



**District of Columbia Renewable Energy Incentive Program
Guide to Solar Photovoltaic Incentives**



District Department of the Environment

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A. REIP - How to Apply

1. Introduction & Program Background

The District Department of the Environment (DDOE) is proud to announce a range of financial incentives to support the installation of renewable energy systems in the District of Columbia. The 2009 DC Renewable Energy Incentive Program (REIP) builds on the success of the Renewable Energy Demonstration Project (REDP). The REIP is supported through a newly-created Sustainable Energy Trust Fund (SETF), which is funded via a public benefits charge supported by Pepco and Washington Gas ratepayers. The Fund is administered by the District Department of the Environment, with allocations of \$2 million per year continuing to September 30, 2012. The REIP is the first of a variety of “Green Energy DC” incentives to cover a range of renewable energy technologies, and the program has been designed to spur market development and increase local demand for affordable, high quality clean energy systems.

The incentives outlined in this guide cover systems that use solar energy to produce grid-interconnected electricity. Through the use of renewable energy to meet a growing portion of our energy needs, District residents, businesses and institutions can play a role in reducing greenhouse gas emissions, improving air quality, lowering energy costs, meeting increasing energy demands and supporting local job creation.

Solar photovoltaic incentives offered through the REIP are intended to improve the quality, reliability and cost effectiveness of photovoltaic systems installed in the District of Columbia. A major goal of this program is to drive innovation and lower costs by providing incentives for the installation of photovoltaic systems that support the city’s sustainability goals and reduce demand on conventional polluting fuel sources.

Past experiences with renewable energy systems of the last two decades have shown the need for clear standards on system performance, installation, and operations & maintenance protocols. A listing of REIP technical requirements and program checklist follow in the appendices of this document.

2. Eligibility Criteria and Requirements

All criterion and requirements listed in the following sections must be met for an application to be deemed eligible. Case-by-case assessments can be discussed in consultation with REIP program staff if projects do not meet published requirements.

2.1. Participant Eligibility

To be deemed eligible to receive rebates for photovoltaic installations, incentive applicants must be a Pepco retail electric account holder of record for the site where the generating equipment will be located. Both residential and commercial customer classes are eligible for the incentive.

The project site must be within the District of Columbia. Applicants are required to provide proof of electric distribution services through the inclusion of the most recent utility bill. Additionally, applicants must consent to being surveyed by DDOE and/or an

independent program evaluator, and must sign and date all program application forms and related documents as requested.

The Applicant must meet all minimum equipment and performance requirements, solar energy system design and installation standards, and energy efficiency requirements prior to receiving an incentive.

All solar electric systems receiving incentives under the REIP must be connected to Pepco's electricity distribution system. The interconnection, operation, and metering requirements for photovoltaic systems shall be in accordance with Pepco and DC Public Service Commission rules for customer generating facility interconnections.

2.1.1. Applicants/Customer-Generators

The Applicant/Customer-Generator is the owner of the photovoltaic system at the time the incentive is paid.

Eligible Organizations/Entities

The following organizations/entities are eligible to apply for DC Renewable Energy Incentive Program rebates:

- Individual residents
- Non-governmental organizations
- Businesses
- Schools (private educational institutions)
- Individual condominium owners, with documentation from the condo association.
- Condo associations - system must be connected to a commercial meter.
- Apartments - when applied for by the building owner. The entire project must be under a single rebate application.
- Renewable energy cooperatives - Each individual resident or business owner participating in the cooperative must provide a separate application to include project details unique to their site.

Non-Eligible Organizations/Entities

The following entities are not eligible to apply for DC Renewable Energy Incentive Program rebates:

- United States Federal government
- Electricity utilities
- Electricity suppliers
- Natural gas utilities
- Natural gas suppliers
- Heating oil suppliers
- District of Columbia government agencies

2.1.2. Installers

All systems supported through the REIP must be installed by an appropriately licensed contractor in accordance with all rules and regulations required under District of Columbia law. Self-installers are not eligible to receive rebates under this program at this time. Equipment Sellers may be the same as the Contractor. If the Equipment Seller is not the Contractor, indicate information for the Seller on the Program Application.

Installers seeking to be identified on the REIP List of Contractors and Installers must submit a Contractor Participation Application, along with insurance documentation. To remain eligible, a company must resubmit this information annually by October 1st of each year.

Although not required, installation contractors are encouraged to become certified by the North American Board of Certified Energy Practitioners (NABCEP). For additional information on NABCEP, visit www.nabcep.org.

