

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**  
**OFFICE OF THE SECRETARY**  
**Statutory Authority: 29 Delaware Code,**  
**Section 8051(d) (29 Del.C. §8051(d))**

Secretary's Order No.: 2004-A-0032

**FINAL**

**Regulations Governing the Green Energy Program**

**I. Background**

On May 12, 2004 a public hearing was held in the DNREC Energy Office, located at 146 S. Governors Avenue, Dover, Delaware, to receive comment on the Department's proposed **Delaware Regulations for the Green Energy Program** (previously known as the Energy Alternatives Rebate Program under regulations that were published by the Economic Development Office approximately two years ago).

In 1999, the General Assembly enacted House Bill #10 (i.e., the Electric Restructuring Act of 1999), which created what was known at that time as the Environmental Incentive Fund. In August of 2002, Senate Resolution #30 was passed to allow the Environmental Incentive Fund monies to be used for renewable energy property grants. At that time, grant levels were set at 35 percent of the installed cost of solar, water heating, solar electric (commonly known as photovoltaics), geothermal heat pumps, and small wind turbines. The Fund was based in the Delaware Economic Development Office at that time.

Last year, Senate Bills #93 and #145 came before the General Assembly and were passed. These bills changed the Environmental Incentive Fund to the Green Energy Fund, or the Green Energy Program. It increased the incentive levels for eligible technologies. It also established two new programs: the Technology Demonstration Program; and the Research and Development Program. It also allowed for increased outreach and education. The eligible technologies under these programs are solar photovoltaic, solar hot water heating and cooling applications, and wind and fuel cells (note: for the purposes of this Green Energy Program, the fuel cells must use a renewable type fuel).

The Department's Energy Office has developed an application process which is now located on the Internet at the Green Plains Energy Website, maintained by their contractor, Sandra Burton ([www.greenplainsenergy.com](http://www.greenplainsenergy.com)). This website can also be reached through the Delaware Energy Office's website at [www.delaware-energy.com](http://www.delaware-energy.com). Basic eligibility requirements for the Green Energy Program are as follows: (1) one must be a Conectiv Power delivery customer (note: Delaware Electric Cooperative and municipalities are allowed to come into this program on a voluntary basis); (2) the equipment must be new and previously unused; and (3) the equipment must be approved equipment only, as per the regulation – solar pool heating equipment is not eligible. For all specific requirements of eligibility and references to various codes and standards concerning these matters, one should refer directly to the regulation language itself, which contains detail with respect to these issues.

Several members of the public attended this public hearing. Written comments were received by the Department subsequent to the hearing, due to the fact that the Hearing Officer permitted the record to remain open for fifteen [15] calendar days after the hearing to allow for receipt of such comments. The Department formally responded to these written comments immediately thereafter, and a formal chart outlining the Energy Office's review and response to these comments was submitted to the Hearing Officer on June 9, 2004. Proper notice of the hearing was provided as required by law.

**II. Findings**

Proper notice of the hearing was provided as required by law.

The Department has carefully considered all relevant public input regarding its proposed regulation and has provided a reasoned analysis and a sound conclusion regarding each comment as reflected in the June 10, 2004 Hearing Officer's Report, which is attached and incorporated into this Order. The reasoning and conclusions with respect to each issue are hereby incorporated into this Order as formal findings.

**III. Order**

In view of the above findings, it is hereby ordered that the **Delaware Regulations Governing the Green Energy Program**, as revised through the public comment process and Departmental review, be promulgated in final form in the customary manner and established rule-making procedure required by law.

### Reasons

This rulemaking, together with the revisions made as a result of the public comment process, will provide a significant energy benefit for the current citizens of the State of Delaware, as well as for future generations to come. Additionally, this rulemaking represents careful, deliberate and reasoned action by this agency to address the energy issues affecting Delaware at this time. In developing these regulations, the Department has balanced the absolute environmental need for the State of Delaware to promulgate regulations concerning this matter with the important interests and wide array of public concerns surrounding the same, in furtherance of the policy and purposes of 7 Del.C. Ch. 60.

John A. Hughes, Secretary

Date of Issuance: June 14, 2004

Effective Date of the Amendment: July 11, 2004

### Regulations for the Green Energy Program

#### **1.0 Purpose**

The purpose of this regulation is to prescribe procedures relating to the Green Energy Fund pursuant to 29 Del.C. Chapter 80, Subchapter 2, the Delaware Energy Act. It is the goal in establishing this regulation to provide a streamlined procedure for distributing Green Energy Funds through the use of grants.

This regulation provides rules of practice and procedure for application and disbursement of Green Energy Fund grants for renewable energy projects in Delaware.

#### **2.0 Statutory Authority**

These regulations are promulgated under authority of 29 Delaware Code, Section 8051 (d).

#### **3.0 Definitions**

For purposes of this regulation, the following words and phrases shall have the meanings set forth below.

**“Conectiv Power Delivery”** means the trade name used by Delmarva Power and Light Company.

**“Department”** means the Department of Natural Resources & Environmental Control [~~or its agent.~~ the Delaware Energy Office, or such other agents as the department or Secretary may designate.]

**“DP&L Service Territory”** means the service territory of Delmarva Power and Light Company, doing business as Conectiv Power Delivery, or its successor, as such territory is reflected in the electric service territory maps maintained by the Delaware Public Service Commission under the authority of 26 Del.C. § 203B.

**“Fiscal Year”** means the budget and accounting year of the State beginning on July 1 and ending on June 30. Reference to a Fiscal Year by year number means the Fiscal Year ending on June 30 of the named year. For example, a reference to Fiscal Year 2004 means the period beginning on July 1, 2003 and ending on June 30, 2004.

**“Freeze Tolerance Limit”** means the temperature below which a Qualifying System for Solar Water Heating might suffer damage attributable to freezing.

**“Fuel Cell”** is an electrochemical energy conversion device which converts the chemical energy from a fuel directly into electricity and heat.

