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Cool Savings Program Guidelines

Introduction

The following guidelines provide the qualification criteria and rebate levels for the California Energy Commission's Cool Savings program. As of June 26, 2001, these qualification criteria and rebate levels supersede those of the Commission's previous Cool Roof Retrofit Program guidelines dated December 6, 2000.

The overall program goal is a peak electricity demand savings of approximately 62 MW at a cost of \$24.5 million (\$395/kW). Funding is made possible by the passage of recent legislation, Senate Bill 5X (SB 5X), which provides \$14.5 million for low energy usage building materials, and by the availability of remaining funds (\$10 million) from Assembly Bill 970 (AB 970), which helped create the Commission's previous Cool Roof Retrofit Program.

The Cool Savings Program is administered on behalf of the Commission by several Program Administrators (PAs) across the state. These PAs are responsible for recruiting and screening applicants, processing applications and related documents, inspecting projects as required by contract with the Commission, paying the rebate for finished projects, and other related tasks.

Contact information for PAs is available here –

www.energy.ca.gov/peakload/cool_roofs.html#admin

1. Program Summary

The Cool Savings Program is designed to provide incentives to reduce the peak electricity demand from air conditioning systems resulting from solar energy absorbed by roof surfaces and rooftop ducts and transferred as heat into air-conditioned space. Monitoring of buildings before and after cool roof applications shows that roof surface temperatures are lowered by 30-50°F or more and that savings of up to 40% for the electricity for cooling can result.

2. Schedule

Qualifying projects will be processed on a first-come, first-served basis. Each applicant must have a signed and correctly completed Customer Agreement form on file with a Program Administrator (PA) and be in receipt of a Notice of Eligibility from the PA in order to reserve a rebate. Rebates will be awarded in order based on the date of the Notice of Eligibility. The applicant must properly complete and submit an acceptable Final Application within the allowed schedule in order to receive the rebate.

Higher incentive levels are available if projects are *fully completed* (the cool roof is fully installed and reflecting sunlight) by October 31, 2001, and final applications for those projects are submitted to the appropriate PA no later than November 15, 2001. See Section 8, Incentive Payments, for details on the incentive levels and schedules.

Projects initiated under the previous Cool Roof Retrofit Program will receive the lower Cool Roof Retrofit Program incentives if the PA invoiced the Commission on or before June 26, 2001, for those projects. Any project initiated under the previous program can qualify for the new higher Cool Savings

Program incentives if the project is fully completed, all paperwork is satisfactorily submitted by the applicant to the PA, and the date on the subsequent PA's invoice to the Commission is June 27, 2001, or after.

For projects completed after October 31, 2001, program funds will be disbursed at the post-October 31 Cool Savings Program incentive levels on a first-come, first-served basis until the funds are exhausted or until November 30, 2002, whichever comes first.