2.2. Equipment Eligibility & Technical Requirements

2.2.1 Eligible Equipment and System Applications

All major system components (panels and inverters) must be new and not previously placed in service in any other location or for any other application. Rebuilt, refurbished, or relocated equipment is not eligible for a photovoltaic incentive. Performance meters are also required. Meters are required to have a ± 5 percent or greater accuracy. All meters shall measure and display output in kilowatts and kilowatt hours, retain production data during power outages, and have a communication port capable of enabling remote performance monitoring and reporting service.

2.2.2 Shade

A system is considered to have minimal shading if no obstruction is closer than a distance of twice its height. Obstructions include any roof equipment, neighboring trees, poles, buildings, or other objects. Landscaping should be evaluated at the expected mature height.

If there are obstructions that will interfere with full solar access between the hours of 9am and 3pm at any time of year, a shading analysis is required. Submittals may include a table showing distance to height ratios per orientation, photo of a Solar Pathfinder, or printouts from the Pathfinder Assistant or Solmetric SunEye. Shading results shall be used to assist in estimating the system's annual energy production.

2.2.3. System Sizing

Eligible systems must be at least 1,000 Watts_{DC}. The Applicant must show evidence of the system sizing with the submittal of the full REIP application. The expected

production of electricity by the system may not exceed the actual energy consumed during the previous 12 months at the site, as calculated per this formula:

Maximum System Capacity (kW_{DC}) = Previous 12 months electric usage (kWh/year) / 1,600 (hours/year).

In the case of Applicants with new or expanded sites where no electric bill has been accrued or where the existing electric bill does not reflect the Applicant's expected expanded consumption, the Applicant must include an engineering estimate. The engineering estimate must include the appropriate substantiation of the forecast of the customer-generator site's annual energy use (in kWh) if the generating system size is based on future load growth, including new construction, load growth due to site expansion, or other load growth circumstances. Suggested methods of demonstrating load growth include building simulation program reports such as eQUEST, EnergyPro, DOE-2, and VisualDOE, or detailed engineering calculations.

2.2.4. Energy Efficiency

For residential sites, DDOE offers free high quality energy audits through the Energy Office's Home Energy Rating System (HERS) Program. It is recommended that households implement efficiency measures where appropriate. For nonresidential sites, the customer-generator should consider scheduling a comprehensive commercial energy efficiency study prior to installing any renewable energy system.

2.2.5. Roof Loading

District of Columbia code requires structural drawings and roof load calculations to ensure the structure where the module will be mounted meets a 30 lbs/ft² snowload rating. This load limit is typically not a factor for photovoltaic systems where only the collectors and mounting hardware are mounted on the roof.

2.2.6. Metering

Accurate solar production metering is required for all projects that receive incentives. These meters are separate from the billing meter used for net energy metering. For systems less than 100 kW_{DC} , meter accuracy of $\pm 5\%$ is required. Some inverters have a performance meter included which meets this requirement. If not, a separate meter is required to measure PV energy production.

For systems 100 kW_{DC} and larger, a revenue grade meter ($\pm 2\%$) is required with remote communications capability. The meter shall be tested to all applicable ANSI C-12 testing protocols and shall have Interval Data Recording (15 minutes or less). The system Seller or Installer must retain and provide the System Owner and DDOE-EO with remote access to 15 minute average data for a minimum of one year. A remote performance monitoring and reporting service is required. Monthly system energy production data shall be reported to DDOE-EO for calculation of the performance based incentive. All program participants must allow access to the photovoltaic production

meter for testing, inspection, or data collection when given proper notice. Installers are encouraged to locate PV production meters in an easily accessible area.

2.2.7. Owner's manual

A manual or manuals must be provided with each photovoltaic system and balance-of-system, including the inverter.

2.2.8. Warranty Requirements

To protect the purchaser against defective workmanship, system or component breakdown, or severe degradation all systems must carry the original manufacturer's warranty of one year or greater, and all installation workmanship must be guaranteed for a minimum of one year. The entire solar generating system must carry a warranty, including PV modules (panels) and inverters, and warranties should provide for no-cost repair or replacement of the system or system components, including any associated labor during the warranty period.

Meters must have a five-year warranty to protect against defective workmanship, system or component breakdown, or degradation in electrical output of more than fifteen percent from their originally rated electrical output during the warranty period.

3. Incentive Structure

Photovoltaic incentives are based on the combined system rating in kilowatt_{DC} output.

