

AUGUST 1, 2007

**CONSUMERS' DIRECTORY
OF
CERTIFIED EFFICIENCY RATINGS**

for

Heating and Water Heating Equipment

INCLUDES:

RESIDENTIAL HEATING EQUIPMENT

- Gas Central Furnaces
- Oil Central Furnaces
- Gas Boilers
- Oil Boilers
- Gas Room Heaters
- Gas Floor Furnaces
- Gas Wall Furnaces

COMMERCIAL HEATING EQUIPMENT

- Gas Central Furnaces
- Oil Central Furnaces

RESIDENTIAL WATER HEATING EQUIPMENT

- Gas Water Heaters
- Oil Water Heaters
- Electric Water Heaters
including Heat Pump Type

COMMERCIAL WATER HEATING EQUIPMENT

- Gas Water Heaters
- Oil Water Heaters
- Electric Water Heaters



An Association of Appliance and Equipment Manufacturers

"Chapter I and Chapter III (Sections 1 - 3) of this directory have been approved by the California Energy Commission (CEC) for determining compliance with its energy efficiency standards for buildings. (See Section 100 (g), title 24, California Code of Regulations). For information about models for sale in California that are beyond the scope of the GAMA program or are produced by manufacturers that have chosen not to participate in the GAMA program, please call the CEC Hotline at (916) 654-5106 or (toll free in California) at (800) 772-3300."



AUGUST 1, 2007
CONSUMERS DIRECTORY OF
CERTIFIED EFFICIENCY RATINGS
FOR RESIDENTIAL HEATING
AND WATER HEATING
EQUIPMENT AND COMMERCIAL
WATER HEATING EQUIPMENT

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NOTE: A more detailed Table of Contents for each chapter will be found on the pages shown above.

FOREWORD

The Gas Appliance Manufacturers Association (GAMA) is a national trade association whose members manufacture over 90 percent of all the residential, commercial and industrial gas appliances made in the United States. GAMA also represents manufacturers of certain products that use oil or electricity as their energy source. There are a number of product divisions within GAMA. Four of those, the Furnace Division, Hydronics Institute Division, Direct Heating Division and Water Heater Division, have developed separate efficiency certification programs which verify manufacturers' equipment efficiency ratings in accordance with federally mandated test procedures.

The GAMA Furnace and Hydronics Institute Divisions sponsor the certification program for residential gas and oil central furnaces and boilers. The GAMA Direct Heating Division sponsors the efficiency certification program for vented gas room heaters, floor furnaces and wall furnaces. The GAMA Water Heater Division sponsors the efficiency certification program for residential gas, oil, electric (including heat pump type) water heaters, and commercial water heaters. Each of these programs operates independently of each other. This Directory lists the models for all participating manufacturers in each of the programs. The following is the format for those listings:

- CHAPTER I Gas and Oil Central Heating Equipment
- CHAPTER II Gas Vented Direct Heating Equipment
- CHAPTER III Gas, Oil, Electric, Combination, & Instantaneous Water Heaters
- CHAPTER IV Commercial Gas, Oil, Electric, & Instantaneous Water Heaters
- CHAPTER V Commercial Gas and Oil Central Heating Equipment

Each participant in the GAMA Efficiency Certification Program is entitled to display the GAMA Certification Symbol (Seal), Figure 1, on units of models covered by the program. The seal may be affixed to the unit only at the time and place of manufacture. The seal may also be displayed on specification sheets, advertising and on other literature that either specifies ratings or claims participation in the program. The seal and listing in this Directory are an indication that the equipment's efficiency rating as well as output heating capacity for heating equipment and first hour rating for water heating equipment have been determined and are accurately stated in accordance with the applicable efficiency test method; no other warranty, representation, endorsement or other statement, expressed or implied, is made.

Figure 1. GAMA Certification Seal



**CHAPTER III
GAS, OIL AND ELECTRIC WATER HEATERS, AND COMBINATION WATER HEATERS/SPACE HEATERS
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USE OF CHAPTER III AND DESCRIPTION OF GAMA WATER HEATER EFFICIENCY CERTIFICATION PROGRAM

Introduction

This chapter will assist the dealer in selling, and the consumer in selecting, the best water heating buy. The best buy is always a properly sized unit since with an undersized unit there will be times of insufficient hot water and oversized units are more costly to buy and operate. Once the proper size is determined, the best buy is almost always a more efficient unit which will usually cost more to purchase but less to operate.

How the Chapter is Set up

This Chapter is divided into sections based on the type of residential water heater: gas, oil, electric, heat pump with a storage tank, heat pump without a storage tank, and combination water heaters/space heaters. The columns of each listing (shown below*) provide the essential information needed to select an efficient and properly sized water heater.

*(with the exception of the combination listing)

Model Number (1)	Footnotes (2)	1st Hour Rating (3)	Energy Factor (4)
---------------------	------------------	---------------------------	-------------------------

- Column 1 Model Number identifies each model. (The model number on a water heater can be found on the manufacturer's nameplate.)
- Column 2 Footnotes further identify the model or its intended use.
- Column 3 1st Hour Rating is a measure of the water heater's ability to provide hot water.
- Column 4 Energy Factor is a measure of the overall efficiency rating of the water heater.

For gas and oil models, the last column lists recovery efficiency. The recovery efficiency only represents how efficiently energy is transferred to the water when the burner is firing. It should not be used in place of the Energy Factor to compare water heater efficiencies. Recovery efficiencies for electric models are not listed because they have a recovery efficiency of 98%.

How to Use This Chapter

The First Hour Rating and Energy Factor (EF) can be used to select the right size water heater for your needs and, at the same time, select an energy efficient model.

FIRST: Find the right size water heater for your needs by finding those models with a First Hour Rating that matches (within one or two gallons) your peak hour demand.

To estimate your peak hour demand:

1. Determine during what general time of day (morning, noon, evening) there is usually the most use of hot water in your home, keeping in mind the number of people in your home.
2. Using the following table, determine what your maximum usage of hot water in one hour could be; this is your peak hour demand:

NOTE: This table does not estimate total daily hot water usage. As an example, an average of 4 gallons of hot water is used each time dishes are washed by hand but, dishes washed by hand are usually done 3 times a day. The average daily hot water usage for hand dishwashing, 12 gallons, is about the same as the average hot water usage for an automatic dishwasher, used once a day.

