Chapter Adm 46

RENEWABLE ENERGY REFUNDS

Adm 46.01 Authority. Section 16.957 (5d), Stats., requires the department to establish performance standards for renewable energy systems that apply for a direct refund. Section 16.957 (8), Stats., requires the department to define dual purpose passive energy systems. Section 134.75, Stats., requires the department to produce a consumer notice stating the standards the department will apply when determining eligibility for a refund.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.02 Purpose. The purpose of this chapter is to establish the criteria the department will use to approve renewable energy applications for an owner of a system applying for a renewable energy system financial incentive. This chapter applies to all renewable energy systems installed on or after January 1, 1986 and submitted for a refund.

Note: All renewable energy systems are subject to applicable portions of other Wisconsin administrative codes (i.e., chs. ILHR 50-64, Building and Heating, Ventilating and Air Conditioning Code; ch. ILHR 82, Design, Construction, Installation, Supervision and Inspection of Plumbing; ch. ILHR 16, Wisconsin Electrical Code; chs. ILHR 41-42, Boiler and Pressure Vessel Code; and related codes).

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.03 Definitions. (1) "Active solar energy system" means any mechanical system which collects solar radiation in the form of thermal energy and uses a heat transfer fluid to transport the thermal energy to meet load requirements or to thermal storage where the thermal storage and collectors are separated in order that losses from the collector, while it is not operating, do not contribute to loss from storage. Components of the system include collectors; storage containers and contents, except the building envelope; pipe; fittings; ductwork insulation; pumps; blowers; valves and controls.

(2) "Annual usable energy output" means the annual amount of energy provided by the renewable energy system which can be utilized to offset energy requirements normally met by purchased energy resources. It is measured in millions of British thermal units and takes into account climatic conditions, system performance characteristics, system load and load usage patterns.

(3) "'British thermal unit' (Btu)'" means the amount of energy required to raise the temperature of one pound of water one degree fahrenheit.

(4) "Department" means the department of administration.

(5) "Dual purpose passive solar energy system" means a passive solar energy system whose collectors or storage components serve a purpose other than the collection and storage of solar thermal energy. Such purposes include living space, greenhousing, flooring, roofing and windows.

(6) "Innovative solar energy system" means a solar energy system for which no nationally recognized certification program or testing method exists.

(7) "Installation date" means the date on which the renewable energy system is put in operation or is capable of operating.

(8) "Load" means the energy requirements of a building, device or process.

(9) "Passive solar energy system" means a solar energy system whose collectors and storage units are integrated into the building structure, such that losses from the collector, while it is not operating, contribute to loss from storage.

(10) "Photovoltaic" means a solar energy system that converts radiant solar energy directly into electrical energy. Components include collectors, batteries, wiring and controls.

(11) "Pool heating system" means a solar energy system used primarily to heat a swimming pool or hot tub.

(12) "Renewable energy system" means a solar energy system, or a wind energy system, not including any equipment which functions as part of a conventional energy system, pool heating system or dual purpose passive solar energy system.

(13) "Single purpose passive solar energy system" means a passive solar energy system whose components are used for the sole purpose of collecting, storing and distributing solar energy. Examples of single purpose passive solar energy systems include solar attics, Trombe walls, water walls, and building integrated phase-change systems except when used in conjunction with a dual purpose passive solar energy system.

(14) "Solar energy system" means the equipment which directly converts and then transfers or stores solar energy into usable forms of thermal or electrical energy. Such systems may include space heating or cooling, crop drying, electricity generation or hot water heating.

(15) "System addition" means equipment attached to an existing renewable energy system which increases the annual usable energy output of the system.

(16) "System designer" means a person who offers for sale a renewable energy system as a complete package, the components of which may be produced by different manufacturers.

(17) "System replacement" means the total removal and replacement of the collectors in a solar energy system; or replacement of the blade assembly, generator or alternator in a wind energy system.

(18) "Wind energy system" means a device that uses blades rotated by the wind to convert kinetic energy of the wind into electrical or mechanical energy. It does not include sailboats, iceboats, and other wind-pow-

ered vehicles or devices. Components include blade assemblies; brakes; generator or alternators; orienting mechanism; tower and supports; wiring; controls; electric power converters; electrical or mechanical interfacing equipment; and thermal or electrical storage.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.04 Application. Application for refund shall be made on forms provided by the department. The department may request additional information in order to verify eligibility for approval. Upon receipt of all requested information, the department shall notify the applicant of the department's decision within 40 working days. If a decision cannot be made within 40 days, the department shall notify the applicant of the reason for the delay and provide an estimated processing date. Application forms shall include specific information including family size; age and square footage of building; size and type of thermal storage unit; manufacturer and model numbers of the major system components; fuel displaced and other relevant information as indicated on the application form for the particular system being installed. Attachments to the application shall include:

(1) PROOF OF PURCHASE. Proof of purchase such as receipts, contracts or other items verifying the cost for the design, construction, equipment and installation of the system, as defined in s. Adm 46.03; seller's name; purchaser's name; purchase date; description of renewable energy system or component; and cost of system or component. For systems with multiple receipts, the department may accept an itemized list of components costing less than $50.

