FORM EIA-902
ANNUAL GEOTHERMAL HEAT PUMP SHIPMENTS REPORT

GENERAL INFORMATION AND INSTRUCTIONS

I. Purpose

Form EIA-902 is designed to provide the data necessary for the U.S. Energy Information Administration (EIA), a part of the U.S. Department of Energy (DOE), to carry out its responsibilities for tracking heat pump shipments in the geothermal heat pump industry and for providing information concerning the size and status of the industry. The data collected will be published in the Renewable Energy Annual and also be available through EIA's Internet site at http://www.eia.doe.gov/fuelrenewable.html.

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-63B is to be submitted by companies (whether U.S. or foreign-based) that operate under the laws and regulations pertaining to the conduct of commerce within the United States and its territories and possessions and that engage in geothermal heat pump-related activities within the United States, its territories, and possessions specifically directed toward geothermal heat pumps manufacturing, shipping, importing, and/or exporting activities. Companies involving geothermal heat pump-related activities during the survey year can be classified in any of the following categories: (1) manufacturer; (2) brand name manufacturer (private label owner); (3) subsidiary or business unit of overseas manufacturer; (4) U.S. registered publicly traded overseas manufacturer; (5) importer; (6) exporter.

III. Where to Submit Completed Forms

Submit your data electronically using EIA's secure internet data collection system (e-file). This system uses security protocols to protect information against unauthorized access during transmission. All respondents for whom EIA has an e-mail address will be notified of the procedure for submitting using the e-file system.

If you need an alternate means of filing your response or have questions about the data requested on Form EIA-902, please contact the Survey Manager, Peter Wong at peter.wong@eia.doe.gov or (202) 586-7574.

Please retain a completed copy of this form for your files.

IV. When to Submit Completed Forms

The survey year is from January 1 through December 31 each year. Respondents have **60** days from receipt of notification to comply to submit the Form EIA-902.

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 penalty of not more than $2,750 per day for each civil violation, or a fine of not more than $5,000 per day for each criminal 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. **Title 18 U.S.C. 1001 makes it a criminal offense for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious, or fraudulent statements as to any matter within its jurisdictio**n.

VI. Provisions Regarding Confidentiality of Information

The information reported on this form will be protected 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 Department of Energy regulations, 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905.

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 Government Accountability 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 nonstatistical purposes such as administrative, regulatory, law enforcement, or adjudicatory purposes.

Disclosure limitation procedures are applied to the statistical data published from Form EIA-902 survey information on the dollar value of shipments and complete systems to ensure that the risk of disclosure of identifiable information is very small.

For all other data published from the Form EIA-902, disclosure limitation procedures are not applied. 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 4.5 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

For the purpose of this report, please provide information for geothermal heat pump units only. Do not provide information for complete GHP systems. A complete geothermal heat pump system is defined as the geothermal heat pump unit with all the necessary functional components, except for installation materials. These include the geothermal heat pump, air handler, heat exchanger, and system kits.

SCHEDULE 1: IDENTIFICATION

In Schedule 1, the respondent is required to provide and verify the following information. Please contact the survey manager listed on page 1 of the instructions if any of the information needs to be updated

Part A: Reporting entity name, reporting entity URL, reporting entity street address, reporting entity suite address, reporting entity city, reporting entity state, reporting entity zip code, reporting entity official contact name, reporting entity official title, reporting entity official phone number, reporting entity official fax number, and reporting entity official e-mail address.

Part B: Form preparer name, form preparer title, form preparer company URL, form preparer street address, form preparer suite address, form preparer city, form preparer state, form preparer zip code, form preparer phone number, form preparer fax number, and form preparer e-mail address.

Part C: Entity supervisor name, entity supervisor title, entity supervisor company URL, entity supervisor street address, entity supervisor suite address, entity supervisor city, entity supervisor zip code, entity supervisor phone number, entity supervisor fax number, and entity supervisor e-mail address.

Part D: Parent company name, parent company official contact name, parent company street address, parent company suit address, parent company city, parent company state, parent company zip code, parent company international phone number, parent company official contact phone number, parent company official contact fax number, and parent company official e-mail address.

Part E: Parent contact name, parent contact title, parent contact company URL, parent contact street address, parent contact suit address, parent contact city, parent contact state, parent contact zip code, parent contact international phone number, parent contact phone number, parent contact fax number, and parent contact E-mail.

SCHEDULE 2: COMPANY STATUS (Respondent Business Type)

Part A: Select the business types that best describe the responding company's involvement in geothermal heat pump manufacturing. The responding company may be classified using multiple business types. (See glossary entries at the glossary section).