<u>Use</u>	<u>Average Gallons of Hot Water per Usage</u>		<u>Times Used During One Hour</u>	=	<u>Gallons Used in One Hour</u>
Shower	20	x	_____	=	_____
Bath	20	x	_____	=	_____
Shaving	2	x	_____	=	_____
Hands and Face Washing	4	x	_____	=	_____
Hair Shampoo	4	x	_____	=	_____
Hand Dishwashing	4	x	_____	=	_____
Automatic Dishwasher	14	x	_____	=	_____
Food Preparation	5	x	_____	=	_____
Wringer Clothes Washer	26	x	_____	=	_____
Automatic Clothes Washer	32	x	_____	=	_____
TOTAL (Peak Hour Demand)					=====

EXAMPLE: Your household uses the most hot water in the morning. In the busiest one hour period of the morning, the usage is

$$\begin{array}{r}
 3 \text{ showers} - 20 \times 3 = 60 \\
 1 \text{ shave} - 2 \times 1 = 2 \\
 1 \text{ shampoo} - 4 \times 1 = 4 \\
 \text{Handwashing} \\
 \text{of Dishes} - 4 \times 1 = \underline{4} \\
 \text{(Peak Hour Demand)} \quad 70
 \end{array}$$

In this case, the peak hour demand is 70 gallons and you should look in the third column of each listing for those models of water heaters with a first hour rating of 68 to 72 gallons.

NOTE: Models under each manufacturer's name are listed from the lowest to the highest first hour rating.

SECOND: Look at the EF listed in the fourth column for those models that have the first hour rating that you need. The higher the EF, the more energy efficient the water heater. The EF can be used to estimate a yearly cost of operation for a water heater. Tables 1 through 5 provide estimated yearly costs of operation for various fuel costs and various Energy Factors. Once you know the cost of fuel in your area, you can find the estimated annual cost of operation for any model using its EF and the appropriate table. (The cost of fuel in your area should be available from your fuel supplier.)

EXAMPLE:

	<u>Fuel Cost</u> (Per Therm)	<u>Energy Factor</u>			
		.54	.55	.56	.57
1.08	\$300	\$294	\$289	\$284	\$279
1.10	\$305	\$300	\$294	\$289	
1.12	\$311	\$305	\$300		
1.14	\$316	\$311			
1.16	\$322				

(Excerpt from Table 1. Estimated Annual Operating Cost for Gas Water Heater using Natural Gas)

At a fuel cost of \$1.10/therm, a gas water heater with an EF of .55 has an estimated annual operating cost of \$300.

If your choice of water heater is restricted to one fuel type (gas, oil or electric), you need only compare the EF values for that type. If you have a choice of more than one type of water heater, you should compare both the EF and the estimated cost of operation for the fuel rates in your area for each type of water heater that you can use. In all cases, keep in mind that the determination of the EF is based on a particular set of test conditions. Actual conditions of water heater use in a residence will differ from these test conditions. Consequently, the actual annual cost of operation will differ from the values on Tables 1 through 5.

THIRD: Determine the payback period. Doing this will help you decide what model water heater is most economical for you. Tables 1 through 5 illustrate that the higher the EF, the lower the annual operating cost. However, a more efficient water heater generally has a higher purchase price. Therefore, there is a period of time before the savings in the lower operating cost of a more efficient water heater make up for the increased price of that water heater as compared to a less efficient water heater, this is the payback period. It is only after the payback period that you obtain a net savings with the more efficient water heater.

Accordingly, the shorter the payback period, the better.

EXAMPLE: Assume you are intending to buy a gas water heater and your local gas cost is .60 per therm. You are comparing two water heaters, Model A and Model B, which both have the same first hour rating.

	<u>Price of</u> <u>Water Heater</u>	<u>EF</u>	<u>Estimated Annual</u> <u>Cost of Operation</u>
Model A	\$165	.54	\$166
Model B	\$210	.58	\$155
Additional Cost of More Efficient Model (Model B)			\$210-165 = \$45
Estimated Annual Savings in Operating cost for Model B			\$166-155 = \$11 (per year)
Payback Period			\$45/\$11 per year = 4.1 years

NOTE: As fuel prices increase, the greater the savings obtained from a more efficient water heater and the shorter the payback period becomes.

Information About the GAMA Water Heater Efficiency Certification Program

Chapter III is a product of the Water Heater Efficiency Certification Program sponsored by the Gas Appliance Manufacturers Association, Inc. (GAMA) in cooperation with its industry members. The GAMA Water Heater Efficiency Certification Program provides for independent verification of the water heater manufacturer's stated efficiency rating, represented by the Energy Factor (EF). The complete details of the GAMA Water Heater Efficiency Certification Program are contained in the Program Procedural Guide which is available from GAMA.

Testing Laboratories and Test Procedures

Intertek Testing Services of Cortland, New York, has been retained as the program administrator and independent testing laboratory responsible for conducting efficiency verification tests on water heaters. Randomly selected units of residential gas, electric and oil water heaters are tested in accordance with the U.S. Department of Energy (DOE) Test Procedure for Water Heaters as published in the May 11, 1998 Federal Register Notice, to verify the Energy Factor and First Hour Rating. Federal law requires that manufacturers' efficiency claims be based on Department of Energy test procedures; the Energy Factor is the descriptor that is determined by those test procedures. Copies of the water heater test procedure are available from GAMA.

In October 1990, DOE issued the following amended federal minimum efficiency requirements for residential water heaters which are based on the test procedures.

<u>Type</u>	<u>Minimum Energy Factor</u>
Gas-fired	0.67 – 0.0019V
Oil-fired	0.59 – 0.0019V
Electric	0.97 – 0.00132V
Tabletop	0.93 – 0.00132V
Instantaneous Gas-fired	0.62 – 0.0019V
Instantaneous Electric	0.93 – 0.00132V

Where "V" = Rated Volume

Use of Heat Traps

The listings in this Directory include water heater models factory equipped with heat traps on the inlet and outlet water connections. The efficiency (Energy Factor) of models not factory equipped with heat traps and having vertical water pipe connections can be increased by the addition of heat traps on the inlet and outlet water connections. To determine whether a specific model is factory equipped with heat traps, review the footnotes for that model.

Scope of the Program

The Program is open to all manufacturers of water heaters and to all firms that market private brand models. Participation in the Program is voluntary, but all models of residential water heaters marketed by a participant in the United States must be included in the Efficiency Certification Program. The residential water heaters covered by this program are defined by the following parameters:

Electric storage water heaters with energy input ratings of 12 kilowatts or less and with a storage capacity of not less than 20 gallons nor more than 120 gallons.

