

# **Governor’s Clean Energy GREEN TEAM Report on Financing Programs for Renewable Energy**

## **I. Introduction**

AB 970 directed the Governor’s Clean Energy GREEN TEAM to develop “recommendations for low- or zero-interest financing programs for renewable energy, including distributed renewable energy for state and nonprofit corporations.” Renewable energy technologies include photovoltaics, solar thermal electric, wind, geothermal and biomass (including landfill gas). Renewable technologies are generally more expensive to purchase and operate than conventional energy sources. However, tax incentives, grants, buy-downs and tax credits can be used to reduce the effective cost of such projects and to shorten the apparent pay-back period. In addition, financial incentives can be used to encourage end users to make the investment in renewable technology. This paper focuses on financing options.

To develop recommendations, the GREEN TEAM researched renewable financing programs in California and across the country, to determine the nature of the programs and to whom they are available.<sup>1</sup> In addition, the GREEN TEAM sought comments from industry participants about the options they believe would be most helpful for encouraging the development and deployment of renewable technology. This report describes the results of its statewide research, as well as the results it found from across the country. The report also gives information about some programs available in other countries.<sup>2</sup> The report then analyzes the full array of programs, and identifies components of the market in California that are not served by the existing programs and makes recommendations. In particular, the report makes the following recommendations:

- ? Develop cost data associated with various pay back periods for renewable energy projects, based on the existing revolving loan program.
- ? Develop cost projections for various low- and zero-interest rates for renewable energy projects, based on the existing revolving loan program.
- ? Develop projections regarding the cost of extending the existing SAFE-BIDCO and expanding it to cover other private sector entities.
- ? Develop cost projections for a “contracted out” revolving loan fund.
- ? Develop cost projections for extending the pay back period for renewable energy projects under an expanded SAFE-BIDCO program.

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<sup>1</sup> Attached is a list of individuals and entities contacted by the GREEN TEAM in the course of preparing this report.

<sup>2</sup> Also attached is a table comparing the existing programs studied by the GREEN TEAM.

- ? Investigate the effect of amending the SAFE-BIDCO statute to specifically provide for renewable energy.
- ? Develop cost estimates for zero-interest model loan program.
- ? Develop cost estimates for a conventional loan “buy down” programs, including estimates for programs of various scopes and the cost of “buy downs” to various interest rates (including zero interest).

## **II. Existing California State Financing Programs**

There are four state-sponsored programs designed to offer financing for energy programs, including the deployment of renewable energy technologies, and one major state program that offers financial incentives. These programs offer loans to small businesses, state and local agencies, schools, hospitals, nonprofit organizations, colleges and universities. One of the four financing programs is not currently lending money because of changes to federal law. The operating programs have financed very few renewable energy installations because they are restricted to installations that pay for themselves in energy savings over a defined and relatively short period of time.

In summary, there are three operating state programs that finance various public entities, and one program that offers financial incentives to both the public and private sector; no state financing programs serve private residential or industrial customers, or power service providers. One of the three operating financing programs is scheduled to end in seven months.

### **A. CEC Energy Efficiency Financing Program**

The CEC Energy Efficiency Financing Program (EEFP) provides financing for the installation of energy-efficiency measures, renewable technologies and related feasibility studies. EEFP draws loan principle from a revolving fund, currently containing approximately \$5 million. Public entities, including local governments, public or nonprofit schools and hospitals, special districts and special care facilities may apply for a maximum of \$2 million per loan to install energy efficiency measures or renewable energy technologies in their facilities. The interest rate for the loans cannot be less than the State Pool Rate, currently 6%, at any given time. Applicants must demonstrate a simple pay-back of seven years to qualify. Applicants can satisfy the criterion by combining purchase of renewable energy technologies with energy efficiency measures that have a higher cost-benefit ratio, or use the loan only for a portion of the project. Because the EEFP relies on loan payments to provide the principle for future loans, the level of available funds varies from year to year.

According to CEC staff, the pay-back time period has operated to restrict the number of renewable energy installations; a longer pay-back period would be needed for renewable projects to qualify.

EEFP Facts

- ? Number of loans issued since 1978 (includes 2 pending loan requests): 566
  - o 60% awarded to schools (total of 360 K-12 + colleges),
  - o 30% to local governments (total of 158), and
  - o 10% to hospitals, special districts, public care facilities (total of 48)
- ? Total dollar value of loans: \$79.9 million
- ? Estimated annual cost savings: \$13.2 million
- ? Estimated annual kWh savings = 113 million kWh
- ? Estimated MW load reduction = 31 MW

The EEFP is authorized by Public Resource Code §§ 25410-25421; 25440-25443.5.

