

# **ENERGYGUIDE**

## **EXTRA HIGH EFFICIENCY GROUND WATER HEAT PUMP**

### **MODELS**

**WPV30B**

**WPV36B**

**WPV53B**

**WPV62B**

**BARD MANUFACTURING COMPANY, BOX 607, BRYAN, OHIO 43506**

**(419) 636-1194**

**MANUAL 2100-185 REV.  
SUPERSEDES REV.**

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BRYAN, OHIO

## ENERGYGUIDE INFORMATION

The cost grids on the fact sheets are based upon representative incremental rates that should correspond to the type of fuel being considered.

**IMPORTANT:** All cost grid data are "estimated yearly operating costs". Your actual yearly operating costs are dependent upon such factors as weather severity, routine maintenance items affecting operating efficiency (filters, blowers, etc.), actual heat loss of structure, desired indoor temperatures, living patterns of the occupants, and other items affecting operating time of the heating appliance.

To use the cost grids, it is necessary to know the heat loss of your home or building and the energy rate for your area. If not already know, the heat loss can be calculated by the dealer, builder, architect, etc., and the current energy rates obtained from the appropriate local utility.

Even without the specific information listed above, the cost of operation of competitive models can be compared by using similarly rated input models and their respective fact sheets and using the same heat loss of house and energy cost values on each fact sheet.

An example of how to use the enclosed information is as follows:

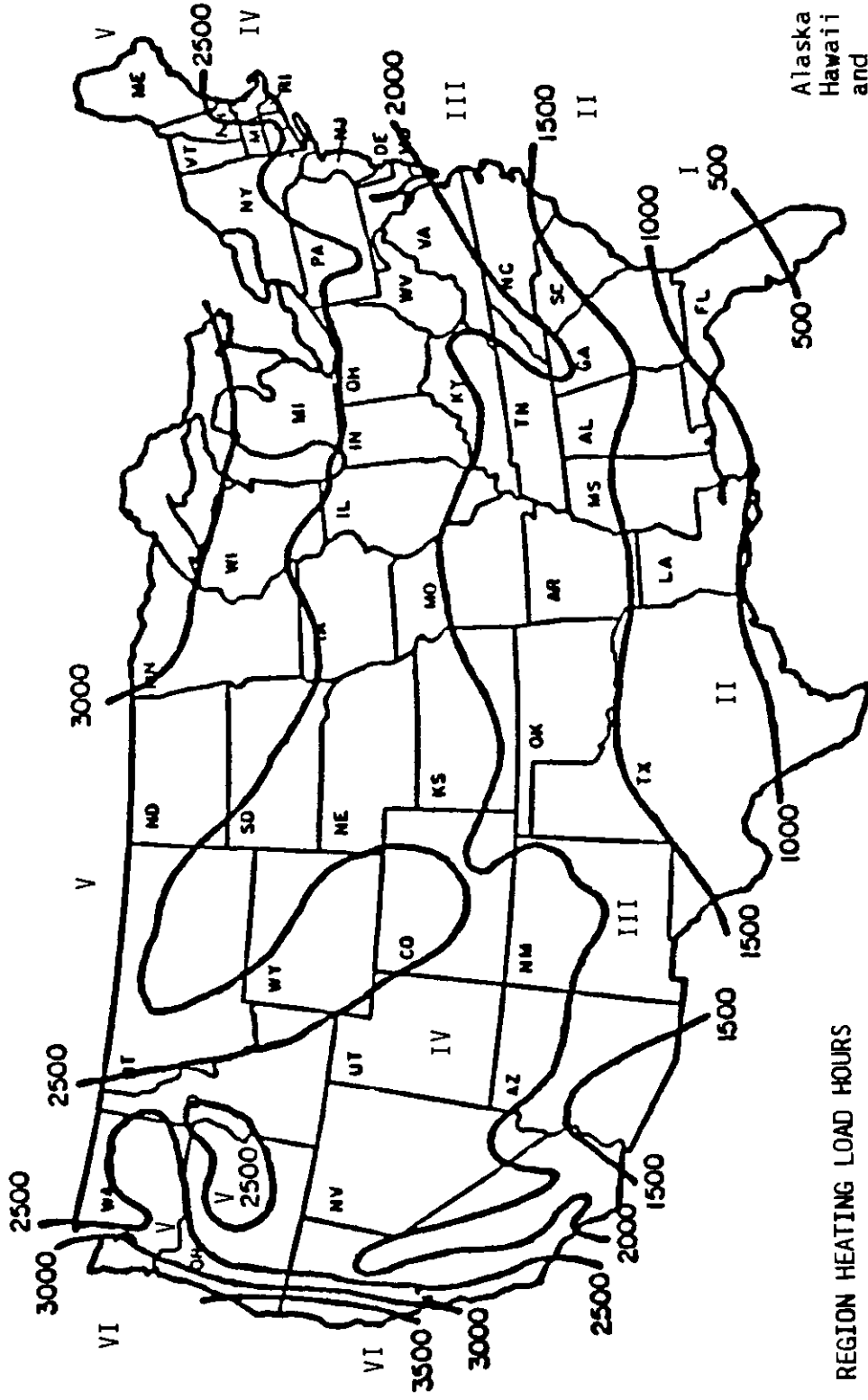
Geographic Location:	Ohio--From Region Map: Region IV
Heat Loss of Building:	70,000 Btu/h
Heat Appliance Model Desired:	WPV53B