(2) PHOTOGRAPHS. Photographs of the renewable energy system. The photographs for solar energy systems shall show the number of panels or collector surface; position on or relative to the building; and any potential shading of the collector suraface. Photographs for wind energy systems shall show the blade assembly and tower, including guy-wire anchoring where applicable.

(3) TAX FORMS. Except for corporations, cooperatives, partnerships and sole-proprietorships, a copy of the applicant's and the applicant's spouse's single or jointly filed federal income tax form for the year prior to the year of application. The tax forms submitted shall include the applicant's name and applicant's spouse's name, address and federal taxable incomes. Forms shall be returned by the department upon request.

(4) STATEMENT OF INSTALLATION AND COMPLIANCE WITH STATE AND LOCAL BUILDING CODES. For active solar energy systems and photovoltaic energy systems subject to state and local building codes, a signed statement from the system designer or builder that the installation has been completed and is in compliance with state and local building codes. The department may, with prior approval, accept inspection by a licensed architect or engineer in lieu of such statement.

(5) TOWER DESIGN. For wind energy systems, a certification of the tower design by the tower manufacturer or by an independent professional structural engineer. The certification shall state that the tower has been designed to withstand windloads under the given site conditions.

Note: Application forms may be obtained by writing:

Department of Administration
Division of State Energy & Coastal Management
Renewable Refund Program
101 S. Webster St., P.O. Box 7868
Madison, WI 53707

The following forms are available:

AD-EN-115: Active Solar Energy System Incorporating a Manufactured Flat-Plate, Concentrating, Evacuated Tube, or Tracking Collector.

AD-EN-116: Active Solar Energy System Incorporating a Home-Built or Custom-Built Collector.

AD-EN-118: Wind Energy System, Photovoltaic Energy System or Single Purpose Passive Solar Energy System.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.05 Approval standards. The durability and performance of the renewable energy system shall be documented for the purpose of determining the eligibility and amount of a refund.

(1) DURABILITY. The renewable energy system shall be proven durable for a minimum of 5 years of service use. This requirement shall be determined by the department based on a review of system schematics, materials specifications, and warranties. All active solar energy systems shall meet the minimum warranty requirements of s. 101.175 (4) (a), Stats.

(2) PERFORMANCE. The department shall use accepted engineering principles to determine the performance rating of the renewable energy system. The performance rating, expressed as annual usable energy output, shall be based on the following:

(a) *Manufactured active solar energy systems.* 1. Except for small manufacturers as provided in par. (b), all collectors shall be certified by the solar rating and certification corporation (SRCC) or the air-conditioning and refrigeration institute (ARI).

2. Except for small manufacturers as provided in par. (b), a manufacturer of a collector or system with at least one certified Wisconsin installation in 1985, which has not been tested by an SRCC or ARI accredited laboratory, or whose test is invalid because of engineering changes, may be granted an extension not to exceed 6 months from January 1, 1986, in order to have a collector or system tested by an SRCC or ARI accredited laboratory.

3. Except for small manufacturers as provided in par. (b), a manufacturer of a collector or system with at least one certified Wisconsin installation in 1985, which has been tested by an SRCC or ARI accredited laboratory and whose collector or system has not been changed so that the test result is invalid, may be granted an extension not to exceed 18 months from January 1, 1986, in order to have a collector or system retested by an SRCC or ARI accredited laboratory and certified by SRCC or ARI.

4. The performance rating of the manufactured active solar energy system shall be based on an F-Chart analysis utilizing the results of an ASHRAE 93-77 or 95-1981 test as performed by an SRCC or ARI accredited laboratory. Performance rating tables shall be established for all major collector types used in domestic hot water systems, space heat systems and combined space and domestic hot water systems. These tables shall be used by the department to calculate benefits for one- and 2-family dwellings. System performance for all other applications shall be

based on an individualized F-Chart analysis utilizing site specific information.

Note: These standards can be obtained by writing to:

American Society of Heating, Refrigeration and Air-Conditioning Engineers, ASHRAE Publications Sales Department, 1791 Tullie Circle, N.E., Atlanta, GA 30329; Methods of Testing to Determine the Thermal Performance of Solar Collectors, ASHRAE 93-77; Methods of Testing to Determine Thermal Performance of Domestic Water Heating Systems, ASHRAE 95-1981.