Heat pump water heaters with maximum current ratings of 24 amperes at a voltage no greater than 250 volts. The heat pump water heater may either include a storage tank or be intended for connection to an existing residential water heater or storage tank installation.

Gas storage water heaters with energy input ratings of 75,000 Btu's per hour or less and with a storage capacity of not less than 20 gallons nor more than 100 gallons.

Oil storage water heaters with energy input ratings of 105,000 Btu's per hour or less and with a storage capacity of 50 gallons or less.

Gas instantaneous water heaters with input ratings greater than 50,000 Btu's per hour but less than 200,000 Btu's per hour designed to deliver water at a controlled temperature of less than 180°F.

The Directory and the Federal Trade Commission EnergyGuide

The Federal Trade Commission (FTC) requires that gas, electric and oil residential, automatic storage water heaters be labeled to show 1) an estimated annual cost of operation for that particular model, based on a national average cost of fuel specified by FTC, and 2) how the efficiency of that model compares to all other comparable models. Currently, FTC does not require that heat pump water heaters or residential instantaneous water heaters be labeled.

The listing in this chapter is another means of providing the same information. The sample FTC "EnergyGuide" label on page 138 has explanations as to how the directory listing provides the same information as the FTC "EnergyGuide" label.

Model Number

The model number listed in the Directory identifies the essential model number designation of the water heater. All the numbers and letters of the listed model number will appear on the rating plate of units of that model, otherwise the units are not that model. As noted, other letters and numbers may also be on the rating plate, but they are not required to identify the basic model.

Please note that as the national average energy cost is changed by FTC, the estimated annual cost of operation will change even though the efficiency of the water heater has remained the same.

Based on standard U.S. Government tests

ENERGYGUIDE

The First Hour Rating is shown in the third column of the listing.

Water Heater – Natural Gas
Capacity (first hour rating):
60 gallons

XYZ Corporation
Model(s) RP23,
RP38

← The model numbers for all models to which the label applies, are listed. The model number is given in the first column of the listing.

Compare the Energy Use of this Water Heater with Others Before You Buy.

This is the estimated annual energy consumption for this model. This estimated annual energy consumption can be adequately approximated using the Energy Factor (EF) shown in the fourth column of the listing and employing the formula as described in the "Definitions and Calculations" section.

This Model Uses
240 therms/year

Energy Use (therms/year) range of all similar models

Uses Least Energy
245

Uses Most Energy
295

← This section shows how this model compares to all other similar models which have a First Hour Rating within the range noted. Chapter III allows for the comparison of the Energy Factor, and consequently, estimated annual energy consumption for each model within a narrower range of First Hour Ratings based on the consumer's particular hot water needs.

Therms/year is a measure of energy use. Your utility company uses it to compute your bill. Only models with first hour ratings of **56 to 64** gallons are used in this scale.

← Range of First Hour Ratings.

Natural Gas water heaters that use fewer therms/year cost less to operate. This model's estimated yearly operating cost is:

\$ 145

National average unit cost of fuel.

→ Based on a 1994 U.S. Government national average cost of \$0.604 per therm for Natural Gas. Your actual operating cost will vary depending on your local utility rates and your use of the product.

← This is the estimated annual operating cost for this model using the national average fuel cost noted.

Important Removal of this label before customer purchase is a violation of Federal law (42 USC 6302)

CORRELATION OF CHAPTER III LISTING TO FTC "EnergyGuide" LABEL

Definitions and Sample Calculations

The measure of water heater efficiency listed is:

Energy Factor (EF) - A measure of the overall efficiency of a water heater determined by comparing the energy supplied in heated water to the total daily consumption of the water heater.

The measure used for the purpose of comparing models of similar hot water delivery capabilities is:

First Hour Rating (1st Hour Rating) - The amount of hot water that the water heater can supply in the first hour of operation. It is a combination of how much water is stored in the water heater and how quickly the water heater can heat cold water to the desired temperature.

The estimated yearly cost of operation for a water heater shown in Tables 1 through 5, is calculated by using one of the following formulas, as appropriate:

$$\text{For gas and oil water heaters: } \frac{41045 \text{ Btu}}{\text{EF}} \times \text{Unit Cost of Fuel } \$/\text{Btu} \times 365 = \text{Estimated Annual Cost of Operation}$$

$$\text{For electric water heaters, including heat pump units: } \frac{12.03 \text{ kWh}}{\text{EF}} \times \text{Unit Cost of Fuel } \$/\text{kWh} \times 365 = \text{Estimated Annual Cost of Operation}$$

EXAMPLES:

Using the national average unit costs of fuel, as determined by the U.S. Department of Energy, the following show how the estimated annual cost of operation is determined for each of the various fuels used for heating water:

Assume a gas water heater, using natural gas, has an EF of .57. Its estimated annual cost of operation is:

$$\frac{41045 \text{ Btu}}{.57} \times \$0.00000619/\text{Btu} \times 365 = \$163$$

If this same model of gas water heater uses LP gas, its estimated annual cost of operation is:

$$\frac{41045 \text{ Btu}}{.57} \times \$0.00001040/\text{Btu} \times 365 = \$273$$

Assume an oil water heater has an EF of .52. Its estimated annual cost of operation is:

$$\frac{41045 \text{ Btu}}{.52} \times \$0.00000685/\text{Btu} \times 365 = \$197$$

Assume an electric water heater has an EF of .88. Its estimated annual cost of operation is:

$$\frac{12.03 \text{ kWh}}{.88} \times \$0.0842/\text{kWh} \times 365 = \$420$$

Assume a heat pump water heater has an EF of 2.0. Its estimated annual cost of operation is:

$$\frac{12.03 \text{ kWh}}{2.0} \times \$0.0842/\text{kWh} \times 365 = \$185$$

The following unit conversions have been used in the sample calculations:

1 therm	=	100,000 Btu's
1 gallon LP Gas	=	91,333 Btu's
1 gallon Fuel Oil	=	138,700 Btu's
1 kWh	=	3,412 Btu's

