

CALIFORNIA
ENERGY
COMMISSION

**EMERGING
RENEWABLES
PROGRAM**

SECOND EDITION

GUIDEBOOK

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Arnold Schwarzenegger, *Governor*

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TABLE OF CONTENTS

I - INTRODUCTION	1
A. PURPOSE	1
B. OVERVIEW	2
II - WHAT ARE THE ELIGIBILITY REQUIREMENTS	4
A. SYSTEM OWNERSHIP	4
B. GRID INTERCONNECTION	4
C. SYSTEM COMPONENTS	4
D. NEW EQUIPMENT	5
E. SYSTEM SIZED TO OFFSET ON-SITE ELECTRICITY LOAD	5
F. SYSTEM INSTALLATION	5
G. FIVE-YEAR WARRANTY REQUIREMENTS	6
H. SYSTEM PERFORMANCE METER	6
I. RETAILERS	6
J. AUDITS AND INSPECTIONS	7
III - INCENTIVES OFFERED THROUGH THIS PROGRAM	8
A. REBATES OFFERED	8
B. OTHER INCENTIVES MAY AFFECT YOUR REBATE AMOUNT	9
C. PERFORMANCE-BASED INCENTIVES FOR PHOTOVOLTAIC SYSTEMS 30 kW OR GREATER	9
D. AVAILABLE FUNDS	9
E. ADJUSTMENT OF REBATE LEVELS	9
IV - RESERVATION PROCESS	10
A. RESERVING A REBATE	10
1. <i>Reservation Request Form</i>	11
2. <i>Evidence of Agreement to Purchase</i>	11
3. <i>Itemized Cost of Major Equipment and Labor</i>	12
4. <i>Evidence that Site Electricity Load is Supplied by Eligible Utility</i>	12
5. <i>Payee Data Record (Form STD-204)</i>	12
6. <i>Submitting Your Complete Reservation Application</i>	12
V - PAYMENT PROCESS	14
A. CLAIMING A REBATE PAYMENT	14
1. <i>Payment Claim Form</i>	14
2. <i>Documentation Confirming Final Payment and System Installation</i>	14
3. <i>Building Permit and Final Inspection Sign Off</i>	15
4. <i>Five-year Warranty</i>	15
5. <i>Utility Interconnection Application</i>	15
B. SUBMITTING A PAYMENT CLAIM	15
C. CLAIMING A REBATE PAYMENT WITHOUT A PRIOR RESERVATION	16
D. ASSIGNMENT OF REBATE PAYMENT	16
E. CAN MY INSTALLED SYSTEM BE DIFFERENT THAN MY RESERVATION?	16
1. <i>How do Changes Effect the Rebate Amount</i>	17
2. <i>Extension Requests and Other Substantive Changes</i>	17
VI - ELIGIBLE SYSTEM COSTS	19
A. WHAT SYSTEM COSTS ARE ELIGIBLE?	19
B. WHAT COSTS ARE NOT ELIGIBLE?	19

VII - SPECIAL FUNDING

21

- A. SOLAR SCHOOLS PROGRAM
- B. SPECIAL FUNDING FOR AFFORDABLE HOUSING PROJECTS

21
21

APPENDIX 1 - FORMS AND WORKSHEETS

APPENDIX 2 - TIPS FOR CONSUMERS

- A. CHOOSING A CONTRACTOR
- B. CHOOSING A RETAILER
- C. HOW MUCH ENERGY DOES A SYSTEM PRODUCE?

APPENDIX 3 - CRITERIA FOR LISTING COMPONENTS AS ELIGIBLE

- A. PHOTOVOLTAIC MODULES
- B. SOLAR THERMAL
- C. FUEL CELLS
- D. SMALL WIND
- E. INVERTERS
 - 1. *Changes to the Eligible Inverter List*
- F. METERING CRITERIA
- G. OTHER TECHNOLOGIES

APPENDIX 4 - MAXIMUM SYSTEM SIZE CALCULATIONS

- A. MAXIMUM SYSTEM SIZE CALCULATIONS
 - 1. *New or expanded site electrical load*
 - 2. *Peak load capacity option*

APPENDIX 5 - ATYPICAL INCENTIVE APPLICATIONS

- A. NEW HOUSING DEVELOPMENT
- B. SYSTEMS INSTALLED BY SELLERS OR CONTRACTORS FOR THEIR OWN PERSONAL OR BUSINESS USE
- C. ADDING TO EXISTING SYSTEMS
- D. SPECIAL REQUIREMENTS FOR LEASED SYSTEMS

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 (SB 1038; Sher, Chapter 515, Statutes Of 2002). It describes the requirements for receiving funding under the Emerging Renewables Program element of the Renewable Energy Program.¹

The Energy Commission has adopted other 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 for funding under the Emerging Renewables Program must satisfy the requirements contained in both the *Overall Program Guidebook* and this *Emerging Renewables Program Guidebook*. These guidebooks replace the *Overall Guidelines for the Renewable Resource Trust Fund, Fifth Edition* and the previous guidebooks governing the Emerging Renewable Buydown Program (*the Emerging Renewable Resources Account Guidebook, Ninth Edition*). Applications for funding approved under the previous program remain governed by the previous guidebooks until the projects are completed, expired, or cancelled.

The Emerging Renewables Program builds on the experience of the Emerging Renewable Buydown Program (ERBP), which began in 1998 and operated through most of 2002. Over 3800 new systems were installed through the ERBP from 1998 through 2002. Most of these systems utilized solar photovoltaic (PV) technology.

This guidebook is organized to allow the reader to identify areas of interest quickly and find details on program requirements easily.

A. Purpose

The Emerging Renewables Program (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 new renewable energy systems using emerging technologies.

¹ Emerging technologies currently include photovoltaics, solar thermal electric, fuel cells and wind turbines.

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.

The ERP is one of several program elements within the Energy Commission's Renewable Energy Program. Funding for the Renewable Energy Program is collected from the ratepayers of the three largest investor-owned utilities in California to support existing, new, and emerging renewable electricity generation technologies. For more information about the Renewable Energy Program please visit the Energy Commission's website at [www.ConsumerEnergyCenter.org/].

For consumer tips on purchasing a renewable energy system to supply on-site electricity needs please refer to Appendix 2. Also see *A Guide to Photovoltaic (PV) System Design and Installation*, June 2001, (P500-01-020) and *Buying a Small Wind Electric System*, February 2002 for further information. These and other documents are also available on the Energy Commission's website.

B. Overview

The ERP provides consumers of electricity 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. The incentive is paid once the system is installed and operational. The consumer must apply to the Energy Commission for funding following 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 from an existing in-state electrical corporation contributing funds to support the program. These electrical corporations are Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E). The renewable energy system must utilize an emerging renewable technology, such as solar photovoltaic, solar thermal-electric, fuel cells, or small wind turbines (of not more than 50,000 watts of rated electrical capacity). The system must also be interconnected to the utility distribution grid, must use new components that are certified or tested to be reliable, and must come with a five-year warranty. In addition, the renewable energy system must generate electricity to offset the consumer's on-site electrical load.

In most cases, an applicant submits a Reservation Request Form (CEC 1038 R1) and supporting documentation to reserve a fixed amount of program funds. Once the Reservation Request Form is reviewed and approved, the Energy Commission sends the applicant a Payment Claim Form that identifies the amount of funds reserved. 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

and submits the Payment Claim Form 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 payment in this amount.

II - What Are the Eligibility Requirements

Currently, four technologies are eligible for ERP funding. They include the following:

1. Photovoltaic - the direct conversion of sunlight to electricity.
2. Solar Thermal Electric - the conversion of sunlight to heat and its concentration and use to power a generator to produce electricity.
3. Fuel Cell - the conversion of sewer gas, land fill gas, or other renewable sources of hydrogen or hydrogen rich gases into electricity by a direct chemical process.
4. Small Wind Turbines - small electricity-producing, wind-driven generating systems with a rated output of 50 kilowatts or less.

