

STAFF REPORT

DATE: April 21, 2009

TO: City Council

FROM: Paul Navazio, Assistant City Manager
Donna Silva, Parks and General Services Department Director
Mitch Sears, Sustainability Program Manager

SUBJECT: Creation of an Energy Efficiency, Solar Energy, and Water Conservation Financing Program

Recommendations

1. Approve the concept of the Davis Energy Efficiency, Solar Energy, and Water Conservation Financing Program to allow private property owners to finance energy efficiency improvements, solar installations, and water conservation projects, through a City-sponsored financing mechanism resulting in a voluntary assessment on their individual property tax bills, and direct staff to continue work developing the program.
2. Approve issuance of a request for proposals as outlined in this report to evaluate options and develop the specific program.
3. Direct staff to return with the specifics of a program and design, and any necessary Council action as needed to implement the recommended program through a contract with a firm to design, administer, market, and finance the Energy Efficiency, Solar Energy, and Water Conservation Financing Program.

Fiscal Impact

The Davis Energy Efficiency, Solar Energy, and Water Conservation Financing Program is anticipated to be revenue neutral with program and administrative costs paid by program participants. Direct costs to the City include staff time for program development, community education and promotion to be funded through resources already allocated in support of the City's sustainability initiatives.

City-sponsored energy efficiency programs for private property owners have recently gained significant attention as a result of the City of Berkeley's 'Berkeley First!' program – designed using available Mello-Roos financing mechanisms under the City's Charter City authority, and subsequent State Statutes, through enactment of AB811, which allows General Law cities to utilize Special Assessment District financing mechanisms for this purpose.

The advantages of these various financing mechanisms include:

- 1) Elimination of upfront cost for energy efficiency improvements
- 2) Ability to spread costs over useful life of eligible improvements and

- 3) Ability for the annual payments to be passed on the subsequent property owners when a property is sold.

Under this type of program, a hypothetical property owner could finance 100% of a \$25,000 investment (net of rebates and administrative costs) in eligible energy conservation improvements, to be repaid over 20 years through an assessment – appearing on the property tax bill - of \$211 per month, or \$2,531 per year, assuming an interest rate of 6.75%. Resulting monthly energy cost savings offset the property tax bill assessment.

While such programs are gaining in popularity, spurred by the emergence of innovative application of existing financing mechanisms similar to this concept, the ability of the City, or any public entity, to actually implement this type of financing program is greatly dependent on the ability to access capital markets for land-secured debt financing at reasonably favorable terms. Current economic conditions have significantly delayed implementation of these programs, and caused some cities to jump-start their energy retrofit programs through commitment of General Fund dollars.

Regardless, staff believes it is prudent to expedite establishment of a program so as to take advantage of bond financing opportunities expected to be available when market conditions improve.

Limited financing for this type of revolving loan program is available through the Federal Stimulus Energy Efficiency Community Development Block Grant (EECBDG). However, the amount available through the federal funding program would not provide sufficient capital to fund even early stages of the proposed program. Further, one of the primary values of this type of program is that it is self funding. Therefore, staff is not recommending that the EECBDG funds be applied to this program.

Background and Analysis

The focus of this report is the development of a financing program for energy efficiency, solar energy, and water conservation projects. A brief overview of other energy related activities the City is engaged in provide context.

Overview of current energy related activities

- California Energy Commission - Renewable Based Energy Secure Communities (RESCO) Grant Application

In February, the City submitted a RESCO proposal to explore what renewable energy strategy should be employed at the local level to reach its GHG emission reduction targets and adapt to predicted climate change. This program provides the City with the opportunity to partner with the California Renewable Energy Collaborative to identify, analyze and implement a local renewable energy strategy for Davis. Made up primarily of UC Davis subject matter experts, the Collaborative is a statewide group of renewable energy researchers committed to supporting the development of safe, reliable, cost effective, and environmentally responsible renewable power in California. The Collaborative is a partnership between the University of California and the California Energy Commission.

- **Community Scale Renewable Energy Production**

The City continues discussions with PG&E on developing community scale renewable energy projects in the Davis area (10+ megawatt projects). These discussions have focused on expansion of PV USA and PG&E's recent filing with the California Public Utilities Commission to develop 500 megawatts of solar PV production in the next several years.

