









4. Payee Data Record (Form STD-204) .....	18
5. Submitting Your Complete Reservation Application.....	18
<b>V. Payment Process .....</b>	<b>19</b>
A. Claiming a Rebate Payment .....	19
1. Payment Claim Form.....	19
2. Documentation Confirming Final Payment and System Installation.....	19
3. Final Building Permit and Final Inspection Sign-Off.....	20
4. Five-Year Warranty.....	20
5. Evidence That Site Electricity Load Is Supplied by an Eligible Utility .....	20
6. System Interconnection With Utility Grid.....	21
7. Renewable Fuel Supplier Attestation.....	21
8. Payee Data Record (Form STD-204) .....	22
B. Submitting a Payment Claim .....	22
C. Claiming a Rebate Payment Without a Prior Reservation .....	23
D. Assignment of Rebate Payment .....	23
E. Time Extension Requests .....	24
<b>VI. Modifications or Changes to Reservations .....</b>	<b>25</b>
A. Can Installed System Be Different Than Reservation? .....	25
1. How Do Changes Affect the Rebate Amount? .....	25
<b>VII. Eligible System Costs.....</b>	<b>28</b>
A. What System Costs Are Eligible?.....	28
B. What Costs Are Not Eligible? .....	28
<b>VIII. Special Funding .....</b>	<b>29</b>
A. Special Funding for Affordable Housing Projects.....	29
<b>Appendix 1 Forms and Worksheets.....</b>	<b>31</b>
<b>Appendix 2 Tips for Consumers .....</b>	<b>43</b>
A. Choosing a Contractor .....	43
B. Choosing a Retailer .....	43
C. How Much Energy Does a System Produce?.....	43
<b>Appendix 3 Criteria for Listing Components as Eligible.....</b>	<b>45</b>

A. Small Wind.....	45
1. Small Wind Turbines Previously Listed .....	46
B. Fuel Cells.....	47
C. Inverters.....	47
D. Metering Criteria.....	47
E. Other Technologies.....	47
F. Criteria for Removing Small Wind Turbines from the List of Eligible Equipment.....	48
G. Procedure for Removing Equipment from Eligible Lists .....	49
<b>Appendix 4 Maximum System Size Calculations.....</b>	<b>50</b>
<b>Appendix 5 Atypical Incentive Applications .....</b>	<b>51</b>
A. New Construction (Building Permit) .....	51
B. Systems Installed by Sellers or Contractors for Their Own Personal or Business Use.....	51
C. Adding to Existing Systems.....	51
D. Special Requirements for Leased Systems .....	52

## ABSTRACT

The Emerging Renewables Program provides rebates and production incentives to end-use consumers who purchase and install renewable energy technologies, specifically small wind systems and fuel cells, for on-site generation. Payments from the Emerging Renewables Program are intended to reduce the net cost of generating equipment using emerging renewable technologies and thereby stimulate substantial sales of such systems. Increased sales of generating equipment are expected to encourage manufacturers, sellers, and installers to expand their operations and reduce their costs per unit.

Along with expanding the sales of emerging renewable technology systems, another goal of the Emerging Renewables Program is to encourage the siting of small, reliable distributed generating systems throughout California in locations where the produced electricity is both needed and consumed.

This Guidebook describes the rules and process for applying and claiming a rebate under the Emerging Renewables Program. This Guidebook also contains copies of all the forms necessary for the rebate process.

**Keywords:** emerging, renewable, program, ERP, California Energy Commission, small wind, fuel cell, rebate, incentive, electricity production, distributed generation, guidelines, and eligibility.

## What's New in This Guidebook?

Below are the major changes to this Eleventh edition of the *Emerging Renewables Program Guidebook* as compared to the April 2010 edition of the *Emerging Renewables Program Guidebook*.

- The rebate level of \$3/watt for the first 10 kilowatts will be extended for 120 days from the date the Eleventh edition of this Guidebook is adopted
- Rebates shall not exceed 50 percent of the net purchase price of the system (before ERP incentives)
- Small wind turbines shall no longer receive listing on the list of eligible small wind turbines for the ERP by providing 12 consecutive months of performance data
- Small wind turbines are required to receive third-party certification in order to receive listing on the list of eligible small wind turbines for the ERP
- Small wind turbines currently listed on the Energy Commission's list of eligible equipment for the ERP shall provide a third party-certified power curve in order to remain on the list of eligible equipment
- The rating of small wind turbines shall be standardized at 11 meter per second (24.6 miles per hour) for purposes of determining program incentives
- Additional criteria for removing equipment from the list of eligible equipment has been added

# I. Introduction

This *Emerging Renewables Program Guidebook* is one of several guidebooks the California Energy Commission (Energy Commission) has adopted to implement the Renewable Energy Program pursuant to Senate Bill 1038<sup>1</sup>, Senate Bill 183<sup>2</sup>, Senate Bill 1250<sup>3</sup>, and Senate Bill 107.<sup>4</sup> It describes the requirements for receiving funding for the installation and operation of non-solar renewable energy systems under the Emerging Renewables Program (ERP) element of the Renewable Energy Program.

The Energy Commission has adopted additional guidebooks to address the requirements for the other elements of the Renewable Energy Program and guidelines governing the overall administration of the Renewable Energy Program. The *Overall Program Guidebook* describes how the Renewable Energy Program will be administered and includes information and requirements that apply to all program elements of the Renewable Energy Program.

Applicants requesting funding under the Emerging Renewables Program must satisfy the requirements contained in both the *Overall Program Guidebook* and this *Emerging Renewables Program Guidebook*. This guidebook replaces the previous guidebook governing the Emerging Renewables Program (*the Emerging Renewables Program Guidebook, Tenth Edition*). Applications for funding approved under the previous program guidebook remain governed by the previous guidebook until the projects are completed, expired, or cancelled.

Funding for the installation and operation of solar photovoltaic systems on new residential construction is available under the Energy Commission's *New Solar Homes Partnership*. Funding for the installation and operation of solar photovoltaic systems on existing residential and new and existing non-residential buildings is available under the California Public Utilities Commission's *California Solar Initiative*. Information on these two programs can be found at [[www.gosolarcalifornia.org](http://www.gosolarcalifornia.org)].

## A. Purpose

The ERP was created to help develop a self-sustaining market for renewable energy systems that supply on-site electricity needs across California. Through this program, the Energy Commission provides funding to offset the cost of purchasing and installing new renewable energy systems using emerging renewable technologies.