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

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 9604(d).

B. Grid Interconnection

Eligible renewable energy systems must be permanently interconnected to the electrical distribution grid of the utility serving the customer's electrical load. Portable systems are not eligible. The site where the system is installed must receive electrical distribution service from PG&E, SCE, or SDG&E. The system interconnection must comply with applicable electrical codes and utility interconnection requirements.

C. System Components

The major system components must be certified or approved as described in Appendix 3. Approved major components are on the Energy Commission's lists of eligible components and are available at:

1. www.ConsumerEnergyCenter.org/erprebate/ or
2. by requesting copies from the Energy Commission call center staff at (800) 555-7794.

The applicant should confirm that the components purchased for a system are eligible when applying for ERP funding. The 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.

D. New Equipment

All major system components (requiring certification per section C) must be new 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.

E. 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 twice the historical or expected electrical needs of the electricity consumer at the site of installation. For example, if a purchaser's historical load at the site of installation is 10,000 kilowatt hours (kWh) of electricity per year, the system may be sized to produce no more than 20,000 kWh per year (100 percent more than the historical need). See Appendix 4 for further details on how to determine the maximum allowed system size.

F. 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 C-10 license, or a C-46 license for photovoltaic systems.

The Energy Commission intends to require that photovoltaic systems installation contractors be certified to the testing requirements of the North American Board of Certified Energy Practitioners (NABCEP) photovoltaic protocols after these protocols are finalized.

Systems may also be self-installed by the purchaser (owner). While such installations are eligible 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 standards².

² For information on restrictions placed on owner-builders or self-installers, contact the Contractor's State License Board at 1-800-321-CSLB to obtain a current edition of the Contractor's License Law and Handbook.

G. 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 any defective 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 ten percent from their originally rated electrical output during the five year period. Major components are defined as photovoltaic modules, wind turbine generators, solar thermal engines and dishes, fuel cell reformers and cells, and inverters. The warranty may be provided in combination by the manufacturer and installer. (See warranty form CEC 1038 R3.)

Self-installed systems must have a minimum five-year warranty to protect the purchaser against defective major system components. The warranty need not cover the labor costs associated with removing or replacing defective major components since the repairs would be done by the self-installer.

H. System Performance Meter

All systems must be installed with a performance meter so that the customer can determine the amount of energy produced by the system. However, any system that is installed and has received the final inspection signoff before March 31, 2003 is not subject to this requirement. The applicant may be granted a reservation without such a meter by providing a copy of the building permit showing a final inspection sign off dated prior to March 31, 2003 with the reservation request. 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. 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 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.

I. Retailers

To participate in the ERP, retailers must provide the Energy Commission with the following information:

- 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 of the California Secretary of State, as required for corporate and limited liability entities
- 6) Reseller's license number

This information may be submitted at any time that a retailer wishes to become eligible for the ERP. To remain eligible, the information must be resubmitted annually, by March 31, using form CEC 1038 R4. This information must be on file with the Energy Commission before a retailer can submit any reservation request or payment claim. The Energy Commission will compile this retailer information and make it available to consumers to assist them in making purchase decisions and effectuating remedial action. Send the information by telefax to (916) 653-2543 or by mail to:

ERP Equipment Sellers
California Energy Commission
1516 - 9th Street, MS-45
Sacramento, CA 95814-5512

J. 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 inspections to verify systems are operating properly and installed as specified in the reservation request and payment claim applications.

III - Incentives Offered Through This Program

A. Rebates Offered

The rebates offered through this program vary by system size, technology, and type of installation. The rebates offered for professionally installed new systems are identified below in Table 1. Lower rebates, 15 percent less, are also available for owner or self installed systems. Additionally, special rebates are available for systems installed for “affordable housing,” and may be available at a later date for public schools. Because these special rebates target specific groups or classes of customers, they are discussed separately in Chapter VII of this guidebook.

Table 1 lists the rebate levels available by size category and technology type at the beginning of the ERP; these rebate levels are expected to decline over time as described below.

Table 1: Rebates Available for Emerging Renewable Systems

Technology Type	Size Category	Rebate Offered*
Photovoltaic, Solar Thermal Electric Fuel Cells using a renewable fuel**	<30 kW	\$4.00 per Watt
	=>30 kW	Future Performance Incentive
Wind	First 7.5 kW	\$2.50 per Watt
	Increments above 7.5 kW up to 30 kW	\$1.50 per Watt
	=> 30 up to 50 kW	Future Performance Incentive
* Rebates for owner installed systems are discounted by 15 percent. ** Fuel cells that operate on non-renewable fuels and are used in combined heat and power applications may be eligible for rebates at a later date when funds from other sources are no longer available.		

B. Other Incentives May Affect Your Rebate Amount

Incentives received from sources other than the ERP that lower the cost of a generating system may affect the rebate amount you receive from the Energy Commission. No system may be issued a reservation or receive payment from the ERP if the system is also participating in the California Public Utilities Commission approved Self Generation Incentive Program. Fifty percent (50%) of incentives received or expected must be subtracted from the rebate amounts listed in Table 1 if the incentives are from a utility incentive program, a State of California sponsored incentive program, or a federal government sponsored incentive program, other than tax credits. For example, under no circumstance will the incentive from the ERP exceed the net purchase price of the system (before ERP incentives).

See Chapter VII of this guidebook for information regarding rebate levels for affordable housing.

C. Performance-Based Incentives for Photovoltaic Systems 30 kW or Greater

This portion of the program will be developed at a later date.

D. Available Funds

As discussed in the *Overall Program Guidebook*, at least \$118,125,000 in funding is available for the ERP. Of this amount, \$10 million is allocated to performance-based incentives for systems 30 kW or larger.

E. Adjustment of Rebate Levels

The rebate levels for all technology types will be reduced by 20 cents per watt every six months beginning July 1, 2003 (and every January 1st and July 1st thereafter). In addition, the rebate level for photovoltaic systems will be reduced an additional 40 cents per watt beginning January 1, 2004.

IV - Reservation Process

Through this program, funding is reserved for applicants who have committed to purchase and install an eligible system at a given site. A funding reservation provides the purchaser assurance that the reserved funds will be available when the claim is made. The reservation period is for nine months for systems less than 30 kW, and only one reservation will be allowed for each site within that nine month period. A group of reservations in one location, such as for multiple homes in a new residential development, or for one customer at several locations, such as for multiple retail stores in a retail chain or for multiple schools in a single school district, which total 30 kW or greater in aggregate will receive an 18 month reservation period.

Funding reservations are made only for complete applications on a first come, first served basis. Incomplete applications will not be processed until all appropriate documentation is provided. No payment will be made unless the installed system meets all applicable ERP requirements even if funds are reserved. As it is the goal of this program to ultimately lower system costs, systems with an installed system price that is significantly higher than average may require additional justification.

The Energy Commission will start accepting reservation requests on March 3, 2003.

A. Reserving a Rebate

This section describes the paperwork that is required to reserve funding. Please be sure to submit a complete reservation application and provide all the supporting documentation described below to receive your reservation. The reservation process will be delayed if incomplete and incorrect information is received. To obtain a rebate reservation, you must submit the following five items:

- Reservation Request Form (CEC-1038 R-1)
- Evidence of an agreement to purchase and install a system
- Itemized costs of major components and labor costs
- Evidence that site electricity load is supplied by an eligible utility
- Payee data record (Form STD-204)

(Once a system is completed, the applicant will need to submit a building permit showing final inspection signoff, a full five-year warranty for the system, a signed utility interconnection application for the system, and documentation confirming final payment and installation to claim the rebate payment and to demonstrate that the system complies with eligibility requirements. These items are discussed in detail in Chapter V.)

Chapter VII covers the special requirements for the Solar Rebates for Affordable Housing Program. Appendix 5 covers new housing developments, systems installed on property owned by retailers and/or contractors, adding to systems, and leased systems.

