EIA-902
(Revised 3/06)

Energy Information Administration
U.S. DEPARTMENT OF ENERGY

Form Approved
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Expires:

FORM EIA-902
ANNUAL GEOTHERMAL HEAT PUMP MANUFACTURERS SURVEY

GENERAL INFORMATION AND INSTRUCTIONS

I. Purpose

Form EIA-902, "Annual Geothermal Heat Pump Manufacturers Survey" is used to collect data about the manufacture and distribution of geothermal heat pumps and the status of the industry. The information collected will be used by public and private analysts interested in geothermal heat pumps and related energy issues.

II. Who Should Respond to This Survey

This report is mandatory and required pursuant to the authority granted to the Department of Energy (DOE) by the Federal Energy Information Administration Act of 1974 (Public Law 93-275). Form EIA-902 is to be submitted by all companies within the 50 States, District of Columbia, Puerto Rico, the Virgin Islands, Guam, and the other U.S. territories and possessions which manufactured and shipped any geothermal heat pumps during 2006. The form requests detailed information on any geothermal heat pumps shipped in calendar year 2006.

III. Where to Submit Completed Forms

Submit your data electronically using EIA's secure Internet Data Collection (IDC) System. All respondents for whom EIA has an e-mail address will be notified of the procedure for submitting using the IDC system.

Completed EIA-902 form may also be faxed to Susan Henry, at (202) 287-1964. For further information, please contact Ms. Henry at (202) 287-1792, or by e-mail to susan.henry@eia.doe.gov.

Facsimile and e-mail transmissions (including files attached to e-mail messages) travel over ordinary telephone lines and are not considered secure electronic methods of transmitting survey data.

IV. When to Submit Completed Forms

Completed EIA-902 forms are due by March 01, 2007.

V. Sanctions

The timely submission of Form EIA-902 by those required to report is mandatory under Section 13(b) of the Federal Energy Administration Act of 1974 (FEAA) (Public Law 93-275), as amended. Failure to respond may result in a civil penalty of not more than $2,500 for each violation, or a fine of not more than $5,000 for each willful violation.

The government may bring a civil action to prohibit reporting violations which may result in a temporary restraining order or a preliminary or permanent injunction without bond. In such civil action, the court may also issue mandatory injunctions commanding any person to comply with these reporting requirements.

VI. Provisions Regarding Confidentiality of Information

The information reported on Form EIA-902 will be kept confidential and not disclosed to the public to the extent that it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. §552, the DOE regulations, 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905. The Energy Information Administration (EIA) will protect your information in accordance with its confidentiality and security policies and procedures.

The Federal Energy Administration Act requires the EIA to provide company-specific data to other Federal agencies when requested for official use. The information reported on this form may also be made available, upon request, to another component of the Department of Energy (DOE); to any Committee of Congress, the General Accounting Office, or other Federal agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order. The information may be used for any non-statistical purposes such as administrative, regulatory, law enforcement, or adjudicatory purposes.

Disclosure limitation procedures are not applied to the statistical data published from EIA-902 survey information. Thus, there may be some statistics that are based on data from fewer than three respondents, or that are dominated by data from one or two large respondents. In these cases, it may be possible for a knowledgeable person to estimate the information reported by a specific respondent.

VII. Filing Forms With Federal Government And Estimated Reporting Burden

Respondents are not required to file or reply to any Federal collection of information unless it has a valid OMB control number. Public reporting burden for this collection of information is estimated to average 4.25 hours per response including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Energy Information Administration, Statistics and Methods Group, EI-70, 1000 Independence Ave., S.W., Washington, D.C. 20585-0670, and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