**“Geothermal Heat Pump”** means either an open or closed loop system or direct expansion system that uses the thermal energy of the ground or groundwater as the heat source and heat sink for residential or non-residential space heating and/or cooling. It may provide both space heating and cooling, cooling only or heating only functions. A closed loop system consists of a ground heat exchanger in which the heat transfer fluid is permanently contained in a closed system. An open loop system consists of a ground heat exchanger in which the heat transfer fluid is part of a larger environment. A direct expansion system consists of a geothermal heat pump system in which the refrigerant is

circulated in pipes buried in the ground, rather than using a heat transfer fluid, such as water or antifreeze solution in a separate closed loop, and fluid to refrigerant heat exchanger.

“Green Energy Fund” means the fund established by 29 Del.C. § 8054 and administered by the Department.

“Grid-connected”, “Grid-tied” or “Interconnected” means a condition in which a Qualifying System that is an electrical generating system serves and is electrically connected to an electrical load that is also connected to and served by the local utility electrical grid. The delivery or ability to deliver, any portion of the generating capacity into the utility electrical grid is not required, nor must the loads served be only alternating current loads. The Photovoltaic or Wind Turbine systems need only to be capable of serving electrical loads that would otherwise be served by the local utility.

“Kilowatt” means 1,000 Watts.

“Kilowatt-hour” means the basic unit of electric energy equal to one Kilowatt of power supplied to or taken from an electric circuit steadily for one hour. One-Kilowatt hour equals 1,000 Watt-hours. Electric energy is commonly sold by the Kilowatt-hour.

“Nonresidential” means all classes of customer purchasing electric power for uses other than for individual households. These groups of customers generally purchase electric power for commercial and industrial purposes. When used as an adjective with respect to Qualified Systems or Green Energy Program Grants, such term refers to systems owned by, or leased to, or grants awarded to Nonresidential persons.

“Participating Contractor” An appropriately Delaware licensed contractor who has submitted to the Department an application designated by the Department with all required attachments and maintains in full force all required insurance and warranties as described in Section 5.2.

“Passive Solar Design” A residential or non-residential building design that uses no external mechanical power, such as pumps or blowers, to collect and move solar heat.

“Photovoltaic” means a non-mechanical semiconductor device, most commonly made of silicon that produces direct current (dc) electricity [from sunlight].

“Placed in Service” means installed, operational, and producing output.

[“Professional Engineer” means “engineer” as defined in Title 24 Del.C., Chapter 28, Professional Engineers, namely, a person who by reason of his or her advance knowledge of mathematics and the physical sciences, acquired by professional education and practical experience, is technically and legally qualified to practice Professional Engineering, and who is licensed by the Delaware Association of Professional Engineers.]

“Purchaser” means the purchaser or lessee of a Qualifying System.

“Qualifying System” has the meaning as set forth in Section 5.0.

“Renewable Energy Technology” shall have the meaning as prescribed in 29 Del.C. Chapter 80.

“Renewable Fuel” means a non-nuclear fuel that can be derived from non-fossil energy sources that are naturally replenishing and virtually inexhaustible.

“Residential” means the class or classes of customers purchasing electric power for household uses. When used as an adjective with respect to Qualified Systems or Green Energy Program Grants, such term refers to systems owned by, or leased to, or grants awarded to Residential persons.

“Retailer” means the vendor or lessor of a Qualifying System.

“Secretary” means the Secretary of the Department of Natural Resources and Environmental Control.

“Solar Pathfinder™” is a non-electronic instrument that measures the annual solar potential for a given site.

“Solar Shade Analysis” means an on site evaluation using a Solar Pathfinder™ or [functionally] equivalent device that measures the annual solar potential for the given site.

“Solar Water Heating” means the heating of water by use of the sun’s energy rather than electricity or gas or some other means.

“State” means the State of Delaware.

“Ton of Capacity” means 12,000 British Thermal Units (BTU) per hour of capacity.

“Watt” means the basic unit of measure of real electric power, or rate of doing work.

“Watt-hour” means the basic unit of measure of electric energy consumption. The total amount of energy used in one hour by a device that requires one Watt of power for continuous operation.

“Wind Turbine” means a mechanical/electrical system that converts the kinetic energy of blowing wind into [mechanical or] electric power.

#### **4.0 Green Energy Fund**

The Delaware 142nd General Assembly enacted and Governor Minner signed into law Senate Bills 93 and 145, which amended Title 29 of the Delaware Code to include new provisions for utilizing the Green Energy Fund. The law continues to encourage and promote the use of renewable electric generation technologies and alternate energy technologies by residential and non-residential (commercial) customers. Further, the law amends §8054(d) by

dividing the Green Energy Fund into three separate and distinct programs.

The programs outlined in §8054(d) are described in full in this regulation and include the following:

Green Energy Program

Technology Demonstration Program

Research and Development Program

## **5.0 Green Energy Program**

### **5.1 General Provisions**

All grants made under the Green Energy Program are on a first-come first-served basis and shall not exceed sixty-five percent (65%) of the total revenue collected during the previous fiscal year [or sixty-five percent (65%) or the total fund whichever is greater]. Under no circumstances will the Department issue grants for land acquisition in association with any project proposed in the Green Energy Program.

Of the total funds available through Green Energy Program on an annual basis, the grants made for residential projects shall not exceed 40% of the total funds available and the non-residential grants shall not exceed 60% of the total funds available.

### **5.2 Eligibility**

The Delaware Green Energy Program is available to Conectiv Power Delivery electric customers or persons in Delaware receiving services from a non-regulated electric supplier which is contributing to the Green Energy Fund. All eligible equipment and products must be installed in Delaware.

### **5.3 Grant Reservation Request**

Customers and contractors applying for any grant must provide the following information to the Department prior to installing the system:

5.3.1 Completed Grant Reservation Form signed by both customer and contractor

5.3.2 The type of qualifying system

5.3.3 Copy of project estimate, purchase order, or letter of intent

5.3.4 Copy of the customer's recent Conectiv Power Delivery electric bill or a bill from a non-regulated electric supplier which is contributing to the Green Energy Fund

5.3.5 System schematic or line drawing

5.3.6 Plot plan illustrating well, turbine, or module location (wind and geothermal only, photovoltaic when system is ground mounted)

5.3.7 Manual J calculation (geothermal only)

5.3.8 Detailed system design and a predicted performance calculation verified by a Professional Engineer. (Non-residential solar water heating systems only.)