The goal of the ERP is to reduce the net cost of on-site renewable energy systems to end-use consumers, and thereby stimulate demand and increased sales of such systems. Increased sales are expected to encourage manufacturers, sellers, and installers to expand operations, improve distribution, and reduce system costs.

Funding for the Renewable Energy Program is collected from the ratepayers of four investor-owned utilities in California to support existing, new, and emerging renewable electricity

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<sup>1</sup> Stats. 2002, Ch. 515, §§ 15 & 16, as codified in Public Utilities Code §§ 383.5 and 445.

<sup>2</sup> Stats. 2003, Ch. 666, §§ 1 & 2, as codified in Public Resources Code §§ 25401.6, and 25740 – 25751.

<sup>3</sup> Stats, 2006, Ch. 512, §§ 9-14, as codified in Public Resources Code §§ 25740.5 – 25747.

<sup>4</sup> Stats, 2006, Ch. 464, §§ 7 & 9, as codified in Public Resources Code §§ 25744.5 and 25746.

generation technologies. For more information about the Renewable Energy Program, please visit the Energy Commission's website at [[www.energy.ca.gov/renewables](http://www.energy.ca.gov/renewables)].

For consumer tips on purchasing a renewable energy system to supply on-site electricity needs please refer to Appendix 2 of this guidebook. Also see *Buying a Small Wind Electric System, February 2002* for further information. This and other documents are available on the Energy Commission's website at [[www.consumerenergycenter.org](http://www.consumerenergycenter.org)].

## **B. Overview**

The ERP provides electricity consumers with a financial incentive to install renewable energy systems on their property. The financial incentive varies based on system size, technology, and type of installation and is paid once the system is installed and operational. The consumer must apply to the Energy Commission for funding using the protocols in this guidebook.

To qualify for an incentive, both the consumer and the renewable energy system must satisfy a number of requirements. The consumer must receive electricity distribution service at the site of installation from an existing in-state electrical corporation contributing funds to support the program. These electrical corporations are Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), and Golden State Water Company (doing business as Bear Valley Electric Service (BVES)).

The renewable energy system must utilize one of two emerging renewable technologies: fuel cells using renewable fuels or small wind turbines.<sup>5</sup> The system must also use new components that are certified and come with a five-year warranty. In addition, the renewable energy system must generate electricity to offset the consumer's on-site electrical load. Lastly, the system must be interconnected to the utility distribution grid, unless the system is a fuel cell system used for backup generation for emergency, safety, or telecommunication purposes.

A "backup generation system" is defined as a generation system that is designed to serve as a backup in the event of a temporary failure or interruption in the flow of power from the primary electricity source or utility distribution grid.

In most cases, an applicant submits a Reservation Request Form (CEC-1038 R1) and supporting documentation to reserve a fixed amount of program funds. For fuel cell systems, a CEC-1038 R1A form is also required to verify the eligibility and use of renewable fuel. Once the Reservation Request Form is reviewed and approved, the Energy Commission sends the applicant a Payment Claim Form (CEC-1038 R2) that identifies the amount of funds reserved and the date upon which the reservation expires. The applicant then proceeds to install an eligible system. When the system is completed and operational, the applicant then submits the Payment Claim Form and supporting documentation to the Energy Commission. If the applicant installs an eligible system, meets all program requirements, and submits a completed Payment Claim Form, with supporting documentation prior to the expiration date of the reservation, the Energy Commission reviews the amount reserved and the incentive the applicant is eligible to receive and makes the appropriate payment.

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<sup>5</sup> Rebates are available for systems less than 30 kilowatts in size (wind systems up to 50 kilowatts in size may participate, but the rebates for such systems are limited to less than 30 kilowatts).

Forms are available in Appendix 1 of this Guidebook. For additional information, contact the Energy Commission's Call Center at: (800) 555-7794 or go to [[www.consumerenergycenter.org/erprebate/forms.html](http://www.consumerenergycenter.org/erprebate/forms.html)].

## II. Program Eligibility Requirements

Effective January 1, 2007, two technologies are eligible for ERP funding:

1. Small Wind Turbines - small electricity-producing, wind-driven generating systems with a rated electrical generating capacity no greater than 50 kilowatts;
2. Fuel Cells - technologies that generate electricity through an electrochemical reaction using a renewable fuel, with a generating capacity not greater than 30 kilowatts. For purposes of fuel cell eligibility, "renewable fuel" is limited to the following:
  - a) Landfill gas, digester gas, and other gases that meet the definition of an "eligible renewable energy resource" as defined in Public Utilities Code section 399.12(c) with reference to Public Resources Code section 25741(b).
  - b) Hydrogen or hydrogen rich gases derived from a non-fossil fuel or feedstock through the use of power generated by an "eligible renewable energy resource."<sup>6</sup>

In addition, fuel cell technologies must meet additional eligibility requirements of Public Resources Code section 25744(b)(3) which identifies "fuel cell technologies with an emission profile equivalent or better than the State Air Resources Board 2007 standard."

Systems that use the above technologies must satisfy the following eligibility criteria as explained in this chapter. Other technologies may be added to this category if they meet the criteria identified in Appendix 3 to the Energy Commission's satisfaction.

### A. System Ownership

Eligible renewable energy systems may not be owned by an electrical corporation as defined in Public Utilities Code section 218, or by a local publicly owned electric utility as defined in Public Utilities Code section 224.3.

### B. System Location

The renewable energy system and eligible renewable energy resource must be located on the same site where the customer's own electricity demand is located. To meet this requirement a fuel cell system and its renewable fuel storage tank must be installed at the site where the

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<sup>6</sup> An example of a renewable fuel is hydrogen derived from water through an electrolysis process energized with electricity generated by a solar photovoltaic system. In this example, the hydrogen is derived from water (a non-fossil fuel or feedstock) through a process energized with electricity from an eligible renewable energy resource (a solar photovoltaic system). The electricity used to energize the process must be bundled with the associated renewable attributes, so that renewable energy is used to produce the hydrogen. If the renewable attributes are unbundled from the electricity and disposed of separately, the hydrogen will be produced with null power and will not be considered a renewable fuel for purposes of fuel cell eligibility under the ERP.

customer's own electricity demand is located. However, the renewable fuel may be produced at another location and transported to the customer's site.

