

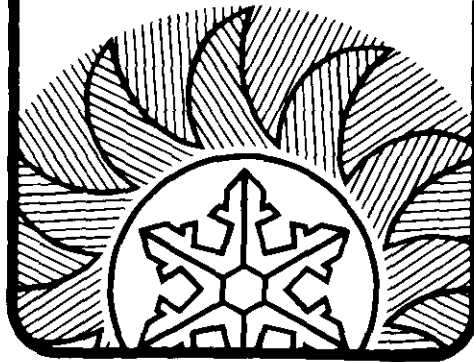
MANUAL 2100-071

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

**REGION 3**

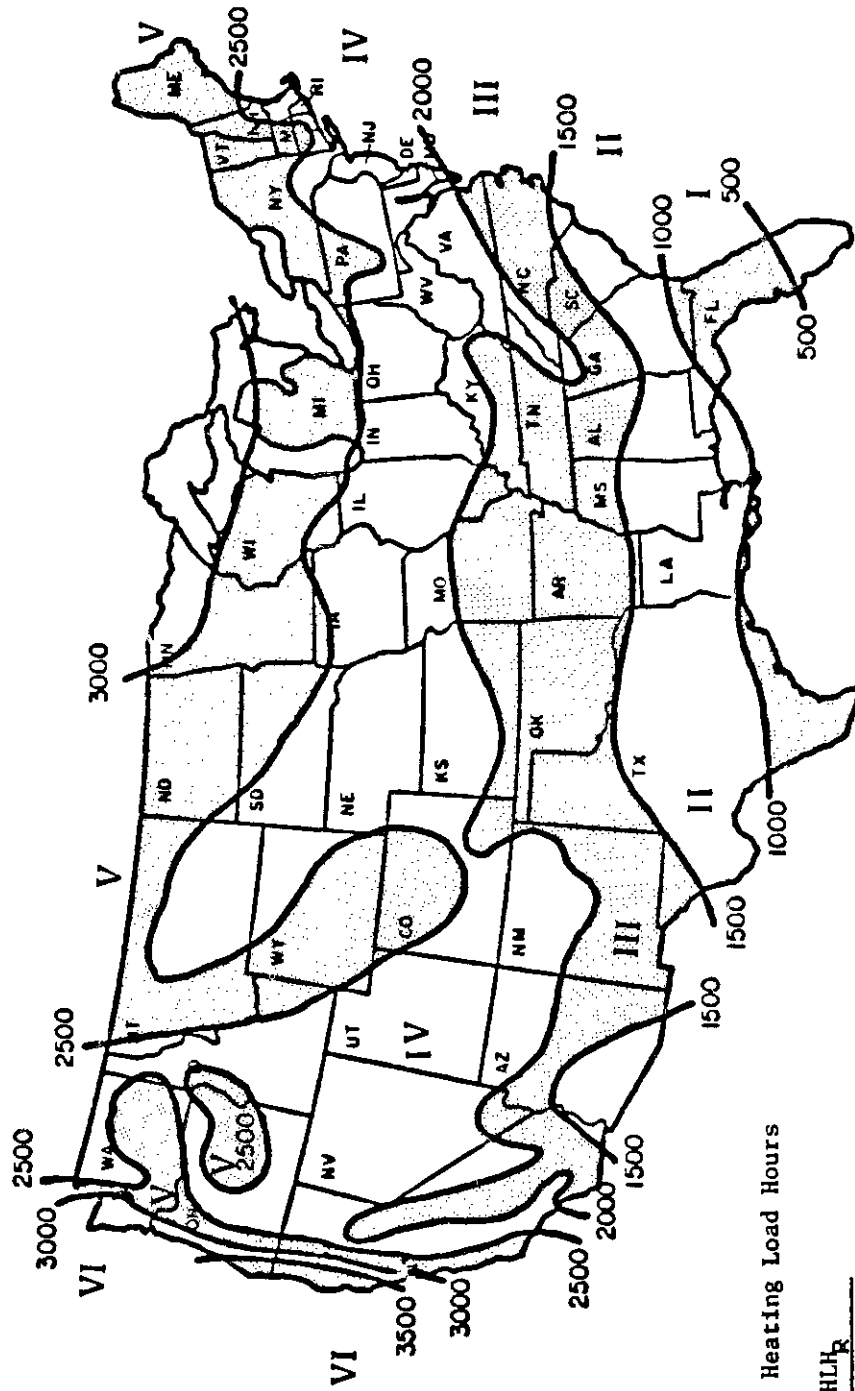
**Bard<sup>®</sup>**

**DUAL ENERGY  
SYSTEMS**



**BARD MANUFACTURING CO. • BRYAN, OHIO 43506**

*Dependable quality equipment. . .since 1914*



Regional Heating Load Hours

Region	HLH <sub>R</sub>
I	750
II	1250
III	1750
IV	2250
V	2750
VI	3250

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

## TABLE OF CONTENTS

General Description				i
How To Use				ii
Heat Pump Outdoor Model	Heat Pump Indoor Model	Furnace Fuel	Furnace AFUE Efficiency Rating	Page
WQS30/WQSD30	H3AQ/H3AQ1	Electric	100%	1
		Natural Gas	65%	2
		Oil	65%	3
		Propane	65%	4
WQS36/WQSD36	H3AQ/H3AQ1	Electric	100%	5
		Natural Gas	65%	6
		Oil	65%	7
		Propane	65%	8
24HPQ2	H24QS1	Electric	100%	9
		Natural Gas	65%	10
		Oil	65%	11
		Propane	65%	12
30HPQ4	H3AQ/H3AQ1	Electric	100%	13
		Natural Gas	65%	14
		Oil	65%	15
		Propane	65%	16
36HPQ4	H3AQ/H3AQ1	Electric	100%	17
		Natural Gas	65%	18
		Oil	65%	19
		Propane	65%	20
42HPQ	H5AQ	Electric	100%	21
		Natural Gas	65%	22
		Oil	65%	23
		Propane	65%	24
48HPQ2	H5AQ	Electric	100%	25
		Natural Gas	65%	26
		Oil	65%	27
		Propane	65%	28

## 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 - FSM-1 FUEL SAVER MODULE

These estimates utilize the Bard FSM-1 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 FSM-1 module.

### FURNACE EFFICIENCY

For purposes of these cost estimates, furnace efficiency levels of 100% AFUE for electric, 65% AFUE for natural and propane gas and 65% 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. Bard standing pilot gas furnaces without flue dampers range from 60.6% to 67.9% AFUE with a 65.1% average. New Bard oil furnaces which utilize high speed flame retention head power burners range from 72% to 83.5% AFUE with the average at 78.5%. In order to represent the typical efficiency level of oil-fired furnaces currently installed in the field, it is necessary to recognize the fact that many older less efficient designs are still in use and that the efficiency level of any oil heating system will be reduced by improper adjustment or a lack of adequate maintenance and servicing on a regular basis. An oil-fired system typically requires more frequent and complex maintenance to prevent degradation of its efficiency level, hence, a 65% AFUE was chosen for these calculations. The AFUE efficiency varies, depending on the design of the specific piece of equipment and its maintenance and condition.

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, or 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 Table of Contents.

EXAMPLE: 36HPQ4 w/H3AQ Indoor Coil

<b>BARD MANUFACTURING COMPANY</b>	
<b>DUAL FUEL ADD-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS</b>	
REGION <u>4</u>	INDOOR <u>H3AQ/H3AQ1</u>
HEAT PUMP MODEL: OUTDOOR <u>36HPQ4</u>	
ARI RATED COOLING CAP.: BTUH (95 ) <u>36600</u> , SEER <u>7.50</u>	
ARI RATED HEATING CAP.: BTUH (47 ) <u>40500</u> , COP (47 ) <u>2.65</u> , HSPF <u>6.40</u> MIN.DHR	
	BTUH (17 ) <u>24800</u> , COP (17 ) <u>1.95</u>

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

EXAMPLE: A fuel oil furnace with AFUE of 65%.

FURNACE TYPE <u>FUEL OIL</u>	FURNACE EFFICIENCY <u>65.00% AFUE</u>
------------------------------	---------------------------------------

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 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 \$1,878.
  - 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 from 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 Kw cost and \$1.40 per gallon fuel oil. The annual cost using a 36HPQ4 Bard heat pump with the oil furnace would be \$1173 for an annual savings of \$705 (\$1878 minus \$1173).

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 36HPQ4 heat pump has a balance point of 31 Deg. 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 FSM-1 Fuel Saver Module.

70,000	\$	1342	1478	1613	1743	1878	2014	2149	2283	2423	2595	2755	3227	←← THEORETICAL HEATING COST - FURNACE ONLY
.03	\$	563	688	716	739	767	795	819	345	868	925	976	1026	THEORETICAL HEATING COST - FURN. + HEAT PUMP \$ PER YEAR
.04	\$	795	823	852	874	902	931	953	981	1004	1060	1111	1152	
.05	\$	931	959	987	1010	1038	1055	1089	1117	1139	1196	1247	1297	
.06	\$	1066	1094	1122	1145	1173	1231	1224	1252	1275	1331	1382	1433	
.07	\$	1201	1230	1258	1280	1309	1337	1359	1395	1412	1467	1517	1568	
.08	\$	1337	1365	1393	1416	1444	1472	1495	1523	1548	1602	1653	1704	
.09	\$	1467	1495	1523	1545	1574	1602	1625	1653	1675	1732	1783	1833	
.10	\$	1502	1530	1558	1581	1709	1737	1760	1788	1811	1867	1919	1969	
.12	\$	1873	1901	1929	1952	1980	2009	2031	2059	2092	2132	2189	2240	

BALANCE POINT 31 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 \$234.00 annually.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP.											
	\$	.03	.04	.05	.06	.07	.08	.09	.10	.12	
		117	156	195	234	273	312	351	390	468	←← 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.

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.

HEAT PUMP COST \$/KW	PLANT COST \$/KW	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20
40,000		\$ 767	840	919	993	1072	1151	1224	1303	1382	1534	1647	1733	<-- THEORETICAL HEATING COST - FURNACE ONLY
+03		\$ 332	342	338	364	379	355	355	361	366	372	373	339	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+04		\$ 428	476	434	440	475	451	457	462	468	473	473	435	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+05		\$ 524	530	530	530	541	547	547	552	558	565	569	531	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+06		\$ 625	631	631	637	643	648	648	654	659	665	671	631	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+07		\$ 727	727	727	733	739	754	765	750	766	761	767	723	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+08		\$ 813	823	823	829	835	840	846	852	857	863	867	823	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+09		\$ 919	929	929	931	935	942	948	947	953	959	965	929	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+10		\$ 1015	1021	1021	1026	1031	1035	1034	1043	1047	1055	1060	1021	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+12		\$ 1207	1215	1215	1216	1221	1233	1233	1236	1241	1247	1252	1215	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
														BALANCE POINT 15 DEG.F.
50,000		\$ 799	1055	1151	1247	1342	1438	1534	1630	1724	1918	2110	2302	<-- THEORETICAL HEATING COST - FURNACE ONLY
+03		\$ 428	440	445	457	472	473	485	490	502	519	536	527	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+04		\$ 541	552	558	569	575	586	598	603	615	631	648	645	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+05		\$ 554	663	571	632	588	677	710	716	727	744	761	728	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+06		\$ 767	778	784	795	801	812	823	829	840	857	874	831	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+07		\$ 880	891	897	908	914	925	935	947	953	970	987	944	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+08		\$ 993	1004	1012	1021	1030	1038	1047	1057	1067	1084	1101	1057	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+09		\$ 1105	1117	1122	1134	1140	1151	1162	1174	1184	1201	1218	1174	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+10		\$ 1218	1230	1235	1247	1253	1265	1276	1289	1299	1319	1336	1292	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+12		\$ 1444	1455	1451	1472	1478	1489	1500	1516	1526	1551	1561	1455	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
														BALANCE POINT 23 DEG.F.
60,000		\$ 1151	1253	1362	1475	1583	1725	1819	1957	2070	2302	2433	2754	<-- THEORETICAL HEATING COST - FURNACE ONLY
+03		\$ 541	556	575	572	579	586	583	650	677	705	739	773	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+04		\$ 565	607	623	710	703	755	767	784	801	829	863	897	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+05		\$ 789	805	823	840	847	874	891	908	925	953	987	1021	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+06		\$ 914	931	947	954	961	978	985	1002	1019	1047	1081	1115	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+07		\$ 1038	1055	1072	1089	1105	1123	1139	1156	1173	1201	1235	1269	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+08		\$ 1162	1179	1195	1213	1230	1247	1263	1280	1297	1325	1359	1393	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+09		\$ 1292	1309	1325	1342	1359	1375	1391	1410	1427	1455	1489	1523	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+10		\$ 1415	1433	1453	1472	1491	1509	1527	1544	1561	1579	1613	1647	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+12		\$ 1654	1651	1644	1715	1711	1744	1756	1793	1811	1849	1867	1895	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
														BALANCE POINT 27 DEG.F.
70,000		\$ 1342	1474	1513	1743	1714	214	2144	2295	2427	2695	2755	3227	<-- THEORETICAL HEATING COST - FURNACE ONLY
+03		\$ 565	535	719	113	151	275	318	348	379	425	475	1024	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+04		\$ 793	423	553	174	371	531	553	611	1024	1064	1111	1152	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+05		\$ 931	454	547	151	181	181	175	1117	1117	1196	1247	1237	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+06		\$ 1251	1171	1251	1171	1251	1251	1251	1251	1251	1251	1251	1251	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+07		\$ 1347	1365	1393	1449	1471	1502	1506	1533	1545	1574	1603	1634	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+08		\$ 1457	1475	1513	1548	1571	1622	1625	1653	1675	1712	1741	1783	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+09		\$ 1592	1635	1593	1691	1709	1717	1700	1788	1811	1867	1919	1954	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+10		\$ 1773	1901	1929	1952	1950	2003	2011	2059	2032	2119	2197	2240	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
														BALANCE POINT 31 DEG.F.
80,000		\$ 1514	1697	1639	1997	2149	2302	2454	2612	2754	3043	3379	3694	<-- THEORETICAL HEATING COST - FURNACE ONLY
+03		\$ 812	857	831	831	875	1010	1049	1189	1129	1207	1284	1345	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+04		\$ 953	943	1037	1074	1111	1151	1190	1335	1243	1348	1427	1505	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+05		\$ 1094	1135	1173	1213	1252	1292	1331	1371	1410	1449	1488	1527	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+06		\$ 1235	1275	1314	1354	1393	1433	1472	1512	1551	1630	1709	1788	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+07		\$ 1376	1416	1455	1495	1534	1574	1613	1653	1692	1771	1850	1929	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+08		\$ 1517	1557	1596	1636	1675	1715	1754	1794	1833	1912	1991	2070	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+09		\$ 1658	1692	1732	1771	1811	1850	1890	1929	1968	2048	2127	2206	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+10		\$ 1799	1833	1873	1912	1952	1991	2031	2170	2110	2189	2268	2347	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
+12		\$ 2276	2115	2155	2194	2234	2273	2313	2352	2392	2471	2550	2629	THEORETICAL HEATING COST - FURNACE + HEAT PUMP
														BALANCE POINT 34 DEG.F.
ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP.														
		+03	+04	+05	+06	+07	+08	+09	+10	+12				
		\$ 117	156	195	234	273	312	351	390	459				
											--ELECTRIC RATE \$/KW			
											--THEORETICAL AIR CONDITIONING COST			

Figure 1.