5.3.9 Roof diagram illustrating the following:

5.3.9.1 Roof dimensions (angle, length and width)

5.3.9.2 Location of collectors or modules on roof

5.3.9.3 Location of any roof-mounted or building-mounted equipment

5.3.9.4 Orientation & Tilt of array or collectors

5.3.9.5 Areas of shading (Provide Solar Pathfinder results for all cases where shading occurs between 9:00 a.m. and 3:00 p.m. Results of the solar shade analysis must determine that 70% of the annual solar path's area is shade free to be considered for a grant.)

### **5.4 Evaluation of Grant Reservation Request**

Upon receipt of the Grant Reservation Request and supporting documents, the Department will perform an evaluation to check the proposal package for its compliance with the requirements noted above. If the proposal package is complete, the Department will process the Grant Reservation and issue a Confirmation and Claim Form to the applicant. All requirements as outlined in Section 5.3 must be provided to the Department prior to processing the grant reservation.

The Department will reserve the funds for the project described in the Grant Reservation Request for six (6) months from the date of the reservation for residential applicants and twelve (12) months from the date of reservation for non-residential applicants. Since all grants are reserved on a first come-first served basis, viable projects that are not completed within the required time will be placed at the end of the queue and issued an extension of six (6) months from the date of the expired reservation for residential applicants and twelve (12) months from the date of expired reservation for non-residential applicants. To be considered of a reservation extension, the Department will require a project status and summary in writing fourteen (14) business days prior to the expiration of the original

reservation.

5.5 Claim for and Distribution of Green Energy Program Grants

After installation, the customer and contractor must provide the following to the Department

5.5.1 Completed Confirmation and Claim form signed by customer and contractor

5.5.2 Copy of electrical, plumbing or building inspection

5.5.3 Copy of completed and approved Conectiv Power Delivery Interconnection Agreement (photovoltaic, wind, fuel cell) or similar document from a non-regulated electric supplier which is contributing to the Green Energy Fund

5.5.4 Copy of product specification sheets

5.5.5 Copy of final sales invoice (invoice must include actual price paid, itemized list of components, labor, permit fees, method of payment)

5.5.6 Copy of warranty agreement

5.5.7 Copy of verification of completion of installation signed by customer and contractor.

Upon receipt of the completed Reservation Claim Form and all final documentation pertaining to the project as noted in Section ~~[5.1.2 - 5.1.4]~~ 5.5.1 - 5.5.6], the Department will evaluate the Reservation and Claim Form and the required accompanying documents for consideration of grant approval. The contractor and customer are fully responsible for insuring that all forms and documentation have been supplied and the system meets all program requirements. The Department may make an inspection of the systems prior to final grant approval.

The Department will process the grant within 30 days of receipt of the Reservation and Claim Form and all supporting documentation. The Department will ordinarily process the payment to the purchaser, however, if the purchaser so requests in writing and documentation reflects the grant value was reduced directly from the purchase price, the Department will process the payment to the retailer or installing contractor.

**[Upon written request, the Department will pay the grant in two installments. Twenty-five percent (25%) of the grant paid after the equipment is delivered to the installation site and all required permits, approvals, certifications from all jurisdictions having authority are secured. The remaining twenty-five percent is paid when the system is operational and approved by the utility and/or appropriate inspection agent. The Department reserves the right to review any installation prior to any partial or final grant payment.]**

5.6 Green Energy Program Participating Contractor Guidelines

5.6.1 Participating Contractor Application

Contractors installing qualifying photovoltaic, solar water heating, geothermal heat pumps, small wind turbines, or fuel cells must complete the Participating Contractor Application prior to installing systems within the Green Energy Program. The application will consist of the following:

5.6.1.1 Name of company and key contact information

5.6.1.2 Brief history and organizational structure of company

5.6.1.3 Education, experience and licensure

5.6.1.4 General liability and statutory worker's compensation

5.6.1.5 Statement of reliability and good standing

5.6.2 Education and Licensure

Participating Contractors shall maintain appropriate education and licenses to insure that only professionally designed systems are installed within the Program. The Participating Contractor must be licensed in the State of Delaware.

Where industry certification programs have been promulgated, grant recipients are encouraged to use industry certified contractors.

5.6.3 Insurance Requirements

The Participating Contractor and anyone acting under its direction or control or on its behalf shall at its own expense procure and maintain in full force at all times Commercial General Liability Insurance with a bodily injury and property damage combined single limit of liability of at least ONE MILLION DOLLARS (\$1,000,000) for any occurrence.

5.6.4 Statement of Reliability and Good Standing Contractor must be reliable and in good standing with a "Satisfactory Record" (or no negative reports) with the Better Business Bureau. The Contractor shall provide a copy of their Better Business Bureau report to the Department upon request. Reports may be obtained at the following address.

BBB of Delaware

1415 Foulk Road, Suite 202 Foulkstone Plaza

Wilmington, DE 19803

Phone: (302)230-0108  
Fax: (302)230-0116  
Web Site: [www.delaware.bbb.org](http://www.delaware.bbb.org)  
Email: [info@delaware.bbb.org](mailto:info@delaware.bbb.org)

#### 5.6.5 Limitation of Funds

The Program funds are limited. The Participating Contractor shall follow program guidelines to insure reservation of funds prior to installing a qualifying system.

#### 5.6.6 Owner's Manual Minimum Requirements

Contractors are required to provide each Program participant with an owner's manual. At a minimum, the owner's manual shall include the following:

5.6.6.1 Name and address of the seller

5.6.6.2 System model name or number

5.6.6.3 Identification and explanation of system components

5.6.6.4 Description of system operation

5.6.6.5 Description of system maintenance

5.6.6.6 Description of emergency procedures

5.6.6.7 Vacation procedures

5.6.6.8 Systems warranty

#### 5.7 Warranty

All qualifying systems receiving a Green Energy Program grant must have a full 5-year warranty against component failure, malfunction and premature output degradation. The warranty must cover all components for which the program incentive is granted and cover the full cost of repair and replacement of all components of the system. For professionally installed systems, the warranty must cover the labor to remove and replace defective components and systems.