B. SAFE-BIDCO

California created a state loan corporation, the State Assistance Fund for Enterprise, Business and Industrial Development Corporation (SAFE-BIDCO), that administers the Energy Efficiency Improvements Loan Fund. (Cal. Financial Code §§ 32900-32960) SAFE-BIDCO provides low-interest loans to small businesses and non-profit organizations seeking to reduce their energy costs. The rate of interest must not be less than five percentage points below the prevailing published New York prime interest rate. (Fin. Code §32932) Eligible projects include the installation of energy-efficient lighting; weatherization; and renewable energy systems. The loan maximum is \$250,000, with a 5-year repayment period.

SAFE-BIDCO funding comes from the federal petroleum violation escrow account funds. The initial funding allocation was \$3 million, and the majority of these funds are still available, although the corporation's lending function will sunset on July 1, 2001 unless the Legislature amends the state Financial Code. Loan activity is reported quarterly to the California Energy Commission.

Because of the July 1, 2001 sunset date, projects targeted for Summer 2001 implementation in most cases will need to apply to SAFE-BIDCO to secure funding prior to July 1. Future projects, however, will no longer have access to this source of financing. It is uncertain who will continue to service these loans after the sunset date.

SAFE-BIDCO currently serves as the lending agency for SDG&E's "Energy Cents" program for commercial customers and is developing a similar program with Los Angeles Department of Water and Power.

C. Department of General Services Energy Assessment Bond Program

The Department of General Services (DGS) administers the Energy Assessment Revenue Bond program, which finances renewable energy projects that meet a set of cost-effectiveness criteria.<sup>3</sup> Eligible entities include state agencies, local governments, correctional facilities, and schools (UC and CSU systems, as well as K-12). Local governments have not taken advantage of this program and DGS has not pursued this potential customer sector.

The energy savings from energy projects must meet or exceed loan payments in each year; loan applicants repay the loans with the resulting energy savings. The interest rate is typically 6% with a simple pay-back of less than eight years. While the program has lent funds for renewable energy projects (e.g. solar water heating, PV, and cogeneration), the cost-savings and relative short pay-back timeframe criteria appear to prevent widespread use of this program for those technologies. Most approved loans are used for energy efficiency and load reduction projects.

EARB has existed for twelve years and has approximately \$250 million in funds available.<sup>4</sup>

D. California Alternative Energy & Advanced Transportation Financing Authority

In the past, the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) has issued tax-exempt revenue bonds (in the range of several million dollars per bond issuance) to fund energy conservation and renewable energy technologies. The bond funds have been disbursed to both private and governmental entities under Public Resources Code §§ 26000 *et. seq.* The Authority has not issued bonds in over 10 years, and is currently only monitoring ongoing projects (i.e. no new funds have been issued). A new executive director took office November 27, 2000 and is working with the State Treasurer to develop future plans for the use of this financing authority.

Since the inception of this authority, changes in federal tax law have severely limited the use of tax-exempt bonds for private enterprise. First, a state's overall borrowing for such purposes is limited to \$50 per capita. Thus, renewable energy borrowers would have to compete for limited funds with every other private investment currently favored by the state for the use of tax-exempt bonds. Second,

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<sup>3</sup> These criteria are based in part on guidelines set by the National Institute of Standards and Technology.

<sup>4</sup> Although not part of the bond program, DGS also arranges for agencies to reduce conventional electricity demand by entering into agreements with energy service companies (ESCOs). The ESCOs install energy efficiency improvements and generating resources at an agency's facilities, ensures that the agency will face energy charges no higher than those imposed by the local utility, and shares any resulting savings. According to Energy Assessments staff, the ESCOs have more latitude to include renewable energy and distributed generation projects, but that they still make conservative assumptions about energy savings.

under current Internal Revenue Service Rules, electric generators do not qualify for tax-exempt financing unless the energy is used onsite as part of another otherwise-qualifying industrial process. This authority could provide a source of financing for industrial customers and generating firms, however issuing new bonds could require changes in federal law.

