



**Case No.: 09-1912-EL-REN**

**A. Name of Renewable Generating Facility:** The Cincinnati Zoo & Botanical Garden

*The name specified will appear on the facility's certificate of eligibility issued by the Public Utilities Commission of Ohio.*

**Facility Location:** Harold C. Schott Education Center

Street Address: 3400 Vine Street

City: Cincinnati State: OH Zip Code: 45220

**Facility Latitude and Longitude**

Latitude: 39.145593

Longitude: -84.505548

*There are internet mapping tools available to determine your latitude and longitude, if you do not have this information.*

*If applicable, U.S. Department of Energy, Energy Information Administration Form EIA-860 Plant Name and Plant Code.*

EIA-860 Plant Name:

EIA Plant Code:

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**B. Name of the Facility Owner:** The Cincinnati Zoo & Botanical Garden

*Please note that the facility owner name listed will be the name that appears on the certificate.*

*If the facility has multiple owners, please provide the following information for each on additional sheets.*

Applicant's Legal Name: Mark Fisher

Title: Senior Director of Facilities and Planning

Organization: The Cincinnati Zoo & Botanical Garden

Owner's Address:

Street Address: 3400 Vine Street

City: Cincinnati State: OH Zip Code: 45220

Country: USA

Phone: 513-559-7795 Fax: 513-487-3398 Email Address: mark.fisher@cincinnati-zoo.org

Web Site Address (if applicable): <http://www.cincinnati-zoo.org/>

**C. List name, address, telephone number and web site address under which Applicant will do business in Ohio.**

Applicant's Legal Name: Mark Fisher

Title: Senior Director of Facilities and Planning

Organization: The Cincinnati Zoo & Botanical Garden

*Please note that the company name will appear on the certificate*

Owner's Address:

*The address provided in this section is where the certificate will be sent*

Street Address: 3400 Vine Street

City: Cincinnati State: OH Zip Code: 45220

Country: USA

Phone: 513-559-7795 Fax: 513-487-3398 Email Address: mark.fisher@cincinnati-zoo.org

Web Site Address (if applicable): <http://www.cincinnati-zoo.org/>

**D. Name of Generation Facility Operating Company: The Cincinnati Zoo & Botanical Garden**

Legal Name of Contact Person: Mark Fisher

Title: Senior Director of Facilities and Planning

Organization: The Cincinnati Zoo & Botanical Garden

Operator's Address:

Street Address: 3400 Vine Street

City: Cincinnati State: OH Zip Code: 45220

Country: USA

Phone: 513-559-7795 Fax: 513-487-3398 Email Address: mark.fisher@cincinnati-zoo.org

Web Site Address (if applicable): <http://www.cincinnati-zoo.org/>

**E. Contact person for regulatory or emergency matters:**

Legal Name of Contact Person: Mark Fisher

Title: Senior Director of Facilities and Planning

Organization: The Cincinnati Zoo & Botanical Garden

Operator's Address:

Street Address: 3400 Vine Street

City: Cincinnati State: OH Zip Code: 45220

Country: USA

Phone: 513-559-7795 Fax: 513-487-3398 Email Address: mark.fisher@cincinnati-zoo.org

Web Site Address (if applicable): <http://www.cincinnati-zoo.org/>

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## **F. Certification Criteria 1: Deliverability of the Generation into Ohio**

Ohio Revised Code (ORC) Sec. 4928.64(B)(3)

*The facility must have an interconnection with an electric utility.*

Check which of the following applies to your facility's location:

☒ The facility is located in Ohio.

☐ The facility is located in a state geographically contiguous to Ohio (Indiana, Kentucky, Michigan, Pennsylvania, or West Virginia).

☐ The facility is located in the following state:

*If the renewable energy resource generation facility is not located in Ohio, Indiana, Kentucky, Michigan, Pennsylvania, or West Virginia, you are required to submit a study by one of the regional transmission organizations (RTO) operating in Ohio, either PJM or Midwest ISO, demonstrating that the power from your facility is physically deliverable into the state of Ohio. The study may be conducted by someone other than the RTO provided that the RTO approves the study. This study must be appended to your application as an exhibit.*

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## **G. Certification Criteria 2: Qualified Resource or Technology**

*You should provide information for only one resource or technology on this application; please check and/or fill out only one of the sections below. If you are applying for more than one resource or technology, you will need to complete a separate application for each resource or technology.*

G.1. For the resource or technology you identify in Sections G.4 – G.13 below, please provide a written description of the system.