SPECIFIC INSTRUCTIONS

Item	Instruction
1.0	RESPONDENT INFORMATION: Make any corrections to the company name or address in the spaces provided.
2.0	TOTAL SHIPMENTS IN CALENDAR YEAR 2006: Enter the number of geothermal heat pumps, total rated capacity (in tons), average cooling also referred to as the energy efficiency ratio (EER), and average heating also referred to as the coefficient of performance (COP) of those pumps for each heat pump type listed that were shipped in 2006. EER ratio is calculated by dividing the cooling capacity in Btus per hours (Btu/h) by the power input in watts at a given set of rating conditions, expressed in Btu/h per watt. If the capacity of a heat pump is 48,000 Btu/h, and the compressor, fan and pumps consume 3,430 watts, the EER is 48,000 / 3,430 = 14.0 COP ratio is calculated by dividing the total heating capacity provided by the heat pump, including circulating fan heat but excluding supplementary resistance heat (Btus per hour), by the total electric input (watts) x 3.412. If the capacity of a heat pump is 48,000 Btu/h, and the compressor, fan and pumps consume 3,430 watts, the COP is 48,000 / (3,430 x 3.412) = 4.1 If average values for EEO and COP are not readily available, estimates are acceptable. The totals should be the sums of the various geothermal heat pump types and their capacities.
3.0	TOTAL SHIPMENTS (Total rated capacity in tons) IN CALENDAR YEAR 2006 BY DESTINATION: Enter the total rated capacity (in tons) of geothermal heat pumps by type shipped in 2006 to each destination listed. Destinations include the category “exported” as well as the 50 States, the District of Columbia, Puerto Rico, and the U. S. Virgin Islands. Include shipments within the State of manufacture.
4.0	DOMESTIC SHIPMENTS BY CUSTOMER TYPE IN CALENDAR YEAR 2006: Enter the total rated capacity (in tons) of geothermal heat pumps shipped domestically to each type of customer in 2006. If a customer could be included in more than one of the customer categories listed, include the total rated capacity of pumps shipped to that customer in the first appropriate category in the list. For example, if a customer is both an exporter and a wholesale distributor, shipments to that customer would be classified as total rated capacity to an “exporter.” Another example is a customer that is both a retail distributor and an installer. Shipments to that customer would be reported as rated capacity under the “retail distributor” category because that category appears in the list before the “installer” category.
5.0	DOMESTIC SHIPMENTS BY SECTOR IN CALENDAR YEAR 2006: For each sector, enter the total rated capacity (in tons) of geothermal heat pumps by type shipped domestically in 2006. The sectors are listed in the Definitions section of the instructions (pages 4-5):
6.0	COMMENTS: Enter any comments or remarks in the space provided.

DEFINITIONS

1. **ARI certified:** certification by the Air-Conditioning and Refrigeration Institute (ARI) that a pump has been tested using procedures stipulated in ARI standards and that it meets the manufacturer's certified published performance rating.

   ARI Standards 320, 325, and 330 refer to a rating system for testing performance of a water source heat pump when installed under three different conditions. For this reason, a single pump could be certified under all three ratings, and could potentially be installed under different circumstances.

   Geothermal heat pumps refer to systems where the unit uses the earth or natural body of water as a heat sink. There are typically three types of geothermal systems:

   1) A water source heat pump rated under standard ARI-320 is typically installed in a commercial application where several heat pumps are installed in series, with a central chiller or boiler supplying the heating or cooling of the fluid.

   2) A ground water source system is a standard ARI-325 installation, and is an open-loop system that uses a natural body of water for the exchange of heat. An open-loop heat pump system is a heat pump system that directly utilizes water from a well or water body, pumps it through a pipe for use as a heat exchanger and returns it back to the environment.

   3A) A ground source system is a standard ARI-330 installation, and is a closed-loop system that uses water or a water/glycol solution to exchange heat. The system employs extensive tubing which is buried fairly deep in the ground. A closed-loop heat pump system is a geothermal heat pump system that uses water/anti-freeze in a buried pipe loop as a heat exchanger. The water/anti-freeze in the loop never leaves the system. Loop piping can be installed vertically or horizontally in the earth, a lake, a channel or the ocean.

   3B) A direct expansion system is a geothermal heat pump system that uses refrigerant in a buried pipe loop as a heat exchanger. The refrigerant in the loop never leaves the system. A direct expansion system is a ground source system with a closed-loop which uses refrigerant throughout the system rather than a water/glycol solution to exchange heat.