- \$3 for each of the first 3,000 installed watts of capacity;
- \$2 for each of the next 7,000 installed watts of capacity;
- \$1 for each of the next 10,000 installed watts of capacity

Rebates for photovoltaic systems are capped at a maximum of \$33,000 (for 20 kilowatts) for each applicant site per program year.

4. Incentive Application Process

4.1. Prequalification and Reservations

All applicants must review all program checklist and guidelines. Before proceeding with an installation, applicants must schedule a site assessment with an area vendor. Please see the list of registered equipment and service providers in Appendix 3.

After configuring a system to meet your needs, your contractor will assist you in completing the Prequalification Application. This form must be submitted in advance of a full incentive application in order to receive project approval notification and an REIP Reservation Number. The reservation number reserves the project in a queue should all funds be expended for the program year. Reserved applications will automatically enter the next funding queue.

4.2. Reservation Approval

Upon approval of the Prequalification Application, the applicant will be notified via telephone and email confirmation. At this time, the applicant may submit a full application. DDOE-EO will only approve projects that have submitted a complete application.

4.3. Full Application Submission

The application packet must contain:

- Incentive Application (Technology Specific, includes:)
 - Signed cost estimate, purchase order or letter of intent indicating equipment purchase (a down payment is required)
 - Itemized list of components
 - System schematic or line drawing
 - Site plan (photos, aerial map, rendering if applicable)
 - Shading analysis (if shading exists between 9am and 3pm any time of the year)
 - Location of collectors or modules on the roof (if installed on the roof) and orientation and tilt of collectors or array
- District of Columbia Master Supplier Form
- Form W-9 Federal Tax Identification

4.4. Payment Approval

The incentive will be paid within 30-45 days upon receipt by DDOE of all required program documentation including a signed invoice or system contract indicating system equipment has been purchased. Written requests for consideration of unusual system applications will be considered if received before the installation.

4.5. Final Inspection

Upon completion of the installation, a System Completion Certificate must be completed and provided to the program office. Completion documentation helps to ensure that all installations supported through this incentive meet District of Columbia building and electrical codes, as well as to facilitate proper interconnection of systems to the electrical grid.

5. Self-Installation

Self-installations are not currently allowed under this program.

6. Contact Information

Program inquiries:

Renewable Energy Incentive Program
District Department of the Environment
2000 14th Street NW, Suite 300 East
Washington, DC 20009
202.673.6750 Energy Office Hotline
202.673.6725 fax
www.greenenergy.dc.gov
greenenergy@dc.gov

Technical inquiries:

Please consult a system reseller or installer for questions specific to your particular application. A list of area dealers and installers is attached as Appendix 3.

APPENDIX 1

DEFINITIONS AND GLOSSARY OF TERMS

ALTERNATING CURRENT (AC): Electric current (flow of electrons) in which the direction of flow is reversed at constant intervals, such as 60 cycles per second. Home and business appliances plugged into an outlet typically utilize alternating current.

AMPERE (AMP or A): A measure of electrical charge that equals the quantity of electricity flowing in one second past any point in a circuit, or defined as one coulomb per second.

AMPERE-HOUR (AMP-HOUR or AHR): A measure of electrical charge that equals the quantity of electricity flowing in one hour past any point in a circuit. Battery capacity is measured in amp-hours.

ARRAY: A collection of photovoltaic modules electrically wired together in one structure to produce a specific amount of power.

AUTONOMOUS OPERATION: Self-contained operation, capable of existing independently.

AZIMUTH: The angular measure between due south and the point on the horizon directly below the sun.

BALANCE OF SYSTEM (BOS): Components of a photovoltaic system other than the photovoltaic or solar thermal array and load.

CELL (PHOTOVOLTAIC): A semiconductor device that converts light directly into DC electricity.

CHARGE CONTROLLER: A component of a photovoltaic system that controls the flow of current to and from the battery subsystem to protect batteries from overcharge, overdischarge or other control functions. The charge controller may also monitor system operational status.

DIRECT CURRENT (DC): Electric current (flow of electrons) in which the flow is in only one direction. Output from photovoltaic systems must be converted to direct current through the use of an inverter and other power conditioning equipment to supply AC current to wall outlets.

ENERGY: The capacity for doing work.

GRID-CONNECTED: A photovoltaic system that is connected to a centralized electrical power network such as a utility.

HYBRID SYSTEM: A power system consisting of two or more power generating subsystems.

