	519	547	575	603	631	660	688	716	773	829	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 519	547	575	603	631	660	688	716	744	773	829	885	
	.07	\$ 569	598	626	654	682	710	739	767	795	823	880	936	
	.08	\$ 620	648	677	705	733	761	789	818	846	874	931	987	
	.09	\$ 677	705	733	761	789	818	846	874	902	931	987	1043	
	.10	\$ 727	756	784	812	840	868	897	925	953	981	1038	1094	
	.12	\$ 835	863	891	919	947	976	1004	1032	1060	1089	1145	1201	
	.14	\$ 942	970	998	1026	1055	1083	1111	1139	1168	1196	1252	1309	
	.16	\$ 1049	1077	1105	1134	1162	1190	1218	1247	1275	1303	1359	1416	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	75	90	105	120	135	150	180	210	241	
										<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION MOS30A INDOOR A36A0-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 30770 BTUH, 16.34 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 27710 BTUH, 3.62 COP
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	KWH COST S/KWH	HEATING OIL COST - \$/GALLON															
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70		1.80			
30,000	\$	332	383	428	479	524	575	620	671	716	767	812	863	---THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$	248	248	248	248	248	248	253	253	253	253	253	253	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	293	293	293	293	293	293	299	299	299	299	299	299				
.07	\$	344	344	344	344	344	344	349	349	349	349	349	349				
.08	\$	389	389	389	389	389	389	394	394	394	394	394	394				
.09	\$	440	440	440	440	440	440	445	445	445	445	445	445				
.10	\$	485	485	485	485	485	485	490	490	490	490	490	490				
.12	\$	581	581	581	581	581	581	586	586	586	586	586	586				
.14	\$	677	677	677	677	677	677	682	682	682	682	682	682				
.16	\$	778	778	778	778	778	778	784	784	784	784	784	784			BALANCE POINT 7- DEG.F.	
35,000	\$	389	445	502	558	615	671	727	784	835	891	947	1004			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	282	282	282	282	287	287	287	287	293	293	293	293	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	338	338	338	338	344	344	344	344	349	349	349	349				
.07	\$	394	394	394	394	400	400	400	400	406	406	406	406				
.08	\$	445	445	445	445	451	451	451	451	457	457	457	457				
.09	\$	502	502	502	502	507	507	507	507	513	513	513	513				
.10	\$	558	558	558	558	564	564	564	564	569	569	569	569				
.12	\$	665	665	665	665	671	671	671	671	677	677	677	677				
.14	\$	773	773	773	773	778	778	778	778	784	784	784	784				
.16	\$	880	880	880	880	885	885	885	885	891	891	891	891			BALANCE POINT 3 DEG.F.	
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	321	327	332	332	338	344	344	349	355	355	361	361	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	378	383	389	389	394	400	400	406	411	411	417	417				
.07	\$	440	445	451	451	457	462	462	468	473	473	479	479				
.08	\$	496	502	507	507	513	519	519	524	530	530	536	536				
.09	\$	558	564	569	569	575	581	581	586	592	592	598	598				
.10	\$	615	620	626	626	631	637	637	643	648	648	654	654				
.12	\$	733	739	744	744	750	756	756	761	767	767	773	773				
.14	\$	852	857	863	863	868	874	874	880	885	885	891	891				
.16	\$	970	976	981	981	987	993	993	998	1004	1004	1010	1010			BALANCE POINT 11 DEG.F.	
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	434	457	479	502	524	547	575	598	620	643	665	688	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	490	513	536	558	581	603	631	654	677	699	722	744				
.07	\$	547	569	592	615	637	660	688	710	733	756	778	801				
.08	\$	603	626	648	671	694	716	744	767	789	812	835	857				
.09	\$	660	682	705	727	750	773	801	823	846	868	891	914				
.10	\$	716	739	761	784	806	829	857	880	902	925	947	970				
.12	\$	823	846	868	891	914	936	964	987	1010	1032	1055	1077				
.14	\$	936	959	981	1004	1026	1049	1077	1100	1122	1145	1168	1190				
.16	\$	1049	1072	1094	1117	1139	1162	1190	1213	1235	1258	1280	1303			BALANCE POINT 22 DEG.F.	
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	547	592	631	671	710	750	795	835	874	914	953	998	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	603	648	688	727	767	806	852	891	931	970	1010	1055				
.07	\$	654	699	739	778	818	857	902	942	981	1021	1060	1105				
.08	\$	705	750	789	829	868	908	953	993	1032	1072	1111	1156				
.09	\$	761	806	846	885	925	964	1010	1049	1089	1128	1168	1213				
.10	\$	812	857	897	936	976	1015	1060	1100	1139	1179	1218	1263				
.12	\$	919	964	1004	1043	1083	1122	1168	1207	1247	1286	1326	1371				
.14	\$	1026	1072	1111	1151	1190	1230	1275	1314	1354	1393	1433	1478				
.16	\$	1134	1179	1218	1258	1297	1337	1382	1421	1461	1500	1540	1585			BALANCE POINT 29 DEG.F.	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	75	90	105	120	135	150	180	210	241	<--ELECTRIC RATE S/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION MOS30A INDCOR A36AO-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 30770 BTUH, 16.34 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 27710 BTUH, 3.52 COP
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON												
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20	1.20	
30,000	\$	434	473	507	547	581	620	654	694	727	801	874	874	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	248	248	248	248	248	253	253	253	253	253	253	253	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	293	293	293	293	293	299	299	299	299	299	299	299	
.07	\$	344	344	344	344	344	349	349	349	349	349	349	349	
.08	\$	389	389	389	389	389	394	394	394	394	394	394	394	
.09	\$	440	440	440	440	440	445	445	445	445	445	445	445	
.10	\$	485	485	485	485	485	490	490	490	490	490	490	490	
.12	\$	581	581	581	581	581	586	586	586	586	586	586	586	
.14	\$	677	677	677	677	677	682	682	682	682	682	682	682	
.16	\$	778	778	778	778	778	784	784	784	784	784	784	784	
35,000	\$	507	552	592	637	682	722	767	806	852	936	1021	1021	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	282	282	287	287	287	287	287	293	293	293	293	293	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	338	338	344	344	344	344	344	349	349	349	349	349	
.07	\$	394	394	400	400	400	400	400	406	406	406	406	406	
.08	\$	445	445	451	451	451	451	451	457	457	457	457	457	
.09	\$	502	502	507	507	507	507	507	513	513	513	513	513	
.10	\$	558	558	564	564	564	564	564	569	569	569	569	569	
.12	\$	665	665	671	671	671	671	671	677	677	677	677	677	
.14	\$	773	773	778	778	778	778	778	784	784	784	784	784	
.16	\$	880	880	885	885	885	885	885	891	891	891	891	891	
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	332	332	338	338	344	344	349	349	355	361	366	366	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	389	389	394	394	400	400	406	406	411	417	423	423	
.07	\$	451	451	457	457	462	462	468	468	473	479	485	485	
.08	\$	507	507	513	513	519	519	524	524	530	536	541	541	
.09	\$	569	569	575	575	581	581	586	586	592	598	603	603	
.10	\$	626	626	631	631	637	637	643	643	648	654	660	660	
.12	\$	744	744	750	750	756	756	761	761	767	773	778	778	
.14	\$	863	863	868	868	874	874	880	880	885	891	897	897	
.16	\$	981	981	987	987	993	993	998	998	1004	1010	1015	1015	
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	485	502	519	536	552	569	586	609	626	660	694	694	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	541	558	575	592	609	626	643	665	682	716	750	750	
.07	\$	598	615	631	648	665	682	699	722	739	773	806	806	
.08	\$	654	671	688	705	722	739	756	778	795	829	863	863	
.09	\$	710	727	744	761	778	795	812	835	852	885	919	919	
.10	\$	767	784	801	818	835	852	868	891	908	942	976	976	
.12	\$	874	891	908	925	942	959	976	998	1015	1049	1083	1083	
.14	\$	987	1004	1021	1038	1055	1072	1089	1111	1128	1162	1196	1196	
.16	\$	1100	1117	1134	1151	1168	1184	1201	1224	1241	1275	1309	1309	
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	637	665	699	727	761	789	823	852	885	947	1010	1010	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	694	722	756	784	818	846	880	908	942	1004	1066	1066	
.07	\$	744	773	806	835	868	897	931	959	993	1055	1117	1117	
.08	\$	795	823	857	885	919	947	981	1010	1043	1105	1168	1168	
.09	\$	852	880	914	942	976	1004	1038	1066	1100	1162	1224	1224	
.10	\$	902	931	964	993	1026	1055	1089	1117	1151	1213	1275	1275	
.12	\$	1010	1038	1072	1100	1134	1162	1196	1224	1258	1320	1382	1382	
.14	\$	1117	1145	1179	1207	1241	1269	1303	1331	1365	1427	1489	1489	
.16	\$	1224	1252	1286	1314	1348	1376	1410	1438	1472	1534	1596	1596	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH
\$	75	90	105	120	135	150	180	210	241	<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION MCS36A INDOOR A36AO-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 36680 BTUH, 15.74 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 35260 BTUH, 3.69 COP
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
35,000			
.05	\$	287	885
.06	\$	344	1060
.07	\$	406	1241
.08	\$	462	1416
.09	\$	519	1596
.10	\$	581	1771
.12	\$	699	2127
.14	\$	806	2482
.16	\$	925	2838

BALANCE POINT 13- DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
40,000			
.05	\$	327	1010
.06	\$	394	1213
.07	\$	457	1416
.08	\$	524	1619
.09	\$	586	1822
.10	\$	648	2025
.12	\$	778	2431
.14	\$	914	2838
.16	\$	1043	3244

BALANCE POINT 4- DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
50,000			
.05	\$	400	1263
.06	\$	473	1517
.07	\$	558	1771
.08	\$	637	2025
.09	\$	722	2279
.10	\$	795	2533
.12	\$	959	3041
.14	\$	1117	3549
.16	\$	1280	4057

BALANCE POINT 10 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
60,000			
.05	\$	485	1517
.06	\$	581	1822
.07	\$	682	2127
.08	\$	778	2431
.09	\$	880	2736
.10	\$	976	3041
.12	\$	1168	3650
.14	\$	1365	4260
.16	\$	1557	4869

BALANCE POINT 19 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
70,000			
.05	\$	598	1771
.06	\$	716	2127
.07	\$	840	2482
.08	\$	959	2838
.09	\$	1077	3193
.10	\$	1196	3549
.12	\$	1433	4260
.14	\$	1675	4971
.16	\$	1912	5682

BALANCE POINT 25 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

\$	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH
	93	111	130	149	167	186	223	261	298	<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION W0336A INDOOR A36A0-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 36680 BTUH, 15.74 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 35260 BTUH, 3.69 COP
 FURNACE TYPE: NATURAL GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM														
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90		1.00		
35,000	\$	270	310	344	383	423	462	502	541	581	620	694	773	---THEORETICAL HEATING COST * FURNACE ONLY		
.05	\$	282	282	282	282	282	282	282	282	282	282	282	282	287	287	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	338	338	338	338	338	338	338	338	338	338	338	338	344	344	
.07	\$	394	394	394	394	394	394	394	394	394	394	394	394	400	400	
.08	\$	451	451	451	451	451	451	451	451	451	451	451	451	457	457	
.09	\$	507	507	507	507	507	507	507	507	507	507	507	507	513	513	
.10	\$	564	564	564	564	564	564	564	564	564	564	564	564	569	569	
.12	\$	677	677	677	677	677	677	677	677	677	677	677	677	682	682	
.14	\$	784	784	784	784	784	784	784	784	784	784	784	784	789	789	
.16	\$	897	897	897	897	897	897	897	897	897	897	897	897	902	902	
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885	---THEORETICAL HEATING COST * FURNACE ONLY		
.05	\$	315	315	315	315	315	315	315	321	321	321	321	321	321	321	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	383	383	383	383	383	383	383	389	389	389	389	389	389	389	
.07	\$	445	445	445	445	445	445	445	445	451	451	451	451	451	451	
.08	\$	507	507	507	507	507	507	507	513	513	513	513	513	513	513	
.09	\$	569	569	569	569	569	569	569	575	575	575	575	575	575	575	
.10	\$	631	631	631	631	631	631	631	637	637	637	637	637	637	637	
.12	\$	756	756	756	756	756	756	756	761	761	761	761	761	761	761	
.14	\$	880	880	880	880	880	880	880	885	885	885	885	885	885	885	
.16	\$	1010	1010	1010	1010	1010	1010	1010	1015	1015	1015	1015	1015	1015	1015	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105	---THEORETICAL HEATING COST * FURNACE ONLY		
.05	\$	389	389	394	400	400	406	406	411	411	417	423	428	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.06	\$	462	462	468	473	473	479	479	485	485	490	496	502			
.07	\$	530	530	536	541	541	547	547	552	552	558	564	569			
.08	\$	603	603	609	615	615	620	620	626	626	631	637	643			
.09	\$	677	677	682	688	688	694	694	699	699	705	710	716			
.10	\$	750	750	756	761	761	767	767	773	773	778	784	789			
.12	\$	897	897	902	908	908	914	914	919	919	925	931	936			
.14	\$	1043	1043	1049	1055	1055	1060	1060	1066	1066	1072	1077	1083			
.16	\$	1190	1190	1196	1201	1201	1207	1207	1213	1213	1218	1224	1230			
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331	---THEORETICAL HEATING COST * FURNACE ONLY		
.05	\$	457	473	485	496	507	519	536	547	558	569	598	620	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.06	\$	530	547	558	569	581	592	609	620	631	643	671	694			
.07	\$	603	620	631	643	654	665	682	694	705	716	744	767			
.08	\$	682	699	710	722	733	744	761	773	784	795	823	846			
.09	\$	756	773	784	795	806	818	835	846	857	868	897	919			
.10	\$	829	846	857	868	880	891	908	919	931	942	970	993			
.12	\$	976	993	1004	1015	1026	1038	1055	1066	1077	1089	1117	1139			
.14	\$	1128	1145	1156	1168	1179	1190	1207	1218	1230	1241	1269	1292			
.16	\$	1275	1292	1303	1314	1326	1337	1354	1365	1376	1388	1416	1438			
70,000	\$	541	620	694	773	852	931	1010	1083	1162	1241	1393	1551	---THEORETICAL HEATING COST * FURNACE ONLY		
.05	\$	530	552	575	598	620	643	665	688	710	733	778	818	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.06	\$	603	626	648	671	694	716	739	761	784	806	852	891			
.07	\$	677	699	722	744	767	789	812	835	857	880	925	964			
.08	\$	756	778	801	823	846	868	891	914	936	959	1004	1043			
.09	\$	829	852	874	897	919	942	964	987	1010	1032	1077	1117			
.10	\$	902	925	947	970	993	1015	1038	1060	1083	1105	1151	1190			
.12	\$	1055	1077	1100	1122	1145	1168	1190	1213	1235	1258	1303	1342			
.14	\$	1207	1230	1252	1275	1297	1320	1342	1365	1388	1410	1455	1495			
.16	\$	1354	1376	1399	1421	1444	1467	1489	1512	1534	1557	1602	1642			