#### 5.8 Code Compliance

All qualifying systems must be installed in accordance with the standards and specifications of the manufacturers of the components in the system, in compliance with all applicable local electric and building codes, local ordinances and these guidelines. Where discrepancies, if any, exist with these guidelines and local codes, local codes shall govern.

#### 5.9 Green Energy Program Renewable Energy Technologies

##### 5.9.1 Photovoltaic Systems

###### 5.9.1.1 Grant Limits

Subject to availability of funds, the Delaware Green Energy Program offers grants for grid-connected photovoltaic systems installed by qualified contractors and customers up to 50% of the total installed costs. Grants will not exceed \$22,500 per residential dwelling for residential systems and \$250,000 per non-residential facility for non-residential systems. A photovoltaic system may not have eligible qualifying photovoltaic system costs in excess of \$12 per Watt.

###### 5.9.1.2 Accepted Products and Equipment

[5.9.1.2.1 Grid Interconnected] All photovoltaic modules must be certified by a nationally recognized testing laboratory as meeting the requirements of the most recent version of Underwriters Laboratory Standard 1703.

All qualifying grid-connected systems must comply with the Institute of Electrical and Electronic Engineers Standards Board (IEEE) 929, Recommended Practice for Utility Interface of Photovoltaic (PV) Systems, IEEE 1547, Standard for Interconnecting Distributed Resources with the Electric Power Systems and the appropriate generation interconnection requirements of Conectiv Power Delivery's, Technical Considerations Covering Parallel Operations of Customer Owned Generation of Less than 1 Megawatt and Interconnected with the Conectiv Power Delivery System or similar interconnection requirements from a non-regulated electric supplier which is contributing to the Green Energy Fund.

All inverters must be certified by a nationally recognized testing laboratory for safe operation and be certified as meeting the requirements of Underwriters Laboratory Standards 1741, Standard for Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems.

**[All grid interconnected systems must be designed and installed to comply with the National Electric Code (NEC).**

**5.9.1.2.2 Non-Grid Interconnected or Stand-Alone.** All photovoltaic modules must be certified by a nationally recognized testing laboratory as meeting the requirements of the most recent version of Underwriters laboratory standard 1703.

All non-grid interconnected or stand-alone systems shall be designed and installed to comply with the National Electric Code (NEC).]

5.9.1.3 Array Orientation and Tilt

Optimum array orientation is a 180° true bearing. However, the program accepts solar arrays oriented between South of due East and South of due West or between 80° and 260° magnetic. Systems installed between 260° and 80° magnetic or North of due East and North of due West are not eligible for a Green Energy Program Grant. —Optimum array tilt is equal to the latitude at the installation site. However, the program accepts array tilt parameters as specified by the module manufacturer which may allow for tilts greater than and less than latitude.

5.9.1.4 Array Shading

Photovoltaic arrays shall be installed such that the array has a minimum of six (6) hours of unobstructed sunshine daily inclusive of solar noon. A "solar window" of eight (8) hours of unobstructed sunshine is preferred.

The installing contractor is responsible for insuring that the system is free from shading. The installing contractor shall perform a "Solar Shade Analysis" [using the "Solar Pathfinder™2"] to ensure the array meets the minimum daily sunshine requirements. Results of the solar shade analysis must determine that 70% of the annual solar path's area is shade free to be considered for a grant.

5.9.1.5 Aesthetics

Aesthetics must be considered in the design and mounting of the photovoltaic array. The designing contractor must provide a roof schematic complete with roof dimensions, array placement, orientation and areas of shading to the Department prior to installation. The designing contractor must make every attempt to configure the modules in an aesthetically pleasing manner free from shading.

5.9.2 Solar Water Heating

5.9.2.1 Grant Limits

Subject to availability of funds, the Delaware Green Energy Program offers grants for solar water heating systems installed by qualified contractors and customers up to 50% of the total installed cost. Grants will not exceed \$3,000 per residential dwelling for residential systems and \$250,000 per non-residential facility for non-residential systems.

Solar water heating systems integrated into a radiant heating application are eligible for a grant up to 50 % of the installed cost of the solar energy portion of the system. Grants will not exceed \$5,000 per residential dwelling for residential systems and \$250,000 per non-residential dwelling for non-residential systems.

5.9.2.2 Accepted Products and Equipment

A solar water heating system must be designed to reduce or eliminate the need for electric or gas heated water.

All qualifying residential solar water heating systems must be certified to meet the Solar Rating and Certification Corporation's (SRCC) OG- 300, Operating Guidelines and Minimum Standards for Certifying Solar Water Heating Systems: An Optional Solar Water Heating System Certification and Rating Program and have a Freeze Tolerance Limit of minus 21 degrees Fahrenheit without electrical power.

All qualifying non-residential solar water heating systems and solar energy systems integrated into a radiant heating application must utilize collectors certified to meet the Solar Rating and Certification Corporation's (SRCC) OG-100, Operating Guidelines for Certifying Solar Collectors.

Non-residential solar water heating systems will be required to submit a detailed system design and a predicted performance calculation verified by a Professional Engineer (P.E.)

5.9.2.3 Collector Orientation and Tilt

Optimum collector array orientation is a 180° true bearing. However, the program accepts solar collectors oriented between South of due East and South of due West or between 80° and 260° magnetic. Systems installed between 260° and 80° magnetic or North of due East and North of due West are not eligible for a Green Energy Program Grant. Optimum collector tilt is equal to the latitude at the installation site. However, the program accepts collector tilt parameters as specified by the collector manufacturer which may allow for tilts greater than and less than latitude.

5.9.2.4 Collector Shading

All collectors shall be installed such that the collector array has a minimum of six (6) hours of unobstructed sunshine daily inclusive of solar noon. A "solar window" of eight (8) hours of unobstructed sunshine is preferred.

The installing contractor is responsible for insuring that the system is free from shading. The installing contractor shall perform a “Solar Shade Analysis” [using the “Solar Pathfinder™2”] to ensure the array meets the minimum daily sunshine requirements. Results of the solar shade analysis must determine that 70% of the annual solar path’s area is shade free to be considered for a grant.