## **C. Grid Interconnection**

The renewable energy system must be permanently interconnected to the electrical distribution grid of the utility serving the customer's electrical load for the duration of the equipment's expected life. This requirement does not apply to fuel cell systems used for backup generation for emergency, safety, or telecommunication purposes.

Portable systems are not eligible. The site where the system is installed must receive electrical distribution service from PG&E, SCE, SDG&E, or BVE. The system's interconnection to the electricity distribution system must also comply with applicable electrical codes and utility interconnection requirements.

## **D. System Components**

The major system components must be certified or approved as described in Appendix 3 and listed by the Energy Commission in its lists of eligible equipment for the Emerging Renewables Program. The Energy Commission will only list equipment that is eligible to participate in the Emerging Renewables Program. Fuel cells with a generating capacity greater than 30 kilowatts and small wind turbines with a generating capacity greater than 50 kilowatts will not be listed, because fuel cell and wind turbine systems exceeding these capacities are not eligible for program funding. Rebuilt or refurbished equipment components will not be listed, because equipment must be new and unused and not previously placed in service to be eligible for program funding.

The Energy Commission's lists of eligible equipment are available at [\[www.consumerenergycenter.org/erprebate/equipment\]](http://www.consumerenergycenter.org/erprebate/equipment).

The applicant should confirm that the components purchased for a system are eligible when applying for ERP funding. New equipment may be added to the lists of eligible equipment from time to time and existing equipment removed as specified in Appendix 3. Energy Commission staff will confirm that equipment identified in a reservation application meets eligibility requirements prior to an application being approved. However, if the applicant begins or completes the installation before the Energy Commission has approved the reservation, equipment lists may have changed, and significant and costly changes may be needed for the system to comply with the eligibility criteria.

## **E. New Equipment**

All major system components (requiring certification under section D) must be new and unused and must not have been previously placed in service in any other location or for any other application. Equipment purchased or installed more than 18 months before applying for a reservation is not eligible.

## **F. System Sized to Offset On-site Electricity Load**

For all eligible systems, regardless of technology, the system must be sized so that the amount of electricity produced by the system primarily offsets part or all of the customer's electrical needs at the site of installation. The expected production of electricity by the system may not be more than the historical or expected electrical needs of the electricity consumer at the site of installation. See Appendix 4 for further details on how to determine the maximum allowed system size.

## **G. System Installation**

All systems, if installed under contract, must be installed by appropriately licensed California contractors in accordance with rules and regulations adopted by the State of California Contractors State Licensing Board. Installation contractors must have an active A, B, or a C-10 license.

Systems may also be self-installed by the purchaser (owner). While such installations are eligible for funding without the licensing requirements listed, they will be eligible only for a lesser rebate as described in Chapter III.

In all cases, systems must be installed in conformance with the manufacturer's specifications and with all applicable electrical and building codes and standards.<sup>7</sup>

## **H. Five-Year Warranty Requirements**

All systems must have a minimum five-year warranty to protect the purchaser against system or component breakdown. The warranty must cover, and provide for no-cost, repair or replacement of the system or system components including any associated labor for five years. The warranty must also cover the major components of the generating system against breakdown or degradation in electrical output of more than 10 percent from their originally rated electrical output during the five-year period. Major components are defined as wind turbine generators, fuel cell reformers and fuel cells, fuel processing and storage systems, and inverters. The warranty may be provided in combination by the manufacturer and installer.

Self-installed systems must have a minimum five-year warranty to protect the purchaser against breakdown or electrical output degradation of major system components. In this case, the warranty need not cover the labor costs associated with removing or replacing major components, because any repairs would be done by the self-installer or at the self-installer's expense.

## **I. System Performance Meter**

All systems must be installed with a performance meter<sup>8</sup> so that the customer can determine the

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<sup>7</sup> For information on restrictions placed on owner-builders or self-installers, contact the Contractors State License Board at (800) 321-CSLB to obtain a current edition of the *Contractor's License Law and Handbook*.

amount of energy produced by the system. The meter must be listed with the Energy Commission and measure the total energy produced by the system in kilowatt hours (or watt hours) and have a manufacturer's uncertainty specification of  $\pm 5$  percent. The meter must retain the kilowatt-hour production data in the event of a power outage and must provide a display of system output that the customer can easily view and understand. A system need not include a separate meter if the system is installed with an inverter that contains internal metering and display equipment that meets the meter requirements above. The meter requirement also applies to system additions if the existing system does not include a performance meter. A list of eligible performance meters and inverters that have built-in meters is available at [\[www.consumerenergycenter.org/erprebate/equipment.html\]](http://www.consumerenergycenter.org/erprebate/equipment.html).

## J. Equipment Sellers/Installers

To participate in the ERP, companies that sell and/or install system equipment must be self-registered on the Energy Commission's Contractors, Installers, and Sellers Database. Equipment sellers/installers should have the following information available prior to self-registration:

1. Business name, address, phone, fax, and e-mail address
2. Owner or principal contact
3. Business license number
4. Contractor license number (if applicable)
5. Proof of good standing on the records with the California Secretary of State, as required for corporate and limited liability entities
6. Reseller's license number

**This information must be submitted to the Energy Commission through the self-registration process before a company can become eligible to participate in the ERP. Contractors, sellers, and installers are responsible for maintaining their listing to reflect the most current information for their company.**

Self-registration must be done on-line at: <http://gosolarcalifornia.ca.gov/database/addcompany.php>.

Sellers, contractors, or installers that are listed in the online Database should maintain their information on a regular basis. This can be done using the log-on account name and password provided when the company has registered. Updates can be done online at:

<http://www.gosolarcalifornia.ca.gov/database/updates.php>

The Energy Commission will send out emails periodically to remind companies to update their online information, contacts, and other data.

It is the responsibility of each company to maintain its online information. If the Energy Commission's e-mails are returned as undeliverable, and the Energy Commission cannot reach

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<sup>8</sup> A performance meter is a device which measures and displays the energy output of the renewable energy system.

that company by phone or by regular U.S. mail, the Energy Commission reserves the right to remove the company from the online database after a three-month period.

The above information must be on file with the Energy Commission before the applicant can receive any reservation confirmation or payment. The Energy Commission will compile the information and make it available to consumers to assist them in making purchase decisions and effectuating remedial action. Information about registered equipment sellers will be posted on the Energy Commission's website at [\[www.gosolarcalifornia.ca.gov/retailers/search-new.php\]](http://www.gosolarcalifornia.ca.gov/retailers/search-new.php).