1. Reservation Request Form

The purchaser of the system must always sign the Reservation Request Form. If the seller of the system is designated as the payee, the seller (retailer or wholesaler) must also sign. Eligible equipment sellers need to file business information with the Energy Commission to be eligible to participate in the program. After March 31, 2003, reservation requests that identify ineligible retailers will not be approved until the required business information is filed with the Energy Commission.

Detailed instructions are on the back of the Reservation Request Form. Appendix 1 includes a blank copy of the Reservation Request Form and accompanying instructions. To obtain additional blank forms, call the Energy Commission Call Center at (800) 555-7794 or download the forms online from the following Energy Commission website: [www.ConsumerEnergyCenter.org/erprebate/].

2. Evidence of Agreement to Purchase

For most systems, the purchaser must submit a copy of the system or equipment purchase agreement(s) and installation contract(s) with the application for a rebate reservation. The copies may include one contract where the equipment and installation are provided by the same company or may be two or more contracts for separate purchase(s) of equipment and a contract for labor. All installation contract(s) must comply with the Contractors State License Board (CSLB) requirements. The equipment purchase agreement(s) and installation contract(s) must constitute signed agreement(s) to proceed with the purchase and installation of the specified system, including identification and signatures of the buyer and seller. The agreement(s) must clearly identify or state the following:

1. the quantity make and model number as shown on the lists of eligible equipment for the following:
 - photovoltaic modules, wind turbines, or other generating equipment
 - inverters and system performance meters;
2. the physical address of the location where the equipment is to be installed;
3. the payment terms, the total cost of the contract, the expected rebate amount from the Energy Commission, and any other limited conditions of sale.

(To reduce concerns with signing a contract before a rebate reservation request is submitted and approved, the agreement(s)/contract(s) may include a statement indicating that the agreement is conditional upon receiving the expected reservation approval from the Energy Commission.)

Individuals who install their own systems may qualify for the discounted rebate and may submit an agreement between the seller and purchaser for the purchase of equipment (as above), but need not submit an installation agreement.

Alternately, the purchaser may demonstrate a commitment to purchase the system by submitting invoices or receipts showing that a down payment of at least ten percent of the major equipment price has been paid. The information in item 1 in the list above and the total cost of the purchase(s) must be clearly identified on the invoices and receipts.

3. Itemized Cost of Major Equipment and Labor

If not already included in the purchase agreement or contract, the individually itemized costs for the photovoltaic modules, wind turbines, inverters, and labor must be identified by providing supplemental information.

4. Evidence that Site Electricity Load is Supplied by Eligible Utility

If the installation location currently has electrical service, the purchaser must submit a copy of the utility bill showing the address of the installation site, the name of the purchaser, electric energy usage, and the utility name. If the name on the utility bill is not the same as the purchaser's, provide an explanation. This or other documentation must show that the annual on-site electrical load justifies the proposed system size before payment will be made.

If the installation location is a new facility without electrical service, the purchaser must submit a signed statement explaining the site is new construction and identifying the electric utility that will be providing service. A utility bill or other similar documentation identifying the physical address of the installation, the electric utility provider at the site, and the expected electricity usage at the site will be required before a rebate payment is made. The energy usage can also be demonstrated with a statement signed by a qualified architect, engineer, or electrical contractor indicating that the requisite electricity consumption will occur at the site.

5. Payee Data Record (Form STD-204)

This form must be completed by the person or business entity receiving the rebate payment. If the designated payee has submitted a complete STD-204 form with a prior application, the payee may identify the payee identification number assigned to the prior application form instead of submitting a new form.

6. Submitting Your Complete Reservation Application

The complete reservation request application may be delivered by FAX to (916) 653-1435 or by mail to:

Emerging Renewables Program

California Energy Commission, Accounting Office
1516 - 9th Street, MS-2
Sacramento, CA 95814-5512

No funding will be reserved if an application is incomplete or illegible or has conflicting information. The application will be approved for a reservation based on the date it is deemed complete and not the date it was first submitted. The rebate level and other program criteria applicable on the completion date will apply. If the reservation request application is incomplete, the Energy Commission may request the provision of missing or unclear information from the appropriate party (purchaser, equipment seller, or installer) to process the request. In that event, the Energy Commission will allow the submitting party 30 days to respond with the information. If missing information is not submitted within 30 days of the Energy Commission's request, the Energy Commission will send a notice to the purchaser indicating that the application has been disapproved. The application will not be processed further unless resubmitted with the required information.

If you qualify for the affordable housing rebate, see Chapter VII for further requirements.

The amount of the rebate available is expected to change during the term of the program. Therefore, the Energy Commission recommends that applicants wait to order or install system equipment until after they receive a confirmation indicating the amount of funding that has been reserved for their rebate.

V - Payment Process

A. Claiming a Rebate Payment

To receive payment of your rebate, you must make a claim for payment before the expiration of your reservation. Once a system is installed and operating satisfactorily, the following documents must be submitted to claim a rebate payment:

- Rebate Payment Claim Form (CEC 1038 R2)
- Documentation confirming final payment and system installation
- Initial building permit application and final signoff
- Five-year warranty for the system
- Signed utility interconnection application
- A copy of the utility bill if the installation location was a new facility without electrical service when the reservation request was submitted

1. Payment Claim Form

The Energy Commission will send a copy of the Payment Claim Form to the purchaser and designated payee to confirm the amount of funding reserved on the purchaser's behalf. In most cases, the parties entering into the purchase agreement and installation contract (purchaser and seller and/or installer) must read, sign, and date the Payment Claim Form (CEC 1038 R2). If the purchaser alone applied for and is to receive the rebate, only the purchaser need sign the Payment Claim Form. This form must be mailed, as original signatures are required for payment.

Any changes to the information provided on the previously submitted Reservation Request Form must be noted in the space provided. If additional space is required to note such changes, additional pages may be attached to the form. Changes in equipment from the original application or other changes may affect the eligibility and amount of the rebate.

2. Documentation Confirming Final Payment and System Installation

Applicants must submit final project cost documentation clearly identifying what work was done and how much was paid. Cost documentation must show proof of the amount paid and provide sufficient information to clearly identify the equipment and labor purchased. To meet this requirement, you must submit final invoices or a copy of the final contract. The actual amount paid by the purchaser to the seller must be clearly indicated. Also, the invoice/contract must clearly indicate the extent to which the Energy Commission's rebate lowered the cost of the system to the purchaser.

The Energy Commission reserves the right to require that copies of cancelled checks, credit card statements, or equivalent documentation be submitted to substantiate payment of the claimed eligible project cost. Applicants must explain the difference if

the final price paid by the applicant is different from that price shown on any contract or invoice previously submitted with a Reservation Request Form.

3. Building Permit and Final Inspection Sign Off

Submit a copy of the building permit and the final inspection signoff upon completion of system installation. The name and address on the building permit must match that shown on the Payment Claim Form.

4. Five-year Warranty

A standard full five-year warranty form (CEC 1038 R3) must be completed and signed by the appropriate party(ies) and given to the purchaser. Submit a copy of this warranty with your payment request.

For owner installed systems, submit copies of the manufacturer's 5 year warranties for the inverters and generating equipment.

5. Utility Interconnection Application

A copy of the signed utility interconnection application must be submitted to claim payment. The letter of authorization to interconnect the system with the utility must then be subsequently submitted to the Energy Commission to demonstrate that the utility approved the operation of the system at the site of installation. If the letter of authorization to interconnect is not provided in a timely fashion, the Energy Commission may audit and take corrective action against the applicant and/or system retailer.