#### 5.9.2.5 Aesthetics

Aesthetics must be considered in the design and mounting of the solar water heating collectors. The designing contractor must complete a roof schematic complete with roof dimensions, collector placement, orientation and areas of shading to the Department prior to installation. The designing contractor must make every attempt to configure the collectors in an aesthetically pleasing manner.

### 5.9.3 Small Wind Turbines

#### 5.9.3.1 Grant Limits

Subject to availability of funds, the Delaware Green Energy Program offers incentives up to 50% of the total installed cost for small grid-connected wind turbines installed by a qualified contractor for a qualified customer. Small wind turbines shall be at least 500 Watts [and not exceed 25 kilowatts]. Grants will not exceed \$22,500 per residential dwelling for residential systems and \$100,000 per non-residential facility for non-residential systems. A qualifying wind turbine system shall not exceed \$5.00 per Watt installed.

#### 5.9.3.2 Capacity Limits

Qualifying wind turbine systems shall be at least 500 Watts. [and not exceed 25 kilowatts.]

The Department may reject applications if the location of the proposed wind turbine system has an inadequate wind resource for reasonable utilization of the equipment [as recommended by the turbine manufacturer]. Wind resources can vary significantly; therefore, the contractor and customer must take care that the location has adequate wind for the turbine selected. It is strongly recommended that a professional evaluation of your specific site be completed. The Department may require additional evidence of feasibility prior to approving the grant reservation.

#### 5.9.3.3 Accepted Products and Equipment

[5.9.3.3.1 Grid Interconnected.] All qualifying grid-connected small wind systems must use Underwriters Laboratory listed equipment and comply with the Institute of Electrical and Electronic Engineers Standards Board (IEEE) 929, Recommended Practice for Utility Interface of Photovoltaic (PV) Systems, IEEE 1547, Standard for Interconnecting Distributed Resources with the Electric Power Systems and the appropriate generation interconnection requirements of Conectiv Power Delivery’s, Technical Considerations Covering Parallel Operations of Customer Owned Generation of Less than 1 Megawatt and Interconnected with the Conectiv Power Delivery System or similar interconnection requirements from a non-regulated electric supplier which is contributing to the Green Energy Fund.

All inverters or other systems used in interconnection must be certified by a nationally recognized testing laboratory for safe operation and be certified as meeting the requirements of Underwriters Laboratory Standards 1741, Standard for Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems.

[All grid interconnected systems must be designed and installed to comply with the National Electric Code (NEC).

5.9.3.3.2 Non-Grid Interconnected or Stand-Alone All qualifying non-grid interconnected wind systems must use Underwriters Laboratory certified listed equipment and systems shall be designed and installed to comply with the National Electric Code (NEC)]

### 5.9.4 Geothermal Heat Pump Systems

#### 5.9.4.1 Grant Limits

Subject to availability of funds, the Delaware Green Energy Program offers grants for geothermal heat pump systems installed by qualified contractors and customers at the following rates:

Residential:

\$600 per ton not exceeding \$3,000 per residential dwelling for residential systems installed with an Energy Efficiency Ratio (EER) of 15.0 and Coefficient of Performance (COP) of 3.4 or greater or 50% of the installed cost whichever is lower, or

\$500 per ton not exceeding \$2500 per residential dwelling for residential systems with an Energy Efficiency Ratio (EER) of 14.0 and Coefficient of Performance (COP) of 3.0 or greater or 50% of the installed cost whichever is lower.

Non-residential:

\$600 per ton not exceeding \$25,000 per non-residential facility for non-residential systems

with an Energy Efficiency Ratio (EER) of 15.0 and Coefficient of Performance (COP) of 3.4 or greater or 50% of the installed cost whichever is lower, or

\$500 per ton not exceeding \$25,000 per non-residential facility for non-residential systems with an Energy Efficiency Ratio (EER) of 14.0 and Coefficient of Performance (COP) of 3.0 or greater or 50% of the installed cost whichever is lower.

#### 5.9.4.2 Accepted Products and Equipment

Qualifying geothermal heat pump systems must be sized in accordance with good heating, ventilation and air conditioning design practices for the occupancy, location and structure. Contractor shall provide a Manual J calculation, or other equivalent calculation, to determine proper size of equipment.

All qualifying systems must have a warranty for protection of the integrity and performance of the system for at least five years. All units installed under this program must have a minimum EER of 14.0 and COP of 3.0. Qualifying systems must meet the following:

Closed loop systems shall qualify under rating conditions in accordance with ISO 13256-1.

Open loop systems shall qualify under rating conditions in accordance with ISO 13256-1.

DX systems shall qualify under rating conditions in accordance with ARI 870.

### 5.9.5 Fuel Cells

#### 5.9.5.1 Grant Limits

Subject to availability of funds, the Delaware Green Energy Program offers grants for grid-connected fuel cells installed by qualified contractors and customers up to 50% of the total installed cost for fuel cell systems operating on a renewable fuel source. Grants will not exceed \$22,500 for residential systems and \$250,000 for non-residential systems.

#### 5.9.5.2 Accepted Products and Equipment

[5.9.5.2.1 Grid Interconnected] All Qualifying fuel cells systems must utilize a renewable fuel source and meet the National Fire Protection Association (NFPA) 853 for Stationary Fuel Cell Power Plants, the Institute of Electrical and Electronic Engineers Standards Board (IEEE) 519- Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, the most current version of the American National Standards Institute (ANSI) Z21.83 for Fuel Cell Power Plants, and input and output protection functions should be in compliance with ANSI C37.2 Device Function Number Specifications.

**[All grid interconnected systems must be designed and installed to comply with the National Electric Code (NEC).**

**5.9.5.2.2 Non-Grid Interconnected or Stand-Alone All non-grid interconnected or stand-alone systems shall be designed and installed to comply with the National Electric Code (NEC)]**

## **6.0 Technology Demonstration Program**

### 6.1 General Provisions

The Technology Demonstration Program provides grants to projects that demonstrate the market potential for renewable technologies and accelerate the commercialization of these technologies in Delaware.

