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# Energy Guide

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## Dual Fuel Add-On Heat Pump Guide for Operational Cost Savings

### Region 4

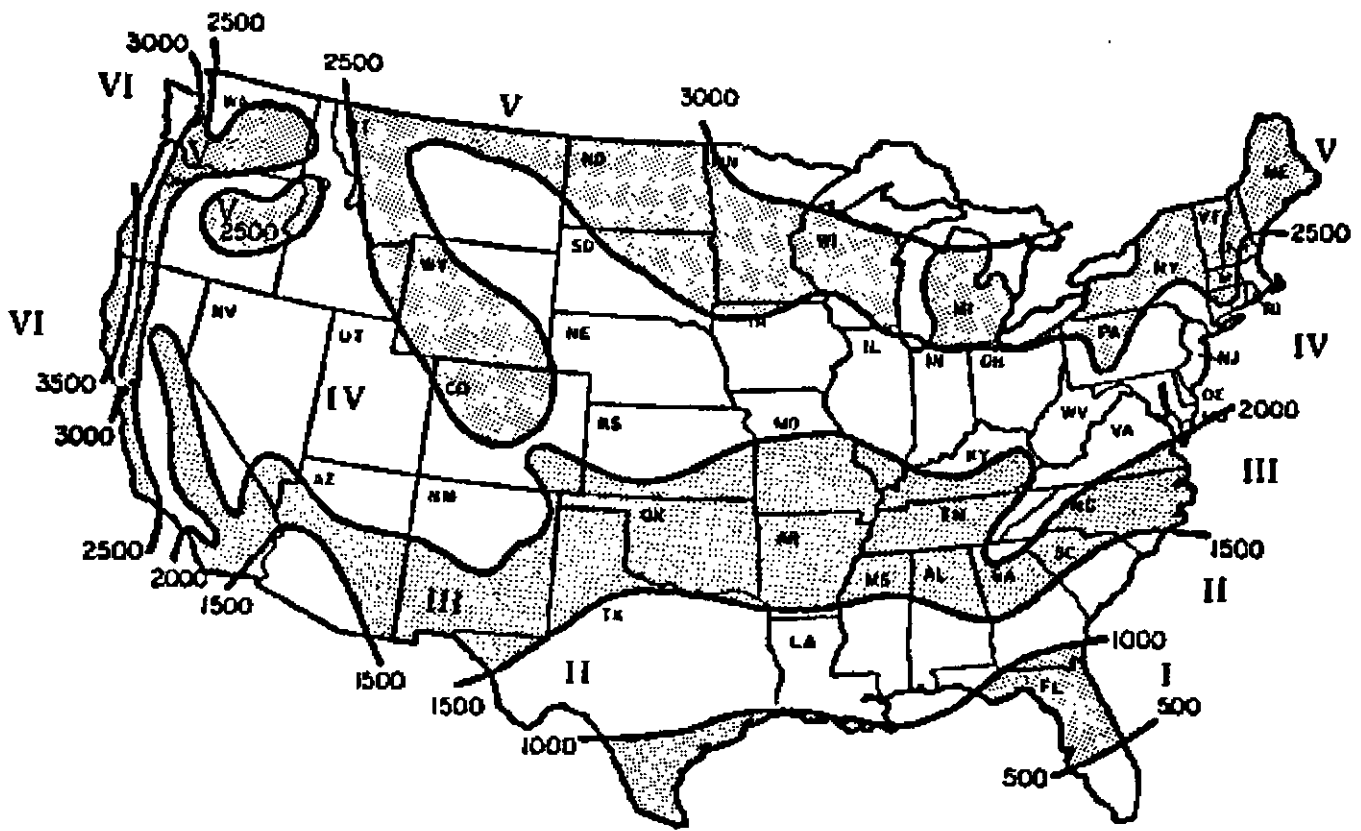
**Models: WQS30A/A36AQ-A  
WQS36A/A36AQ-A  
WQS42A/A42AQ-A  
24UHPQC/A36AQ-A  
30UHPQC/A36AQ-A  
30UHPQC/A37AQ-A  
36UHPQC/A37AQ-A  
42UHPQC/A61AQ-A  
48UHPQC/A61AQ-A  
60UHPQC/A61AQ-A**



Bard Manufacturing Company  
Bryan, Ohio 43506

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

Manual No.: 2100-072 Rev. G  
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REGION HEATING LOAD HOURS

Region	HLHr
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.

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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
42UHPQC	A61AQ-A	Electric	100%	29
		Natural Gas	78%	30
		Oil	78%	31
		Propane	78%	32
48UHPQC	A61AQ-A	Electric	100%	33
		Natural Gas	78%	34
		Oil	78%	35
		Propane	78%	36
60UHPQC	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 36UHPQA		
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> , HSPF <u>6.90</u> MIN. DHR REG IV
	BTUH (17) <u>20000</u>	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
.07	\$	885	953	1021	1089	1151	1218	1286	1354	1421	1489	1557	1619	PUMP \$ PER YEAR
.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 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
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	
.06	\$ 468	479	490	496	507	519	530	541	552	564	569	581	THEORETICAL HEATING COST * FURN. + HEAT
.07	\$ 536	547	558	564	575	586	598	609	620	631	637	648	PUMP \$ PER YEAR
.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	
.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	
.14	\$ 998	1010	1021	1026	1038	1049	1060	1072	1083	1094	1100	1111	BALANCE POINT 19 DEG. F.
.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	
.06	\$ 519	536	552	569	592	609	626	643	660	682	699	716	THEORETICAL HEATING COST * FURN. + HEAT
.07	\$ 586	603	620	637	660	677	694	710	727	750	767	784	PUMP \$ PER YEAR
.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	
.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	
.14	\$ 1043	1060	1077	1094	1117	1134	1151	1168	1184	1207	1224	1241	BALANCE POINT 22 DEG. F.
.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	
.06	\$ 620	654	688	722	756	789	823	857	891	925	959	993	THEORETICAL HEATING COST * FURN. + HEAT
.07	\$ 682	716	750	784	818	852	885	919	953	987	1021	1055	PUMP \$ PER YEAR
.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	
.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	
.14	\$ 1128	1162	1196	1230	1263	1297	1331	1365	1399	1433	1467	1500	BALANCE POINT 28 DEG. F.
.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	
.06	\$ 710	767	823	885	942	998	1055	1111	1168	1230	1286	1342	THEORETICAL HEATING COST * FURN. + HEAT
.07	\$ 767	823	880	942	998	1055	1111	1168	1224	1286	1342	1399	PUMP \$ PER YEAR
.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	
.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	
.14	\$ 1128	1184	1241	1303	1359	1416	1472	1529	1585	1647	1704	1760	BALANCE POINT 33 DEG. F.
.16	\$ 1235	1292	1348	1410	1467	1523	1579	1636	1692	1754	1811	1867	
<b>A</b> 70,000	\$ 784	891	1004	1117	1230	1342	1455	<b>C</b> 1568	1675	1788	1901	2014	← THEORETICAL HEATING COST * FURNACE ONLY
.05	\$ 767	835	902	970	1032	1100	1168	1235	1303	1371	1438	1500	
<b>D</b> .06	\$ 823	891	959	1026	1089	1156	1224	<b>E</b> 1292	1359	1427	1495	1557	THEORETICAL HEATING COST * FURN. + HEAT
.07	\$ 885	953	1021	1089	1151	1218	1286	1354	1421	1489	1557	1619	PUMP \$ PER YEAR
.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	BALANCE POINT 36 DEG. F.
.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

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BARD MANUFACTURING COMPANY

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

REGION 4  
 HEAT PUMP MODEL: COMPRESSOR SECTION W0S30A 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

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BARD MANUFACTURING COMPANY

DUAL FUEL 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.: 30/70 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% APUE

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 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 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	
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	BALANCE POINT 7- DEG.F.
.16	\$	778	778	778	778	778	778	784	784	784	784	784	784	
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	BALANCE POINT 3 DEG.F.
.16	\$	880	880	880	880	885	885	885	885	891	891	891	891	
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	BALANCE POINT 11 DEG.F.
.16	\$	970	976	981	981	987	993	993	998	1004	1004	1010	1010	
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	BALANCE POINT 22 DEG.F.
.16	\$	1049	1072	1094	1117	1139	1162	1190	1213	1235	1258	1280	1303	
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	BALANCE POINT 29 DEG.F.
.16	\$	1134	1179	1218	1258	1297	1337	1382	1421	1461	1500	1540	1585	

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
\$	75	90	105	120	135	150	180	210	241		

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 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 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	293	293	293	293	293	293	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	338	338	344	344	344	344	349	349	349	349	349	349	
.07	\$	394	394	400	400	400	400	406	406	406	406	406	406	
.08	\$	445	445	451	451	451	451	457	457	457	457	457	457	
.09	\$	502	502	507	507	507	507	513	513	513	513	513	513	
.10	\$	558	558	564	564	564	564	569	569	569	569	569	569	
.12	\$	665	665	671	671	671	671	677	677	677	677	677	677	
.14	\$	773	773	778	778	778	778	784	784	784	784	784	784	
.16	\$	880	880	885	885	885	885	891	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	
\$	75	90	105	120	135	150	180	210	241	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

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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 ELECTRIC FURNACE EFFICIENCY 100.00% AFUE

HEAT LOSS BTUH  
 ELEC. COST \$/KWH

35,000

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

.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.