Table 1: Estimated Annual Operating Costs for Natural Gas Water Heaters

Energy Factor

	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68
\$1.20	\$409	\$400	\$391	\$383	\$375	\$367	\$360	\$353	\$346	\$339	\$333	\$327	\$321	\$315	\$310	\$305	\$300	\$295	\$290	\$285	\$281	\$277	\$272	\$268	\$264
\$1.22	\$415	\$406	\$397	\$389	\$381	\$373	\$366	\$358	\$351	\$345	\$338	\$332	\$326	\$321	\$315	\$310	\$305	\$300	\$295	\$290	\$286	\$281	\$277	\$273	\$269
\$1.24	\$422	\$413	\$404	\$395	\$387	\$379	\$372	\$364	\$357	\$351	\$344	\$338	\$332	\$326	\$320	\$315	\$310	\$305	\$300	\$295	\$290	\$286	\$281	\$277	\$273
\$1.26	\$429	\$419	\$410	\$402	\$393	\$385	\$378	\$370	\$363	\$356	\$350	\$343	\$337	\$331	\$325	\$320	\$315	\$309	\$304	\$300	\$295	\$290	\$286	\$282	\$278
\$1.28	\$436	\$426	\$417	\$408	\$400	\$391	\$384	\$376	\$369	\$362	\$355	\$349	\$342	\$336	\$331	\$325	\$320	\$314	\$309	\$304	\$300	\$295	\$291	\$286	\$282
\$1.30	\$443	\$433	\$423	\$414	\$406	\$397	\$390	\$382	\$375	\$367	\$361	\$354	\$348	\$342	\$336	\$330	\$325	\$319	\$314	\$309	\$304	\$300	\$295	\$291	\$286
\$1.32	\$449	\$439	\$430	\$421	\$412	\$404	\$396	\$388	\$380	\$373	\$366	\$360	\$353	\$347	\$341	\$335	\$330	\$324	\$319	\$314	\$309	\$304	\$300	\$295	\$291
\$1.34	\$456	\$446	\$436	\$427	\$418	\$410	\$402	\$394	\$386	\$379	\$372	\$365	\$358	\$352	\$346	\$340	\$335	\$329	\$324	\$319	\$314	\$309	\$304	\$300	\$295
\$1.36	\$463	\$453	\$443	\$434	\$424	\$416	\$407	\$400	\$392	\$384	\$377	\$370	\$364	\$357	\$351	\$345	\$340	\$334	\$329	\$323	\$318	\$313	\$309	\$304	\$300
\$1.38	\$470	\$459	\$449	\$440	\$431	\$422	\$413	\$405	\$398	\$390	\$383	\$376	\$369	\$363	\$356	\$350	\$345	\$339	\$333	\$328	\$323	\$318	\$313	\$309	\$304
\$1.40	\$477	\$466	\$456	\$446	\$437	\$428	\$419	\$411	\$403	\$396	\$388	\$381	\$375	\$368	\$362	\$355	\$350	\$344	\$338	\$333	\$328	\$323	\$318	\$313	\$308
\$1.42	\$483	\$473	\$462	\$453	\$443	\$434	\$425	\$417	\$409	\$401	\$394	\$387	\$380	\$373	\$367	\$361	\$355	\$349	\$343	\$338	\$332	\$327	\$322	\$318	\$313
\$1.44	\$490	\$479	\$469	\$459	\$449	\$440	\$431	\$423	\$415	\$407	\$400	\$392	\$385	\$378	\$372	\$366	\$360	\$354	\$348	\$342	\$337	\$332	\$327	\$322	\$317
\$1.46	\$497	\$486	\$475	\$465	\$456	\$446	\$437	\$429	\$421	\$413	\$405	\$398	\$391	\$384	\$377	\$371	\$365	\$359	\$353	\$347	\$342	\$337	\$331	\$326	\$322
\$1.48	\$504	\$493	\$482	\$472	\$462	\$453	\$443	\$435	\$426	\$418	\$411	\$403	\$396	\$389	\$382	\$376	\$370	\$363	\$358	\$352	\$346	\$341	\$336	\$331	\$326
\$1.50	\$511	\$499	\$489	\$478	\$468	\$459	\$449	\$441	\$432	\$424	\$416	\$409	\$401	\$394	\$387	\$381	\$375	\$368	\$362	\$357	\$351	\$346	\$340	\$335	\$330
\$1.52	\$518	\$506	\$495	\$485	\$474	\$465	\$455	\$447	\$438	\$430	\$422	\$414	\$407	\$400	\$393	\$386	\$380	\$373	\$367	\$361	\$356	\$350	\$345	\$340	\$335
\$1.54	\$524	\$513	\$502	\$491	\$481	\$471	\$461	\$452	\$444	\$435	\$427	\$419	\$412	\$405	\$398	\$391	\$385	\$378	\$372	\$366	\$360	\$355	\$350	\$344	\$339
\$1.56	\$531	\$519	\$508	\$497	\$487	\$477	\$467	\$458	\$449	\$441	\$433	\$425	\$417	\$410	\$403	\$396	\$390	\$383	\$377	\$371	\$365	\$360	\$354	\$349	\$344
\$1.58	\$538	\$526	\$515	\$504	\$493	\$483	\$473	\$464	\$455	\$447	\$438	\$430	\$423	\$415	\$408	\$401	\$395	\$388	\$382	\$376	\$370	\$364	\$359	\$353	\$348
\$1.60	\$545	\$533	\$521	\$510	\$499	\$489	\$479	\$470	\$461	\$452	\$444	\$436	\$428	\$421	\$413	\$406	\$400	\$393	\$387	\$380	\$375	\$369	\$363	\$358	\$353
\$1.62	\$552	\$539	\$528	\$516	\$506	\$495	\$485	\$476	\$467	\$458	\$449	\$441	\$433	\$426	\$418	\$411	\$404	\$398	\$391	\$385	\$379	\$373	\$368	\$362	\$357
\$1.64	\$558	\$546	\$534	\$523	\$512	\$501	\$491	\$482	\$472	\$464	\$455	\$447	\$439	\$431	\$424	\$416	\$409	\$403	\$396	\$390	\$384	\$378	\$372	\$367	\$361
\$1.66	\$565	\$553	\$541	\$529	\$518	\$508	\$497	\$488	\$478	\$469	\$461	\$452	\$444	\$436	\$429	\$422	\$414	\$408	\$401	\$395	\$389	\$383	\$377	\$371	\$366
\$1.68	\$572	\$559	\$547	\$536	\$524	\$514	\$503	\$494	\$484	\$475	\$466	\$458	\$449	\$442	\$434	\$427	\$419	\$413	\$406	\$400	\$393	\$387	\$381	\$376	\$370
\$1.70	\$579	\$566	\$554	\$542	\$531	\$520	\$509	\$499	\$490	\$481	\$472	\$463	\$455	\$447	\$439	\$432	\$424	\$418	\$411	\$404	\$398	\$392	\$386	\$380	\$375