Technology Demonstration Program proposals will be accepted by the Department on a biannual basis. The total of all grants awarded under the Technology Demonstration shall not exceed twenty-five percent (25%) of all revenue collected for the Green Energy Fund during the previous fiscal year [or 25% of the fund balance whichever is greater].

To be eligible for consideration, a project must demonstrate a commercially available technology. Research and Development projects will not be funded under the Technology Demonstration Program. [To be eligible for consideration, a ★] project must demonstrate either a novel technology or a novel application of an available technology. Projects must include a public education component, such as integration into an educational program or location at a facility that allows public tours of the installed renewable energy technology.

Under no circumstances will the Department issue grants for land acquisition in association with any project proposed in the Technology Demonstration Program.

#### 6.1.1 Grant Limits

Subject to availability of funds, the Green Energy Fund's Technology Demonstration Program offers grants to projects that demonstrate the market potential of renewable energy technology in Delaware. Individual grants shall not exceed twenty-five percent (25%) of the cost of the eligible equipment for a renewable energy technology project and will not exceed \$200,000 per project.

#### 6.1.2 Code Compliance

All Technology Demonstration Program projects must be installed in accordance with the standards and specifications of the manufacturers of the components in the system and in compliance with all applicable local electric, plumbing, and building codes and local ordinances to be considered for application.

### 6.1.3 Permits

All Technology Demonstration Program projects must obtain all relevant permits from the Delaware Department of Natural Resources and Environmental Control, other necessary state, local, regional, and federal permits to be considered for application.

### 6.1.4 Application Process

Technology Demonstration Program proposals will be accepted on a biannual basis. Applicants for the Technology Demonstration Program shall submit six (6) copies of the proposal and supporting documentation to the Department and receive approval prior to beginning the project.

In addition to the requirements in Sections ~~56.2~~, proposals for grants under Technology Demonstration Program shall include the following:

6.1.4.1 Detailed project description including location of project, size of project, description of building[, structure or site]

6.1.4.2 Experience of project team

6.1.4.3 Detailed estimate of total project costs

6.1.4.4 List of project partners

6.1.4.5 Estimated energy impact

6.1.4.6 Letter of commitment from building owner or manager

6.1.4.7 Project schedule including detailed milestones

6.1.4.8 Design plans

The Department may request additional information upon review of initial proposal.

Applications will be reviewed by a committee established by the Department. The Department will determine the eligibility for a grant and will, in particular, consider the education requirements in 6.1. A statement of reservation of funds and authorization to proceed will be issued by the Department upon acceptance as a Technology Demonstration Program project.

### **6.1.5 Distribution of Technology Demonstration Grants**

**The Department will process the invoices from the grant recipient within 30 days of receipt of invoice and supporting documentation. Supporting documentation shall include but not limited to hours worked, receipts for expenditures and a brief progress report.]**

### 6.2 Accepted Products and Equipment

All Technology Demonstration Program projects interconnecting with the utility grid must comply with the Institute of Electrical and Electronic Engineers Standards Board (IEEE) 929, Recommended Practice for Utility Interface of Photovoltaic (PV) Systems and the appropriate generation interconnection arrangement of Conectiv Power Delivery's, Technical Considerations Covering Parallel Operations of Customer Owned Generation of Less than 1 Megawatt and Interconnected with the Conectiv Power Delivery System or a similar document from a non-regulated electric supplier.

All inverters must be certified by a nationally recognized testing laboratory for safe operation as well as be certified as meeting the requirements of Underwriters Laboratory Standards 1741- 1999, Standard for Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems.

#### 6.2.1 Photovoltaic Systems

Photovoltaic projects located in Delaware ~~[that are in excess of \$12 per Watt]~~, use photovoltaic electricity to replace or substitute the need for non-renewable fuel, or include a novel or innovative use of photovoltaic design are eligible to receive a grant under the Technology Demonstration Program.

#### 6.2.2 Solar Thermal

Solar thermal projects located in Delaware that use solar thermal energy to produce electricity, replace or substitute the need for non-renewable fuel, or includes a novel or innovative use of solar thermal design is eligible to receive a grant under the Technology Demonstration Program.

#### 6.2.3 Small Wind Turbines

Small wind turbine projects located in Delaware ~~[that exceed \$5.00 per Watt installed and do not exceed 1 MW]~~ may apply for a grant under the Technology Demonstration Program.

#### 6.2.4 Fuel Cells

Fuel cell projects located in Delaware using a **[renewable or]** non-renewable energy fuel source ~~[and not exceeding 1MW]~~ may apply for a grant under the Technology Demonstration Program.

#### 6.2.5 Hydroelectric Generators

Hydroelectric projects located in Delaware and placed at existing dams or in free-flowing

waterways may be eligible for a grant under the Technology Demonstration Program.

#### 6.2.6 Storage, Conversion and Conditioning Equipment

Storage, conversion and conditioning equipment, for ~~[qualifying photovoltaic, small wind turbine, and hydroelectric systems use with renewable energy products]~~ that include a novel or innovative use of storage, conversion and conditioning equipment may be eligible to receive a grant under the Technology Demonstration Program.

#### 6.2.7 Passive Solar Design

Passive solar designs that implement novel or innovative passive solar ~~[products project]~~ may be eligible to receive a grant under the Technology Demonstration Program. Grants for passive solar projects shall not exceed 25% of the installed cost of the product up to a maximum of \$3000 per residential dwelling for residential projects and \$20,000 per non-residential facility for non-residential projects.

The project shall meet the requirements in Section 6.1 and provide a cost-effectiveness analysis and a Manual J calculation or equivalent that demonstrates the estimated energy impact expected over the industry standards that provide a similar function.

### **7.0 Research and Development Program**

#### 7.1 General Provisions

Subject to availability of funds, the Green Energy Fund's Research and Development Program offers grants to projects that develop or improve Renewable Energy Technology in Delaware. The Department will accept proposals for Research and Development Program grants for qualifying projects that improve the engineering, adaptation, or development of products or processes that directly relate to renewable energy technology.