B. Submitting a Payment Claim

The payment claim must be submitted to the Energy Commission at the address shown below by mail by 5:00 p.m. on or before the expiration date specified on the Payment Claim Form. The Payment Claim Form cannot be submitted by telefax because original signatures are required on the Payment Claim Form to process rebate payments. Be sure to keep a copy of the Payment Claim Form together with the purchase agreement, contract, receipts, evidence of payment, building permit, and final signoff, etc. for your records. If necessary to verify compliance with the expiration date of a reservation, the completed Payment Claim Form and supporting documentation may be submitted by telefax to (916) 653-1435, provided that the original forms are subsequently submitted by mail. Faxed claims will not be reviewed until the original Payment Claim form is received.

Claims not received by the expiration date or otherwise not eligible will be returned to the purchaser along with a written notice stating the reasons that the claim was rejected. If the claim is made after the expiration date, the purchaser will have to re-

apply and will be subject to the eligibility requirements, incentives, and funding available at that time.

All required forms and supporting documentation required to claim payment shall be mailed to:

Emerging Renewables Program

California Energy Commission, Accounting Office
1516 9th Street, MS-2
Sacramento, CA 95814- 5512

The Energy Commission intends to make incentive payments within 30 days of receipt of a complete rebate payment claim application. Payment will be made to the seller or purchaser, as designated on the Reservation Request Form (CEC-1038 R1) unless the payee has assigned the payment to a third party, and will be mailed to the address provided by the recipient on the Payee Data Record (Form STD-204), previously submitted to the Energy Commission.

C. Claiming a Rebate Payment Without a Prior Reservation

If a rebate payment is claimed for a system not previously approved for a rebate reservation, the Payment Claim Form must also be accompanied by a completed and signed Reservation Request Form (CEC 1038 R1). The submittal should meet all requirements needed for approval and payment as described herein. Applicants without a prior reservation should be aware that program eligibility requirements may have changed and their installed systems may require significant and costly changes prior to payment.

D. Assignment of Rebate Payment

The designated payee of the rebate payment may assign his or her right to receive the payment to a third party by completing the Reservation Payment Assignment Form, CEC-1038 R5, and submitting it with their Payment Claim Form, CEC 1038 R2. The Reservation Payment Assignment Form may not be submitted by telefax as original signatures are required to process the assignment. Payees that assign their rebate payment to a third party will still be reported as the recipients of said payments for tax purposes and issued informational tax documents to the extent required by law.

E. Can My Installed System Be Different Than My Reservation?

The Energy Commission expects a system to be installed as described in the Reservation Request Form, but recognizes that minor changes may result during installation and that extensions or other substantive changes may be necessary in extraordinary circumstances. Minor changes do not require prior approval, but must be

documented on the Payment Claim form. Minor changes include small increases and decreases in the size of the system (while staying within the Energy Commission size categories) or changes from one make or model of a certified component to another. Any changed rebate amount that occurs is subject to availability of funding.

1. How do Changes Effect the Rebate Amount

Modifications to an approved reservation may be made prior to a payment claim. If any change results in the installed system differing in its rated electrical output from the system originally specified in the Reservation Request Form, a new rebate payment amount will be calculated. If the installed system is smaller in output than originally specified in the Reservation Request Form, the new rebate amount will be determined using the same program parameters that were used to calculate the original rebate amount.

If the installed system is larger than that originally specified in the reservation request, the Energy Commission will provide the higher of the reserved or paid dollar amount or the maximum allowable rebate for the entire project available at the time a modification request or a complete payment claim is filed. The maximum rebate for the entire system shall not exceed the sum of 1) the amount originally reserved or paid, and 2) the current rebate level multiplied by the incremental watts added on site. The Energy Commission may not be able to increase the rebate amount reserved if no additional funds are available; or if the project size is increased to 30 kW or greater.

2. Extension Requests and Other Substantive Changes

Substantive changes, such as change of purchaser, location, or expiration date of reservation, require prior approval by the Energy Commission's Renewables Committee and can be considered if requested in writing. Each request must describe the need for the change and must document the following:

1. Circumstances beyond the control of the reservation holder that prevent the system from being installed as described under the reservation.
2. Neither the holder, retailer, nor installer knew or had reason to know of the above circumstances (Criteria 1) at the time the current reservation was issued.
3. The holder, retailer, or installer has incurred documented costs or expenses equaling no less than 25 percent of the original reserved system's total cost, and said costs or expenses are unrecoverable unless the requested change is approved. These costs can be incurred either through the purchase of system equipment or by other construction costs expressly for the purpose of installing the reserved system.
4. There are no other known obstacles in the way of completing the project within the extension period.

5. The requested change would otherwise comport with all of the eligibility requirements of the Program.

A request to change the expiration date of the reservation must be limited to three months of additional time for reservations concerning single small systems and six months of additional time for all other system sizes and group reservations for multiple systems.

Extension requests and other substantive changes must be filed before the reservation expires. Any requests made 30 or fewer days before the reservation expiration date shall include an explanation of why a more timely request was not possible under the circumstances. The program manager will notify requesting parties of a decision on their request. Approval of a request for a change in purchaser location or expiration date will not change or modify any other reservation condition.

VI - Eligible System Costs

In most cases, the system cost will not affect the eligible incentive amount, but is needed for a variety of reasons. First, the Energy Commission is interested in having information about system prices to evaluate future rebate levels and monitor whether the program goals are being achieved. Second, total costs are needed to assure the incentive does not exceed the net purchase price of the system.

A. What System Costs Are Eligible?

In addition to the cost of permits issued by local building departments or appropriate government entities to install the electricity generation system and sales tax, the program covers only the following specific eligible components and equipment:

Photovoltaics: The photovoltaic cells, modules, mounting or tracking structures, wire, inverters, foundation (for free-standing systems), simple kWh system performance meters, and utility required interconnection equipment.

Small Wind: The wind turbine, tower, wire, inverter, foundation (for free standing systems), simple kWh system performance meters, and utility required interconnection equipment.

Solar Thermal: The concentrating and collecting apparatus, tracking and mounting structures, wiring, thermal engines or devices for the conversion of heat to mechanical energy, generator, inverter, support structure and foundation (for free-standing systems), simple kWh system performance meters, and utility required interconnection equipment.

Fuel Cells: The renewable gas pre-treatment equipment (but not the gas collection or production equipment), fuel processor, cell stacks, inverter and power conditioning equipment, cooling equipment, foundation (for free-standing systems), simple kWh system performance meters, and utility required interconnection equipment.

B. What Costs Are Not Eligible?

Many of the system costs included in the sales or installation contracts may not be eligible. The purchaser or retailer must provide details to separate these costs from eligible costs. The cost of any equipment used to store the electricity produced is not eligible (e.g., batteries, charge controllers, battery cables, etc.). The cost of tools is not eligible.

Other ineligible costs include items that are not typically required for a given eligible system installation. These ineligible costs include, but are not limited to, tree trimming, fencing, re-roofing, roof repairs or reinforcement, landscaping, relocating vent pipes,

and moving HVAC or other equipment. Additionally, financing fees or costs incurred by either the customer or retailer are ineligible.

VII - Special Funding

This section describes special funding and the corresponding eligibility requirements for applicants who install systems on affordable housing projects.

A. Solar Schools Program

Pursuant to Interagency Agreement No. R500-02-006, the Energy Commission and the California Power Authority have established the Solar Schools Program to provide a higher level of funding for public schools and encourage the installation of photovoltaic generating systems at more school sites. The Solar Schools Program was intended to be funded from the Emerging Renewables Program funds and the Attorney General's Alternative Energy Retrofit Account (AGAERA). At this time, the Energy Commission has been unable to secure budget authority from the Department of Finance to disburse the funds from the AGAERA account. Consequently, the Energy Commission has suspended the program at this time until budget authority and a variety of other issues are resolved.

B. Special Funding for Affordable Housing Projects

Pursuant to Assembly Bill 58 [AB 58, Keeley, (Statutes Of 2002, Chapter 836)], the Energy Commission has established an additional rebate for systems installed on affordable housing projects. Affordable housing projects may qualify for an extra 25 percent rebate above the standard rebate level, not to exceed 75 percent of the system cost, if the following additional criteria are met:

1. The affordable housing project was undertaken pursuant to sections 50052.5, 50053, or 50199.4 of the Health and Safety Code.
2. Each residential unit (apartments, multifamily homes, etc.) has an individual meter.
3. The housing project has adopted measures to promote energy efficiency as evidenced by receipt of an energy efficiency rebate from the Energy Commission or applicable electric utility provider.