Fuel Cost per Therm

Table 2: Estimated Annual Operating Costs for Propane Water Heaters

Energy Factor

	0.44	0.45	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68
\$1.75	\$652	\$638	\$624	\$611	\$598	\$586	\$574	\$563	\$552	\$542	\$532	\$522	\$513	\$504	\$495	\$487	\$478	\$471	\$463	\$456	\$449	\$442	\$435	\$428	\$422
\$1.77	\$660	\$645	\$631	\$618	\$605	\$593	\$581	\$569	\$558	\$548	\$538	\$528	\$518	\$509	\$501	\$492	\$484	\$476	\$468	\$461	\$454	\$447	\$440	\$433	\$427
\$1.79	\$667	\$652	\$638	\$625	\$612	\$599	\$587	\$576	\$565	\$554	\$544	\$534	\$524	\$515	\$506	\$498	\$489	\$481	\$474	\$466	\$459	\$452	\$445	\$438	\$432
\$1.81	\$675	\$660	\$645	\$632	\$619	\$606	\$594	\$582	\$571	\$560	\$550	\$540	\$530	\$521	\$512	\$503	\$495	\$487	\$479	\$471	\$464	\$457	\$450	\$443	\$437
\$1.83	\$682	\$667	\$653	\$639	\$625	\$613	\$600	\$589	\$577	\$566	\$556	\$546	\$536	\$527	\$518	\$509	\$500	\$492	\$484	\$476	\$469	\$462	\$455	\$448	\$441
\$1.85	\$690	\$674	\$660	\$646	\$632	\$619	\$607	\$595	\$584	\$573	\$562	\$552	\$542	\$532	\$523	\$514	\$506	\$497	\$489	\$482	\$474	\$467	\$460	\$453	\$446
\$1.87	\$697	\$682	\$667	\$653	\$639	\$626	\$613	\$601	\$590	\$579	\$568	\$558	\$548	\$538	\$529	\$520	\$511	\$503	\$495	\$487	\$479	\$472	\$465	\$458	\$451
\$1.89	\$705	\$689	\$674	\$660	\$646	\$633	\$620	\$608	\$596	\$585	\$574	\$564	\$554	\$544	\$535	\$525	\$517	\$508	\$499	\$492	\$484	\$477	\$470	\$463	\$456
\$1.91	\$712	\$696	\$681	\$667	\$653	\$639	\$627	\$614	\$602	\$591	\$580	\$570	\$559	\$550	\$540	\$531	\$522	\$514	\$505	\$497	\$490	\$482	\$475	\$468	\$461
\$1.93	\$719	\$704	\$688	\$674	\$660	\$646	\$633	\$621	\$609	\$597	\$586	\$576	\$565	\$555	\$546	\$537	\$528	\$519	\$511	\$503	\$495	\$487	\$480	\$473	\$466
\$1.95	\$727	\$711	\$695	\$681	\$666	\$653	\$640	\$627	\$615	\$604	\$592	\$582	\$571	\$561	\$551	\$542	\$533	\$524	\$516	\$508	\$500	\$492	\$485	\$477	\$470
\$1.97	\$734	\$718	\$702	\$688	\$673	\$659	\$646	\$634	\$621	\$610	\$598	\$588	\$577	\$567	\$557	\$548	\$539	\$530	\$521	\$513	\$505	\$497	\$490	\$482	\$475
\$1.99	\$742	\$725	\$710	\$695	\$680	\$666	\$653	\$640	\$628	\$616	\$604	\$593	\$583	\$573	\$563	\$553	\$544	\$535	\$526	\$518	\$510	\$502	\$495	\$487	\$480
\$2.01	\$749	\$733	\$717	\$701	\$687	\$673	\$659	\$646	\$634	\$622	\$611	\$599	\$589	\$578	\$568	\$559	\$550	\$540	\$532	\$523	\$515	\$507	\$500	\$492	\$485
\$2.03	\$757	\$740	\$724	\$708	\$694	\$680	\$666	\$653	\$640	\$628	\$617	\$605	\$595	\$584	\$574	\$564	\$555	\$546	\$537	\$529	\$520	\$512	\$505	\$497	\$490
\$2.05	\$764	\$747	\$731	\$715	\$701	\$686	\$673	\$659	\$647	\$634	\$623	\$611	\$600	\$590	\$580	\$570	\$560	\$551	\$542	\$534	\$525	\$517	\$509	\$502	\$495
\$2.07	\$772	\$755	\$738	\$722	\$707	\$693	\$679	\$666	\$653	\$641	\$629	\$617	\$606	\$596	\$585	\$575	\$566	\$557	\$548	\$539	\$531	\$522	\$514	\$507	\$499
\$2.09	\$779	\$762	\$745	\$729	\$714	\$700	\$686	\$672	\$659	\$647	\$635	\$623	\$612	\$601	\$591	\$581	\$571	\$562	\$553	\$544	\$536	\$527	\$519	\$512	\$504
\$2.11	\$787	\$769	\$752	\$736	\$721	\$706	\$692	\$679	\$666	\$653	\$641	\$629	\$618	\$607	\$597	\$587	\$577	\$567	\$558	\$549	\$541	\$532	\$524	\$517	\$509
\$2.13	\$794	\$776	\$760	\$743	\$728	\$713	\$699	\$685	\$672	\$659	\$647	\$635	\$624	\$613	\$602	\$592	\$582	\$573	\$564	\$555	\$546	\$538	\$529	\$521	\$514
\$2.15	\$802	\$784	\$767	\$750	\$735	\$720	\$705	\$692	\$678	\$665	\$653	\$641	\$630	\$619	\$608	\$598	\$588	\$578	\$569	\$560	\$551	\$543	\$534	\$526	\$519
\$2.17	\$809	\$791	\$774	\$757	\$742	\$726	\$712	\$698	\$685	\$672	\$659	\$647	\$636	\$624	\$614	\$603	\$593	\$584	\$574	\$565	\$556	\$548	\$539	\$531	\$523
\$2.19	\$816	\$798	\$781	\$764	\$748	\$733	\$718	\$704	\$691	\$678	\$665	\$653	\$641	\$630	\$619	\$609	\$599	\$589	\$579	\$570	\$561	\$553	\$544	\$536	\$528
\$2.21	\$824	\$806	\$788	\$771	\$755	\$740	\$725	\$711	\$697	\$684	\$671	\$659	\$647	\$636	\$625	\$614	\$604	\$594	\$585	\$575	\$566	\$558	\$549	\$541	\$533
\$2.23	\$831	\$813	\$795	\$778	\$762	\$747	\$732	\$717	\$703	\$690	\$677	\$665	\$653	\$642	\$631	\$620	\$610	\$600	\$590	\$581	\$572	\$563	\$554	\$546	\$538
\$2.25	\$839	\$820	\$802	\$785	\$769	\$753	\$738	\$724	\$710	\$696	\$683	\$671	\$659	\$647	\$636	\$626	\$615	\$605	\$595	\$586	\$577	\$568	\$559	\$551	\$543