The Delaware Research and Development Program grants are available to applicants located within the State of Delaware for projects conducted in the State of Delaware. Under no circumstances will the Department issue grants for land acquisition in association with any project proposed in the Research and Development Program.

#### 7.2 Grant Limits

Subject to availability of funds, the Research and Development Program offers grants up to thirty-five percent (35%) of the cost of qualifying projects. Research and Development Program grants shall not exceed ~~[\$200,000 \$250,000]~~ per project.

Research and Development Program proposals will be accepted by the Department on a biannual basis. The total of all grants awarded in any one fiscal year shall not exceed ten percent (10%) of all revenue collected for the Green Energy Fund during the previous fiscal year **[or 10% of the fund balance whichever is greater]**.

Subject to the future availability of funds, the Department will consider multi-year projects in the Research and Development Program. Proposals seeking grants for multi-year projects shall not exceed fifty percent (50%) of the total annual funds available in the Research and Development Program.

#### 7.3 Application Process

The Department will accept proposals for Research and Development Program grants for qualifying projects that improve the engineering adaptation, or development of products that directly relate to renewable energy technology. The Department reserves the right to reject any or all proposals if the information provided is inadequate or incomplete.

The following describes the general approach envisioned for these projects. Alternative approaches to achieve the desired results may be considered, provided that the work scope is complete, addresses all of the technical issues, and has a convincing chance for success.

Applicants are to propose projects and tasks that address all issues described in Section 7.1 with care taken to emphasize the unique application advantages and environmental benefits that will result from the proposed project. The proposal should clearly define why this project is an improvement over existing products that provide a similar function.

#### 7.4 Application Submittal

Research and Development Program proposals must be submitted and awarded prior to beginning the project. Failure to respond or follow the instructions regarding the order and content of the application may result in the application being deemed non-responsive, or result in an overall lower score during evaluation. The applicant must submit six (6) complete copies of the proposal to the Department for consideration.

#### 7.5 Application Contents

The applicant must submit six (6) complete copies of the proposal to the Department consisting of a detailed description, a time line, a budget, itemized by task and include the following sections:

##### 7.5.1 Cover Page

The cover page must indicate the name of the organization, location, project title, and points of contact for the applicant, including names, titles, addresses, telephone and facsimile numbers, and electronic mail addresses

of key project participants.

7.5.2 Table of Contents

The narrative shall include a table of contents and page numbers corresponding to the elements outlined herein.

7.5.3 Project Summary

A one-page project summary describing, in general terms, the proposed project, the proposed project benefits as a result of the grant, and a total cost estimate including cost shares and federal contribution must be submitted with the application. The summary should be informative and only contain information that is releasable to the public.

7.5.4 Technical Proposal

The Technical Proposal portion shall be structured in accordance with the following sections:

The Technical Proposal section should include the following:

7.5.4.1 Technical concept, goals, and location of project

7.5.4.2 Anticipated benefits as a result of the project

7.5.4.3 Degree to which the proposed project advances the technology and commercial readiness of renewable energy technology in Delaware, including advantages and disadvantages compared to competing technologies

7.5.4.4 Economic viability of the proposed project

7.5.4.5 Estimated energy impact (generation or reduction)

7.5.4.6 Environmental benefits ~~[and impacts of the project reliability, noise levels, and suitability for grid interconnection]~~

7.5.4.7 ~~[Impact on electricity reliability, noise levels, and suitability for grid interconnection]~~

7.5.4.~~7~~ ~~8~~] Public benefit and value added to Delaware by successful completion of the proposed project

7.5.4.~~8~~ ~~9~~] Potential for commercialization and the estimated market potential of project

7.5.4.~~9~~ ~~10~~] Advantages of the proposed approach compared to alternative approaches.

7.5.5 Work Plan / Statement of Objectives

This section should include the following:

7.5.5.1 Task-oriented Statement of Objectives with complete task descriptions

7.5.5.2 Work plan including decision points and performance-based progress measures

7.5.5.3 Work schedule including intermediate and major milestones

7.5.6 Budget Narrative

An explanation of the proposed project costs including Green Energy Fund proceeds, applicant cost share, and any federal leveraged funds should be provided in this section. The Narrative shall include a budget by each task and include the following:

7.5.6.1 Job title and number of hours for each of the individual personnel proposed

7.5.6.2 Proposed equipment, materials, supplies, overhead and total labor costs.

7.5.7 Organization Qualifications and Personnel Qualifications

This section should include the following:

7.5.7.1 Applicant's current research directly related to the topic proposed

7.5.7.2 Applicant's experience on previous research and development projects similar in size, scope and complexity and the success in completing similar work

7.5.7.3 Description of the teaming structure for the project, including the names of the applicant and each participant involved in the project, as well as business agreements between the applicant and participants and the role of each team member

7.5.7.4 Project management concept with respect to the proposed tasks, including organizational and individual responsibilities for each team member

7.5.7.5 Education, professional training, and the technical and business-related skills and work experience of key personnel, on projects similar in size, scope, and complexity to the topic proposed

7.5.7.6 Level and reasonableness of the time commitment

7.5.8 Personnel Resumes

A resume should be provided for all key personnel involved in the proposed project. Each resume is limited to a maximum of two pages.

7.6 Evaluation of Applications

A compliance review will be performed to check the proposal package for its compliance with the requirements of the Research and Development Program. All requirements as outlined in Section 7.1 [and 7.5] must be provided to the Department to be eligible for the comprehensive evaluation.

The Department reserves the right to void an application if the information requested is not received within the prescribed timeframe when requested or is inadequate or incomplete.

#### 7.6.1 Comprehensive Evaluation

All applications that fulfill the minimum application requirements, as determined under the compliance review, will be eligible for comprehensive evaluation. The comprehensive evaluation of proposals will be performed by the Department and a committee designated by the Department. In evaluating applications, the Department reserves the right to use any assistance deemed advisable, including qualified personnel from federal agencies, other government entities, universities, industry, and contractors. [The Department will make every effort to use unbiased individuals and experts on the review committee.] These individuals will be required to protect the confidentiality of any specifically identified trade secrets and/or privileged or confidential commercial or financial information obtained as a result of their participation in this evaluation.