Solar Rating and Certification Corporation, 1001 Connecticut Avenue, N.W., Suite 800, Washington, DC 20036; Test Methods and Minimum Standards for Certifying Solar Collectors, Standard 100-81; Test Methods for Minimum Standards for Certifying Solar Water Heating Systems, Standard 200-82; Operating Guidelines for Certifying Solar Collectors, Document OG-100; Operating Guidelines for Certifying Solar Water Heating Systems, Document OG-200; Methodology for Determining the Thermal Performance Rating for Solar Collectors, Document RM-1.

Air-Conditioning and Refrigeration Institute, 1501 Wilson Boulevard, 6th Floor, Arlington, VA 22209; ARI Standard 910-83 for Solar Collectors; Certification Program for Solar Collectors, Operational Manual OM 910.

F-Chart Software, 4406 Fox Bluff Road, Middleton, WI 53662; F-Chart User's Manual — Miocrocomputer Version.

(b) *Home-built, custom-built, and small manufacturers of active solar energy systems.* The performance of home-built or custom-built active solar energy systems of small manufacturers shall be based on good engineering practice and shall account for system and material specifications, construction techniques, climatic conditions, system use and available test results. As used in this paragraph:

1. "Home-built active solar energy system" means an owner-installed system incorporating a collector assembled by the system owner from components. It does not include manufactured collectors supplied as an integral unit and installed by the owner.

2. "Custom-built active solar energy system" means a one of a kind system incorporating a collector fabricated at the installation site from components. It does not include modular systems in which the modular components are assembled at the installation site."

3. "Small manufacturer" means a business that builds or assembles less than 2500 square feet of collector per year and elects not to list with SRCC or ARI.

(c) *Single purpose passive solar energy system.* The performance rating of single purpose passive solar energy systems shall be based upon good engineering practice and shall take into account climatic conditions, system design, materials and performance documentation provided by the manufacturer or system designer.

(d) *Photovoltaic energy system.* The performance of photovoltaic energy systems shall be based upon good engineering practice and shall take into account engineering specifications provided by the manufacturer and local radiation conditions and load. The storage efficiency shall not be included in these calculations.

(e) *Wind energy systems.* The performance rating of wind energy systems shall be based upon good engineering practice, and shall take into account the manufacturer's power curve, tower height and the estimated average wind speed at the site.

(f) *Innovative solar energy systems.* Performance of innovative solar energy systems shall be based upon good engineering practice, and shall

take into account system design, material specifications, construction techniques and any available test results.

(3) PERFORMANCE RATING ADJUSTMENTS. Performance rating adjustments for renewable energy systems shall be adjusted based on installation site conditions or engineering changes.

(a) The department may increase the performance rating of a system based on favorable engineering changes. Manufacturers may obtain the adjustment by providing the department with all of the following:

1. A description of the change.

2. Where applicable, a statement by SRCC or ARI that the change does not adversely affect the performance of the system.

3. An independent written engineering analysis showing the calculated changes to the power curve in wind systems, the test slope, test intercept and incident angle modifiers for active solar energy systems.

(b) The department may decrease the performance rating based on site specific conditions which significantly decrease the performance of the system including:

1. Collectors installed more than 30° off due south;

2. Tilt angle less than 30° from horizontal;

3. Shading or obstructions; or

4. Partial year usage.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.06 Benefit determination. Refunds shall be determined on the basis of $100 per million Btu of annual usable energy output. The maximum refund per system is $10,000 for corporations, cooperatives, partnerships and sole-proprietorships; and $2,000 for all others.

(1) *Systems additions.* The refund for system additions shall be based on current estimates of the Btu difference between the original system and the total system. The total benefits per system and all system additions shall not exceed the current maximum allowable refund.

(2) *System replacements.* Refunds for system replacements shall be based on the performance of the replacement system. The refund shall be limited to the smaller of the current maximum refund or an amount based on the following formula:

$$R = (BTU \times \$100) - \left[OS - \left[\frac{OS}{DL} \right] * N \right]$$

where:

R = Refund on the replacement system.

BTU = Performance rating on the replacement system in millions of Btu per year.

OS = Amount of state refund or tax credit received on the original system under ss. 16.957, 71.04 (16), 71.09 (12) or 101.57, Stats.

DL = Design life of the system (20 years).

N = Number of years the original system was in operation.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.07 Application, benefit and performance limitations. The following limitations shall apply to renewable energy systems:

(1) NUMBER OF CLAIMS. Only one claim may be made per system, system addition, or system replacement.