3. Definitions

- **California Climate Zones** – as defined by the California Code of Regulations, Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Buildings. California climate zone descriptions, maps, and related information are available on the Commission's web site at http://38.144.192.166/maps/climate_zones.html.
- **Cool Roof** – a cool roof is defined, in general, as a roof surface of both high reflectivity and high emissivity. In the context of the Cool Savings Program, a cool roof is defined as meeting the rebate qualification criteria set forth in this document.
- **Cool Surface** – a reflective coating or other material applied to the surface of a roof or duct meeting the qualification criteria set forth in this document.
- **Ducts** – the portion of the duct system, including plenums and other areas not required for access or adjustments, that is in direct contact with solar radiation.
- **Emittance or Emissivity** – a measure of the ability of a surface to emit radiant energy, as determined in accordance with ASTM E-408-71 (1996)e1.
- **High-profile tile** – a tile roof product that has a rise-to-width ratio greater than 1:5.
- **High-rise residential building** – a building, other than a hotel or motel, of Occupancy Group R, Division 1, with four or more habitable stories. Occupancy Groups are defined in the Uniform Building Code (UBC). High-rise residential buildings are considered to be nonresidential buildings for the purposes of Title 24, Part 6.
- **Incentive (or rebate)** – the portion of the project cost that will be reimbursed by the Program Administrators to qualifying applicants.
- **Initial Reflectivity** – the value listed under the heading "initial reflectivity" as published in the Energy Star Roof Products Program Qualifying Product List, available on <http://yosemite1.epa.gov/estar/consumers.nsf/content/roofbus.htm>.
- **Insulation** – a material having a thermal resistance to heat flow and used principally to retard heat flow. Also see "R-value."
- **Low-rise residential building** – a building, other than a hotel or motel, of Occupancy Group R, Division 1, and is three stories or less, or that is of Occupancy Group R, Division 3. Occupancy Groups are defined in the Uniform Building Code (UBC). Low-rise residential buildings are considered to be residential buildings for the purposes of Title 24, Part 6, and of the Cool Savings Program.
- **Low-sloped Roof** – a roof with a slope of less than or equal to 2 inches of fall in 12 inches of run.
- **Multi-family dwelling** – a dwelling unit of occupancy type R, as defined by the UBC, sharing a common wall and/or ceiling/floor with at least one other dwelling unit.
- **Rebate** – see **Incentive**.
- **Reflectivity** – the solar reflectance, or fraction of solar flux reflected by a surface, expressed as a percentage (0-100%) or fraction between 0.00 and 1.00, as determined in accordance with either ASTM E-903-96 or ASTM E-1918-97, depending on the material.
- **Refrigerated Building or Space** – a building or space for which the space conditioning system is designed and thermostatically controlled to maintain a process environment temperature less than 55°F within the building or space.
- **R-Value** – the thermal resistance of a material, in units of (hr. x ft.² x °F)/Btu.

- **Roof or Roof Surface** - the uppermost part of the roof system that is in direct contact with solar radiation.
- **School** – as defined in the Warren-Alquist State Energy Resources Conservation and Development Act of 1974 and amended thereafter, a public or nonprofit institution, including a local educational agency, which 1) provides, and is legally authorized to provide, elementary education or secondary education, or both, on a day or residential basis, 2) provides, and is legally authorized to provide, a program beyond secondary education, on a day or residential basis, and a) admits as students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such certificate; b) is accredited by a nationally recognized accrediting agency or association; c) provides an education program for which it awards a bachelor’s degree or higher degree or provides no less than a two-year program which is acceptable for full credit toward such a degree at any institution which meets the requirements of a) and b) and which provides such a program.
- **Sloped Roof** – a roof with a slope of more than 2 inches of fall in 12 inches of run.
- **Solar Flux** – the direct and diffuse radiation from the sun received at ground level over the solar spectrum, expressed in watts per square meter.
- **Solar Reflectance Index (SRI)** – a rating system to measure the temperature of a material in the sun, defined by the extremes of white and black paint. The SRI shall be calculated using ASTM E-1980 for moderate wind conditions.
- **Solar Spectrum** – radiation originating from the sun, including ultraviolet, visible, and near-infrared radiation (99% of these wavelengths are between approximately 0.3 to 3.5 micrometers).
- **Thermal Resistance** – the resistance of a material or building component to the passage of heat in (hr. x ft.² x °F)/Btu. Also see R-value.
- **Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Buildings** – the portion of the California Code of Regulations that contains the building codes for energy efficiency.

4. Applicants Eligible for Incentives

- Owners of qualifying buildings or property managers who have authority to make decisions associated with building repairs, renovations, or new construction.
- OR
- Others, upon written approval from the Commission’s Cool Savings Program Contract Manager. Potential qualifying parties include but are not limited to manufacturers of eligible cool roofing products. Parties interested in applying cool roofs to single-family residential buildings, either in new construction or for retrofits, shall be required to combine (aggregate) a number of individual buildings. Parties interested in aggregating projects shall contact a Cool Savings PA for more information. The Commission reserves the right to specify qualification criteria and rebate levels upon entering into agreements with these aggregators.

5. Projects Eligible for Incentives

All projects must meet the following criteria to be eligible for incentives:

Geographic Region

Projects must be located in California Climate Zones 2 through 15.