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION W0336A INDOOR A36A0-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 36680 BTUH, 15.74 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 35260 BTUH, 3.69 COP
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON												
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70		1.80
35,000	\$	389	445	502	558	615	671	727	784	835	891	947	1004	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 282	282	282	282	282	282	287	287	287	287	287	287	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 338	338	338	338	338	338	344	344	344	344	344	344	
	.07	\$ 394	394	394	394	394	394	400	400	400	400	400	400	
	.08	\$ 451	451	451	451	451	451	457	457	457	457	457	457	
	.09	\$ 507	507	507	507	507	507	513	513	513	513	513	513	
	.10	\$ 564	564	564	564	564	564	569	569	569	569	569	569	
	.12	\$ 677	677	677	677	677	677	682	682	682	682	682	682	
	.14	\$ 784	784	784	784	784	784	789	789	789	789	789	789	
	.16	\$ 897	897	897	897	897	897	902	902	902	902	902	902	
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 315	315	315	321	321	321	321	321	321	327	327	327	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 383	383	383	389	389	389	389	389	389	394	394	394	
	.07	\$ 445	445	445	451	451	451	451	451	451	457	457	457	
	.08	\$ 507	507	507	513	513	513	513	513	513	519	519	519	
	.09	\$ 569	569	569	575	575	575	575	575	575	581	581	581	
	.10	\$ 631	631	631	637	637	637	637	637	637	643	643	643	
	.12	\$ 756	756	756	761	761	761	761	761	761	767	767	767	
	.14	\$ 880	880	880	885	885	885	885	885	885	891	891	891	
	.16	\$ 1010	1010	1010	1015	1015	1015	1015	1015	1015	1021	1021	1021	
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 400	400	406	411	417	423	423	428	434	440	445	445	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 473	473	479	485	490	496	496	502	507	513	519	519	
	.07	\$ 541	541	547	552	558	564	564	569	575	581	586	586	
	.08	\$ 615	615	620	626	631	637	637	643	648	654	660	660	
	.09	\$ 688	688	694	699	705	710	710	716	722	727	733	733	
	.10	\$ 761	761	767	773	778	784	784	789	795	801	806	806	
	.12	\$ 908	908	914	919	925	931	931	936	942	947	953	953	
	.14	\$ 1055	1055	1060	1066	1072	1077	1077	1083	1089	1094	1100	1100	
	.16	\$ 1201	1201	1207	1213	1218	1224	1224	1230	1235	1241	1247	1247	
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 496	513	530	552	569	586	603	620	637	660	677	694	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 569	586	603	626	643	660	677	694	710	733	750	767	
	.07	\$ 643	660	677	699	716	733	750	767	784	806	823	840	
	.08	\$ 722	739	756	778	795	812	829	846	863	885	902	919	
	.09	\$ 795	812	829	852	868	885	902	919	936	959	976	993	
	.10	\$ 868	885	902	925	942	959	976	993	1010	1032	1049	1066	
	.12	\$ 1015	1032	1049	1072	1089	1105	1122	1139	1156	1179	1196	1213	
	.14	\$ 1168	1184	1201	1224	1241	1258	1275	1292	1309	1331	1348	1365	
	.16	\$ 1314	1331	1348	1371	1388	1405	1421	1438	1455	1478	1495	1512	
70,000	\$	784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 603	631	665	699	727	761	795	823	857	891	919	953	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 677	705	739	773	801	835	868	897	931	964	993	1026	
	.07	\$ 750	778	812	846	874	908	942	970	1004	1038	1066	1100	
	.08	\$ 829	857	891	925	953	987	1021	1049	1083	1117	1145	1179	
	.09	\$ 902	931	964	998	1026	1060	1094	1122	1156	1190	1218	1252	
	.10	\$ 976	1004	1038	1072	1100	1134	1168	1196	1230	1263	1292	1326	
	.12	\$ 1128	1156	1190	1224	1252	1286	1320	1348	1382	1416	1444	1478	
	.14	\$ 1280	1309	1342	1376	1405	1438	1472	1500	1534	1568	1596	1630	
	.16	\$ 1427	1455	1489	1523	1551	1585	1619	1647	1681	1715	1743	1777	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION MOS36A INDOOR A36AO-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 36680 BTUH, 15.74 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 35260 BTUH, 3.69 COP
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10		1.20	1.20	
35,000	\$	507	552	592	637	682	722	767	806	852	936	1021	1021	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	282	282	282	282	282	287	287	287	287	287	287	287	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.06	\$	338	338	338	338	338	344	344	344	344	344	344	344	\$ PER YEAR	
.07	\$	394	394	394	394	394	400	400	400	400	400	400	400		
.08	\$	451	451	451	451	451	457	457	457	457	457	457	457		
.09	\$	507	507	507	507	507	513	513	513	513	513	513	513		
.10	\$	564	564	564	564	564	569	569	569	569	569	569	569		
.12	\$	677	677	677	677	677	682	682	682	682	682	682	682		
.14	\$	784	784	784	784	784	789	789	789	789	789	789	789	BALANCE POINT 13- DEG.F.	
.16	\$	897	897	897	897	897	902	902	902	902	902	902	902		
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	315	321	321	321	321	321	321	321	321	327	327	327	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.06	\$	383	389	389	389	389	389	389	389	389	394	394	394	\$ PER YEAR	
.07	\$	445	451	451	451	451	451	451	451	451	457	457	457		
.08	\$	507	513	513	513	513	513	513	513	513	519	519	519		
.09	\$	569	575	575	575	575	575	575	575	575	581	581	581		
.10	\$	631	637	637	637	637	637	637	637	637	643	643	643		
.12	\$	756	761	761	761	761	761	761	761	761	767	767	767		
.14	\$	880	885	885	885	885	885	885	885	885	891	891	891	BALANCE POINT 4- DEG.F.	
.16	\$	1010	1015	1015	1015	1015	1015	1015	1015	1015	1021	1021	1021		
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	406	411	411	417	423	423	428	434	434	440	451	451	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.06	\$	479	485	485	490	496	496	502	507	507	513	524	524	\$ PER YEAR	
.07	\$	547	552	552	558	564	564	569	575	575	581	592	592		
.08	\$	620	626	626	631	637	637	643	648	648	654	665	665		
.09	\$	694	699	699	705	710	710	716	722	722	727	739	739		
.10	\$	767	773	773	778	784	784	789	795	795	801	812	812		
.12	\$	914	919	919	925	931	931	936	942	942	947	959	959		
.14	\$	1060	1066	1066	1072	1077	1077	1083	1089	1089	1094	1105	1105	BALANCE POINT 10 DEG.F.	
.16	\$	1207	1213	1213	1218	1224	1224	1230	1235	1235	1241	1252	1252		
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	536	547	564	575	592	603	615	631	643	671	699	699	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.06	\$	609	620	637	648	665	677	688	705	716	744	773	773	\$ PER YEAR	
.07	\$	682	694	710	722	739	750	761	778	789	818	846	846		
.08	\$	761	773	789	801	818	829	840	857	868	897	925	925		
.09	\$	835	846	863	874	891	902	914	931	942	970	998	998		
.10	\$	908	919	936	947	964	976	987	1004	1015	1043	1072	1072		
.12	\$	1055	1066	1083	1094	1111	1122	1134	1151	1162	1190	1218	1218		
.14	\$	1207	1218	1235	1247	1263	1275	1286	1303	1314	1342	1371	1371	BALANCE POINT 19 DEG.F.	
.16	\$	1354	1365	1382	1393	1410	1421	1433	1450	1461	1489	1517	1517		
70,000	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	671	694	716	744	767	789	818	840	863	914	959	959	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.06	\$	744	767	789	818	840	863	891	914	936	987	1032	1032	\$ PER YEAR	
.07	\$	818	840	863	891	914	936	964	987	1010	1060	1105	1105		
.08	\$	897	919	942	970	993	1015	1043	1066	1089	1139	1184	1184		
.09	\$	970	993	1015	1043	1066	1089	1117	1139	1162	1213	1258	1258		
.10	\$	1043	1066	1089	1117	1139	1162	1190	1213	1235	1286	1331	1331		
.12	\$	1196	1218	1241	1269	1292	1314	1342	1365	1388	1438	1484	1484		
.14	\$	1348	1371	1393	1421	1444	1467	1495	1517	1540	1591	1636	1636	BALANCE POINT 25 DEG.F.	
.16	\$	1495	1517	1540	1568	1591	1613	1642	1664	1687	1737	1783	1783		

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION W0542A INDOOR A42A0-A
 COOLING CAPACITY AT 53 DEG.F. ENTERING WATER TEMP.: 43320 BTUH, 16.25 SEER
 HEATING CAPACITY AT 53 DEG.F. ENTERING WATER TEMP.: 41500 BTUH, 3.59 COP
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% APUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY	
40,000				
.05	\$	338	1010	
.06	\$	411	1213	
.07	\$	479	1416	
.08	\$	547	1619	
.09	\$	615	1822	
.10	\$	682	2025	
.12	\$	818	2431	
.14	\$	953	2838	BALANCE POINT 16- DEG.F.
.16	\$	1089	3244	

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY	
50,000				
.05	\$	417	1263	
.06	\$	496	1517	
.07	\$	581	1771	
.08	\$	665	2025	
.09	\$	744	2279	
.10	\$	835	2533	
.12	\$	998	3041	
.14	\$	1162	3549	BALANCE POINT 0 DEG.F.
.16	\$	1331	4057	

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY	
60,000				
.05	\$	490	1517	
.06	\$	586	1822	
.07	\$	682	2127	
.08	\$	784	2431	
.09	\$	880	2736	
.10	\$	981	3041	
.12	\$	1179	3650	
.14	\$	1376	4260	BALANCE POINT 11 DEG.F.
.16	\$	1574	4869	

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY	
70,000				
.05	\$	581	1771	
.06	\$	699	2127	
.07	\$	818	2482	
.08	\$	931	2838	
.09	\$	1049	3193	
.10	\$	1162	3549	
.12	\$	1393	4260	
.14	\$	1625	4971	BALANCE POINT 19 DEG.F.
.16	\$	1856	5682	

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY	
80,000				
.05	\$	688	2025	
.06	\$	829	2431	
.07	\$	970	2838	
.08	\$	1105	3244	
.09	\$	1241	3650	
.10	\$	1382	4057	
.12	\$	1658	4869	
.14	\$	1935	5682	BALANCE POINT 24 DEG.F.
.16	\$	2206	6494	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

\$	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH
	106	127	149	170	191	213	255	298	341	<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION MOS42A INDOOR A42AO-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 43320 BTUH, 16.25 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 41500 BTUH, 3.59 COP
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00	
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	332	332	332	332	332	332	332	332	332	332	338	338	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	400	400	400	400	400	400	400	400	400	406	406	406	
.07	\$	468	468	468	468	468	468	468	468	468	473	473	473	
.08	\$	530	530	530	530	530	530	530	530	530	536	536	536	
.09	\$	598	598	598	598	598	598	598	598	598	603	603	603	
.10	\$	665	665	665	665	665	665	665	665	665	671	671	671	BALANCE POINT 16- DEG.F.
.12	\$	795	795	795	795	795	795	795	795	795	801	801	801	
.14	\$	925	925	925	925	925	925	925	925	925	931	931	931	
.16	\$	1055	1055	1055	1055	1055	1055	1055	1055	1055	1060	1060	1060	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	406	406	406	411	411	411	411	411	411	417	417	417	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	485	485	485	490	490	490	490	490	490	496	496	496	
.07	\$	564	564	564	569	569	569	569	569	569	575	575	575	
.08	\$	643	643	643	648	648	648	648	648	648	654	654	654	
.09	\$	722	722	722	727	727	727	727	727	727	733	733	733	
.10	\$	801	801	801	806	806	806	806	806	806	812	812	812	BALANCE POINT 0 DEG.F.
.12	\$	959	959	959	964	964	964	964	964	964	970	970	970	
.14	\$	1117	1117	1117	1122	1122	1122	1122	1122	1122	1128	1128	1128	
.16	\$	1280	1280	1280	1286	1286	1286	1286	1286	1286	1292	1292	1292	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	473	473	479	485	485	490	496	496	502	507	513	519	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	564	564	569	575	575	581	586	586	592	598	603	609	
.07	\$	654	654	660	665	665	671	677	677	682	688	694	699	
.08	\$	744	744	750	756	756	761	767	767	773	778	784	789	
.09	\$	835	835	840	846	846	852	857	857	863	868	874	880	
.10	\$	925	925	931	936	936	942	947	947	953	959	964	970	BALANCE POINT 11 DEG.F.
.12	\$	1105	1105	1111	1117	1117	1122	1128	1128	1134	1139	1145	1151	
.14	\$	1286	1286	1292	1297	1297	1303	1309	1309	1314	1320	1326	1331	
.16	\$	1461	1461	1467	1472	1472	1478	1484	1484	1489	1495	1500	1506	
70,000	\$	541	620	694	773	852	931	1010	1083	1162	1241	1393	1551		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	547	558	575	592	603	620	631	648	660	677	705	733	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	637	648	665	682	694	710	722	739	750	767	795	823	
.07	\$	727	739	756	773	784	801	812	829	840	857	885	914	
.08	\$	818	829	846	863	874	891	902	919	931	947	976	1004	
.09	\$	908	919	936	953	964	981	993	1010	1021	1038	1066	1094	
.10	\$	993	1004	1021	1038	1049	1066	1077	1094	1105	1122	1151	1179	BALANCE POINT 19 DEG.F.
.12	\$	1173	1184	1201	1218	1230	1247	1258	1275	1286	1303	1331	1359	
.14	\$	1354	1365	1382	1399	1410	1427	1438	1455	1467	1484	1512	1540	
.16	\$	1529	1540	1557	1574	1585	1602	1613	1630	1642	1658	1687	1715	
80,000	\$	620	705	795	885	976	1060	1151	1241	1331	1416	1596	1771		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	620	648	671	699	722	750	773	801	823	852	902	953	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	705	733	756	784	806	835	857	885	908	936	987	1038	
.07	\$	795	823	846	874	897	925	947	976	998	1026	1077	1128	
.08	\$	885	914	936	964	987	1015	1038	1066	1089	1117	1168	1218	
.09	\$	976	1004	1026	1055	1077	1105	1128	1156	1179	1207	1258	1309	
.10	\$	1060	1089	1111	1139	1162	1190	1213	1241	1263	1292	1342	1393	BALANCE POINT 24 DEG.F.
.12	\$	1241	1269	1292	1320	1342	1371	1393	1421	1444	1472	1523	1574	
.14	\$	1416	1444	1467	1495	1517	1546	1568	1596	1619	1647	1698	1749	
.16	\$	1596	1625	1647	1675	1698	1726	1749	1777	1799	1828	1878	1929	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH
\$	106	127	149	170	191	213	255	298	341	<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION W0S42A INDOOR A42AO-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 43320 BTUH, 16.25 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 41500 BTUH, 3.59 COP
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00% AFUR

HEAT LOSS BTUH	K.L.B.C. COST \$/KWH	HEATING OIL COST - \$/GALLON													
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80		
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	332	332	332	332	338	338	338	338	338	338	338	338	344	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	400	400	400	400	406	406	406	406	406	406	406	406	411	
.07	\$	468	468	468	468	473	473	473	473	473	473	473	473	479	
.08	\$	530	530	530	530	536	536	536	536	536	536	536	536	541	
.09	\$	598	598	598	598	603	603	603	603	603	603	603	603	609	
.10	\$	665	665	665	665	671	671	671	671	671	671	671	671	677	
.12	\$	795	795	795	795	801	801	801	801	801	801	801	801	806	
.14	\$	925	925	925	925	931	931	931	931	931	931	931	931	936	
.16	\$	1055	1055	1055	1055	1060	1060	1060	1060	1060	1060	1060	1060	1066	
														BALANCE POINT 16- DEG.F.	
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	411	411	411	411	417	417	417	417	423	423	423	423	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	490	490	490	490	496	496	496	496	502	502	502	502		
.07	\$	569	569	569	569	575	575	575	575	581	581	581	581		
.08	\$	648	648	648	648	654	654	654	654	660	660	660	660		
.09	\$	727	727	727	727	733	733	733	733	739	739	739	739		
.10	\$	806	806	806	806	812	812	812	812	818	818	818	818		
.12	\$	964	964	964	964	970	970	970	970	976	976	976	976		
.14	\$	1122	1122	1122	1122	1128	1128	1128	1128	1134	1134	1134	1134		
.16	\$	1286	1286	1286	1286	1292	1292	1292	1292	1297	1297	1297	1297		
															BALANCE POINT 0 DEG.F.
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	485	490	496	502	502	507	513	519	524	530	536	541	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	575	581	586	592	592	598	603	609	615	620	626	631		
.07	\$	665	671	677	682	682	688	694	699	705	710	716	722		
.08	\$	756	761	767	773	773	778	784	789	795	801	806	812		
.09	\$	846	852	857	863	863	868	874	880	885	891	897	902		
.10	\$	936	942	947	953	953	959	964	970	976	981	987	993		
.12	\$	1117	1122	1128	1134	1134	1139	1145	1151	1156	1162	1168	1173		
.14	\$	1297	1303	1309	1314	1314	1320	1326	1331	1337	1342	1348	1354		
.16	\$	1472	1478	1484	1489	1489	1495	1500	1506	1512	1517	1523	1529		
															BALANCE POINT 11 DEG.F.
70,000	\$	784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	592	615	631	654	677	694	716	739	756	778	801	818	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	682	705	722	744	767	784	806	829	846	868	891	908		
.07	\$	773	795	812	835	857	874	897	919	936	959	981	998		
.08	\$	863	885	902	925	947	964	987	1010	1026	1049	1072	1089		
.09	\$	953	976	993	1015	1038	1055	1077	1100	1117	1139	1162	1179		
.10	\$	1038	1060	1077	1100	1122	1139	1162	1184	1201	1224	1247	1263		
.12	\$	1218	1241	1258	1280	1303	1320	1342	1365	1382	1405	1427	1444		
.14	\$	1399	1421	1438	1461	1484	1500	1523	1546	1563	1585	1608	1625		
.16	\$	1574	1596	1613	1636	1658	1675	1698	1721	1737	1760	1783	1799		
															BALANCE POINT 19 DEG.F.
80,000	\$	891	1021	1151	1280	1405	1534	1664	1788	1918	2048	2172	2302	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	699	739	773	812	846	885	919	959	993	1026	1066	1100	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	784	823	857	897	931	970	1004	1043	1077	1111	1151	1184		
.07	\$	874	914	947	987	1021	1060	1094	1134	1168	1201	1241	1275		
.08	\$	964	1004	1038	1077	1111	1151	1184	1224	1258	1292	1331	1365		
.09	\$	1055	1094	1128	1168	1201	1241	1275	1314	1348	1382	1421	1455		
.10	\$	1139	1179	1213	1252	1286	1326	1359	1399	1433	1467	1506	1540		
.12	\$	1320	1359	1393	1433	1467	1506	1540	1579	1613	1647	1687	1721		
.14	\$	1495	1534	1568	1608	1642	1681	1715	1754	1788	1822	1862	1895		
.16	\$	1675	1715	1749	1788	1822	1862	1895	1935	1969	2003	2042	2076		
															BALANCE POINT 24 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	106	127	149	170	191	213	255	298	341	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: COMPRESSOR SECTION W0S42A INDOOR A42A0-A
 COOLING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 43320 BTUH, 16.25 SEER
 HEATING CAPACITY AT 53 DEG. F. ENTERING WATER TEMP.: 41500 BTUH, 3.59 COP
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20	1.20		
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	332	332	332	338	338	338	338	338	338	338	344	344	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	400	400	400	406	406	406	406	406	406	406	411	411		
.07	\$	468	468	468	473	473	473	473	473	473	473	479	479	BALANCE POINT 16- DEG.F.	
.08	\$	530	530	530	536	536	536	536	536	536	536	541	541		
.09	\$	598	598	598	603	603	603	603	603	603	603	609	609		
.10	\$	665	665	665	671	671	671	671	671	671	671	677	677		
.12	\$	795	795	795	801	801	801	801	801	801	801	806	806		
.14	\$	925	925	925	931	931	931	931	931	931	931	936	936		
.16	\$	1055	1055	1055	1060	1060	1060	1060	1060	1060	1060	1066	1066		
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	411	411	417	417	417	417	417	417	423	423	423	423	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	490	490	496	496	496	496	496	496	502	502	502	502		
.07	\$	569	569	575	575	575	575	575	575	581	581	581	581	BALANCE POINT 0 DEG.F.	
.08	\$	648	648	654	654	654	654	654	654	660	660	660	660		
.09	\$	727	727	733	733	733	733	733	733	739	739	739	739		
.10	\$	806	806	812	812	812	812	812	812	818	818	818	818		
.12	\$	964	964	970	970	970	970	970	970	976	976	976	976		
.14	\$	1122	1122	1128	1128	1128	1128	1128	1128	1134	1134	1134	1134		
.16	\$	1286	1286	1292	1292	1292	1292	1292	1292	1292	1292	1297	1297		
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	496	496	502	507	513	513	519	524	530	536	541	541	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	586	586	592	598	603	603	609	615	620	626	631	631		
.07	\$	677	677	682	688	694	694	699	705	710	716	722	722	BALANCE POINT 11 DEG.F.	
.08	\$	767	767	773	778	784	784	789	795	801	806	812	812		
.09	\$	857	857	863	868	874	874	880	885	891	897	902	902		
.10	\$	947	947	953	959	964	964	970	976	981	987	993	993		
.12	\$	1128	1128	1134	1139	1145	1145	1151	1156	1162	1168	1173	1173		
.14	\$	1309	1309	1314	1320	1326	1326	1331	1337	1342	1348	1354	1354		
.16	\$	1484	1484	1489	1495	1500	1500	1506	1512	1517	1523	1529	1529		
70,000	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	637	654	665	682	699	716	733	744	761	795	829	829	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	727	744	756	773	789	806	823	835	852	885	919	919		
.07	\$	818	835	846	863	880	897	914	925	942	976	1010	1010	BALANCE POINT 19 DEG.F.	
.08	\$	908	925	936	953	970	987	1004	1015	1032	1066	1100	1100		
.09	\$	998	1015	1026	1043	1060	1077	1094	1105	1122	1156	1190	1190		
.10	\$	1083	1100	1111	1128	1145	1162	1179	1190	1207	1241	1275	1275		
.12	\$	1263	1280	1292	1309	1326	1342	1359	1371	1388	1421	1455	1455		
.14	\$	1444	1461	1472	1489	1506	1523	1540	1551	1568	1602	1636	1636		
.16	\$	1619	1636	1647	1664	1681	1698	1715	1726	1743	1777	1811	1811		
80,000	\$	1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	778	806	835	863	891	919	947	976	1004	1055	1111	1111	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	863	891	919	947	976	1004	1032	1060	1089	1139	1196	1196		
.07	\$	953	981	1010	1038	1066	1094	1122	1151	1179	1230	1286	1286	BALANCE POINT 24 DEG.F.	
.08	\$	1043	1072	1100	1128	1156	1184	1213	1241	1269	1320	1376	1376		
.09	\$	1134	1162	1190	1218	1247	1275	1303	1331	1359	1410	1467	1467		
.10	\$	1218	1247	1275	1303	1331	1359	1388	1416	1444	1495	1551	1551		
.12	\$	1399	1427	1455	1484	1512	1540	1568	1596	1625	1675	1732	1732		
.14	\$	1574	1602	1630	1658	1687	1715	1743	1771	1799	1850	1907	1907		
.16	\$	1754	1783	1811	1839	1867	1895	1924	1952	1980	2031	2087	2087		