### **System description:**

The Cincinnati Zoo & Botanical Garden has a fully functioning 19.3 kW photovoltaic (PV) system installed on the rooftop of its Harold C. Schott Education Center building located in Cincinnati, OH. The system consists of 168 Evergreen Solar EC-115-G modules in 7 sub-arrays of 24. The solar system output is measured by five PV Powered inverters.

G.2. Please include a detailed description of how the output of the facility is going to be measured and verified, including the configuration of the meter(s) and the meter type(s).

Currently, the solar array at The Cincinnati Zoo & Botanical Garden is measured using five PV Powered PVP-4600 inverters. There were photographs taken of these inverters to measure the output on 01/06/09 and again on 08/05/09. Another snapshot of the inverters will be taken at the end of December. We plan to verify the inverter readings with the estimates provided through the National Renewable Research Laboratory (NREL) calculator found at <http://www.pvwatts.org/> for 2008 and 2009 generation. A utility grade meter will be installed by the end of 2009.

G.3. Please attach digital photographs that depict an accurate characterization of the renewable generating facility. Please indicate the date(s) the photographs were taken. For existing facilities, these photographs must be submitted for your application to be reviewed. For proposed facilities or those under construction, photographs will be required to be filed within 30 days of the on-line date of the facility.

**INSERT PHOTOGRAPH(S)**

Photo taken – 01/09/07



**The Applicant is applying for certification in Ohio based on the following qualified resource or technology (Sec. 4928.01 O.R.C.):**

**G.1   x   SOLAR PHOTOVOLTAIC**

Total PV Capacity (DC): 19,320 watts

Total PV Capacity (AC): 18,450 watts

Expected Capacity Factor: 13-18%

Anticipated Annual output in kWh/yr: about 18,000 kWh

Location of the PV array:   x   Roof      Ground      Other

# of Modules and/or size of the array: 168 modules in 7 sub-arrays of 24

**G.1a PV Modules**

For each PV module, provide the following information:

Manufacturer: Evergreen Solar

Model and Rating: EC-115-G; 115 DC watts @ STC

**G.2      SOLAR THERMAL**

**G.3      WIND**

Total Nameplate Capacity (DC):                      kW DC

Expected Capacity Factor:

Anticipated Annual Output in kWh/yr or MWh/yr:

# of Generators:

**G.3a Wind Generators**

*If your system includes multiple generators, please provide the following information for each unique generator you have in your system*

Manufacturer:

Model Name and Number:

Generator Nameplate Capacity (kilowatts DC):

Wind Hub Height (ft):

Wind Rotor Diameter (ft):

**G.4 \_\_ HYDROELECTRIC** ("hydroelectric facility" means a hydroelectric generating facility that is located at a dam on a river, or on any water discharged to a river, that is within or bordering this state or within or bordering an adjoining state (Sec. 4928.01(35) O.R.C.)

Check each of the following to verify that your facility meets each of the statutory standards (Sec. 4928.01(35) O.R.C.):