INSOLATION: The amount of energy in sunlight reaching an area. Usually expressed in watts per square meter (W/m^2), but also expressed on a daily basis as watts per square meter per day ($W/m^2/day$).

INVERTER: A device that converts direct current (DC) to alternating current (AC) electricity.

KILOWATT (kW): 1,000 Watts.

KILOWATT-HOUR (kWh): 1,000 Watt-hours. A typical residence in the United States consumes about 1,000 kilowatt-hours each month at a price in the range of \$.06 to \$.15 per kilowatt-hour.

LIFE CYCLE COST (LCC) ANALYSIS: A form of economic analysis to calculate the total expected cost of ownership over the lifespan of the system. LCC analysis allows a direct comparison of the costs of alternative energy systems, fossil fuel generators, or the extension of utility power lines.

LOAD: Any device or appliance in an electrical circuit that uses power, such as a light bulb.

MAINTENANCE COSTS: Any costs incurred in the upkeep of a system. These costs may include replacement and repair of components.

MODULE: A number of photovoltaic cells wired together to form a unit, usually in a sealed frame of convenient size for handling and assembling into arrays; also called a "panel."

NET ENERGY METERING (NET METERING): Service to an electric consumer under which electric energy generated by that electric consumer-generator from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period. Net metering is typified by the electrical meter "running backward" when on-site generation exceeds demand.

OPERATING COSTS: The costs of using a system for a selected period.

PARALLEL CONNECTION: A wiring configuration where positive terminals are connected together and negative terminals are connected together to increase current (amperage).

PEAK SUN HOURS: The equivalent number of hours when solar insolation averages 1000 Watts per square meter and produces the same total insolation as actual sun conditions.

PEAK WATTS (WP): The maximum power (in watts) a solar array will produce on a clear, sunny day while the array is in full sunlight and operating at 25degrees Celsius. Actual wattage at higher temperatures is usually somewhat lower.

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PHOTOVOLTAIC (PV) SYSTEM: A complete set of interconnected components for converting sunlight into electricity by the photovoltaic process, including array, balance-of-system components, and the load.

POWER: The rate of doing work or energy is consumed or generated. Power is measured in Watts or horsepower.

POWER CONDITIONER: The electrical equipment used to convert electrical power from a photovoltaic array into a form suitable for subsequent use, such as an inverter, transformer, voltage regulator, and other power controls.

SERIES CONNECTION: A wiring configuration in which the negative terminal of one module is connected to the positive terminal of the next module to increase voltage.

SILICON: A non-metallic element, the basic material of beach sand and the raw material currently used to manufacture most photovoltaic cells.

STAND-ALONE PHOTOVOLTAIC SYSTEM: A solar electric system, commonly used in a remote location, that is not connected to the main electric grid (utility). Most stand-alone, or off-grid systems include some type of energy storage, such as batteries.

VOLTAGE (V): A measure of the force or "push" given the electrons in an electrical circuit; a measure of electric potential. One volt produces one amp of current when acting against a resistance of one ohm.

WATT (W): A measure of electric power or amount of work done in a unit of time and equal to the rate of current flow (amps) multiplied by the voltage of that flow (volts). One amp of current flowing at a potential of one volt produces one Watt of power.

WATT-HOUR (Wh): A measure of electrical energy equal to the electrical power multiplied by the length of time (hours) the power is applied.

APPENDIX 2

FREQUENTLY ASKED QUESTIONS – DC PHOTOVOLTAIC INCENTIVES

Q: Who can apply?

A: All electricity and natural gas customers within the District of Columbia and entities that will install projects that will produce or offset energy that would otherwise be derived from electricity or natural gas. Projects must be located within the District of Columbia. The United States Federal Government, utility distributors and suppliers are not eligible under this solicitation. See technology guides for additional information.

Q: How many projects will be funded under REIP?

A: The REIP has a total of \$2 million per program year to distribute in Fiscal Years 2009-2012. Any future award amount depends on program budget, as well as the size and number of projects submitted for approval. Changes in legislation may result in funding updates for renewable energy programs such as the REIP. DDOE hopes to fund a minimum of 100 installations per year under this program.

Q: What types of projects are acceptable, or most desirable?