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

REGION 3  
 HEAT PUMP MODEL: COMPRESSOR SECTION WQS30/HQS30 INDOOR H3A0/H3A01  
 COOLING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 31100 BTUH, 1.3 COP  
 HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 31600 BTUH, 1.6 COP  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	THEORETICAL ANNUAL HEATING COST	HEATING COST ELECTRIC HEAT ONLY	
25,000		HEAT PUMP WITH ELECTRIC HEAT		
	.03	\$ 102	293	
	.04	\$ 138	391	
	.05	\$ 169	489	
	.06	\$ 204	592	
	.07	\$ 235	690	
	.08	\$ 271	788	
	.09	\$ 307	885	
	.10	\$ 338	984	
	.12	\$ 409	1184	BALANCE POINT -14 DEG.F.
30,000		HEAT PUMP WITH ELECTRIC HEAT		
	.03	\$ 120	351	
	.04	\$ 160	471	
	.05	\$ 200	592	
	.06	\$ 240	707	
	.07	\$ 280	828	
	.08	\$ 325	943	
	.09	\$ 365	1064	
	.10	\$ 405	1184	
	.12	\$ 485	1420	BALANCE POINT -1 DEG.F.
35,000		HEAT PUMP WITH ELECTRIC HEAT		
	.03	\$ 138	414	
	.04	\$ 187	552	
	.05	\$ 231	690	
	.06	\$ 280	828	
	.07	\$ 325	966	
	.08	\$ 374	1104	
	.09	\$ 418	1242	
	.10	\$ 467	1380	
	.12	\$ 561	1656	BALANCE POINT 8 DEG.F.
40,000		HEAT PUMP WITH ELECTRIC HEAT		
	.03	\$ 160	471	
	.04	\$ 213	627	
	.05	\$ 267	788	
	.06	\$ 320	943	
	.07	\$ 374	1104	
	.08	\$ 423	1260	
	.09	\$ 480	1420	
	.10	\$ 534	1576	
	.12	\$ 636	1892	BALANCE POINT 15 DEG.F.
50,000		HEAT PUMP WITH ELECTRIC HEAT		
	.03	\$ 204	592	
	.04	\$ 271	788	
	.05	\$ 338	984	
	.06	\$ 405	1184	
	.07	\$ 471	1380	
	.08	\$ 547	1576	
	.09	\$ 614	1776	
	.10	\$ 681	1972	
	.12	\$ 814	2368	BALANCE POINT 25 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	100	134	168	201	235	268	302	336	403	<--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 3  
 HEAT PUMP MODEL: COMPRESSOR SECTION HQS30/WQ5030 INDOOR H3A0/H3A01  
 COOLING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 31.00 BTUH, 13.00 EER  
 HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 31.00 BTUH, 1.60 COP  
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 65.0% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM														
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00			
25,000	\$ 178	204	231	258	284	307	333	360	387	414	463	516	<--THEORETICAL HEATING COST * FURNACE ONLY			
.03	\$ 102	102	102	102	102	102	102	102	102	102	102	102	102	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.04	\$ 138	138	138	138	138	138	138	138	138	138	138	138	138			
.05	\$ 169	169	169	169	169	169	169	169	169	169	169	169	169			
.06	\$ 204	204	204	204	204	204	204	204	204	204	204	204	204			
.07	\$ 235	235	235	235	235	235	235	235	235	235	235	235	235			
.08	\$ 271	271	271	271	271	271	271	271	271	271	271	271	271			
.09	\$ 307	307	307	307	307	307	307	307	307	307	307	307	307			
.10	\$ 338	338	338	338	338	338	338	338	338	338	338	338	338			
.12	\$ 409	409	409	409	409	409	409	409	409	409	409	409	409		BALANCE POINT-14 DEG.F.	
30,000	\$ 213	244	276	307	338	369	400	431	463	494	556	618	<--THEORETICAL HEATING COST * FURNACE ONLY			
.03	\$ 120	120	120	120	120	120	120	120	120	120	120	120	120		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$ 160	160	160	160	160	160	160	160	160	160	160	160	160			
.05	\$ 200	200	200	200	200	200	200	200	200	200	200	200	200			
.06	\$ 240	240	240	240	240	240	240	240	240	240	240	240	240			
.07	\$ 280	280	280	280	280	280	280	280	280	280	280	280	280			
.08	\$ 325	325	325	325	325	325	325	325	325	325	325	325	325			
.09	\$ 365	365	365	365	365	365	365	365	365	365	365	365	365			
.10	\$ 405	405	405	405	405	405	405	405	405	405	405	405	405			
.12	\$ 485	485	485	485	485	485	485	485	485	485	485	485	485	BALANCE POINT -1 DEG.F.		
35,000	\$ 253	289	325	360	396	431	467	507	543	578	650	721	<--THEORETICAL HEATING COST * FURNACE ONLY			
.03	\$ 138	138	138	138	138	138	138	138	138	138	138	138	138	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.04	\$ 187	187	187	187	187	187	187	187	187	187	187	187	187			
.05	\$ 231	231	231	231	231	231	231	231	231	231	231	231	231			
.06	\$ 280	280	280	280	280	280	280	280	280	280	280	280	280			
.07	\$ 325	325	325	325	325	325	325	325	325	325	325	325	325			
.08	\$ 374	374	374	374	374	374	374	374	374	374	374	374	374			
.09	\$ 418	418	418	418	418	418	418	418	418	418	418	418	418			
.10	\$ 467	467	467	467	467	467	467	467	467	467	467	467	467			
.12	\$ 561	561	561	561	561	561	561	561	561	561	561	561	561		BALANCE POINT 8 DEG.F.	
40,000	\$ 289	329	369	414	454	494	538	578	618	658	743	828	<--THEORETICAL HEATING COST * FURNACE ONLY			
.03	\$ 155	155	155	155	160	160	160	160	160	160	160	160	160		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$ 209	209	209	209	213	213	213	213	213	213	213	213	213			
.05	\$ 262	262	262	262	267	267	267	267	267	267	267	267	267			
.06	\$ 316	316	316	316	320	320	320	320	320	320	320	320	320			
.07	\$ 369	369	369	369	374	374	374	374	374	374	374	374	374			
.08	\$ 418	418	418	418	423	423	423	423	423	423	423	423	423			
.09	\$ 471	471	471	471	476	476	476	476	476	476	476	476	476			
.10	\$ 525	525	525	525	529	529	529	529	529	529	529	529	529			
.12	\$ 627	627	627	627	632	632	632	632	632	632	632	632	632	BALANCE POINT 15 DEG.F.		
50,000	\$ 360	414	463	516	569	618	672	721	774	828	930	1033	<--THEORETICAL HEATING COST * FURNACE ONLY			
.03	\$ 200	200	204	204	204	204	209	209	209	209	213	218	218	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.04	\$ 262	262	267	267	267	267	271	271	271	271	276	280	280			
.05	\$ 325	325	329	329	329	329	333	333	333	333	338	342	342			
.06	\$ 387	387	391	391	391	391	396	396	396	396	400	405	405			
.07	\$ 449	449	454	454	454	454	458	458	458	458	463	467	467			
.08	\$ 516	516	520	520	520	520	525	525	525	525	529	534	534			
.09	\$ 578	578	583	583	583	583	587	587	587	587	592	596	596			
.10	\$ 641	641	645	645	645	645	650	650	650	650	654	658	658			
.12	\$ 765	765	770	770	770	770	774	774	774	774	779	783	783		BALANCE POINT 25 DEG.F.	