40,000

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

.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.

50,000

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

.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.

60,000

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

.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.

70,000

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

.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 W0S36A 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	287	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	338	338	338	338	338	338	338	338	338	338	344	344	
.07	\$	394	394	394	394	394	394	394	394	394	394	400	400	
.08	\$	451	451	451	451	451	451	451	451	451	451	457	457	
.09	\$	507	507	507	507	507	507	507	507	507	507	513	513	
.10	\$	564	564	564	564	564	564	564	564	564	564	569	569	
.12	\$	677	677	677	677	677	677	677	677	677	677	682	682	
.14	\$	784	784	784	784	784	784	784	784	784	784	789	789	
.16	\$	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	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	383	383	383	383	383	383	383	389	389	389	389	389	
.07	\$	445	445	445	445	445	445	445	451	451	451	451	451	
.08	\$	507	507	507	507	507	507	507	513	513	513	513	513	
.09	\$	569	569	569	569	569	569	569	575	575	575	575	575	
.10	\$	631	631	631	631	631	631	631	637	637	637	637	637	
.12	\$	756	756	756	756	756	756	756	761	761	761	761	761	
.14	\$	880	880	880	880	880	880	880	885	885	885	885	885	
.16	\$	1010	1010	1010	1010	1010	1010	1010	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	<--ELECTRIC RATE \$/KWH
	93	111	130	149	167	186	223	261	298	<--THEORETICAL AIR CONDITIONING COST

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BARD MANUFACTURING COMPANY

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

REGION 4  
 HEAT PUMP MODEL: COMPRESSOR SECTION W0S36A 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		BALANCE POINT 13- DEG.F.
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		BALANCE POINT 4- DEG.F.
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		BALANCE POINT 10 DEG.F.
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		BALANCE POINT 19 DEG.F.
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		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	
\$	93	111	130	149	167	186	223	261	298	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

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BARD MANUFACTURING COMPANY

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

REGION 4  
 HEAT PUMP MODEL: COMPRESSOR SECTION W0S36A 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 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 \$ PER YEAR
.06	\$	338	338	338	338	338	344	344	344	344	344	344	344	
.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	
.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 \$ PER YEAR
.06	\$	383	389	389	389	389	389	389	389	389	394	394	394	
.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	
.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 \$ PER YEAR
.06	\$	479	485	485	490	496	496	502	507	507	513	524	524	
.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	
.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 \$ PER YEAR
.06	\$	609	620	637	648	665	677	688	705	716	744	773	773	
.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	
.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 \$ PER YEAR
.06	\$	744	767	789	818	840	863	891	914	936	987	1032	1032	
.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	
.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

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BARD MANUFACTURING COMPANY

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

REGION 4  
 HEAT PUMP MODEL: COMPRESSOR SECTION WOS42A 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% AFUE

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
.16	\$	1089	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	\$	417	1263
.06	\$	496	1517
.07	\$	581	1771
.08	\$	665	2025
.09	\$	744	2279
.10	\$	835	2533
.12	\$	998	3041
.14	\$	1162	3549
.16	\$	1331	4057

BALANCE POINT 0 DEG.F.

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
.16	\$	1574	4869

BALANCE POINT 11 DEG.F.

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
.16	\$	1856	5682

BALANCE POINT 19 DEG.F.

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
.16	\$	2206	6494

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

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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 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	338	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	
.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	
.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	
.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	
.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	
.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	<--THEORETICAL AIR CONDITIONING COST
\$	106	127	149	170	191	213	255	298	341		

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 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			
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	423		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.06	\$	490	490	490	490	496	496	496	496	502	502	502	502	502		
.07	\$	569	569	569	569	575	575	575	575	581	581	581	581	581		
.08	\$	648	648	648	648	654	654	654	654	660	660	660	660	660		
.09	\$	727	727	727	727	733	733	733	733	739	739	739	739	739		
.10	\$	806	806	806	806	812	812	812	812	818	818	818	818	818		
.12	\$	964	964	964	964	970	970	970	970	976	976	976	976	976		
.14	\$	1122	1122	1122	1122	1128	1128	1128	1128	1134	1134	1134	1134	1134		
.16	\$	1286	1286	1286	1286	1292	1292	1292	1292	1297	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		631	
.07	\$	665	671	677	682	682	688	694	699	705	710	716	722		722	
.08	\$	756	761	767	773	773	778	784	789	795	801	806	812		812	
.09	\$	846	852	857	863	863	868	874	880	885	891	897	902		902	
.10	\$	936	942	947	953	953	959	964	970	976	981	987	993		993	
.12	\$	1117	1122	1128	1134	1134	1139	1145	1151	1156	1162	1168	1173		1173	
.14	\$	1297	1303	1309	1314	1314	1320	1326	1331	1337	1342	1348	1354		1354	
.16	\$	1472	1478	1484	1489	1489	1495	1500	1506	1512	1517	1523	1529		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			908
.07	\$	773	795	812	835	857	874	897	919	936	959	981	998			998
.08	\$	863	885	902	925	947	964	987	1010	1026	1049	1072	1089			1089
.09	\$	953	976	993	1015	1038	1055	1077	1100	1117	1139	1162	1179			1179
.10	\$	1038	1060	1077	1100	1122	1139	1162	1184	1201	1224	1247	1263	1263		
.12	\$	1218	1241	1258	1280	1303	1320	1342	1365	1382	1405	1427	1444	1444		
.14	\$	1399	1421	1438	1461	1484	1500	1523	1546	1563	1585	1608	1625	1625		
.16	\$	1574	1596	1613	1636	1658	1675	1698	1721	1737	1760	1783	1799	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			1184
.07	\$	874	914	947	987	1021	1060	1094	1134	1168	1201	1241	1275			1275
.08	\$	964	1004	1038	1077	1111	1151	1184	1224	1258	1292	1331	1365			1365
.09	\$	1055	1094	1128	1168	1201	1241	1275	1314	1348	1382	1421	1455			1455
.10	\$	1139	1179	1213	1252	1286	1326	1359	1399	1433	1467	1506	1540		1540	
.12	\$	1320	1359	1393	1433	1467	1506	1540	1579	1613	1647	1687	1721		1721	
.14	\$	1495	1534	1568	1608	1642	1681	1715	1754	1788	1822	1862	1895		1895	
.16	\$	1675	1715	1749	1788	1822	1862	1895	1935	1969	2003	2042	2076		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 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 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	1297	1297	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 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 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, 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 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  
 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	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	
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	<—ELECTRIC RATE \$/KWH	<—THEORETICAL AIR CONDITIONING COST
\$	76	91	107	122	137	153	183	214	245		

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 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	
20,000	\$	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 30UHPCQ 30UHPCQ/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 \$/KWH

30,000 --- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	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	BALANCE POINT 19 DEG.F.
.16	\$	1173	2431	

35,000 --- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	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	BALANCE POINT 24 DEG.F.
.16	\$	1388	2838	

40,000 --- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	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	BALANCE POINT 28 DEG.F.
.16	\$	1625	3244	

50,000 --- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	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	BALANCE POINT 34 DEG.F.
.16	\$	2183	4057	

60,000 --- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	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	BALANCE POINT 38 DEG.F.
.16	\$	2815	4869	

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 30UHPCO 30UHPCO/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. HSPE 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	BALANCE POINT 19 DEG.F.
	.16	\$ 925	931	936	942	947	953	959	964	970	981	993	1004	
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	BALANCE POINT 24 DEG.F.
	.16	\$ 959	970	981	993	1004	1015	1021	1032	1043	1055	1077	1100	
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 PUMP \$ 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	BALANCE POINT 28 DEG.F.
	.16	\$ 914	936	953	970	993	1010	1026	1049	1066	1083	1122	1162	
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	BALANCE POINT 34 DEG.F.
	.16	\$ 880	914	947	981	1015	1043	1077	1111	1145	1179	1247	1309	
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	BALANCE POINT 38 DEG.F.
	.16	\$ 835	880	931	981	1026	1077	1122	1173	1218	1269	1365	1461	