Fuel Cost per Gallon

Table 3: Estimated Annual Operating Costs for Oil Water Heaters

Energy Factor

	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.65
\$1.75	\$378	\$371	\$364	\$357	\$350	\$344	\$338	\$332	\$326	\$320	\$315	\$310	\$305	\$300	\$295	\$291
\$1.80	\$389	\$381	\$374	\$367	\$360	\$353	\$347	\$341	\$335	\$330	\$324	\$319	\$314	\$309	\$304	\$299
\$1.85	\$400	\$392	\$384	\$377	\$370	\$363	\$357	\$351	\$345	\$339	\$333	\$328	\$322	\$317	\$312	\$307
\$1.90	\$410	\$402	\$395	\$387	\$380	\$373	\$366	\$360	\$354	\$348	\$342	\$336	\$331	\$326	\$321	\$316
\$1.95	\$421	\$413	\$405	\$397	\$390	\$383	\$376	\$370	\$363	\$357	\$351	\$345	\$340	\$334	\$329	\$324
\$2.00	\$432	\$424	\$415	\$408	\$400	\$393	\$386	\$379	\$372	\$366	\$360	\$354	\$348	\$343	\$338	\$332
\$2.05	\$443	\$434	\$426	\$418	\$410	\$403	\$395	\$388	\$382	\$375	\$369	\$363	\$357	\$351	\$346	\$341
\$2.10	\$454	\$445	\$436	\$428	\$420	\$412	\$405	\$398	\$391	\$384	\$378	\$372	\$366	\$360	\$354	\$349
\$2.15	\$464	\$455	\$447	\$438	\$430	\$422	\$415	\$407	\$400	\$394	\$387	\$381	\$375	\$369	\$363	\$357
\$2.20	\$475	\$466	\$457	\$448	\$440	\$432	\$424	\$417	\$410	\$403	\$396	\$390	\$383	\$377	\$371	\$366
\$2.25	\$486	\$477	\$467	\$459	\$450	\$442	\$434	\$426	\$419	\$412	\$405	\$398	\$392	\$386	\$380	\$374
\$2.30	\$497	\$487	\$478	\$469	\$460	\$452	\$444	\$436	\$428	\$421	\$414	\$407	\$401	\$394	\$388	\$382
\$2.35	\$508	\$498	\$488	\$479	\$470	\$462	\$453	\$445	\$438	\$430	\$423	\$416	\$409	\$403	\$397	\$391
\$2.40	\$518	\$508	\$499	\$489	\$480	\$471	\$463	\$455	\$447	\$439	\$432	\$425	\$418	\$411	\$405	\$399
\$2.45	\$529	\$519	\$509	\$499	\$490	\$481	\$473	\$464	\$456	\$449	\$441	\$434	\$427	\$420	\$413	\$407
\$2.50	\$540	\$529	\$519	\$509	\$500	\$491	\$482	\$474	\$466	\$458	\$450	\$443	\$436	\$429	\$422	\$415
\$2.55	\$551	\$540	\$530	\$520	\$510	\$501	\$492	\$483	\$475	\$467	\$459	\$452	\$444	\$437	\$430	\$424
\$2.60	\$562	\$551	\$540	\$530	\$520	\$511	\$501	\$493	\$484	\$476	\$468	\$460	\$453	\$446	\$439	\$432
\$2.65	\$572	\$561	\$550	\$540	\$530	\$520	\$511	\$502	\$494	\$485	\$477	\$469	\$462	\$454	\$447	\$440
\$2.70	\$583	\$572	\$561	\$550	\$540	\$530	\$521	\$512	\$503	\$494	\$486	\$478	\$470	\$463	\$456	\$449
\$2.75	\$594	\$582	\$571	\$560	\$550	\$540	\$530	\$521	\$512	\$503	\$495	\$487	\$479	\$471	\$464	\$457
\$2.80	\$605	\$593	\$582	\$571	\$560	\$550	\$540	\$531	\$521	\$513	\$504	\$496	\$488	\$480	\$473	\$465
\$2.85	\$616	\$604	\$592	\$581	\$570	\$560	\$550	\$540	\$531	\$522	\$513	\$505	\$497	\$489	\$481	\$474
\$2.90	\$626	\$614	\$602	\$591	\$580	\$570	\$559	\$550	\$540	\$531	\$522	\$514	\$505	\$497	\$489	\$482
\$2.95	\$637	\$625	\$613	\$601	\$590	\$579	\$569	\$559	\$549	\$540	\$531	\$522	\$514	\$506	\$498	\$490
\$3.00	\$648	\$635	\$623	\$611	\$600	\$589	\$579	\$568	\$559	\$549	\$540	\$531	\$523	\$514	\$506	\$499