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 100	134	168	201	235	268	302	336	403	<--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 3  
 HEAT PUMP MODEL: COMPRESSOR SECTION WQSD30/WQSD30 INDOOR H3A0/H3A01  
 COOLING CAPACITY AT -62 DEG.F. ENTERING WATER TEMP.: 31100 BTUH, 12.00 PER  
 HEATING CAPACITY AT -62 DEG.F. ENTERING WATER TEMP.: 31600 BTUH, 12.60 COP  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 65.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON														
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40			
25,000	\$	369	409	445	485	520	556	596	632	672	743	819	894	←--THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$	102	102	102	102	102	102	102	102	102	102	102	102	102	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	138	138	138	138	138	138	138	138	138	138	138	138			
.05	\$	169	169	169	169	169	169	169	169	169	169	169	169			
.06	\$	204	204	204	204	204	204	204	204	204	204	204	204			
.07	\$	235	235	235	235	235	235	235	235	235	235	235	235			
.08	\$	271	271	271	271	271	271	271	271	271	271	271	271			
.09	\$	307	307	307	307	307	307	307	307	307	307	307	307			
.10	\$	338	338	338	338	338	338	338	338	338	338	338	338			
.12	\$	409	409	409	409	409	409	409	409	409	409	409	409	BALANCE POINT -14 DEG.F.		
30,000	\$	445	489	534	578	623	672	716	761	805	894	984	1073	←--THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$	120	120	120	120	120	120	120	120	120	120	120	120	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.04	\$	160	160	160	160	160	160	160	160	160	160	160	160			
.05	\$	200	200	200	200	200	200	200	200	200	200	200	200			
.06	\$	240	240	240	240	240	240	240	240	240	240	240	240			
.07	\$	280	280	280	280	280	280	280	280	280	280	280	280			
.08	\$	325	325	325	325	325	325	325	325	325	325	325	325			
.09	\$	365	365	365	365	365	365	365	365	365	365	365	365			
.10	\$	405	405	405	405	405	405	405	405	405	405	405	405			
.12	\$	485	485	485	485	485	485	485	485	485	485	485	485		BALANCE POINT -1 DEG.F.	
35,000	\$	520	574	623	676	730	783	832	886	939	1041	1148	1251		←--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	138	138	138	138	138	138	138	138	138	138	138	138		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	187	187	187	187	187	187	187	187	187	187	187	187			
.05	\$	231	231	231	231	231	231	231	231	231	231	231	231			
.06	\$	280	280	280	280	280	280	280	280	280	280	280	280			
.07	\$	325	325	325	325	325	325	325	325	325	325	325	325			
.08	\$	374	374	374	374	374	374	374	374	374	374	374	374			
.09	\$	418	418	418	418	418	418	418	418	418	418	418	418			
.10	\$	467	467	467	467	467	467	467	467	467	467	467	467			
.12	\$	561	561	561	561	561	561	561	561	561	561	561	561	BALANCE POINT 8 DEG.F.		
40,000	\$	596	654	716	774	832	894	952	1015	1073	1193	1313	1433	←--THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$	160	160	160	160	160	160	160	160	160	160	160	160	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR		
.04	\$	213	213	213	213	213	213	213	213	213	213	218	218			
.05	\$	267	267	267	267	267	267	267	267	267	267	271	271			
.06	\$	320	320	320	320	320	320	320	320	320	320	325	325			
.07	\$	374	374	374	374	374	374	374	374	374	374	378	378			
.08	\$	423	423	423	423	423	423	423	423	423	423	427	427			
.09	\$	476	476	476	476	476	476	476	476	476	476	480	480			
.10	\$	529	529	529	529	529	529	529	529	529	529	534	534			
.12	\$	632	632	632	632	632	632	632	632	632	632	636	636		BALANCE POINT 15 DEG.F.	
50,000	\$	743	819	894	970	1041	1117	1193	1269	1344	1491	1643	1789		←--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	209	209	213	213	218	218	218	222	222	227	231	235		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	271	271	276	276	280	280	284	284	289	293	298	298			
.05	\$	333	333	338	338	342	342	347	347	351	356	360	360			
.06	\$	396	396	400	400	405	405	409	409	414	418	423	423			
.07	\$	458	458	463	463	467	467	471	471	476	480	485	485			
.08	\$	525	525	529	529	534	534	538	538	543	547	552	552			
.09	\$	587	587	592	592	596	596	601	601	605	610	614	614			
.10	\$	650	650	654	654	658	658	663	663	667	672	676	676			
.12	\$	774	774	779	779	783	783	788	788	792	797	801	801	BALANCE POINT 25 DEG.F.		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	100	134	168	201	235	268	302	336	403	←--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 3  
 HEAT PUMP MODEL: COMPRESSOR SECTION HQS30/HQSD30 INDOOR H3A0/H3A01  
 HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 3100 BTUH, 1.00 COP  
 COOLING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 3100 BTUH, 1.00 COP  
 HEATING CAPACITY AT 24 DEG.F. ENTERING WATER TEMP.: 3100 BTUH, 1.00 COP  
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 65.00% 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		
25,000	\$	338	369	396	423	454	480	512	538	565	623	681	681	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	102	102	102	102	102	102	102	102	102	102	102	102	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	138	138	138	138	138	138	138	138	138	138	138	138		
.05	\$	169	169	169	169	169	169	169	169	169	169	169	169		
.06	\$	204	204	204	204	204	204	204	204	204	204	204	204		
.07	\$	235	235	235	235	235	235	235	235	235	235	235	235		
.08	\$	271	271	271	271	271	271	271	271	271	271	271	271		
.09	\$	307	307	307	307	307	307	307	307	307	307	307	307		
.10	\$	338	338	338	338	338	338	338	338	338	338	338	338		
.12	\$	409	409	409	409	409	409	409	409	409	409	409	409		
															BALANCE POINT -14 DEG.F.
30,000	\$	409	440	476	512	543	578	614	645	681	748	819	819		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	120	120	120	120	120	120	120	120	120	120	120	120		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	160	160	160	160	160	160	160	160	160	160	160	160		
.05	\$	200	200	200	200	200	200	200	200	200	200	200	200		
.06	\$	240	240	240	240	240	240	240	240	240	240	240	240		
.07	\$	280	280	280	280	280	280	280	280	280	280	280	280		
.08	\$	325	325	325	325	325	325	325	325	325	325	325	325		
.09	\$	365	365	365	365	365	365	365	365	365	365	365	365		
.10	\$	405	405	405	405	405	405	405	405	405	405	405	405		
.12	\$	485	485	485	485	485	485	485	485	485	485	485	485		
														BALANCE POINT -1 DEG.F.	
35,000	\$	476	516	556	596	636	676	716	756	797	872	952	952	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	138	138	138	138	138	138	138	138	138	138	138	138	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	187	187	187	187	187	187	187	187	187	187	187	187		
.05	\$	231	231	231	231	231	231	231	231	231	231	231	231		
.06	\$	280	280	280	280	280	280	280	280	280	280	280	280		
.07	\$	325	325	325	325	325	325	325	325	325	325	325	325		
.08	\$	374	374	374	374	374	374	374	374	374	374	374	374		
.09	\$	418	418	418	418	418	418	418	418	418	418	418	418		
.10	\$	467	467	467	467	467	467	467	467	467	467	467	467		
.12	\$	561	561	561	561	561	561	561	561	561	561	561	561		
															BALANCE POINT 8 DEG.F.
40,000	\$	543	592	636	681	725	770	819	863	908	1001	1090	1090		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	160	160	160	160	160	160	160	160	160	160	160	160		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	213	213	213	213	213	213	213	213	213	213	213	213		
.05	\$	267	267	267	267	267	267	267	267	267	267	267	267		
.06	\$	320	320	320	320	320	320	320	320	320	320	320	320		
.07	\$	374	374	374	374	374	374	374	374	374	374	374	374		
.08	\$	423	423	423	423	423	423	423	423	423	423	423	423		
.09	\$	476	476	476	476	476	476	476	476	476	476	476	476		
.10	\$	529	529	529	529	529	529	529	529	529	529	529	529		
.12	\$	632	632	632	632	632	632	632	632	632	632	632	632		
														BALANCE POINT 15 DEG.F.	
50,000	\$	681	739	797	850	908	966	1024	1082	1135	1251	1362	1362	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	209	209	209	213	213	213	218	218	218	222	222	222	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	271	271	271	276	276	276	280	280	280	284	284	284		
.05	\$	333	333	333	338	338	338	342	342	342	347	347	347		
.06	\$	396	396	396	400	400	400	405	405	405	409	409	409		
.07	\$	458	458	458	463	463	463	467	467	467	471	471	471		
.08	\$	525	525	525	529	529	529	534	534	534	538	538	538		
.09	\$	587	587	587	592	592	592	596	596	596	601	601	601		
.10	\$	650	650	650	654	654	654	658	658	658	663	663	663		
.12	\$	774	774	774	779	779	779	783	783	783	788	788	788		
															BALANCE POINT 25 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	100	134	168	201	235	268	302	336	403	<--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 3  
 HEAT PUMP MODEL: COMPRESSOR SECTION WQSD36/WQSD36 INDOOR H3A0/H3A01  
 HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP. 35900 BTUH 11.20 COP  
 COOLING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP. 35900 BTUH 11.20 COP  
 HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP. 35900 BTUH 11.20 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			
	.03 \$	124	351
	.04 \$	169	471
	.05 \$	209	592
	.06 \$	253	707
	.07 \$	293	828
	.08 \$	333	943
	.09 \$	378	1064
	.10 \$	418	1184
	.12 \$	503	1420
			BALANCE POINT -16 DEG.F.
35,000			
	.03 \$	146	414
	.04 \$	195	552
	.05 \$	240	690
	.06 \$	289	828
	.07 \$	339	966
	.08 \$	387	1104
	.09 \$	436	1242
	.10 \$	485	1380
	.12 \$	583	1656
			BALANCE POINT -4 DEG.F.
40,000			
	.03 \$	164	471
	.04 \$	218	627
	.05 \$	276	788
	.06 \$	329	943
	.07 \$	382	1104
	.08 \$	440	1260
	.09 \$	494	1420
	.10 \$	547	1576
	.12 \$	658	1892
			BALANCE POINT 4 DEG.F.
50,000			
	.03 \$	204	592
	.04 \$	271	788
	.05 \$	338	984
	.06 \$	409	1184
	.07 \$	480	1380
	.08 \$	547	1576
	.09 \$	614	1776
	.10 \$	681	1972
	.12 \$	819	2368
			BALANCE POINT 16 DEG.F.
60,000			
	.03 \$	249	707
	.04 \$	329	943
	.05 \$	418	1184
	.06 \$	498	1420
	.07 \$	583	1656
	.08 \$	667	1892
	.09 \$	748	2128
	.10 \$	832	2368
	.12 \$	997	2840
			BALANCE POINT 24 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	120	161	201	241	282	322	362	402	483	<--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 3  
HEAT PUMP MODEL: COMPRESSOR SECTION WQSD36 WQSD36 INDOOR H3A0/H3A01  
COOLING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 35900 BTUH 11.80 EER  
HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 35900 BTUH 3.40 COP  
FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 81.00% 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		\$ 213	244	276	307	338	369	400	431	463	494	556	618	---THEORETICAL HEATING COST * FURNACE ONLY		
	.03	\$ 124	124	124	124	124	124	124	124	124	124	124	124	124	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
	.04	\$ 169	169	169	169	169	169	169	169	169	169	169	169			
	.05	\$ 209	209	209	209	209	209	209	209	209	209	209	209			
	.06	\$ 253	253	253	253	253	253	253	253	253	253	253	253			
	.07	\$ 293	293	293	293	293	293	293	293	293	293	293	293			
	.08	\$ 333	333	333	333	333	333	333	333	333	333	333	333			
	.09	\$ 378	378	378	378	378	378	378	378	378	378	378	378			
	.10	\$ 418	418	418	418	418	418	418	418	418	418	418	418			
	.12	\$ 503	503	503	503	503	503	503	503	503	503	503	503			
														BALANCE POINT -16 DEG.F.		
35,000		\$ 253	289	325	360	396	431	467	507	543	578	650	721	---THEORETICAL HEATING COST * FURNACE ONLY		
	.03	\$ 146	146	146	146	146	146	146	146	146	146	146	146	146		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.04	\$ 195	195	195	195	195	195	195	195	195	195	195	195			
	.05	\$ 240	240	240	240	240	240	240	240	240	240	240	240			
	.06	\$ 289	289	289	289	289	289	289	289	289	289	289	289			
	.07	\$ 338	338	338	338	338	338	338	338	338	338	338	338			
	.08	\$ 387	387	387	387	387	387	387	387	387	387	387	387			
	.09	\$ 436	436	436	436	436	436	436	436	436	436	436	436			
	.10	\$ 485	485	485	485	485	485	485	485	485	485	485	485			
	.12	\$ 583	583	583	583	583	583	583	583	583	583	583	583			
														BALANCE POINT -4 DEG.F.		
40,000		\$ 289	329	369	414	454	494	538	578	618	658	743	828	---THEORETICAL HEATING COST * FURNACE ONLY		
	.03	\$ 164	164	164	164	164	164	164	164	164	164	164	164	164	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
	.04	\$ 218	218	218	218	218	218	218	218	218	218	218	218			
	.05	\$ 276	276	276	276	276	276	276	276	276	276	276	276			
	.06	\$ 329	329	329	329	329	329	329	329	329	329	329	329			
	.07	\$ 382	382	382	382	382	382	382	382	382	382	382	382			
	.08	\$ 440	440	440	440	440	440	440	440	440	440	440	440			
	.09	\$ 494	494	494	494	494	494	494	494	494	494	494	494			
	.10	\$ 547	547	547	547	547	547	547	547	547	547	547	547			
	.12	\$ 658	658	658	658	658	658	658	658	658	658	658	658			
														BALANCE POINT 4 DEG.F.		
50,000		\$ 360	414	463	516	569	618	672	721	774	828	930	1033	---THEORETICAL HEATING COST * FURNACE ONLY		
	.03	\$ 200	204	204	204	204	204	204	204	204	204	204	204	204		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
	.04	\$ 267	271	271	271	271	271	271	271	271	271	271	271			
	.05	\$ 333	338	338	338	338	338	338	338	338	338	338	338			
	.06	\$ 405	409	409	409	409	409	409	409	409	409	409	409			
	.07	\$ 471	476	476	476	476	476	476	476	476	476	476	476			
	.08	\$ 538	543	543	543	543	543	543	543	543	543	543	543			
	.09	\$ 605	610	610	610	610	610	610	610	610	610	610	610			
	.10	\$ 672	676	676	676	676	676	676	676	676	676	676	676			
	.12	\$ 805	810	810	810	810	810	810	810	810	810	810	810			
														BALANCE POINT 16 DEG.F.		
60,000		\$ 431	494	556	618	681	743	805	868	930	992	1117	1242	---THEORETICAL HEATING COST * FURNACE ONLY		
	.03	\$ 244	244	249	249	249	253	253	253	253	258	258	262	262	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
	.04	\$ 320	320	325	325	325	329	329	329	329	333	333	338			
	.05	\$ 400	400	405	405	405	409	409	409	409	414	414	418			
	.06	\$ 476	476	480	480	480	485	485	485	485	489	489	494			
	.07	\$ 556	556	561	561	561	565	565	565	565	569	569	574			
	.08	\$ 636	636	641	641	641	645	645	645	645	650	650	654			
	.09	\$ 712	712	716	716	716	721	721	721	721	725	725	730			
	.10	\$ 792	792	797	797	797	801	801	801	801	805	805	810			
	.12	\$ 948	948	952	952	952	957	957	957	957	961	961	966			
														BALANCE POINT 24 DEG.F.		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 120	161	201	241	282	322	362	402	483	---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 3  
 HEAT PUMP MODEL: COMPRESSOR SECTION HQS36/HAS036 INDOOR H2A0/H2A01  
 COOLING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 35900 BTUH, 11.80 EER  
 HEATING CAPACITY AT 62 DEG.F. ENTERING WATER TEMP.: 38900 BTUH, 7.40 COP  
 FURNACE TYPE FUEL\_OIL FURNACE EFFICIENCY 57.00% AFUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON													
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40		
30,000	\$ 445	489	534	578	623	672	716	761	805	894	984	1073	---THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$ 124	124	124	124	124	124	124	124	124	124	124	124	124	124	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.04	\$ 169	169	169	169	169	169	169	169	169	169	169	169	169	169	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.05	\$ 209	209	209	209	209	209	209	209	209	209	209	209	209	209	\$ PER YEAR
.06	\$ 253	253	253	253	253	253	253	253	253	253	253	253	253	253	
.07	\$ 293	293	293	293	293	293	293	293	293	293	293	293	293	293	
.08	\$ 333	333	333	333	333	333	333	333	333	333	333	333	333	333	
.09	\$ 378	378	378	378	378	378	378	378	378	378	378	378	378	378	
.10	\$ 418	418	418	418	418	418	418	418	418	418	418	418	418	418	
.12	\$ 503	503	503	503	503	503	503	503	503	503	503	503	503	503	BALANCE POINT-16 DEG.F.
35,000	\$ 520	574	623	676	730	783	832	886	939	1041	1148	1251	---THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$ 146	146	146	146	146	146	146	146	146	146	146	146	146	146	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.04	\$ 195	195	195	195	195	195	195	195	195	195	195	195	195	195	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.05	\$ 240	240	240	240	240	240	240	240	240	240	240	240	240	240	\$ PER YEAR
.06	\$ 289	289	289	289	289	289	289	289	289	289	289	289	289	289	
.07	\$ 338	338	338	338	338	338	338	338	338	338	338	338	338	338	
.08	\$ 387	387	387	387	387	387	387	387	387	387	387	387	387	387	
.09	\$ 436	436	436	436	436	436	436	436	436	436	436	436	436	436	
.10	\$ 485	485	485	485	485	485	485	485	485	485	485	485	485	485	
.12	\$ 583	583	583	583	583	583	583	583	583	583	583	583	583	583	BALANCE POINT -4 DEG.F.
40,000	\$ 596	654	716	774	832	894	952	1015	1073	1193	1313	1433	---THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$ 164	164	164	164	164	164	164	164	164	164	164	164	164	164	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.04	\$ 218	218	218	218	218	218	218	218	218	218	218	218	218	218	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.05	\$ 276	276	276	276	276	276	276	276	276	276	276	276	276	276	\$ PER YEAR
.06	\$ 329	329	329	329	329	329	329	329	329	329	329	329	329	329	
.07	\$ 382	382	382	382	382	382	382	382	382	382	382	382	382	382	
.08	\$ 440	440	440	440	440	440	440	440	440	440	440	440	440	440	
.09	\$ 494	494	494	494	494	494	494	494	494	494	494	494	494	494	
.10	\$ 547	547	547	547	547	547	547	547	547	547	547	547	547	547	
.12	\$ 658	658	658	658	658	658	658	658	658	658	658	658	658	658	BALANCE POINT 4 DEG.F.
50,000	\$ 743	819	894	970	1041	1117	1193	1269	1344	1491	1643	1789	---THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$ 204	204	204	204	204	204	209	209	209	209	209	209	209	209	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.04	\$ 271	271	271	271	271	271	276	276	276	276	276	276	276	276	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.05	\$ 338	338	338	338	338	338	342	342	342	342	342	342	342	342	\$ PER YEAR
.06	\$ 409	409	409	409	409	409	414	414	414	414	414	414	414	414	
.07	\$ 476	476	476	476	476	476	480	480	480	480	480	480	480	480	
.08	\$ 543	543	543	543	543	543	547	547	547	547	547	547	547	547	
.09	\$ 610	610	610	610	610	610	614	614	614	614	614	614	614	614	
.10	\$ 676	676	676	676	676	676	681	681	681	681	681	681	681	681	
.12	\$ 810	810	810	810	810	810	814	814	814	814	814	814	814	814	BALANCE POINT 16 DEG.F.
60,000	\$ 894	984	1073	1162	1251	1344	1433	1522	1611	1789	1972	2150	---THEORETICAL HEATING COST * FURNACE ONLY		
.03	\$ 253	258	258	262	262	262	267	267	271	276	276	280	280	280	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.04	\$ 329	333	333	338	338	338	342	342	347	351	351	356	356	356	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
.05	\$ 409	414	414	418	418	418	423	423	427	431	431	436	436	436	\$ PER YEAR
.06	\$ 485	489	489	494	494	494	498	498	503	507	507	512	512	512	
.07	\$ 565	569	569	574	574	574	578	578	583	587	587	592	592	592	
.08	\$ 645	650	650	654	654	654	658	658	663	667	667	672	672	672	
.09	\$ 721	725	725	730	730	730	734	734	739	743	743	748	748	748	
.10	\$ 805	805	805	810	810	810	814	814	819	823	823	828	828	828	
.12	\$ 957	961	961	966	966	966	970	970	975	979	979	984	984	984	BALANCE POINT 24 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 120	161	201	241	282	322	362	402	483	<--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 7  
 HEAT PUMP MODEL: OUTDOOR\_24HPQ2----- INDOOR\_H24Q51-----  
 ARI RATED COOLING CAP.: BTUH (95) 1-23200 SEER 7.89  
 ARI RATED HEATING CAP.: BTUH (47) 1-22000 COP(47) 2.20 HSPF 6.32 MIN.OHR REG IV  
 FURNACE TYPE ELECTRIC----- COP(17) 1.95 FURNACE EFFICIENCY 100.00%AEUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ANNUAL HEATING COST ELECTRIC HEAT ONLY	
20,000		--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT		ELECTRIC HEAT ONLY
.03	\$	120		235
.04	\$	160		311
.05	\$	200		391
.06	\$	235		471
.07	\$	276		552
.08	\$	316		627
.09	\$	360		707
.10	\$	396		788
.12	\$	476		943
				BALANCE POINT 19 DEG.F.

25,000		--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT		ELECTRIC HEAT ONLY
.03	\$	146		293
.04	\$	195		391
.05	\$	244		489
.06	\$	293		592
.07	\$	342		690
.08	\$	391		788
.09	\$	440		886
.10	\$	489		984
.12	\$	587		1184
				BALANCE POINT 25 DEG.F.

30,000		--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT		ELECTRIC HEAT ONLY
.03	\$	178		351
.04	\$	235		471
.05	\$	293		592
.06	\$	351		707
.07	\$	409		828
.08	\$	471		943
.09	\$	529		1064
.10	\$	587		1184
.12	\$	703		1420
				BALANCE POINT 29 DEG.F.

35,000		--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT		ELECTRIC HEAT ONLY
.03	\$	209		414
.04	\$	276		552
.05	\$	347		690
.06	\$	418		828
.07	\$	485		966
.08	\$	556		1104
.09	\$	627		1242
.10	\$	699		1380
.12	\$	832		1656
				BALANCE POINT 33 DEG.F.