SCHEDULE 3: INDUSTRY STATUS

Part A: (a-h) Report only on activities that are geothermal heat pump-related.

Part B: (a-d) Check the appropriate boxes if you are planning to introduce a new geothermal heat pump-related product. A new geothermal heat pump-related product is differentiated from a modified existing product if the "new" product is different enough to warrant a new model number and requires retesting or recertification under existing industry standards.

Part C: Enter the total number of full-time equivalent employees engaged in geothermal heat pump-related activities during the survey year. (See glossary entry for "Full-time equivalent employee" on page 7.)

Part D: "Geothermal heat pump-related activities" includes all activities listed in schedule 3 part A.

SCHEDULE 4: GEOTHERMAL HEAT PUMP SHIPMENTS STATUS

Part A: For each type of geothermal heat pump that the responding company had in inventory, manufactured, imported, or exported, select the type of heat pump from the drop-down lists. The columns in the data entry section of the form will change to reflect the selections.

4A.a (Product Available): (1-4) For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units available in inventory at the beginning of the report period, manufactured during the report period, imported during the report period, and the cumulative total available for shipment. The cumulative total should be the sum of (1-3). The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

4A.b (Shipments): (1-3) For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units shipped within U.S. (sold within U.S.), exported (sold overseas), and the total shipments. Total shipments should be the sum of (1-2). The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

4A.c (Revenue): (1-2) Enter the total value received for the total geothermal heat pump shipments in Item 4.A.b.3 by type. The value reported should be the total value received for geothermal heat pumps only at your company's net billing price, freight-on-board factory, including charges for cooperative advertising and warranties. Do not include excise taxes, freight, or transportation. Report values to the nearest dollar. Verify that the average value is equal to the dollar value of the total shipments divided by the quantity of total shipments (schedule 4A.c.1 divided by schedule 4A.b.3). The total column should contain the total revenue for all heat pump types in a given row.

4A.d (Inventory at Close of Report Year): (1) For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units that remain in inventory at the end of the report year. These values should be equal to the difference between schedule 4A.a.4 and schedule 4A.b.3. The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

4A.e (Efficiency): (1) Enter the average cooling rating, also referred to as the energy efficiency ratio (EER). EER 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. (2) Enter the average heating rating, also referred to as

the coefficient of performance (COP). COP is calculated by dividing the total heating capacity provided by the heat pump (Btus per hour), including circulating fan heat but excluding supplementary resistance heat, 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, COP is 48,000 / (3,430 x 3.412) = 4.1.

SCHEDULE 5: ORIGIN OF GEOTHERMAL HEAT PUMPS

Part A: For each type of geothermal heat pump that the responding company imported, select the type of heat pump from the drop-down lists. The columns in the data entry section of the form will change to reflect the selections.

List the country(ies) from which the geothermal heat pumps reported in schedule 4A.a.3 were imported. Enter the name of each manufacturer of the imported heat pumps and select the country of origin from the drop-down lists. For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units imported during the report period. The values in the total row should equal the values from schedule 4A.a.3. The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

Part B: For each type of geothermal heat pump that the responding company manufactured within the U.S., select the type of heat pump from the drop-down lists. The columns in the data entry section of the form will change to reflect the selections.

List the state(s) in which the geothermal heat pumps reported in schedule 4A.a.2 were manufactured. Select the state in which the heat pumps were manufactured from the drop-down lists. For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units manufactured within the U.S. during the report period. The values in the total row should equal the values from schedule 4A.a.2. The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

SCHEDULE 6: DESTINATION OF GEOTHERMAL HEAT PUMP

Part A: For each type of geothermal heat pump that the responding company exported, select the type of heat pump from the drop-down lists. The columns in the data entry section of the form will change to reflect the selections.

List the country(ies) to which the geothermal heat pumps reported in schedule 4A.b.2 were exported. Enter the name of each recipient of the exported geothermal heat pump and select the destination country from the drop-down lists. For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units exported during the report period. The values in the total row should equal the values from schedule 4A.b.2. The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

Part B: For each type of geothermal heat pump that the responding company shipped within the U.S., select the type of heat pump from the drop-down lists. The columns in the data entry section of the form will change to reflect the selections. Then select the state to which the heat pumps were shipped from another drop-down list. After entering the relevant data into the form for one state, repeat the process for each additional state that received geothermal heat pump shipments.