- **Federal Stimulus Energy Efficiency Community Development Block Grant (EECBDG)**

City staff are developing criteria to assist with the identification of local energy related projects that could be funded or partially funded with the City's \$591,000 allocation under this Federal Stimulus program. Building on the draft list of energy related actions developed by the Climate Action Team and the information assembled for the RESCO grant application, staff are drafting a community energy strategy that must be submitted by the City to the Department of Energy by the end of June to qualify for funding. Staff anticipates preliminary recommendations will be presented in late May/early June.

- **Energy Conservation and Retrofit Financing Programs**

The majority of this report is dedicated to the development of this type of financing system for Davis. As part of its public outreach effort, the Climate Action Team sponsored a public workshop in late January on local energy efficiency and solar power financing programs. The event was very well attended and showed that the community has a high level of interest in this type of financing program. The remainder of this report focuses on development of a financing program for energy efficiency, solar energy, and water conservation projects.

Davis Energy Efficiency, Solar Energy, and Water Conservation Financing Program

The Davis Energy Efficiency, Solar Energy, and Water Conservation Financing Program is being developed as part of the City's early implementation of its climate action planning efforts which support the greenhouse gas reduction targets the Council established in November 2008.

Development of this type of program is consistent with the draft recommendations of the Climate Action Team relating to energy efficiency, renewable energy production and water conservation. The first complete draft of the Climate Action and Adaptation Plan is expected to be presented to the Natural Resources Commission in late spring and the City Council in early Summer.

The City Manger's Office and Parks and General Services Department initiated work on an energy financing system in late 2008 as a way to promote energy efficiency and solar projects in the City. More recently, a water conservation component has been added to incorporate this important issue that faces many of the same financing limitations associated with energy improvements. In particular, this program focuses on improvements to the existing building stock where a significant proportion of the community's GHG emissions originate. The basic framework for the program is patterned after similar municipal programs developed for Berkeley, Palm Desert, Galt, and Sonoma County. In addition, staff is recommending that, if direction is given by the Council to pursue development of this type of program, it be structured to fit within a developing statewide financing program. This will allow for a simplified transition if a statewide program is implemented that provides significant advantages to Davis residents.

The framework for this type of financing program has generated a great deal of interest from local jurisdictions because it has the potential to dramatically change the market for solar and energy efficiency (and water conservation) programs. Installation of solar electric systems, solar thermal systems, and energy efficiency projects are cost effective for many residential and commercial property owners with the existing state and federal subsidies. This type of financing program addresses three primary financial hurdles to major energy efficiency improvements, solar electric, and solar water systems: (1) high upfront costs, (2) the ability to amortize the costs over 20 years, and (3) the possibility that those costs will not be recovered when the property is sold.

Program basics

The financing mechanism is based on a voluntary assessment district where the City serves as the financing agent. The program would be designed to allow property owners (residential and commercial) to install electric and thermal solar systems and make energy and water efficiency improvements to their buildings and pay for the cost over 20 years through an annual assessment on their property tax bills. The City would provide the upfront funding for the project through proceeds derived from a bond issue. The bond issue will be repaid from assessments placed on participating property owners' property tax bills. The program would be designed to be self-funding with any City expenditures recovered through the program.

Under the program, individual property owners would contract directly with "pre-approved", qualified private contractors for energy efficiency, solar, and water conservation projects on their property. The City would secure a pool of funds for the projects from a bond or loan fund that gets repaid through assessments on participating property owners' tax bills. The 20-year assessment is the approximate time it takes to recover the costs of the most expensive improvements through energy savings. In other words, energy savings would provide a significant cost off-set or, in some circumstances, match the annual assessment.

No property owner would pay an assessment unless they had work done on their property as part of the program. Those who choose to pay for solar and energy and water efficiency projects through this program would pay only for the cost of their project, interest, and an administrative fee.

The Financing District solves many of the financial hurdles facing property owners. First, there would be little upfront cost to the property owner. Second, the tax assessment is transferable between owners. Therefore, if an owner sells their property prior to the end of the 20-year repayment period, the next owner takes over the assessment as part of their property tax bill.

Property owners and their contractors would be required to agree to certain terms and conditions mandating energy and/or water efficiency steps, appropriate warranties, and other performance measures to take advantage of the financing.

To qualify for financing under the program, improvements must be permanently affixed to the property. In general, the type of improvements contemplated by the program would include:

- High efficiency windows
- Solar and/or tankless water heaters
- Solar panels
- Upgraded wall and roof insulation
- “Smart” irrigation systems
- High efficiency HVAC systems

A more complete list of eligible projects and financing limits would be developed as part of the RFP process. The final program parameters would be submitted to the Council for approval.