40,000		--- THEORETICAL ANNUAL HEATING COST ---		
		HEAT PUMP WITH ELECTRIC HEAT		ELECTRIC HEAT ONLY
.03	\$	244		471
.04	\$	329		627
.05	\$	409		788
.06	\$	485		943
.07	\$	569		1104
.08	\$	650		1260
.09	\$	730		1420
.10	\$	814		1576
.12	\$	979		1892
				BALANCE POINT 36 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	106	142	177	213	249	284	320	355	427	<--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 3  
 HEAT PUMP MODEL: OUTDOOR\_24HPQ2 INDOOR\_H24Q51  
 ARI RATED COOLING CAP.: BTUH (95) 10-23500 SEER 7.89  
 ARI RATED HEATING CAP.: BTUH (47) 10-20000 COP (47) 1.270 HSPF 6.35 MIN.DHR REG IV  
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY .65.003 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	\$	142	164	182	204	227	244	267	289	307	329	369	414	<--THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	120	120	120	120	120	124	124	124	124	124	129	129	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
+04	\$	160	160	160	160	160	164	164	164	164	164	169	169		
+05	\$	195	195	195	195	195	200	200	200	200	200	204	204		
+06	\$	231	231	231	231	231	235	235	235	235	235	240	240		
+07	\$	271	271	271	271	271	276	276	276	276	276	280	280		
+08	\$	307	307	307	307	307	311	311	311	311	311	316	316		
+09	\$	347	347	347	347	347	351	351	351	351	351	356	356		
+10	\$	382	382	382	382	382	387	387	387	387	387	391	391		
+12	\$	458	458	458	458	458	463	463	463	463	463	467	467		BALANCE POINT 19 DEG.F.
25,000	\$	178	204	231	258	284	307	333	360	387	414	463	516		<--THEORETICAL HEATING COST * FURNACE ONLY
+03	\$	146	146	151	151	155	160	160	164	164	169	173	178		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
+04	\$	191	191	195	195	200	204	204	209	209	213	218	222		
+05	\$	231	231	235	235	240	244	244	249	249	253	258	262		
+06	\$	276	276	280	280	284	289	289	293	293	298	302	307		
+07	\$	320	320	325	325	329	333	333	338	338	342	347	351		
+08	\$	360	360	365	365	369	374	374	378	378	382	387	391		
+09	\$	405	405	409	409	414	418	418	423	423	427	431	436		
+10	\$	449	449	454	454	458	463	463	467	467	471	476	480		
+12	\$	534	534	538	538	543	547	547	552	552	556	561	565	BALANCE POINT 25 DEG.F.	
30,000	\$	213	244	276	307	338	369	400	431	463	494	556	618	<--THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	173	182	187	191	200	204	209	213	222	227	240	249	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
+04	\$	218	227	231	235	244	249	253	258	267	271	284	293		
+05	\$	267	276	280	284	293	298	302	307	316	320	333	342		
+06	\$	311	320	325	329	338	342	347	351	360	365	378	387		
+07	\$	356	365	369	374	382	387	391	396	405	409	423	431		
+08	\$	400	409	414	418	427	431	436	440	449	454	467	476		
+09	\$	445	454	458	463	471	476	480	485	494	498	512	520		
+10	\$	489	498	503	507	516	520	525	529	538	543	556	565		
+12	\$	578	587	592	596	605	610	614	618	627	632	645	654		BALANCE POINT 29 DEG.F.
35,000	\$	253	289	325	360	396	431	467	507	543	578	650	721		<--THEORETICAL HEATING COST * FURNACE ONLY
+03	\$	213	227	240	253	262	276	289	302	316	329	351	378		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
+04	\$	253	267	280	293	302	316	329	342	356	369	391	418		
+05	\$	293	307	320	333	342	356	369	382	396	409	431	458		
+06	\$	333	347	360	374	382	396	409	423	436	449	471	498		
+07	\$	374	387	400	414	423	436	449	463	476	489	512	538		
+08	\$	418	431	445	458	467	480	494	507	520	534	556	583		
+09	\$	458	471	485	498	507	520	534	547	561	574	596	623		
+10	\$	498	512	525	538	547	561	574	587	601	614	636	663		
+12	\$	583	596	610	623	632	645	658	672	685	699	721	748	BALANCE POINT 33 DEG.F.	
40,000	\$	289	329	369	414	454	494	538	578	618	658	743	828	<--THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	240	253	267	284	298	311	325	342	356	369	400	427	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
+04	\$	284	298	311	329	342	356	369	387	400	414	445	471		
+05	\$	333	347	360	378	391	405	418	436	449	463	494	520		
+06	\$	378	391	405	423	436	449	463	480	494	507	538	565		
+07	\$	423	436	449	467	480	494	507	525	538	552	583	610		
+08	\$	467	480	494	512	525	538	552	569	583	596	627	654		
+09	\$	516	529	543	561	574	587	601	618	632	645	676	703		
+10	\$	561	574	587	605	618	632	645	663	676	690	721	748		
+12	\$	654	667	681	699	712	725	739	756	770	783	814	841		BALANCE POINT 36 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	106	142	177	213	249	284	320	355	427	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 24HPQ2 INDOOR H242S1  
 ARI RATED COOLING CAP.: BTUH (17) 11,300 SEER 7.89  
 ARI RATED HEATING CAP.: BTUH (47) 24,000 COP (47) 2.10 HSPF 6.35 MIN.DHR REG IV  
 BTUH (17) 11,300 COP (17) 1.95  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY .65 AQX AEWE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON												
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40	
20,000	\$ 298	325	356	387	414	445	476	507	534	596	654	716	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 120	120	120	120	120	124	124	124	124	124	124	129	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 160	160	160	160	160	164	164	164	164	164	164	169	\$ PER YEAR	
.05	\$ 195	195	195	195	195	195	200	200	200	200	200	204		
.06	\$ 235	235	235	235	235	240	240	240	240	240	240	244		
.07	\$ 276	276	276	276	276	280	280	280	280	280	280	284		
.08	\$ 316	316	316	316	316	320	320	320	320	320	320	325		
.09	\$ 351	351	351	351	351	356	356	356	356	356	356	360		
.10	\$ 391	391	391	391	391	396	396	396	396	396	396	400	BALANCE POINT 19 DEG.F.	
.12	\$ 467	467	467	467	467	471	471	471	471	471	471	476		
25,000	\$ 369	409	445	485	520	556	596	632	672	743	819	894	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 151	151	151	155	155	155	155	160	160	164	164	169	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 195	195	195	200	200	200	200	204	204	209	209	213	\$ PER YEAR	
.05	\$ 244	244	244	249	249	249	249	253	253	258	258	262		
.06	\$ 289	289	289	293	293	293	293	298	298	302	302	307		
.07	\$ 338	338	338	342	342	342	342	347	347	351	351	356		
.08	\$ 382	382	382	387	387	387	387	391	391	396	396	400		
.09	\$ 427	427	427	431	431	431	431	436	436	440	440	445		
.10	\$ 476	476	476	480	480	480	480	485	485	489	489	494	BALANCE POINT 25 DEG.F.	
.12	\$ 565	565	565	569	569	569	569	574	574	578	578	583		
30,000	\$ 445	489	534	578	623	672	716	761	805	894	984	1073	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 182	187	191	191	195	195	200	204	204	213	218	222	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 235	240	244	244	249	249	253	258	258	267	271	276	\$ PER YEAR	
.05	\$ 289	293	298	298	302	302	307	311	311	320	325	329		
.06	\$ 342	347	351	351	356	356	360	365	365	374	378	382		
.07	\$ 391	396	400	400	405	405	409	414	414	423	427	431		
.08	\$ 445	449	454	454	458	458	463	467	467	476	480	485		
.09	\$ 498	503	507	507	512	512	516	520	520	529	534	538		
.10	\$ 552	556	561	561	565	565	569	574	574	583	587	592	BALANCE POINT 29 DEG.F.	
.12	\$ 654	658	663	663	667	667	672	676	676	685	690	694		
35,000	\$ 520	574	623	676	730	783	832	886	939	1041	1148	1251	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 227	231	235	240	249	253	258	262	267	280	289	302	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 284	289	293	298	307	311	316	320	325	338	347	360	\$ PER YEAR	
.05	\$ 338	342	347	351	360	365	369	374	378	391	400	414		
.06	\$ 396	400	405	409	418	423	427	431	436	449	458	471		
.07	\$ 454	458	463	467	476	480	485	489	494	507	516	529		
.08	\$ 512	516	520	525	534	538	543	547	552	565	574	587		
.09	\$ 569	574	578	583	592	596	601	605	610	623	632	645		
.10	\$ 627	632	636	641	650	654	658	663	667	681	690	703	BALANCE POINT 33 DEG.F.	
.12	\$ 743	748	752	756	765	770	774	779	783	797	805	819		
40,000	\$ 596	654	716	774	832	894	952	1015	1073	1193	1313	1433	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 267	276	284	293	302	311	320	329	333	351	369	387	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 329	338	347	356	365	374	382	391	396	414	431	449	\$ PER YEAR	
.05	\$ 391	400	409	418	427	436	445	454	458	476	494	512		
.06	\$ 454	463	471	480	489	498	507	516	520	538	556	574		
.07	\$ 516	525	534	543	552	561	569	578	583	601	618	636		
.08	\$ 578	587	596	605	614	623	632	641	645	663	681	699		
.09	\$ 636	645	654	663	672	681	690	699	703	721	739	756		
.10	\$ 699	707	716	725	734	743	752	761	765	783	801	819	BALANCE POINT 36 DEG.F.	
.12	\$ 823	832	841	850	859	868	877	886	890	908	926	943		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	106	142	177	213	249	284	320	355	427	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 26HP02 INDOOR H240S1  
 ARI RATED COOLING CAP.: BTUH (17) 23500 SEER 7.82  
 ARI RATED HEATING CAP.: BTUH (17) 24000 COP (17) 2.70 HSPF 6.35 MIN. OHR REG IV  
 BTUH (17) 14200 COP (17) 1.95  
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY .65 .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	\$	271	293	316	338	360	382	409	431	454	498	543	543	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	120	120	120	120	120	120	120	124	124	124	124	124	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	160	160	160	160	160	160	160	164	164	164	164	164		
.05	\$	195	195	195	195	195	195	195	200	200	200	200	200		
.06	\$	235	235	235	235	235	235	235	240	240	240	240	240		
.07	\$	276	276	276	276	276	276	276	280	280	280	280	280		
.08	\$	316	316	316	316	316	316	316	320	320	320	320	320		
.09	\$	351	351	351	351	351	351	351	356	356	356	356	356		
.10	\$	391	391	391	391	391	391	391	396	396	396	396	396		
.12	\$	467	467	467	467	467	467	467	471	471	471	471	471		
25,000	\$	338	369	396	423	454	480	512	538	565	623	681	681		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	151	151	151	151	151	155	155	155	155	160	160	160		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	195	195	195	195	195	200	200	200	200	204	204	204		
.05	\$	244	244	244	244	244	249	249	249	249	253	253	253		
.06	\$	289	289	289	289	289	293	293	293	293	298	298	298		
.07	\$	338	338	338	338	338	342	342	342	342	347	347	347		
.08	\$	382	382	382	382	382	387	387	387	387	391	391	391		
.09	\$	427	427	427	427	427	431	431	431	431	436	436	436		
.10	\$	476	476	476	476	476	480	480	480	480	485	485	485		
.12	\$	565	565	565	565	565	569	569	569	569	574	574	574		
30,000	\$	409	440	476	512	543	578	614	645	681	748	819	819	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	182	182	187	187	191	191	195	195	200	204	209	209	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	235	235	240	240	244	244	249	249	253	258	262	262		
.05	\$	289	289	293	293	298	298	302	302	307	311	316	316		
.06	\$	342	342	347	347	351	351	356	356	360	365	369	369		
.07	\$	391	391	396	396	400	400	405	405	409	414	418	418		
.08	\$	445	445	449	449	454	454	458	458	463	467	471	471		
.09	\$	498	498	503	503	507	507	512	512	516	520	525	525		
.10	\$	552	552	556	556	561	561	565	565	569	574	578	578		
.12	\$	654	654	658	658	663	663	667	667	672	676	681	681		
35,000	\$	476	516	556	596	636	676	716	756	797	872	952	952		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	222	227	231	235	240	240	244	249	253	262	271	271		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	280	284	289	293	298	298	302	307	311	320	329	329		
.05	\$	333	338	342	347	351	351	356	360	365	374	382	382		
.06	\$	391	396	400	405	409	409	414	418	423	431	440	440		
.07	\$	449	454	458	463	467	467	471	476	480	489	498	498		
.08	\$	507	512	516	520	525	525	529	534	538	547	556	556		
.09	\$	565	569	574	578	583	583	587	592	596	605	614	614		
.10	\$	623	627	632	636	641	641	645	650	654	663	672	672		
.12	\$	739	743	748	752	756	756	761	765	770	779	788	788		
40,000	\$	543	592	636	681	725	770	819	863	908	1001	1090	1090	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	258	267	271	280	284	293	298	307	311	325	338	338	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	320	329	333	342	347	356	360	369	374	387	400	400		
.05	\$	382	391	396	405	409	418	423	431	436	449	463	463		
.06	\$	445	454	458	467	471	480	485	494	498	512	525	525		
.07	\$	507	516	520	529	534	543	547	556	561	574	587	587		
.08	\$	569	578	583	592	596	605	610	618	623	636	650	650		
.09	\$	627	636	641	650	654	663	667	676	681	694	707	707		
.10	\$	690	699	703	712	716	725	730	739	743	756	770	770		
.12	\$	814	823	828	837	841	850	854	863	868	881	894	894		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	106	142	177	213	249	284	320	355	427	<--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 3  
 HEAT PUMP MODEL: OUTDOOR\_30HP04 INDOOR\_H1A0\_08\_H1A01  
 ARI RATED COOLING CAP.: BTUH (17) 1-2000 SEER 8.10  
 ARI RATED HEATING CAP.: BTUH (17) 2000 COP (17) 1.90 HSPF 6.50 MIN.OHR REG IV  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AEUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
25,000			
	.03 \$	142	293
	.04 \$	195	391
	.05 \$	240	489
	.06 \$	289	592
	.07 \$	338	690
	.08 \$	387	788
	.09 \$	431	886
	.10 \$	480	984
	.12 \$	578	1184
			BALANCE POINT 15 DEG.F.
30,000			
	.03 \$	169	351
	.04 \$	227	471
	.05 \$	284	592
	.06 \$	342	707
	.07 \$	396	828
	.08 \$	458	943
	.09 \$	512	1064
	.10 \$	569	1184
	.12 \$	685	1420
			BALANCE POINT 20 DEG.F.
35,000			
	.03 \$	195	414
	.04 \$	262	532
	.05 \$	329	650
	.06 \$	396	768
	.07 \$	463	886
	.08 \$	525	1004
	.09 \$	592	1124
	.10 \$	658	1242
	.12 \$	788	1556
			BALANCE POINT 25 DEG.F.
40,000			
	.03 \$	227	471
	.04 \$	298	627
	.05 \$	378	788
	.06 \$	449	943
	.07 \$	525	1104
	.08 \$	605	1260
	.09 \$	676	1420
	.10 \$	752	1576
	.12 \$	903	1892
			BALANCE POINT 28 DEG.F.
50,000			
	.03 \$	289	592
	.04 \$	382	788
	.05 \$	480	984
	.06 \$	578	1184
	.07 \$	672	1380
	.08 \$	770	1576
	.09 \$	863	1776
	.10 \$	961	1972
	.12 \$	1153	2368
			BALANCE POINT 34 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	127	170	212	255	297	340	382	425	510	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 30HP04 SEER 8.30 INDOOR H340/H3401  
 ARI RATED COOLING CAP.: BTUH (17) 1-20200 COP (17) 1.90  
 ARI RATED HEATING CAP.: BTUH (47) 1-32000 COP (47) 2.75 HSPF 8.50 MIN. DHR REG IV  
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY .6500% AEWE