## **K. Audits and Inspections**

The Energy Commission will conduct audits of the applications it receives to verify that the information provided in the applications is true and correct. The Energy Commission may also conduct field inspections to verify systems are operating properly and installed as specified in the reservation request and payment claim applications.

In the event that a contractor, equipment seller, or purchaser provides information in a reservation application or payment request that appears to be questionable, the Energy Commission may take the following steps to clarify the questionable information:

1. Stop review of the application containing the questionable information to investigate further.
2. Require additional documentation from the manufacturer, contractor, equipment seller, and/or purchaser to verify the accuracy of the questionable information.

If the questionable information appears to be false or misrepresented, the Energy Commission will take one or more of the following corrective measures:

1. Reject the reservation application, or if a payment application, reject the payment request and cancel the reservation.
2. Notify the proper authorities, including the Contractors State License Board, so appropriate enforcement action may be taken.
3. Suspend review of all other applications submitted by or associated with the manufacturer, contractor, equipment seller, or purchaser to review whether false or misrepresented information was provided in those applications.
4. Require additional documentation from the manufacturer, contractor, equipment seller, or purchaser to verify if false or misrepresented information was provided with these other applications.

5. Notify purchasers identified in these other applications that additional information will be required to keep approved applications active or to process payment requests, and that the processing of any such applications will likely be delayed.
6. Require supporting documentation for all new applications and payment requests submitted by or associated with the manufacturer, contractor, or equipment seller.
7. Require that all payment requests submitted by or associated with the manufacturer, contractor, equipment seller, or purchaser be supported by additional verification of payments made by the purchaser, including bank statements, cancelled checks, credit card statements, or other similar documentation.
8. Post information on the Energy Commission website which informs consumers that:
  - a. Additional information is required when applying for reservations or payments using the manufacturer, contractor, or equipment seller, and
  - b. Any applications submitted by or associated with the manufacturer, contractor, or equipment seller will be subject to a more thorough review which will delay the processing of these applications.

## III. Incentives Offered Through This Program

### A. Rebates Offered

The rebates offered through this program are based on the generating capacity of a system and vary by system size, technology, and type of installation. The incentive must be used to reduce the purchase or lease cost of the eligible system, or the cost of electricity produced by the eligible system for the on-site customer. A rebate that is 15 percent lower than the standard rebate is available for self-installed systems. Additionally, special rebates may be available for systems installed for affordable housing. Because these special rebates target specific groups or classes of customers, they are discussed separately in Chapter VIII of this Guidebook.

The total amount of rebates available within this program will be limited by technology. The total amount allotted for each technology is dependent on the amount of available funds within the Emerging Renewable Resources Account (ERRA) of the Renewable Resource Trust Fund. In addition to this overall program funding limit described above, the total amount allotted to any single technology supplier and/or retailer is limited to a percentage of the annual funding allocation for the ERRA. These limits are discussed in the Overall Program Funding Limits section of this Chapter.

The rebate will be based on the generating capacity of the system. The total eligible rebate amount is calculated by multiplying the capacity of the system in watts by the appropriate rebate rate at the time of application. If the capacity of the energy system(s) exceeds the capacity of the inverter(s), then the capacity of the inverter(s) will be used to determine the total eligible rebate amount. It is not recommended that the capacity of the energy system(s) exceed the capacity of the inverter(s).

For systems using small wind turbines, a power rating at 11 meters per second (24.6 miles per hour) will be used for calculating the incentive.

Table 1 lists the rebate levels available, by size category and technology type. Since the Emerging Renewables Program was suspended approximately 30 days before a scheduled rebate drop for small wind systems, from \$3.00/watt for the first 10 kW of generating capacity to \$2.50/watt for the first 10 kW, the higher rebate for small wind systems will be extended for a fixed period of time after the suspension is lifted. The rebate level for the first 10 kW of generating capacity of a small wind system will remain \$3.00 per watt through March 1, 2012, and will revert to \$2.50 per watt on March 2, 2012. **Applications for wind turbine systems submitted to the Energy Commission via fax by 5:00 PM on March 1, 2012, will be considered for the \$3.00 per watt rebate.** Applications received via fax after 5:00 PM on March 1, 2012, will be considered for the \$2.50 per watt rebate. **No exceptions will be made.** Applications that are sent via hard-copy mail and are postmarked on or before March 1, 2012, will be deemed to have been submitted before the rebate drop date and will be considered for the \$3.00 per watt rebate. Only **COMPLETE** applications submitted before the deadline will be eligible for the \$3.00 per watt rebate. **Applications submitted via electronic mail will not be accepted.**

Additionally, the total eligible rebate amount available for any energy system shall not exceed 50 percent of the net purchase price of the system (before ERP incentives).<sup>9</sup>

**Table 1: Rebates Available for Emerging Renewable Systems**

<b>Technology Type</b>	<b>Size Category</b>	<b>Rebate Offered</b>
Fuel Cells using a renewable fuel	<30 kW	\$3.00 per watt
Wind	First 10 kW	\$3.00 per watt through March 1, 2012 \$2.50 per watt beginning March 2, 2012
	Increments between >10 kW and <30 kW	\$1.50 per watt

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<sup>9</sup> The net system price is based on the system's eligible costs as described in Chapter VII of this guidebook.

## C. Additional Reporting for Leased Systems

Renewable energy systems purchased under a lease agreement are eligible for rebates under the ERP, but are subject to additional requirements discussed in Appendix 5.

## D. Overall Program Funding Limits

Due to funding limitations the ERP will divide the funds available to the program evenly between rebates for systems using small wind turbines and systems using fuel cells<sup>10</sup>. If more funds are made available, additional allocations may be made for each technology. The Energy Commission reserves the right to adjust the allocation of funds between technologies at any time. The Energy Commission will issue a public notice announcing any changes to the allocation of funds 30 days before the changes go into effect.

Once the funding for a given technology is exhausted, through the payment of rebates and the issuance of rebate reservations, the Energy Commission will stop accepting rebate reservation applications for that technology and will issue a public notice informing consumers that the funds for that technology are exhausted.