Priority

The program would be designed to prioritize energy projects as follows:

1. Energy efficiency improvements
2. Solar thermal water heating
3. Renewable energy installations (e.g. solar PV)

Generally, this is the order of highest energy savings to cost ratio for energy related projects.

Water efficiency projects would allow for both indoor and outdoor improvements.

A sample list of eligible energy and water projects from a similar program in Sonoma County provides additional background (Attachment 1).

Legislative Authority

Currently, the primary vehicle available to the City to implement this program would be through formation of a voluntary (opt-in) Special Assessment District, authorized under provisions of AB811 (Streets and Highways Code sections 5898.10 et. seq. as amended by AB 811). The legislature is currently considering alternative approaches that would allow general law cities additional flexibility in designing and implementing this type of financing program. Staff is monitoring development of these potential options. If a more favorable financing system becomes available after a program is established, staff would provide an update to the Council with recommendations on options that could be incorporated into future phases of the program.

RFP Outline

If direction is provided to proceed with development of a program and issue an RFP, the following elements would be included:

Proposals would address the following elements:

1. Program design. Assistance in the formation and implementation of the financing district and program. Deliverables would include:

- Resolutions authorizing the Program
- Financing Program guidelines
- Eligible equipment list

- Loan application
- Loan process
- Loan agreement
- Notice of assessment
- Assessment District maintenance

2. Administration. A comprehensive plan to administer the program, process applications, and provide customer service. Proposals would clearly outline exactly how the program would be administered:

- Which components would be handled by the firm(s) and which would be handled by the City
- What information on the program would be provided to potential participants and how it would be provided
- Application components and process
- Detailed timeline for typical program participant
- Criteria by which applicants are approved or denied
- Level and type of customer service
- All application/administration related fees or commissions
- Relationship with the City – engagement, support, reporting

3. Marketing. The firm(s) will market the Program within the community. Marketing of the program may include:

- Create a webpage which provides information about the Program
- Develop and provide community workshops
- Answer incoming calls about the program

4. Support. The firm(s) would provide ongoing support to the City after the program has been fully funded. The specific type of support will be determined in the Program guidelines. It is expected that the qualified firm will attend all meetings of the City regarding the Program and be prepared to report on the program's operation.

5. Finance. A financing package that includes an agreement to purchase and/or remarket bonds and prompt funding to program participants. The proposal would provide:

- Market analysis estimating number of participating properties and maximum size of bond issuance(s).
- Draft term sheet for bond purchase agreement with detailed information on projected interest rates/benchmarks, fees, and commissions.
- Detailed timeline for bond purchase and provision of funds to program participants.
- All the terms and conditions related to the financing.
- All estimated issuance cost associated with the bond issue including independent, third-party legal and financial advisors, the printing costs associated with the offering documents to be recovered by the City upon the formation of the assessment district and sale of bonds. Firms to provide legal and financial advice will be chosen at the discretion of the City.

Conclusion

If direction is given to continue to develop a program and issue an RFP, staff anticipates returning to the Council with project specifics and recommendations in late summer/early fall.

Attachments

1. Sonoma County Energy Independence Program– Appendix A: Eligible Improvements

Attachment 1

**Sonoma County Energy Independence Program
APPENDIX A – ELIGIBLE IMPROVEMENTS**

The Sonoma County Energy Independence Program offers SCEIP funds for a number of equipment types, including water conservation measures, energy efficiency measures, solar systems, and other innovative, energy-saving and energy generation custom measures. In each case, if a rebate is available to the property owner to be applied to the purchase price, that amount must be deducted from the amount of financing requested.

I. WATER CONSERVATION MEASURE

A. Residential Indoor Water Conservation Measures.

- (1) High efficiency toilets (average flush volume of 1.28 gallons or less)
- (2) Showerheads (1.75 gpm)
- (3) Bathroom aerators (1.5 gpm)
- (4) Hot water delivery options, as defined by the Energy Star [“Volumetric Hot Water Savings Guidelines”](#)
 - (a) Hot water recirculation systems use a hot water circulating pump to pump hot water from the water heater, through the hot water piping, and on back to the water heater through an additional length of pipe that runs from the furthest fixture back to the water heater.
 - (b) Demand initiated hot water systems use a recirculation pump to rapidly pull hot water from a water heater while simultaneously sending cooled-off water from the hot water lines back to the water heater to be reheated.
 - (c) Whole house manifold systems consist of a manifold (trunk line) connected to the water heater from which individual pipes (twigs) are connected to each water fixture.
 - (d) Core plumbing systems are hot water distribution systems where water volumes in the pipes are reduced by a combination of smaller pipe diameters and shorter pipe runs due to a centrally located water heater.
- (5) Demand initiated water softeners, Energy Star rated
- (6) Demand initiated or instantaneous hot water heaters

(7) Hot water pipe insulation (minimum of R4)

B. Residential Outdoor Water Conservation Measures.

(1) Irrigation control systems, with “Evapotranspiration” based controllers or Smart Irrigation Controllers- irrigation controllers that automatically adjust based on the weather conditions, plant material, slope, etc.