Consulting the Region IV cost grid (1) and moving down the 70,000 Btu/h (2) column to the \$.110 cost per kilowatt hour line (closest value to actual cost determined by contacting local utility) (3), the estimated cost per year to operate is \$1,437.00.(4)

		* HEAT LOSS OF HOUSE (1000 BTU HR) *				
		40	50	60	70(2)	80
		* ESTIMATED \$ PER YEAR TO OPERATE *				
Cost	\$.050	386	470	554	653	770
Per	\$.070	541	658	776	915	1078
Kilowatt	\$.090	695	846	998	1176	1386
Hour	\$.110(3)	850	1034	1219	1437(4)	1693
	\$.130	1004	1222	1441	1698	2001
	\$.150	1158	1409	1662	1959	2309

\$Cost based on region (1)
Heating load hours (2250)

ACTUAL HEATING LOAD HOURS (HLH<sub>A</sub>) AND REGIONAL HEATING LOAD HOURS (HLH<sub>R</sub>) FOR THE UNITED STATES



Alaska -- 3500 HLH  
 Hawaii -- 0 HLH  
 and  
 Territories

REGION HEATING LOAD HOURS

Region	HLHr
I	750
II	1250
III	1750
IV	2250
V	2750
VI	2750

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

**BARD MANUFACTURING COMPANY  
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**EXTRA HIGH EFFICIENCY  
GROUND WATER HEAT PUMP**

MODEL WPV30B

Cooling and Heating Capacity  
And Efficiency At  
4 Gallons Per Minute  
(GPM Water Flow)

Ground Water Temp of	COOLING	
	BTUH (1)	EER (2) EER
50°	<u>31000</u>	<u>16.1 13.8</u>
70°	<u>27400</u>	<u>12.7 11.0</u>

of	HEATING	
	BTUH (1)	COP (2) COP
50°	<u>23400</u>	<u>3.43 2.9</u>
70°	<u>30000</u>	<u>3.91 3.4</u>

(1) Unit only rating without well water pump watts included.

(2) Unit rating which includes watt allowance for water pumping in accordance with ARI Standard 325.

**ESTIMATED ANNUAL HEATING CO  
BASED ON AVERAGE GROUND WATER  
TEMPERATURES IN EACH REGION**

	* HEAT LOSS OF HOUSE(1000 BTU HR) *		
	10	15	20
COST	\$ .050	47	61
PER	\$ .070	66	85
KILOWATT	\$ .090	85	109
PER	\$ .110	103	133
HOURLY	\$ .130	122	158
	\$ .150	141	182
		97	125

\* ESTIMATED \$ PER YEAR TO OPERATE \*

\$ COST BASED ON REGION (1) HEATING LOAD HRS. ( 750)