**Only complete applications will be approved and receive fund encumbrances. Incomplete applications will be returned to the applicant; applicants may reapply but will be subject to the funding availability at the time the application is deemed complete.**

Because program funding is limited, and will ultimately be exhausted, the Energy Commission recommends that applicants not purchase or start work on any system until they receive a reservation confirming the availability and amount of funding approved for their application. The Energy Commission will closely monitor the rate at which the program funds are used for each technology to inform program participants on the availability of funds. The Energy Commission will post weekly updates on the amount of funds available. These updates can be found on the Energy Commission website

at: [http://www.energy.ca.gov/renewables/emerging\\_renewables/index.html](http://www.energy.ca.gov/renewables/emerging_renewables/index.html)

The Energy Commission will suspend the ERP once program funding is exhausted and may establish a waiting list for complete applications that are not funded. Applications on a waiting list may be funded if additional program funding becomes available. The Energy Commission may establish additional conditions for applications on the waiting list, including, but not limited to, conditions that limit the total dollar amount of applications on the waiting list and the duration of time applications may remain on the waiting list.

### 1. Funding Limits by Technology Supplier or Retailer

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<sup>10</sup> It is anticipated that the initial sum of \$20 million will be available for both technologies after the Eleventh edition of this Guidebook is adopted; \$10 million allocated to each technology.



































Examiners, visit the Energy Commission's website at [[www.energy.ca.gov/efficiency/cabec\\_roster.html](http://www.energy.ca.gov/efficiency/cabec_roster.html)].

# Appendix 1 Forms and Worksheets

CEC-1038 R1-	Reservation Request Form (All technologies)
CEC-1038 R1A -	Fuel Cell Supplemental Information Form (Fuel Cell technologies only)
STD 204 -	Payee Data Record
CEC-1038 R2 -	Payment Claim Form
CEC-1038 R2A -	Renewable Fuel Supplier Attestation (Fuel Cell technologies only)
CEC-1038 R3 -	Minimum Warranty Form
CEC-1038 R5 -	Reservation Payment Assignment Form

# R1

## RESERVATION REQUEST FORM

### EMERGING RENEWABLES PROGRAM

#### 1. Physical Site of System Installation

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

#### 2. Purchaser Name and Mailing Address

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Email: \_\_\_\_\_

#### 3. Equipment Seller (Must be registered)

Company: \_\_\_\_\_

City: \_\_\_\_\_ CEC ID (if known): \_\_\_\_\_

Phone: ( ) \_\_\_\_\_ Fax: ( ) \_\_\_\_\_

#### 4. System Installation (Write "Owner" if not hiring contractor)

Company: \_\_\_\_\_

City: \_\_\_\_\_ License No.: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

#### 5. Electric Utility (Attach all pages of monthly statement)

PG&E  SCE  SDG&E  BVE Service ID: \_\_\_\_\_

Billing Period: \_\_\_\_\_ kWh Used: \_\_\_\_\_

Note: If new construction attach building permit. Permit No. \_\_\_\_\_

Submit complete application by fax at (916) 653-2543 or by mail to:

California Energy Commission  
 Emerging Renewables Program (MS-45)  
 1516 Ninth Street  
 Sacramento, CA 95814-5512

#### 6. Equipment (Turbines, fuel cells, inverters, meters)

	Quantity	Manufacturer, Model (see CEC lists)
Generating Equipment		
Inverters, Meters		

#### 7. Installation Type and Height (For wind only - Tower, Pole, or Roof-mounted)

\_\_\_\_\_

Estimated annual energy production \_\_\_\_\_ kWh/Year

#### 8. Rebate and Other Incentives

System Rated Output \_\_\_\_\_ watts

Total System Cost: \$ \_\_\_\_\_

Expected Rebate: \$ \_\_\_\_\_

Pay Rebate to:  Purchaser  Seller

#### 9. Fuel Cell System. No Yes. If yes attach completed R1A Fuel Cell Supplemental Information Form.

Other Incentives: \$ \_\_\_\_\_

Source/Record No.: \_\_\_\_\_

#### 10. Declaration

The undersigned parties declare under penalty of perjury that the information provided in this form and the R1A form, if applicable, and the supporting documentation submitted herewith is true and correct to the best of their knowledge and that the following is true:

- All system equipment is new and unused and has been purchased within the last 18 months;
- The generating system is intended primarily to offset Purchaser's electrical needs at the site of installation;
- The generating system will be operated at the above site of installation for its useful life or the duration of the applicable lease agreement;
- If the generating system is a fuel cell system, it will only use renewable fuel;
- If the generating system is leased or provides electricity under a power purchase agreement the undersigned parties will comply with the special reporting requirements and will repay some or all of the ERP funding he or she receives if the lease agreement or power purchase agreement is terminated within five years of the system's installation or the start date of the agreement, whichever is later; and
- The generating system will be interconnected with the distribution system of the electric utility identified above, unless the system is for backup generation that will not be serving grid-connected electrical load.

The undersigned parties further acknowledge that they are aware of the requirements and conditions of receiving funding under the Emerging Renewables Program (ERP) and agree to comply with all such requirements and conditions as provided in the Energy Commission's ERP Guidebook and Overall Program Guidebook as a condition to receiving funding under the ERP. The undersigned Purchaser authorizes the Energy Commission during the term of the ERP to exchange information on this form with the Purchaser's electric utility to verify compliance with the requirements of the ERP.

#### Purchaser Signature

Print Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

#### Equipment Seller Signature

Print Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_





















## Appendix 2 Tips for Consumers

This Appendix provides some basic guidelines for those who are not familiar with renewable energy systems and may be interested in learning more. The Energy Commission has a variety of sources of additional information about choosing a renewable energy system, finding retailers, or estimating a system's energy output. This information can be obtained by visiting the Energy Commission's website at [[www.consumerenergycenter.org/](http://www.consumerenergycenter.org/)].

### A. Choosing a Contractor

Make sure the contractor is licensed by the Contractors State License Board. State law specifies that any job that costs \$500 or more (labor and materials) requires the services of a licensed contractor. As with any large purchase decision, the Energy Commission recommends that a customer obtain at least two or three bids before selecting an installer or agreeing to purchase a renewable energy system. The final contractor selection should be based on various factors including company reputation, warranty service, and installed system price. The Contractors State License Board [[www.cslb.ca.gov](http://www.cslb.ca.gov)] provides helpful consumer information, has a process to address complaints against contractors, and maintains information about the status of contractor licenses. The Energy Commission recommends that the status of the installer's contractor license be verified for consumer protection.