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
\$	93	111	130	149	167	186	223	261	298		

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: 30UHPC/A36AQ-A  
 30UHPC/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 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		
.16	\$	942	953	959	970	976	987	998	1004	1015	1021	1032	1038		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	\$	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		
.16	\$	993	1010	1021	1038	1055	1072	1089	1105	1117	1134	1151	1168		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	\$	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		
.16	\$	976	998	1026	1055	1083	1111	1134	1162	1190	1218	1247	1269		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	\$	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		
.16	\$	981	1032	1077	1128	1173	1224	1269	1320	1365	1410	1461	1506		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	\$	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		
.16	\$	981	1055	1122	1190	1263	1331	1399	1472	1540	1608	1681	1749		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 30UHPQC 30UHPQC/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 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	\$	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		BALANCE POINT 19 DEG.F.
.16	\$	959	970	976	981	987	998	1004	1010	1015	1032	1043	1043		
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		BALANCE POINT 24 DEG.F.
.16	\$	1026	1038	1049	1060	1072	1089	1100	1111	1122	1145	1173	1173		
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		BALANCE POINT 28 DEG.F.
.16	\$	1032	1055	1072	1094	1117	1134	1156	1179	1196	1235	1280	1280		
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		BALANCE POINT 34 DEG.F.
.16	\$	1083	1122	1156	1196	1230	1269	1303	1342	1376	1450	1523	1523		
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		BALANCE POINT 38 DEG.F.
.16	\$	1134	1184	1241	1292	1342	1399	1450	1506	1557	1664	1771	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		
	\$	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/A37 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: 30UHPQC/A37AQ-A  
 OUTDOOR 30UHPQC 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	
.12	\$	677	682	688	694	699	705	710	716	722	733	744	756	
.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	
.12	\$	710	722	733	744	756	767	773	784	795	806	829	852	
.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	
.12	\$	694	716	733	750	773	789	806	829	846	863	902	942	
.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	
.12	\$	694	727	761	795	829	857	891	925	959	993	1060	1122	
.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	
.12	\$	694	739	789	840	885	936	981	1032	1077	1128	1224	1320	
.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	
\$	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 30UHPOC 30UHPOC/A37AQ-A  
 HEAT PUMP MODEL: INDOOR A37AQ-A  
 ARI RATED COOLING CAP.: BTUH (95) 30000 SEER12.00  
 ARI RATED HEATING CAP.: BTUH (47) 28000 COP(47) 3.40, HSPE 7.50 MIN.DHR REG 1V  
 BTUH (17) 17000, COP(17) 2.20  
 FURNACE TYPR FUEL OIL FURNACE EFFICIENCY 78.00 % AEUE

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: 30UHPQC/A37AQ-A  
 ARI RATED COOLING CAP.: BTUH(95) 30000 SEER12.00 INDOOR A37AQ-A  
 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	BALANCE POINT 19 DEG.F.	
.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	BALANCE POINT 19 DEG.F.	
.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	BALANCE POINT 19 DEG.F.	
.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	BALANCE POINT 24 DEG.F.	
.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	BALANCE POINT 24 DEG.F.	
.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	BALANCE POINT 24 DEG.F.	
.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	BALANCE POINT 28 DEG.F.	
.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	BALANCE POINT 28 DEG.F.	
.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	BALANCE POINT 28 DEG.F.	
.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	BALANCE POINT 34 DEG.F.	
.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	BALANCE POINT 34 DEG.F.	
.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	BALANCE POINT 34 DEG.F.	
.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	BALANCE POINT 39 DEG.F.	
.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	BALANCE POINT 39 DEG.F.	
.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	BALANCE POINT 39 DEG.F.	
.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	---
\$	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 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 LOSS BTUH ELEC. COST \$/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	
\$	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

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 MTN.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
\$	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 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

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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.60	PROPANE GAS COST - \$/GALLON												
		.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	\$	400	406	417	423	434	440	445	457	462	479	496	496	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	457	462	473	479	490	496	502	513	519	536	552	552	\$ PER YEAR
.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														
	\$	581	631	682	727	778	829	874	925	976	1072	1168	1168	←THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	451	462	473	479	490	496	507	519	524	541	564	564	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	519	530	541	547	558	564	575	586	592	609	631	631	\$ PER YEAR
.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														
	\$	727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	←THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	598	620	648	677	699	727	750	778	801	857	908	908	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	654	677	705	733	756	784	806	835	857	914	964	964	\$ PER YEAR
.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														
	\$	874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	←THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	756	801	840	885	931	976	1015	1060	1105	1190	1280	1280	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	801	846	885	931	976	1021	1060	1105	1151	1235	1326	1326	\$ PER YEAR
.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														
	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	←THEORETICAL HEATING COST * FURNACE ONLY
.05	\$	874	925	976	1032	1083	1134	1184	1235	1286	1388	1489	1489	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.06	\$	925	976	1026	1083	1134	1184	1235	1286	1337	1438	1540	1540	\$ PER YEAR
.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 42UHPOC 42UHPOC/A61AO-A INDOOR A61AO-A  
 ARI RATED COOLING CAP.: BTUH(95) 42500 SEER11.00  
 ARI RATED HEATING CAP.: BTUH(47) 39000 COP(47) 3.40 HSPF 7.50 MIN.DHR REG IV  
 BTUH(17) 24400 COP(17) 2.20  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AFUE

HEAT  
LOSS  
BTUH

ELEC.  
COST  
\$/KWH

40,000

--- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.05	\$	473	1010
.06	\$	575	1213
.07	\$	665	1416
.08	\$	761	1619
.09	\$	857	1822
.10	\$	953	2025
.12	\$	1145	2431
.14	\$	1337	2838
.16	\$	1529	3244

BALANCE POINT 17 DEG.F.

50,000

--- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.05	\$	609	1263
.06	\$	733	1517
.07	\$	846	1771
.08	\$	970	2025
.09	\$	1094	2279
.10	\$	1213	2533
.12	\$	1455	3041
.14	\$	1704	3549
.16	\$	1946	4057

BALANCE POINT 25 DEG.F.

60,000

--- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.05	\$	761	1517
.06	\$	914	1822
.07	\$	1072	2127
.08	\$	1218	2431
.09	\$	1371	2736
.10	\$	1523	3041
.12	\$	1828	3650
.14	\$	2132	4260
.16	\$	2443	4869

BALANCE POINT 31 DEG.F.

70,000

--- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.05	\$	947	1771
.06	\$	1134	2127
.07	\$	1326	2482
.08	\$	1517	2838
.09	\$	1704	3193
.10	\$	1895	3549
.12	\$	2273	4260
.14	\$	2652	4971
.16	\$	3030	5682

BALANCE POINT 36 DEG.F.

80,000

--- THEORETICAL ANNUAL HEATING COST ---

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.05	\$	1145	2025
.06	\$	1376	2431
.07	\$	1608	2838
.08	\$	1839	3244
.09	\$	2070	3650
.10	\$	2302	4057
.12	\$	2753	4869
.14	\$	3216	5682
.16	\$	3678	6494

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	
\$	154	185	216	247	278	309	370	432	494	<--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 42UHPC 42UHPC/A61AQ-A INDOOR A61AQ-A
ARI RATED COOLING CAP.: BTUH(95) 42500 SEER11.00
ARI RATED HEATING CAP.: BTUH(47) 39000 COP(47) 3.40, HSPF 7.50 MIN.DHR REG IV
BTUH(17) 24400 COP(17) 2.20
FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00 % AFUE

Table with columns: HEAT LOSS BTUH, ELEC. COST \$/KWH, NATURAL GAS COST - \$/THERM (values .35 to 1.00), and rows for heating load values 40,000, 50,000, 60,000, 70,000, 80,000. Includes theoretical heating cost and balance point information.

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

Table with columns: ELECTRIC RATE \$/KWH, THEORETICAL AIR CONDITIONING COST, and values for electric rates (05 to 16) and annual costs (154 to 494).