### **III. Other Financing Options Available in California**

#### **A. Energy Efficient Mortgages**

Several agencies fund renewable energy and energy efficiency measures through issuance of energy efficient home mortgages. The premise is that potential borrowers can qualify for larger mortgages based on expected savings resulting from renewable energy and energy efficiency measures. The following organizations, among others, offer home mortgages in California: Fannie Mae<sup>5</sup>, Freddie Mac<sup>6</sup>, and GMAC Mortgage. It is not yet known how widely available energy efficient mortgages are within these agencies.

#### **B. Electric Cooperatives and Municipal Solar Utilities**

Electric cooperatives are consumer-owned, independent electric utilities established to provide at-cost electric service to its members.<sup>7</sup> Co-ops are usually tax-exempt, not-for-profit organization; the tax savings accrue to the members. Co-ops can provide renewable energy financing and other solar energy services to their members, such as bulk purchase of renewable energy and/or construction of cooperatively-owned renewable generation facilities.<sup>8</sup> Renewable generation facilities, such as photovoltaic panels, can be installed either in customers' premises in small installations or in centralized or commercial spaces in larger installations. The latter approach would enable co-op members to purchase renewable energy even when there is no ability to site equipment on a member's property.

A Municipal Solar Utility (MSU) is "an entity organized at the municipal level to advance the use of solar energy technologies within the local marketplace."<sup>9</sup> A MSU may directly provide solar energy and energy efficiency services, or it may provide low-interest financing to its customers/members. To create and fund an MSU, a

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<sup>5</sup> Los Angeles Department of Water and Power currently directs its residential customers to Fannie Mae for energy efficiency loans.

<sup>6</sup> Full name of this program is "Federal Home Mortgage Loan Corporation"

<sup>7</sup> See the Energy Cooperative Network web site at <http://www.energy-co-op.net/ecdp.html>

<sup>8</sup> One existing cooperative, Plumas-Sierra Rural Electric Cooperative, has considered formation of a Green Consumer Electric Purchasing Cooperative. For further information, contact Robert (Bob) Marshall at Plumas-Sierra REC, (530) 832-4261.

<sup>9</sup> California Energy Commission. "Municipal Solar Utilities in California: Marketing, Financial and Legal Issues." CEC Contract no. P500-80-062. December 1980. p. i.

community floats tax-exempt bonds, and then makes those funds available for a range of solar energy programs.

#### **IV. Summary of Renewable Energy Financing Programs in Other States**

A survey of states engaged in programs to promote renewable energy technologies and energy efficiency through financing incentives was conducted to identify: (a) different types of programs, (b) which population groups are targeted (such as commercial, governmental, and homeowners), (c) the loan timeframes involved, (d) the interest rates, (e) which technologies are eligible for loans, and (f) the maximum loan amounts available.

The programs fall under three basic loan categories: (a) revolving energy loan funds administered by a state agency, (b) state loan programs funded through general obligation bonds and (c) utility loan programs. Many of the programs have limits on the amount loaned, and this limit is often set as a percentage of the overall project cost. Among the programs in other states, the smaller programs limit the life of the loans to ten years, with some setting the limit as short as five. Larger programs, such as Oregon's Energy Loan Program, offer loans of up to 30 years.

##### **A. Programs Funded by General Obligation Bonds**

###### **1. Oregon's Energy Loan Program**

The Oregon Energy Loan Program, administered by the Office of Energy under the Oregon Department of Natural Resources, sells state general obligation bonds to finance energy conservation projects, energy projects using renewable resources, and projects that manufacture new products from recycled materials. A unique provision in the Federal Tax Code exempts the bonds from both federal and state tax. Currently, Oregon is the only state with this federal exemption.

Funding from the loan program has funded lighting and HVAC improvements, weatherization, cogeneration, and biomass projects. The program includes small-scale residential photovoltaics, primarily for demonstration value. Although considered small, these PV projects generally cost between \$20,000 and \$50,000. Current renewable projects in the planning and/or application stages are biomass and wind generation proposals, as well as cogeneration applications. A few companies are considering the use of waste thermal streams for heat recovery to aid environmental requirements and conserve energy. Waste heat is considered a renewable energy source for purposes of program financing.

The program accepts applications from individual and commercial customers, schools, special districts, and local, state and federal agencies. The majority of

participants are commercial projects, school districts and local governments. The program does not focus on residential or small business customers because the borrowing costs on small loans (\$25,000 or less) are prohibitive for small customers. The Office of Energy considers subsidies in special cases, but cannot subsidize many projects without depleting the programs funding. The most common loan amounts range from \$400,000 to \$1 million.