(2) Permanently installed rainwater cisterns

(3) Matched precipitation rate sprinkler heads are multi-stream spray head that provides high uniformity and a low application rate sprinkler with matched precipitation, even after arc and radius adjustment.

C. Commercial Water Conservation Measures.

(1) All applicable water conservation measures listed for “residential”

(2) Pre-rinse spray valves (1.2gpm)

(3) Urinals (pint)

(4) Waterless urinals

(5) Bathroom aerators (0.5 gpm)

D. Commercial Custom Measures.

(1) Industrial process water use reduction

(2) Recycled water source

(3) Deionization

(4) Filter upgrades

(5) Cooling condensate reuse

(6) Foundation drain water

(7) Cooling tower conductivity controllers

E. Residential and Commercial Recycled Water Use (Custom Track Measures).

- (1) Outdoor irrigation

II. ENERGY EFFICIENCY MEASURES

The Sonoma County Energy Independence Program provides services and funding for a wide range of Energy Star-rated efficiency measures, including many Energy Efficiency measures for which property owners can get rebates as well as SCEIP funding. Excepting the HVAC equipment as noted below, efficiency measures must meet the performance criteria stated in the list of Eligible Improvements or the Energy Star minimum efficiency levels.

For all packaged and central air conditioning systems funded in this Program, the minimum efficiency levels shall be as required by the current minimum requirements set forth in List of Eligible Improvements.

All other proposed efficiency measures will be considered in the Custom Measure Track.

The County of Sonoma anticipates that Energy Star requirements will “ratchet up” to greater efficiency levels over time. Energy Star will also become more inclusive of technologies over time. Thus, the SCEIP will evolve with Energy Star and the market for energy-efficient technologies.

The following Energy Star measures – among others – are eligible in the Efficiency Track.

A. Residential Energy Efficiency Measures.

- (1) Geothermal exchange heat pumps
 - (a) Minimum efficiencies
 - (i) Ground source exchange open loop system 17.8 EER or higher
 - (ii) Ground source exchange closed loop system 15.5 EER or higher
- (2) Home EV charging installations
- (3) HVAC Systems
 - (a) Minimum efficiencies
 - (i) Split systems with 14 SEER and 12 EER or higher rating

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- (ii) Natural gas furnaces of 90 AFUE or higher
- (iii) Package systems with 14 SEER and 11 EER or higher rating
- (b) Home energy management control systems
- (c) Whole house fan systems
- (d) Duct insulation, meeting Energy Star guideline
- (e) Duct sealing
- (4) Evaporative Coolers
 - (a) Cooler must have a separate ducting system from air conditioning and heating ducting system
 - (b) Maximum 5 gallons/ton-hour cooling
- (5) Natural gas storage water heater, EF of 0.67 or higher and Energy Star listed
- (6) Tankless water heater, EF of 0.82 or higher and Energy Star listed
- (7) Solar water heater systems, rated by Solar Rating Certification Council
- (8) Cool roof system as defined by the 2005 California Building Energy Efficiency Standards (also called the California Energy Code). Roofing replacement eligible under this program shall be:
 - (a) Tested and rated through the Cool Roof Rating Council (CRRC);
 - (b) Be labeled for its initial reflectance and initial emittance as determined in the CRRC tests and be labeled that the product meets Title 24, Section 118(i);
 - (c) Achieve at least a 0.75 initial emittance and 0.70 initial reflectance or, if the initial emittance is less than 0.75, have an initial reflectance of at least $[0.70 + \{0.34 \times (0.75 - \text{initial emittance})\}]$; **and**, if applied as a liquid coating in the field, be applied at a minimum dry mil thickness of 20 mils* across the entire roof surface and meet performance requirements listed in the table shown immediately below:

- (9) Reflective roofs and coatings
- (10) Attic and wall insulation, minimum R value 30 and Energy Star listed
- (11) Reflective insulation or radiant barriers
- (12) Attic fans
- (13) Windows and glass doors, U value of 0.40 or less and solar heat gain coefficient of 0.40 or less
- (14) Window film, in compliance with the NFRC glazing attachment ratings for solar heat gain and visible transmittance
- (15) Weather-stripping, following Energy Star guidelines
- (16) Home sealing, following Energy Star guidelines
- (17) Skylights, U Value of 0.60 or less and solar heat gain coefficient of 0.40 or less
- (18) Solar tubes
- (19) Additional building openings to provide additional natural light, windows and doors must meet the Energy Star rating U value of 0.40 or less
- (20) Lighting, Energy Star listed (no bulb only retrofits)
- (21) Pool equipment
 - (a) Pool circulating pumps (must be variable flow and/or multi-speed with controllers)

B. Residential Energy Efficiency Custom Measures.

- (1) Passive solar (heating/cooling)

C. Commercial Energy Efficiency Measures.

- (1) Heating, ventilating and air conditioning systems ("HVAC")
 - (a) Minimum efficiencies
 - (i) Split systems with 14 SEER or 12 EER
 - (ii) Package systems with 13 SEER or 11 EER
- (2) Geothermal exchange heat pumps
 - (a) Minimum efficiencies
 - (i) Ground source exchange open loop system 17.8 EER or higher
 - (ii) Ground source exchange closed loop system 15.5 EER or higher
- (3) High efficiency electric hand dryer
- (4) All applicable energy efficiency measures listed in "Residential" section

D. Commercial Energy Efficiency Custom Measures.

- (1) Building energy management systems,
- (2) Lighting control systems, which shall include occupancy sensors and other energy saving measures
- (3) HVAC duct zoning control systems
- (4) Motors and controls (processing or manufacturing equipment)
- (5) Customer electric vehicle plug-in station

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III. SOLAR EQUIPMENT

Solar track funding is available for a wide range of solar equipment. SCEIP funding will be available for photovoltaic equipment and installers listed by the California Energy Commission. Solar thermal equipment must be rated by the Solar Rating Certification Council (SRCC). As with efficiency measures, if a rebate is available to the property owner to be applied to the purchase price, that amount must be deducted from the amount of financing requested. Eligible solar equipment for both residential and commercial properties include:

- (1) Solar thermal systems (hot water)
- (2) Solar thermal systems for pool heating
- (3) Photovoltaic systems (electricity)
 - (a) Battery back-up systems will be allowed
 - (b) Funding for off-grid systems will be allowed
 - (c) PV systems can be sized to accommodate plug-in electric vehicles
 - (d) Plug in stations
- (4) Emerging technologies – following the Custom Measures Track
 - (a) Nano/thin film photovoltaic
 - (b) High intensity (parabolic solar panels)

IV. CUSTOM MEASURES

The Custom Measures Track is a process by which SCEIP Staff can evaluate and fund projects that are not “off the shelf” improvements listed in the eligible Water Conservation, Energy Efficiency or Solar Measures. These custom projects may involve large scale industrial or commercial energy efficiency improvement projects, such as process or industrial mechanical systems, renewable energy sources and energy generation, other than the solar system (photovoltaic), such as geothermal, and potentially fuel cells, as well as more complex and cutting edge energy management solutions and emerging technologies. The Custom Measure Track will evaluate and provide funding, if appropriate, for these innovative projects.

Applicants for the Custom Measure Track should consult with SCEIP Staff to determine eligibility and will be required in most cases to submit engineering plans and

SCEIP Program Report and Administrative Guidelines Appendix A – 7 SCEIP Program Report and Administrative Guidelines Appendix A – 8 specifications. An SCEIP Custom Measure’s Track review/technical panel will meet to review the engineering documents and data for custom and emerging technology projects. SCEIP may require an additional administrative fee for project evaluation by the technical review. In all cases, the County reserves the right to decline funding of a custom measure. The following types of measures – among others – will be considered for SCEIP funding through the Custom Measure Track:

A. Energy Efficiency Custom Measures.

- (1) Alternative energy generation (other than photovoltaic)
- (2) Building energy management controls
- (3) HVAC duct zoning control systems
- (4) Irrigation pumps and controls
- (5) Lighting controls
- (6) Industrial and process equipment motors and controls

As these “Custom Measures” become Energy Star rated they will be included in the List of Eligible Improvements.

B. Energy Generation Custom Measures.

- (1) Fuel Cells
- (2) Natural gas
- (3) Hydrogen fuel
- (4) Other fuel sources (emerging technologies)
- (5) Co-generation (heat and energy)