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 42UHPC 42UHPC/A61AQ-A  
 INDOOR A61AQ-A  
 ARI RATED COOLING CAP.: BTUH(95) 42500 SEER11.00  
 ARI RATED HEATING CAP.: BTUH(47) 39000 COP(47) 3.40 HSFP 7.50 MIN.DHR REG IV  
 BTUH(17) 24400 COP(17) 2.20  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00% A/EU

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	\$ 445	457	468	479	490	502	513	530	541	552	564	575	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 519	530	541	552	564	575	586	603	615	626	637	648		
.07	\$ 592	603	615	626	637	648	660	677	688	699	710	722		
.08	\$ 665	677	688	699	710	722	733	750	761	773	784	795		
.09	\$ 739	750	761	773	784	795	806	823	835	846	857	868		
.10	\$ 812	823	835	846	857	868	880	897	908	919	931	942		
.12	\$ 953	964	976	987	998	1010	1021	1038	1049	1060	1072	1083		
.14	\$ 1100	1111	1122	1134	1145	1156	1168	1184	1196	1207	1218	1230	BALANCE POINT 17 DEG.F.	
.16	\$ 1247	1258	1269	1280	1292	1303	1314	1331	1342	1354	1365	1376		
50,000	\$ 558	637	716	795	880	959	1038	1117	1196	1280	1359	1438	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$ 541	564	586	609	631	654	682	705	727	750	773	795	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 615	637	660	682	705	727	756	778	801	823	846	868		
.07	\$ 694	716	739	761	784	806	835	857	880	902	925	947		
.08	\$ 773	795	818	840	863	885	914	936	959	981	1004	1026		
.09	\$ 846	868	891	914	936	959	987	1010	1032	1055	1077	1100		
.10	\$ 925	947	970	993	1015	1038	1066	1089	1111	1134	1156	1179		
.12	\$ 1077	1100	1122	1145	1168	1190	1218	1241	1263	1286	1309	1331		
.14	\$ 1230	1252	1275	1297	1320	1342	1371	1393	1416	1438	1461	1484	BALANCE POINT 25 DEG.F.	
.16	\$ 1382	1405	1427	1450	1472	1495	1523	1546	1568	1591	1613	1636		
60,000	\$ 671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$ 637	682	722	761	801	840	885	925	964	1004	1043	1089	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 710	756	795	835	874	914	959	998	1038	1077	1117	1162		
.07	\$ 778	823	863	902	942	981	1026	1066	1105	1145	1184	1230		
.08	\$ 852	897	936	976	1015	1055	1100	1139	1179	1218	1258	1303		
.09	\$ 925	970	1010	1049	1089	1128	1173	1213	1252	1292	1331	1376		
.10	\$ 993	1038	1077	1117	1156	1196	1241	1280	1320	1359	1399	1444		
.12	\$ 1139	1184	1224	1263	1303	1342	1388	1427	1467	1506	1546	1591		
.14	\$ 1280	1326	1365	1405	1444	1484	1529	1568	1608	1647	1687	1732	BALANCE POINT 31 DEG.F.	
.16	\$ 1421	1467	1506	1546	1585	1625	1670	1709	1749	1788	1828	1873		
70,000	\$ 784	891	1004	1117	1230	1342	1455	1568	1675	1788	1901	2014	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$ 744	812	880	947	1010	1077	1145	1213	1280	1348	1416	1478	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 801	868	936	1004	1066	1134	1201	1269	1337	1405	1472	1534		
.07	\$ 857	925	993	1060	1122	1190	1258	1326	1393	1461	1529	1591		
.08	\$ 908	976	1043	1111	1173	1241	1309	1376	1444	1512	1579	1642		
.09	\$ 964	1032	1100	1168	1230	1297	1365	1433	1500	1568	1636	1698		
.10	\$ 1021	1089	1156	1224	1286	1354	1421	1489	1557	1625	1692	1754		
.12	\$ 1134	1201	1269	1337	1399	1467	1534	1602	1670	1737	1805	1867		
.14	\$ 1241	1309	1376	1444	1506	1574	1642	1709	1777	1845	1912	1974	BALANCE POINT 36 DEG.F.	
.16	\$ 1354	1421	1489	1557	1619	1687	1754	1822	1890	1957	2025	2087		
80,000	\$ 891	1021	1151	1280	1405	1534	1664	1788	1918	2048	2172	2302	<--THEORETICAL HEATING COST * FURNACE ONLY	
.05	\$ 852	947	1038	1128	1224	1314	1410	1500	1596	1687	1783	1873	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$ 891	987	1077	1168	1263	1354	1450	1540	1636	1726	1822	1912		
.07	\$ 931	1026	1117	1207	1303	1393	1489	1579	1675	1766	1862	1952		
.08	\$ 976	1072	1162	1252	1348	1438	1534	1625	1721	1811	1907	1997		
.09	\$ 1015	1111	1201	1292	1388	1478	1574	1664	1760	1850	1946	2036		
.10	\$ 1055	1151	1241	1331	1427	1517	1613	1704	1799	1890	1986	2076		
.12	\$ 1134	1230	1320	1410	1506	1596	1692	1783	1878	1969	2065	2155		
.14	\$ 1218	1314	1405	1495	1591	1681	1777	1867	1963	2053	2149	2240	BALANCE POINT 39 DEG.F.	
.16	\$ 1297	1393	1484	1574	1670	1760	1856	1946	2042	2132	2228	2319		

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
	\$ 154	185	216	247	278	309	370	432	494	<--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 42UHPC 42UHPC/A61AQ-A  
 INDOOR A61AQ-A  
 ARI RATED COOLING CAP.: BTUH(95) 42500 SEER11.00  
 ARI RATED HEATING CAP.: BTUH (47) 39000 COP(47) 3.40, HSFP 7.50 MIN. DHR REG IV  
 BTUH (17) 24400, COP(17) 2.20  
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELRC. 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	\$ 468	479	490	496	507	513	524	536	541	558	581	581	
	.06	\$ 541	552	564	569	581	586	598	609	615	631	654	654	
	.07	\$ 615	626	637	643	654	660	671	682	688	705	727	727	
	.08	\$ 688	699	710	716	727	733	744	756	761	778	801	801	
	.09	\$ 761	773	784	789	801	806	818	829	835	852	874	874	
	.10	\$ 835	846	857	863	874	880	891	902	908	925	947	947	
	.12	\$ 976	987	998	1004	1015	1021	1032	1043	1049	1066	1089	1089	
	.14	\$ 1122	1134	1145	1151	1162	1168	1179	1190	1196	1213	1235	1235	
	.16	\$ 1269	1280	1292	1297	1309	1314	1326	1337	1342	1359	1382	1382	
													BALANCE POINT 17 DEG.F.	
50,000	\$ 727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461	<--THEORETICAL HEATING COST * FURNACE ONLY	
	.05	\$ 592	609	626	643	660	677	694	716	733	767	801	801	
	.06	\$ 665	682	699	716	733	750	767	789	806	840	874	874	
	.07	\$ 744	761	778	795	812	829	846	868	885	919	953	953	
	.08	\$ 823	840	857	874	891	908	925	947	964	998	1032	1032	
	.09	\$ 897	914	931	947	964	981	998	1021	1038	1072	1105	1105	
	.10	\$ 976	993	1010	1026	1043	1060	1077	1100	1117	1151	1184	1184	
	.12	\$ 1128	1145	1162	1179	1196	1213	1230	1252	1269	1303	1337	1337	
	.14	\$ 1280	1297	1314	1331	1348	1365	1382	1405	1421	1455	1489	1489	
	.16	\$ 1433	1450	1467	1484	1500	1517	1534	1557	1574	1608	1642	1642	
													BALANCE POINT 25 DEG.F.	
60,000	\$ 874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754	<--THEORETICAL HEATING COST * FURNACE ONLY	
	.05	\$ 727	756	789	818	852	880	914	942	976	1038	1100	1100	
	.06	\$ 801	829	863	891	925	953	987	1015	1049	1111	1173	1173	
	.07	\$ 868	897	931	959	993	1021	1055	1083	1117	1179	1241	1241	
	.08	\$ 942	970	1004	1032	1066	1094	1128	1156	1190	1252	1314	1314	
	.09	\$ 1015	1043	1077	1105	1139	1168	1201	1230	1263	1326	1388	1388	
	.10	\$ 1083	1111	1145	1173	1207	1235	1269	1297	1331	1393	1455	1455	
	.12	\$ 1230	1258	1292	1320	1354	1382	1416	1444	1478	1540	1602	1602	
	.14	\$ 1371	1399	1433	1461	1495	1523	1557	1585	1619	1681	1743	1743	
	.16	\$ 1512	1540	1574	1602	1636	1664	1698	1726	1760	1822	1884	1884	
													BALANCE POINT 31 DEG.F.	
70,000	\$ 1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048	<--THEORETICAL HEATING COST * FURNACE ONLY	
	.05	\$ 885	936	987	1043	1094	1145	1196	1247	1297	1399	1500	1500	
	.06	\$ 942	993	1043	1100	1151	1201	1252	1303	1354	1455	1557	1557	
	.07	\$ 998	1049	1100	1156	1207	1258	1309	1359	1410	1512	1613	1613	
	.08	\$ 1049	1100	1151	1207	1258	1309	1359	1410	1461	1563	1664	1664	
	.09	\$ 1105	1156	1207	1263	1314	1365	1416	1467	1517	1619	1721	1721	
	.10	\$ 1162	1213	1263	1320	1371	1421	1472	1523	1574	1675	1777	1777	
	.12	\$ 1275	1326	1376	1433	1484	1534	1585	1636	1687	1788	1890	1890	
	.14	\$ 1382	1433	1484	1540	1591	1642	1692	1743	1794	1895	1997	1997	
	.16	\$ 1495	1546	1596	1653	1704	1754	1805	1856	1907	2008	2110	2110	
													BALANCE POINT 36 DEG.F.	
80,000	\$ 1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341	<--THEORETICAL HEATING COST * FURNACE ONLY	
	.05	\$ 1049	1122	1190	1263	1337	1405	1478	1546	1619	1760	1901	1901	
	.06	\$ 1089	1162	1230	1303	1376	1444	1517	1585	1658	1799	1941	1941	
	.07	\$ 1128	1201	1269	1342	1416	1484	1557	1625	1698	1839	1980	1980	
	.08	\$ 1173	1247	1314	1388	1461	1529	1602	1670	1743	1884	2025	2025	
	.09	\$ 1213	1286	1354	1427	1500	1568	1642	1709	1783	1924	2065	2065	
	.10	\$ 1252	1326	1393	1467	1540	1608	1681	1749	1822	1963	2104	2104	
	.12	\$ 1331	1405	1472	1546	1619	1687	1760	1828	1901	2042	2183	2183	
	.14	\$ 1416	1489	1557	1630	1704	1771	1845	1912	1986	2127	2268	2268	
	.16	\$ 1495	1568	1636	1709	1783	1850	1924	1991	2065	2206	2347	2347	
													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
	\$ 154	185	216	247	278	309	370	432	494	<--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 48UHPC 48UHPC/A61AQ-A INDOOR A61AQ-A  
 ARI RATED COOLING CAP.: BTUH(95) 49000 SEER10.00  
 ARI RATED HEATING CAP.: BTUH (47) 45000 COP(47) 3.30 HSPF 7.50 MIN.DHR REG IV  
 BTUH (17) 30000 COP(17) 2.20  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AEUE