To fund the loan program, Oregon sells bonds up to an amount equal to one-half of one percent of the assessed value of the state. This provides approximately \$835 million; the program has loaned out close to \$300 million over the twenty-year life of the program. Currently, there are 250 loans for a loan portfolio balance of \$280 million. The budgeted annual amount is \$35 million, although if a large project required further funding, additional bonds could most likely be sold on a case-by-case basis.

The level of bond sales is determined by both actual loans to be funded and anticipated loan demand between bond sales. Typically, the program holds one to three bond sales per year, and avoids holding too many cash reserves to minimize the carrying costs. The Office of Energy usually partners with another state agency selling bonds to reduce costs.

Loan terms vary by the useful life of the project. Most loans are between 10 and twenty years, with 30 years as the longest loan term. The maximum allowable interest rate is one and a half percent over the cost of the bonds. There is no minimum rate, and at times the rate is one percent over cost. The program charges the borrower with fees to cover the program expenses for sale of the bonds and other extraneous costs. Loan disbursement is handled through the Office of Energy; no other financial institution is involved. Program requirements differ slightly between the two applicable loan segments. The municipal segment makes loans to counties, cities, school districts, and other governmental entities. These entities must achieve certain levels of return on the dollars loaned based on the amount of energy savings. Typically, energy savings must be between 75 and 100 percent of the loan payments on municipal segment projects. There is no such requirement for commercial or industrial projects, although the program maintains an informal guideline of 25% of the loan payment recovered through energy savings. Renewable generation projects must generate at least 125% of the revenue needed to operate and service the loan, or have the backing of an entity to guarantee the loan.

Program awareness strategies target a broad network of architects, engineers, vendors and developers of commercial projects. Local and state governments/entities are contacted through the League of Oregon Cities, the League of Counties, the Oregon General Services Administration and the Department of Corrections, with a special emphasis on staff responsible for management and maintenance of buildings

and other facilities.

## B. Revolving Energy Loan Programs

Several states have revolving energy loan program, including Alaska, Arizona, Connecticut, Idaho, Iowa, Maryland, Minnesota, Mississippi and Oregon. Described below are the programs about which the GREEN TEAM was able to obtain the most information. The GREEN TEAM will continue to investigate the programs not described below, and incorporate that information into future reports and recommendations.

### 1. Arizona Revolving Energy Loans

The Arizona Department of Commerce administers the Revolving Energy Loans for Arizona (RELA) program to provide low-interest loans to businesses and non-profit organizations to finance energy conservation, efficiency and renewable projects. The \$4.2 million program receives its funding from the oil overcharge fund.

To qualify for the program, entities must either purchase or manufacture renewable energy, alternative energy or energy-conserving products. RELA funds lighting, heating and cooling systems, solar systems, heat exchangers and recovery systems, and other energy conservation equipment.

Loans from RELA fund up to 75% of total energy-eligible costs. Loans, disbursed directly by the agency, range from \$10,000 to \$500,000, depending on the energy savings generated by the financed assets. Projects have simple loan payback terms of seven years or less, a fixed interest rate of 5% over the term of the loan, and an origination fee of 1% of the loan amount. Since RELA's inception in 1989, the program has funded 38 projects totaling \$5 million dollars. There are 16 current loans outstanding for a total of \$1 million.

Currently, there are three solar projects and one wind project receiving funding. Program administrators attribute the small number of renewable projects to the seven-year maximum loan term. Typically, solar investments require a longer payback period.

Program outreach consists primarily of staff attendance at trade shows, direct mail to vendors, and local media appearances.

### 2. The Iowa Energy Bank

The Iowa Energy Bank (the Bank) was created through statute as a part of Iowa's Department of Natural Resources (DNR). A significant part of the DNR's budget regarding this program markets the program to encourage client participation.



The program initially served public schools, and was so successful that it expanded to include hospitals, local and state government organizations, and private colleges.

The law requires that the program only fund energy efficiency projects that are expected to pay for themselves within six years. Since 1987, the DNR has funded \$138 million in improvements, with \$18.5 million in energy savings annually. In 1999, the program disbursed \$500,000. For 2000, there are 10 new outstanding loans, ranging from \$15,000 to \$600,000 (for a geothermal project). The average APR from the primary private lender (Wells Fargo) is 5.23%

Once a client decides to participate, the DNR assists the client in selecting an energy efficiency consultant to provide the technical analysis to determine the cost-effective energy efficiency opportunities at the client's site. The consultant's report, which discusses the financial savings that could be earned through the installation of various energy efficiency technologies, is then brought to a lending institution by the client along with a representative from the DNR. Either the Iowa Energy Bank or a private lending institution issues the loan. The loan is issued with a six-year payback, to be repaid with the energy efficiency savings earned from the installation of the new technology.