Fuel Cost per Gallon

Table 4: Estimated Annual Operating Costs for Electric Water Heaters

Energy Factor

	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99
5.0 ¢	\$274	\$271	\$268	\$265	\$261	\$258	\$255	\$252	\$249	\$247	\$244	\$241	\$239	\$236	\$234	\$231	\$229	\$226	\$224	\$222
5.5 ¢	\$302	\$298	\$295	\$291	\$288	\$284	\$281	\$278	\$274	\$271	\$268	\$265	\$263	\$260	\$257	\$254	\$252	\$249	\$246	\$244
6.0 ¢	\$329	\$325	\$321	\$317	\$314	\$310	\$306	\$303	\$299	\$296	\$293	\$290	\$286	\$283	\$280	\$277	\$274	\$272	\$269	\$266
6.5 ¢	\$357	\$352	\$348	\$344	\$340	\$336	\$332	\$328	\$324	\$321	\$317	\$314	\$310	\$307	\$304	\$300	\$297	\$294	\$291	\$288
7.0 ¢	\$384	\$379	\$375	\$370	\$366	\$362	\$357	\$353	\$349	\$345	\$342	\$338	\$334	\$331	\$327	\$324	\$320	\$317	\$314	\$310
7.5 ¢	\$412	\$407	\$402	\$397	\$392	\$387	\$383	\$379	\$374	\$370	\$366	\$362	\$358	\$354	\$350	\$347	\$343	\$340	\$336	\$333
8.0 ¢	\$439	\$434	\$428	\$423	\$418	\$413	\$408	\$404	\$399	\$395	\$390	\$386	\$382	\$378	\$374	\$370	\$366	\$362	\$358	\$355
8.5 ¢	\$467	\$461	\$455	\$450	\$444	\$439	\$434	\$429	\$424	\$419	\$415	\$410	\$406	\$401	\$397	\$393	\$389	\$385	\$381	\$377
9.0 ¢	\$494	\$488	\$482	\$476	\$470	\$465	\$460	\$454	\$449	\$444	\$439	\$434	\$430	\$425	\$420	\$416	\$412	\$407	\$403	\$399
9.5 ¢	\$521	\$515	\$509	\$503	\$497	\$491	\$485	\$479	\$474	\$469	\$463	\$458	\$453	\$449	\$444	\$439	\$435	\$430	\$426	\$421
10.0 ¢	\$549	\$542	\$535	\$529	\$523	\$517	\$511	\$505	\$499	\$493	\$488	\$483	\$477	\$472	\$467	\$462	\$457	\$453	\$448	\$444
10.5 ¢	\$576	\$569	\$562	\$555	\$549	\$542	\$536	\$530	\$524	\$518	\$512	\$507	\$501	\$496	\$490	\$485	\$480	\$475	\$470	\$466
11.0 ¢	\$604	\$596	\$589	\$582	\$575	\$568	\$562	\$555	\$549	\$543	\$537	\$531	\$525	\$519	\$514	\$508	\$503	\$498	\$493	\$488
11.5 ¢	\$631	\$623	\$616	\$608	\$601	\$594	\$587	\$580	\$574	\$567	\$561	\$555	\$549	\$543	\$537	\$532	\$526	\$521	\$515	\$510
12.0 ¢	\$659	\$651	\$643	\$635	\$627	\$620	\$613	\$606	\$599	\$592	\$585	\$579	\$573	\$567	\$561	\$555	\$549	\$543	\$538	\$532
12.5 ¢	\$686	\$678	\$669	\$661	\$653	\$646	\$638	\$631	\$624	\$617	\$610	\$603	\$597	\$590	\$584	\$578	\$572	\$566	\$560	\$554
13.0 ¢	\$714	\$705	\$696	\$688	\$680	\$672	\$664	\$656	\$649	\$641	\$634	\$627	\$620	\$614	\$607	\$601	\$595	\$588	\$582	\$577
13.5 ¢	\$741	\$732	\$723	\$714	\$706	\$697	\$689	\$681	\$674	\$666	\$659	\$651	\$644	\$637	\$631	\$624	\$617	\$611	\$605	\$599
14.0 ¢	\$768	\$759	\$750	\$741	\$732	\$723	\$715	\$707	\$699	\$691	\$683	\$676	\$668	\$661	\$654	\$647	\$640	\$634	\$627	\$621
14.5 ¢	\$796	\$786	\$776	\$767	\$758	\$749	\$740	\$732	\$724	\$715	\$707	\$700	\$692	\$685	\$677	\$670	\$663	\$656	\$650	\$643
15.0 ¢	\$823	\$813	\$803	\$794	\$784	\$775	\$766	\$757	\$748	\$740	\$732	\$724	\$716	\$708	\$701	\$693	\$686	\$679	\$672	\$665
15.5 ¢	\$851	\$840	\$830	\$820	\$810	\$801	\$791	\$782	\$773	\$765	\$756	\$748	\$740	\$732	\$724	\$716	\$709	\$702	\$694	\$687
16.0 ¢	\$878	\$867	\$857	\$846	\$836	\$827	\$817	\$808	\$798	\$789	\$781	\$772	\$764	\$755	\$747	\$740	\$732	\$724	\$717	\$710
16.5 ¢	\$906	\$894	\$884	\$873	\$863	\$852	\$842	\$833	\$823	\$814	\$805	\$796	\$788	\$779	\$771	\$763	\$755	\$747	\$739	\$732
17.0 ¢	\$933	\$922	\$910	\$899	\$889	\$878	\$868	\$858	\$848	\$839	\$829	\$820	\$811	\$803	\$794	\$786	\$778	\$770	\$762	\$754

Fuel Cost per kWh

Table 5: Estimated Annual Operating Costs for Heat Pump Water Heaters With and Without Tank