### B. Choosing a Retailer

The Energy Commission maintains a list of renewable energy system retailers to make it easier to find products in your area. The list is available on the Energy Commission's webpage at [[www.gosolarcalifornia.ca.gov/retailers/search-new.php](http://www.gosolarcalifornia.ca.gov/retailers/search-new.php)].

### C. How Much Energy Does a System Produce?

The annual amount of energy from an eligible renewable energy system can be estimated and in most cases can be guaranteed by the system retailer or installer. The annual amount of wind energy at a given location can be estimated, but is somewhat difficult to predict accurately without sufficient site wind speed data. It is important to note that wind turbines are rated at a wind speed of 28 miles per hour and some wind turbines do not produce any energy until the wind speed exceeds 12 miles per hour.

Battery backup systems are an option when purchasing renewable energy system and have the advantage of providing power during a utility outage. However, adding battery back-up significantly increases the cost of the generating system, requires additional maintenance, and reduces the useful energy output of the system by about 10 to 20 percent compared to a similar system without batteries.

Be sure to compare the energy output that contractors prepare before choosing a contractor. The energy output from a system is a much better indicator of the system performance than is the systems rated output. Also, be sure to verify that your installed system has an easy to read

meter installed that measures the energy produced in kilowatt hours. A meter is required by the ERP so that you will be able to determine if your system is operating properly. The utility meter only provides the net energy used at your home but does not tell you how much energy your system produces.

You may wish to consider purchasing a pre-designed packaged system to reduce the chance of safety or performance problems with mismatched equipment. Of course, all systems are not the same and may not suit your particular situation. Also, be sure that your system warranty clearly identifies the responsible party for repairing your system in the event of a malfunction or break down. Although you may be able to obtain lower prices by purchasing system components and equipment separately, keep in mind that the money you save may be more than offset by increased installation costs and lower energy output because of mismatched equipment. This, in turn, could affect your warranty coverage.

System prices vary depending on the technology, equipment type, local labor rates, site conditions, and other factors. The following table lists a range of system prices and annual energy production that are typical for wind energy system installations.

**Table 3: Typical Wind Energy System Prices and Energy Production**

Technology Type	Typical Energy Production (kWh/year)	Typical Installed System Prices <sup>1</sup>
Wind Energy Systems <sup>2</sup>		
3 kW	4,990 to 8,500	\$12,000-18,000
10 kW	8,400 to 16,440	\$30,000-60,000

1. Price examples are for 2010. The incentives will decrease to promote similar reduction in price.
2. Wind calculations based on manufacturer's predicted monthly energy production for a site with average wind speeds of 11 mph and 14 mph.

## Appendix 3 Criteria for Listing Components as Eligible

This Appendix summarizes the criteria used for listing which components can be used to create a renewable energy system that is eligible for a rebate from the Emerging Renewables Program.

The equipment must meet national or internationally recognized electrical standards or other appropriate criteria. Until the equipment is listed by the Energy Commission on its lists of eligible equipment for the Emerging Renewables Program, it is not eligible and no funding will be reserved or paid for a system using such equipment. Equipment that has not met the aforementioned requirements will not be placed on the lists of eligible equipment.

To have equipment listed by the Energy Commission, the equipment manufacturer must provide the Energy Commission with the following information:

- The name, address, and contact information for the equipment manufacturer;
- A detailed description of the equipment, including the equipment type, model number, and system specifications such as the rotor diameter, cut-in wind speed, and cut-out wind speed (for small wind turbines)
- Documentation demonstrating the equipment has been certified to the applicable standard;
- A copy of the certification report;
- For small wind turbines, a certified power curve showing power output (in watts or kilowatts) as a function of wind speed.
- A declaration confirming the equipment is new and unused, and is not rebuilt or refurbished equipment.

A subset of the information provided to the Energy Commission for the purposes of receiving listing on the eligible list of equipment may be made available on the Energy Commission's website.

Generating equipment (e.g. wind turbines), inverters, and performance meters are periodically added and removed from the lists of eligible equipment. The Energy Commission reserves the right to deny or remove any equipment on its lists of eligible equipment for any reason that adversely affects the goals or successful implementation of the program, including, but not limited to: poor equipment performance, concerns about equipment design or safety, concerns about the quality of data presented for purposes of equipment listing, or lack of manufacturer support for equipment maintenance and warranties. The equipment in question may be removed from the list of eligible equipment at any time and may be subject to further review.

### A. Small Wind

For small wind turbines not currently listed with the Energy Commission to be placed on the Energy Commission's list of eligible equipment, the turbine must meet the following requirements:

- The turbine must be certified to either the International Electrotechnical Commission 61400-2 (IEC 61400-2) standard or the American Wind Energy Association 9.1-2009 (AWEA 9.1-2009) standard by the Small Wind Certification Council (SWCC) or a Nationally Recognized Testing Laboratory (NRTL) such as Intertek.<sup>19</sup>
- The turbine must also have a certified power curve tested to the standards of IEC 61400-12-1, or Section 2 of the AWEA 9.1-2009 standards. The certified power curve must also come from the SWCC or a NRTL.

For all small wind turbines listed on the Energy Commission's list of eligible equipment, the power rating at 11 meters per second (24.6 miles per hour) will be used for calculating the incentive.

## 1. Small Wind Turbines Previously Listed

Turbines that were listed on the Energy Commission's list of eligible equipment under prior editions of this Guidebook must have a power performance certification that satisfies either Section 2 of the AWEA 9.1-2009 standard or the IEC 61400-12-1 standard in order to remain on the list of eligible equipment after the Eleventh edition of this Guidebook is adopted.

Any turbine that does not have a certified power curve at the time the Eleventh edition of this Guidebook is adopted will be removed from the Energy Commission's list of eligible equipment, but may be re-listed upon submission of a certified power curve within 12 months of the adoption of the Eleventh edition of this Guidebook.

A manufacturer must provide the Energy Commission with the following documentation within five calendar days of the adoption of the Eleventh edition of this Guidebook to ensure the manufacturer's turbine is not removed from the list of eligible equipment:

- A certified power curve for the turbine showing power output (in watts or kilowatts) as a function of wind speed.
- Documentation demonstrating the power curve was prepared in accordance with the standards of IEC 61400-12-1 or Section 2 of the AWEA 9.1-2009 standards by the SWCC or a NRTL prior to the adoption date of the Eleventh edition of this Guidebook.