HEAT LOSS BTUH  
 ELEC. COST \$/KWH

50,000 --- THEORETICAL ANNUAL HEATING COST ---  
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	581	1263
.06	\$	699	1517
.07	\$	818	1771
.08	\$	931	2025
.09	\$	1049	2279
.10	\$	1168	2533
.12	\$	1399	3041
.14	\$	1630	3549
.16	\$	1867	4057

BALANCE POINT 17 DEG.F.

60,000 --- THEORETICAL ANNUAL HEATING COST ---  
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	705	1517
.06	\$	852	1822
.07	\$	993	2127
.08	\$	1134	2431
.09	\$	1280	2736
.10	\$	1421	3041
.12	\$	1704	3650
.14	\$	1986	4260
.16	\$	2273	4869

BALANCE POINT 24 DEG.F.

70,000 --- THEORETICAL ANNUAL HEATING COST ---  
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	857	1771
.06	\$	1026	2127
.07	\$	1196	2482
.08	\$	1371	2838
.09	\$	1540	3193
.10	\$	1709	3549
.12	\$	2053	4260
.14	\$	2392	4971
.16	\$	2731	5682

BALANCE POINT 28 DEG.F.

80,000 --- THEORETICAL ANNUAL HEATING COST ---  
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1015	2025
.06	\$	1218	2431
.07	\$	1421	2838
.08	\$	1625	3244
.09	\$	1828	3650
.10	\$	2031	4057
.12	\$	2437	4869
.14	\$	2843	5682
.16	\$	3250	6494

BALANCE POINT 32 DEG.F.

90,000 --- THEORETICAL ANNUAL HEATING COST ---  
 HEAT PUMP WITH ELECTRIC HEAT ELECTRIC HEAT ONLY

.05	\$	1201	2279
.06	\$	1444	2736
.07	\$	1681	3193
.08	\$	1918	3650
.09	\$	2161	4107
.10	\$	2398	4564
.12	\$	2877	5478
.14	\$	3363	6393
.16	\$	3842	7307

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	
\$	196	235	274	313	352	392	470	548	627	<--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 48UHPC 48UHPC/A61AQ-A INDOOR A61AQ-A
ARI RATED COOLING CAP.: BTUH (95) 49000 SEER10.00
ARI RATED HEATING CAP.: BTUH (47) 45000 COP (47) 3.30, HSPF 7.50 MIN.DHR REG IV
BTUH (17) 30000, COP (17) 2.20
FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 78.00% AFUE

Table with columns: HEAT LOSS BTUH, ELEC. COST \$/KWH, NATURAL GAS COST - \$/THERM (.35 to 1.00), and rows for heating capacity (40,000 to 90,000) and electric rate (.05 to .16). Includes theoretical heating cost and balance point information.

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

Table showing annual air conditioning cost for electric rates from .05 to .16, with theoretical air conditioning cost values.