HEAT LOSS BTUH	ELEC. COST \$/KWH	NATURAL GAS COST - \$/THERM.													
		.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90		1.00	
25,000	\$	178	204	231	258	284	307	333	360	387	414	463	516	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	142	142	142	142	146	146	146	146	146	146	146	151	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$	191	191	191	191	195	195	195	195	195	195	195	200	\$ PER YEAR	
.05	\$	235	235	235	235	240	240	240	240	240	240	240	244		
.06	\$	284	284	284	284	289	289	289	289	289	289	289	293		
.07	\$	329	329	329	329	333	333	333	333	333	333	333	338		
.08	\$	378	378	378	378	382	382	382	382	382	382	382	387		
.09	\$	423	423	423	423	427	427	427	427	427	427	427	431		
.10	\$	471	471	471	471	476	476	476	476	476	476	476	480	BALANCE POINT 15 DEG.F.	
.12	\$	565	565	565	565	569	569	569	569	569	569	569	574		
30,000	\$	213	244	276	307	338	369	400	431	463	494	556	618	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	169	173	173	173	178	178	178	182	182	182	187	187	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$	222	227	227	227	231	231	231	235	235	235	240	240	\$ PER YEAR	
.05	\$	276	280	280	280	284	284	284	289	289	289	293	293		
.06	\$	329	333	333	333	338	338	338	342	342	342	347	347		
.07	\$	382	387	387	387	391	391	391	396	396	396	400	400		
.08	\$	436	440	440	440	445	445	445	449	449	449	454	454		
.09	\$	489	494	494	494	498	498	498	503	503	503	507	507		
.10	\$	543	547	547	547	552	552	552	556	556	556	561	561	BALANCE POINT 20 DEG.F.	
.12	\$	650	654	654	654	658	658	658	663	663	663	667	667		
35,000	\$	253	289	325	360	396	431	467	507	543	578	650	721	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	195	200	204	209	209	213	218	222	227	227	235	240	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$	253	258	262	267	267	271	276	280	284	284	293	298	\$ PER YEAR	
.05	\$	311	316	320	325	325	329	333	338	342	342	351	356		
.06	\$	369	374	378	382	382	387	391	396	400	400	409	414		
.07	\$	427	431	436	440	440	445	449	454	458	458	467	471		
.08	\$	485	489	494	498	498	503	507	512	516	516	525	529		
.09	\$	538	543	547	552	552	556	561	565	569	569	578	583		
.10	\$	596	601	605	610	610	614	618	623	627	627	636	641	BALANCE POINT 25 DEG.F.	
.12	\$	712	716	721	725	725	730	734	739	743	743	752	756		
40,000	\$	289	329	369	414	454	494	538	578	618	658	743	828	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	227	235	244	253	258	267	276	284	289	298	316	329	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$	284	293	302	311	316	325	333	342	347	356	374	387	\$ PER YEAR	
.05	\$	342	351	360	369	374	382	391	400	405	414	431	445		
.06	\$	400	409	418	427	431	440	449	458	463	471	489	503		
.07	\$	458	467	476	485	489	498	507	516	520	529	547	561		
.08	\$	512	520	529	538	543	552	561	569	574	583	601	614		
.09	\$	569	578	587	596	601	610	618	627	632	641	658	672		
.10	\$	627	636	645	654	658	667	676	685	690	699	716	730	BALANCE POINT 28 DEG.F.	
.12	\$	743	752	761	770	774	783	792	801	805	814	832	846		
50,000	\$	360	414	463	516	569	618	672	721	774	828	930	1033	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	293	311	329	347	365	382	400	418	436	454	489	525	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$	351	369	387	405	423	440	458	476	494	512	547	583	\$ PER YEAR	
.05	\$	405	423	440	458	476	494	512	529	547	565	601	636		
.06	\$	463	480	498	516	534	552	569	587	605	623	658	694		
.07	\$	516	534	552	569	587	605	623	641	658	676	712	748		
.08	\$	574	592	610	627	645	663	681	699	716	734	770	805		
.09	\$	627	645	663	681	699	716	734	752	770	788	823	859		
.10	\$	685	703	721	739	756	774	792	810	828	846	881	917		
.12	\$	797	814	832	850	868	886	903	921	939	957	992	1028	BALANCE POINT 34 DEG.F.	

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	127	170	212	255	297	340	382	425	510	---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 3  
 HEAT PUMP MODEL: OUTDOOR 30HP04 INDOOR H3AQZH3AQ1  
 ARI RATED COOLING CAP.: BTUH 195 SEER 8.30  
 ARI RATED HEATING CAP.: BTUH 147 COP 1.75 HSPF 6.50 MIN. DHR REG IV  
 BTUH (17) COP (17)  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 92.00% AEWE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON												
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40	
25,000		\$ 369	409	445	485	520	556	596	632	672	743	819	894	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$ 146	146	146	146	146	146	146	146	146	146	151	151	151	
.04	\$ 195	195	195	195	195	195	195	195	195	195	200	200	200	
.05	\$ 240	240	240	240	240	240	240	240	240	240	244	244	244	
.06	\$ 289	289	289	289	289	289	289	289	289	289	293	293	293	
.07	\$ 338	338	338	338	338	338	338	338	338	338	342	342	342	
.08	\$ 382	382	382	382	382	382	382	382	382	382	387	387	387	
.09	\$ 431	431	431	431	431	431	431	431	431	431	436	436	436	
.10	\$ 480	480	480	480	480	480	480	480	480	480	485	485	485	
.12	\$ 574	574	574	574	574	574	574	574	574	574	578	578	578	
														BALANCE POINT 15 DEG.F.
30,000		\$ 445	489	534	578	623	672	716	761	805	894	984	1073	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$ 173	173	173	173	173	173	178	178	178	178	182	182	182	
.04	\$ 231	231	231	231	231	231	235	235	235	235	240	240	240	
.05	\$ 284	284	284	284	284	284	289	289	289	289	293	293	293	
.06	\$ 338	338	338	338	338	338	342	342	342	342	347	347	347	
.07	\$ 386	386	386	386	386	386	396	400	400	400	405	405	405	
.08	\$ 449	449	449	449	449	449	454	454	454	454	458	458	458	
.09	\$ 503	503	503	503	503	503	507	507	507	507	512	512	512	
.10	\$ 561	561	561	561	561	561	565	565	565	565	569	569	569	
.12	\$ 672	672	672	672	672	672	676	676	676	676	681	681	681	
														BALANCE POINT 20 DEG.F.
35,000		\$ 520	574	623	676	730	783	832	886	939	1041	1148	1251	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$ 204	204	204	209	209	213	213	213	218	218	222	227	227	
.04	\$ 267	267	267	271	271	276	276	276	280	280	284	289	289	
.05	\$ 329	329	329	333	333	338	338	338	342	342	347	351	351	
.06	\$ 391	391	391	396	396	400	400	400	405	405	409	414	414	
.07	\$ 454	454	454	458	458	463	463	463	467	467	471	476	476	
.08	\$ 512	512	512	516	516	520	520	520	525	525	529	534	534	
.09	\$ 574	574	574	578	578	583	583	583	587	587	592	596	596	
.10	\$ 636	636	636	641	641	645	645	645	650	650	654	658	658	
.12	\$ 761	761	761	765	765	770	770	770	774	774	779	783	783	
														BALANCE POINT 25 DEG.F.
40,000		\$ 596	654	716	774	832	894	952	1015	1073	1193	1313	1433	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$ 235	240	240	244	249	249	253	258	262	267	271	280	280	
.04	\$ 302	307	307	311	316	316	320	325	329	333	338	347	347	
.05	\$ 374	378	378	382	387	387	391	396	400	405	409	418	418	
.06	\$ 440	445	445	449	454	454	458	463	467	471	476	485	485	
.07	\$ 507	512	512	516	520	520	525	529	534	538	543	552	552	
.08	\$ 574	578	578	583	587	587	592	596	601	605	610	618	618	
.09	\$ 645	650	650	654	658	658	663	667	672	676	681	690	690	
.10	\$ 712	716	716	721	725	725	730	734	739	743	748	756	756	
.12	\$ 850	854	854	859	863	863	868	872	877	881	886	894	894	
														BALANCE POINT 28 DEG.F.
50,000		\$ 743	819	894	970	1041	1117	1193	1269	1344	1491	1643	1789	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$ 311	320	329	338	342	351	360	369	378	391	409	427	427	
.04	\$ 391	400	409	418	423	431	440	449	458	471	489	507	507	
.05	\$ 467	476	485	494	498	507	516	525	534	547	565	583	583	
.06	\$ 547	556	565	574	578	587	596	605	614	627	645	663	663	
.07	\$ 623	632	641	650	654	663	672	681	690	703	721	739	739	
.08	\$ 699	707	716	725	730	739	748	756	765	779	797	814	814	
.09	\$ 779	788	797	805	810	819	828	837	846	859	877	894	894	
.10	\$ 854	863	872	881	886	894	903	912	921	935	952	970	970	
.12	\$ 1010	1019	1028	1037	1041	1050	1059	1068	1077	1090	1108	1126	1126	
														BALANCE POINT 34 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 127	170	212	255	297	340	382	425	510	<--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.

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

REGION 3  
 HEAT PUMP MODEL: OUTDOOR 30HP04 INDOOR H3A0/H3A01  
 ARI RATED COOLING CAP.: BTUH 195 SEER 8.30  
 ARI RATED HEATING CAP.: BTUH (47) COP 1.75 HSPF 6.50 MIN-DHR REG IV  
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 65.0% A/EVE

HEAT LOSS BTUH	ELEC. COST \$/KWH	PROPANE GAS COST - \$/GALLON													
		.60	.65	.70	.75	.80	.85	.90	.95	1.00	1.10	1.20			
25,000	\$	338	369	396	423	454	480	512	538	565	623	681	681	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	146	146	146	146	146	146	146	146	146	146	146	146	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	195	195	195	195	195	195	195	195	195	195	195	195		
.05	\$	240	240	240	240	240	240	240	240	240	240	240	240		
.06	\$	289	289	289	289	289	289	289	289	289	289	289	289		
.07	\$	338	338	338	338	338	338	338	338	338	338	338	338		
.08	\$	382	382	382	382	382	382	382	382	382	382	382	382		
.09	\$	431	431	431	431	431	431	431	431	431	431	431	431		
.10	\$	480	480	480	480	480	480	480	480	480	480	480	480		
.12	\$	574	574	574	574	574	574	574	574	574	574	574	574		BALANCE POINT 15 DEG.F.
30,000	\$	409	440	476	512	543	578	614	645	681	748	819	819		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	173	173	173	173	173	173	173	178	178	178	178	178		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	231	231	231	231	231	231	231	235	235	235	235	235		
.05	\$	284	284	284	284	284	284	284	289	289	289	289	289		
.06	\$	338	338	338	338	338	338	338	342	342	342	342	342		
.07	\$	396	396	396	396	396	396	396	400	400	400	400	400		
.08	\$	449	449	449	449	449	449	449	454	454	454	454	454		
.09	\$	503	503	503	503	503	503	503	507	507	507	507	507		
.10	\$	561	561	561	561	561	561	561	565	565	565	565	565		
.12	\$	672	672	672	672	672	672	672	676	676	676	676	676	BALANCE POINT 20 DEG.F.	
35,000	\$	476	516	556	596	636	676	716	756	797	872	952	952	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	200	204	204	204	209	209	209	209	213	213	218	218	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	262	267	267	267	271	271	271	276	276	280	280	280		
.05	\$	325	329	329	329	333	333	333	338	338	342	342	342		
.06	\$	387	391	391	391	396	396	396	400	400	405	405	405		
.07	\$	449	454	454	454	458	458	458	463	463	467	467	467		
.08	\$	507	512	512	512	516	516	516	520	520	525	525	525		
.09	\$	569	574	574	574	578	578	578	583	583	587	587	587		
.10	\$	632	636	636	636	641	641	641	645	645	650	650	650		
.12	\$	756	761	761	761	765	765	765	770	770	774	774	774		BALANCE POINT 25 DEG.F.
40,000	\$	543	592	636	681	725	770	819	863	908	1001	1090	1090		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	231	235	235	240	244	244	249	249	253	258	262	262		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	298	302	302	307	311	311	316	316	320	325	329	329		
.05	\$	369	374	374	378	382	382	387	387	391	396	400	400		
.06	\$	436	440	440	445	449	449	454	454	458	463	467	467		
.07	\$	503	507	507	512	516	516	520	520	525	529	534	534		
.08	\$	569	574	574	578	583	583	587	587	592	596	601	601		
.09	\$	641	645	645	650	654	654	658	658	663	667	672	672		
.10	\$	707	712	712	716	721	721	725	725	730	734	739	739		
.12	\$	846	850	850	854	859	859	863	863	868	872	877	877	BALANCE POINT 28 DEG.F.	
50,000	\$	681	739	797	850	908	966	1024	1082	1135	1251	1362	1362	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	307	311	316	325	329	338	342	347	356	365	378	378	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	387	391	396	405	409	418	423	427	436	445	458	458		
.05	\$	463	467	471	480	485	494	498	503	512	520	534	534		
.06	\$	543	547	552	561	565	574	578	583	592	601	614	614		
.07	\$	618	623	627	636	641	650	654	658	667	676	690	690		
.08	\$	694	699	703	712	716	725	730	734	743	752	765	765		
.09	\$	774	779	783	792	797	805	810	814	823	832	846	846		
.10	\$	850	854	859	868	872	881	886	890	899	908	921	921		
.12	\$	1006	1010	1015	1024	1028	1037	1041	1046	1055	1064	1077	1077		BALANCE POINT 34 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12		
	\$	127	170	212	255	297	340	382	425	510	<--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 3  
 HEAT PUMP MODEL: OUTDOOR\_30HP09 INDOOR\_H3A0\_08\_H1A01  
 ARI RATED COOLING CAP.: BTUH (17) 1-36500 SEER 7.50  
 ARI RATED HEATING CAP.: BTUH (17) 1-40500 COP (17) 1-2.62 HSPF\_6.40 MIN.DHR REG IV  
 BTUH (17) 1-24800 COP (17) 1.95  
 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			
.03	\$	178	351
.04	\$	240	471
.05	\$	298	592
.06	\$	360	707
.07	\$	418	828
.08	\$	476	943
.09	\$	538	1064
.10	\$	601	1184
.12	\$	716	1420
			BALANCE POINT 15 DEG.F.
35,000			
.03	\$	204	414
.04	\$	276	552
.05	\$	347	690
.06	\$	414	828
.07	\$	480	966
.08	\$	552	1104
.09	\$	618	1242
.10	\$	690	1380
.12	\$	828	1656
			BALANCE POINT 19 DEG.F.
40,000			
.03	\$	235	471
.04	\$	311	627
.05	\$	391	788
.06	\$	467	943
.07	\$	543	1104
.08	\$	623	1260
.09	\$	699	1420
.10	\$	779	1576
.12	\$	935	1892
			BALANCE POINT 23 DEG.F.
50,000			
.03	\$	289	592
.04	\$	387	788
.05	\$	485	984
.06	\$	583	1184
.07	\$	676	1380
.08	\$	774	1576
.09	\$	877	1776
.10	\$	975	1972
.12	\$	1166	2368
			BALANCE POINT 29 DEG.F.
60,000			
.03	\$	356	707
.04	\$	476	943
.05	\$	592	1184
.06	\$	712	1420
.07	\$	832	1656
.08	\$	948	1892
.09	\$	1068	2128
.10	\$	1184	2368
.12	\$	1420	2840
			BALANCE POINT 33 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	175	234	292	351	409	468	527	585	702	←--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 3  
 HEAT PUMP MODEL: OUTDOOR 36HP04 SEER 7.50 INDOOR H1A0/H3A1  
 ARI RATED COOLING CAP.: BTUH (17) 18600 COP (17) 2.62 HSPF 6.40 MIN. OHR REG IV  
 ARI RATED HEATING CAP.: BTUH (17) 24000 COP (17) 1.92  
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 65.00% AEWE