Moreover, after 12 months from the date the Eleventh edition of this Guidebook is adopted, any turbine that has not received a complete certification satisfying the AWEA 9.1-2009 standard or the IEC 61400-2 standard will be removed from the list of eligible equipment.

Equipment that is removed from the list of eligible equipment may reapply to be listed upon proof of completion of certification to one of the above-listed standards.

Small wind turbines that are listed on the list of eligible equipment, but are not eligible to participate in the Emerging Renewables Program, such as turbines with a rated generating

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<sup>19</sup> The AWEA 9.1-2009 standard can be found here:  
[http://www.awea.org/learnabout/smallwind/upload/AWEA\\_Small\\_Turbine\\_Standard\\_Adopted\\_Dec09.pdf](http://www.awea.org/learnabout/smallwind/upload/AWEA_Small_Turbine_Standard_Adopted_Dec09.pdf)

capacity exceeding 50 kilowatts, will be removed from the list of eligible equipment 12 months from the date the Guidebook is adopted.

## B. Fuel Cells

All fuel cells must be certified as meeting the requirements of ANSI/CSA America FC 1-2004 for fuel cell power plants.

## C. Inverters

All inverters must be certified as meeting the requirements of UL 1741 **for inverters that will be used exclusively with small wind turbines or fuel cells.** Only inverters that have completed the testing will be listed as eligible equipment.

**Additional testing is required by a qualified Nationally Recognized Test Laboratory (NRTL) for inverters that will be used with solar photovoltaic systems participating in the California Solar Initiative or the New Solar Homes Partnership.<sup>20</sup>**

The Energy Commission also plans to consider if changes should include adjusting the ratings for inverters with battery-backup to account for losses inherent in battery back-up systems or for wind specific applications.

## D. Metering Criteria

Meters must retain the kilowatt-hour production data in the event of a power outage and must be easy to read for the customer's benefit. The meter must measure the total energy produced by the system in kilowatt-hours (or watt hours) and have a manufacturer's uncertainty specification of plus or minus five percent.

## E. Other Technologies

New technologies may be added by petitioning the Energy Commission, through the appropriate Committee. Applicants must submit the proper documentation satisfying all of the following criteria:

- 1) Financial assistance is required for these technologies to become commercially viable.
- 2) The technology must be commercially available with at least one vendor available for the sale of the system.

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<sup>20</sup> Nationally Recognized Testing Laboratories shall be those laboratories that have been recognized by the U.S. Department of Labor, Occupational Safety & Health Administration (OSHA), in accordance with Title 29 of the Code of Federal Regulations, section 1910.7, and are approved to conduct test UL 1741 under the scope of their OSHA recognition. A list of all current Nationally Recognized Testing Laboratories is available on OSHA's web page at [[www.osha.gov/dts/otpc/nrtl/index.html](http://www.osha.gov/dts/otpc/nrtl/index.html)]. Please note, not all of the Nationally Recognized Testing Laboratories identified on OSHA's list are approved to conduct test UL 1741.

- 3) Vendors of any generating systems employing the technology must offer at least a five-year full warranty on the entire generating system.
- 4) The technology must show at least one year of demonstrated reliable, predictable, and safe performance by a full-scale facility using this technology under field conditions.
- 5) The available data must show that generating systems using the technology have a useful design life of at least 20 years.
- 6) The technology must be designed so that it can produce grid-connected electricity, unless the system purpose is for backup generation used for emergency, safety, or telecommunications.
- 7) The technology represents a new electricity generating process not well represented among existing grid-connected renewable generating facilities, rather than some evolutionary or incremental improvements to renewable technologies used in existing renewable resource technology generating facilities (examples of such evolutionary or incremental improvements will be: a) an improved blade design for wind turbines, b) less expensive well drilling techniques for geothermal, or c) a more efficient burner design for a biomass plant).
- 8) The project must be designed exclusively for the purpose of producing electricity for on-site use or sale (excluding demonstration projects that may sell to one specific customer), in contrast to a research or demonstration facility, which is designed primarily for collecting additional research data.

## F. Criteria for Removing Small Wind Turbines from the List of Eligible Equipment

In order to insure that small wind turbines on the list of eligible equipment perform as represented to the Energy Commission by the equipment manufacturer, small wind turbines with a power coefficient ( $C_p$ ) of greater than 0.593 will be removed from the list of eligible equipment. A power coefficient of 0.593 represents the theoretical maximum amount of kinetic energy that can be captured from the wind, according to the Betz Limit Theory.<sup>21</sup>

The  $C_p$  is calculated as a ratio of the power of the turbine at a certain wind speed to the total power in wind at that speed. The  $C_p$  is represented by Equation 1:

$$C_p = \frac{P_{\text{turbine}}}{P_{\text{wind}}}$$

The equation for the total power in the wind is shown in Equation 2:

$$P_{\text{wind}} = \frac{1}{2} \rho V^3 A$$

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<sup>21</sup> de Vries, O., Fluid Dynamic Aspects of Wind Energy Conversion, National Aerospace Laboratory NLR, The Netherlands, 1979.

Where:

- $P_{wind}$  is the power of the wind in watts
- $\rho$  is the air density in kg/m<sup>3</sup>
- $V$  is the wind speed in m/s
- $A$  is the swept area of the rotor in m<sup>2</sup>

The power of the turbine  $P_{turbine}$  is the rating at certain wind speed, supplied by the manufacturer.

## G. Procedure for Removing Equipment from Eligible Lists

The Energy Commission may de-list and remove equipment from the lists of eligible small wind turbines, fuel cells, inverters, or meters for the ERP by providing the manufacturer of such equipment advance notice of equipment's removal. The notice shall identify the reason(s) for the equipment's de-listing and shall provide the manufacturer at least 10 business days from receipt of the notice to respond to the Energy Commission and address the stated reason(s) for de-listing the equipment<sup>22</sup>.

Pending the manufacturer's response to a notice of de-listing, the Energy Commission may suspend the processing of any reservation applications that propose a system using the equipment subject to de-listing. In addition, the Energy Commission may alert consumers and program participants of the equipment subject to de-listing.

If a component becomes de-listed, and is removed from the Energy Commission's lists of eligible equipment before a rebate reservation is granted, applicants may be required to modify their systems by replacing the de-listed component with a listed component before a payment is issued.