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	106	127	149	170	191	213	255	298	341	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 24UHPQC INDOOR A36AQ-A
 ARI RATED COOLING CAP. BTUH(95) 23000, SEER12.00
 ARI RATED HEATING CAP. BTUH(47) 22000, COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 13600, COP(17) 2.00
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT LOSS
 BTUH

ELEC.
 COST
 \$/KWH

20,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	242		502	
.06	\$	293		603	
.07	\$	338		705	
.08	\$	389		806	
.09	\$	434		908	
.10	\$	485		1010	
.12	\$	581		1213	BALANCE POINT 14 DEG.F.
.14	\$	677		1416	
.16	\$	778		1619	

25,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	299		631	
.06	\$	366		756	
.07	\$	423		885	
.08	\$	485		1010	
.09	\$	547		1139	
.10	\$	609		1263	
.12	\$	733		1517	BALANCE POINT 20 DEG.F.
.14	\$	852		1771	
.16	\$	976		2025	

30,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	366		756	
.06	\$	445		908	
.07	\$	519		1060	
.08	\$	592		1213	
.09	\$	665		1365	
.10	\$	744		1517	
.12	\$	891		1822	BALANCE POINT 25 DEG.F.
.14	\$	1038		2127	
.16	\$	1184		2431	

35,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	445		885	
.06	\$	536		1060	
.07	\$	626		1241	
.08	\$	710		1416	
.09	\$	801		1596	
.10	\$	891		1771	
.12	\$	1072		2127	BALANCE POINT 29 DEG.F.
.14	\$	1247		2482	
.16	\$	1427		2838	

40,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	524		1010	
.06	\$	631		1213	
.07	\$	739		1416	
.08	\$	846		1619	
.09	\$	947		1822	
.10	\$	1055		2025	
.12	\$	1269		2431	BALANCE POINT 32 DEG.F.
.14	\$	1478		2838	
.16	\$	1692		3244	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	76	91	107	122	137	153	183	214	245	<—ELECTRIC RATE \$/KWH
										<—THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL. OUTDOOR 24UHPQC 24UHPQC/A36AQ-A
 INDOOR A36AQ-A
 ARI RATED COOLING CAP. BTUH(95) 23000, SEER(12) 00
 ARI RATED HEATING CAP. BTUH(47) 22000, COP(47) 3.20, HSPF 7.50 MIN DHR REG IV
 BTUH(17) 13600, COP(17) 2.00
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	40	45	.50	55	60	.65	70	75	.80	90		1.00
20,000	\$	152	174	197	220	242	265	287	310	332	349	394	440	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	220	225	225	225	231	231	236	236	242	242	248	253	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	259	265	265	265	270	270	276	276	282	282	287	293	\$ PER YEAR
.07	\$	299	304	304	304	310	310	315	315	321	321	327	332	
.08	\$	338	344	344	344	349	349	355	355	361	361	366	372	
.09	\$	378	383	383	383	389	389	394	394	400	400	406	411	
.10	\$	423	428	428	428	434	434	440	440	445	445	451	457	
.12	\$	502	507	507	507	513	513	519	519	524	524	530	536	BALANCE POINT 14 DEG.F.
.14	\$	581	586	586	586	592	592	598	598	603	603	609	615	
.16	\$	665	671	671	671	677	677	682	682	688	688	694	699	
25,000	\$	191	220	248	276	304	332	355	383	411	440	496	552	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	259	265	270	276	282	287	293	299	304	310	315	327	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	299	304	310	315	321	327	332	338	344	349	355	366	\$ PER YEAR
.07	\$	344	349	355	361	366	372	378	383	389	394	400	411	
.08	\$	389	394	400	406	411	417	423	428	434	440	445	457	
.09	\$	434	440	445	451	457	462	468	473	479	485	490	502	
.10	\$	479	485	490	496	502	507	513	519	524	530	536	547	
.12	\$	569	575	581	586	592	598	603	609	615	620	626	637	BALANCE POINT 20 DEG.F.
.14	\$	660	665	671	677	682	688	694	699	705	710	716	727	
.16	\$	744	750	756	761	767	773	778	784	789	795	801	812	
30,000	\$	231	265	299	332	361	394	428	462	496	530	598	665	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	293	299	310	321	327	338	349	361	366	378	394	417	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	338	344	355	366	372	383	394	406	411	423	440	462	\$ PER YEAR
.07	\$	383	389	400	411	417	428	440	451	457	468	485	507	
.08	\$	428	434	445	457	462	473	485	496	502	513	530	552	
.09	\$	473	479	490	502	507	519	530	541	547	558	575	598	
.10	\$	519	524	536	547	552	564	575	586	592	603	620	643	
.12	\$	609	615	626	637	643	654	665	677	682	694	710	733	BALANCE POINT 25 DEG.F.
.14	\$	699	705	716	727	733	744	756	767	773	784	801	823	
.16	\$	789	795	806	818	823	835	846	857	863	874	891	914	
35,000	\$	270	310	344	383	423	462	502	541	581	620	694	773	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	315	332	349	366	383	400	417	434	451	468	496	530	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	361	378	394	411	428	445	462	479	496	513	541	575	\$ PER YEAR
.07	\$	400	417	434	451	468	485	502	519	536	552	581	615	
.08	\$	440	457	473	490	507	524	541	558	575	592	620	654	
.09	\$	479	496	513	530	547	564	581	598	615	631	660	694	
.10	\$	524	541	558	575	592	609	626	643	660	677	705	739	
.12	\$	603	620	637	654	671	688	705	722	739	756	784	818	BALANCE POINT 29 DEG.F.
.14	\$	688	705	722	739	756	773	789	806	823	840	868	902	
.16	\$	767	784	801	818	835	852	868	885	902	919	947	981	
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	344	372	394	423	451	473	502	530	552	581	637	688	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	372	400	423	451	479	502	530	558	581	609	665	716	\$ PER YEAR
.07	\$	406	434	457	485	513	536	564	592	615	643	699	750	
.08	\$	434	462	485	513	541	564	592	620	643	671	727	778	
.09	\$	468	496	519	547	575	598	626	654	677	705	761	812	
.10	\$	496	524	547	575	603	626	654	682	705	733	789	840	
.12	\$	564	592	615	643	671	694	722	750	773	801	857	908	BALANCE POINT 32 DEG.F.
.14	\$	626	654	677	705	733	756	784	812	835	863	919	970	
.16	\$	688	716	739	767	795	818	846	874	897	925	981	1032	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<---ELECTRIC RATE \$/KWH
\$	76	91	107	122	137	153	183	214	245	<---THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4 24UHPQC/A36AQ-A
 HEAT PUMP MODEL. OUTDOOR 24UHPQC INDOOR A36AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 23000, SEER12.00
 ARI RATED HEATING CAP.: BTUH(47) 22000, COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 13600, COP(17) 2.00
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON												
		70	80	90	100	110	120	130	140	150	160	170	180	
20,000	\$	220	253	287	315	349	383	411	445	479	507	541	575	<---THEORETICAL HEATING COST * FURNACE ONLY
05	\$	231	231	236	236	242	248	248	253	259	259	265	270	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
06	\$	270	270	276	276	282	287	287	293	299	299	304	310	| \$ PER YEAR
07	\$	310	310	315	315	321	327	327	332	338	338	344	349	
08	\$	349	349	355	355	361	366	366	372	378	378	383	389	
09	\$	389	389	394	394	400	406	406	411	417	417	423	428	
10	\$	434	434	440	440	445	451	451	457	462	462	468	473	
12	\$	513	513	519	519	524	530	530	536	541	541	547	552	BALANCE POINT 14 DEG.F.
14	\$	592	592	598	598	603	609	609	615	620	620	626	631	
16	\$	677	677	682	682	688	694	694	699	705	705	710	716	
25,000	\$	276	315	355	394	440	479	519	558	598	637	677	716	<---THEORETICAL HEATING COST * FURNACE ONLY
05	\$	276	287	293	299	310	315	321	327	338	344	349	361	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
06	\$	315	327	332	338	349	355	361	366	378	383	389	400	| \$ PER YEAR
07	\$	361	372	378	383	394	400	406	411	423	428	434	445	
08	\$	406	417	423	428	440	445	451	457	468	473	479	490	
09	\$	451	462	468	473	485	490	496	502	513	519	524	536	
10	\$	496	507	513	519	530	536	541	547	558	564	569	581	
12	\$	586	598	603	609	620	626	631	637	648	654	660	671	BALANCE POINT 20 DEG.F.
14	\$	677	688	694	699	710	716	722	727	739	744	750	761	
16	\$	761	773	778	784	795	801	806	812	823	829	835	846	
30,000	\$	332	383	428	479	524	575	620	671	716	767	812	863	<---THEORETICAL HEATING COST * FURNACE ONLY
05	\$	321	332	349	361	378	389	406	417	428	445	457	473	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
06	\$	366	378	394	406	423	434	451	462	473	490	502	519	| \$ PER YEAR
07	\$	411	423	440	451	468	479	496	507	519	536	547	564	
08	\$	457	468	485	496	513	524	541	552	564	581	592	609	
09	\$	502	513	530	541	558	569	586	598	609	626	637	654	
10	\$	547	558	575	586	603	615	631	643	654	671	682	699	
12	\$	637	648	665	677	694	705	722	733	744	761	773	789	BALANCE POINT 25 DEG.F.
14	\$	727	739	756	767	784	795	812	823	835	852	863	880	
16	\$	818	829	846	857	874	885	902	914	925	942	953	970	
35,000	\$	389	445	502	558	615	671	727	784	835	891	947	1004	<---THEORETICAL HEATING COST * FURNACE ONLY
05	\$	366	394	417	440	462	485	513	536	558	581	603	631	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
06	\$	411	440	462	485	507	530	558	581	603	626	648	677	| \$ PER YEAR
07	\$	451	479	502	524	547	569	598	620	643	665	688	716	
08	\$	490	519	541	564	586	609	637	660	682	705	727	756	
09	\$	530	558	581	603	626	648	677	699	722	744	767	795	
10	\$	575	603	626	648	671	694	722	744	767	789	812	840	
12	\$	654	682	705	727	750	773	801	823	846	868	891	919	BALANCE POINT 29 DEG.F.
14	\$	739	767	789	812	835	857	885	908	931	953	976	1004	
16	\$	818	846	868	891	914	936	964	987	1010	1032	1055	1083	
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151	<---THEORETICAL HEATING COST * FURNACE ONLY
05	\$	423	462	502	541	581	615	654	694	733	767	806	846	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
06	\$	451	490	530	569	609	643	682	722	761	795	835	874	| \$ PER YEAR
07	\$	485	524	564	603	643	677	716	756	795	829	868	908	
08	\$	513	552	592	631	671	705	744	784	823	857	897	936	
09	\$	547	586	626	665	705	739	778	818	857	891	931	970	
10	\$	575	615	654	694	733	767	806	846	885	919	959	998	
12	\$	643	682	722	761	801	835	874	914	953	987	1026	1066	BALANCE POINT 32 DEG.F.
14	\$	705	744	784	823	863	897	936	976	1015	1049	1089	1128	
16	\$	767	806	846	885	925	959	998	1038	1077	1111	1151	1190	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	05	06	07	08	09	10	12	14	16	
\$	76	91	107	122	137	153	183	214	245	<---ELECTRIC RATE \$/KWH
										<---THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 24UHPQC INDOOR A36AQ-A
 ARI RATED COOLING CAP: BTUH(95) 23000, SEER12.00
 ARI RATED HEATING CAP: BTUH(47) 22000, COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 13600, COP(17) 2.00
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH 20,000	ELEC COST \$/KWH	PROPANE GAS COST - \$/GALLON												
		60	65	70	75	80	85	90	95	1.00	1.10	1.20	1.20	
	\$	287	315	338	361	389	411	434	462	485	536	581	581	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	236	236	242	242	248	248	253	253	259	265	270	270	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	276	276	282	282	287	287	293	293	299	304	310	310	\$ PER YEAR
.07	\$	315	315	321	321	327	327	332	332	338	344	349	349	
.08	\$	355	355	361	361	366	366	372	372	378	383	389	389	
.09	\$	394	394	400	400	406	406	411	411	417	423	428	428	
.10	\$	440	440	445	445	451	451	457	457	462	468	473	473	
.12	\$	519	519	524	524	530	530	536	536	541	547	552	552	BALANCE POINT 14 DEG.F.
.14	\$	598	598	603	603	609	609	615	615	620	626	631	631	
.16	\$	682	682	688	688	694	694	699	699	705	710	716	716	
25,000	\$	361	394	423	457	485	513	547	575	609	665	727	727	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	293	299	304	310	315	321	327	332	338	349	361	361	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	332	338	344	349	355	361	366	372	378	389	400	400	\$ PER YEAR
.07	\$	378	383	389	394	400	406	411	417	423	434	445	445	
.08	\$	423	428	434	440	445	451	457	462	468	479	490	490	
.09	\$	468	473	479	485	490	496	502	507	513	524	536	536	
.10	\$	513	519	524	530	536	541	547	552	558	569	581	581	
.12	\$	603	609	615	620	626	631	637	643	648	660	671	671	BALANCE POINT 20 DEG.F.
.14	\$	694	699	705	710	716	722	727	733	739	750	761	761	
.16	\$	778	784	789	795	801	806	812	818	823	835	846	846	
30,000	\$	434	473	507	547	581	620	654	694	727	801	874	874	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	349	361	372	383	394	400	411	423	434	457	473	473	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	394	406	417	428	440	445	457	468	479	502	519	519	\$ PER YEAR
.07	\$	440	451	462	473	485	490	502	513	524	547	564	564	
.08	\$	485	496	507	519	530	536	547	558	569	592	609	609	
.09	\$	530	541	552	564	575	581	592	603	615	637	654	654	
.10	\$	575	586	598	609	620	626	637	648	660	682	699	699	
.12	\$	665	677	688	699	710	716	727	739	750	773	789	789	BALANCE POINT 25 DEG.F.
.14	\$	756	767	778	789	801	806	818	829	840	863	880	880	
.16	\$	846	857	868	880	891	897	908	919	931	953	970	970	
35,000	\$	507	552	592	637	682	722	767	806	852	936	1021	1021	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	417	440	457	473	490	507	530	547	564	598	637	637	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	462	485	502	519	536	552	575	592	609	643	682	682	\$ PER YEAR
.07	\$	502	524	541	558	575	592	615	631	648	682	722	722	
.08	\$	541	564	581	598	615	631	654	671	688	722	761	761	
.09	\$	581	603	620	637	654	671	694	710	727	761	801	801	
.10	\$	626	648	665	682	699	716	739	756	773	806	846	846	
.12	\$	705	727	744	761	778	795	818	835	852	885	925	925	BALANCE POINT 29 DEG.F.
.14	\$	789	812	829	846	863	880	902	919	936	970	1010	1010	
.16	\$	868	891	908	925	942	959	981	998	1015	1049	1089	1089	
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	507	536	564	592	626	654	682	710	739	801	857	857	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	536	564	592	620	654	682	710	739	767	829	885	885	\$ PER YEAR
.07	\$	569	598	626	654	688	716	744	773	801	863	919	919	
.08	\$	598	626	654	682	716	744	773	801	829	891	947	947	
.09	\$	631	660	688	716	750	778	806	835	863	925	981	981	
.10	\$	660	688	716	744	778	806	835	863	891	953	1010	1010	
.12	\$	727	756	784	812	846	874	902	931	959	1021	1077	1077	BALANCE POINT 32 DEG.F.
.14	\$	789	818	846	874	908	936	964	993	1021	1083	1139	1139	
.16	\$	852	880	908	936	970	998	1026	1055	1083	1145	1201	1201	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<---ELECTRIC RATE \$/KWH
\$	76	91	107	122	137	153	183	214	245	<---THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 30UHPOC 30UHPOC/A36AQ-A INDOOR A36AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 28000 SEER12.00
 ARI RATED HEATING CAP.: BTUH(47) 28000 COP(47) 3.20. HSPF 7.20 MIN.DHR REG IV
 BTUH(17) 17200 COP(17) 2.10
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT LOSS
 BTUH
 ELEC.
 COST
 S/KWH

30,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	366	756
.06	\$	440	908
.07	\$	513	1060
.08	\$	586	1213
.09	\$	660	1365
.10	\$	733	1517
.12	\$	880	1822
.14	\$	1026	2127
.16	\$	1173	2431

BALANCE POINT 19 DEG.F.

35,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	434	885
.06	\$	524	1060
.07	\$	609	1241
.08	\$	694	1416
.09	\$	784	1596
.10	\$	868	1771
.12	\$	1043	2127
.14	\$	1213	2482
.16	\$	1388	2838

BALANCE POINT 24 DEG.F.

40,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	507	1010
.06	\$	609	1213
.07	\$	716	1416
.08	\$	818	1619
.09	\$	919	1822
.10	\$	1021	2025
.12	\$	1224	2431
.14	\$	1421	2838
.16	\$	1625	3244

BALANCE POINT 28 DEG.F.

50,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	677	1263
.06	\$	818	1517
.07	\$	953	1771
.08	\$	1089	2025
.09	\$	1224	2279
.10	\$	1365	2533
.12	\$	1636	3041
.14	\$	1912	3549
.16	\$	2183	4057

BALANCE POINT 34 DEG.F.