A: A variety of eligible systems that use a renewable source of fuel to produce or offset conventional energy generation are acceptable under the Clean and Affordable Energy. Initially only photovoltaic systems will be rebated under this program. Updates on additional technologies will be listed at www.greenenergy.dc.gov. To promote the use of renewable energy systems in all Wards and within all building sectors, DDOE encourages installations at any viable site. Particularly desirable but not a prerequisite to receive a rebate are installations in underserved and low-income communities, projects that will be well documented and easily duplicated, accessible to public viewing, innovatively use renewable resources as a public outreach tool, have a positive impact on the building or structure where they are located, and have a positive impact on the surrounding community.

Q: What about wind in a residential neighborhood?

A: Small or “microwind” systems are available for residential neighborhoods, and eligible to receive incentives under this program. Please note that a general lack of constant wind resource in most of the District may limit your options to install a reliable system that functions as desired. Please consult a licensed installer to find a system that matches your needs. An attractive alternative is to purchase wind power credits from a reputable energy services company.

Q: Does this grant cover solar thermal water heaters and other technologies?

A: A future incentive announcement will provide rebates for eligible solar thermal projects include solar water heating, air heating, solar absorption walls, concentrating solar power, and other emerging thermal systems that are SRCC rated. Pool heating systems are not eligible.

Q: Are geothermal projects covered?

A: Geothermal (geo-exchange) heat pump systems will be covered under this incentive opportunity in FY 2010. However, regulations are being updated and systems will not be rebated until that process is completed. Funds are being reserved for potential geothermal installations, as well as other technologies not immediately eligible at the time of program launch.

Q: What will be done about Renewable Energy Credits (REC)?

A: The renewable energy credits will be the property of the owner of the renewable generator. The regional transmission organization PJM has developed the Generation Attributes Tracking System (GATS). System installers and REC aggregators can assist applicants in obtaining generator status in the GATS system, as well as maintain an accurate accounting of the REC's produced by an apparatus that benefits from this program.

Q: What about net metering and interconnection?

A: Net metering is allowable in the District of Columbia. Your contractor will assist you through the Pepco application and permitting process, and design equipment that will facilitate interconnection and net metering.

Q: Who is responsible for the collaboration commitment form?

A: Participants that have multiple sources of funding, corporate partners, non-profit partners, federal, state, or local government partners must complete the collaboration commitment form. Applicants that do not have additional sources of funding or are involved in a partnership do not have to complete the collaboration commitment form.

Q: What is the process of funding disbursement?

A: Upon approval of a Prequalification Application, applicants will receive a reservation number based on date and time received. This number serves as to identify the project and places the applicant in a reservation queue should demand exceed funding. Prequalification also prompts the applicant to submit a full REIP Application, to include but is not limited to an official invoice or letter of intent providing proof that system components have been purchased.

Q: What is the deadline on the use of the funds?

A: The funds must be used within six (6) months from the date of receipt of funds. Projects may not exceed one (1) year including all provisions for extensions. If for any reason an installation cannot be completed in the allotted time, the Applicant forfeits all rights to the rebate and must return the funds to the District of Columbia. Failure to do so will result in the placement of a lien against the Applicant's real property to secure payment.

Q: What if the total cost of the system is more after implementation than was estimated?

A: Additional funds will not be added to the amount of the rebate already allocated toward the Applicant's original Prequalification request.

Q: What is the time limit for completion of a project?

A: A total of one year (12 months) from the date of initial monetary disbursement (and including all project extensions) is given to complete an installation. Projects will be monitored as per the award agreement.

Q: Who has to fill out a W-9 and Master Supplier form?

A: These forms are required for all applicants/system owners that intend to receive a rebate from the District of Columbia. They are for procurement processing only.

Q: Does DC offer tax incentives for renewable energy?

A: Not at this time. The Federal government does offer tax credits for renewable energy. These credits can be used in conjunction with REIP incentives.

Q: When is the Solar Homes Tour held?

A: The Solar Homes Tour is usually held the first weekend of October each year.

Q: Do the systems need to be approved by Pepco?

A: Pepco needs to be contacted for meters to be used for interconnected net metering.

Q: Can you have multiple partners in a project?

A: Yes, you may have multiple partners and partnerships are encouraged. Supporting documentation is required at the time of application.

Q: How large does a project have to be?

A: Projects can be any size that positively impacts the facility where the project is located or the surrounding community. Per interconnection guidelines, any electricity generating installation cannot greatly exceed the expected consumption of the facility where it is located. All incentives are capped at \$33,000 for a 20 kilowatt/kilowatt equivalent or larger generation system.

Q: What can we do about installing renewable energy in a historic building?

