



CITY OF LODI

COUNCIL COMMUNICATION

AGENDA TITLE: Adopt resolution authorizing the City Manager to provide funding in the amount of \$50,000 to fund the Public Benefits Program Grant – Vineyard Shopping Center Demand-side Management Project (EUD)

MEETING DATE: October 17, 2001

PREPARED BY: Electric Utility Director

RECOMMENDED ACTION: That the City Council adopt a resolution authorizing the City Manager to provide funding in the amount of \$50,000 to fund the Public Benefits Program Grant – Vineyard Shopping Center Demand -side Management Project.

BACKGROUND INFORMATION: Owners and operators of the Vineyard Shopping Center have embarked upon a significant energy conservation effort. In the ensuing weeks, they will have installed by Royal Roofing Company, a highly reflective product known as white roof guard. Unlike the silver coat or light gray reflective roofing materials commonly used over the past ten years, the white roof guard product is now rated as the top reflective product on the market. The Sacramento Tree Foundation, in conjunction with the California Energy Commission, has approved this material for installation on commercial building rooftops throughout the state.

A total of 125,000 square feet will be coated with white roof guard at the Vineyard Shopping Center, reducing the roof's surface temperature by an average of 45 degrees on a typical Lodi summer day. This heat reduction on the roof then translates into a significantly cooler store or room below the coated roof surface. In most cases, occupants of a building where the white roof guard has been applied, reduce cooling costs (air conditioning) by an average of fifty percent.

The Public Benefits Program grant in the amount of \$50,000 reflects the maximum amount of funding available to any one commercial customer under the Energy Services Partnership Program. The total cost for this white roof guard project is \$258,837. The grant will be paid in two equal installments over the next twelve months. The City of Lodi Electric Utility respectfully recommends approval of this grant as a qualifying component of the City of Lodi Public Benefits Program.

FUNDING: 164605 – Public Benefits Program (Category: Demand-side Management)

Funding Approval: *Vicky McAthie*
Vicky McAthie, Finance Director

Alan N. Vallow
Alan N. Vallow
Electric Utility Director

PREPARED BY: Rob Lechner, Manager of Customer Programs
ANV/RL/1st

APPROVED: *Janet Kester*
for H. Dixon Flynn - City Manager



Roof Guard

"THE ULTIMATE ROOFING SYSTEM"

DEMONSTRATED ENERGY SAVINGS OF COOL ROOF SYSTEMS

A Technical Seminar presented at Roof Consultants Institute, March 1997 by:

Dr. Lisa M. Gartland
Building Energy Analysis Program
Energy and Environment Division
Lawrence Berkeley National Laboratory

A relatively new class of roof coatings has been shown to save significant amounts of cooling energy. Cool roof coatings reflect away the bulk of the sun's energy, allowing the roof surface to stay cooler and transferring less heat to the building underneath. Demonstration projects have shown these coatings can **save between 20% and 70% of the cooling energy** used in a building.

These coatings also have the potential to save money, reduce air pollution and reduce the need for reroofing. There are still technical and industrial challenges in the way of the widespread adoption of these coatings as the roofing standard. This paper discusses all aspects of cool roof coatings and their implementation, from the technical to the sociological.

DEMONSTRATION OF COOL ROOF SAVINGS:

Numerous projects have been undertaken to study the effects of cool roof coatings on roof surface temperature and cooling energy use. **All studies confirm the ability of cool coatings to reduce roof surface temperatures dramatically - by 50° to 80°F, and to save significant amounts of cooling energy during the summer months.**

Table 2 summarizes the results of five studies performed in California and Florida. The albedos of all roof tops were raised by **40 to 60 percentage points**, well into the range of "very high albedo" (over 50%). Regardless of the level of insulation in the roof, all buildings showed significant reductions in the amount of cooling energy used - **reductions from 25% to 67%.**

1 Akbari, Bretz, Hanford, Kurn, Fishman, Taha and Bos. "Monitoring Peak Power and Cooling Energy Savings of Shade Trees and White Surfaces in the Sacramento Municipal Utility District (SMUD) Service Area: Data Analysis, Simulations and Results". Lawrence Berkeley Laboratory Report #LBL-34411, December 1993.