To apply for the extra rebate, owners of the affordable housing project must submit the following in addition to the standard application:


- A copy of the regulatory agreement for the property, title of the property, or equivalent documentation indicating that residency is limited to low and moderate income persons as defined by the Health and Safety Code sections 50052.5, 50053, or 50199.4.
- Documentation from the electric utility indicating that each residential unit has an individual meter.

- Documentation of energy efficiency measures already implemented to achieve at least a 10 % reduction in electricity usage or letter indicating receipt of an energy efficiency rebate administered by the Energy Commission or applicable electric utility provider. See [www.ConsumerEnergyCenter.org] or call (800) 555-7794 for a list of rebate opportunities.

Appendix 1 - Forms and Worksheets

CEC 1038 R1-	Reservation Request Form (All technologies)
STD 204 -	Payee Data Record
CEC 1038 R2 -	Reservation Payment Claim Form
CEC 1038 R3 -	Minimum Warranty Form
CEC 1038 R4 -	Retailer Information Form
CEC 1038 R5 -	Payment Assignment Form

R1	RESERVATION REQUEST FORM EMERGING RENEWABLES PROGRAM	<input type="checkbox"/> Modify Existing Record # _____ <input type="checkbox"/> Affordable Housing Project <input type="checkbox"/> New Housing Development
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 RENEWABLE ENERGY PROGRAM CALIFORNIA ENERGY COMMISSION	For details on this program please see the Guidebook for the Renewable Energy Program at: www.consumerenergycenter.org/ or by calling (800) 555-7794.	Please submit by fax to (916) 653-1435 or mail: California Energy Commission Emerging Renewables Program 1516 Ninth Street (MS-2) Sacramento, CA 95814-5512
--	--	---

1. Purchaser

Name:	Physical Address of System:	Mailing Address:
Phone: () ()	Fax: () ()	
Email:	Primary contact for questions:	Utility: <input type="checkbox"/> PG&E <input type="checkbox"/> SCE <input type="checkbox"/> SDG&E
Payee ID: _____ (if applicable)	<input type="checkbox"/> Purchaser <input type="checkbox"/> Seller	

2. Seller (seller of generating equipment)

Company:	Address:	Phone: () ()
Contact:		Fax: () ()
Payee ID: _____ (if applicable)		Email:

3. Installer

<input type="checkbox"/> Hired Contractor; License Class and # _____ Expires: _____	Phone: () ()
<input type="checkbox"/> Self or Other (qualifies for 15% lower rebate)	Fax: () ()
Company Name:	Address:
	Email:

4. System Equipment

Inverter Manufacturer	Model	Quantity	Rating (W)	Efficiency (%)	Estimated Energy Production: _____ kWh/year Methodology Used: _____	
_____	_____	_____	_____	_____		
Performance Meter Manuf.	Model	Quantity	Inverter includes eligible meter? <input type="checkbox"/> Yes <input type="checkbox"/> No			
_____	_____	_____				
Manufacturer	Model	Quantity	Rating (W ptc)	Inverter Eff. (%)	Rebate Level	Requested \$
PV	_____	_____ x	_____ x	_____ x	_____ \$/W =	_____
Wind	_____	_____ x	_____ x	_____ x	_____ \$/W =	_____
Other	_____	_____ x	_____ x	_____ x	_____ \$/W =	_____

5. Declaration Under Penalty of Perjury

The undersigned parties declare under penalty of perjury that the information in this form is true and correct to the best of their knowledge. The undersigned parties further declare under penalty of perjury that 1) they have entered into an agreement to purchase the generating system components listed on this form and that that agreement is attached, 2) all equipment is new and unused and has been purchased within the last 18 months, 3) the described generating system is intended primarily to offset part or all of the purchaser's electrical needs at the site of installation, 4) the purchaser's intent is to operate the system at the above site of installation for its useful life or the duration of the lease agreement and 5) the system described above will be interconnected with the electric utility identified.

6. Incentive Requested

System Cost (before rebate) \$	_____
Other Incentives: \$	_____
Source:	_____
Rated Output (Watts)	_____
Total Request	\$ _____
Pay Rebate to:	<input type="checkbox"/> Purchaser <input type="checkbox"/> Seller

Purchaser	Seller	
Print Name: _____	Print Name: _____	Is payment to be assigned to another party? <input type="checkbox"/> Yes If yes, attach the payment assignment form (CEC 1038 R5) with original signatures.
Signature: _____	Signature: _____	
Date: _____	Date: _____	

IMPORTANT: Attach a signed copy of the purchase agreement(s) and labor contract(s) or proof of 10% down payment
 A copy of a monthly electricity statement showing system address, purchaser name, and energy usage
 Payee data record (STD-204) for the recipient of the rebate
 Itemized prices for the modules, inverters, wind turbines or other generating components
An incomplete reservation form cannot be processed.

INSTRUCTIONS FOR THE RESERVATION REQUEST FORM (CEC FORM 1038 R1)

Section 1. Purchaser

Provide the purchaser name, complete installation address, mailing address (if different from the installation address), phone and fax number and email address. If the physical address of the installation is the retailer's office or personal property, list the supplier of the PV modules or wind turbine as the seller. Check the box indicating the name of the electric utility serving the installation location.

Section 2. Seller

Provide the seller company name and a contact person name, complete address, phone and fax number and email address.

Section 3. Installer

Check the appropriate box for whether the system is to be installed by a contractor (include contractor's license class, number and expiration date) or other, such as "owner install." If installed by a contractor, provide the contractor's company name and contact person name, complete address and email address. All contractors must have an active "A", "B", "C-10" or "C-46" license. A standard five year warranty (Form CEC 1038-R3) must be submitted later when payment is requested for systems installed by a contractor.

Section 4. System Equipment

Provide the name of the inverter manufacturer, the inverter model, the number of inverters, the power rating in watts, the efficiency at ¼ load and indicate whether the inverter includes an eligible performance (kWh) meter. Eligible inverters and rating information is located on the Commission's website www.ConsumerEnergyCenter.org/erprebate/.

Identify the performance (kWh) meter manufacturer, complete model number and the number of meters. Check the box to indicate whether the inverter includes an eligible meter.

Indicate the calculation method used to determine the estimated energy production value in kWh. For photovoltaic systems for example, Clean Power Estimator or PV installers guide methodology.

Identify the manufacturer name of the generating equipment and the complete model number, the quantity of generating equipment and the rated output (for PV use the PTC rating). Calculate and include the system output by multiplying the inverter efficiency at ¼ load by the quantity of equipment used, by the rating in watts (PTC rating for PV). If the inverter rated output is less than the system output (kW), the inverter rated output will be used to calculate the rebate.

Section 5. Self Explanatory

Section 6. Incentive Requested

Identify incentives expected or received from other sources. Provide the system installed cost (before the Emerging Renewables Program rebate). The Emerging Renewables Program (ERP) requires that incentives from other sources be accounted for before determining the rebate from the ERP. Fifty percent of any incentive received or expected from a utility incentive program, a State of California or federal government sponsored incentive program, other than tax credits, must be subtracted from the ERP rebate amount requested. The "Total Request" should therefore be based on the ERP rebate level in place at the time the application is received by the Commission and the system cost after subtracting other incentives.

Check the box indicating whether the incentive is to be paid to the purchaser or seller.

Signatures:

The purchaser must always print and sign his or her name on the form. If the seller is designated as the payee, the seller must also sign his or her name on the form.