A: There may be localized issues regarding the installation of exterior appliances on historic structures. Because a renewable energy system may alter the appearance of your building, consideration must be given to neighborhood ordinances and community associations. Your contractor/installer likely has experience with resolving these issues. The District government is supportive of retrofits that promote the implementation of renewable technologies into historic structures where viable.

Q: I have questions about the application. Who do I contact?

A: Please contact the Renewable Energy Incentive Program staff via the Energy Office Hotline - 202.673.6750 or greenenergy@dc.gov

Appendix 3

Washington Area Renewable Energy Contractors, Installers and Suppliers

Professional installation of your renewable energy system

Aurora-Energy

Photovoltaic and Solar Thermal System Design and Installation

Jason Brennan

9009 Mendenhall Court; Suite E

Columbia, MD 21045

Phone: (410) 997-0778

www.aurora-energy.com

Capital Sun Group, Ltd

Photovoltaic, Solar Thermal, Geothermal System Design and Installation

Carlos La Porta, Albert Nunez

6503 81st Street

Cabin John, MD 20818

Phone: (301) 229-0671

capital.sun@verizon.net

www.capitalsungroup.com

Chesapeake Solar, a groSolar Company

Photovoltaic and Solar Thermal System Design and Installation

Tim Grahl

7761 Waterloo Road

Jessup, MD 20794

Phone: (443) 733-1221

info@grosolar.com

www.grosolar.com

Clean Currents Solar

Photovoltaic System Design and Installation

Mark Willhoite

155 Gibbs Street, Suite 425

Rockville, MD 20850

Phone: (301) 754-0430

solar@cleancurrents.com

www.cleancurrents.com

Earth Sun Energy Systems

Photovoltaic and Solar Thermal System Design and Installation

Keith Winston

3927 Madison Street

Hyattsville, MD 20781

Phone: (301) 980-6325

solar@earthsunenergy.com

www.earthsunenergy.com

Eco Electric

Photovoltaic, Solar Thermal System Design and Installation

David Fricke, Jr.

4631 Baltimore Avenue

Hyattsville, MD 20781

Phone: (301) 927-4900

dfricke@go-companies.com

www.ecoelec.net

Energy & Environment Inc.

Photovoltaic, Solar Thermal, Geothermal System Design and Installation

Robert (Bob) Bennett

Energy & Environment, Inc

5505 Connecticut Avenue, NW #262

Washington, DC 20015

Phone: (202) 445-1515

bob.bennett@energyandenvironmentinc.com

www.energyandenvironmentinc.com

GreenBrilliance, USA

Photovoltaic and Solar Thermal System Design and Installation

Sumit Bhatnagar

Phone: (703) 593-8870

sumit.bhatnagar@greenbrilliance.com

www.greenbrilliance.com

Greenspring Energy

Photovoltaic and Solar Thermal System Design
and Installation

Sandra Formanek
8830 Orchard Tree Lane
Towson, MD 21286
Phone: (443) 322-7000

sformanekgreenspring@gmail.com
www.greenspringenergy.com

Maggio Roofing/Jamsco Inc

Photovoltaic System Design and Installation

Scott Siegal
6476 Sligo Mill Road
Takoma Park, MD 20912
Phone: (301) 891-1390

scott@maggioroofing.com
www.maggioroofing.com

Monarc Construction

Photovoltaic System Design and Installation

Mark Bellingham
2781 Hartland Road
Falls Church, VA 22043
Phone: (703) 887-8692

jbellingham@monarcconstruction.com
www.monarcconstruction.com/GreenSheets/

Plus Electric

Photovoltaic System Design and Installation

Horacio Muslera
3405 Rosemary Lane
Hyattsville, MD 20782
Phone: (202) 607-0552

Horacio@PlusElectricCorp.com
www.pluselectriccorp.com

The Solar Edge

Photovoltaic and Solar Thermal System Design
and Installation

Matt Shanley
Phone: (410) 696-2657

matt@thesolaredge.com
www.thesolaredge.com

Solar Energy Services

Solar Thermal System Design

Rick Peters
1514 Jabez Run Rd., #106
Millersville, MD 21108
Phone : (410) 255-7773

rick@solarsaves.net
www.solarsaves.net

Solar Solution, LLC

Photovoltaic and Solar Thermal System Design
and Installation

Atta Kiarash
10411 Motor City Drive
Suite 750
Bethesda, MD 20817
Phone: (240) 395-1379

sales@solarsolutionllc.com
www.solarsolutionllc.com

SOLgenics, Inc.