- ☐ (a) The facility provides for river flows that are not detrimental for fish, wildlife, and water quality, including seasonal flow fluctuations as defined by the applicable licensing agency for the facility.
- ☐ (b) The facility demonstrates that it complies with the water quality standards of this state, which compliance may consist of certification under Section 401 of the "Clean Water Act of 1977," 91 Stat. 1598, 1599, 33 U.S.C. 1341, and demonstrates that it has not contributed to a finding by this state that the river has impaired water quality under Section 303(d) of the "Clean Water Act of 1977," 114 Stat. 870, 33 U.S.C. 1313.
- ☐ (c) The facility complies with mandatory prescriptions regarding fish passage as required by the Federal Energy Regulatory Commission license issued for the project, regarding fish protection for riverine, anadromous, and catadromus fish.
- ☐ (d) The facility complies with the recommendations of the Ohio Environmental Protection Agency and with the terms of its Federal Energy Regulatory Commission license regarding watershed protection, mitigation, or enhancement, to the extent of each agency's respective jurisdiction over the facility.
- ☐ (e) The facility complies with provisions of the "Endangered Species Act of 1973," 87 Stat. 884, 16 U.S.C. 1531 to 1544, as amended.
- ☐ (f) The facility does not harm cultural resources of the area. This can be shown through compliance with the terms of its Federal Energy Regulatory Commission license or, if the facility is not regulated by that commission, through development of a plan approved by the Ohio Historic Preservation Office, to the extent it has jurisdiction over the facility.
- ☐ (g) The facility complies with the terms of its Federal Energy Regulatory Commission license or exemption that are related to recreational access, accommodation, and facilities or, if the facility is not regulated by that commission, the facility complies with similar requirements as are recommended by resource agencies, to the extent they have jurisdiction over the facility; and the facility provides access to water to the public without fee or charge.
- ☐ (h) The facility is not recommended for removal by any federal agency or agency of any state, to the extent the particular agency has jurisdiction over the facility.

**G.5 \_\_ GEOTHERMAL**

**G.6 \_\_ SOLID WASTE** (as defined in ORC section 3734.01), electricity generation using fuel derived from solid wastes through fractionation, biological decomposition, or other process that does not principally involve combustion. (Sec. 4928.01(A)(35) O.R.C.)

Identify all fuel types used by the facility and respective proportions (show by the percent of heat input):

**G.7 \_\_ BIOMASS**

Identify the fuel type used by the facility:

*If co-firing an electric generating facility with a biomass energy resource, the proportion of fuel input attributable to the biomass energy resource shall dictate the proportion of electricity output from the facility that can be considered biomass energy.*

**G.7a** List all fuel types used by the facility and respective proportions (show by the percent of heat input):

**G.7b** Please attach the formula for computing the proportions of output per fuel type by MWh or kWh generated.

**G.8 \_\_ FUEL CELL** (any fuel cell used in the generation of electricity, including, but not limited to, a proton exchange membrane fuel cell, phosphoric acid fuel cell, molten carbonate fuel cell, or solid oxide fuel cell; Sec. 4928.01(35)(A) O.R.C.).

Identify all fuel types used by the facility and respective proportions:

**G.9 \_\_ STORAGE FACILITY**

If using compressed air or pumped hydropower, the renewable energy resource used to impel the resource into the storage reservoir is (include resource type and facility name):

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**H. Certification Criteria 3: Placed in Service Date** (Sec. 4928.64. (A)(1) O.R.C.)

The Renewable Energy Facility:

☐ has a placed-in-service date before January 1, 1998; (month/day/year):

☒ has a placed-in-service date on or after January 1, 1998; (month/day/year): August 2006

☐ has been modified or retrofitted on or after January 1, 1998; (month/day/year):

Please provide a detailed description of the modifications or retrofits made to the facility that rendered it eligible for consideration as a qualified renewable energy resource. In your description, please include the date of initial operation and the date of modification or retrofit to use a qualified renewable resource. Please include this description as an exhibit attached to your application filing and identify the subject matter in the heading of the exhibit.

☐ Not yet online; projected in-service date (month/day/year):

**H.1** Is the renewable energy facility owner a mercantile customer?

ORC Sec. 4928.01 (19) "Mercantile customer" means a commercial or industrial customer if the electricity consumed is for nonresidential use and the customer consumes more than seven hundred thousand kilowatt hours per year or is part of a national account involving multiple facilities in one or more states.

☐ No

☒ Yes

Has the mercantile customer facility owner committed to integrate the resource under the provisions of Rule 4901:1-39-08 O.A.C?

☒ No

☐ Yes

If yes, please attach a copy of your approved application as an exhibit to this filing.



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**I. Facility Information**

The nameplate capacity of the entire facility in megawatts (MW): .01932

If applicable, what is the expected heat rate of resource used per kWh of net generation:  
BTU/kWh

Number of Generating Units: 1

**I.1** For each generating unit, provide the following information:

In-Service date of each unit	The nameplate capacity of each unit in megawatts (MW)	Projected Annual Generation	Expected Annual Capacity Factor %
August 2006	.01932 MW	18,000 kWh	13-18%

*(To expand the number of rows if more units need to be reported, place your cursor in the bottom right cell and hit tab).*

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## J. Regional Transmission Organization Information

**J.1** In which Regional Transmission Organization area is your facility located:

☐ Within Geographic Area of PJM Interconnection, L.L.C.