HEAT LOSS BTUH	ELEC. COST \$/KWH	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00	
30,000	\$	213	244	276	307	338	369	400	431	463	494	556	618	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	178	178	178	182	182	182	182	182	182	187	187	187	
.04	\$	235	235	235	240	240	240	240	240	240	244	244	244	
.05	\$	293	293	293	298	298	298	298	298	298	302	302	302	
.06	\$	351	351	351	356	356	356	356	356	356	360	360	360	
.07	\$	409	409	409	414	414	414	414	414	414	418	418	418	
.08	\$	467	467	467	471	471	471	471	471	471	476	476	476	
.09	\$	525	525	525	529	529	529	529	529	529	534	534	534	
.10	\$	583	583	583	587	587	587	587	587	587	592	592	592	
.12	\$	699	699	699	703	703	703	703	703	703	707	707	707	
														BALANCE POINT 15 DEG.F.
35,000	\$	253	289	325	360	396	431	467	507	543	578	650	721	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	209	209	209	213	213	218	218	218	222	222	227	231	
.04	\$	271	271	271	276	276	280	280	280	284	284	289	293	
.05	\$	338	338	338	342	342	347	347	347	351	351	356	360	
.06	\$	400	400	400	405	405	409	409	409	414	414	418	423	
.07	\$	467	467	467	471	471	476	476	476	480	480	485	489	
.08	\$	534	534	534	538	538	543	543	543	547	547	552	556	
.09	\$	596	596	596	601	601	605	605	605	610	610	614	618	
.10	\$	663	663	663	667	667	672	672	672	676	676	681	685	
.12	\$	792	792	792	797	797	801	801	801	805	805	810	814	
														BALANCE POINT 19 DEG.F.
40,000	\$	289	329	369	414	454	494	538	578	618	658	743	828	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	235	240	244	249	253	258	258	262	267	271	280	289	
.04	\$	302	307	311	316	320	325	325	329	333	338	347	356	
.05	\$	374	378	382	387	391	396	396	400	405	409	418	427	
.06	\$	440	445	449	454	458	463	463	467	471	476	485	494	
.07	\$	512	516	520	525	529	534	534	538	543	547	556	565	
.08	\$	578	583	587	592	596	601	601	605	610	614	623	632	
.09	\$	650	654	658	663	667	672	672	676	681	685	694	703	
.10	\$	716	721	725	730	734	739	739	743	748	752	761	770	
.12	\$	854	859	863	868	872	877	877	881	886	890	899	908	
														BALANCE POINT 23 DEG.F.
50,000	\$	360	414	463	516	569	618	672	721	774	828	930	1033	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	293	307	316	325	333	342	356	365	374	382	405	423	
.04	\$	365	378	387	396	405	414	427	436	445	454	476	494	
.05	\$	440	454	463	471	480	489	503	512	520	529	552	569	
.06	\$	516	529	538	547	556	565	578	587	596	605	627	645	
.07	\$	592	605	614	623	632	641	654	663	672	681	703	721	
.08	\$	667	681	690	699	707	716	730	739	748	756	779	797	
.09	\$	743	756	765	774	783	792	805	814	823	832	854	872	
.10	\$	814	828	837	846	854	863	877	886	894	903	926	943	
.12	\$	966	979	988	997	1006	1015	1028	1037	1046	1055	1077	1095	
														BALANCE POINT 29 DEG.F.
60,000	\$	431	494	556	618	681	743	805	868	930	992	1117	1242	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	360	382	405	427	449	471	494	512	534	556	601	645	
.04	\$	431	454	476	498	520	543	565	593	605	627	672	716	
.05	\$	503	525	547	569	592	614	636	654	676	699	743	788	
.06	\$	574	596	618	641	663	685	707	725	748	770	814	859	
.07	\$	641	663	685	707	730	752	774	792	814	837	881	926	
.08	\$	712	734	756	779	801	823	846	863	886	908	952	997	
.09	\$	783	805	828	850	872	894	917	935	957	979	1024	1068	
.10	\$	854	877	899	921	943	966	988	1006	1028	1050	1095	1139	
.12	\$	992	1015	1037	1059	1082	1104	1126	1144	1166	1188	1233	1277	
														BALANCE POINT 33 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	175	234	292	351	409	468	527	585	702	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 36HP04 SEER 7.5 INDOOR H2A0/H2A01  
 ARI RATED COOLING CAP.: BTUH (95) 13600 COP (2.7) 2.65 HSPF 6.40 MIN.DHR REG IV  
 ARI RATED HEATING CAP.: BTUH (47) 40500 COP (1.7) 1.22  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY .65.00% AEUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON													
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40		
30,000	\$	445	489	534	578	623	672	716	761	805	894	984	1073	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	182	182	182	182	182	182	182	187	187	187	187	187	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	240	240	240	240	240	240	240	244	244	244	244	244		
.05	\$	298	298	298	298	298	298	298	302	302	302	302	302		
.06	\$	356	356	356	356	356	356	356	360	360	360	360	360		
.07	\$	418	418	418	418	418	418	418	423	423	423	423	423		
.08	\$	476	476	476	476	476	476	476	480	480	480	480	480		
.09	\$	534	534	534	534	534	534	534	538	538	538	538	538		
.10	\$	592	592	592	592	592	592	592	596	596	596	596	596		
.12	\$	712	712	712	712	712	712	712	716	716	716	716	716		
															BALANCE POINT 15 DEG.F.
35,000	\$	520	574	623	676	730	783	832	886	939	1041	1148	1251		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	209	209	209	209	213	213	213	213	213	218	218	218		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	276	276	276	276	280	280	280	280	280	284	284	284		
.05	\$	342	342	342	342	347	347	347	347	347	351	351	351		
.06	\$	409	409	409	409	414	414	414	414	414	418	418	418		
.07	\$	476	476	476	476	480	480	480	480	480	485	485	485		
.08	\$	547	547	547	547	552	552	552	552	552	556	556	556		
.09	\$	614	614	614	614	618	618	618	618	618	623	623	623		
.10	\$	681	681	681	681	685	685	685	685	685	690	690	690		
.12	\$	814	814	814	814	819	819	819	819	819	823	823	823		
														BALANCE POINT 19 DEG.F.	
40,000	\$	596	654	716	774	832	894	952	1015	1073	1193	1313	1433	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	235	240	240	240	244	244	244	249	249	253	253	258	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	311	316	316	316	320	320	320	325	325	329	329	333		
.05	\$	387	391	391	391	396	396	396	400	400	405	405	409		
.06	\$	463	467	467	467	471	471	471	476	476	480	480	485		
.07	\$	534	538	538	538	543	543	543	547	547	552	552	556		
.08	\$	610	614	614	614	618	618	618	623	623	627	627	632		
.09	\$	685	690	690	690	694	694	694	699	699	703	703	707		
.10	\$	761	765	765	765	770	770	770	774	774	779	779	783		
.12	\$	908	912	912	912	917	917	917	921	921	926	926	930		
															BALANCE POINT 23 DEG.F.
50,000	\$	743	819	894	970	1041	1117	1193	1269	1344	1491	1643	1789		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	302	307	311	316	320	325	329	333	338	347	351	360		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	391	396	400	405	409	414	418	423	427	436	440	449		
.05	\$	480	485	489	494	498	503	507	512	516	525	529	538		
.06	\$	565	569	574	578	583	587	592	596	601	610	614	623		
.07	\$	654	658	663	667	672	676	681	685	690	699	703	712		
.08	\$	743	748	752	756	761	765	770	774	779	788	792	801		
.09	\$	828	832	837	841	846	850	854	859	863	872	877	886		
.10	\$	917	921	926	930	935	939	943	948	952	961	966	975		
.12	\$	1090	1095	1099	1104	1108	1113	1117	1122	1126	1135	1139	1148		
														BALANCE POINT 29 DEG.F.	
60,000	\$	894	984	1073	1162	1251	1344	1433	1522	1611	1789	1972	2150	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	382	391	400	409	418	427	436	445	454	471	489	507	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	480	489	498	507	516	525	534	543	552	569	587	605		
.05	\$	578	587	596	605	614	623	632	641	650	667	685	703		
.06	\$	676	685	694	703	712	721	730	739	748	765	783	801		
.07	\$	774	783	792	801	810	819	828	837	846	863	881	899		
.08	\$	872	881	890	899	908	917	926	935	943	961	979	997		
.09	\$	970	979	988	997	1006	1015	1024	1033	1041	1059	1077	1095		
.10	\$	1068	1077	1086	1095	1104	1113	1122	1130	1139	1157	1175	1193		
.12	\$	1264	1273	1282	1291	1300	1309	1317	1326	1335	1353	1371	1389		
															BALANCE POINT 33 DEG.F.

ANNUAL AIR CONDITIONING COST WHEN COOLING LOAD IS SIZED TO MATCH COOLING CAPACITY OF HEAT PUMP.  
 \$ .03 .04 .05 .06 .07 .08 .09 .10 .12 <--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 3  
HEAT PUMP MODEL: OUTDOOR 36HP04 SEER 7.50 INDOOR H2A2/H2A2L  
ARI RATED COOLING CAP.: BTUH (95 F) 26500 COP (17 F) 2.65 HSPF 6.40 MIN. OHR REG IV  
ARI RATED HEATING CAP.: BTUH (47 F) 40500 COP (17 F) 4.92  
FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 65.00% AEU

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	\$	409	440	476	512	543	578	614	645	681	748	819	819	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	182	182	182	182	182	182	182	182	182	187	187	187	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	240	240	240	240	240	240	240	240	240	244	244	244		
.05	\$	298	298	298	298	298	298	298	298	298	302	302	302		
.06	\$	356	356	356	356	356	356	356	356	356	360	360	360		
.07	\$	418	418	418	418	418	418	418	418	418	423	423	423		
.08	\$	476	476	476	476	476	476	476	476	476	480	480	480		
.09	\$	534	534	534	534	534	534	534	534	534	538	538	538		
.10	\$	592	592	592	592	592	592	592	592	592	596	596	596		
.12	\$	712	712	712	712	712	712	712	712	712	716	716	716		BALANCE POINT 15 DEG.F.
35,000	\$	476	516	556	596	636	676	716	756	797	872	952	952		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	209	209	209	209	209	209	209	213	213	213	213	213		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	276	276	276	276	276	276	276	280	280	280	280	280		
.05	\$	342	342	342	342	342	342	342	347	347	347	347	347		
.06	\$	409	409	409	409	409	409	409	414	414	414	414	414		
.07	\$	476	476	476	476	476	476	476	480	480	480	480	480		
.08	\$	547	547	547	547	547	547	547	552	552	552	552	552		
.09	\$	614	614	614	614	614	614	614	618	618	618	618	618		
.10	\$	681	681	681	681	681	681	681	685	685	685	685	685		
.12	\$	814	814	814	814	814	814	814	819	819	819	819	819	BALANCE POINT 19 DEG.F.	
40,000	\$	543	592	636	681	725	770	819	863	908	1001	1090	1090	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	235	235	240	240	240	240	244	244	244	249	249	249	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	311	311	316	316	316	316	320	320	320	325	325	325		
.05	\$	387	387	391	391	391	391	396	396	396	400	400	400		
.06	\$	463	463	467	467	467	467	471	471	471	476	476	476		
.07	\$	534	534	538	538	538	538	543	543	543	547	547	547		
.08	\$	610	610	614	614	614	614	618	618	618	623	623	623		
.09	\$	685	685	690	690	690	690	694	694	694	699	699	699		
.10	\$	761	761	765	765	765	765	770	770	770	774	774	774		
.12	\$	908	908	912	912	912	912	917	917	917	921	921	921		BALANCE POINT 23 DEG.F.
50,000	\$	681	739	797	850	908	966	1024	1082	1135	1251	1362	1362		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	298	302	307	311	311	316	320	320	325	333	338	338		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR
.04	\$	387	391	396	400	400	405	409	409	414	423	427	427		
.05	\$	476	480	485	489	489	494	498	498	503	512	516	516		
.06	\$	561	565	569	574	574	578	583	583	587	596	601	601		
.07	\$	650	654	658	663	663	667	672	672	676	685	690	690		
.08	\$	739	743	748	752	752	756	761	761	765	774	779	779		
.09	\$	823	828	832	837	837	841	846	846	850	859	863	863		
.10	\$	912	917	921	926	926	930	935	935	939	948	952	952		
.12	\$	1086	1090	1095	1099	1099	1104	1108	1108	1113	1122	1126	1126	BALANCE POINT 29 DEG.F.	
60,000	\$	819	886	952	1024	1090	1157	1228	1295	1362	1500	1638	1638	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	374	382	387	396	400	409	414	423	427	445	458	458	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR	
.04	\$	471	480	485	494	498	507	512	520	525	543	556	556		
.05	\$	569	578	583	592	596	605	610	618	623	641	654	654		
.06	\$	667	676	681	690	694	703	707	716	721	739	752	752		
.07	\$	765	774	779	788	792	801	805	814	819	837	850	850		
.08	\$	863	872	877	886	890	899	903	912	917	935	948	948		
.09	\$	961	970	975	984	988	997	1001	1010	1015	1033	1046	1046		
.10	\$	1059	1068	1073	1082	1086	1095	1099	1108	1113	1130	1144	1144		
.12	\$	1255	1264	1269	1277	1282	1291	1295	1304	1309	1326	1340	1340		BALANCE POINT 33 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12		
	\$	175	234	292	351	409	468	527	585	702	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 42HPQ INDOOR H5A0  
 ARI RATED COOLING CAP.: BTUH 14711 SEER 8.20  
 ARI RATED HEATING CAP.: BTUH 14711 COP 1.70 HSPF 6.25 MIN.DHR REG IV  
 BTUH 11711 COP 1.80  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AEWE

HEAT LOSS  
 BTUH  
 ELEC. COST  
 \$/KWH

35,000

		--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.03	\$	209	414
.04	\$	276	552
.05	\$	347	690
.06	\$	414	828
.07	\$	485	966
.08	\$	556	1104
.09	\$	623	1242
.10	\$	694	1380
.12	\$	828	1656

BALANCE POINT 19 DEG.F.

40,000

		--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.03	\$	235	471
.04	\$	316	627
.05	\$	391	788
.06	\$	471	943
.07	\$	552	1104
.08	\$	627	1260
.09	\$	707	1420
.10	\$	783	1576
.12	\$	939	1892

BALANCE POINT 23 DEG.F.

50,000

		--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.03	\$	289	592
.04	\$	387	788
.05	\$	485	984
.06	\$	587	1184
.07	\$	681	1380
.08	\$	779	1576
.09	\$	877	1776
.10	\$	975	1972
.12	\$	1166	2368

BALANCE POINT 28 DEG.F.

60,000

		--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.03	\$	351	707
.04	\$	471	943
.05	\$	592	1184
.06	\$	707	1420
.07	\$	823	1656
.08	\$	943	1892
.09	\$	1064	2128
.10	\$	1179	2368
.12	\$	1415	2840

BALANCE POINT 32 DEG.F.