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<sup>22</sup> This process does not preclude the Energy Commission from initiating a formal review of the equipment in question pursuant to the complaint and investigatory process set forth in the California Code of Regulations, title 20, Section 1230, et seq.

## Appendix 4 Maximum System Size Calculations

This Appendix describes the method used to determine the maximum system size eligible for incentives from the program. Because the average annual residential electricity consumption in California is about 7000 kWh/yr system, 5 kW and under are exempt from the maximum size limitation.

In cases where the proposed system size is greater than 5 kW, the system must be sized so that the expected production of the system is no greater than 100 percent of the building's on-site estimated annual electricity consumption. The customer may submit either a recent utility bill, the estimated annual electricity consumption of the building based on a detailed energy use calculation signed by a professional energy rater or a letter from a qualified architect, engineer, or electrical contractor (C-10 licensed) detailing expected energy consumption. In cases where the expected electricity production is greater than 100 percent of the estimated annual consumption, the rebate reserved will be reduced by an amount equal to the ratio between the estimated annual consumption and the expected system production.

If the Energy Commission calculates a reduced rebate amount, the applicant may submit subsequent utility bills within the following three months to receive their full reservation amount, provided there are sufficient program funds available at that time to make an additional payment.

## **Appendix 5 Atypical Incentive Applications**

### **A. New Construction (Building Permit)**

For sites that currently do not have electrical service, a copy of the building permit for the new home or major site improvement must be included with the reservation application (not remodeling projects). All approved applications for new construction will receive 18 month reservations.

### **B. Systems Installed by Sellers or Contractors for Their Own Personal or Business Use**

Renewable energy system sellers (e.g., retailers, wholesalers, manufacturers) or contractors who arrange to have a system installed by a separate company on their own home or place of business may qualify for the full rebate. To receive a reservation, the applicant must submit documentation consistent with that of an individual independently buying a system. When an equipment seller purchases equipment for the seller's own use, the purchase agreement (or proof of purchase) must be between the purchaser and the generating equipment supplier, in most cases the wholesaler.

The supplier must be identified as the seller on the application form and must be registered with the Energy Commission. If the labor installation is done by a contractor on his own home or place of business, the application will be treated as an owner installed system unless the contractor hires an independent company to do the system installation and is able to document payments to the independent company. The purchase and installation agreements must be between two independent entities. Documentation of a purchase between two principals or owners within the same entity or between spouses is not acceptable, nor is a purchase agreement if signed by the same individual.

### **C. Adding to Existing Systems**

Additions to existing systems will only be allowed for systems that met past program requirements and were partially funded by participating in the Energy Commission's program. For these projects, the Energy Commission has the records and documentation identifying the equipment that was installed previously, the program warranty, and system equipment standards and warranties that were met by the originally installed equipment. The newly added generating equipment must be selected from the current lists of eligible equipment and meet the current guidebook requirements. All of the current program eligibility criteria and documentation requirements apply to the added equipment.

The rebate calculation will be based on the incremental rated capacity of the added equipment. Under no circumstances will the rebate for the added equipment exceed the current rebate for the incremental watts added.

Because the rebate for wind decreases with the system size, the incremental calculation will be based on the incremental system size above the pre-existing system.

Sample Calculation - Incremental Calculation for Wind Systems

Existing 5,000 watt system, rebate amount is:  $\$2.50 \times 5,000 = \$12,500$

Adding 6,000 watts for a total of 11,000 watts (no inverter capacity limitation)

Rebate level is \$2.50 per watt for first 10 kW and \$1.50 per watt for increments above 10 kW

The rebate available for the new addition is:

$5,000 \text{ W} \times \$2.50/\text{watt} + 1,000 \times \$1.50/\text{watt}$  (for contractor installation) = \$14,000

## **D. Special Requirements for Leased Systems**

Wind energy systems or fuel cells that are leased by an end-use customer or provide electricity to an end-use customer under a power purchase agreement (PPA) are eligible for ERP funding if the lease agreement or PPA is executed and has a start date on or after July 1, 2009. Lease agreements and PPAs that are executed or have a start date prior to July 1, 2009, are not eligible for funding even though the system may have been installed after this date. Lease agreements and PPAs must have an initial term of no less than 10 years and must provide the lessee or customer the option to renew the agreement, purchase the system, or remove the system at the end of the initial term of the agreement. In addition, lease agreements and PPAs must demonstrate that the ERP funding benefits the end-use customer by directly and exclusively reducing the lease payments for the system or the cost of electricity produced by the system.

For the first five years of the lease or PPA, the lessor or owner of the renewable energy system, in the case of a PPA, shall provide an annual status report to the Energy Commission on the operation of the ERP-funded energy system. The annual status report shall address agreements executed through December 31 of each year, be submitted to the Energy Commission no later than January 31 of each year, and shall include the following information for each system:

- 1) Date that the agreement was fully executed and the start date of the agreement;
- 2) Operational status of the system; and
- 3) Status of the agreement, and if status has changed, date of change and reason for the change. (Status changes would primarily include, change in lessee or customer, system purchase, termination of agreement, and system removal.)

If any lease agreement or PPA for a system that received funding from the ERP is terminated and the system is removed from the building on which it was originally installed, the ERP funding received by the applicant shall be repaid by the Lessor or system owner to the Energy Commission in the amounts specified below:

- If the agreement is terminated within one year of the system's installation or the start date of the agreement, whichever is later, 100 percent of the funding received shall be repaid;
- If the agreement is terminated within two years of the system's installation or the start date of the agreement, whichever is later, 80 percent of the funding received shall be repaid;
- If the agreement is terminated within three years of the system's installation or the start date of the agreement, whichever is later, 60 percent of the funding received shall be repaid;

- If the agreement is terminated within four years of the system's installation or the start date of the agreement, whichever is later, 40 percent of the funding received shall be repaid;
- If the agreement is terminated within five years of the system's installation or the start date of the agreement, whichever is later, 20 percent of the funding received shall be repaid;
- Repayment shall not be required if the agreement is terminated more than five years after the system's installation or the start date of the agreement, whichever is later.

Repayment will not be required if a system is destroyed by natural disaster or fire at no fault of the lessor/owner or lessee/customer.

Nothing in this section precludes an applicant from using an otherwise valid reservation to request a rebate for a system that is leased or provides electricity through a power purchase agreement.