60,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	880	1517
.06	\$	1049	1822
.07	\$	1230	2127
.08	\$	1405	2431
.09	\$	1585	2736
.10	\$	1754	3041
.12	\$	2110	3650
.14	\$	2460	4260
.16	\$	2815	4869

BALANCE POINT 38 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE S/KWH <--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: 30UHPOC/A36AQ-A
 30UHPOC/A36AQ-A
 INDOOR A36AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 28000 SEER12.00
 ARI RATED HEATING CAP.: BTUH(47) 28000 COP(47) 3.20 HSPF 7.20 MIN.DHR REG IV
 BTUH(17) 17200 COP(17) 2.10
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM													
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00		
30,000	\$	231	265	299	332	361	394	428	462	496	530	598	665	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	321	327	332	338	344	349	355	361	366	378	389	400	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	372	378	383	389	394	400	406	411	417	428	440	451		
.07	\$	428	434	440	445	451	457	462	468	473	485	496	507		
.08	\$	485	490	496	502	507	513	519	524	530	541	552	564		
.09	\$	541	547	552	558	564	569	575	581	586	598	609	620		
.10	\$	592	598	603	609	615	620	626	631	637	648	660	671		
.12	\$	705	710	716	722	727	733	739	744	750	761	773	784		
.14	\$	812	818	823	829	835	840	846	852	857	868	880	891		
.16	\$	925	931	936	942	947	953	959	964	970	981	993	1004		BALANCE POINT 19 DEG.F.
35,000	\$	270	310	344	383	423	462	502	541	581	620	694	773		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	355	366	378	389	400	411	417	428	440	451	473	496	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	406	417	428	440	451	462	468	479	490	502	524	547		
.07	\$	462	473	485	496	507	519	524	536	547	558	581	603		
.08	\$	519	530	541	552	564	575	581	592	603	615	637	660		
.09	\$	575	586	598	609	620	631	637	648	660	671	694	716		
.10	\$	626	637	648	660	671	682	688	699	710	722	744	767		
.12	\$	739	750	761	773	784	795	801	812	823	835	857	880		
.14	\$	846	857	868	880	891	902	908	919	931	942	964	987		
.16	\$	959	970	981	993	1004	1015	1021	1032	1043	1055	1077	1100		BALANCE POINT 24 DEG.F.
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	378	400	417	434	457	473	490	513	530	547	586	626	THEORETICAL HEATING COST * FURN.+ HEAT P \$ PER YEAR	
.06	\$	423	445	462	479	502	519	536	558	575	592	631	671		
.07	\$	473	496	513	530	552	569	586	609	626	643	682	722		
.08	\$	524	547	564	581	603	620	637	660	677	694	733	773		
.09	\$	569	592	609	626	648	665	682	705	722	739	778	818		
.10	\$	620	643	660	677	699	716	733	756	773	789	829	868		
.12	\$	722	744	761	778	801	818	835	857	874	891	931	970		
.14	\$	818	840	857	874	897	914	931	953	970	987	1026	1066		
.16	\$	914	936	953	970	993	1010	1026	1049	1066	1083	1122	1162		BALANCE POINT 28 DEG.F.
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	434	468	502	536	569	598	631	665	699	733	801	863	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	473	507	541	575	609	637	671	705	739	773	840	902		
.07	\$	513	547	581	615	648	677	710	744	778	812	880	942		
.08	\$	558	592	626	660	694	722	756	789	823	857	925	987		
.09	\$	598	631	665	699	733	761	795	829	863	897	964	1026		
.10	\$	637	671	705	739	773	801	835	868	902	936	1004	1066		
.12	\$	716	750	784	818	852	880	914	947	981	1015	1083	1145		
.14	\$	801	835	868	902	936	964	998	1032	1066	1100	1168	1230		
.16	\$	880	914	947	981	1015	1043	1077	1111	1145	1179	1247	1309		BALANCE POINT 34 DEG.F.
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	496	541	592	643	688	739	784	835	880	931	1026	1122	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	524	569	620	671	716	767	812	863	908	959	1055	1151		
.07	\$	558	603	654	705	750	801	846	897	942	993	1089	1184		
.08	\$	586	631	682	733	778	829	874	925	970	1021	1117	1213		
.09	\$	620	665	716	767	812	863	908	959	1004	1055	1151	1247		
.10	\$	648	694	744	795	840	891	936	987	1032	1083	1179	1275		
.12	\$	710	756	806	857	902	953	998	1049	1094	1145	1241	1337		
.14	\$	773	818	868	919	964	1015	1060	1111	1156	1207	1303	1399		
.16	\$	835	880	931	981	1026	1077	1122	1173	1218	1269	1365	1461		BALANCE POINT 38 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 30UHPOC 30UHPOC/A36AO-A INDOOR A36AO-A
 ARI RATED COOLING CAP.: BTUH(95) 28000 SEER12.00
 ARI RATED HEATING CAP.: BTUH(47) 28000 COP(47) 3.20. HSPF 7.20 MIN.DHR REG IV
 BTUH(17) 17200 COP(17) 2.10
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON												
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	
30,000	\$	332	383	428	479	524	575	620	671	716	767	812	863	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	338	349	355	366	372	383	394	400	411	417	428	434	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	389	400	406	417	423	434	445	451	462	468	479	485	
.07	\$	445	457	462	473	479	490	502	507	519	524	536	541	
.08	\$	502	513	519	530	536	547	558	564	575	581	592	598	
.09	\$	558	569	575	586	592	603	615	620	631	637	648	654	
.10	\$	609	620	626	637	643	654	665	671	682	688	699	705	
.12	\$	722	733	739	750	756	767	778	784	795	801	812	818	
.14	\$	829	840	846	857	863	874	885	891	902	908	919	925	BALANCE POINT 19 DEG.F.
.16	\$	942	953	959	970	976	987	998	1004	1015	1021	1032	1038	
35,000	\$	389	445	502	558	615	671	727	784	835	891	947	1004	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	389	406	417	434	451	468	485	502	513	530	547	564	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	440	457	468	485	502	519	536	552	564	581	598	615	
.07	\$	496	513	524	541	558	575	592	609	620	637	654	671	
.08	\$	552	569	581	598	615	631	648	665	677	694	710	727	
.09	\$	609	626	637	654	671	688	705	722	733	750	767	784	
.10	\$	660	677	688	705	722	739	756	773	784	801	818	835	
.12	\$	773	789	801	818	835	852	868	885	897	914	931	947	
.14	\$	880	897	908	925	942	959	976	993	1004	1021	1038	1055	BALANCE POINT 24 DEG.F.
.16	\$	993	1010	1021	1038	1055	1072	1089	1105	1117	1134	1151	1168	
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	440	462	490	519	547	575	598	626	654	682	710	733	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	485	507	536	564	592	620	643	671	699	727	756	778	
.07	\$	536	558	586	615	643	671	694	722	750	778	806	829	
.08	\$	586	609	637	665	694	722	744	773	801	829	857	880	
.09	\$	631	654	682	710	739	767	789	818	846	874	902	925	
.10	\$	682	705	733	761	789	818	840	868	897	925	953	976	
.12	\$	784	806	835	863	891	919	942	970	998	1026	1055	1077	
.14	\$	880	902	931	959	987	1015	1038	1066	1094	1122	1151	1173	BALANCE POINT 28 DEG.F.
.16	\$	976	998	1026	1055	1083	1111	1134	1162	1190	1218	1247	1269	
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	536	586	631	682	727	778	823	874	919	964	1015	1060	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	575	626	671	722	767	818	863	914	959	1004	1055	1100	
.07	\$	615	665	710	761	806	857	902	953	998	1043	1094	1139	
.08	\$	660	710	756	806	852	902	947	998	1043	1089	1139	1184	
.09	\$	699	750	795	846	891	942	987	1038	1083	1128	1179	1224	
.10	\$	739	789	835	885	931	981	1026	1077	1122	1168	1218	1263	
.12	\$	818	868	914	964	1010	1060	1105	1156	1201	1247	1297	1342	
.14	\$	902	953	998	1049	1094	1145	1190	1241	1286	1331	1382	1427	BALANCE POINT 34 DEG.F.
.16	\$	981	1032	1077	1128	1173	1224	1269	1320	1365	1410	1461	1506	
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	643	716	784	852	925	993	1060	1134	1201	1269	1342	1410	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	671	744	812	880	953	1021	1089	1162	1230	1297	1371	1438	
.07	\$	705	778	846	914	987	1055	1122	1196	1263	1331	1405	1472	
.08	\$	733	806	874	942	1015	1083	1151	1224	1292	1359	1433	1500	
.09	\$	767	840	908	976	1049	1117	1184	1258	1326	1393	1467	1534	
.10	\$	795	868	936	1004	1077	1145	1213	1286	1354	1421	1495	1563	
.12	\$	857	931	998	1066	1139	1207	1275	1348	1416	1484	1557	1625	
.14	\$	919	993	1060	1128	1201	1269	1337	1410	1478	1546	1619	1687	BALANCE POINT 38 DEG.F.
.16	\$	981	1055	1122	1190	1263	1331	1399	1472	1540	1608	1681	1749	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: 30UHPCQ/A36AO-A
 OUTDOOR 30UHPCQ INDOOR A36AO-A
 ARI RATED COOLING CAP.: BTUH(95) 28000 SEER(12.00)
 ARI RATED HEATING CAP.: BTUH(47) 28000 COP(47) 3.20 HSPE 7.20 MIN.DHR REG IV
 BTUH(17) 17200 COP(17) 2.10
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELBC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20	1.20		
30,000	\$	434	473	507	547	581	620	654	694	727	801	874	874	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	355	366	372	378	383	394	400	406	411	428	440	440	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	406	417	423	428	434	445	451	457	462	479	490	490		
.07	\$	462	473	479	485	490	502	507	513	519	536	547	547		
.08	\$	519	530	536	541	547	558	564	569	575	592	603	603		
.09	\$	575	586	592	598	603	615	620	626	631	648	660	660		
.10	\$	626	637	643	648	654	665	671	677	682	699	710	710		
.12	\$	739	750	756	761	767	778	784	789	795	812	823	823		
.14	\$	846	857	863	868	874	885	891	897	902	919	931	931		
.16	\$	959	970	976	981	987	998	1004	1010	1015	1032	1043	1043		BALANCE POINT 19 DEG.F.
35,000	\$	507	552	592	637	682	722	767	806	852	936	1021	1021		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	423	434	445	457	468	485	496	507	519	541	569	569	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	473	485	496	507	519	536	547	558	569	592	620	620		
.07	\$	530	541	552	564	575	592	603	615	626	648	677	677		
.08	\$	586	598	609	620	631	648	660	671	682	705	733	733		
.09	\$	643	654	665	677	688	705	716	727	739	761	789	789		
.10	\$	694	705	716	727	739	756	767	778	789	812	840	840		
.12	\$	806	818	829	840	852	868	880	891	902	925	953	953		
.14	\$	914	925	936	947	959	976	987	998	1010	1032	1060	1060		
.16	\$	1026	1038	1049	1060	1072	1089	1100	1111	1122	1145	1173	1173		BALANCE POINT 24 DEG.F.
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	496	519	536	558	581	598	620	643	660	699	744	744	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	541	564	581	603	626	643	665	688	705	744	789	789		
.07	\$	592	615	631	654	677	694	716	739	756	795	840	840		
.08	\$	643	665	682	705	727	744	767	789	806	846	891	891		
.09	\$	688	710	727	750	773	789	812	835	852	891	936	936		
.10	\$	739	761	778	801	823	840	863	885	902	942	987	987		
.12	\$	840	863	880	902	925	942	964	987	1004	1043	1089	1089		
.14	\$	936	959	976	998	1021	1038	1060	1083	1100	1139	1184	1184		
.16	\$	1032	1055	1072	1094	1117	1134	1156	1179	1196	1235	1280	1280		BALANCE POINT 28 DEG.F.
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	637	677	710	750	784	823	857	897	931	1004	1077	1077	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	677	716	750	789	823	863	897	936	970	1043	1117	1117		
.07	\$	716	756	789	829	863	902	936	976	1010	1083	1156	1156		
.08	\$	761	801	835	874	908	947	981	1021	1055	1128	1201	1201		
.09	\$	801	840	874	914	947	987	1021	1060	1094	1168	1241	1241		
.10	\$	840	880	914	953	987	1026	1060	1100	1134	1207	1280	1280		
.12	\$	919	959	993	1032	1066	1105	1139	1179	1213	1286	1359	1359		
.14	\$	1004	1043	1077	1117	1151	1190	1224	1263	1297	1371	1444	1444		
.16	\$	1083	1122	1156	1196	1230	1269	1303	1342	1376	1450	1523	1523		BALANCE POINT 34 DEG.F.
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	795	846	902	953	1004	1060	1111	1168	1218	1326	1433	1433	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	823	874	931	981	1032	1089	1139	1196	1247	1354	1461	1461		
.07	\$	857	908	964	1015	1066	1122	1173	1230	1280	1388	1495	1495		
.08	\$	885	936	993	1043	1094	1151	1201	1258	1309	1416	1523	1523		
.09	\$	919	970	1026	1077	1128	1184	1235	1292	1342	1450	1557	1557		
.10	\$	947	998	1055	1105	1156	1213	1263	1320	1371	1478	1585	1585		
.12	\$	1010	1060	1117	1168	1218	1275	1326	1382	1433	1540	1647	1647		
.14	\$	1072	1122	1179	1230	1280	1337	1388	1444	1495	1602	1709	1709		
.16	\$	1134	1184	1241	1292	1342	1399	1450	1506	1557	1664	1771	1771		BALANCE POINT 38 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODL: 30URPQC/A37
 HEAT PUMP MODL: OUTDOOR 30URPQC INDOOR A37AO-A
 ARI RATED COOLING CAP.: BTUH(95) 30000 SEER12.00
 ARI RATED HEATING CAP.: BTUH(47) 28000 COP(47) 3.40, HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 17000, COP(17) 2.20
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AFUE

HEAT LOSS
 BTUH
 ELEC.
 COST
 \$/KWH

30,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	355	756
.06	\$	428	908
.07	\$	496	1060
.08	\$	564	1213
.09	\$	637	1365
.10	\$	705	1517
.12	\$	846	1822
.14	\$	993	2127
.16	\$	1134	2431

BALANCE POINT 19 DEG.F.

35,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	423	885
.06	\$	502	1060
.07	\$	586	1241
.08	\$	671	1416
.09	\$	756	1596
.10	\$	840	1771
.12	\$	1004	2127
.14	\$	1173	2482
.16	\$	1342	2838

BALANCE POINT 24 DEG.F.

40,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	496	1010
.06	\$	592	1213
.07	\$	694	1416
.08	\$	789	1619
.09	\$	885	1822
.10	\$	987	2025
.12	\$	1184	2431
.14	\$	1376	2838
.16	\$	1579	3244

BALANCE POINT 28 DEG.F.

50,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	665	1263
.06	\$	795	1517
.07	\$	931	1771
.08	\$	1066	2025
.09	\$	1196	2279
.10	\$	1331	2533
.12	\$	1591	3041
.14	\$	1862	3549
.16	\$	2127	4057

BALANCE POINT 34 DEG.F.

60,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	857	1517
.06	\$	1032	1822
.07	\$	1207	2127
.08	\$	1376	2431
.09	\$	1551	2736
.10	\$	1721	3041
.12	\$	2065	3650
.14	\$	2415	4260
.16	\$	2753	4869

BALANCE POINT 39 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	100	120	140	160	180	200	240	280	320	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 30UHPQC 30UHPQC/A37AQ-A INDOOR A37AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 30000 SEER12.00
 ARI RATED HEATING CAP.: BTUH (47) 28000 COP(47) 3.40. HSPF 7.50 MIN.DHR REG IV
 BTUH (17) 17000, COP(17) 2.20
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90		1.00
30,000	\$	231	265	299	332	361	394	428	462	496	530	598	665	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 310	315	321	327	332	338	344	349	355	366	378	389	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 361	366	372	378	383	389	394	400	406	417	428	440	
	.07	\$ 411	417	423	428	434	440	445	451	457	468	479	490	
	.08	\$ 468	473	479	485	490	496	502	507	513	524	536	547	
	.09	\$ 519	524	530	536	541	547	552	558	564	575	586	598	
	.10	\$ 569	575	581	586	592	598	603	609	615	626	637	648	BALANCE POINT 19 DEG.F.
	.12	\$ 677	682	688	694	699	705	710	716	722	733	744	756	
	.14	\$ 784	789	795	801	806	812	818	823	829	840	852	863	
	.16	\$ 885	891	897	902	908	914	919	925	931	942	953	964	
35,000	\$	270	310	344	383	423	462	502	541	581	620	694	773		<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 344	355	366	378	389	400	406	417	428	440	462	485	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 394	406	417	428	440	451	457	468	479	490	513	536	
	.07	\$ 445	457	468	479	490	502	507	519	530	541	564	586	
	.08	\$ 496	507	519	530	541	552	558	569	581	592	615	637	
	.09	\$ 552	564	575	586	598	609	615	626	637	648	671	694	
	.10	\$ 603	615	626	637	648	660	665	677	688	699	722	744	BALANCE POINT 24 DEG.F.
	.12	\$ 710	722	733	744	756	767	773	784	795	806	829	852	
	.14	\$ 812	823	835	846	857	868	874	885	897	908	931	953	
	.16	\$ 919	931	942	953	964	976	981	993	1004	1015	1038	1060	
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885		<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 366	389	406	423	445	462	479	502	519	536	575	615	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 411	434	451	468	490	507	524	547	564	581	620	660	
	.07	\$ 457	479	496	513	536	552	569	592	609	626	665	705	
	.08	\$ 507	530	547	564	586	603	620	643	660	677	716	756	
	.09	\$ 552	575	592	609	631	648	665	688	705	722	761	801	
	.10	\$ 598	620	637	654	677	694	710	733	750	767	806	846	BALANCE POINT 28 DEG.F.
	.12	\$ 694	716	733	750	773	789	806	829	846	863	902	942	
	.14	\$ 789	812	829	846	868	885	902	925	942	959	998	1038	
	.16	\$ 880	902	919	936	959	976	993	1015	1032	1049	1089	1128	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105		<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 423	457	490	524	558	586	620	654	688	722	789	852	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 462	496	530	564	598	626	660	694	727	761	829	891	
	.07	\$ 502	536	569	603	637	665	699	733	767	801	868	931	
	.08	\$ 541	575	609	643	677	705	739	773	806	840	908	970	
	.09	\$ 581	615	648	682	716	744	778	812	846	880	947	1010	
	.10	\$ 620	654	688	722	756	784	818	852	885	919	987	1049	BALANCE POINT 34 DEG.F.
	.12	\$ 694	727	761	795	829	857	891	925	959	993	1060	1122	
	.14	\$ 773	806	840	874	908	936	970	1004	1038	1072	1139	1201	
	.16	\$ 852	885	919	953	987	1015	1049	1083	1117	1151	1218	1280	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331		<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 485	530	581	631	677	727	773	823	868	919	1015	1111	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 519	564	615	665	710	761	806	857	902	953	1049	1145	
	.07	\$ 547	592	643	694	739	789	835	885	931	981	1077	1173	
	.08	\$ 575	620	671	722	767	818	863	914	959	1010	1105	1201	
	.09	\$ 603	648	699	750	795	846	891	942	987	1038	1134	1230	
	.10	\$ 637	682	733	784	829	880	925	976	1021	1072	1168	1263	BALANCE POINT 39 DEG.F.
	.12	\$ 694	739	789	840	885	936	981	1032	1077	1128	1224	1320	
	.14	\$ 756	801	852	902	947	998	1043	1094	1139	1190	1286	1382	
	.16	\$ 812	857	908	959	1004	1055	1100	1151	1196	1247	1342	1438	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH	<--THEORETICAL AIR CONDITIONING COST
\$	100	120	140	160	180	200	240	280	320		