Building Types

- All non-residential occupancies (defined in Title 24, Part 6), including high-rise residential buildings.

NOTE: Residential buildings, including low-rise residential, shall be eligible for Cool Savings incentives only if 1) funded through AB 970 appropriations, or 2) legislation is changed so that SB 5X funds can be

allocated for residential projects. For either of these situations, single-family residential buildings shall be eligible only when aggregated (combined) together as a group. Potential aggregators and projects shall be approved on a case-by-case basis. Multi-family buildings need not be aggregated. Refer to Section 4, Applicants Eligible for Incentives, for more information.

Method of Cooling Building

- All buildings shall have electrically-powered, compressor-based air conditioning systems, or refrigeration system(s) in the case of refrigerated (cold storage) buildings, operating at least from June through September. Exception: schools are not required to operate during summer break in order to qualify for the incentive.

Existing Roof/Duct

- The existing roof and duct surface shall be in compliance with all applicable codes and standards prior to cool surface application. Roof or duct surfaces that require improvements prior to the cool surface application are not eligible until such time as those surfaces are brought up to the condition required by the cool surface manufacturer or contractor for warranty purposes.
- In the case of buildings where a portion of the space under the roof is air-conditioned (as defined above) or refrigerated and a portion is not, the rebate will be based on the number of square feet of sunlit roof directly over the air-conditioned or refrigerated space. Exception: if a building has an enclosed attic space between the ceiling of the conditioned space and the sunlit roof, the portion of the building's roof that is directly over the enclosed attic space shall qualify for the rebate. For example, an air-conditioned office space within an unconditioned warehouse will not qualify for a cool roof rebate if the ceiling of the office is within the warehouse space (that is, the office ceiling is lower than the warehouse roof), and no enclosed attic space exists between the ceiling of the conditioned space and the warehouse roof. The same air-conditioned office space would qualify, however, if an enclosed attic space (not open to the warehouse) existed between the office ceiling and the warehouse roof, or if the ceiling of the office space is a portion of the warehouse roof.
- In the case of buildings where a portion of the space is refrigerated and a portion is air-conditioned, the incentive(s) will be based on the cooling level(s) (either refrigerated or air-conditioned, or both) of the space(s) directly below the roof system. For example, if a refrigerated space is contained within a qualifying air-conditioned warehouse, the higher incentive for refrigerated space will apply only for the square footage of refrigerated space whose roof is exposed directly to sunlight, and the appropriate incentive for nonresidential buildings will apply to the remaining qualifying square footage.
- For incentives for other building configurations not described here, interested parties may contact a PA or the Commission's Cool Savings Program Contract Manager.

Final Roof/Duct

- Qualifying cool roof products shall be listed in the version of the "Energy Star Roof Products Program Qualifying Product List" current between the time of Grant Application and Final Application submittal. This list is available on the Environmental Protection Agency's Energy Star Roof Products web site:

<http://yosemite1.epa.gov/estar/consumers.nsf/content/roofbus.htm>.

- In addition to being included on the Energy Star List, qualifying products must meet the following criteria:
 - an initial **reflectivity** of greater than or equal to 65% as published in Energy Star Qualifying Products List
 - AND**

- an **emittance** of greater than or equal to 80%
NOTE: Roof products with top coatings that do not contain metal generally have high emittance and meet this requirement, while bare metallic surfaces (and coatings containing metal particles) do not.

OR

- a **minimum Solar Reflectance Index (SRI)** of 75% (calculated using ASTM E-1980 for moderate wind conditions).

Exception: High-profile tile for sloped roofs shall have an initial **reflectivity** of greater than or equal to 40% **AND** an **emittance** of greater than or equal to 80%, **OR** a **minimum SRI** of 41% (calculated using ASTM E-1980 for moderate wind conditions).

- Qualifying products must be installed according to manufacturer specifications.
- Manufacturer provides written 5-year warranty (materials); contractor provides written 2-year minimum warranty (installation). Refer to Section 6, Warranty Provisions, for more information.
- All liquid-applied coatings shall meet the applicable ASTM standards for type of coating applied.
- Cool surface application must meet all applicable codes and standards.
- Cool surface application must meet all program eligibility criteria.