70,000

		--- THEORETICAL ANNUAL HEATING COST ---	
		HEAT PUMP WITH ELECTRIC HEAT	ELECTRIC HEAT ONLY
.03	\$	427	828
.04	\$	565	1104
.05	\$	707	1380
.06	\$	850	1656
.07	\$	988	1932
.08	\$	1130	2208
.09	\$	1273	2484
.10	\$	1415	2760
.12	\$	1696	3312

BALANCE POINT 36 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	191	255	318	382	446	510	573	637	765	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 42HPQ INDOOR H5A2  
 ARI RATED COOLING CAP.: BTUH (95) 47500, SEER 8.00  
 ARI RATED HEATING CAP.: BTUH (47) 21500, COP (47) 2.20, HSPF 6.25 MIN.DHR REG IV  
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY 65.00% AEVE

HEAT LOSS BTUH	ELEC. COST \$/KWH	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00	
35,000	\$	253	289	325	360	396	431	467	507	543	578	650	721	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	209	209	209	213	213	218	218	218	222	222	227	231	
.04	\$	271	271	271	276	276	280	280	280	284	284	289	293	
.05	\$	338	338	338	342	342	347	347	347	351	351	356	360	
.06	\$	400	400	400	405	405	409	409	409	414	414	418	423	
.07	\$	467	467	467	471	471	476	476	476	480	480	485	489	
.08	\$	529	529	529	534	534	538	538	538	543	543	547	552	
.09	\$	596	596	596	601	601	605	605	605	610	610	614	618	
.10	\$	663	663	663	667	667	672	672	672	676	676	681	685	
.12	\$	792	792	792	797	797	801	801	801	805	805	810	814	
														BALANCE POINT 19 DEG.F.
40,000	\$	289	329	369	414	454	494	538	578	618	658	743	828	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	231	235	240	244	249	253	253	258	262	267	276	284	
.04	\$	302	307	311	316	320	325	325	329	333	338	347	356	
.05	\$	369	374	378	382	387	391	391	396	400	405	414	423	
.06	\$	440	445	449	454	458	463	463	467	471	476	485	494	
.07	\$	507	512	516	520	525	529	529	534	538	543	552	561	
.08	\$	578	583	587	592	596	601	601	605	610	614	623	632	
.09	\$	645	650	654	658	663	667	667	672	676	681	690	699	
.10	\$	716	721	725	730	734	739	739	743	748	752	761	770	
.12	\$	854	859	863	868	872	877	877	881	886	890	899	908	
														BALANCE POINT 23 DEG.F.
50,000	\$	360	414	463	516	569	618	672	721	774	828	930	1033	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	289	302	311	320	329	338	351	360	369	378	400	418	
.04	\$	365	378	387	396	405	414	427	436	445	454	476	494	
.05	\$	440	454	463	471	480	489	503	512	520	529	552	569	
.06	\$	512	525	534	543	552	561	574	583	592	601	623	641	
.07	\$	587	601	610	619	627	636	650	658	667	676	699	716	
.08	\$	663	676	685	694	703	712	725	734	743	752	774	792	
.09	\$	734	748	756	765	774	783	797	805	814	823	846	863	
.10	\$	810	823	832	841	850	859	872	881	890	899	921	939	
.12	\$	961	975	984	992	1001	1010	1024	1033	1041	1050	1073	1090	
														BALANCE POINT 28 DEG.F.
60,000	\$	431	494	556	618	681	743	805	868	930	992	1117	1242	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	360	382	405	427	449	471	494	512	534	556	601	645	
.04	\$	427	449	471	494	516	538	561	578	601	623	667	712	
.05	\$	493	520	543	565	587	610	632	650	672	694	739	783	
.06	\$	565	597	610	632	654	676	699	716	739	761	805	850	
.07	\$	636	658	681	703	725	748	770	788	810	832	877	921	
.08	\$	703	725	748	770	792	814	837	854	877	899	943	988	
.09	\$	774	797	819	841	863	886	908	926	948	970	1015	1059	
.10	\$	841	863	886	908	930	952	975	992	1015	1037	1082	1126	
.12	\$	979	1001	1024	1046	1068	1090	1113	1130	1153	1175	1220	1264	
														BALANCE POINT 32 DEG.F.
70,000	\$	507	578	650	721	797	868	939	1015	1086	1157	1304	1447	<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	414	440	463	489	516	538	565	592	618	641	694	743	
.04	\$	494	520	543	569	596	618	645	672	699	721	774	823	
.05	\$	569	596	618	645	672	694	721	748	774	797	850	899	
.06	\$	650	676	699	725	752	774	801	828	854	877	930	979	
.07	\$	730	756	779	805	832	854	881	908	935	957	1010	1059	
.08	\$	810	837	859	886	912	935	961	988	1015	1037	1090	1139	
.09	\$	886	912	935	961	988	1010	1037	1064	1090	1113	1166	1215	
.10	\$	966	992	1015	1041	1068	1090	1117	1144	1171	1193	1246	1295	
.12	\$	1122	1148	1171	1197	1224	1246	1273	1300	1326	1349	1402	1451	
														BALANCE POINT 36 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	191	255	318	382	446	510	573	637	765	<--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 400-ON HEAT PUMP GUIDE TO ENERGY COST SAVINGS

REGION 3  
 HEAT PUMP MODEL: OUTDOOR 42HRQ INDOOR H5AQ  
 ARI RATED COOLING CAP.: BTUH 7057 SEER 8.02  
 ARI RATED HEATING CAP.: BTUH (47) COP (4.7) HSPF 6.25 MIN. OHR REG IV  
 BTUH (17) COP (11) 1.80  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY .6500% A/EWE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON													
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40		
35,000	\$	520	574	623	676	730	783	832	886	939	1041	1148	1251	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	209	209	209	213	213	213	213	213	218	218	218	222	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$	276	276	276	280	280	280	280	280	284	284	289	289	\$ PER YEAR	
.05	\$	342	342	342	347	347	347	347	347	351	351	351	356		
.06	\$	414	414	414	418	418	418	418	418	423	423	423	427		
.07	\$	480	480	480	485	485	485	485	485	489	489	489	494		
.08	\$	547	547	547	552	552	552	552	552	556	556	556	561		
.09	\$	614	614	614	618	618	618	618	618	623	623	623	627		
.10	\$	681	681	681	685	685	685	685	685	690	690	690	694	BALANCE POINT 19 DEG.F.	
.12	\$	814	814	814	819	819	819	819	819	823	823	823	828		
40,000	\$	596	654	716	774	832	894	952	1015	1073	1193	1313	1433	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	240	240	240	244	244	244	249	249	249	253	258	262		
.04	\$	316	316	316	320	320	320	325	325	325	329	333	339	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$	391	391	391	396	396	396	400	400	400	405	409	414	\$ PER YEAR	
.06	\$	467	467	467	471	471	471	476	476	476	480	485	489		
.07	\$	538	538	538	543	543	543	547	547	547	552	556	561		
.08	\$	614	614	614	618	618	618	623	623	623	627	632	636		
.09	\$	690	690	690	694	694	694	699	699	699	703	707	712		
.10	\$	765	765	765	770	770	770	774	774	774	779	783	788	BALANCE POINT 23 DEG.F.	
.12	\$	912	912	912	917	917	917	921	921	921	926	930	935		
50,000	\$	743	819	894	970	1041	1117	1193	1269	1344	1491	1643	1789	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	302	307	311	316	320	325	329	333	338	347	351	360		
.04	\$	391	396	400	405	409	414	418	423	427	436	440	449	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$	480	485	489	494	498	503	507	512	516	525	529	538	\$ PER YEAR	
.06	\$	565	569	574	578	583	587	592	596	601	610	614	623		
.07	\$	654	658	663	667	672	676	681	685	690	699	703	712		
.08	\$	743	748	752	756	761	765	770	774	779	788	792	801		
.09	\$	832	837	841	846	850	854	859	863	868	877	881	890		
.10	\$	917	921	926	930	935	939	943	948	952	961	966	975	BALANCE POINT 28 DEG.F.	
.12	\$	1095	1099	1104	1108	1113	1117	1122	1126	1130	1139	1144	1153		
60,000	\$	894	984	1073	1162	1251	1344	1433	1522	1611	1799	1972	2150	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	378	387	396	405	409	418	427	436	445	463	480	494		
.04	\$	476	485	494	503	507	516	525	534	543	561	578	592	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$	578	587	596	605	610	618	627	636	645	663	681	694	\$ PER YEAR	
.06	\$	676	685	694	703	707	716	725	734	743	761	779	792		
.07	\$	774	783	792	801	805	814	823	832	841	859	877	890		
.08	\$	872	881	890	899	903	912	921	930	939	957	975	988		
.09	\$	970	979	988	997	1001	1010	1019	1028	1037	1055	1073	1086		
.10	\$	1068	1077	1086	1095	1099	1108	1117	1126	1135	1153	1171	1184	BALANCE POINT 32 DEG.F.	
.12	\$	1264	1273	1282	1291	1295	1304	1313	1322	1331	1349	1366	1380		
70,000	\$	1041	1148	1251	1358	1460	1567	1669	1776	1879	2088	2297	2506	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	467	485	498	512	529	543	556	574	587	618	650	676		
.04	\$	574	592	605	618	636	650	663	681	694	725	756	783	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$	681	699	712	725	743	756	770	788	801	832	863	890	\$ PER YEAR	
.06	\$	788	805	819	832	850	863	877	894	908	939	970	997		
.07	\$	890	908	921	935	952	966	979	997	1010	1041	1073	1099		
.08	\$	997	1015	1028	1041	1059	1073	1086	1104	1117	1148	1179	1206		
.09	\$	1104	1122	1135	1148	1166	1179	1193	1211	1224	1255	1286	1313		
.10	\$	1211	1228	1242	1255	1273	1286	1300	1317	1331	1362	1393	1420	BALANCE POINT 36 DEG.F.	
.12	\$	1424	1442	1456	1469	1487	1500	1513	1531	1545	1576	1607	1634		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 191	255	318	382	446	510	573	637	765	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 42HPQ INDOOR H5A0  
 ARI RATED COOLING CAP.: BTUH (95) 1-25000 SEER 8.00  
 ARI RATED HEATING CAP.: BTUH (47) 1-25000 COP (47) 1-2.70 HSPF 6.25 MIN.DHR REG IV  
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 65.00% AEUE

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	\$ 476	516	556	596	636	676	716	756	797	872	952	952	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 209	209	209	209	209	213	213	213	213	213	218	218	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 276	276	276	276	276	280	280	280	280	280	284	284	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$ 342	342	342	342	342	347	347	347	347	347	351	351	\$ PER YEAR	
.06	\$ 414	414	414	414	414	418	418	418	418	418	423	423		
.07	\$ 480	480	480	480	480	485	485	485	485	485	489	489		
.08	\$ 547	547	547	547	547	552	552	552	552	552	556	556		
.09	\$ 614	614	614	614	614	618	618	618	618	618	623	623		
.10	\$ 681	681	681	681	681	685	685	685	685	685	690	690	BALANCE POINT 19 DEG.F.	
.12	\$ 814	814	814	814	814	819	819	819	819	819	823	823		
40,000	\$ 543	592	636	681	725	770	819	863	908	1001	1090	1090	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 235	240	240	240	240	244	244	244	244	249	253	253	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 311	316	316	316	316	320	320	320	320	325	329	329	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$ 387	391	391	391	391	396	396	396	396	400	405	405	\$ PER YEAR	
.06	\$ 463	467	467	467	467	471	471	471	471	476	480	480		
.07	\$ 534	538	538	538	538	543	543	543	543	547	552	552		
.08	\$ 610	614	614	614	614	618	618	618	618	623	627	627		
.09	\$ 685	690	690	690	690	694	694	694	694	699	703	703		
.10	\$ 761	765	765	765	765	770	770	770	770	774	779	779	BALANCE POINT 23 DEG.F.	
.12	\$ 908	912	912	912	912	917	917	917	917	921	926	926		
50,000	\$ 681	739	797	850	908	966	1024	1082	1135	1251	1362	1362	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 302	307	311	311	311	316	320	320	325	333	338	338	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 391	396	400	400	400	405	409	409	414	423	427	427	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$ 480	485	489	489	489	494	498	498	503	512	516	516	\$ PER YEAR	
.06	\$ 565	569	574	574	574	578	583	583	587	596	601	601		
.07	\$ 654	654	658	663	663	667	672	672	676	685	690	690		
.08	\$ 743	743	748	752	752	756	761	761	765	774	779	779		
.09	\$ 832	832	837	841	841	846	850	850	854	863	868	868		
.10	\$ 917	917	921	926	926	930	935	935	939	948	952	952	BALANCE POINT 28 DEG.F.	
.12	\$ 1095	1095	1099	1104	1104	1108	1113	1113	1117	1126	1130	1130		
60,000	\$ 819	886	952	1024	1090	1157	1228	1295	1362	1500	1638	1638	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 369	378	382	391	396	400	409	414	423	436	449	449	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 467	476	480	489	494	498	507	512	520	534	547	547	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$ 569	578	583	592	596	601	610	614	623	636	650	650	\$ PER YEAR	
.06	\$ 667	676	681	690	694	699	707	712	721	734	748	748		
.07	\$ 765	774	779	788	792	797	805	810	819	832	846	846		
.08	\$ 863	872	877	886	890	894	903	908	917	930	943	943		
.09	\$ 961	970	975	984	988	992	1001	1006	1015	1028	1041	1041		
.10	\$ 1059	1058	1073	1082	1086	1090	1099	1104	1113	1126	1139	1139	BALANCE POINT 32 DEG.F.	
.12	\$ 1255	1264	1269	1277	1282	1286	1295	1300	1309	1322	1335	1335		
70,000	\$ 952	1033	1113	1193	1273	1353	1433	1513	1594	1749	1910	1910	---THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$ 458	467	480	489	503	512	525	534	547	569	592	592	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.04	\$ 565	574	587	596	610	618	632	641	654	676	699	699	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
.05	\$ 672	681	694	703	716	725	739	748	761	783	805	805	\$ PER YEAR	
.06	\$ 779	788	801	810	823	832	846	854	868	890	912	912		
.07	\$ 881	890	903	912	926	935	948	957	970	992	1015	1015		
.08	\$ 988	997	1010	1019	1033	1041	1055	1064	1077	1099	1122	1122		
.09	\$ 1095	1104	1117	1126	1139	1148	1162	1171	1184	1206	1228	1228		
.10	\$ 1202	1211	1224	1233	1246	1255	1269	1277	1291	1313	1335	1335	BALANCE POINT 36 DEG.F.	
.12	\$ 1415	1424	1438	1447	1460	1469	1482	1491	1505	1527	1549	1549		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	191	255	318	382	446	510	573	637	765	<--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 3  
 HEAT PUMP MODEL: OUTDOOR\_48HR02 INDOOR\_H210  
 ARI RATED COOLING CAP.: BTUH (75) 46200 SEER 8.10  
 ARI RATED HEATING CAP.: BTUH (47) 44000 COP(47) 2.60 HSPF\_6.15 MIN.DHR REG IV  
 BTUH (17) 26800 COP(17) 1.85  
 FURNACE TYPE ELECTRIC FURNACE EFFICIENCY 100.00% AEUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ANNUAL HEATING COST	ELECTRIC HEAT ONLY	
35,000		--- THEORETICAL ANNUAL HEATING COST ---			
		HEAT PUMP WITH ELECTRIC HEAT			
.03	\$	218		414	
.04	\$	289		552	
.05	\$	360		690	
.06	\$	427		828	
.07	\$	503		966	
.08	\$	574		1104	
.09	\$	645		1242	
.10	\$	716		1380	BALANCE POINT 17 DEG.F.
.12	\$	863		1656	

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ANNUAL HEATING COST	ELECTRIC HEAT ONLY	
40,000		--- THEORETICAL ANNUAL HEATING COST ---			
		HEAT PUMP WITH ELECTRIC HEAT			
.03	\$	240		471	
.04	\$	325		627	
.05	\$	405		788	
.06	\$	489		943	
.07	\$	569		1104	
.08	\$	650		1260	
.09	\$	730		1420	
.10	\$	810		1576	BALANCE POINT 20 DEG.F.
.12	\$	975		1892	

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ANNUAL HEATING COST	ELECTRIC HEAT ONLY	
50,000		--- THEORETICAL ANNUAL HEATING COST ---			
		HEAT PUMP WITH ELECTRIC HEAT			
.03	\$	302		592	
.04	\$	400		788	
.05	\$	498		984	
.06	\$	601		1184	
.07	\$	699		1380	
.08	\$	801		1576	
.09	\$	899		1776	
.10	\$	1001		1972	BALANCE POINT 26 DEG.F.
.12	\$	1197		2368	

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ANNUAL HEATING COST	ELECTRIC HEAT ONLY	
60,000		--- THEORETICAL ANNUAL HEATING COST ---			
		HEAT PUMP WITH ELECTRIC HEAT			
.03	\$	365		707	
.04	\$	480		943	
.05	\$	601		1184	
.06	\$	721		1420	
.07	\$	846		1656	
.08	\$	966		1892	
.09	\$	1086		2128	
.10	\$	1206		2368	BALANCE POINT 31 DEG.F.
.12	\$	1447		2840	

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEAT PUMP WITH ELECTRIC HEAT	ANNUAL HEATING COST	ELECTRIC HEAT ONLY	
70,000		--- THEORETICAL ANNUAL HEATING COST ---			
		HEAT PUMP WITH ELECTRIC HEAT			
.03	\$	431		828	
.04	\$	574		1104	
.05	\$	721		1380	
.06	\$	863		1656	
.07	\$	1006		1932	
.08	\$	1153		2208	
.09	\$	1295		2484	
.10	\$	1438		2760	BALANCE POINT 34 DEG.F.
.12	\$	1727		3312	