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 48UIHPC 48UIHPC/A61AQ-A  
ARI RATED COOLING CAP.: BTUH(95) 49000 SEER10.00 INDOOR A61AQ-A  
ARI RATED HEATING CAP.: BTUH(47) 45000 COP(47) 3.30 HSFP 7.50 MIN.DHR REG IV  
BTUH(17) 30000 COP(17) 2.20  
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				
40,000	\$	445	507	575	637	699	767	829	891	959	1021	1083	1151	---THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$	451	457	462	462	468	473	473	479	485	485	490	490	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	536	541	547	547	552	558	558	564	569	569	575	575				
.07	\$	620	626	631	631	637	643	643	648	654	654	660	660				
.08	\$	705	710	716	716	722	727	727	733	739	739	744	744				
.09	\$	789	795	801	801	806	812	812	818	823	823	829	829				
.10	\$	874	880	885	885	891	897	897	902	908	908	914	914				
.12	\$	1043	1049	1055	1055	1060	1066	1066	1072	1077	1077	1083	1083				
.14	\$	1218	1224	1230	1230	1235	1241	1241	1247	1252	1252	1258	1258				
.16	\$	1388	1393	1399	1399	1405	1410	1410	1416	1421	1421	1427	1427			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	\$	541	558	575	586	603	620	631	648	665	677	694	705			THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	631	648	665	677	694	710	722	739	756	767	784	795				
.07	\$	716	733	750	761	778	795	806	823	840	852	868	880				
.08	\$	806	823	840	852	868	885	897	914	931	942	959	970				
.09	\$	897	914	931	942	959	976	987	1004	1021	1032	1049	1060				
.10	\$	981	998	1015	1026	1043	1060	1072	1089	1105	1117	1134	1145				
.12	\$	1156	1173	1190	1201	1218	1235	1247	1263	1280	1292	1309	1320				
.14	\$	1337	1354	1371	1382	1399	1416	1427	1444	1461	1472	1489	1500				
.16	\$	1512	1529	1546	1557	1574	1591	1602	1619	1636	1647	1664	1675	BALANCE POINT 17 DEG.F.			
60,000	\$	671	767	863	959	1055	1151	1247	1342	1438	1534	1630	1726	---THEORETICAL HEATING COST * FURNACE ONLY			
.05	\$	643	671	699	722	750	778	806	835	863	891	914	942	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	733	761	789	812	840	868	897	925	953	981	1004	1032				
.07	\$	818	846	874	897	925	953	981	1010	1038	1066	1089	1117				
.08	\$	908	936	964	987	1015	1043	1072	1100	1128	1156	1179	1207				
.09	\$	998	1026	1055	1077	1105	1134	1162	1190	1218	1247	1269	1297				
.10	\$	1089	1117	1145	1168	1196	1224	1252	1280	1309	1337	1359	1388				
.12	\$	1269	1297	1326	1348	1376	1405	1433	1461	1489	1517	1540	1568				
.14	\$	1450	1478	1506	1529	1557	1585	1613	1642	1670	1698	1721	1749				
.16	\$	1630	1658	1687	1709	1737	1766	1794	1822	1850	1878	1901	1929			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	\$	739	784	835	880	925	976	1021	1072	1117	1162	1213	1258			THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	823	868	919	964	1010	1060	1105	1156	1201	1247	1297	1342				
.07	\$	902	947	998	1043	1089	1139	1184	1235	1280	1326	1376	1421				
.08	\$	987	1032	1083	1128	1173	1224	1269	1320	1365	1410	1461	1506				
.09	\$	1066	1111	1162	1207	1252	1303	1348	1399	1444	1489	1540	1585				
.10	\$	1151	1196	1247	1292	1337	1388	1433	1484	1529	1574	1625	1670				
.12	\$	1314	1359	1410	1455	1500	1551	1596	1647	1692	1737	1788	1833				
.14	\$	1478	1523	1574	1619	1664	1715	1760	1811	1856	1901	1952	1997				
.16	\$	1642	1687	1737	1783	1828	1878	1924	1974	2020	2065	2115	2161	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	\$	852	925	1004	1077	1156	1235	1309	1388	1461	1540	1613	1692	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR			
.06	\$	914	987	1066	1139	1218	1297	1371	1450	1523	1602	1675	1754				
.07	\$	976	1049	1128	1201	1280	1359	1433	1512	1585	1664	1737	1816				
.08	\$	1038	1111	1190	1263	1342	1421	1495	1574	1647	1726	1799	1878				
.09	\$	1100	1173	1252	1326	1405	1484	1557	1636	1709	1788	1862	1941				
.10	\$	1162	1235	1314	1388	1467	1546	1619	1698	1771	1850	1924	2003				
.12	\$	1286	1359	1438	1512	1591	1670	1743	1822	1895	1974	2048	2127				
.14	\$	1410	1484	1563	1636	1715	1794	1867	1946	2020	2099	2172	2251				
.16	\$	1540	1613	1692	1766	1845	1924	1997	2076	2149	2228	2302	2381			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	\$	947	1032	1117	1201	1292	1376	1461	1546	1636	1721	1805	1890			THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1021	1105	1190	1275	1365	1450	1534	1619	1709	1794	1878	1963				
.07	\$	1089	1173	1258	1342	1433	1517	1602	1687	1777	1862	1946	2031				
.08	\$	1156	1241	1326	1410	1500	1585	1670	1754	1845	1929	2014	2099				
.09	\$	1224	1309	1393	1478	1568	1653	1737	1822	1912	1997	2082	2166				
.10	\$	1297	1382	1467	1551	1642	1726	1811	1895	1986	2070	2155	2240				
.12	\$	1433	1517	1602	1687	1777	1862	1946	2031	2121	2206	2290	2375				
.14	\$	1574	1658	1743	1828	1918	2003	2087	2172	2262	2347	2431	2516				
.16	\$	1709	1794	1878	1963	2053	2138	2223	2307	2398	2482	2567	2652	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	
										<--ELECTRIC RATE \$/KWH
	\$ 196	235	274	313	352	392	470	548	627	<--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 48UHPC 48UHPC/A61A0-A INDOOR A61A0-A  
 ARI RATED COOLING CAP.: BTUH (95) 49000 SEER10.00  
 ARI RATED HEATING CAP.: BTUH (47) 45000 COP(47) 3.30 HSPF 7.50 MIN.DHR REG IV  
 BTUH (17) 30000 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	\$ 462	462	468	468	473	473	479	479	485	490	496	496	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR	
.06	\$ 547	547	552	552	558	558	564	564	569	575	581	581		
.07	\$ 631	631	637	637	643	643	648	648	654	660	665	665		
.08	\$ 716	716	722	722	727	727	733	733	739	744	750	750		
.09	\$ 801	801	806	806	812	812	818	818	823	829	835	835		
.10	\$ 885	885	891	891	897	897	902	902	908	914	919	919		
.12	\$ 1055	1055	1060	1060	1066	1066	1072	1072	1077	1083	1089	1089		
.14	\$ 1230	1230	1235	1235	1241	1241	1247	1247	1252	1258	1263	1263		
.16	\$ 1399	1399	1405	1405	1410	1410	1416	1416	1421	1427	1433	1433		
50,000	\$ 727	789	852	914	976	1032	1094	1156	1218	1337	1461	1461		
.05	\$ 575	586	598	609	620	631	643	654	665	688	710	710	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR	
.06	\$ 665	677	688	699	710	722	733	744	756	778	801	801		
.07	\$ 750	761	773	784	795	806	818	829	840	863	885	885		
.08	\$ 840	852	863	874	885	897	908	919	931	953	976	976		
.09	\$ 931	942	953	964	976	987	998	1010	1021	1043	1066	1066		
.10	\$ 1015	1026	1038	1049	1060	1072	1083	1094	1105	1128	1151	1151		
.12	\$ 1190	1201	1213	1224	1235	1247	1258	1269	1280	1303	1326	1326		
.14	\$ 1371	1382	1393	1405	1416	1427	1438	1450	1461	1484	1506	1506		
.16	\$ 1546	1557	1568	1579	1591	1602	1613	1625	1636	1658	1681	1681		
60,000	\$ 874	947	1021	1094	1168	1241	1314	1388	1461	1608	1754	1754		
.05	\$ 699	722	744	761	784	806	829	846	868	908	953	953	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR	
.06	\$ 789	812	835	852	874	897	919	936	959	998	1043	1043		
.07	\$ 874	897	919	936	959	981	1004	1021	1043	1083	1128	1128		
.08	\$ 964	987	1010	1026	1049	1072	1094	1111	1134	1173	1218	1218		
.09	\$ 1055	1077	1100	1117	1139	1162	1184	1201	1224	1263	1309	1309		
.10	\$ 1145	1168	1190	1207	1230	1252	1275	1292	1314	1354	1399	1399		
.12	\$ 1326	1348	1371	1388	1410	1433	1455	1472	1495	1534	1579	1579		
.14	\$ 1506	1529	1551	1568	1591	1613	1636	1653	1675	1715	1760	1760		
.16	\$ 1687	1709	1732	1749	1771	1794	1816	1833	1856	1895	1941	1941		
70,000	\$ 1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048		
.05	\$ 840	874	914	947	981	1021	1055	1094	1128	1201	1275	1275	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR	
.06	\$ 925	959	998	1032	1066	1105	1139	1179	1213	1286	1359	1359		
.07	\$ 1004	1038	1077	1111	1145	1184	1218	1258	1292	1365	1438	1438		
.08	\$ 1089	1122	1162	1196	1230	1269	1303	1342	1376	1450	1523	1523		
.09	\$ 1168	1201	1241	1275	1309	1348	1382	1421	1455	1529	1602	1602		
.10	\$ 1252	1286	1326	1359	1393	1433	1467	1506	1540	1613	1687	1687		
.12	\$ 1416	1450	1489	1523	1557	1596	1630	1670	1704	1777	1850	1850		
.14	\$ 1579	1613	1653	1687	1721	1760	1794	1833	1867	1941	2014	2014		
.16	\$ 1743	1777	1816	1850	1884	1924	1957	1997	2031	2104	2178	2178		
80,000	\$ 1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341		
.05	\$ 1015	1072	1134	1190	1247	1309	1365	1421	1478	1596	1715	1715	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR	
.06	\$ 1077	1134	1196	1252	1309	1371	1427	1484	1540	1658	1777	1777		
.07	\$ 1139	1196	1258	1314	1371	1433	1489	1546	1602	1721	1839	1839		
.08	\$ 1201	1258	1320	1376	1433	1495	1551	1608	1664	1783	1901	1901		
.09	\$ 1263	1320	1382	1438	1495	1557	1613	1670	1726	1845	1963	1963		
.10	\$ 1326	1382	1444	1500	1557	1619	1675	1732	1788	1907	2025	2025		
.12	\$ 1450	1506	1568	1625	1681	1743	1799	1856	1912	2031	2149	2149		
.14	\$ 1574	1630	1692	1749	1805	1867	1924	1980	2036	2155	2273	2273		
.16	\$ 1704	1760	1822	1878	1935	1997	2053	2110	2166	2285	2403	2403		
90,000	\$ 1314	1427	1534	1642	1754	1862	1974	2082	2194	2415	2635	2635		
.05	\$ 1128	1196	1263	1326	1393	1455	1523	1591	1653	1788	1918	1918	THEORETICAL HEATING COST * FURN. + HEAT PUMP \$ PER YEAR	
.06	\$ 1201	1269	1337	1399	1467	1529	1596	1664	1726	1862	1991	1991		
.07	\$ 1269	1337	1405	1467	1534	1596	1664	1732	1794	1929	2059	2059		
.08	\$ 1337	1405	1472	1534	1602	1664	1732	1799	1862	1997	2127	2127		
.09	\$ 1405	1472	1540	1602	1670	1732	1799	1867	1929	2065	2194	2194		
.10	\$ 1478	1546	1613	1675	1743	1805	1873	1941	2003	2138	2268	2268		
.12	\$ 1613	1681	1749	1811	1878	1941	2008	2076	2138	2273	2403	2403		
.14	\$ 1754	1822	1890	1952	2020	2082	2149	2217	2279	2415	2544	2544		
.16	\$ 1890	1957	2025	2087	2155	2217	2285	2352	2415	2550	2680	2680		

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

	.05	.06	.07	.08	.09	.10	.14	.16	---	
	\$ 196	235	274	313	352	392	470	548	627	---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 60UHPQC 60UHPQC/A61AQ-A INDOOR A61AQ-A  
 ARI RATED COOLING CAP.: BTUH(95) 57000 SEER10.00  
 ARI RATED HEATING CAP.: BTUH(47) 56000 COP(47) 3.20 HSPF 7.20 MIN.DHR REG IV  
 BTUH(17) 35000 COP(17) 2.20  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00 % AFUE

HEAT LOSS BTUH  
 ELEC. COST \$/KWH

70,000

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

.05	\$	840	1771
.06	\$	1010	2127
.07	\$	1179	2482
.08	\$	1342	2838
.09	\$	1512	3193
.10	\$	1687	3549
.12	\$	2020	4260
.14	\$	2352	4971
.16	\$	2685	5682

BALANCE POINT 24 DEG.F.