DNR collects information on completed programs through an annual "implementation survey" that it requests the clients to fill out. It records the amount of project, how much money the energy efficiency technology is expected to save, and what the actual savings are. This information is useful for determining the success of the program.

The benefit of this program methodology is that the state is able to achieve energy efficiencies without significant outlays of cash incentives. The program achieves its goals through education, and providing the energy efficiency expertise that many organizations and administrators lack. The client's cash-flow remains constant over the payback period.

### 3. Maryland Energy Loan Programs

The state of Maryland established two revolving fund, self-sustaining loan programs capitalized with national oil overcharge funds: the Community Energy Loan Program (CELP) and the State Agency Loan Program (SALP.) Both programs are administered by the Maryland Energy Administration (MEA.)

The CELP was authorized by statute in 1989 to make energy efficiency investments more available to local governments and non-profit agencies. A CELP loan must have a payback period of seven years or less. Interest rates range from zero to 4.5%. The MEA uses a simple formula to determine both the cost-

effectiveness and the loan payback period: the amount of the loan divided by the estimated average annual energy savings. For example, a \$200,000 loan project with estimated annual savings of \$40,000 would yield a five-year loan term. The MEA audits and verifies all applicant-estimated annual savings. Initial funding for the program was \$3.2 million. CELP disburses approximately \$1 million for four to five new projects annually. Since 1989, the program has disbursed a total of \$6.5 million in 39 loans, primarily to schools, universities and museums.

The SALP, established by the MEA in 1991 to enable state agencies to obtain zero interest loans that fund cost-effective energy efficiency improvements for state facilities. To date, the SALP has administered approximately 50 loans for over \$7 million. The average payback period is 10 to 15 years. Typical energy conservation and efficiency projects include insulation, window replacement, and lighting, heating and cooling upgrades. All project implementation costs may be included for funding purposes. To date, renewables have not been a significant component of most projects, although at least one SALP project has a PV component.

According to MEA, the CELP and SALP are more cost effective for state and local government agencies than floating bonds on a project-by-project basis.

#### 4. Idaho Renewable Energy Loan Program

In 1993, the Energy Division of the Idaho Department of Water Resources expanded its conservation program to encourage renewable energy usage among business and agricultural customers. There is no statute mandating the program. The Division has not set any termination date for the program.

At its inception, the program was funded with \$5 million from an Exxon settlement. An additional \$2 million was later added. There is no continuous funding source; Idaho's revolving loan program issues loans on repayments. This amount funds the entire energy conservation program, including the renewable component. Residential loan amounts range from \$1000 to \$10,000; commercial and industrial customers may borrow up to \$100,000. Loan terms are 4% interest with a five-year payback period. The program sets the interest rate.

The renewable energy program has slightly different requirements. Projects must demonstrate an estimated payback period of 10 years or less from energy savings (rather than five-years for conservation projects) and must be the lowest cost alternative. To date, the renewables component of the program has processed 346 loans totaling \$1.6 million, providing funding for 773,695 kWh of renewable generation. Funded projects include solar energy and wind power systems for homes and stock watering, geothermal space heating and ground source heat pumps, hydropower systems for water pumping and on-site generation, and biomass energy

sources.

Program staff reviews client applications. If the project meets the program requirements, the applicant is sent to a lending institution for a credit check. When the applicant is deemed credit worthy, the applicant signs a promissory note at the lending institution, and returns to the Energy Division for disbursement of funds and to arrange terms of repayment. The project must be installed within 90 days after the project has been approved. Failure to complete the project within this timeframe could result in revocation of the loan and resubmittal of the application.

Program outreach is conducted by attending home shows, fairs, and contacting vendors of renewable resources. Program administrators believe the program is being utilized to its fullest extent.