	* HEAT LOSS OF HOUSE(1000 BTU HR) *		
	15	20	25
COST	\$ .050	79	102
PER	\$ .070	110	142
KILOWATT	\$ .090	141	183
PER	\$ .110	173	223
HOURLY	\$ .130	204	272
	\$ .150	235	304

\* ESTIMATED \$ PER YEAR TO OPERATE \*

\$ COST BASED ON REGION (2) HEATING LOAD HRS. ( 1250)

	* HEAT LOSS OF HOUSE(1000 BTU HR) *		
	15	20	30
COST	\$ .050	111	144
PER	\$ .070	155	201
KILOWATT	\$ .090	199	258
PER	\$ .110	243	315
HOURLY	\$ .130	287	372
	\$ .150	332	430

\* ESTIMATED \$ PER YEAR TO OPERATE \*

\$ COST BASED ON REGION (3) HEATING LOAD HRS. ( 1750)

	* HEAT LOSS OF HOUSE(1000 BTU HR) *		
	20	25	30
COST	\$ .050	188	229
PER	\$ .070	262	320
KILOWATT	\$ .090	337	411
PER	\$ .110	412	502
HOURLY	\$ .130	487	593
	\$ .150	562	684

\* ESTIMATED \$ PER YEAR TO OPERATE \*

\$ COST BASED ON REGION (4) HEATING LOAD HRS. ( 2250)

	* HEAT LOSS OF HOUSE(1000 BTU HR) *		
	20	25	30
COST	\$ .050	255	312
PER	\$ .070	357	436
KILOWATT	\$ .090	459	561
PER	\$ .110	560	685
HOURLY	\$ .130	662	810
	\$ .150	764	934

\* ESTIMATED \$ PER YEAR TO OPERATE \*

\$ COST BASED ON REGION (5) HEATING LOAD HRS. ( 2750)

These are estimated costs only, presented for comparison purposes and may vary due to actual water temperature, accuracy of heating load estimates and individual living patterns.

**BARD MANUFACTURING COMPANY**  
**BRYAN, OHIO 43506**

**EXTRA HIGH EFFICIENCY  
GROUND WATER HEAT PUMP**

MODEL WPV36B

Cooling and Heating Capacity  
And Efficiency At  
5 Gallons Per Minute  
(GPM Water Flow)

Ground Water Temp °F	COOLING	
	BTUH (1) EER (2)	EER
50°	<u>41000</u>	<u>15.6</u> 13.7
70°	<u>36000</u>	<u>12.1</u> 10.8

°F	HEATING	
	BTUH (1) COP (2)	COP
50°	<u>33600</u>	<u>3.39</u> 3.0
70°	<u>42000</u>	<u>3.79</u> 3.3

(1) Unit only rating without well water pump watts included.

(2) Unit rating white includes watt allowance for water pumping in accordance with ARI Standard 325.

**ESTIMATED ANNUAL HEATING COST  
BASED ON AVERAGE GROUND WATER  
TEMPERATURES IN EACH REGION**

\* HEAT LOSS OF HOUSE(1000 BTU HR) \*

	15	20	25	30
COST PER KILOWATT HOUR	\$ .050	\$ .070	\$ .090	\$ .110
HEATING LOAD HRS. ( 750)	48	63	77	91
ESTIMATED \$ PER YEAR TO OPERATE *	2.40	4.29	6.03	8.19

\* HEAT LOSS OF HOUSE(1000 BTU HR) \*

	20	25	30	35	40
COST PER KILOWATT HOUR	\$ .050	\$ .070	\$ .090	\$ .110	\$ .130
HEATING LOAD HRS. ( 1250)	105	129	151	173	196
ESTIMATED \$ PER YEAR TO OPERATE *	5.25	9.04	13.65	19.02	25.44

\* HEAT LOSS OF HOUSE(1000 BTU HR) \*

	25	30	35	40	50
COST PER KILOWATT HOUR	\$ .050	\$ .070	\$ .090	\$ .110	\$ .130
HEATING LOAD HRS. ( 1750)	182	214	245	276	342
ESTIMATED \$ PER YEAR TO OPERATE *	9.10	14.98	22.05	30.32	44.58