Energy Factor

	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4
5.0 ¢	\$146	\$137	\$129	\$122	\$116	\$110	\$105	\$100	\$95	\$91	\$88	\$84	\$81	\$78	\$76	\$73	\$71	\$69	\$67	\$65
5.5 ¢	\$161	\$151	\$142	\$134	\$127	\$121	\$115	\$110	\$105	\$101	\$97	\$93	\$89	\$86	\$83	\$81	\$78	\$75	\$73	\$71
6.0 ¢	\$176	\$165	\$155	\$146	\$139	\$132	\$125	\$120	\$115	\$110	\$105	\$101	\$98	\$94	\$91	\$88	\$85	\$82	\$80	\$77
6.5 ¢	\$190	\$178	\$168	\$159	\$150	\$143	\$136	\$130	\$124	\$119	\$114	\$110	\$106	\$102	\$98	\$95	\$92	\$89	\$86	\$84
7.0 ¢	\$205	\$192	\$181	\$171	\$162	\$154	\$146	\$140	\$134	\$128	\$123	\$118	\$114	\$110	\$106	\$102	\$99	\$96	\$93	\$90
7.5 ¢	\$220	\$206	\$194	\$183	\$173	\$165	\$157	\$150	\$143	\$137	\$132	\$127	\$122	\$118	\$114	\$110	\$106	\$103	\$100	\$97
8.0 ¢	\$234	\$220	\$207	\$195	\$185	\$176	\$167	\$160	\$153	\$146	\$141	\$135	\$130	\$125	\$121	\$117	\$113	\$110	\$106	\$103
8.5 ¢	\$249	\$233	\$220	\$207	\$196	\$187	\$178	\$170	\$162	\$156	\$149	\$144	\$138	\$133	\$129	\$124	\$120	\$117	\$113	\$110
9.0 ¢	\$263	\$247	\$232	\$220	\$208	\$198	\$188	\$180	\$172	\$165	\$158	\$152	\$146	\$141	\$136	\$132	\$127	\$123	\$120	\$116
9.5 ¢	\$278	\$261	\$245	\$232	\$220	\$209	\$199	\$190	\$181	\$174	\$167	\$160	\$154	\$149	\$144	\$139	\$135	\$130	\$126	\$123
10.0 ¢	\$293	\$274	\$258	\$244	\$231	\$220	\$209	\$200	\$191	\$183	\$176	\$169	\$163	\$157	\$151	\$146	\$142	\$137	\$133	\$129
10.5 ¢	\$307	\$288	\$271	\$256	\$243	\$231	\$220	\$210	\$200	\$192	\$184	\$177	\$171	\$165	\$159	\$154	\$149	\$144	\$140	\$136
11.0 ¢	\$322	\$302	\$284	\$268	\$254	\$242	\$230	\$220	\$210	\$201	\$193	\$186	\$179	\$173	\$167	\$161	\$156	\$151	\$146	\$142
11.5 ¢	\$337	\$316	\$297	\$281	\$266	\$252	\$240	\$230	\$220	\$210	\$202	\$194	\$187	\$180	\$174	\$168	\$163	\$158	\$153	\$149
12.0 ¢	\$351	\$329	\$310	\$293	\$277	\$263	\$251	\$240	\$229	\$220	\$211	\$203	\$195	\$188	\$182	\$176	\$170	\$165	\$160	\$155
12.5 ¢	\$366	\$343	\$323	\$305	\$289	\$274	\$261	\$249	\$239	\$229	\$220	\$211	\$203	\$196	\$189	\$183	\$177	\$172	\$166	\$161
13.0 ¢	\$381	\$357	\$336	\$317	\$300	\$285	\$272	\$259	\$248	\$238	\$228	\$220	\$211	\$204	\$197	\$190	\$184	\$178	\$173	\$168
13.5 ¢	\$395	\$370	\$349	\$329	\$312	\$296	\$282	\$269	\$258	\$247	\$237	\$228	\$220	\$212	\$204	\$198	\$191	\$185	\$180	\$174
14.0 ¢	\$410	\$384	\$362	\$342	\$324	\$307	\$293	\$279	\$267	\$256	\$246	\$236	\$228	\$220	\$212	\$205	\$198	\$192	\$186	\$181
14.5 ¢	\$424	\$398	\$375	\$354	\$335	\$318	\$303	\$289	\$277	\$265	\$255	\$245	\$236	\$227	\$220	\$212	\$205	\$199	\$193	\$187
15.0 ¢	\$439	\$412	\$387	\$366	\$347	\$329	\$314	\$299	\$286	\$274	\$263	\$253	\$244	\$235	\$227	\$220	\$212	\$206	\$200	\$194
15.5 ¢	\$454	\$425	\$400	\$378	\$358	\$340	\$324	\$309	\$296	\$284	\$272	\$262	\$252	\$243	\$235	\$227	\$220	\$213	\$206	\$200
16.0 ¢	\$468	\$439	\$413	\$390	\$370	\$351	\$335	\$319	\$305	\$293	\$281	\$270	\$260	\$251	\$242	\$234	\$227	\$220	\$213	\$207
16.5 ¢	\$483	\$453	\$426	\$403	\$381	\$362	\$345	\$329	\$315	\$302	\$290	\$279	\$268	\$259	\$250	\$242	\$234	\$226	\$220	\$213
17.0 ¢	\$498	\$467	\$439	\$415	\$393	\$373	\$355	\$339	\$325	\$311	\$299	\$287	\$276	\$267	\$257	\$249	\$241	\$233	\$226	\$220

Fuel Cost per kWh

SECTION 4 - HEAT PUMP WATER HEATERS WITH TANK

RANGES OF COMPARABILITY FOR HEAT PUMP WATER HEATERS WITH TANK

As described on pages 150 and 151, the first criteria for selecting a water heater is First Hour Rating. Only after you know what First Hour Rating is needed to meet your hot water needs should consideration be given to the efficiency of the water heater. To assist in this section process, the following chart shows the range of efficiency (lowest and highest Energy Factor) and corresponding range of estimated energy consumption for all the heat pump water heaters with tank listed in this chapter within a range of First Hour Rating as specified by the Federal Trade Commission for use on water heater EnergyGuide labels.

The Federal Trade Commission also specifies the following national average energy costs for use on water heater EnergyGuide labels:

Electricity	8.60¢ per kWh
Natural Gas	91.0¢ per therm
Propane Gas	\$1.23 per gallon (\$1.35 per therm)
No. 2 Heating Oil	\$1.28 per gallon (\$0.92 per therm)

HEAT PUMP WATER HEATERS WITH TANK

First Hour Rating	Range (EF)		Range (of Estimated Annual Energy Consumption) (kWh/year)	
Less than 21	*	*	*	*
21 to 24	*	*	*	*
25 to 29	*	*	*	*
30 to 34	*	*	*	*
35 to 40	*	*	*	*
41 to 47	*	*	*	*
48 to 55	*	*	*	*
56 to 64	2.28	2.28	1926	1926
65 to 74	*	*	*	*
75 to 86	*	*	*	*
87 to 99	*	*	*	*
110 to 114	*	*	*	*
115 to 131	*	*	*	*
Over 131	*	*	*	*

* No models in this range listed in this edition

Model Number	Footnotes	1st Hr Rating Gals.	Energy Factor	Rated Storage Vol. Gals.	Input kWh	Model Number	Footnotes	1st Hr Rating Gals.	Energy Factor	Rated Storage Vol. Gals.	Input kWh
ECR INTERNATIONAL											
Trade Name(s): WatterSaver											
		Discontinued Models									
⌘HPWH500AA0B		62	2.28	50	4.5						
⌘HPWH500AA0C		62	2.28	50	4.5						
⌘HPWH501AA0C		62	2.28	50	4.5						
⌘HPWH50D		62	2.28	50	4.5						
⌘HPWH50E		62	2.28	50	4.5						
⌘HPWH50U		62	2.28	50	4.5						

STANDARD FOOTNOTES:

1. Heat Traps
 2. Manufactured (Mobile) Home Model
- # Rating Voluntarily Revised Since Last Directory
⌘ Rating Revised By Program Since Last Directory