#### 5. Alaska Power Project Loan Fund

The Power Project Loan Fund (Loan Fund), a revolving loan program, was established by statute in 1993 to provide financial assistance to utilities and non-utility service providers. The Loan Fund is administered by the Alaska Energy Authority (AEA), the state agency responsible for developing the state's energy resources. Primary Loan Fund applicants are rural electric cooperatives, small public and private utilities, and tribal councils. Loans average \$500,000 with a 20-year payback period; there are approximately \$22 million in outstanding loans. The AEA currently has an informal loan cap of \$1 million, although entities requiring additional funding could apply for concurrent loans. The interest rate is calculated at a rate equal to the average weekly yield of municipal bonds for the 12 months prior to the loan date. The AEA has statutory authority to offer a lower or zero-interest loan to allow an entity to meet the financial viability requirements.

Since 1993, the program has funded transmission and distribution extensions, replacement of generators, and a few small hydroelectric projects. The program has not received many applications for renewable projects although such projects are eligible; generation replacement is typically diesel-to-diesel replacement. The AEA does not track the amount of generation funded by the loan program.

The technical and economic feasibility of a proposal are evaluated by the AEA on a per-project basis. If the AEA determines a proposed project will result in a rate increase higher than average utility rates for surrounding communities, the project is rejected.

The AEA provides ongoing outreach to rural communities through its other technical assistance programs, and periodically runs display advertisements, such as billboards or print ads to market the loan program.

## **C. Utility Loan Programs**

### **1. Texas Home Energy Loan Program**

Since 1982, Austin Energy, a city-owned utility, has offered small-scale, unsecured loans with variable financing to homeowners for residential energy efficiency improvements, primarily weatherization and air conditioning replacement, although solar screens may be financed as well. The loan program is offered as an alternative to the available rebate option. Loan amounts range from \$1000 to \$9000 with variable interest rates from 4.99% to 5.99% over three to ten year repayment periods. An average of 640 customers participate each year; Austin Energy loans approximately \$3 million annually. Most loans average \$4800. The program is budgeted through the Austin city council.

Homeowners may submit a credit application or apply by telephone to a private finance company under contract to Austin Energy. Once approval is received, the customer completes a comprehensive energy audit and obtains a bid from a utility-registered contractor. An Austin Energy inspector performs a follow-up visit to verify the audit recommendations and approve the final bid. After the contractor completes the project, the contractor schedules a return visit by an Austin Energy representative to inspect the work. After the utility inspection, the finance company mails a check directly to the contractor. The finance company invoices Austin Energy for the interest buy-down amount.

Austin Energy advertises the loan program through direct mail, and offers lower interest rates during winter months to promote the program and stimulate work for energy contractors during the off-peak season. The registered contractors also market their services individually.

### **2. Long Island Power Authority's Photovoltaic Loan Program**

The Long Island Power Authority (LIPA) in New York initiated a Clean Energy Initiative, which administers a loan program for photovoltaic systems. The funds for the initiative come from approximately \$130 million of the state's system benefits charge. Loans are made at 6 percent, subsidized from the market rate of approximately 9½ percent. Unsecured loans under \$25,000 are made on one to ten year terms, while secured mortgage loans of \$25,000 to \$250,000 are made on 15 year terms. LIPA has an agreement with a local bank to administer the loans. When a loan is issued, LIPA makes a lump-sum payment to the bank in the amount of subsidized interest calculated over the life of the loan.

According to the program director, LIPA's loan program has only made one

loan to date. The program was expected to enroll 175 participants in the first year, and ramp up to 5,000 over a five-year period. The current program director cites lack of marketing and a lack of local system installers as key reasons for low participation.

## **V. Renewable Programs Examples in Other Countries**

Below is a summary of preliminary information on renewable financing programs in other countries:

### **A. Japan's Photovoltaic Program**

The Japanese government uses public funds to buy down interest payments on loans for photovoltaic systems. The resulting interest rate is 5% below market rate. Loan terms are for up to 15 years. The companies providing the loans are private institutions. Approximately 75 MW of photovoltaic systems are currently being installed each year.

### **B. Germany's 100,000 Roof Top Solar Program**

The German government has set a goal of achieving 100,000 photovoltaic installations within a five year period starting on January 1, 1999. The target is to achieve a total photovoltaic capacity of 300 MW by 2004. The government buys down interest on loans from local banks, creating an effective interest rate 4.5% below market rates. As an additional incentive, utility distribution companies are required to purchase all output produced by program participants at a rate equivalent to 43 cents per kWh.