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 30UHPOC 30UHPOC/A37AO-A INDOOR A37AO-A
 ARI RATED COOLING CAP.: BTUH(95) 30000 SEER12.00
 ARI RATED HEATING CAP.: BTUH (47) 28000 COP(47) 3.40. HSPF 7.50 MIN.DHR REG IV
 BTUH (17) 17000. COP(17) 2.20
 FURNACE TYPR FUEL OIL FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON															
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80				
30,000	\$	332	383	428	479	524	575	620	671	716	767	812	863	---THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$	327	338	344	355	361	372	383	389	400	406	417	423	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	378	389	394	406	411	423	434	440	451	457	468	473				
.07	\$	428	440	445	457	462	473	485	490	502	507	519	524				
.08	\$	485	496	502	513	519	530	541	547	558	564	575	581				
.09	\$	536	547	552	564	569	581	592	598	609	615	626	631				
.10	\$	586	598	603	615	620	631	643	648	660	665	677	682				
.12	\$	694	705	710	722	727	739	750	756	767	773	784	789				
.14	\$	801	812	818	829	835	846	857	863	874	880	891	897				
.16	\$	902	914	919	931	936	947	959	964	976	981	993	998			BALANCE POINT 19 DEG.F.	
35,000	\$	389	445	502	558	615	671	727	784	835	891	947	1004			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	378	394	406	423	440	457	473	490	502	519	536	552	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	428	445	457	473	490	507	524	541	552	569	586	603				
.07	\$	479	496	507	524	541	558	575	592	603	620	637	654				
.08	\$	530	547	558	575	592	609	626	643	654	671	688	705				
.09	\$	586	603	615	631	648	665	682	699	710	727	744	761				
.10	\$	637	654	665	682	699	716	733	750	761	778	795	812				
.12	\$	744	761	773	789	806	823	840	857	868	885	902	919				
.14	\$	846	863	874	891	908	925	942	959	970	987	1004	1021				
.16	\$	953	970	981	998	1015	1032	1049	1066	1077	1094	1111	1128			BALANCE POINT 24 DEG.F.	
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	428	451	479	507	536	564	586	615	643	671	699	722	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	473	496	524	552	581	609	631	660	688	716	744	767				
.07	\$	519	541	569	598	626	654	677	705	733	761	789	812				
.08	\$	569	592	620	648	677	705	727	756	784	812	840	863				
.09	\$	615	637	665	694	722	750	773	801	829	857	885	908				
.10	\$	660	682	710	739	767	795	818	846	874	902	931	953				
.12	\$	756	778	806	835	863	891	914	942	970	998	1026	1049				
.14	\$	852	874	902	931	959	987	1010	1038	1066	1094	1122	1145				
.16	\$	942	964	993	1021	1049	1077	1100	1128	1156	1184	1213	1235			BALANCE POINT 28 DEG.F.	
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	524	575	620	671	716	767	812	863	908	953	1004	1049	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	564	615	660	710	756	806	852	902	947	993	1043	1089				
.07	\$	603	654	699	750	795	846	891	942	987	1032	1083	1128				
.08	\$	643	694	739	789	835	885	931	981	1026	1072	1122	1168				
.09	\$	682	733	778	829	874	925	970	1021	1066	1111	1162	1207				
.10	\$	722	773	818	868	914	964	1010	1060	1105	1151	1201	1247				
.12	\$	795	846	891	942	987	1038	1083	1134	1179	1224	1275	1320				
.14	\$	874	925	970	1021	1066	1117	1162	1213	1258	1303	1354	1399				
.16	\$	953	1004	1049	1100	1145	1196	1241	1292	1337	1382	1433	1478			BALANCE POINT 34 DEG.F.	
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	631	705	773	840	914	981	1049	1122	1190	1258	1331	1399	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	665	739	806	874	947	1015	1083	1156	1224	1292	1365	1433				
.07	\$	694	767	835	902	976	1043	1111	1184	1252	1320	1393	1461				
.08	\$	722	795	863	931	1004	1072	1139	1213	1280	1348	1421	1489				
.09	\$	750	823	891	959	1032	1100	1168	1241	1309	1376	1450	1517				
.10	\$	784	857	925	993	1066	1134	1201	1275	1342	1410	1484	1551				
.12	\$	840	914	981	1049	1122	1190	1258	1331	1399	1467	1540	1608				
.14	\$	902	976	1043	1111	1184	1252	1320	1393	1461	1529	1602	1670				
.16	\$	959	1032	1100	1168	1241	1309	1376	1450	1517	1585	1658	1726			BALANCE POINT 39 DEG.F.	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	100	120	140	160	180	200	240	280	320	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 30UHPC 30UHPC/A37AO-A INDOOR A37AO-A
 ARI RATED COOLING CAP.: BTUH(95) 30000 SEER12.00
 ARI RATED HEATING CAP.: BTUH(47) 28000 COP(47) 3.40 HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 17000 COP(17) 2.20
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20	1.20		
30,000	\$	434	473	507	547	581	620	654	694	727	801	874	874	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	344	355	361	366	372	383	389	394	400	417	428	428	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	394	406	411	417	423	434	440	445	451	468	479	479		
.07	\$	445	457	462	468	473	485	490	496	502	519	530	530		
.08	\$	502	513	519	524	530	541	547	552	558	575	586	586		
.09	\$	552	564	569	575	581	592	598	603	609	626	637	637		
.10	\$	603	615	620	626	631	643	648	654	660	677	688	688		
.12	\$	710	722	727	733	739	750	756	761	767	784	795	795		
.14	\$	818	829	835	840	846	857	863	868	874	891	902	902		
.16	\$	919	931	936	942	947	959	964	970	976	993	1004	1004		BALANCE POINT 19 DEG.F.
35,000	\$	507	552	592	637	682	722	767	806	852	936	1021	1021		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	411	423	434	445	457	473	485	496	507	530	558	558	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	462	473	485	496	507	524	536	547	558	581	609	609		
.07	\$	513	524	536	547	558	575	586	598	609	631	660	660		
.08	\$	564	575	586	598	609	626	637	648	660	682	710	710		
.09	\$	620	631	643	654	665	682	694	705	716	739	767	767		
.10	\$	671	682	694	705	716	733	744	756	767	789	818	818		
.12	\$	778	789	801	812	823	840	852	863	874	897	925	925		
.14	\$	880	891	902	914	925	942	953	964	976	998	1026	1026		
.16	\$	987	998	1010	1021	1032	1049	1060	1072	1083	1105	1134	1134		BALANCE POINT 24 DEG.F.
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	485	507	524	547	569	586	609	631	648	688	733	733	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	530	552	569	592	615	631	654	677	694	733	778	778		
.07	\$	575	598	615	637	660	677	699	722	739	778	823	823		
.08	\$	626	648	665	688	710	727	750	773	789	829	874	874		
.09	\$	671	694	710	733	756	773	795	818	835	874	919	919		
.10	\$	716	739	756	778	801	818	840	863	880	919	964	964		
.12	\$	812	835	852	874	897	914	936	959	976	1015	1060	1060		
.14	\$	908	931	947	970	993	1010	1032	1055	1072	1111	1156	1156		
.16	\$	998	1021	1038	1060	1083	1100	1122	1145	1162	1201	1247	1247		BALANCE POINT 28 DEG.F.
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	626	665	699	739	773	812	846	885	919	993	1066	1066	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	665	705	739	778	812	852	885	925	959	1032	1105	1105		
.07	\$	705	744	778	818	852	891	925	964	998	1072	1145	1145		
.08	\$	744	784	818	857	891	931	964	1004	1038	1111	1184	1184		
.09	\$	784	823	857	897	931	970	1004	1043	1077	1151	1224	1224		
.10	\$	823	863	897	936	970	1010	1043	1083	1117	1190	1263	1263		
.12	\$	897	936	970	1010	1043	1083	1117	1156	1190	1263	1337	1337		
.14	\$	976	1015	1049	1089	1122	1162	1196	1235	1269	1342	1416	1416		
.16	\$	1055	1094	1128	1168	1201	1241	1275	1314	1348	1421	1495	1495		BALANCE POINT 34 DEG.F.
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	784	835	891	942	993	1049	1100	1156	1207	1314	1421	1421	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	818	868	925	976	1026	1083	1134	1190	1241	1348	1455	1455		
.07	\$	846	897	953	1004	1055	1111	1162	1218	1269	1376	1484	1484		
.08	\$	874	925	981	1032	1083	1139	1190	1247	1297	1405	1512	1512		
.09	\$	902	953	1010	1060	1111	1168	1218	1275	1326	1433	1540	1540		
.10	\$	936	987	1043	1094	1145	1201	1252	1309	1359	1467	1574	1574		
.12	\$	993	1043	1100	1151	1201	1258	1309	1365	1416	1523	1630	1630		
.14	\$	1055	1105	1162	1213	1263	1320	1371	1427	1478	1585	1692	1692		
.16	\$	1111	1162	1218	1269	1320	1376	1427	1484	1534	1642	1749	1749		BALANCE POINT 39 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH
\$	100	120	140	160	180	200	240	280	320	<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4 36UHPQC/A37AQ-A
 HEAT PUMP MODEL. OUTDOOR 36UHPQC INDOOR A37AQ-A
 ARI RATED COOLING CAP: BTUH(95) 35000, SEER12.00
 ARI RATED HEATING CAP: BTUH (47) 35000, COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH (17) 20800, COP(17) 2.10
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT ELEC.
 LOSS COST
 BTUH \$/KWH

35,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

05	\$	406	885	
06	\$	490	1060	
07	\$	569	1241	
08	\$	654	1416	
09	\$	733	1596	
10	\$	818	1771	
12	\$	981	2127	BALANCE POINT 18 DEG.F
14	\$	1145	2482	
16	\$	1309	2838	

40,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	473	1010	
.06	\$	564	1213	
.07	\$	660	1416	
.08	\$	756	1619	
.09	\$	846	1822	
.10	\$	942	2025	
.12	\$	1134	2431	BALANCE POINT 21 DEG.F
.14	\$	1320	2838	
.16	\$	1506	3244	

50,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	609	1263	
.06	\$	733	1517	
.07	\$	857	1771	
.08	\$	981	2025	
.09	\$	1100	2279	
.10	\$	1224	2533	
.12	\$	1467	3041	BALANCE POINT 27 DEG.F
.14	\$	1715	3549	
.16	\$	1957	4057	

60,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	767	1517	
.06	\$	925	1822	
.07	\$	1077	2127	
.08	\$	1235	2431	
.09	\$	1388	2736	
.10	\$	1546	3041	
.12	\$	1856	3650	BALANCE POINT 32 DEG.F
.14	\$	2161	4260	
.16	\$	2471	4869	

70,000

— THEORETICAL ANNUAL HEATING COST —
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

05	\$	959	1771	
06	\$	1151	2127	
07	\$	1342	2482	
08	\$	1534	2838	
09	\$	1721	3193	
10	\$	1918	3549	
12	\$	2296	4260	BALANCE POINT 35 DEG.F
14	\$	2685	4971	
16	\$	3063	5682	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	07	08	.09	10	.12	14	.16	<—ELECTRIC RATE \$/KWH
\$	116	139	163	186	209	233	279	326	373	<—THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 36UHPQC INDOOR A37AQ-A
 ARI RATED COOLING CAP. BTUH(95) 35000, SEER12.00
 ARI RATED HEATING CAP. BTUH(47) 35000, COP(47) 3.20, HSPF 7.50 MIN DHR REG IV
 BTUH(17) 20800, COP(17) 2.10
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90		1.00
35,000	\$	270	310	344	383	423	462	502	541	581	620	694	773	<--THEORETICAL HEATING COST * FURNACE ONLY
05	\$	355	361	372	378	383	389	400	406	411	417	434	451	THEORETICAL HEATING COST * FURN. + HEAT PUMP
06	\$	411	417	428	434	440	445	457	462	468	473	490	507	\$ PER YEAR
07	\$	473	479	490	496	502	507	519	524	530	536	552	569	
08	\$	536	541	552	558	564	569	581	586	592	598	615	631	
09	\$	598	603	615	620	626	631	643	648	654	660	677	694	
10	\$	654	660	671	677	682	688	699	705	710	716	733	750	
12	\$	778	784	795	801	806	812	823	829	835	840	857	874	BALANCE POINT 18 DEG.F
14	\$	897	902	914	919	925	931	942	947	953	959	976	993	
16	\$	1021	1026	1038	1043	1049	1055	1066	1072	1077	1083	1100	1117	
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885	<--THEORETICAL HEATING COST * FURNACE ONLY
05	\$	400	411	417	428	434	445	451	457	468	473	490	507	THEORETICAL HEATING COST * FURN. + HEAT PUMP
06	\$	468	479	485	496	502	513	519	524	536	541	558	575	\$ PER YEAR
07	\$	536	547	552	564	569	581	586	592	603	609	626	643	
08	\$	603	615	620	631	637	648	654	660	671	677	694	710	
09	\$	671	682	688	699	705	716	722	727	739	744	761	778	
10	\$	739	750	756	767	773	784	789	795	806	812	829	846	
12	\$	880	891	897	908	914	925	931	936	947	953	970	987	BALANCE POINT 21 DEG.F
14	\$	1015	1026	1032	1043	1049	1060	1066	1072	1083	1089	1105	1122	
16	\$	1151	1162	1168	1179	1184	1196	1201	1207	1218	1224	1241	1258	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105	<--THEORETICAL HEATING COST * FURNACE ONLY
05	\$	451	473	496	524	547	569	592	615	637	665	710	756	THEORETICAL HEATING COST * FURN. + HEAT PUMP
06	\$	507	530	552	581	603	626	648	671	694	722	767	812	\$ PER YEAR
07	\$	564	586	609	637	660	682	705	727	750	778	823	868	
08	\$	626	648	671	699	722	744	767	789	812	840	885	931	
09	\$	682	705	727	756	778	801	823	846	868	897	942	987	
10	\$	739	761	784	812	835	857	880	902	925	953	998	1043	
12	\$	852	874	897	925	947	970	993	1015	1038	1066	1111	1156	BALANCE POINT 27 DEG.F
14	\$	970	993	1015	1043	1066	1089	1111	1134	1156	1184	1230	1275	
16	\$	1083	1105	1128	1156	1179	1201	1224	1247	1269	1297	1342	1388	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331	<--THEORETICAL HEATING COST * FURNACE ONLY
05	\$	507	547	586	626	671	710	750	789	829	868	947	1026	THEORETICAL HEATING COST * FURN. + HEAT PUMP
06	\$	552	592	631	671	716	756	795	835	874	914	993	1072	\$ PER YEAR
07	\$	598	637	677	716	761	801	840	880	919	959	1038	1117	
08	\$	643	682	722	761	806	846	885	925	964	1004	1083	1162	
09	\$	688	727	767	806	852	891	931	970	1010	1049	1128	1207	
10	\$	733	773	812	852	897	936	976	1015	1055	1094	1173	1252	
12	\$	829	868	908	947	993	1032	1072	1111	1151	1190	1269	1348	BALANCE POINT 32 DEG.F
14	\$	919	959	998	1038	1083	1122	1162	1201	1241	1280	1359	1438	
16	\$	1010	1049	1089	1128	1173	1213	1252	1292	1331	1371	1450	1529	
70,000	\$	541	620	694	773	852	931	1010	1083	1162	1241	1393	1551	<--THEORETICAL HEATING COST * FURNACE ONLY
05	\$	592	637	682	727	773	823	868	914	959	1010	1100	1190	THEORETICAL HEATING COST * FURN. + HEAT PUMP
06	\$	643	688	733	778	823	874	919	964	1010	1060	1151	1241	\$ PER YEAR
07	\$	699	744	789	835	880	931	976	1021	1066	1117	1207	1297	
08	\$	750	795	840	885	931	981	1026	1072	1117	1168	1258	1348	
09	\$	801	846	891	936	981	1032	1077	1122	1168	1218	1309	1399	
10	\$	857	902	947	993	1038	1089	1134	1179	1224	1275	1365	1455	
12	\$	959	1004	1049	1094	1139	1190	1235	1280	1326	1376	1467	1557	BALANCE POINT 35 DEG.F
14	\$	1066	1111	1156	1201	1247	1297	1342	1388	1433	1484	1574	1664	
16	\$	1173	1218	1263	1309	1354	1405	1450	1495	1540	1591	1681	1771	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<--ELECTRIC RATE \$/KWH	<--THEORETICAL AIR CONDITIONING COST
\$	116	139	163	186	209	233	279	326	373		