6. Warranty Provisions

The building owner or property manager shall be provided, from either the manufacturer or the contractor, warranty coverage for roofing that includes the following provisions:

- A) Scope of Coverage.** The contractor and/or roofing product manufacturer warrants its products against defects in materials, workmanship and installation, including but not limited to cracking, flaking, peeling, bubbling, blistering, and leaking, when properly applied to all structures subject to normal usage.
- B) Nature of Remedy.** If a defect occurs within the warranty coverage, the warranty provider shall furnish sufficient additional materials of product to make necessary repairs for the duration of the warranty, except for the removal and replacement of any materials covering the system.
- C) Length of Coverage.** Minimum warranty as follows: minimum two-year warranty on materials and installation and minimum five-year warranty on materials.

7. Responsibilities

- A)** The roofing contractor and product manufacturer shall assume responsibility for the roof work complying with the warranty provisions of this program.
- B)** Applicants shall be responsible for submitting a completed “Customer Agreement” form to their Program Administrator prior to the installation of the cool roof.
- C)** The Program Administrator shall be allowed to inspect the roof prior to installation of the cool roof.

- D) The Program Administrator shall provide each applicant with a "Notice of Eligibility" form for each submitted project after determining that the project qualifies for the program. The PA shall also notify the appropriate applicant if a project is deemed ineligible.
- E) Applicants shall be responsible for submitting the "Final Application" form, along with a copy of the Roofing Contractor's Invoice listing the specific roofing material used on the building, i.e., product manufacturer, brand name, model, and type. In addition, a copy of the roofing contractor's warranty will be required. The documents shall be submitted to the Program Administrator no more than two weeks after the completed roof installation in order to collect the incentive payment. Because payments will be made on a first-come, first-served basis, Final Applications received more than two weeks after the roof installation may not be funded.

8. Incentive Payments

The Program Administrator shall be responsible for disbursing incentive payments by check to qualified applicants, following receipt of the "Final Application" form along with the required receipts and documents covering the completed roof and/or duct work as noted above.

The amount of the incentive payment shall be as listed below, where 'sf' equals the square feet of cool roof applied over air-conditioned space or of duct surface (as measured by the appropriate Program Administrator). A summary table of the incentives, Table 1, follows the list.

- A) **Cool Rooftop Ducts:** \$0.20/sf until October 31, 2001; thereafter \$0.15/sf.
- B) **Cool Roofs**
- i) Refrigerated buildings: \$0.25/sf until October 31, 2001; thereafter \$0.20/sf.
 - ii) Non-residential buildings: \$0.20/sf until October 31, 2001; thereafter \$0.15/sf.
 - iii) Others as defined in Section 4, Applicants Eligible for Incentives.
- C) **Roof insulation added in conjunction with a cool roof:** roofs with an initial (pre-retrofit) insulation R-value of less than or equal to R-5 are eligible for an additional \$0.05/sf when insulation of R-2 or greater is added in conjunction with a qualifying cool roof.

Table 1. Summary of Cool Savings Program Incentive Levels

Installation completion date	On or before October 31, 2001	After October 31, 2001
Rooftop Ducts	20 cents/sf	15 cents/sf
Refrigerated building roofs	25 cents/sf	20 cents/sf
All other non-residential (includes high-rise residential)	20 cents/sf	15 cents/sf
Other occupancies	Consult Commission's Cool Savings Program Contract Manager or a Program Administrator	Consult Commission's Cool Savings Program Contract Manager or a Program Administrator
Roof insulation plus qualifying cool roof	Add 5 cents/sf to roof rebate	Add 5 cents/sf to roof rebate

9) Modifications

These Cool Savings Program qualification criteria are subject to modification by the Commission. Any modifications will be posted on the Commission's website and the Commission will inform all Program Administrators of the change. The Program Administrators will inform customers of any modifications that may affect their project.

10) Limits on Numbers of Projects by an Individual Applicant

There is no limit on how many projects can be submitted to the Cool Savings Program by any individual applicant.