Please indicate whether the rebate payment is to be assigned to a third party. If yes, please fill in the name and address in the space provided and attach the assignment form (CEC 1038 R5). The assignment form must contain original signatures. Payees that assign the rebate payment to a third party will still be reported as the recipient of the payment(s) for tax purposes.

Attachments: Please attach the documentation necessary to provide the following:

1. evidence of an agreement to purchase and install the system
2. the itemized cost of major equipment and labor
3. evidence of electrical service at the installation location
4. the Payee Data Record, Form STD-204, or include the Payee ID number if the STD 204 is already on file.

Evidence of an agreement to purchase and install can consist of a signed copy of the system or equipment purchase agreement(s) and a signed installation contract(s), or proof of 10% down payment of the major equipment price (through invoices or receipts).

If the system will be located at a new residence please include verification, such as a letter from the utility or a statement indicating the utility name and address at which the system will be interconnected or sign a statement identifying the utility provider and the physical address where the installation is to occur.

R2

REBATE PAYMENT CLAIM FORM EMERGING RENEWABLES PROGRAM



*RENEWABLE
ENERGY
PROGRAM*
CALIFORNIA ENERGY COMMISSION

Mail to:
California Energy Commission
Emerging Renewable Program
1516 Ninth Street (MS-2)
Sacramento, CA 95814-5512

Record Number _____

Payee Number _____

[CEC use only]

[CEC use only]

Tot. Elig. Cost: \$ _____ Date CFA: _____

SRO Watts: _____ Rebate @ _____ = \$ _____

1. Confirmation of Reservation Amount

_____ has been granted a reservation of \$ _____ for a _____ kW renewable energy generating system. The reservation will expire on _____. The system is being installed at _____ and is expected to produce _____ (kWh per year). The payment will be made to the _____.

The generation system must be completed and the claim submitted with the appropriate documentation by the deadline. Claims must be postmarked (or faxed) by the expiration date or the reservation will expire. This reservation is non-transferable. System must be installed at the installation address and sold to the above.

2. System Equipment (Modules, Wind Turbines, Inverters, kWh Meters)

Number	Manufacturer	Model
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Total System Price \$ _____

3. Modifications

Has any of the information in section 1 or 2 above changed? Yes No
If yes note the changes before claiming payment.

The undersigned declare under penalty of perjury that the following statements are true and correct to the best of their knowledge:

- (1) The purchaser will submit to the Energy Commission a copy of the utility "letter of authorization to operate" the system.
- (2) The electrical generating system described above meets the terms and conditions of the California Energy Commission's Emerging Renewables Program and has been installed and is operating satisfactorily as of the date stated below.
- (3) The rated electrical output of the generating system, the physical location of the system, and the equipment identified were installed as stated above.
- (4) Except as noted above, there were no changes in the information regarding the seller, installer, purchaser, generating system specifications, installation location, or price from that information provided in the Reservation Request Form originally submitted by the undersigned.

Purchaser

Print Name: _____
Signature: _____
Date: _____

Seller

Print Name: _____
Signature: _____
Date: _____

Is payment assigned to another party? Yes

If yes, attach the payment assignment form (CEC 1038 R5) with original signatures.

Also Attach: 1. Initial building permit and final inspection signoff; 2. Final purchase and installation invoice(s) confirming the equipment and amount paid; 3. Five-year warranty; 4. Signed utility interconnection application, 5. A copy of the utility bill if the installation location was a new facility without electrical service when the reservation request was submitted.

INSTRUCTIONS FOR THE REBATE PAYMENT CLAIM FORM (CEC 1038 R2)

The CEC 1038 R2 form is used to request payment for a completely installed and operational renewable energy system. The form specifies information about the renewable energy system that was to be installed at the time the reservation request was initiated. It also serves as a means of documenting what changes occurred from the time the reservation request was processed until the time the system was installed. The payment request form must be submitted before the reservation expires.

Section 1. Confirmation of Reservation Amount

Self explanatory.

Section 2. System Equipment Installed

If not already provided, fill in the equipment information requested including the number of units and the make and complete model number. Enter the total system price.

Section 3. Modifications

In the box provided, note any changes to the information on the previously submitted reservation request form. If more space is required to note changes, additional pages may be added to the form. Changes in equipment from the original application may affect its eligibility and the amount of the rebate.

Signatures:

The purchaser must always print and sign their name on the form. If the seller is the rebate payee, the seller must also print and sign their name on the form. Enter the date of each signature. Original signatures are required on the form.

Please indicate whether the rebate payment is to be assigned to a third party. If yes, please fill in the name and address in the space provided and attach the assignment form (CEC 1038 R5). The assignment form must contain original signatures. Payees that assign the rebate payment to a third party will still be reported as the recipient of the payment(s) for tax purposes.

Attachments:

Several attachments to the form must also be submitted before the claim will be processed. These include:

- A copy of the building permit and final signoff
- A copy of the final purchase and installation invoices confirming equipment and amount paid
- A copy of the five year warranty
- The utility interconnection application
- A copy of the utility bill if the installation location was a new facility without electrical service when the reservation request was submitted,

Building Permit and Final Signoff:

The name and address on the building permit must match the installation address on the payment request form.

Invoices:

The invoices must clearly identify the work that was done and the amount paid. This includes identifying the quantity, make and model numbers of major equipment installed and the labor charge for installation. To meet this requirement you may submit a copy of the final invoice(s) or a copy of the final contract(s) showing a zero balance or the amount paid by the purchaser. The invoice or contract must also indicate the extent to which the Commission's rebate lowered the cost of the system. Copies of bank statements, cancelled checks, or credit card statements may also be requested by Energy Commission staff. The final system price paid by the purchaser should match the price shown on any contract or invoice previously submitted. Any differences must be explained.

Warranty:

Complete and attach the CEC 1038 R3 form.

Signed Utility Interconnection Application:

The address in the utility interconnection application must match the address of the installed system. (The letter of authorization to operate the system must be submitted to the Energy Commission must also be provided even after the rebate payment has been made).

Claiming a Rebate Without a Prior Reservation

To claim a rebate without a previously approved reservation, you must also submit a completed and signed reservation request form (CEC 1038 R1).

Submit Your Request to:

Emerging Renewables Program
California Energy Commission, Accounting Office
1516 9th Street, MS-2
Sacramento, CA 95814-5512

Original forms must be submitted by mail; however, if your reservation is about to expire, you may submit a claim form and final paperwork by telefax to (916) 653-1435 to comply with the expiration deadline. Faxed claims will not be reviewed until original forms are received. Allow at least 30 days from receipt of a complete payment claim application for payment. Payment will be mailed to the retailer or purchaser as indicated on the reservation request form at the address indicated on the Payee Data Record form (STD-204), unless you have assigned payment to a third party.

R3**MINIMUM WARRANTY FORM
EMERGING RENEWABLES PROGRAM****System Information**

This warranty applies to the following _____ kW renewable energy electric generating system

Description: _____

Located at: _____

What is Covered

This five year warranty is subject to the terms below(check one of the boxes):

- All components of the generating system AND the system's installation.** Said warrantor shall bear the full cost of diagnosis, repair and replacement of any system or system component, at no cost to the customer. This warranty also covers the generating equipment against breakdown or degradation in electrical output of more than ten percent from the originally rated output (PTC rating for modules, manufacturers rating for wind turbines); or
- System's installation only.** Said warrantor shall bear the full cost of diagnosis, repair and replacement of any system or system component, exclusive of the manufacturer's coverage. (Copies of five-year warranty certificates for the major system components (i.e., solar modules, wind turbines, etc. and inverter- MUST be provided with this form).

General Terms

This warranty extends to the original purchaser and to any subsequent purchasers or owners at the same location during the warranty period. For the purpose of this warranty, the terms "purchaser", "subsequent owner", and "purchase" include a lessee, assignee of a lease, and a lease transaction. This warranty is effective from _____ (date of completion of the system installation).