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL OUTDOOR 36UHPQC INDOOR A37AQ-A
 ARI RATED COOLING CAP: BTUH(95) 35000, SEER12.00
 ARI RATED HEATING CAP: BTUH(47) 35000, COP(47) 3.20, HSPF 7.50 MIN DHR REG IV
 BTUH(17) 20800, COP(17) 2.10
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC COST \$/KWH	HEATING OIL COST - \$/GALLON												
		70	80	90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70		1.80
35,000	\$	389	445	502	558	615	671	727	784	835	891	947	1004	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	378	389	400	406	417	428	440	451	462	473	479	490	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	434	445	457	462	473	485	496	507	519	530	536	547	\$ PER YEAR
.07	\$	496	507	519	524	536	547	558	569	581	592	598	609	
.08	\$	558	569	581	586	598	609	620	631	643	654	660	671	
.09	\$	620	631	643	648	660	671	682	694	705	716	722	733	
.10	\$	677	688	699	705	716	727	739	750	761	773	778	789	
.12	\$	801	812	823	829	840	852	863	874	885	897	902	914	BALANCE POINT 18 DEG.F
.14	\$	919	931	942	947	959	970	981	993	1004	1015	1021	1032	
.16	\$	1043	1055	1066	1072	1083	1094	1105	1117	1128	1139	1145	1156	
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	428	440	451	462	473	485	496	513	524	536	547	558	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	496	507	519	530	541	552	564	581	592	603	615	626	\$ PER YEAR
.07	\$	564	575	586	598	609	620	631	648	660	671	682	694	
.08	\$	631	643	654	665	677	688	699	716	727	739	750	761	
.09	\$	699	710	722	733	744	756	767	784	795	806	818	829	
.10	\$	767	778	789	801	812	823	835	852	863	874	885	897	
.12	\$	908	919	931	942	953	964	976	993	1004	1015	1026	1038	BALANCE POINT 21 DEG.F
.14	\$	1043	1055	1066	1077	1089	1100	1111	1128	1139	1151	1162	1173	
.16	\$	1179	1190	1201	1213	1224	1235	1247	1263	1275	1286	1297	1309	
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	524	558	592	626	660	694	727	761	795	829	863	897	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	581	615	648	682	716	750	784	818	852	885	919	953	\$ PER YEAR
.07	\$	637	671	705	739	773	806	840	874	908	942	976	1010	
.08	\$	699	733	767	801	835	868	902	936	970	1004	1038	1072	
.09	\$	756	789	823	857	891	925	959	993	1026	1060	1094	1128	
.10	\$	812	846	880	914	947	981	1015	1049	1083	1117	1151	1184	
.12	\$	925	959	993	1026	1060	1094	1128	1162	1196	1230	1263	1297	BALANCE POINT 27 DEG.F
.14	\$	1043	1077	1111	1145	1179	1213	1247	1280	1314	1348	1382	1416	
.16	\$	1156	1190	1224	1258	1292	1326	1359	1393	1427	1461	1495	1529	
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	631	688	744	806	863	919	976	1032	1089	1151	1207	1263	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	677	733	789	852	908	964	1021	1077	1134	1196	1252	1309	\$ PER YEAR
.07	\$	722	778	835	897	953	1010	1066	1122	1179	1241	1297	1354	
.08	\$	767	823	880	942	998	1055	1111	1168	1224	1286	1342	1399	
.09	\$	812	868	925	987	1043	1100	1156	1213	1269	1331	1388	1444	
.10	\$	857	914	970	1032	1089	1145	1201	1258	1314	1376	1433	1489	
.12	\$	953	1010	1066	1128	1184	1241	1297	1354	1410	1472	1529	1585	BALANCE POINT 32 DEG.F
.14	\$	1043	1100	1156	1218	1275	1331	1388	1444	1500	1563	1619	1675	
.16	\$	1134	1190	1247	1309	1365	1421	1478	1534	1591	1653	1709	1766	
70,000	\$	784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014	<---THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	733	801	868	936	998	1066	1134	1201	1269	1337	1405	1467	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	784	852	919	987	1049	1117	1184	1252	1320	1388	1455	1517	\$ PER YEAR
.07	\$	840	908	976	1043	1105	1173	1241	1309	1376	1444	1512	1574	
.08	\$	891	959	1026	1094	1156	1224	1292	1359	1427	1495	1563	1625	
.09	\$	942	1010	1077	1145	1207	1275	1342	1410	1478	1546	1613	1675	
.10	\$	998	1066	1134	1201	1263	1331	1399	1467	1534	1602	1670	1732	
.12	\$	1100	1168	1235	1303	1365	1433	1500	1568	1636	1704	1771	1833	BALANCE POINT 35 DEG.F
.14	\$	1207	1275	1342	1410	1472	1540	1608	1675	1743	1811	1878	1941	
.16	\$	1314	1382	1450	1517	1579	1647	1715	1783	1850	1918	1986	2048	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	<---ELECTRIC RATE \$/KWH
\$	116	139	163	186	209	233	279	326	373	<---THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4 36UHPQC/A37AQ-A
 HEAT PUMP MODEL OUTDOOR 36UHPQC INDOOR A37AQ-A
 ARI RATED COOLING CAP. BTUH(95) 35000, SEER12.00
 ARI RATED HEATING CAP. BTUH(47) 35000, COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 20800, COP(17) 2.10
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		60	65	70	75	80	85	90	95	1.00	1.10	1.20		1.20	
35,000															<---THEORETICAL HEATING COST * FURNACE ONLY
	\$	507	552	592	637	682	722	767	806	852	936	1021	1021	THEORETICAL HEATING COST * FURN + HEAT PUMP	
05	\$	400	406	417	423	434	440	445	457	462	479	496	496	\$ PER YEAR	
06	\$	457	462	473	479	490	496	502	513	519	536	552	552		
07	\$	519	524	536	541	552	558	564	575	581	598	615	615		
08	\$	581	586	598	603	615	620	626	637	643	660	677	677		
09	\$	643	648	660	665	677	682	688	699	705	722	739	739		
10	\$	699	705	716	722	733	739	744	756	761	778	795	795		
12	\$	823	829	840	846	857	863	868	880	885	902	919	919	BALANCE POINT 18 DEG.F.	
14	\$	942	947	959	964	976	981	987	998	1004	1021	1038	1038		
16	\$	1066	1072	1083	1089	1100	1105	1111	1122	1128	1145	1162	1162		
40,000														<---THEORETICAL HEATING COST * FURNACE ONLY	
	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	THEORETICAL HEATING COST * FURN + HEAT PUMP	
05	\$	451	462	473	479	490	496	507	519	524	541	564	564	\$ PER YEAR	
06	\$	519	530	541	547	558	564	575	586	592	609	631	631		
07	\$	586	598	609	615	626	631	643	654	660	677	699	699		
08	\$	654	665	677	682	694	699	710	722	727	744	767	767		
09	\$	722	733	744	750	761	767	778	789	795	812	835	835		
10	\$	789	801	812	818	829	835	846	857	863	880	902	902		
12	\$	931	942	953	959	970	976	987	998	1004	1021	1043	1043	BALANCE POINT 21 DEG.F.	
14	\$	1066	1077	1089	1094	1105	1111	1122	1134	1139	1156	1179	1179		
16	\$	1201	1213	1224	1230	1241	1247	1258	1269	1275	1292	1314	1314		
50,000														<---THEORETICAL HEATING COST * FURNACE ONLY	
	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	THEORETICAL HEATING COST * FURN + HEAT PUMP	
05	\$	598	620	648	677	699	727	750	778	801	857	908	908	\$ PER YEAR	
06	\$	654	677	705	733	756	784	806	835	857	914	964	964		
07	\$	710	733	761	789	812	840	863	891	914	970	1021	1021		
08	\$	773	795	823	852	874	902	925	953	976	1032	1083	1083		
09	\$	829	852	880	908	931	959	981	1010	1032	1089	1139	1139		
10	\$	885	908	936	964	987	1015	1038	1066	1089	1145	1196	1196		
12	\$	998	1021	1049	1077	1100	1128	1151	1179	1201	1258	1309	1309	BALANCE POINT 27 DEG.F.	
14	\$	1117	1139	1168	1196	1218	1247	1269	1297	1320	1376	1427	1427		
16	\$	1230	1252	1280	1309	1331	1359	1382	1410	1433	1489	1540	1540		
60,000														<---THEORETICAL HEATING COST * FURNACE ONLY	
	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	THEORETICAL HEATING COST * FURN + HEAT PUMP	
05	\$	756	801	840	885	931	976	1015	1060	1105	1190	1280	1280	\$ PER YEAR	
06	\$	801	846	885	931	976	1021	1060	1105	1151	1235	1326	1326		
07	\$	846	891	931	976	1021	1066	1105	1151	1196	1280	1371	1371		
08	\$	891	936	976	1021	1066	1111	1151	1196	1241	1326	1416	1416		
09	\$	936	981	1021	1066	1111	1156	1196	1241	1286	1371	1461	1461		
10	\$	981	1026	1066	1111	1156	1201	1241	1286	1331	1416	1506	1506		
12	\$	1077	1122	1162	1207	1252	1297	1337	1382	1427	1512	1602	1602	BALANCE POINT 32 DEG.F.	
14	\$	1168	1213	1252	1297	1342	1388	1427	1472	1517	1602	1692	1692		
16	\$	1258	1303	1342	1388	1433	1478	1517	1563	1608	1692	1783	1783		
70,000														<---THEORETICAL HEATING COST * FURNACE ONLY	
	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	THEORETICAL HEATING COST * FURN + HEAT PUMP	
05	\$	874	925	976	1032	1083	1134	1184	1235	1286	1388	1489	1489	\$ PER YEAR	
06	\$	925	976	1026	1083	1134	1184	1235	1286	1337	1438	1540	1540		
07	\$	981	1032	1083	1139	1190	1241	1292	1342	1393	1495	1596	1596		
08	\$	1032	1083	1134	1190	1241	1292	1342	1393	1444	1546	1647	1647		
09	\$	1083	1134	1184	1241	1292	1342	1393	1444	1495	1596	1698	1698		
10	\$	1139	1190	1241	1297	1348	1399	1450	1500	1551	1653	1754	1754		
12	\$	1241	1292	1342	1399	1450	1500	1551	1602	1653	1754	1856	1856	BALANCE POINT 35 DEG.F.	
14	\$	1348	1399	1450	1506	1557	1608	1658	1709	1760	1862	1963	1963		
16	\$	1455	1506	1557	1613	1664	1715	1766	1816	1867	1969	2070	2070		

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	05	06	07	08	09	10	12	14	16	
\$	116	139	163	186	209	233	279	326	373	<---ELECTRIC RATE \$/KWH
										<---THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: OUTDOOR 42UHPOA 42UHPOA/A61AQ-A INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH (95) 43500, SEER11.30
 ARI RATED HEATING CAP.: BTUH (47) 41000, COP(47) 3.40, HSPF 7.60 MIN.DHR REG IV
 BTUH (17) 25000, COP(17) 2.20
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
40,000			
.05	\$	462	1010
.06	\$	558	1213
.07	\$	648	1416
.08	\$	739	1619
.09	\$	835	1822
.10	\$	925	2025
.12	\$	1111	2431
.14	\$	1297	2838
.16	\$	1484	3244
			BALANCE POINT 16 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
50,000			
.05	\$	581	1263
.06	\$	705	1517
.07	\$	818	1771
.08	\$	936	2025
.09	\$	1049	2279
.10	\$	1173	2533
.12	\$	1405	3041
.14	\$	1642	3549
.16	\$	1873	4057
			BALANCE POINT 23 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
60,000			
.05	\$	727	1517
.06	\$	868	1822
.07	\$	1015	2127
.08	\$	1162	2431
.09	\$	1309	2736
.10	\$	1450	3041
.12	\$	1737	3650
.14	\$	2031	4260
.16	\$	2319	4869
			BALANCE POINT 28 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
70,000			
.05	\$	885	1771
.06	\$	1060	2127
.07	\$	1235	2482
.08	\$	1410	2838
.09	\$	1591	3193
.10	\$	1766	3549
.12	\$	2115	4260
.14	\$	2477	4971
.16	\$	2826	5682
			BALANCE POINT 32 DEG.F.

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
80,000			
.05	\$	1066	2025
.06	\$	1275	2431
.07	\$	1495	2838
.08	\$	1704	3244
.09	\$	1918	3650
.10	\$	2127	4057
.12	\$	2561	4869
.14	\$	2984	5682
.16	\$	3413	6494
			BALANCE POINT 35 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	153	184	215	246	277	307	369	431	492	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: OUTDOOR 42UHPOA 42UHPOA/A61AO-A INDOOR A61AO-A
 ARI RATED COOLING CAP.: BTUH (95) 43500 SEER11.30
 ARI RATED HEATING CAP.: BTUH (47) 41000 COP(47) 3.40, HSPF 7.60 MIN.DHR REG IV
 BTUH (17) 25000, COP(17) 2.20
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	KLEC. COST \$/KWH	NATURAL GAS COST - \$/THERM															
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90		1.00			
40,000	\$	310	349	394	440	485	530	575	620	665	705	795	885	---THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$	417	423	428	434	440	445	451	457	457	462	473	485	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	490	496	502	507	513	519	524	530	530	536	547	558				
.07	\$	569	575	581	586	592	598	603	609	609	615	626	637				
.08	\$	648	654	660	665	671	677	682	688	688	694	705	716				
.09	\$	722	727	733	739	744	750	756	761	761	767	778	789				
.10	\$	801	806	812	818	823	829	835	840	840	846	857	868				
.12	\$	953	959	964	970	976	981	987	993	993	998	1010	1021				
.14	\$	1105	1111	1117	1122	1128	1134	1139	1145	1145	1151	1162	1173				
.16	\$	1258	1263	1269	1275	1280	1286	1292	1297	1297	1303	1314	1326			BALANCE POINT 16 DEG.F.	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	479	490	507	524	541	558	569	586	603	620	648	682	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	552	564	581	598	615	631	643	660	677	694	722	756				
.07	\$	626	637	654	671	688	705	716	733	750	767	795	829				
.08	\$	705	716	733	750	767	784	795	812	829	846	874	908				
.09	\$	778	789	806	823	840	857	868	885	902	919	947	981				
.10	\$	852	863	880	897	914	931	942	959	976	993	1021	1055				
.12	\$	998	1010	1026	1043	1060	1077	1089	1105	1122	1139	1168	1201				
.14	\$	1145	1156	1173	1190	1207	1224	1235	1252	1269	1286	1314	1348				
.16	\$	1292	1303	1320	1337	1354	1371	1382	1399	1416	1433	1461	1495			BALANCE POINT 23 DEG.F.	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	541	569	598	626	654	682	710	739	767	795	852	908	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	609	637	665	694	722	750	778	806	835	863	919	976				
.07	\$	677	705	733	761	789	818	846	874	902	931	987	1043				
.08	\$	744	773	801	829	857	885	914	942	970	998	1055	1111				
.09	\$	812	840	868	897	925	953	981	1010	1038	1066	1122	1179				
.10	\$	885	914	942	970	998	1026	1055	1083	1111	1139	1196	1252				
.12	\$	1021	1049	1077	1105	1134	1162	1190	1218	1247	1275	1331	1388				
.14	\$	1156	1184	1213	1241	1269	1297	1326	1354	1382	1410	1467	1523				
.16	\$	1297	1326	1354	1382	1410	1438	1467	1495	1523	1551	1608	1664			BALANCE POINT 28 DEG.F.	
70,000	\$	541	620	694	773	852	931	1010	1083	1162	1241	1393	1551			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	598	643	688	733	778	829	874	919	964	1015	1105	1196	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	648	694	739	784	829	880	925	970	1015	1066	1156	1247				
.07	\$	705	750	795	840	885	936	981	1026	1072	1122	1213	1303				
.08	\$	756	801	846	891	936	987	1032	1077	1122	1173	1263	1354				
.09	\$	812	857	902	947	993	1043	1089	1134	1179	1230	1320	1410				
.10	\$	863	908	953	998	1043	1094	1139	1184	1230	1280	1371	1461				
.12	\$	970	1015	1060	1105	1151	1201	1247	1292	1337	1388	1478	1568				
.14	\$	1077	1122	1168	1213	1258	1309	1354	1399	1444	1495	1585	1675				
.16	\$	1184	1230	1275	1320	1365	1416	1461	1506	1551	1602	1692	1783			BALANCE POINT 32 DEG.F.	
80,000	\$	620	705	795	885	976	1060	1151	1241	1331	1416	1596	1771			---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	671	722	778	829	880	936	987	1043	1094	1145	1252	1359	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	733	784	840	891	942	998	1049	1105	1156	1207	1314	1421				
.07	\$	789	840	897	947	998	1055	1105	1162	1213	1263	1371	1478				
.08	\$	852	902	959	1010	1060	1117	1168	1224	1275	1326	1433	1540				
.09	\$	914	964	1021	1072	1122	1179	1230	1286	1337	1388	1495	1602				
.10	\$	970	1021	1077	1128	1179	1235	1286	1342	1393	1444	1551	1658				
.12	\$	1094	1145	1201	1252	1303	1359	1410	1467	1517	1568	1675	1783				
.14	\$	1213	1263	1320	1371	1421	1478	1529	1585	1636	1687	1794	1901				
.16	\$	1331	1382	1438	1489	1540	1596	1647	1704	1754	1805	1912	2020			BALANCE POINT 35 DEG.F.	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16		
	\$	153	184	215	246	277	307	369	431	492	---
											---ELECTRIC RATE \$/KWH
											---THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: OUTDOOR 42UHPOA 42UHPOA/A61AQ-A
 INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 43500 SEER11.30
 ARI RATED HEATING CAP.: BTUH(47) 41000 COP(47) 3.40, HSPF 7.60 MIN.DHR REG IV
 BTUH(17) 25000, COP(17) 2.20
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00 % AFUR