**[The reviewers and their employers, employees, affiliates, and members shall excuse themselves from proposing projects under the Research and Development or Technology Demonstration Programs for the funding period during which they are serving on the reviewing committee.]**

All applicants will be notified in writing of the action taken on their applications. Applicants should allow at least 90 days for the Department evaluation. The status of any application during the evaluation and selection process will not be discussed with the applicant or any of its partners. [unsuccessful application will receive a letter summarizing the committee's decision.] Unsuccessful applications will not be returned to applicants.

### 7.7 Evaluation Criteria of Proposal

#### 7.7.1 Criterion 1: Technical Description: Weight: 40%

In general, proposals will be evaluated based on the overall relevance to Renewable Energy Technology, including but not limited to any product improving the engineering of, adapting, or development or Renewable Energy Technology either as an independent piece of Renewable Energy Technology or as a component of Renewable Energy Technology.

Specifically, proposals will be scored based on how well they address the following requirements:

7.7.1.1 Technical concept, goals, and location of project

7.7.1.2 Anticipated benefits as a result of the project

7.7.1.3 Degree to which the proposed project advances the technology and commercial readiness of renewable energy technology in Delaware, including advantages and disadvantages compared to competing technologies

7.7.1.4 Economic viability of the proposed project

7.7.1.5 Jobs created as a result of project

7.7.1.6 Advantages of the proposed approach compared to alternative approaches

7.7.1.7 Economic viability of the proposed project

7.7.1.8 Estimated energy impact (generation or reduction)

7.7.1.9 Environmental benefits and impacts of the project

7.7.1.10 Reliability, noise levels, and suitability for grid interconnection

7.7.1.11 Public benefit and value added to Delaware by successful completion of the proposed project

7.7.1.12 Projects ability to leverage federal incentives

7.7.1.13 Projects ability to assist the State in meeting the goals the State Energy Plan

#### 7.7.2 Criterion 2: Work Plan/Statement of Objectives: Weight: 30%

Specifically, applications will be scored based on how well they address the following requirements:

7.7.2.1 Task-oriented Statement of Objectives with complete task descriptions

7.7.2.2 Work plan including decision points and performance-based progress measures Level and reasonableness of the time commitment

7.7.2.3 Work schedule including intermediate and major milestone

7.7.2.4 Advantages of the proposed approach compared to alternative approaches

7.7.2.5 Intent and commitment to commercialize results of the proposed project

#### 7.7.3 Criterion 3: Organization and Personnel Qualifications: Weight: 30%

In general, applications will be evaluated based on the capabilities of the personnel. Specifically, applications will be scored based on how well they address the following requirements:

7.7.3.1 The applicant's current research directly related to the topic proposed

7.7.3.2 The applicant's experience on previous research and development projects similar in size, scope and complexity and the success in completing similar work

7.7.3.3 A description of the teaming structure for the project, preference will be given to projects involving participants who represent a diversity (types and sizes) of proposing organizations, while meeting the eligibility requirements. The participation of universities, small businesses, and women or minority owned businesses are particularly encouraged to apply.

7.7.3.4 The project management concept with respect to the proposed tasks, including organizational and individual responsibilities for each team member

7.7.3.5 The education, professional training, and the technical and business-related skills and work experience key personnel, including major subcontractors, on projects similar in size, scope, and complexity to the topic proposed

7.7.3.6 The level and reasonableness of the time commitment

#### 7.8 If Selected for Negotiation

If a proposal is selected for negotiation for a grant, additional information may be requested. ~~[The Any]~~ request ~~[will may]~~ specify the documents to be submitted, and to whom they must be submitted and may include, but not limited to ~~[detailed]~~ financial ~~[information basis]~~ for any participant(s) providing cost sharing ~~[or performing work]~~. **[This may include detailed explanation of overhead costs, hourly rate per staff person, and fringe benefits.]**

The Department reserves the right to void an application if the information requested is not received within the prescribed timeframe or is inadequate or incomplete.

#### 7.9 Grant Award

If upon completion of the Comprehensive Evaluation, the review committee finds that the proposed project fits the criteria of the Research and Development Program then a statement of reservation of funds and authorization to proceed will be issued by the Department.

All recipients of Research and Development Program grants may be required to participate in mandatory evaluation meetings on a periodic basis. During each evaluation meeting, the results to date and future plans for the project will be presented by the Recipient to an evaluation panel selected by the Department. The results of each evaluation may be used by the Department to determine whether the project will continue to receive funding. Applicants should assume that at least two meetings per year will be required for evaluation and that up to two additional review meetings may be held at the applicant's location.

##### **[7.9.1 Distribution of Research and Development Grant**

**The Department will process the invoices from the grant recipient within 30 days of receipt of invoice and supporting documentation. Supporting documentation shall include but not limited to hours worked, receipts for expenditures and a brief progress report.]**

## **8.0 Proprietary Application Information**

Applicants are hereby notified that the Department intends to make all applications submitted available to non-State personnel for the sole purpose of assisting in its evaluation of the applications. These individuals will be required to protect the confidentiality of any specifically identified proprietary information obtained as a result of their participation in the evaluation.

Proposals submitted may contain trade secrets and/or privileged or confidential commercial or financial information which the applicant does not want to be used or disclosed for any purpose other than evaluation of the application. The use and disclosure of such data may be restricted, provided the applicant follows the Department's "Request for Confidentiality" procedure ~~[consistent with contained in]~~ the Department's "Freedom of Information Act" or "FOIA" regulation. It is important to understand that this FOIA regulation's confidentiality procedure is a necessary part of this regulation in that any information submitted to the Department is subject to public review unless deemed to be confidential by the Secretary in accordance with the criteria and procedures established in the FOIA regulation.

The burden lies with the applicant asserting the claim of confidentiality to meet the criteria established in the FOIA regulation.

## **9.0 Severability**

If any section, subsection, paragraph, sentence, phrase or word of these regulations is declared unconstitutional by a court of competent jurisdiction, the remainder of these regulations shall remain unimpaired and shall continue in

full force and effect, and proceedings there under shall not be affected.  
**8 DE Reg. 114 (7/1/04)**