Exclusions

This warranty does not apply to:

- Damage, malfunction, or degradation of electrical output caused by failure to properly operate or maintain the system in accordance with the printed instructions provided with the system.
- Damage, malfunction, or degradation of electrical output caused by any repair or replacement using a part or service not provided or authorized in writing by the warrantor.
- Damage malfunction, or degradation of electrical output resulting from purchaser or third party abuse, accident, alteration, improper use, negligence or vandalism, or from earthquake, fire, flood, or other acts of God.

Obtaining Warranty Service

Contact the following warrantor for service or instructions:

Name: _____

Phone: ()

Company: _____

Fax: ()

Address: _____

Signature: _____

Date: _____

R4**EQUIPMENT SELLER INFORMATION FORM
EMERGING RENEWABLE RESOURCES ACCOUNT**

Business name:	Phone: ()
Address:	Fax : ()
	Email:
	Web Site:
Owner or principal contact:	
Business license number:	
Reseller's license number:	
Contractor license number (if applicable):	
Proof of corporate, LLC, LLP or other annual filings, as required with the California Secretary of State (or appropriate state):	
The above information applies solely to the business identified above:	
Print Name: _____	Title: _____
Signature: _____	
Date: _____	

R5

**RESERVATION PAYMENT ASSIGNMENT FORM
EMERGING RENEWABLES PROGRAM**



*RENEWABLE
ENERGY
PROGRAM*

CALIFORNIA ENERGY COMMISSION

Record Number _____

Payee ID Number _____

Reservation Information

Payee Name: _____

Payee Address: _____

Payee Contact: _____

Payee Phone #: _____

Assignment Request

I, _____, the designated payee or authorized representative of the payee, hereby assign the right to receive payment for the above noted reservation under the Emerging Renewables Program to the following individual or entity:

Name: _____

Address: _____

Phone #: _____

I request that payment be forwarded to this individual or entity at the address noted and that proof of payment be forwarded to me.

Acknowledgement

As the designated payee or authorized representative, I understand that I remain responsible for complying with the requirements of the Emerging Renewables Program and will remain liable for any tax consequences associated with the reservation payment, despite the payment's assignment. I further understand that I may revoke this payment assignment at any time prior to the Energy Commission's processing of the payment by providing written notice to the Energy Commission's Account Office. Such notice shall be provided to: Emerging Renewables Program, California Energy Commission, Accounting Office, 1516 9th Street, MS-2, Sacramento, CA 95814-5512.

Executed on: _____

Signature: _____

Name: _____

Title: _____

This completed form may be submitted with either the Reservation Request Form (CEC 1038 R1) or the Reservation Payment Claim Form (CEC 1038 R2). This form may not be submitted by telefax, as original signatures are needed to process assignment requests.

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 calling (800) 555-7794 or visiting the Energy Commission's website at www.ConsumerEnergyCenter.org/

A. Choosing a Contractor

Make sure you hire a contractor 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 you obtain at least 2 or 3 bids before selecting an installer or agreeing to purchase a renewable energy system. Your final 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] 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 you check the status of the installer's contractor license for your own 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 by contacting the Energy Commission or visiting its web page.

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. For photovoltaic systems, the annual amount of sunlight energy (insolation) at a given location in California is predictable and typically does not vary more than 5 percent from year to year; however, the annual energy produced by a specific solar system is influenced by many factors. These factors include the orientation (tilt and direction) of the system, wire length and size, shading, module output mismatch, inverter efficiency, module cleanliness, and other factors. A qualified solar system installer should be able to evaluate these factors and estimate an average energy output in monthly or annual kilowatt hours (kWh) for a given system at a specific location. Similarly, 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 a solar or wind 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 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 used, equipment type, local labor rates, site conditions, and other factors. The following table lists ranges of system prices and annual energy production that are typical for many photovoltaic and wind energy system installations.

Table 2 - Typical Photovoltaic and Wind Energy System Prices and Energy Production

Technology Type	Typical Energy Production (kWh/year)	Typical Installed System Prices ¹
Photovoltaic Systems ²		
1 kW	1,200 to 1,400	\$7,000-12,000
2 kW	2,410 to 2,810	\$12,000-20,000
10 kW	12,050 to 14,050	\$60,000-90,000
Wind Energy Systems ³		
3 kW	4,990 to 8,500	\$12,000-18,000
10 kW	8,400 to 16,440	\$30,000-50,000

1. Price examples are for 2002. The incentives will decrease to promote similar reduction in price.
2. Manufacturer ratings at standard test conditions. PV calculations based on (STC kW*5.5 hrs/day)*(365 day/yr.)*(0.6 or 0.7 discount factor). The discount factor is a rough estimate of various loss factors. See "A Guide to Photovoltaic (PV) System Design and Installation, June 2001, (P500-01-020) for further information.
3. 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 Renewable Energy System Rebate program.

The equipment must meet national or internationally recognized electrical standards or other appropriate criteria. Until the equipment is listed it is not eligible and no funding will be reserved. Equipment that has not met the aforementioned requirements will not be placed on the lists.

Systems using components that are not listed as eligible will not be issued a reservation or a payment. If a component becomes decertified according to the testing requirements described below, and is removed from the Energy Commission's lists of eligible components, applicants may be required to modify their systems by replacing the decertified component with a certified component before a payment is issued.

Generating equipment (solar modules, wind turbines...), inverters, and performance meters are periodically added and removed from the lists of eligible equipment.

A. Photovoltaic Modules

All flat plate photovoltaic modules must be certified by a nationally recognized testing laboratory as meeting the requirements of the Underwriters Laboratory (UL) Standard 1703. For concentrator modules, manufacturers of concentrator photovoltaic systems must provide acceptable evidence to the Energy Commission for each model of system they wish to sell under this program that the module model is listed by UL, or other nationally or internationally recognized testing institution, using test procedures and requirements as appropriate for the intended use.

B. Solar Thermal

No standards exist at present for solar thermal electric generating systems. In lieu of certification, manufacturers of solar thermal systems must provide acceptable evidence to the Energy Commission of one year of reliable operation for each model of system they wish to sell under this program.

C. Fuel Cells

All fuel cells must be certified as meeting the requirements of American National Standards Institute (ANSI) standard z21.83-199 for fuel cell power plants.

D. Small Wind

There are two options to achieve ERP eligibility for small wind systems:

1. Small wind turbines must be certified as meeting the requirements of a small wind turbine-specific safety and/or performance standard adopted by a national or international standards setting body, including, but not limited to IEC (International Electrical Code) 61400-2.

or

2. Manufacturers of small wind systems must provide monthly data of average energy produced (kWh) and average wind speed for one consecutive year for each model of system they wish to be considered eligible for this program to demonstrate reliable operation of that model of equipment at a site with average annual wind speeds of at least 12 mph.

E. Inverters

All inverters should be certified as meeting the requirements of UL 1741. However, in the case of large inverters, where the size of the inverter is larger than any other inverter listed on the list of eligible equipment, a reservation may be granted if the applicant submits a signed statement acknowledging that no incentive will be paid for any part of the system unless the inverter passes a field test meeting the requirements of UL 508C and Rule 21 (utility interconnection) at each site. Payment for such a system will only be made when the inverter is shown to meet either UL 1741 or the combined UL 508C and Rule 21 standard.

1. Changes to the Eligible Inverter List

The following changes will be incorporated in the list of eligible inverters.

- The methodology for rating inverters will be based on the inverter efficiency at three-quarter's load.
- After March 31, 2003, the eligible list of inverters will no longer contain non-grid-interactive inverters.
- The Energy Commission also plans to review if changes should include adjusting the ratings for inverters with battery-backup to account for losses inherent in battery back-up systems.

F. 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.

G. 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.
- 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.
- 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.

Appendix 4 - Maximum System Size Calculations

This appendix describes the methodology used to determine the maximum system size eligible for incentives from this program. In most cases the system size limitation will not affect systems less than 10 kW because the average annual residential electricity consumption in California is about 7000 kWh/yr. Commercial loads are almost certain to be higher. The maximum size of system that would primarily offset this average load, given conservative system production, is about 13 kW ($200\% * 7000 \text{ kWh} / (.12 * 8760)$).