Photovoltaic and Solar Thermal System Design
and Installation

Troy Osten
8775 Centre Park Drive #529
Columbia MD 21045-2177
Phone: (202) 470-6638

Troy@SOLgenics.com
www.solgenics.com

Standard Solar, Inc.

Photovoltaic and Solar Thermal System Design
and Installation

Brian Desmond
202 Perry Parkway, Suite 7
Gaithersburg, MD 20877
Phone: (301) 944-1200

sales@standardsolar.com
www.standardsolar.com

Switch, LLC

Photovoltaic System Design and Installation

Christopher Graves
20632 Highland Hall Dr.
Montgomery Village, MD 20886
Phone: (703) 941-3284
Mobile: (703) 994-2271

chrisgraves@switchonenergy.com
www.switchonenergy.com

Renewable Energy Credit Aggregators

Astrum Solar

Solar REC Purchasing
Ben Davis, Josh Goldberg
8955 Henkels Lane, Suite 508
Annapolis Junction, MD 20701
Phone: (410) 443-3419
ben@astrumsolar.com
www.astrumsolar.com

SolSystems

Solar REC Purchasing
George Ashton, Yuri Horwitz
Toll-Free: (888) 235-1538
Phone: (202) 288-0164
yuri@solsystemscompany.com
www.solsystemscompany.com

General and Electrical Contractors

Abrams Design Build

General Contracting and Facilitation of Renewable Energy Installations
Amy Abrams
409 Butternut St NW
Washington, DC 20012
Phone: (202) 726-5894
amy@abramsdesignbuild.com
www.abramsdesignbuild.com

EcoGreen Living

General Contracting and Facilitation of Renewable Energy Installations
Keith Ware
6201 Blair Road NW
Washington, D.C. 20011
Phone: (202) 234-7110
www.eco-greenliving.com

Go Contractors

Electrical Contracting
David Fricke, Jr.
4631 Baltimore Avenue
Hyattsville, MD 20781
Phone: (301) 927-4900
dfricke@go-companies.com
www.ecoelec.net

APPENDIX 4

REFERENCES AND RESOURCES

Maintaining Your Photovoltaic System

Safety

With respect to both maintenance inspections and troubleshooting, a proper knowledge of safety and potential hazards cannot be overemphasized. Service personnel should familiarize themselves with the hazards and safety precautions listed below.

Current and Voltage Safety

Remember that photovoltaic systems produce enough current to cause serious injury.

- Check all safety disconnects for proper operation.
- Insure that all metal parts are grounded.
- Cover the modules when working on them during the day (or work on them at night).

Battery Safety

Special care must be used when working with and around batteries. When charging, lead acid batteries give off hydrogen gas, which can be highly explosive. Smoking and spark producing activities must be avoided when working around these batteries. Low voltage batteries can produce enough short-circuit current to cause physical harm!

Extra precaution must be taken when disconnecting wiring from batteries when they are charging, as this can create sparks and lead to explosions:

- Neutralize lead acid battery acid that gets on the skin with a mixture of baking soda and water.
- Neutralize Ni Cad battery acid that gets on the skin with boric acid or vinegar.
- Ensure that a portable eye wash kit is on hand in case acid is splashed into the eyes. Flush eyes for ten minutes and contact a physician immediately.
- Use eye protection and rubber gloves when working around batteries.

Maintenance

All photovoltaic systems must be inspected and maintained on a regular basis. This preventive maintenance ensures that systems are operating effectively and, in many cases, prevents problems from occurring. Maintenance inspections require a minimal amount of time and are very simple once the procedure is understood and maintenance records are developed. Some of the procedures can be carried out by the system owner, but most should be conducted only by trained technicians familiar with photovoltaic systems, subsystem components and proper safety procedures. A well maintained system is the best insurance against future problems.

General Guidelines

- Inspect system twice per year (Spring and Fall).
- Develop and maintain inspection forms and records.

Attachment A

District of Columbia Renewable Energy Incentive Program Application Process

Step One: Advance Preparation

1. Review program checklist and guidelines.
2. Conduct an energy audit on your home or facility and implement the recommended conservation measures. An energy audit is not required to receive a rebate but is highly advised.
3. Schedule a renewable energy site assessment with a renewable energy installer.

Step Two: Apply for a Rebate

Your contractor will assist you in completing your application.