☒ Within Geographic Area of Midwest ISO

☐ Other (specify):

**J.2** Are you a member of a regional transmission organization?

☐ Yes; specify which one:

☒ No; explain why you are not a member of a regional transmission organization: Facility is a business which is connected to Duke Energy Ohio which is a member of the Midwest ISO.

**J.3** Balancing Authority operator or control area operator for the facility:

☐ PJM

☒ Midwest ISO

☐ Other (specify):

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## K. Attribute Tracking System Information

Are you currently registered with an attribute tracking system: ☐ Yes ☒ No

In which attribute tracking system are you currently registered or in which do you intend to register (*the tracking system you identify will be the system the PUCO contacts with your eligibility certification*):

☒ GATS

☐ M-RETS

☐ Other (specify):

**K.1** Enter the generation ID number you have been assigned by the tracking system:

*If the generation ID number has not yet been assigned, you will need to provide this number to the PUCO within 15 days of your facility receiving this number from the tracking system).*

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**L. Other State Certification**

Is the facility certified by another state as an eligible generating resource to meet the renewable portfolio standards of that state?

☐ Yes

☒ No

**L.1** If yes, for each state, provide the following information:

Name of State	State Certification Agency	State Certification Number	Date Issued

*(To expand the number of rows if more units need to be reported, place your cursor in the bottom right cell and hit tab).*

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**M. Type of Generating Facility**

Please check all of the following that apply to your facility:

- ☐ Utility Generating Facility:
  - ☐ Investor Owned Utility
  - ☐ Rural Electric Cooperative
  - ☐ Municipal System
- ☐ Electric Services Company (competitive retail electric service provider)
- ☐ Distributed Generation with a net metering and interconnection agreement with a utility.  
Identify the utility:
- ☐ Distributed Generation with both on-site use and wholesale sales.  
Identify the utility with which the facility is interconnected:
- ☒ Distributed Generation, interconnected without net metering.  
Identify the utility with which the facility is interconnected: Duke Energy Ohio

Note: if the facility does not yet have an interconnection agreement with a utility or transmission system operator, please note here the status of the application for such an agreement:

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## N. Meter Specifications

*All facilities are required to measure output with a utility grade meter. Please provide this information for each meter used in your system.*

Manufacturer:

Serial Number:

Type:

Date of Last Certification:

Attach a photograph of the meter with date image taken. The meter reading must be clearly visible in the photograph.

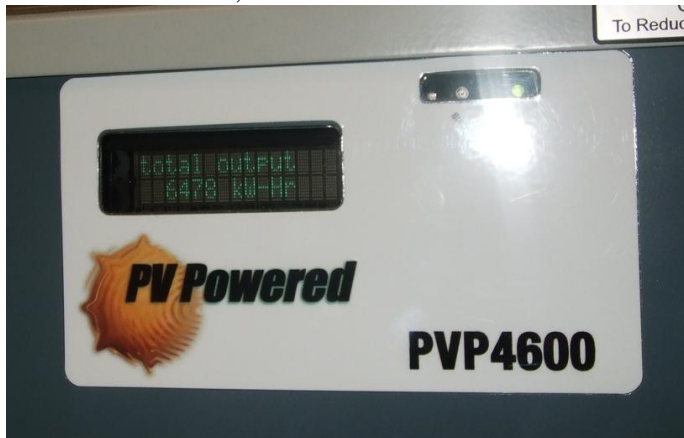
Report the total meter reading number at the time of the photograph and specify the appropriate unit of generation (e.g., kWh): 56,327 kWh