6B.a (U.S. Shipments by State and Sector): (1-5) For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pump units shipped to each sector. Specify whether the geothermal heat pump was new or a retrofit. (See glossary entry for "Retrofit" on page 9.) The values in the total row should equal the values from schedule 4A.b.1. The total column should contain the total rated capacity in tons and total number of units for all heat pump types in a given row.

The sector categories in schedule 6.B.a are:

6B.a (1) Residential: Geothermal heat pump applications related to any building used for residential occupancy that has a system for heating, cooling, or both.

6B.a (2) Commercial: Geothermal heat pump applications for use in businesses where services (rather than products) are provided, such as wholesale and retail trade or health and educational services.

6B.a (3) Industrial: Geothermal heat pump applications for use in businesses where products (rather than services) are provided, such as the manufacture and processing of goods and basic materials.

6B.a (4) Electric Power: Shipments of geothermal heat pumps to the electric power sector for use in power generation or for experimental applications (includes gas and electric utilities). Includes central stations, decentralized systems or experimental applications.

6B.a (5) Transportation: Shipments of geothermal heat pumps to transportation sector that consists of all vehicles whose primary purpose is transporting people and/or goods.

6B.a (6) Total domestic shipments by sector: The sum of new and retrofit heat pumps in the total row should equal the values from schedule 4A.b.1.

6B.b (U.S. Shipments by State and End Use): (1-7) For each type of geothermal heat pump, enter both the rated capacity in tons and number of geothermal heat pumps shipped within the U.S., by end use.

The end-use categories in schedule 6B.b are:

6B.b (1) Hot Water Only: U.S. shipments of geothermal heat pumps used only for water heating.

6B.b (2) Pool Heating Only: U.S. shipments of geothermal heat pumps used only for swimming pool heating.

6B.b (3) Space Heating/Cooling Only: U.S. shipments of geothermal heat pumps used only for space heating and/or space cooling (air conditioning).

6B.b (4) Process heating: U.S. shipments of geothermal heat pumps used for industrial process heating.

6B.b (5) Multiple Uses (1-4 above): U.S. shipments of geothermal heat pumps used for any combination of end uses 1-4.

6B.b (6) Electricity Generation: U.S. shipments of geothermal heat pumps used as steam generators to power electric generators.

6B.b (7) Total U.S. shipments by end use - The sum of all end use heat pumps in the total row should equal the values from schedule 4A.b.1.

SCHEDULE 7: COMMENTS

Part A: Please provide any explanations and comments for this report. For clarification purposes, please identify schedule, part, line number, and column (if applicable) for each entry.

GLOSSARY

Brand Name Manufacturer (Private Label Owner): A "private labeler" is the owner of a brand or trademark on the label of a manufactured product which bears a private label. A product is considered to "bear a private label" if the product or its container is labeled with the brand or trademark of a person other than the manufacturer and the manufacturer's brand or trademark is not on the product or container. In other words, a brand name manufacturer is a company that sells manufactured products under its name but does not produce them.

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.

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

Direct Geothermal Heat pump: 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.

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 code 22.

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.

Export (renewable equipment): A shipment of renewable equipment sent from the United States and any of its territories to a foreign country.

Full-time Equivalent Employee (FTE): A ratio that represents the number of hours that an employee works to 40 hours. Full-time employment is generally considered to be forty hours a week. An FTE is any combination of workers that combines to forty hours per week and does not necessarily equate to headcount. For example, two, half-time (twenty hours per week) workers together amount to one FTE.

Geothermal Heat Pump: A geothermal heat pump is a device which uses the earth as a heat sink during warm weather and as a heat source during colder weather. There are typically four types of geothermal heat pumps:

1. Water loop heat pump (WLHP) 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. Ground water heat pump (GWHP) 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.

3. Ground source heat pump (GSHP) 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/antifreeze 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.

4. Direct geothermal heat pump (DXHP) 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.

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

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

Import (renewable equipment): A shipment of renewable equipment sent into the United States and any of its territories from foreign countries.

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.

Manufacturer: An entity in the business of manufacturing.

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

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.

Retrofit: An upgrade to an existing system. Retrofitting refers to the replacement of components of a system, but not the replacement of the entire system.

Subsidiary or Business Unit of Overseas Manufacturer: An entity directly or indirectly controlled by a manufacturer that is headquartered overseas (parent company) or the logical segment of an overseas manufacturer (such as accounting, production, or marketing that representing a specific business function).

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.

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.

U.S. Registered Publicly Traded Overseas Manufacturer: A manufacturer that is headquartered overseas but whose stock is publicly traded on a U.S. stock exchange.