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON														
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70		1.80		
40,000	\$ 445	507	575	637	699	767	829	891	959	1021	1083	1151	<--THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$ 434	440	451	457	462	468	479	485	490	502	507	513	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$ 507	513	524	530	536	541	552	558	564	575	581	586				
.07	\$ 586	592	603	609	615	620	631	637	643	654	660	665				
.08	\$ 665	671	682	688	694	699	710	716	722	733	739	744				
.09	\$ 739	744	756	761	767	773	784	789	795	806	812	818				
.10	\$ 818	823	835	840	846	852	863	868	874	885	891	897				
.12	\$ 970	976	987	993	998	1004	1015	1021	1026	1038	1043	1049				
.14	\$ 1122	1128	1139	1145	1151	1156	1168	1173	1179	1190	1196	1201				
.16	\$ 1275	1280	1292	1297	1303	1309	1320	1326	1331	1342	1348	1354			BALANCE POINT 16 DEG.F.	
50,000	\$ 558	637	716	795	880	959	1038	1117	1196	1280	1359	1438			<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$ 524	547	569	592	615	637	665	688	710	733	756	778			THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 598	620	643	665	688	710	739	761	784	806	829	852				
.07	\$ 671	694	716	739	761	784	812	835	857	880	902	925				
.08	\$ 750	773	795	818	840	863	891	914	936	959	981	1004				
.09	\$ 823	846	868	891	914	936	964	987	1010	1032	1055	1077				
.10	\$ 897	919	942	964	987	1010	1038	1060	1083	1105	1128	1151				
.12	\$ 1043	1066	1089	1111	1134	1156	1184	1207	1230	1252	1275	1297				
.14	\$ 1190	1213	1235	1258	1280	1303	1331	1354	1376	1399	1421	1444				
.16	\$ 1337	1359	1382	1405	1427	1450	1478	1500	1523	1546	1568	1591	BALANCE POINT 23 DEG.F.			
60,000	\$ 671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	<--THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$ 626	671	710	750	789	829	874	914	953	993	1032	1077	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$ 694	739	778	818	857	897	942	981	1021	1060	1100	1145				
.07	\$ 761	806	846	885	925	964	1010	1049	1089	1128	1168	1213				
.08	\$ 829	874	914	953	993	1032	1077	1117	1156	1196	1235	1280				
.09	\$ 897	942	981	1021	1060	1100	1145	1184	1224	1263	1303	1348				
.10	\$ 970	1015	1055	1094	1134	1173	1218	1258	1297	1337	1376	1421				
.12	\$ 1105	1151	1190	1230	1269	1309	1354	1393	1433	1472	1512	1557				
.14	\$ 1241	1286	1326	1365	1405	1444	1489	1529	1568	1608	1647	1692				
.16	\$ 1382	1427	1467	1506	1546	1585	1630	1670	1709	1749	1788	1833			BALANCE POINT 28 DEG.F.	
70,000	\$ 784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014			<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$ 739	806	874	942	1004	1072	1139	1207	1275	1342	1410	1472			THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 789	857	925	993	1055	1122	1190	1258	1326	1393	1461	1523				
.07	\$ 846	914	981	1049	1111	1179	1247	1314	1382	1450	1517	1579				
.08	\$ 897	964	1032	1100	1162	1230	1297	1365	1433	1500	1568	1630				
.09	\$ 953	1021	1089	1156	1218	1286	1354	1421	1489	1557	1625	1687				
.10	\$ 1004	1072	1139	1207	1269	1337	1405	1472	1540	1608	1675	1737				
.12	\$ 1111	1179	1247	1314	1376	1444	1512	1579	1647	1715	1783	1845				
.14	\$ 1218	1286	1354	1421	1484	1551	1619	1687	1754	1822	1890	1952				
.16	\$ 1326	1393	1461	1529	1591	1658	1726	1794	1862	1929	1997	2059	BALANCE POINT 32 DEG.F.			
80,000	\$ 891	1021	1151	1280	1405	1534	1664	1788	1918	2048	2172	2302	<--THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$ 835	908	987	1060	1139	1218	1292	1371	1444	1523	1596	1675	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$ 897	970	1049	1122	1201	1280	1354	1433	1506	1585	1658	1737				
.07	\$ 953	1026	1105	1179	1258	1337	1410	1489	1563	1642	1715	1794				
.08	\$ 1015	1089	1168	1241	1320	1399	1472	1551	1625	1704	1777	1856				
.09	\$ 1077	1151	1230	1303	1382	1461	1534	1613	1687	1766	1839	1918				
.10	\$ 1134	1207	1286	1359	1438	1517	1591	1670	1743	1822	1895	1974				
.12	\$ 1258	1331	1410	1484	1563	1642	1715	1794	1867	1946	2020	2099				
.14	\$ 1376	1450	1529	1602	1681	1760	1833	1912	1986	2065	2138	2217				
.16	\$ 1495	1568	1647	1721	1799	1878	1952	2031	2104	2183	2257	2336			BALANCE POINT 35 DEG.F.	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
	\$ 153	184	215	246	277	307	369	431	492	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: OUTDOOR 42URPOA 42URPOA/A61AQ-A INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 43500 SEBR11.30
 ARI RATED HEATING CAP.: BTUH (47) 41000 COP(47) 3.40, HSPF 7.60 MIN.DHR REG IV
 BTUH (17) 25000, COP(17) 2.20
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON												
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20	1.20	
40,000	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	451	457	462	468	473	479	485	490	496	507	519	519	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	524	530	536	541	547	552	558	564	569	581	592	592	
.07	\$	603	609	615	620	626	631	637	643	648	660	671	671	
.08	\$	682	688	694	699	705	710	716	722	727	739	750	750	
.09	\$	756	761	767	773	778	784	789	795	801	812	823	823	
.10	\$	835	840	846	852	857	863	868	874	880	891	902	902	
.12	\$	987	993	998	1004	1010	1015	1021	1026	1032	1043	1055	1055	
.14	\$	1139	1145	1151	1156	1162	1168	1173	1179	1184	1196	1207	1207	
.16	\$	1292	1297	1303	1309	1314	1320	1326	1331	1337	1348	1359	1359	
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	575	592	609	626	643	660	677	699	716	750	784	784	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	648	665	682	699	716	733	750	773	789	823	857	857	
.07	\$	722	739	756	773	789	806	823	846	863	897	931	931	
.08	\$	801	818	835	852	868	885	902	925	942	976	1010	1010	
.09	\$	874	891	908	925	942	959	976	998	1015	1049	1083	1083	
.10	\$	947	964	981	998	1015	1032	1049	1072	1089	1122	1156	1156	
.12	\$	1094	1111	1128	1145	1162	1179	1196	1218	1235	1269	1303	1303	
.14	\$	1241	1258	1275	1292	1309	1326	1342	1365	1382	1416	1450	1450	
.16	\$	1388	1405	1421	1438	1455	1472	1489	1512	1529	1563	1596	1596	
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	716	744	778	806	840	868	902	931	964	1026	1089	1089	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	784	812	846	874	908	936	970	998	1032	1094	1156	1156	
.07	\$	852	880	914	942	976	1004	1038	1066	1100	1162	1224	1224	
.08	\$	919	947	981	1010	1043	1072	1105	1134	1168	1230	1292	1292	
.09	\$	987	1015	1049	1077	1111	1139	1173	1201	1235	1297	1359	1359	
.10	\$	1060	1089	1122	1151	1184	1213	1247	1275	1309	1371	1433	1433	
.12	\$	1196	1224	1258	1286	1320	1348	1382	1410	1444	1506	1568	1568	
.14	\$	1331	1359	1393	1421	1455	1484	1517	1546	1579	1642	1704	1704	
.16	\$	1472	1500	1534	1563	1596	1625	1658	1687	1721	1783	1845	1845	
70,000	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	880	931	981	1038	1089	1139	1190	1241	1292	1393	1495	1495	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	931	981	1032	1089	1139	1190	1241	1292	1342	1444	1546	1546	
.07	\$	987	1038	1089	1145	1196	1247	1297	1348	1399	1500	1602	1602	
.08	\$	1038	1089	1139	1196	1247	1297	1348	1399	1450	1551	1653	1653	
.09	\$	1094	1145	1196	1252	1303	1354	1405	1455	1506	1608	1709	1709	
.10	\$	1145	1196	1247	1303	1354	1405	1455	1506	1557	1658	1760	1760	
.12	\$	1252	1303	1354	1410	1461	1512	1563	1613	1664	1766	1867	1867	
.14	\$	1359	1410	1461	1517	1568	1619	1670	1721	1771	1873	1974	1974	
.16	\$	1467	1517	1568	1625	1675	1726	1777	1828	1878	1980	2082	2082	
80,000	\$	1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	998	1055	1117	1173	1230	1292	1348	1405	1461	1579	1698	1698	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	1060	1117	1179	1235	1292	1354	1410	1467	1523	1642	1760	1760	
.07	\$	1117	1173	1235	1292	1348	1410	1467	1523	1579	1698	1816	1816	
.08	\$	1179	1235	1297	1354	1410	1472	1529	1585	1642	1760	1878	1878	
.09	\$	1241	1297	1359	1416	1472	1534	1591	1647	1704	1822	1941	1941	
.10	\$	1297	1354	1416	1472	1529	1591	1647	1704	1760	1878	1997	1997	
.12	\$	1421	1478	1540	1596	1653	1715	1771	1828	1884	2003	2121	2121	
.14	\$	1540	1596	1658	1715	1771	1833	1890	1946	2003	2121	2240	2240	
.16	\$	1658	1715	1777	1833	1890	1952	2008	2065	2121	2240	2358	2358	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	153	184	215	246	277	307	369	431	492	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 4
 HEAT PUMP MODEL: OUTDOOR 48UHPQB 48UHPQB/A61AQ-A INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 50000 SEER10.50
 ARI RATED HEATING CAP.: BTUH(47) 48000 COP(47) 3.20 HSPF 7.40 MIN.DHR REG IV
 BTUH(17) 29000 COP(17) 2.10
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT LOSS
BTUH

ELEC.
COST
\$/KWH

60,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	739	1517
.06	\$	880	1822
.07	\$	1026	2127
.08	\$	1179	2431
.09	\$	1326	2736
.10	\$	1467	3041
.12	\$	1766	3650
.14	\$	2059	4260
.16	\$	2352	4869

BALANCE POINT 24 DEG.F.

70,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	880	1771
.06	\$	1060	2127
.07	\$	1235	2482
.08	\$	1410	2838
.09	\$	1585	3193
.10	\$	1760	3549
.12	\$	2115	4260
.14	\$	2465	4971
.16	\$	2821	5682

BALANCE POINT 28 DEG.F.

80,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1043	2025
.06	\$	1247	2431
.07	\$	1461	2838
.08	\$	1664	3244
.09	\$	1873	3650
.10	\$	2082	4057
.12	\$	2505	4869
.14	\$	2917	5682
.16	\$	3334	6494

BALANCE POINT 32 DEG.F.

90,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1230	2279
.06	\$	1472	2736
.07	\$	1715	3193
.08	\$	1963	3650
.09	\$	2211	4107
.10	\$	2454	4564
.12	\$	2945	5478
.14	\$	3436	6393
.16	\$	3927	7307

BALANCE POINT 35 DEG.F.

100,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1416	2533
.06	\$	1698	3041
.07	\$	1986	3549
.08	\$	2268	4057
.09	\$	2556	4564
.10	\$	2832	5072
.12	\$	3402	6088
.14	\$	3972	7104
.16	\$	4542	8119

BALANCE POINT 37 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	190	228	266	304	342	380	457	533	609	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 48UHQB 48UHQB/A61AQ-A
 INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH (95) 50000 SEER10.50
 ARI RATED HEATING CAP.: BTUH (47) 48000 COP(47) 3.20, HSPF 7.40 MIN.DHR REG IV
 BTUH (17) 29000 COP(17) 2.10
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00	
50,000	\$	383	440	496	552	609	665	716	773	829	885	998	1105	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	524	536	541	552	564	575	586	598	603	615	637	660	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	615	626	631	643	654	665	677	688	694	705	727	750	
.07	\$	705	716	722	733	744	756	767	778	784	795	818	840	
.08	\$	795	806	812	823	835	846	857	868	874	885	908	931	
.09	\$	885	897	902	914	925	936	947	959	964	976	998	1021	
.10	\$	981	993	998	1010	1021	1032	1043	1055	1060	1072	1094	1117	
.12	\$	1162	1173	1179	1190	1201	1213	1224	1235	1241	1252	1275	1297	
.14	\$	1342	1354	1359	1371	1382	1393	1405	1416	1421	1433	1455	1478	BALANCE POINT 18 DEG.F.
.16	\$	1523	1534	1540	1551	1563	1574	1585	1596	1602	1613	1636	1658	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	598	615	631	654	671	688	710	727	744	767	806	840	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	688	705	722	744	761	778	801	818	835	857	897	931	
.07	\$	784	801	818	840	857	874	897	914	931	953	993	1026	
.08	\$	874	891	908	931	947	964	987	1004	1021	1043	1083	1117	
.09	\$	964	981	998	1021	1038	1055	1077	1094	1111	1134	1173	1207	
.10	\$	1060	1077	1094	1117	1134	1151	1173	1190	1207	1230	1269	1303	
.12	\$	1247	1263	1280	1303	1320	1337	1359	1376	1393	1416	1455	1489	
.14	\$	1427	1444	1461	1484	1500	1517	1540	1557	1574	1596	1636	1670	BALANCE POINT 24 DEG.F.
.16	\$	1613	1630	1647	1670	1687	1704	1726	1743	1760	1783	1822	1856	
70,000	\$	541	620	694	773	852	931	1010	1083	1162	1241	1393	1551	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	654	688	716	750	784	818	852	885	914	947	1015	1083	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	739	773	801	835	868	902	936	970	998	1032	1100	1168	
.07	\$	818	852	880	914	947	981	1015	1049	1077	1111	1179	1247	
.08	\$	902	936	964	998	1032	1066	1100	1134	1162	1196	1263	1331	
.09	\$	987	1021	1049	1083	1117	1151	1184	1218	1247	1280	1348	1416	
.10	\$	1072	1105	1134	1168	1201	1235	1269	1303	1331	1365	1433	1500	
.12	\$	1241	1275	1303	1337	1371	1405	1438	1472	1500	1534	1602	1670	
.14	\$	1410	1444	1472	1506	1540	1574	1608	1642	1670	1704	1771	1839	BALANCE POINT 28 DEG.F.
.16	\$	1579	1613	1642	1675	1709	1743	1777	1811	1839	1873	1941	2008	
80,000	\$	620	705	795	885	976	1060	1151	1241	1331	1416	1596	1771	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	694	744	801	852	902	959	1010	1066	1117	1168	1275	1382	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	761	812	868	919	970	1026	1077	1134	1184	1235	1342	1450	
.07	\$	823	874	931	981	1032	1089	1139	1196	1247	1297	1405	1512	
.08	\$	891	942	998	1049	1100	1156	1207	1263	1314	1365	1472	1579	
.09	\$	953	1004	1060	1111	1162	1218	1269	1326	1376	1427	1534	1642	
.10	\$	1021	1072	1128	1179	1230	1286	1337	1393	1444	1495	1602	1709	
.12	\$	1151	1201	1258	1309	1359	1416	1467	1523	1574	1625	1732	1839	
.14	\$	1280	1331	1388	1438	1489	1546	1596	1653	1704	1754	1862	1969	BALANCE POINT 32 DEG.F.
.16	\$	1405	1455	1512	1563	1613	1670	1721	1777	1828	1878	1986	2093	
90,000	\$	694	795	897	998	1094	1196	1297	1393	1495	1596	1794	1997	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	773	835	891	953	1010	1072	1128	1190	1252	1309	1427	1546	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	846	908	964	1026	1083	1145	1201	1263	1326	1382	1500	1619	
.07	\$	919	981	1038	1100	1156	1218	1275	1337	1399	1455	1574	1692	
.08	\$	987	1049	1105	1168	1224	1286	1342	1405	1467	1523	1642	1760	
.09	\$	1060	1122	1179	1241	1297	1359	1416	1478	1540	1596	1715	1833	
.10	\$	1134	1196	1252	1314	1371	1433	1489	1551	1613	1670	1788	1907	
.12	\$	1275	1337	1393	1455	1512	1574	1630	1692	1754	1811	1929	2048	
.14	\$	1421	1484	1540	1602	1658	1721	1777	1839	1901	1957	2076	2194	BALANCE POINT 35 DEG.F.
.16	\$	1563	1625	1681	1743	1799	1862	1918	1980	2042	2099	2217	2336	
100,000	\$	773	885	998	1105	1218	1331	1438	1551	1664	1771	1997	2217	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	823	902	981	1066	1145	1224	1303	1388	1467	1546	1709	1867	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	874	953	1032	1117	1196	1275	1354	1438	1517	1596	1760	1918	
.07	\$	931	1010	1089	1173	1252	1331	1410	1495	1574	1653	1816	1974	
.08	\$	981	1060	1139	1224	1303	1382	1461	1546	1625	1704	1867	2025	
.09	\$	1032	1111	1190	1275	1354	1433	1512	1596	1675	1754	1918	2076	
.10	\$	1083	1162	1241	1326	1405	1484	1563	1647	1726	1805	1969	2127	
.12	\$	1190	1269	1348	1433	1512	1591	1670	1754	1833	1912	2076	2234	
.14	\$	1292	1371	1450	1534	1613	1692	1771	1856	1935	2014	2178	2336	BALANCE POINT 37 DEG.F.
.16	\$	1399	1478	1557	1642	1721	1799	1878	1963	2042	2121	2285	2443	