A. Maximum System Size Calculations

The Energy Commission will determine the maximum size of eligible systems as follows:

1. New or expanded site electrical load

In the case of applicants with new or expanded facilities, where there is no electricity bill to attach or where the existing electricity bill does not reflect the applicant's expected expanded consumption, the applicant must submit an electricity bill when the system is complete or submit a signed statement by an architect, engineer or electrical contractor that the requisite electricity consumption is occurring or will occur at the site.

Applicants who are awarded Reservations based on new or expanded loads will only be paid the full amount of their requested reservation once they have submitted a bill that is consistent with their new or expanded estimated consumption and have otherwise satisfied the requirements for requesting a rebate payment. In most cases, applicants with systems 10 kW or less need only submit a bill verifying grid connection at the site of installation.

The Energy Commission will check the submitted electricity bill(s) for usage consistent with the expected load, and calculate the appropriate incentive payment as described above. 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.

2. Peak load capacity option

A customer may submit documentation that the proposed system is not greater than 200 percent of on-site peak demand (in kW) during any month. Documented historical information can be a utility statement within the last 12 months. For a new customer load or addition to present load, appropriate documentation can be a detailed energy use calculation, signed by a licensed electrical contractor.

The Energy Commission will calculate a "benchmark" production for the system using the following formula:

$$\text{Benchmark Energy Produced} = \text{System Capacity(kW)} \times 1050\text{kWh/year}^3.$$

This Benchmark Energy Produced (BEP) will be compared to the estimated annual consumption based on the utility bill submitted with the application. If the BEP is less than 200 percent of the estimated annual consumption, the full rebate requested will be reserved. If the BEP is greater than 200 percent of the estimated annual consumption, then the rebate reserved will be reduced by an amount equal to the ratio between the estimated annual consumption and the BEP.

The Energy Commission will compare the estimated annual consumption to the consumption reflected on the electricity bill submitted with the reservation form. In cases where the estimated annual consumption appears to be inconsistent with the electricity bill submitted (for example, when the monthly consumption shown on the electricity bill is less than 8.5 percent of the estimated annual consumption), the Energy Commission will request additional information from the applicant, and will not process the reservation until satisfactory information is received.

If the installed system exceeds the size limits justified by the applicant, then the incentive would be calculated based on the maximum allowable system size.

³ The annual energy produced by a photovoltaic system is influenced by many factors, including the amount of insolation (sunlight) at a particular geographic location, the orientation (tilt and direction) of the system, the degree of cloud cover, any shading that affects the system, and cleanliness. The BEP calculation above estimates the amount of energy produced by a system with a relatively low 12% capacity factor; that is, a system with relatively poor location, orientation, etc. This represents a conservative estimate of the energy that will be produced by a system. Most systems, with more favorable characteristics, will produce a greater amount of energy. However, a system installed in a relatively poor location with the intent of offsetting the onsite load should not be rejected through the use of an optimistic or even an average estimate of energy production. Therefore, using the BEP calculation for a relatively poorly performing system allows these systems to be eligible, consistent with the intent of SB 90. Using this calculation for all systems minimizes the administrative cost of predicting the energy produced by the system in relation to the load at the site.

Appendix 5 - Atypical Incentive Applications

A. New Housing Development

New home developers may purchase and install renewable energy systems as part of a new development before selling the home. The renewable energy system is often a feature that is included in the new home price. In most cases it is unclear who will purchase the home, when it will be sold, and how much the end-user pays for the system. Unlike individuals, developers will often purchase the system equipment in bulk and have an agreement with a subcontractor to install systems on various homes in the development.

A group of reservations in one location, such as for multiple homes in a new residential development which total 30 kW or greater in aggregate will receive an 18 month reservation period.

To obtain a rebate reservation for a new housing development where the sum of individual installed systems will total 30 kW or more, the developer may submit the following items instead of submitting separate documentation for each address:

- 1) **One Reservation Request Form (CEC 1038 R1) for the entire new housing development.** The Reservation Request form must be signed by the homebuilder (purchaser) and the seller (retailer, wholesaler or other supplier) of the electricity generation system. The reservation request must be accompanied by a detailed summary sheet containing the same information requested on the Reservation Request form for each site (i.e., the physical addresses, generating system information, and system cost for each of the systems to be installed). This information may be listed directly on the form or incorporated by reference to the summary sheet or to the master purchase agreement.
- 2) **One master purchase agreement for the entire new housing development.** The master purchase agreement(s) for the equipment and installation labor must contain the following information: signature of homebuilder (purchaser) representative, seller of the generating equipment, and installer (unless a letter or installation agreement for each subcontractor stating the price charged for specified homes in the housing development is provided); a list of the physical addresses of the system installations; the quantity, make and model of the electricity generating equipment and inverters to be installed at each address; the total cost of the equipment and/or labor; total eligible system cost and rebate requested for each address.
- 3) **Payee Data Record (STD-204) for the recipient of the rebate payment.**
- 4) **Utility Interconnection.** As with other new construction, submit a simple statement identifying the electric utility and acknowledging that proof of interconnection will be provided prior to a payment claim.
- 5) **Building permit and final inspection signoff (at time of payment)** - submit a copy of the electronic building permit record (or building permit) showing final inspection signoff for the housing development or an interconnection agreement listing all of the addresses at which the utility confirms that an eligible electricity generation system was correctly installed. See "Reservation and Payment Process" for additional paperwork required at the time payment is claimed.

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

Renewable energy system sellers (retailers, wholesalers, manufacturers...) or contractors who install a system on their own home or place of business may qualify for the full rebate with certain documentation. To receive a reservation, the applicant must submit documentation consistent with that of an individual independently buying a system. The purchase agreement must be signed by the purchaser and the generating equipment supplier in most cases, the wholesaler). Documentation of a purchase between two parties within the same entity is not adequate, nor is a purchase agreement if signed by the same individual. The warranty requirements are the same as for self-installed systems.

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 and 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 Energy Commission will calculate 1) the rebate amount paid for the existing system, 2) the maximum allowable rebate for the entire project (existing plus addition) available at the time a complete payment claim is filed, and 3) the amount originally paid plus the current rebate for the incremental watts added on site. The total allowable rebate for the existing system plus addition will be the larger of (1) or (2) above, not to exceed (3). The Energy Commission will pay the difference between the amount paid for the existing system and the total allowable rebate for the existing system plus the addition, provided that funds are available.

D. Special Requirements for Leased Systems

To ensure that leased systems are not prematurely removed from the site of installation, leased systems must remain at the original site of installation for a period not less than five years. The lease agreement must specify a lease term of no less than five years and must limit the lessor's remedies, in the event of breach, to monetary damages. The lease agreement may not permit the lessor to remove the system from the original site of installation because of the lessee's default or breach of the lease agreement. In addition, the lease agreement must clearly demonstrate that the program rebate benefits the lessee by directly and exclusively reducing the lease payments for the eligible system.

In determining the total cost of leased systems, the Energy Commission will not consider any finance, interest, insurance, maintenance costs, or any lease processing fees.

The rebate for leased systems will be paid to the retailer of the system or to the lessor as the system purchaser. The rebate will not be paid to the lessee.

The proof of agreement to lease must contain two sections. It must contain the proof of agreement by the lessor to purchase the system from the seller as described above. It must also contain the lease agreement between lessor and lessee and identify the physical address of the system, the quantity, make, and model of major system components, the lease term or duration, terms of payment, the total cost of the lease itemized so as to identify the capital cost and any financing, interest, insurance or maintenance cost and any fees, the total amount to be paid by the lessee over the term of the lease, indication that the rebate benefits the lessee by directly and exclusively reducing the lease payments for the eligible system, and the signatures of both the lessor and lessee.