\* HEAT LOSS OF HOUSE(1000 BTU HR) \*

	30	35	40	50	60
COST PER KILOWATT HOUR	\$ .050	\$ .070	\$ .090	\$ .110	\$ .130
HEATING LOAD HRS. ( 2250)	280	320	360	445	551
ESTIMATED \$ PER YEAR TO OPERATE *	14.00	22.40	32.40	48.98	72.06

\* HEAT LOSS OF HOUSE(1000 BTU HR) \*

	30	35	40	50	60	70
COST PER KILOWATT HOUR	\$ .050	\$ .070	\$ .090	\$ .110	\$ .130	\$ .150
HEATING LOAD HRS. ( 2750)	380	437	493	607	741	906
ESTIMATED \$ PER YEAR TO OPERATE *	19.00	30.61	44.37	66.70	96.68	135.90

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**EXTRA HIGH EFFICIENCY  
GROUND WATER HEAT PUMP**

MODEL WPV53B

Cooling and Heating Capacity  
And Efficiency At  
6 Gallons Per Minute  
(GPM Water Flow)

		<b>COOLING</b>	
Ground Water Temp °F	<u>BTUH (1) EER (2) EER</u>		
50°	<u>56000</u>	<u>16.1</u>	<u>13.4</u>
70°	<u>51000</u>	<u>12.7</u>	<u>10.8</u>
		<b>HEATING</b>	
°F	<u>BTUH (1) COP (2) COP</u>		
50°	<u>44500</u>	<u>3.43</u>	<u>3.0</u>
70°	<u>57000</u>	<u>3.91</u>	<u>3.3</u>

(1) Unit only rating without well water pump watts included.

(2) Unit rating which includes watt allowance for water pumping in accordance with ARI Standard 325.

**ESTIMATED ANNUAL HEATING COST  
BASED ON AVERAGE GROUND WATER  
TEMPERATURES IN EACH REGION**

		* HEAT LOSS OF HOUSE(1000 BTU HR) *				
		20	25	30	35	
		* ESTIMATED \$ PER YEAR TO OPERATE *				
COST PER KILOWATT HOUR	\$ .050	67	82	97	111	
	\$ .070	94	115	136	156	
	\$ .090	120	148	174	200	
	\$ .110	147	180	213	244	
	\$ .130	173	213	251	288	
	\$ .150	200	246	290	333	
\$ COST BASED ON REGION (1)		HEATING LOAD HRS. ( 750)				

		* HEAT LOSS OF HOUSE(1000 BTU HR) *				
		25	30	35	40	
		* ESTIMATED \$ PER YEAR TO OPERATE *				
COST PER KILOWATT HOUR	\$ .050	137	162	186	209	
	\$ .070	192	227	260	293	
	\$ .090	247	291	335	377	
	\$ .110	301	356	409	460	
	\$ .130	356	421	483	544	
	\$ .150	411	485	557	627	
\$ COST BASED ON REGION (2)		HEATING LOAD HRS. ( 1250)				

		* HEAT LOSS OF HOUSE(1000 BTU HR) *				
		35	40	50	60	
		* ESTIMATED \$ PER YEAR TO OPERATE *				
COST PER KILOWATT HOUR	\$ .050	263	296	360	427	
	\$ .070	367	414	504	597	
	\$ .090	472	532	648	767	
	\$ .110	577	650	792	938	
	\$ .130	682	768	936	1108	
	\$ .150	787	886	1080	1279	
\$ COST BASED ON REGION (3)		HEATING LOAD HRS. ( 1750)				

		* HEAT LOSS OF HOUSE(1000 BTU HR) *				
		40	50	60	70	
		* ESTIMATED \$ PER YEAR TO OPERATE *				
COST PER KILOWATT HOUR	\$ .050	386	470	554	653	
	\$ .070	541	658	776	915	
	\$ .090	695	846	998	1178	
	\$ .110	850	1034	1219	1437	
	\$ .130	1004	1222	1441	1698	
	\$ .150	1158	1409	1662	1959	
\$ COST BASED ON REGION (4)		HEATING LOAD HRS. ( 2250)				