(2) SUBSEQUENT OWNERS. Subsequent owners may not claim benefits for a system or part of a system which previously received benefits.

(3) NEW CONSTRUCTION. The date of installation for renewable energy systems installed on new construction shall be the date of first occupancy.

(4) INSTALLATION DATE RESTRICTIONS. Systems, system additions or system replacements installed prior to January 1, 1986, or for which a 1985 federal renewable energy tax credit has been claimed shall not apply under this chapter.

Note: Systems installed in calendar year 1985 may be eligible for a direct refund under ch. Adm 45 if the application is filed by April 15, 1986.

(5) REFUND LIMITS. The total value of the renewable energy financial incentive shall not exceed the difference between the purchase price and the total of other state or federal grants and tax credits.

(6) HEALTH AND SAFETY. Where evidence exists that a renewable energy system presents a hazard to health or property, the department may deny certification or require proof that the hazard has been corrected prior to certification for a refund.

(7) INSTALLATION AND PERFORMANCE. To be eligible for a refund, the renewable energy system shall meet the following requirements:

(a) Renewable energy systems shall be new and expected to remain in operation at the installation site for a minimum of 5 years. Owners of systems removed or deactivated may be required to return a prorated portion of the refund to the department.

(b) Collectors shall be installed within 45° of due south.

(c) Renewable energy systems, system additions or system replacements shall produce a minimum of one million Btu of annual usable energy output.

(d) Except for photovoltaic energy systems, manufactured active solar energy systems shall produce a minimum of 100,000 Btu of annual usable energy output per square foot of collector surface when mounted at a tilt angle of 45 to 60° or 75,000 Btu of annual usable energy output per square foot when mounted at a 90° tilt angle.

(e) Solar energy systems replacing or covering existing glazing shall produce a minimum of one million Btu of annual usable energy output beyond that produced by the exising glazing.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.08 Manufacturer requirements. To enable their systems or collectors to be eligible for a refund and to be listed as eligible for a refund,

manufacturers shall furnish the department with the following information which will be used to determine durability, performance and to inform dealers of program requirements:

(1) List of collector or wind machine model numbers and components.

(2) Copies of warranties.

(3) Copies of all ASHRAE 93-77 or other pertinent test results.

(4) For solar energy systems, a diagram showing collector material and construction.

(5) System schematic, if applicable.

(6) For wind energy systems, a specification list including rotor; hub; blade; transmission; generator or alternator; weight; cut-in speed; cut-out speed; rated power; maximum power and tower design if applicable.

(7) Semi-annual list of all authorized Wisconsin distributors and dealers.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.09 Appeals and challenges. (1) Appeal of denial of a refund or benefit level shall be made to the department in writing and shall state why the original decision should be overruled. A decision shall be made on the appeal by the director of the bureau responsible for administration of the renewable energy refund program.

(2) Manufacturer or dealer challenges to annual usable energy output ratings calculated by the department, or eligibility for program benefits shall be made to the department in writing. The challenge shall state why the rating or eligibility should be changed and shall include supporting documentation such as test results and engineering studies.

Note: Appeals and challenges shall be sent to:

Department of Administration
Division of State Energy & Coastal Management
Bureau of Program Operations
101 S. Webster St., P.O. Box 7868
Madison, WI 53707

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.10 Site inspections. As provided by s. 16.957 (5g), Stats., certified renewable energy systems may be subject to on-site inspections. The purpose of inspection is to verify that information provided in the application for refund conforms to the physical installation. The department shall notify the owner and the system designer of any noncompliance with applicable administrative rules. If the noncompliance pertains to the renewable energy system and presents a danger to health or property, the department shall inform the department of industry, labor and human relations and local building code enforcement authorities of the noncompliance.

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.

Adm 46.11 Consumer services. (1) As specified under s. 134.75, Stats., the department shall produce a written notice designed to inform consumers of the standards applied by the department when determining eligibility for a refund, including which systems are eligible.

(2) The department shall provide a toll free telephone service to answer consumer questions concerning financial incentives, benefit calculation, life cycle costing and system selection.

Note: The designated toll free number is 1-800-222-SUNY.

(3) Any person contemplating purchase of a renewable energy system may request an estimate of the probable refund based on a description of the system under consideration. This request may be made either in writing or by telephone.

Note: The notice "Renewable Energy Systems — Before You Buy" may be obtained at cost by writing to:

Department of Administration
Document Sales & Distribution
202 South Thornton Avenue
Madison, WI 53702

History: Cr. Register, December, 1985, No. 360, eff. 1-1-86.