NOTE: All Roof Guard Roofing Systems and elastomeric coatings are classified as "very high albedo" Cool Roof Systems with an albedo of greater than 80.

Tresco Paint Company • 21595 Curtis Street • Hayward, CA 94545 (800) 395-5109



Roof Guard

"THE ULTIMATE ROOFING SYSTEM"

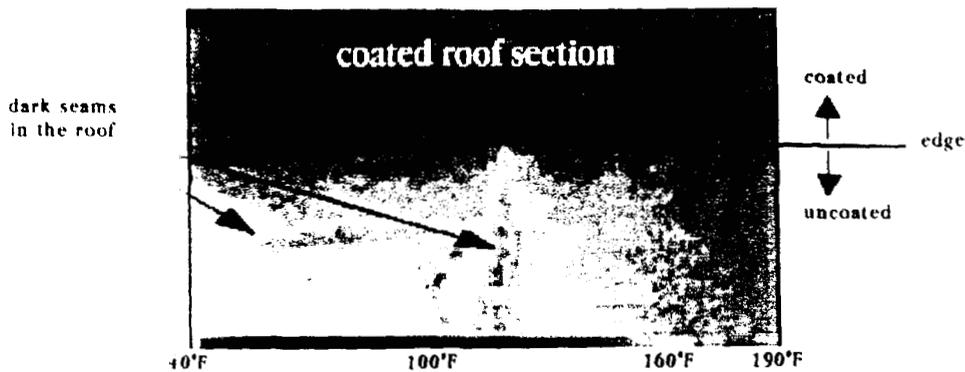
DEMONSTRATED REFLECTIVITY INCREASE & ENERGY SAVINGS

Results of Past Demonstration Projects

Location	Description	Insulation R-Value	Uncoated Albedo	Coated Albedo	Cooling Savings
Sacramento, CA	one-story residence	R-11 flat roof	0.18	0.77	67%
Sacramento, CA	one-story school	R-19 flat roof	0.08	0.68	40%
Cocoa Beach FL	one-story residence	R-11 22° slope	0.21	0.70	25%
Cocoa Beach, FL	one-story residence	uninsulated flat roof	0.20	0.73	43%
Cocoa Beach, FL	one-story School	R-19 flat roof	0.23	0.67	35%

High Performance, ROOF GUARD Elastomeric White Coating Over A Light Grey Capsheet Roof

Infrared Photo Of The Roof At The Edge Of A White Coating



**SURFACE TEMPERATURE REDUCED
FROM 160°F TO 100°F**



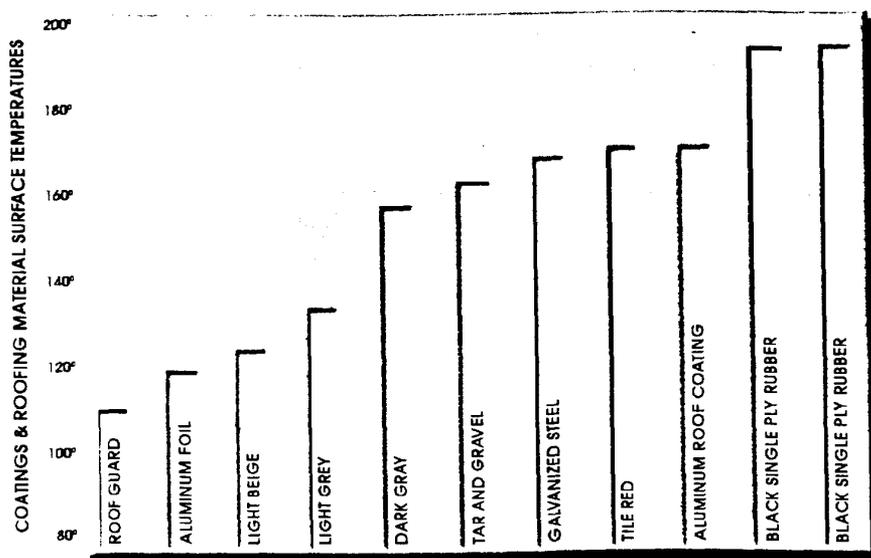
Roof Guard

"THE ULTIMATE ROOFING SYSTEM"