		* HEAT LOSS OF HOUSE(1000 BTU HR) *				
		40	50	60	70	
		* ESTIMATED \$ PER YEAR TO OPERATE *				
COST PER KILOWATT HOUR	\$ .050	523	639	755	879	
	\$ .070	732	895	1057	1231	
	\$ .090	941	1150	1359	1582	
	\$ .110	1150	1406	1661	1934	
	\$ .130	1359	1661	1963	2285	
	\$ .150	1568	1917	2265	2636	
\$ COST BASED ON REGION (5)		HEATING LOAD HRS. ( 2750)				

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**EXTRA HIGH EFFICIENCY  
GROUND WATER HEAT PUMP**

MODEL WPV62B

Cooling and Heating Capacity  
And Efficiency At  
8 Gallons Per Minute  
(GPM Water Flow)

Ground Water Temp °F	COOLING	
	BTUH (1)	EER (2) EER
50°	<u>64000</u>	<u>14.1 12.5</u>
70°	<u>59000</u>	<u>11.2 10.0</u>

°F	HEATING	
	BTUH (1)	COP (2) COP
50°	<u>52000</u>	<u>3.03 2.7</u>
70°	<u>67000</u>	<u>3.29 3.0</u>

(1) Unit only rating without well water pump watts included.

(2) Unit rating which includes watt allowance for water pumping in accordance with ARI Standard 325.

**ESTIMATED ANNUAL HEATING COST  
BASED ON AVERAGE GROUND WATER  
TEMPERATURES IN EACH REGION**

COST PER KILOWATT HOUR	* HEAT LOSS OF HOUSE(1000 BTU HR) *			
	20	25	30	35
\$ .050	73	89	106	121
\$ .070	102	125	148	170
\$ .090	130	160	190	218
\$ .110	159	196	232	267
\$ .130	188	232	274	315
\$ .150	217	267	316	363
\$ COST BASED ON REGION (1)	HEATING LOAD HRS. ( 750)			
				40

COST PER KILOWATT HOUR	* HEAT LOSS OF HOUSE(1000 BTU HR) *			
	30	35	40	50
\$ .050	177	203	229	279
\$ .070	247	284	320	390
\$ .090	317	365	412	502
\$ .110	388	446	503	613
\$ .130	458	527	595	724
\$ .150	529	608	686	836
\$ COST BASED ON REGION (2)	HEATING LOAD HRS. ( 1250)			
				60

COST PER KILOWATT HOUR	* HEAT LOSS OF HOUSE(1000 BTU HR) *			
	40	50	60	70
\$ .050	323	394	463	534
\$ .070	452	551	648	747
\$ .090	581	708	833	960
\$ .110	710	866	1018	1174
\$ .130	839	1023	1203	1387
\$ .150	968	1180	1388	1600
\$ COST BASED ON REGION (3)	HEATING LOAD HRS. ( 1750)			
				80

COST PER KILOWATT HOUR	* HEAT LOSS OF HOUSE(1000 BTU HR) *			
	50	60	70	80
\$ .050	514	603	693	795
\$ .070	719	843	970	1113
\$ .090	924	1084	1247	1431
\$ .110	1129	1325	1523	1749
\$ .130	1335	1566	1800	2067
\$ .150	1540	1807	2077	2385
\$ COST BASED ON REGION (4)	HEATING LOAD HRS. ( 2250)			
				90

COST PER KILOWATT HOUR	* HEAT LOSS OF HOUSE(1000 BTU HR) *			
	50	60	70	80
\$ .050	689	812	934	1062
\$ .070	965	1136	1307	1487
\$ .090	1240	1460	1681	1912
\$ .110	1515	1785	2054	2336
\$ .130	1791	2109	2428	2761
\$ .150	2066	2434	2801	3186
\$ COST BASED ON REGION (5)	HEATING LOAD HRS. ( 2750)			
				90

These are estimated costs only, presented for comparison purposes and may vary due to actual water temperature, accuracy of heating load estimates and individual living patterns.