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

.05 .06 .07 .08 .09 .10 .12 .14 .16 <--ELECTRIC RATE \$/KWH

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 48UHQB 48UHQB/A61AQ-A INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 50000 SEER10.50
 ARI RATED HEATING CAP.: BTUH(47) 48000 COP(47) 3.20, HSPF 7.40 MIN.DHR REG IV
 BTUH(17) 29000 COP(17) 2.10
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON													
		.70	.80	.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80		
50,000	\$	558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	552	569	586	598	615	631	643	660	677	688	705	716	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	643	660	677	688	705	722	733	750	767	778	795	806		
.07	\$	733	750	767	778	795	812	823	840	857	868	885	897		
.08	\$	823	840	857	868	885	902	914	931	947	959	976	987		
.09	\$	914	931	947	959	976	993	1004	1021	1038	1049	1066	1077		
.10	\$	1010	1026	1043	1055	1072	1089	1100	1117	1134	1145	1162	1173		
.12	\$	1190	1207	1224	1235	1252	1269	1280	1297	1314	1326	1342	1354		
.14	\$	1371	1388	1405	1416	1433	1450	1461	1478	1495	1506	1523	1534		
.16	\$	1551	1568	1585	1596	1613	1630	1642	1658	1675	1687	1704	1715		BALANCE POINT 18 DEG.F.
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	654	682	710	733	761	789	818	846	874	902	925	953	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	744	773	801	823	852	880	908	936	964	993	1015	1043		
.07	\$	840	868	897	919	947	976	1004	1032	1060	1089	1111	1139		
.08	\$	931	959	987	1010	1038	1066	1094	1122	1151	1179	1201	1230		
.09	\$	1021	1049	1077	1100	1128	1156	1184	1213	1241	1269	1292	1320		
.10	\$	1117	1145	1173	1196	1224	1252	1280	1309	1337	1365	1388	1416		
.12	\$	1303	1331	1359	1382	1410	1438	1467	1495	1523	1551	1574	1602		
.14	\$	1484	1512	1540	1563	1591	1619	1647	1675	1704	1732	1754	1783		
.16	\$	1670	1698	1726	1749	1777	1805	1833	1862	1890	1918	1941	1969		BALANCE POINT 24 DEG.F.
70,000	\$	784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	756	801	852	897	942	993	1038	1089	1134	1179	1230	1275	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	840	885	936	981	1026	1077	1122	1173	1218	1263	1314	1359		
.07	\$	919	964	1015	1060	1105	1156	1201	1252	1297	1342	1393	1438		
.08	\$	1004	1049	1100	1145	1190	1241	1286	1337	1382	1427	1478	1523		
.09	\$	1089	1134	1184	1230	1275	1326	1371	1421	1467	1512	1563	1608		
.10	\$	1173	1218	1269	1314	1359	1410	1455	1506	1551	1596	1647	1692		
.12	\$	1342	1388	1438	1484	1529	1579	1625	1675	1721	1766	1816	1862		
.14	\$	1512	1557	1608	1653	1698	1749	1794	1845	1890	1935	1986	2031		
.16	\$	1681	1726	1777	1822	1867	1918	1963	2014	2059	2104	2155	2200		BALANCE POINT 28 DEG.F.
80,000	\$	891	1021	1151	1280	1405	1534	1664	1788	1918	2048	2172	2302		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	857	931	1010	1083	1162	1241	1314	1393	1467	1546	1619	1698	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	925	998	1077	1151	1230	1309	1382	1461	1534	1613	1687	1766		
.07	\$	987	1060	1139	1213	1292	1371	1444	1523	1596	1675	1749	1828		
.08	\$	1055	1128	1207	1280	1359	1438	1512	1591	1664	1743	1816	1895		
.09	\$	1117	1190	1269	1342	1421	1500	1574	1653	1726	1805	1878	1957		
.10	\$	1184	1258	1337	1410	1489	1568	1642	1721	1794	1873	1946	2025		
.12	\$	1314	1388	1467	1540	1619	1698	1771	1850	1924	2003	2076	2155		
.14	\$	1444	1517	1596	1670	1749	1828	1901	1980	2053	2132	2206	2285		
.16	\$	1568	1642	1721	1794	1873	1952	2025	2104	2178	2257	2330	2409		BALANCE POINT 32 DEG.F.
90,000	\$	1004	1151	1292	1438	1579	1726	1873	2014	2161	2302	2448	2589		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	959	1043	1128	1213	1303	1388	1472	1557	1647	1732	1816	1901	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1032	1117	1201	1286	1376	1461	1546	1630	1721	1805	1890	1974		
.07	\$	1105	1190	1275	1359	1450	1534	1619	1704	1794	1878	1963	2048		
.08	\$	1173	1258	1342	1427	1517	1602	1687	1771	1862	1946	2031	2115		
.09	\$	1247	1331	1416	1500	1591	1675	1760	1845	1935	2020	2104	2189		
.10	\$	1320	1405	1489	1574	1664	1749	1833	1918	2008	2093	2178	2262		
.12	\$	1461	1546	1630	1715	1805	1890	1974	2059	2149	2234	2319	2403		
.14	\$	1608	1692	1777	1862	1952	2036	2121	2206	2296	2381	2465	2550		
.16	\$	1749	1833	1918	2003	2093	2178	2262	2347	2437	2522	2606	2691		BALANCE POINT 35 DEG.F.
100,000	\$	1117	1280	1438	1596	1760	1918	2076	2240	2398	2561	2719	2877		<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	1072	1184	1303	1421	1534	1653	1766	1884	1997	2115	2228	2347	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1122	1235	1354	1472	1585	1704	1816	1935	2048	2166	2279	2398		
.07	\$	1179	1292	1410	1529	1642	1760	1873	1991	2104	2223	2336	2454		
.08	\$	1230	1342	1461	1579	1692	1811	1924	2042	2155	2273	2386	2505		
.09	\$	1280	1393	1512	1630	1743	1862	1974	2093	2206	2324	2437	2556		
.10	\$	1331	1444	1563	1681	1794	1912	2025	2144	2257	2375	2488	2606		
.12	\$	1438	1551	1670	1788	1901	2020	2132	2251	2364	2482	2595	2714		
.14	\$	1540	1653	1771	1890	2003	2121	2234	2352	2465	2584	2697	2815		
.16	\$	1647	1760	1878	1997	2110	2228	2341	2460	2573	2691	2804	2922		BALANCE POINT 37 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

.05 .06 .07 .08 .09 .10 .12 .14 .16 <--ELECTRIC RATE \$/KWH

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 48URPOB 48URPOB/A61AQ-A
 INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH (95) 50000 SEER10.50
 ARI RATED HEATING CAP.: BTUH (47) 48000 COP(47) 3.20, HSPE 7.40 MIN.DHR REG IV
 BTUH (17) 29000, COP(17) 2.10
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20	1.20		
50,000	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	586	598	609	620	631	643	654	665	677	699	722	722	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	677	688	699	710	722	733	744	756	767	789	812	812		
.07	\$	767	778	789	801	812	823	835	846	857	880	902	902		
.08	\$	857	868	880	891	902	914	925	936	947	970	993	993		
.09	\$	947	959	970	981	993	1004	1015	1026	1038	1060	1083	1083		
.10	\$	1043	1055	1066	1077	1089	1100	1111	1122	1134	1156	1179	1179		
.12	\$	1224	1235	1247	1258	1269	1280	1292	1303	1314	1337	1359	1359		
.14	\$	1405	1416	1427	1438	1450	1461	1472	1484	1495	1517	1540	1540		
.16	\$	1585	1596	1608	1619	1630	1642	1653	1664	1675	1698	1721	1721		
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	710	733	756	773	795	818	840	857	880	919	964	964	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	801	823	846	863	885	908	931	947	970	1010	1055	1055		
.07	\$	897	919	942	959	981	1004	1026	1043	1066	1105	1151	1151		
.08	\$	987	1010	1032	1049	1072	1094	1117	1134	1156	1196	1241	1241		
.09	\$	1077	1100	1122	1139	1162	1184	1207	1224	1247	1286	1331	1331		
.10	\$	1173	1196	1218	1235	1258	1280	1303	1320	1342	1382	1427	1427		
.12	\$	1359	1382	1405	1421	1444	1467	1489	1506	1529	1568	1613	1613		
.14	\$	1540	1563	1585	1602	1625	1647	1670	1687	1709	1749	1794	1794		
.16	\$	1726	1749	1771	1788	1811	1833	1856	1873	1895	1935	1980	1980		
70,000	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	857	891	931	964	998	1038	1072	1111	1145	1218	1292	1292	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	942	976	1015	1049	1083	1122	1156	1196	1230	1303	1376	1376		
.07	\$	1021	1055	1094	1128	1162	1201	1235	1275	1309	1382	1455	1455		
.08	\$	1105	1139	1179	1213	1247	1286	1320	1359	1393	1467	1540	1540		
.09	\$	1190	1224	1263	1297	1331	1371	1405	1444	1478	1551	1625	1625		
.10	\$	1275	1309	1348	1382	1416	1455	1489	1529	1563	1636	1709	1709		
.12	\$	1444	1478	1517	1551	1585	1625	1658	1698	1732	1805	1878	1878		
.14	\$	1613	1647	1687	1721	1754	1794	1828	1867	1901	1974	2048	2048		
.16	\$	1783	1816	1856	1890	1924	1963	1997	2036	2070	2144	2217	2217		
80,000	\$	1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	1021	1077	1139	1196	1252	1314	1371	1427	1484	1602	1721	1721	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1089	1145	1207	1263	1320	1382	1438	1495	1551	1670	1788	1788		
.07	\$	1151	1207	1269	1326	1382	1444	1500	1557	1613	1732	1850	1850		
.08	\$	1218	1275	1337	1393	1450	1512	1568	1625	1681	1799	1918	1918		
.09	\$	1280	1337	1399	1455	1512	1574	1630	1687	1743	1862	1980	1980		
.10	\$	1348	1405	1467	1523	1579	1642	1698	1754	1811	1929	2048	2048		
.12	\$	1478	1534	1596	1653	1709	1771	1828	1884	1941	2059	2178	2178		
.14	\$	1608	1664	1726	1783	1839	1901	1957	2014	2070	2189	2307	2307		
.16	\$	1732	1788	1850	1907	1963	2025	2082	2138	2194	2313	2431	2431		
90,000	\$	1314	1427	1534	1642	1754	1862	1974	2082	2194	2415	2635	2635	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	1139	1207	1275	1337	1405	1467	1534	1602	1664	1799	1929	1929	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1213	1280	1348	1410	1478	1540	1608	1675	1737	1873	2003	2003		
.07	\$	1286	1354	1421	1484	1551	1613	1681	1749	1811	1946	2076	2076		
.08	\$	1354	1421	1489	1551	1619	1681	1749	1816	1878	2014	2144	2144		
.09	\$	1427	1495	1563	1625	1692	1754	1822	1890	1952	2087	2217	2217		
.10	\$	1500	1568	1636	1698	1766	1828	1895	1963	2025	2161	2290	2290		
.12	\$	1642	1709	1777	1839	1907	1969	2036	2104	2166	2302	2431	2431		
.14	\$	1788	1856	1924	1986	2053	2115	2183	2251	2313	2448	2578	2578		
.16	\$	1929	1997	2065	2127	2194	2257	2324	2392	2454	2589	2719	2719		
100,000	\$	1461	1585	1704	1828	1952	2070	2194	2313	2437	2680	2928	2928	---THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$	1320	1410	1495	1585	1675	1760	1850	1941	2025	2206	2381	2381	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1371	1461	1546	1636	1726	1811	1901	1991	2076	2257	2431	2431		
.07	\$	1427	1517	1602	1692	1783	1867	1957	2048	2132	2313	2488	2488		
.08	\$	1478	1568	1653	1743	1833	1918	2008	2099	2183	2364	2539	2539		
.09	\$	1529	1619	1704	1794	1884	1969	2059	2149	2234	2415	2589	2589		
.10	\$	1579	1670	1754	1845	1935	2020	2110	2200	2285	2465	2640	2640		
.12	\$	1687	1777	1862	1952	2042	2127	2217	2307	2392	2573	2747	2747		
.14	\$	1788	1878	1963	2053	2144	2228	2319	2409	2494	2674	2849	2849		
.16	\$	1895	1986	2070	2161	2251	2336	2426	2516	2601	2781	2956	2956		

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

.05 .06 .07 .08 .09 .10 .12 .14 16 <---ELECTRIC RATE \$/KWH

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 60URPOB 60URPOB/A61AQ-A INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH (95) 58000, SEER10.70
 ARI RATED HEATING CAP.: BTUH (47) 61000, COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH (17) 35500, COP(17) 2.20
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT LOSS
 BTUH
 ELEC.
 COST
 \$/KWH

80,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	953	2025
.06	\$	1139	2431
.07	\$	1326	2838
.08	\$	1517	3244
.09	\$	1709	3650
.10	\$	1901	4057
.12	\$	2279	4869
.14	\$	2663	5682
.16	\$	3041	6494

BALANCE POINT 25 DEG.F.

90,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1094	2279
.06	\$	1320	2736
.07	\$	1540	3193
.08	\$	1754	3650
.09	\$	1974	4107
.10	\$	2200	4564
.12	\$	2635	5478
.14	\$	3075	6393
.16	\$	3515	7307

BALANCE POINT 28 DEG.F.

100,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1252	2533
.06	\$	1500	3041
.07	\$	1760	3549
.08	\$	2008	4057
.09	\$	2257	4564
.10	\$	2510	5072
.12	\$	3007	6088
.14	\$	3509	7104
.16	\$	4011	8119

BALANCE POINT 31 DEG.F.

110,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1427	2787
.06	\$	1715	3346
.07	\$	2003	3904
.08	\$	2285	4463
.09	\$	2573	5021
.10	\$	2866	5580
.12	\$	3436	6697
.14	\$	4006	7815
.16	\$	4581	8932

BALANCE POINT 33 DEG.F.

130,000

--- THEORETICAL ANNUAL HEATING COST ---
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1799	3295
.06	\$	2161	3955
.07	\$	2522	4615
.08	\$	2883	5275
.09	\$	3244	5936
.10	\$	3605	6596
.12	\$	4322	7916
.14	\$	5044	9236
.16	\$	5766	10557

BALANCE POINT 37 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP

	.05	.06	.07	.08	.09	.10	.12	.14	.16	
\$	216	260	303	346	390	433	520	607	693	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.

BARD MANUFACTURING COMPANY

BARD MANUFACTURING COMPANY

REGION 4
 HEAT PUMP MODEL: OUTDOOR 60UHQB 60URPQB/A61AQ-A
 INDOOR A61AQ-A
 ARI RATED COOLING CAP.: BTUH(95) 58000 SEER10.70
 ARI RATED HEATING CAP.: BTUH(47) 61000 COP(47) 3.20, HSPF 7.50 MIN.DHR REG IV
 BTUH(17) 35500 COP(17) 2.20
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON												
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20		1.20
60,000	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	682	694	710	722	739	750	761	778	789	818	846	846	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	784	795	812	823	840	852	863	880	891	919	947	947	
.07	\$	885	897	914	925	942	953	964	981	993	1021	1049	1049	
.08	\$	993	1004	1021	1032	1049	1060	1072	1089	1100	1128	1156	1156	
.09	\$	1094	1105	1122	1134	1151	1162	1173	1190	1201	1230	1258	1258	
.10	\$	1196	1207	1224	1235	1252	1263	1275	1292	1303	1331	1359	1359	
.12	\$	1405	1416	1433	1444	1461	1472	1484	1500	1512	1540	1568	1568	
.14	\$	1613	1625	1642	1653	1670	1681	1692	1709	1721	1749	1777	1777	BALANCE POINT 18 DEG.F.
.16	\$	1816	1828	1845	1856	1873	1884	1895	1912	1924	1952	1980	1980	
70,000	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	806	829	852	880	902	925	953	976	998	1049	1094	1094	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	914	936	959	987	1010	1032	1060	1083	1105	1156	1201	1201	
.07	\$	1015	1038	1060	1089	1111	1134	1162	1184	1207	1258	1303	1303	
.08	\$	1117	1139	1162	1190	1213	1235	1263	1286	1309	1359	1405	1405	
.09	\$	1218	1241	1263	1292	1314	1337	1365	1388	1410	1461	1506	1506	
.10	\$	1326	1348	1371	1399	1421	1444	1472	1495	1517	1568	1613	1613	
.12	\$	1529	1551	1574	1602	1625	1647	1675	1698	1721	1771	1816	1816	
.14	\$	1737	1760	1783	1811	1833	1856	1884	1907	1929	1980	2025	2025	BALANCE POINT 22 DEG.F.
.16	\$	1941	1963	1986	2014	2036	2059	2087	2110	2132	2183	2228	2228	
80,000	\$	1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	908	936	964	993	1021	1049	1077	1105	1134	1184	1241	1241	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	1026	1055	1083	1111	1139	1168	1196	1224	1252	1303	1359	1359	
.07	\$	1139	1168	1196	1224	1252	1280	1309	1337	1365	1416	1472	1472	
.08	\$	1258	1286	1314	1342	1371	1399	1427	1455	1484	1534	1591	1591	
.09	\$	1371	1399	1427	1455	1484	1512	1540	1568	1596	1647	1704	1704	
.10	\$	1489	1517	1546	1574	1602	1630	1658	1687	1715	1766	1822	1822	
.12	\$	1721	1749	1777	1805	1833	1862	1890	1918	1946	1997	2053	2053	
.14	\$	1952	1980	2008	2036	2065	2093	2121	2149	2178	2228	2285	2285	BALANCE POINT 25 DEG.F.
.16	\$	2183	2211	2240	2268	2296	2324	2352	2381	2409	2460	2516	2516	
90,000	\$	1314	1427	1534	1642	1754	1862	1974	2082	2194	2415	2635	2635	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	1072	1117	1162	1207	1258	1303	1348	1393	1444	1534	1630	1630	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	1173	1218	1263	1309	1359	1405	1450	1495	1546	1636	1732	1732	
.07	\$	1275	1320	1365	1410	1461	1506	1551	1596	1647	1737	1833	1833	
.08	\$	1376	1421	1467	1512	1563	1608	1653	1698	1749	1839	1935	1935	
.09	\$	1478	1523	1568	1613	1664	1709	1754	1799	1850	1941	2036	2036	
.10	\$	1579	1625	1670	1715	1766	1811	1856	1901	1952	2042	2138	2138	
.12	\$	1788	1833	1878	1924	1974	2020	2065	2110	2161	2251	2347	2347	
.14	\$	1991	2036	2082	2127	2178	2223	2268	2313	2364	2454	2550	2550	BALANCE POINT 28 DEG.F.
.16	\$	2194	2240	2285	2330	2381	2426	2471	2516	2567	2657	2753	2753	
100,000	\$	1461	1585	1704	1828	1952	2070	2194	2313	2437	2680	2928	2928	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	1179	1230	1280	1331	1382	1433	1489	1540	1591	1692	1799	1799	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	1292	1342	1393	1444	1495	1546	1602	1653	1704	1805	1912	1912	
.07	\$	1405	1455	1506	1557	1608	1658	1715	1766	1816	1918	2025	2025	
.08	\$	1517	1568	1619	1670	1721	1771	1828	1878	1929	2031	2138	2138	
.09	\$	1625	1675	1726	1777	1828	1878	1935	1986	2036	2138	2245	2245	
.10	\$	1737	1788	1839	1890	1941	1991	2048	2099	2149	2251	2358	2358	
.12	\$	1963	2014	2065	2115	2166	2217	2273	2324	2375	2477	2584	2584	
.14	\$	2183	2234	2285	2336	2386	2437	2494	2544	2595	2697	2804	2804	BALANCE POINT 31 DEG.F.
.16	\$	2409	2460	2510	2561	2612	2663	2719	2770	2821	2922	3030	3030	
110,000	\$	1608	1743	1878	2008	2144	2279	2415	2550	2680	2951	3216	3216	<--THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	1376	1461	1540	1619	1698	1777	1862	1941	2020	2178	2341	2341	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	1461	1546	1625	1704	1783	1862	1946	2025	2104	2262	2426	2426	
.07	\$	1546	1630	1709	1788	1867	1946	2031	2110	2189	2347	2510	2510	
.08	\$	1630	1715	1794	1873	1952	2031	2115	2194	2273	2431	2595	2595	
.09	\$	1715	1799	1878	1957	2036	2115	2200	2279	2358	2516	2680	2680	
.10	\$	1799	1884	1963	2042	2121	2200	2285	2364	2443	2601	2764	2764	
.12	\$	1969	2053	2132	2211	2290	2369	2454	2533	2612	2770	2934	2934	
.14	\$	2138	2223	2302	2381	2460	2539	2623	2702	2781	2939	3103	3103	BALANCE POINT 33 DEG.F.
.16	\$	2302	2386	2465	2544	2623	2702	2787	2866	2945	3103	3267	3267	

THE ABOVE ANNUAL HEATING AND COOLING OPERATING COSTS ARE THEORETICAL ESTIMATES ONLY AND ARE PROVIDED FOR A COMMON BASIS OF COMPARISON BETWEEN VARIOUS TYPES OF HEATING AND COOLING SYSTEMS. ACTUAL VALUES MAY VARY DEPENDING ON ACTUAL WEATHER CONDITIONS AND INDIVIDUAL USAGE PATTERN.