2. **Coefficient of performance (COP):** A measure of efficiency in the heating mode that represents the ratio of total heating capacity to electrical energy input. The ratio is calculated by dividing the total heating capacity provided by the heat pump, including circulating fan heat but excluding supplementary resistance heat (Btus per hour), by the total electric input (watts) x 3.412.

3. **Commercial sector:** An energy-consuming sector that consists of service-providing facilities and equipment of: businesses; Federal, State, and local governments; and other private and public organizations, such as religious, social, or fraternal groups. The commercial sector includes institutional living quarters. It also includes sewage treatment facilities. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a wide variety of other equipment. *Note:* This sector includes generators that produce electricity and/or useful thermal output primarily to support the activities of the above-mentioned commercial establishments.

4. **Electric power sector:** An energy-consuming sector that consists of electricity only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public--i.e., North American Industry Classification System 22 plants. See also **Combined heat and power (CHP) plant** and **Electricity only plant**.

5. **Energy efficiency ratio (EER):** A measure of efficiency in the cooling mode that represents the ratio of total cooling capacity to electrical energy input. The ratio is calculated by dividing the cooling capacity in Btus per hours (Btu/h) by the power input in watts at a given set of rating conditions, expressed in Btu/h per watt.

6. **Exports:** Shipments of goods from within the 50 States and the District of Columbia to U.S. possessions and territories or to foreign countries. **Note: For the purpose of analyzing activity of the U.S. geothermal heat pump manufacturers in the EIA-902 survey, shipments to foreign**

countries from the 50 States and DC, and shipments from U.S. possessions and territories to foreign countries are included together as exports.

7. **Geothermal heat pump:** A pump which uses the earth as a heat sink during warm weather and as a heat source during colder weather. It also referred to as a ground-source, earth-coupled, or ground-water heat pump.

8. **Heat sink:** A substance into which heat is injected or is absorbed. Substances can be gas, liquid or solid like air, water and earth.

9. **Heat source:** A substance from which heat is received or radiates. Substances can be a gas, liquid or solid like air, water and earth.

10. **Industrial sector:** An energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses the following types of activity: manufacturing (NAICS codes 31-33); agriculture, forestry, fishing and hunting (NAICS code 11); mining, including oil and gas extraction (NAICS code 21); and construction (NAICS code 23). Overall energy use in this sector is largely for process heat and cooling and powering machinery, with lesser amounts used for facility heating, air conditioning, and lighting. Fossil fuels are also used as raw material inputs to manufactured products. Note: This sector includes generators that produce electricity and/or useful thermal output primarily to support the above-mentioned industrial activities. Various EIA programs differ in sectoral coverage-for more information see http://www.eia.doe.gov/neic/datadefinitions/Guideforwebind.htm.

11. **Rated capacity:** The maximum output of a geothermal heat pump unit under specified conditions as designated by the manufacturer, generally measured in tons.

12. **Residential sector:** An energy-consuming sector that consists of living quarters for private households. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances. The residential sector excludes institutional living quarters. *Note*: Various EIA programs differ in sectoral coverage. Click here for further information on the variations of the residential sector used by EIA systems.

13. **Ton:** A measure of the amount of Btu's (British thermal units) needed to melt one ton of ice in a 24-hour period. One ton equals 12,000 Btu's/hour available to heat and/or cool space.

14. **Transportation sector**: An energy-consuming sector that consists of all vehicles whose primary purpose is transporting people and/or goods from one physical location to another. Included are automobiles; trucks; buses; motorcycles; trains, subways, and other rail vehicles; aircraft; and ships, barges, and other waterborne vehicles. Vehicles whose primary purpose is not transportation (e.g., construction cranes and bulldozers, farming vehicles, and warehouse tractors and forklifts) are classified in the sector of their primary use. *Note*: Various EIA programs differ in sectoral coverage. Click here for an explanation of the variations of the transportation sector used by EIA system(s).