## **VI. Renewable Program Proposals by Industry Participants**

### **A. Renewable Power Insurance**

The Renewable Energy Alliance has proposed the creation of a state Renewable Power Insurance fund, which would use a relatively small amount of state and/or federal matching funds to support development of a commercial insurance product to pool and limit the downside financial risk for renewable power marketers. Marketers would purchase this insurance when entering into long-term contracts for new renewable energy projects. If market prices for renewable power drop or premium-paying customers are lost, the insurance limits the renewable marketer's losses.

The industry proposes this program operate for five years (e.g., from 2001 to 2006) and believes an insurance fund would leverage 1000 to 2000 MW of new private sector-funded renewable energy projects by spreading the risk related to longer

term financing across many diverse projects. Consequently, the industry believes expected new renewable projects would increase by 50% to 100% during this period.

The primary role of this program would be to provide security for the parties to a long-term renewable power contract and to promote financing and construction of new renewable energy facilities to meet growing consumer demand. With this security in place, renewable power marketers may be able to enter into contracts for new renewable energy supplies earlier and in higher quantities.

There is already a proposed annual \$5 million appropriation to the Department of Energy to implement this initiative in fiscal years 2000-2005. The Renewable Energy Alliance web site at <http://realliance.org/insurance/index.html> contains more information about the initiative. There is no known state renewable energy insurance pool.

B. Loan Loss Reserve Fund

The state could create a “loan loss” reserve fund for renewable energy to effectively act like a loan guarantee. According to the renewable power industry, the federal Small Business Administration and Veterans Administration offer similar programs. The GREEN TEAM is gathering more information about these existing programs and how successful they are. A loan guarantee increases the likelihood that a conventional lender will issue a loan for a renewable energy project. This type of program still assumes that entities wishing to install renewable power sources will apply for conventional loans.

C. Cash Payments

The Renewable Energy Development Institute proposes the use of a one-time cash payment as a loan subsidy, rebate or loan “prepayment” for the purchasers of renewable energy systems. This payment could be made directly to the lender involved in any of the sectors; residential, commercial, institutional. The CEC currently offers a “buy-down” program, with payments made directly to vendors of renewable energy equipment; the “loan subsidy” payment is not be taxable income to the borrower. The borrower could direct the lender to use the payment for a one-time loan reduction that would reduce the term of the loan as well as lower the total amount of interest paid over the life of the loan. Alternatively, the borrower could direct the lender to apply the subsidy to “prepay” loan payments, offering a “no payments due until XX date” feature.

The Institute proposes that the amount of the payment be determined in the same manner as the “buy-down” (i.e., dollars per AC watt) and suggests a level of \$2.00 per watt up to a maximum of 20% of the system cost. Because different loan

programs have widely varying terms, this type of funding allocation would be preferred to an “interest rate deduction” approach that would vary depending on the loan term. In either case, the net cost of the system to the consumer would be reduced by the loan subsidy. Loan subsidy funds could be leveraging loan funds from conventional lenders. In addition, the subsidy provides an incentive for the consumer to borrow funds for the system, which will result in valuable lending experience over time making it easier in the future to obtain conventional financing.

#### D. Subsidized Loans

The Renewable Energy Development Institute suggests a subsidized loan program through a public entity. The Institute suggests that this type of program could improve access to loan funding for all sectors and over time would facilitate the development of a market for conventional loans by building a portfolio of renewable energy loans. The California Solar Energy Industries Association specifically proposes the creation of a low (2% or less) or zero-interest loan program for residential or commercial photovoltaic systems in both public and private sector projects.

#### E. Consumer Education, Marketing, and Technical Assistance

Regardless of the financing program enacted, customers and developers need easy access to information about financing programs. At present, a interested party would have to go to multiple agencies to identify the public programs, and even a homeowner, for example, may have to secure his or her own financing by calling banks or searching through web resources. This creates an additional barrier and transaction cost that may hinder the deployment of renewable energy generation. Financing programs should be paired with a consumer outreach program that provides for marketing and technical assistance.

### **VIII. Financing Options**

Existing California financing programs for energy efficiency and renewable energy projects provide financing options for state and local government, schools and universities and non-profits and hospitals. The only program that provides financing for the private sector is SAFE-BIDCO, which provides low-interest loans to small businesses and non-profits, however that program will end in Summer 2001 (hospitals may still be able to apply to the CEC). The proposals below are aimed at providing financing to California sectors that currently are underserved by existing or ending programs.