80,000

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

.05	\$	981	2025
.06	\$	1184	2431
.07	\$	1382	2838
.08	\$	1574	3244
.09	\$	1777	3650
.10	\$	1974	4057
.12	\$	2364	4869
.14	\$	2759	5682
.16	\$	3159	6494

BALANCE POINT 28 DEG.F.

90,000

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

.05	\$	1139	2279
.06	\$	1376	2736
.07	\$	1602	3193
.08	\$	1833	3650
.09	\$	2059	4107
.10	\$	2290	4564
.12	\$	2747	5478
.14	\$	3205	6393
.16	\$	3662	7307

BALANCE POINT 31 DEG.F.

100,000

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

.05	\$	1331	2533
.06	\$	1596	3041
.07	\$	1856	3549
.08	\$	2127	4057
.09	\$	2392	4564
.10	\$	2657	5072
.12	\$	3188	6088
.14	\$	3724	7104
.16	\$	4254	8119

BALANCE POINT 34 DEG.F.

110,000

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

.05	\$	1517	2787
.06	\$	1816	3346
.07	\$	2121	3904
.08	\$	2420	4463
.09	\$	2731	5021
.10	\$	3030	5580
.12	\$	3633	6697
.14	\$	4248	7815
.16	\$	4852	8932

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	
\$	228	273	319	364	410	456	547	638	729	<--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 WEATHRR 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 60UHPOC      60UHPOC/A61AQ-A      INDOOR A61AQ-A  
 ARI RATED COOLING CAP.: BTUH (95) 57000, SEER10.00  
 ARI RATED HEATING CAP.: BTUH (47) 56000, COP (47) 3.20, HSPF 7.20 MIN.DHR REG IV  
 BTUH (17) 35000, COP (17) 2.20  
 FURNACE TYPE NATURAL GAS      FURNACE EFFICIENCY 78.00 % AEUE

HEAT LOSS BTUH	ELRC COST \$/KWH	NATURAL GAS COST - \$/THERM												
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00	
60,000	\$	462	530	598	665	727	795	863	931	998	1060	1196	1331	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 620	637	648	660	671	682	699	710	722	733	761	784	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 727	744	756	767	778	789	806	818	829	840	868	891	
	.07	\$ 835	852	863	874	885	897	914	925	936	947	976	998	
	.08	\$ 942	959	970	981	993	1004	1021	1032	1043	1055	1083	1105	
	.09	\$ 1049	1066	1077	1089	1100	1111	1128	1139	1151	1162	1190	1213	
	.10	\$ 1156	1173	1184	1196	1207	1218	1235	1247	1258	1269	1297	1320	
	.12	\$ 1365	1382	1393	1405	1416	1427	1444	1455	1467	1478	1506	1529	
	.14	\$ 1579	1596	1608	1619	1630	1642	1658	1670	1681	1692	1721	1743	
	.16	\$ 1794	1811	1822	1833	1845	1856	1873	1884	1895	1907	1935	1957	
														BALANCE POINT 18 DEG.F.
70,000	\$	541	620	694	773	852	931	1010	1083	1162	1241	1393	1551	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 688	710	733	756	778	801	823	846	868	891	936	976	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 795	818	840	863	885	908	931	953	976	998	1043	1083	
	.07	\$ 902	925	947	970	993	1015	1038	1060	1083	1105	1151	1190	
	.08	\$ 1004	1026	1049	1072	1094	1117	1139	1162	1184	1207	1252	1292	
	.09	\$ 1111	1134	1156	1179	1201	1224	1247	1269	1292	1314	1359	1399	
	.10	\$ 1218	1241	1263	1286	1309	1331	1354	1376	1399	1421	1467	1506	
	.12	\$ 1433	1455	1478	1500	1523	1546	1568	1591	1613	1636	1681	1721	
	.14	\$ 1647	1670	1692	1715	1737	1760	1783	1805	1828	1850	1895	1935	
	.16	\$ 1862	1884	1907	1929	1952	1974	1997	2020	2042	2065	2110	2149	
														BALANCE POINT 24 DEG.F.
80,000	\$	620	705	795	885	976	1060	1151	1241	1331	1416	1596	1771	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 744	778	818	857	891	931	970	1004	1043	1083	1156	1230	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 840	874	914	953	987	1026	1066	1100	1139	1179	1252	1326	
	.07	\$ 936	970	1010	1049	1083	1122	1162	1196	1235	1275	1348	1421	
	.08	\$ 1032	1066	1105	1145	1179	1218	1258	1292	1331	1371	1444	1517	
	.09	\$ 1128	1162	1201	1241	1275	1314	1354	1388	1427	1467	1540	1613	
	.10	\$ 1224	1258	1297	1337	1371	1410	1450	1484	1523	1563	1636	1709	
	.12	\$ 1416	1450	1489	1529	1563	1602	1642	1675	1715	1754	1828	1901	
	.14	\$ 1608	1642	1681	1721	1754	1794	1833	1867	1907	1946	2020	2093	
	.16	\$ 1799	1833	1873	1912	1946	1986	2025	2059	2099	2138	2211	2285	
														BALANCE POINT 28 DEG.F.
90,000	\$	694	795	897	998	1094	1196	1297	1393	1495	1596	1794	1997	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 823	868	908	953	993	1038	1077	1122	1162	1207	1292	1376	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 931	976	1015	1060	1100	1145	1184	1230	1269	1314	1399	1484	
	.07	\$ 1032	1077	1117	1162	1201	1247	1286	1331	1371	1416	1500	1585	
	.08	\$ 1139	1184	1224	1269	1309	1354	1393	1438	1478	1523	1608	1692	
	.09	\$ 1247	1292	1331	1376	1416	1461	1500	1546	1585	1630	1715	1799	
	.10	\$ 1354	1399	1438	1484	1523	1568	1608	1653	1692	1737	1822	1907	
	.12	\$ 1563	1608	1647	1692	1732	1777	1816	1862	1901	1946	2031	2115	
	.14	\$ 1777	1822	1862	1907	1946	1991	2031	2076	2115	2161	2245	2330	
	.16	\$ 1991	2036	2076	2121	2161	2206	2245	2290	2330	2375	2460	2544	
														BALANCE POINT 31 DEG.F.
100,000	\$	773	885	998	1105	1218	1331	1438	1551	1664	1771	1997	2217	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 863	931	998	1060	1128	1196	1263	1326	1393	1461	1591	1726	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 942	1010	1077	1139	1207	1275	1342	1405	1472	1540	1670	1805	
	.07	\$ 1021	1089	1156	1218	1286	1354	1421	1484	1551	1619	1749	1884	
	.08	\$ 1100	1168	1235	1297	1365	1433	1500	1563	1630	1698	1828	1963	
	.09	\$ 1179	1247	1314	1376	1444	1512	1579	1642	1709	1777	1907	2042	
	.10	\$ 1258	1326	1393	1455	1523	1591	1658	1721	1788	1856	1986	2121	
	.12	\$ 1416	1484	1551	1613	1681	1749	1816	1878	1946	2014	2144	2279	
	.14	\$ 1579	1647	1715	1777	1845	1912	1980	2042	2110	2178	2307	2443	
	.16	\$ 1737	1805	1873	1935	2003	2070	2138	2200	2268	2336	2465	2601	
														BALANCE POINT 34 DEG.F.
110,000	\$	852	976	1094	1218	1342	1461	1585	1709	1828	1952	2194	2443	<--THEORETICAL HEATING COST * FURNACE ONLY
	.05	\$ 908	993	1083	1173	1258	1348	1438	1529	1613	1704	1878	2059	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.06	\$ 964	1049	1139	1230	1314	1405	1495	1585	1670	1760	1935	2115	
	.07	\$ 1021	1105	1196	1286	1371	1461	1551	1642	1726	1816	1991	2172	
	.08	\$ 1077	1162	1252	1342	1427	1517	1608	1698	1783	1873	2048	2228	
	.09	\$ 1134	1218	1309	1399	1484	1574	1664	1754	1839	1929	2104	2285	
	.10	\$ 1196	1280	1371	1461	1546	1636	1726	1816	1901	1991	2166	2347	
	.12	\$ 1309	1393	1484	1574	1658	1749	1839	1929	2014	2104	2279	2460	
	.14	\$ 1421	1506	1596	1687	1771	1862	1952	2042	2127	2217	2392	2573	
	.16	\$ 1540	1625	1715	1805	1890	1980	2070	2161	2245	2336	2510	2691	
														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
	\$	228	273	319	364	410	456	547	638	729
										<--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 60UHPOC/A61AO-A
HEAT PUMP MODEL: OUTDOOR 60UHPOC INDOOR A61AO-A
ARI RATED COOLING CAP.: BTUH(95) 57000, SEER10.00
ARI RATED HEATING CAP.: BTUH (47) 56000, COP(47) 3.20, HSPF 7.20 MIN.DHR REG IV
BTUH (17) 35000, COP(17) 2.20
FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 78.00 % AFUE