DIFFERENT COLORS AND THEIR EFFECTS ON ROOF SURFACE TEMPERATURES

Tests were conducted to determine the effect of colors on the temperature of a roof system or roofing material. Coatings were applied over 2" of polyurethane foam. Small thermocoupler sensors were embedded in or under the coating material. The following graph shows the difference between colored coatings and other roofing materials when exposed to sunlight.

CONDITIONS:
Central Texas
August - Clear Sky
Ambient Temperature 90°F



The above numbers were measured in central Texas with an ambient temperature of 90°F. Higher altitudes or ambient temperatures above 90°F will result in even hotter surface temperatures than those measured in this test.

From the above graph it can be seen that even light colored coatings raise the temperature somewhat. Shiny aluminum foil reflects sunlight very well although not as well as Roof Guard. Unfortunately, aluminum filled coatings, by contrast, are good absorbers of solar energy, thus generating more heat. Aluminum coatings and galvanized steel both exceeded 170°F in these tests.

RESOLUTION NO. 2001-240

A RESOLUTION OF THE LODI CITY COUNCIL AUTHORIZING
THE CITY MANAGER TO PROVIDE A PUBLIC BENEFITS
PROGRAM GRANT – DEMAND-SIDE MANAGEMENT
PROJECT TO VINEYARD SHOPPING CENTER

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WHEREAS, the State has mandated that beginning January 1, 1998, the City of Lodi is obligated to fund various programs through a Public Benefits Charge (PBC) based on a historical electric revenue requirement; and

WHEREAS, the requirement amounts to approximately \$1 Million per year that must be dedicated to qualifying programs such as energy efficiency. A further stipulation is that these efforts must be done on the customer's side of the meter in order to qualify; and

WHEREAS, the Electric Utility Department recommends that the City provide a Public Benefits grant in the amount of \$50,000.00 to fund the installation of a highly reflective product known as white roof guard by Royal Roofing Company. Unlike the silver coat or light gray reflective roofing materials commonly used over the past ten years, the white roof guard product is now rated as the top reflective product on the market. The Sacramento Tree Foundation, in conjunction with the California Energy Commission, has approved this material for installation on commercial building rooftops throughout the state; and

WHEREAS, a total of 125,000 square feet will be coated with white roof guard at the Vineyard Shopping Center, reducing the roof's surface temperature by an average of 45 degrees on a typical Lodi summer day. This heat reduction on the roof then translates into a significantly cooler store or room below the coated roof surface. In most cases, occupants of a building where the white roof guard has been applied, reduce cooling costs (air conditioning) by an average of fifty percent; and

WHEREAS, the Public Benefits Program grant in the amount of \$50,000 reflects the maximum amount of funding available to any one commercial customer under the Energy Services Partnership Program. The total cost for this white roof guard project is \$258,837. The grant will be paid in two equal installments over the next twelve months. The City of Lodi Electric Utility respectfully recommends approval of this grant as a qualifying component of the City of Lodi Public Benefits Program.

NOW, THEREFORE, BE IT RESOLVED, that the Lodi City Council hereby authorizes the City Manager to provide a Public Benefits Program Grant in the amount of \$50,000.00 to Vineyard Shopping Center to fund a demand-side management project as set out above.

Dated: October 17, 2001

I hereby certify that Resolution No. 2001-240 was passed and adopted by the Lodi City Council in a regular meeting held October 17, 2001 by the following vote:

AYES: COUNCIL MEMBERS – Hitchcock, Howard, Land, Pennino and Mayor Nakanishi

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – None

ABSTAIN: COUNCIL MEMBERS – None



SUSAN J. BLACKSTON
City Clerk