1. Submit Prequalification Application
2. Await telephone and email notification of approval and receipt of REIP Reservation Number
3. Submit full application and supporting documents to DDOE
 - Incentive Application (Technology Specific) - must include:
 - Signed cost estimate, purchase order or letter of intent indicating equipment purchase (a down payment is required)
 - System schematic or line drawing
 - Site plan (photos, aerial map, or a rendering if applicable)
 - Shading analysis (if shading exists between 9am and 3pm any time of the year)
 - Roof dimensions, including angle, length and width (if system is installed on a roof)
 - Location of collectors or modules on the roof (if installed on the roof) and orientation and tilt of collectors or array
 - District of Columbia Master Supplier Form
 - Form W-9 Federal Tax Identification

*DDOE will only approve projects that have submitted a complete application.

Step Three: Rebate Contract and Rebate Payment

Full applications will be considered and approved/rejected in the order received.

1. If the application is approved, DDOE will mail an incentive contract to the applicant confirming the amount of the rebate within 10 business days.
2. The applicant must sign and return the rebate contract within 15 business days.
3. Rebate payment requests will be processed upon receipt of the signed rebate contract by DDOE. Rebates will be issued in approximately 30-45 business days after receipt.
4. Applicants will have 6 months to complete the installation from the date the rebate check is issued. An additional 6 month extension may be obtained with written approval submitted 5 days before the expiration date of the rebate. If this condition is unmet, the system owner is to return the rebate to DDOE. Failure to return the rebate will constitute a lien on the owner's real and personal property to secure repayment.

Step 4. Complete Your Clean Energy System Installation

- Systems must be installed according to all District of Columbia regulations. Typically both electrical and building permits are required. In addition, historic permits and other special permits may be required. All work must be performed in accordance with all applicable federal

and local manufacturer's codes and standards and Pepco interconnection guidelines for electricity generation systems.

- Pepco should be sent a pre-installation notification before any work begins on systems that will be grid-interconnected. Such notification provides ample time for scheduling a meter connection. Contact the Pepco Green Power Connection™ Team at (202) 872-2040 or gpc-south@pepco.com; <http://www.pepco.com/home/choice/dc/greenpower/>
- To protect the purchaser against defective workmanship, system or component breakdown, or severe degradation all systems must carry the original manufacturer's warranty of one year or greater, and all installation workmanship must be guaranteed for a minimum of one year. The entire solar generating system must carry a warranty, including PV modules (panels) and inverters, and warranties should provide for no-cost repair or replacement of the system or system components, including any associated labor during the warranty period.
- All equipment must be new.

Additional Requirements

- Applicants installing electricity generating equipment must agree to receive an additional digital revenue meter, to be paid for, installed by, and allowed access to by Pepco.
- No system can be removed from the District of Columbia for a period of 10 years following installation.

Step 5. Final Inspection

1. Once the project is completed, arrange final inspection from DCRA building and electrical inspectors.
2. Complete interconnection agreement with Pepco when applicable.
3. Schedule a final inspection with DDOE to verify project completion according to the rebate contract. Applicants must submit a System Completion Certificate specific to the technology rebated.

Rebate Levels

Solar photovoltaic

*\$3 for each of the first 3,000 installed watts or watt equivalents of capacity;

*\$2 for each of the next 7,000 installed watts or watt equivalents of capacity;

*\$1 for each of the next 10,000 installed watts or watt equivalents of capacity;

*Rebates are capped at a maximum of \$33,000 (20 kilowatts/kilowatt equivalents) for each applicant site per program year. An applicant may only apply for one rebate per program year.

Solar Thermal and Geothermal

Regulations are being promulgated for these technologies, and incentives will be announced in fiscal year 2010 beginning October 2009.

Rebate Rules & Guidelines

Multifamily Residential Dwellings

- Individual condominium owners must obtain written permission from the condo association.
- Condo associations can apply for a rebate, and the system must be connected to a commercial meter.
- Apartment buildings are eligible to receive a rebate under this program. The entire project must come under a single rebate application submitted by the building owner.

- Renewable energy cooperatives are eligible for this rebate. Each individual resident or business owner participating in the cooperative must provide a separate application to include project details unique to their specific site.

Solar (photovoltaic and solar thermal)

- Applicant's shading diagram or Solar Pathfinder plot must demonstrate minimal shading by trees, buildings and other structures and good direct exposure to the sun between the hours of 9am and 3pm any time of the year.
- DDOE retains the right to deny rebates based on excessive shading and or poor orientation of solar collectors or modules.