#### Option 1: Adjust Existing Revolving Fund Program to Encourage Renewables

The state could adjust the requirements of the Energy Efficiency Financing Program (EEFP), currently administered by the California Energy Commission, so that more renewable projects could be financed. The CEC staff believes that the 7-year pay back period is too short for renewable technologies to qualify for loans. Arizona's Revolving Energy Loan program staff identified its seven-year pay back period as a barrier to its financing of renewable projects as well. By extending the pay back period, and/or reducing the interest rate from the State Pool Rate to some lower amount, more renewable projects would be able to meet the pay back period and thus qualify for these loans. It may make sense to have 2 pay back periods; one for energy efficiency projects and one for renewable technologies. For example, Idaho's Renewable Energy Loan Program uses a five-year pay back period for energy conservation projects but a ten-year period for renewable energy projects.

- ? Recommendation: Develop cost data associated with various pay back periods for renewable energy projects, based on the existing EEFP program.
- ? Recommendation: Develop cost projections for various lower and zero interest rates for renewable energy projects, based on the existing EEFP program.

Option 2: Extend SAFE-BIDCO/Create a Revolving Loan Fund Open to the Private Sector

The state could extend SAFE-BIDCO or set aside money to disburse as the equivalent of a revolving loan fund. Because the current program is only available to non-profits and small businesses, extension of the program, or creation of a new program could be extended to individuals and commercial enterprises. As discussed above, a revolving loan program is already available to public entities in California, however because that program is funded through tax-exempt bonds, it cannot be extended to private entities without a change in federal law. Alaska, Arizona and Idaho have established revolving loan programs that make low-cost loans available to the private sector by using funding that did not come from bonds. In California, the only such program, SAFE-BIDCO, will expire in Summer 2001. In addition, the five-year pay back period currently required by SAFE-BIDCO appears too short to be used for renewable energy projects. A revolving loan program can be administered by a state agency or the state can identify another institution to handle loan administration. This could be a commercial bank, or a new or existing State financing authority.

- ? Recommendation: Develop projections regarding the cost of extending SAFE-BIDCO and expanding it to cover other private sector entities.
- ? Recommendation: Develop cost projections for having a revolving loan fund handled by another institution through a contract.
- ? Recommendation: Develop cost projections for extending the pay back period for renewable energy projects under an expanded program.



- ? Recommendation: Investigate the effect of amending the SAFE-BIDCO statute to specifically provide for renewable energy.

#### Option 3: Subsidize Loan Interest

AB 970 requires the GREEN TEAM to research and make financing recommendations for “low- or zero-interest” programs. The state currently has no zero interest programs. In addition, while the existing state programs offer lower interest rates than commercial rates, none of those rates are typically at the State Pool Rate, currently at 6%. The state could offer zero-interest loans, interest rates at below the State Pool Rate, or “buy down” the interest between the market rate and some low- or zero-interest value on conventional private loans. For example, Austin Energy makes loans available to individuals as lower interest rates than any of the current interest rates available through California programs. For a “buy down” program, the state could make a lump sum payment of the interest to the lender (with the customer repaying at a reduced interest rate) or to the participant (who makes repayment to the lender at the market rate). In the alternative, the state could provide interest payments to the purchaser as the loan is repaid. This approach would demand more administrative attention, because it requires ongoing monitoring of the customer’s loan payments. In addition to Austin Energy, Japan and Germany may provide a model for this type of program. The GREEN TEAM is continuing to investigate the costs and successes of those programs.

- ? Recommendation: Develop cost estimates for zero-interest model loan.
- ? Recommendation: Develop cost estimates for a conventional loan “buy down” programs, including estimates for programs of various scopes and the cost of “buy downs” to various interest rates (including zero interest).

#### Option 4: Cooperative Assistance

Current state financing programs do not make special mention of cooperatives. Any loan subsidies or other incentives offered by the state could be made explicitly available to the cooperative for financing of renewable energy projects.

- ? Recommendation: Investigate benefits of specifically including renewable electricity cooperatives in state financial incentive programs.

### **IX. Conclusion**

The GREEN TEAM staff determined that there are gaps in the renewable energy financing programs available in California, as well specific steps that could be taken to adjust the existing programs. In sum, (a) the existing loan pay back periods are too short to sustain renewable energy projects, (b) individuals, non-profits, small

businesses, commercial and industrial customers are unserved or about to lose state-provided financing options, (c) no zero- or very low-interest loans are available in California, and (d) electricity coops are not specifically provided for in state programs. The GREEN TEAM recommendations, listed above, propose development of cost estimates for each of the steps listed.