### INSERT PHOTOGRAPH(S)

Inverter 1 – PV Powered Inverter, Serial Number # PV46208121005132

Photo Taken – 08/05/09

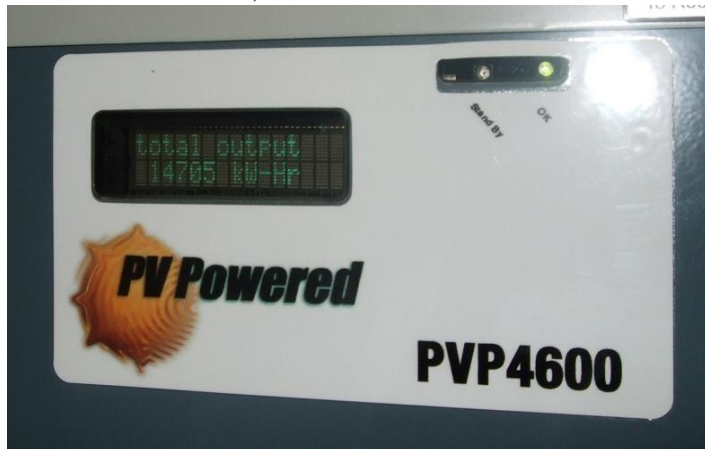
Lifetime kWh – 6,478 kWh



Inverter 2 – PV Powered Inverter, Serial Number # PV46208121005131

Photo Taken – 08/05/09

Lifetime kWh – 14,705 kWh



Inverter 3 – PV Powered Inverter, Serial Number # PV46208121005133

Photo Taken – 08/05/09

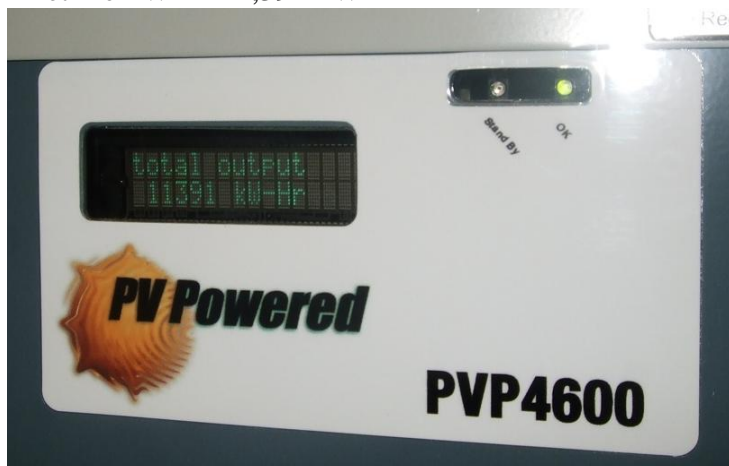
Lifetime kWh – 11,623 kWh



Inverter 4 – PV Powered Inverter, Serial Number # PV46208121005134

Photo Taken – 08/05/09

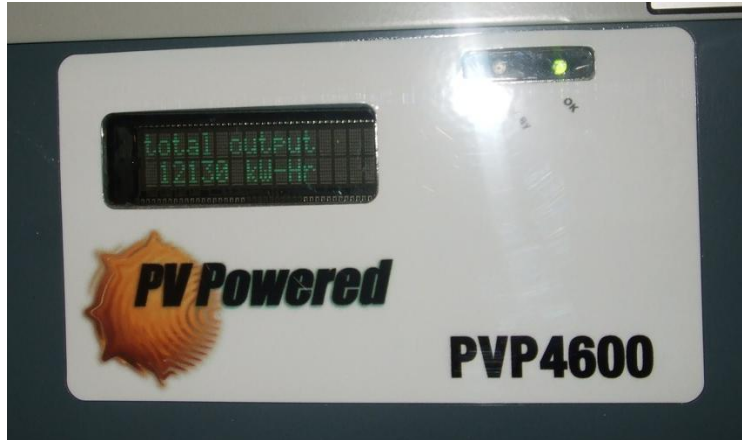
Lifetime kWh – 11,391 kWh



Inverter 5 – PV Powered Inverter, Serial Number # PV46208091005161

Photo Taken – 08/05/09

Lifetime kWh – 12,130 kWh



*The Public Utilities Commission of Ohio reserves the right to verify the accuracy of the data reported to the tracking system and to the PUCO.*

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**12/4/2009 3:47:04 PM**

**in**

**Case No(s). 09-1912-EL-REN**

Summary: Application electronically filed by Ms. Katie A Kiefer on behalf of The Cincinnati Zoo & Botanical Garden and Mr. Mark Fisher