Table with columns: HEAT LOSS BTUH, ELEC. COST \$/KWH, HEATING OIL COST - \$/GALLON (1.00 to 1.80), and rows for heating capacity (60,000 to 110,000) with theoretical heating costs and balance points.

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

Table with columns: ELECTRIC RATE \$/KWH (.05 to .16) and THEORETICAL AIR CONDITIONING COST (228 to 729).

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.

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

REGION 4  
 HEAT PUMP MODEL: OUTDOOR 60UHPOC      60UHPOC/A61AO-A  
INDOOR A61AO-A  
 ARI RATED COOLING CAP.: BTUH(95) 57000 SEER10 00  
 ARI RATED HEATING CAP.: BTUH (47) 56000 COP(47) 3.20 HSPF 7.20 MIN.DHR REG IV.  
 BTUH (17) 35000, COP(17) 2.20  
 FURNACE TYPR PROPANE GAS      FURNACE EFFICIENCY 78.00 % AFUE

HEAT LOSS BTUH	ELEC. COST S/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	\$	699	710	727	739	756	767	778	795	806	835	863	863	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	806	818	835	846	863	874	885	902	914	942	970	970		
.07	\$	914	925	942	953	970	981	993	1010	1021	1049	1077	1077		
.08	\$	1021	1032	1049	1060	1077	1089	1100	1117	1128	1156	1184	1184		
.09	\$	1128	1139	1156	1168	1184	1196	1207	1224	1235	1263	1292	1292		
.10	\$	1235	1247	1263	1275	1292	1303	1314	1331	1342	1371	1399	1399		
.12	\$	1444	1455	1472	1484	1500	1512	1523	1540	1551	1579	1608	1608		
.14	\$	1658	1670	1687	1698	1715	1726	1737	1754	1766	1794	1822	1822		
.16	\$	1873	1884	1901	1912	1929	1941	1952	1969	1980	2008	2036	2036		
70,000	\$	1021	1105	1190	1280	1365	1450	1534	1619	1704	1878	2048	2048		
.05	\$	829	852	874	902	925	947	976	998	1021	1072	1117	1117	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	936	959	981	1010	1032	1055	1083	1105	1128	1179	1224	1224		
.07	\$	1043	1066	1089	1117	1139	1162	1190	1213	1235	1286	1331	1331		
.08	\$	1145	1168	1190	1218	1241	1263	1292	1314	1337	1388	1433	1433		
.09	\$	1252	1275	1297	1326	1348	1371	1399	1421	1444	1495	1540	1540		
.10	\$	1359	1382	1405	1433	1455	1478	1506	1529	1551	1602	1647	1647		
.12	\$	1574	1596	1619	1647	1670	1692	1721	1743	1766	1816	1862	1862		
.14	\$	1788	1811	1833	1862	1884	1907	1935	1957	1980	2031	2076	2076		
.16	\$	2003	2025	2048	2076	2099	2121	2149	2172	2194	2245	2290	2290		
80,000	\$	1168	1263	1365	1461	1557	1658	1754	1850	1952	2144	2341	2341		
.05	\$	976	1015	1055	1100	1139	1179	1224	1263	1303	1388	1472	1472	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1072	1111	1151	1196	1235	1275	1320	1359	1399	1484	1568	1568		
.07	\$	1168	1207	1247	1292	1331	1371	1416	1455	1495	1579	1664	1664		
.08	\$	1263	1303	1342	1388	1427	1467	1512	1551	1591	1675	1760	1760		
.09	\$	1359	1399	1438	1484	1523	1563	1608	1647	1687	1771	1856	1856		
.10	\$	1455	1495	1534	1579	1619	1658	1704	1743	1783	1867	1952	1952		
.12	\$	1647	1687	1726	1771	1811	1850	1895	1935	1974	2059	2144	2144		
.14	\$	1839	1878	1918	1963	2003	2042	2087	2127	2166	2251	2336	2336		
.16	\$	2031	2070	2110	2155	2194	2234	2279	2319	2358	2443	2527	2527		
90,000	\$	1314	1427	1534	1642	1754	1862	1974	2082	2194	2415	2635	2635		
.05	\$	1089	1134	1179	1224	1275	1320	1365	1410	1461	1551	1647	1647	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1196	1241	1286	1331	1382	1427	1472	1517	1568	1658	1754	1754		
.07	\$	1297	1342	1388	1433	1484	1529	1574	1619	1670	1760	1856	1856		
.08	\$	1405	1450	1495	1540	1591	1636	1681	1726	1777	1867	1963	1963		
.09	\$	1512	1557	1602	1647	1698	1743	1788	1833	1884	1974	2070	2070		
.10	\$	1619	1664	1709	1754	1805	1850	1895	1941	1991	2082	2178	2178		
.12	\$	1828	1873	1918	1963	2014	2059	2104	2149	2200	2290	2386	2386		
.14	\$	2042	2087	2132	2178	2228	2273	2319	2364	2415	2505	2601	2601		
.16	\$	2257	2302	2347	2392	2443	2488	2533	2578	2629	2719	2815	2815		
100,000	\$	1461	1585	1704	1828	1952	2070	2194	2313	2437	2680	2928	2928		
.05	\$	1275	1348	1421	1495	1563	1636	1709	1783	1856	2003	2149	2149	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1354	1427	1500	1574	1642	1715	1788	1862	1935	2082	2228	2228		
.07	\$	1433	1506	1579	1653	1721	1794	1867	1941	2014	2161	2307	2307		
.08	\$	1512	1585	1658	1732	1799	1873	1946	2020	2093	2240	2386	2386		
.09	\$	1591	1664	1737	1811	1878	1952	2025	2099	2172	2319	2465	2465		
.10	\$	1670	1743	1816	1890	1957	2031	2104	2178	2251	2398	2544	2544		
.12	\$	1828	1901	1974	2048	2115	2189	2262	2336	2409	2556	2702	2702		
.14	\$	1991	2065	2138	2211	2279	2352	2426	2499	2573	2719	2866	2866		
.16	\$	2149	2223	2296	2369	2437	2510	2584	2657	2731	2877	3024	3024		
110,000	\$	1608	1743	1878	2008	2144	2279	2415	2550	2680	2951	3216	3216		
.05	\$	1455	1551	1647	1743	1845	1941	2036	2132	2234	2426	2623	2623	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.06	\$	1512	1608	1704	1799	1901	1997	2093	2189	2290	2482	2680	2680		
.07	\$	1568	1664	1760	1856	1957	2053	2149	2245	2347	2539	2736	2736		
.08	\$	1625	1721	1816	1912	2014	2110	2206	2302	2403	2595	2793	2793		
.09	\$	1681	1777	1873	1969	2070	2166	2262	2358	2460	2652	2849	2849		
.10	\$	1743	1839	1935	2031	2132	2228	2324	2420	2522	2714	2911	2911		
.12	\$	1856	1952	2048	2144	2245	2341	2437	2533	2635	2826	3024	3024		
.14	\$	1969	2065	2161	2257	2358	2454	2550	2646	2747	2939	3137	3137		
.16	\$	2087	2183	2279	2375	2477	2573	2668	2764	2866	3058	3255	3255		

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 S/KWH	
	\$	228	273	319	364	410	456	547	638	729	---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.