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	206	275	344	413	482	551	619	688	826	<--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 3  
 HEAT PUMP MODEL: OUTDOOR\_4BHPQ2 INDOOR\_H5A0  
 ARI RATED COOLING CAP.: BTUH (75) 174,500 SEER 8.10  
 ARI RATED HEATING CAP.: BTUH (47) 240,000 COP (17) 1.85 HSPF 6.15 MIN. DHR REG IV  
 BTUH (17) 268,000 COP (17) 1.85  
 FURNACE TYPE NATURAL GAS FURNACE EFFICIENCY .8500 AEUE

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	\$	253	289	325	360	396	431	467	507	543	578	650	721	---THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	218	218	218	222	222	227	227	227	231	231	235	240	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
+04	\$	284	284	284	289	289	293	293	293	298	298	302	307	\$ PER YEAR	
+05	\$	351	351	351	356	356	360	360	360	365	365	369	374		
+06	\$	418	418	418	423	423	427	427	427	431	431	436	440		
+07	\$	489	489	489	494	494	498	498	498	503	503	507	512		
+08	\$	556	556	556	561	561	565	565	565	569	569	574	578		
+09	\$	623	623	623	627	627	632	632	632	636	636	641	645		
+10	\$	690	690	690	694	694	699	699	699	703	703	707	712	BALANCE POINT 17 DEG.F.	
+12	\$	828	828	828	832	832	837	837	837	841	841	846	850		
40,000	\$	289	329	369	414	454	494	538	578	618	658	743	828	---THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	240	240	244	244	249	249	253	253	253	258	262	267	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
+04	\$	316	316	320	320	325	325	329	329	329	333	338	342	\$ PER YEAR	
+05	\$	396	396	400	400	405	405	409	409	409	414	418	423		
+06	\$	471	471	476	476	480	480	485	485	485	489	494	498		
+07	\$	547	547	552	552	556	556	561	561	561	565	569	574		
+08	\$	623	623	627	627	632	632	636	636	636	641	645	650		
+09	\$	699	699	703	703	707	707	712	712	712	716	721	725		
+10	\$	774	774	779	779	783	783	788	788	788	792	797	801	BALANCE POINT 20 DEG.F.	
+12	\$	926	926	930	930	935	935	939	939	939	943	948	952		
50,000	\$	360	414	463	516	569	618	672	721	774	828	930	1033	---THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	298	302	307	311	316	320	325	329	333	342	351	360	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
+04	\$	387	391	396	400	405	409	414	418	423	431	440	449	\$ PER YEAR	
+05	\$	471	476	480	485	489	494	498	503	507	516	525	534		
+06	\$	561	565	569	574	578	583	587	592	596	605	614	623		
+07	\$	650	654	658	663	667	672	676	681	685	694	703	712		
+08	\$	734	739	743	748	752	756	761	765	770	779	788	797		
+09	\$	823	828	832	837	841	846	850	854	859	868	877	886		
+10	\$	912	917	921	926	930	935	939	943	948	957	966	975	BALANCE POINT 26 DEG.F.	
+12	\$	1086	1090	1095	1099	1104	1108	1113	1117	1122	1130	1139	1148		
60,000	\$	431	494	556	618	681	743	805	868	930	992	1117	1242	---THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	356	369	382	391	405	418	427	440	454	463	489	512	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
+04	\$	445	458	471	480	494	507	516	529	543	552	578	601	\$ PER YEAR	
+05	\$	538	552	565	574	587	601	610	623	636	645	672	694		
+06	\$	627	641	654	663	676	690	699	712	725	734	761	783		
+07	\$	721	734	748	756	770	783	792	805	819	828	854	877		
+08	\$	810	823	837	846	859	872	881	894	908	917	943	966		
+09	\$	903	917	930	939	952	966	975	988	1001	1010	1037	1059		
+10	\$	992	1006	1019	1028	1041	1055	1064	1077	1090	1099	1126	1148	BALANCE POINT 31 DEG.F.	
+12	\$	1175	1188	1202	1211	1224	1237	1246	1260	1273	1282	1309	1331		
70,000	\$	507	578	650	721	797	868	939	1015	1086	1157	1304	1447	---THEORETICAL HEATING COST * FURNACE ONLY	
+03	\$	427	454	476	503	529	552	578	605	632	654	707	756	THEORETICAL HEATING COST * FURN.+ HEAT PUMP	
+04	\$	512	538	561	587	614	636	663	690	716	739	792	841	\$ PER YEAR	
+05	\$	592	618	641	667	694	716	743	770	797	819	872	921		
+06	\$	676	703	725	752	779	801	828	854	881	903	957	1006		
+07	\$	761	788	810	837	863	886	912	939	966	988	1041	1090		
+08	\$	846	872	894	921	948	970	997	1024	1050	1073	1126	1175		
+09	\$	928	952	975	1001	1028	1050	1077	1104	1130	1153	1206	1255		
+10	\$	1010	1037	1059	1086	1113	1135	1162	1188	1215	1237	1291	1340	BALANCE POINT 34 DEG.F.	
+12	\$	1175	1202	1224	1251	1277	1300	1326	1353	1380	1402	1456	1505		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
\$	206	275	344	413	482	551	619	688	826	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 48HR02 INDOOR H54Q  
 ARI RATED COOLING CAP.: BTUH (47) 46500 SEER 8.10  
 ARI RATED HEATING CAP.: BTUH (47) 24000 COP (17) 1.85  
 FURNACE TYPE FUEL OIL FURNACE EFFICIENCY 85.00% A/EWE

HEAT LOSS BTUH	ELEC. COST \$/KWH	HEATING OIL COST - \$/GALLON													
		1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	2.00	2.20	2.40		
35,000	\$	520	574	623	676	730	783	832	886	939	1041	1148	1251	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	218	218	222	222	222	222	222	222	222	227	227	227	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR                       	
.04	\$	284	284	289	289	289	289	289	289	289	293	293	293		
.05	\$	356	356	360	360	360	360	360	360	360	365	365	365		
.06	\$	427	427	431	431	431	431	431	431	431	436	436	436		
.07	\$	498	498	503	503	503	503	503	503	503	507	507	507		
.08	\$	569	569	574	574	574	574	574	574	574	578	578	578		
.09	\$	641	641	645	645	645	645	645	645	645	650	650	650		
.10	\$	707	707	712	712	712	712	712	712	712	716	716	716		
.12	\$	850	850	854	854	854	854	854	854	854	859	859	859		
40,000	\$	596	654	716	774	832	894	952	1015	1073	1193	1313	1433		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	244	249	249	249	249	253	253	253	253	258	258	262		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR                       
.04	\$	325	329	329	329	329	333	333	333	333	338	338	342		
.05	\$	400	405	405	405	405	409	409	409	409	414	414	418		
.06	\$	480	485	485	485	485	489	489	489	489	494	494	498		
.07	\$	561	565	565	565	565	569	569	569	569	574	574	578		
.08	\$	636	641	641	641	641	645	645	645	645	650	650	654		
.09	\$	716	721	721	721	721	725	725	725	725	730	730	734		
.10	\$	797	801	801	801	801	805	805	805	805	810	810	814		
.12	\$	952	957	957	957	957	961	961	961	961	966	966	970		
50,000	\$	743	819	894	970	1041	1117	1193	1269	1344	1491	1643	1789	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	307	311	316	316	320	325	325	329	333	338	342	347	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR                       	
.04	\$	400	405	409	409	414	418	418	423	427	431	436	440		
.05	\$	494	498	503	503	507	512	512	516	520	525	529	534		
.06	\$	587	592	596	596	601	605	605	610	614	618	623	627		
.07	\$	681	685	690	690	694	699	699	703	707	712	716	721		
.08	\$	774	779	783	783	788	792	792	797	801	805	810	814		
.09	\$	868	872	877	877	881	886	886	890	894	899	903	908		
.10	\$	961	966	970	970	975	979	979	984	988	992	997	1001		
.12	\$	1148	1153	1157	1157	1162	1166	1166	1171	1175	1179	1184	1188		
60,000	\$	894	984	1073	1162	1251	1344	1433	1522	1611	1789	1972	2150		<--THEORETICAL HEATING COST * FURNACE ONLY
.03	\$	382	387	396	400	409	414	423	427	431	445	458	471		THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR                       
.04	\$	489	494	503	507	516	520	529	534	538	552	565	578		
.05	\$	592	596	605	610	618	623	632	636	641	654	667	681		
.06	\$	699	703	712	716	725	730	739	743	748	761	774	788		
.07	\$	805	810	819	823	832	837	846	850	854	868	881	894		
.08	\$	908	912	921	926	935	939	948	952	957	970	984	997		
.09	\$	1015	1019	1028	1033	1041	1046	1055	1059	1064	1077	1090	1104		
.10	\$	1122	1126	1135	1139	1148	1153	1162	1166	1171	1184	1197	1211		
.12	\$	1331	1335	1344	1349	1358	1362	1371	1375	1380	1393	1407	1420		
70,000	\$	1041	1148	1251	1358	1460	1567	1669	1776	1879	2088	2297	2506	<--THEORETICAL HEATING COST * FURNACE ONLY	
.03	\$	471	480	494	507	520	534	547	561	569	596	623	650	THEORETICAL HEATING COST * FURN.+ HEAT PUMP \$ PER YEAR                       	
.04	\$	587	596	610	623	636	650	663	676	685	712	739	765		
.05	\$	699	707	721	734	748	761	774	788	797	823	850	877		
.06	\$	814	823	837	850	863	877	890	903	912	939	966	992		
.07	\$	930	939	952	966	979	992	1006	1019	1028	1055	1082	1108		
.08	\$	1041	1050	1064	1077	1090	1104	1117	1130	1139	1166	1193	1220		
.09	\$	1157	1166	1179	1193	1206	1220	1233	1246	1255	1282	1309	1335		
.10	\$	1273	1282	1295	1309	1322	1335	1349	1362	1371	1398	1424	1451		
.12	\$	1500	1509	1522	1536	1549	1562	1576	1589	1598	1625	1651	1678		

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 206	275	344	413	482	551	619	688	826	<--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 3  
 HEAT PUMP MODEL: OUTDOOR 48HP02 SEER 8 INDOOR H5A0  
 ARI RATED COOLING CAP.: BTUH 795 COP 2.500  
 ARI RATED HEATING CAP.: BTUH (47) 2008 COP (7) 2.100 HSPF 6.15 MIN.DHR REG IV  
 BTUH (17) 2600 COP (17) 1.87  
 FURNACE TYPE PROPANE GAS FURNACE EFFICIENCY 65.00% AEUE

HEAT LOSS BTUH	ELEC. COST \$/KWH	.60	.65	.70	PROPANE .75	PROPANE .80	GAS COST .85	GAS COST .90	GAS COST .95	%GALLDN 1.00	1.10	1.20	1.20	
35,000		\$ 476	516	556	596	636	676	716	756	797	872	952	952	<--THEORETICAL HEATING COST * FURNACE ONLY
	.03	\$ 218	218	218	218	222	222	222	222	222	222	222	222	
	.04	\$ 284	284	284	284	289	289	289	289	289	289	289	289	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
	.05	\$ 356	356	356	356	360	360	360	360	360	360	360	360	\$ PER YEAR
	.06	\$ 427	427	427	427	431	431	431	431	431	431	431	431	
	.07	\$ 498	498	498	498	503	503	503	503	503	503	503	503	
	.08	\$ 569	569	569	569	574	574	574	574	574	574	574	574	
	.09	\$ 641	641	641	641	645	645	645	645	645	645	645	645	
	.10	\$ 707	707	707	707	712	712	712	712	712	712	712	712	
	.12	\$ 850	850	850	850	854	854	854	854	854	854	854	854	BALANCE POINT 17 DEG.F.
40,000		\$ 543	592	636	681	725	770	819	863	908	1001	1090	1090	<--THEORETICAL HEATING COST * FURNACE ONLY
	.03	\$ 244	244	249	249	249	249	249	253	253	253	253	253	
	.04	\$ 325	325	329	329	329	329	333	333	333	333	333	333	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
	.05	\$ 400	400	405	405	405	405	409	409	409	409	409	409	\$ PER YEAR
	.06	\$ 480	480	485	485	485	485	489	489	489	489	489	489	
	.07	\$ 561	561	565	565	565	565	569	569	569	569	569	569	
	.08	\$ 636	636	641	641	641	641	645	645	645	645	645	645	
	.09	\$ 716	716	721	721	721	721	725	725	725	725	725	725	
	.10	\$ 797	797	801	801	801	801	805	805	805	805	805	805	
	.12	\$ 952	952	957	957	957	957	961	961	961	961	961	961	BALANCE POINT 20 DEG.F.
50,000		\$ 681	739	797	850	908	966	1024	1082	1135	1251	1362	1362	<--THEORETICAL HEATING COST * FURNACE ONLY
	.03	\$ 307	307	311	311	316	316	320	320	325	329	333	333	
	.04	\$ 400	400	405	405	409	409	414	414	419	423	427	427	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
	.05	\$ 494	494	498	498	503	503	507	507	512	516	520	520	\$ PER YEAR
	.06	\$ 587	587	592	592	596	596	601	601	605	610	614	614	
	.07	\$ 681	681	685	685	690	690	694	694	699	703	707	707	
	.08	\$ 774	774	779	779	783	783	788	788	792	797	801	801	
	.09	\$ 868	868	872	872	877	877	881	881	886	890	894	894	
	.10	\$ 961	961	966	966	970	970	975	975	979	984	988	988	
	.12	\$ 1148	1148	1153	1153	1157	1157	1162	1162	1166	1171	1175	1175	BALANCE POINT 26 DEG.F.
60,000		\$ 819	886	952	1024	1090	1157	1228	1295	1362	1500	1638	1638	<--THEORETICAL HEATING COST * FURNACE ONLY
	.03	\$ 374	382	387	391	396	400	405	409	414	427	436	436	
	.04	\$ 480	489	494	498	503	507	512	516	520	534	543	543	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
	.05	\$ 583	592	596	601	605	610	614	618	623	636	645	645	\$ PER YEAR
	.06	\$ 690	699	703	707	712	716	721	725	730	743	752	752	
	.07	\$ 797	805	810	814	819	823	828	832	837	850	859	859	
	.08	\$ 899	908	912	917	921	926	930	935	939	952	961	961	
	.09	\$ 1006	1015	1019	1024	1028	1033	1037	1041	1046	1059	1068	1068	
	.10	\$ 1113	1122	1126	1130	1135	1139	1144	1148	1153	1166	1175	1175	
	.12	\$ 1322	1331	1335	1340	1344	1349	1353	1358	1362	1375	1384	1384	BALANCE POINT 31 DEG.F.
70,000		\$ 952	1033	1113	1193	1273	1353	1433	1513	1594	1749	1910	1910	<--THEORETICAL HEATING COST * FURNACE ONLY
	.03	\$ 458	467	480	489	498	507	516	525	538	556	574	574	
	.04	\$ 574	583	596	605	614	623	632	641	654	672	690	690	THEORETICAL HEATING COST * FURN.+ HEAT PUMP
	.05	\$ 685	694	707	716	725	734	743	752	765	783	801	801	\$ PER YEAR
	.06	\$ 801	810	823	832	841	850	859	868	881	899	917	917	
	.07	\$ 917	926	939	948	957	966	975	984	997	1015	1033	1033	
	.08	\$ 1028	1037	1050	1059	1068	1077	1086	1095	1108	1126	1144	1144	
	.09	\$ 1144	1153	1166	1175	1184	1193	1202	1211	1224	1242	1260	1260	
	.10	\$ 1260	1269	1282	1291	1300	1309	1317	1326	1340	1358	1375	1375	
	.12	\$ 1487	1496	1509	1518	1527	1536	1545	1553	1567	1585	1602	1602	BALANCE POINT 34 DEG.F.

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

	.03	.04	.05	.06	.07	.08	.09	.10	.12	
	\$ 206	275	344	413	482	551	619	688	826	<--ELECTRIC RATE \$/KWH
										<--THEORETICAL AIR CONDITIONING COST

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