

Property Tax Assessments as a Finance Vehicle for Residential PV Installations: Opportunities and Potential Limitations

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Introduction

Readily accessible credit has often been cited as a necessary ingredient to open up the market for residential photovoltaic (PV) systems. Though financing does not reduce the high up-front cost of PV, by spreading that cost over some portion of the system's life, financing can certainly make PV systems more affordable.

As a result, a number of states have, in the past, set up special residential loan programs targeting the installation of renewable energy systems and/or energy efficiency improvements, and often featuring low interest rates, longer terms, and no-hassle application requirements.¹

Historically, these loan programs have met with mixed success (particularly for PV), for a variety of reasons, including: (1) historical lack of homeowner interest in PV, (2) lack of program awareness, (3)

reduced appeal in a low-interest-rate environment, and (4) a tendency for early PV adopters to be wealthy, and not in need of financing.

Although some of these barriers have begun to fade – most notably, homeowner interest in PV has grown in some states, particularly those that offer solar rebates – the passage of the Energy Policy Act of 2005 (EPAct 2005) introduced one additional roadblock to the success of low-interest PV loan programs: a residential solar investment tax credit (ITC), subject to the Federal government's "anti-double-dipping" rules. Specifically, the residential solar ITC – equal to 30% of the system's tax basis, capped at \$2000 – will be reduced or offset if the system also benefits from what is known as "subsidized energy financing," which is likely to include most government-sponsored low-interest loan programs.

Within this context, it has been interesting to note the recent flurry of announcements from several U.S. cities concerning a new type of PV financing program. Led by the City of Berkeley, California, these cities propose to offer their residents the

¹ Early examples of such programs are described in a previous case study in this series, titled "Renewable Energy Loan Programs" and available at:

http://eetd.lbl.gov/ea/ems/cases/RE_Loan_Programs.pdf

ability to finance the installation of a PV system using increased property tax assessments, rather than a more-traditional credit vehicle, to recover both system and administrative costs.

As discussed in more detail later, this seemingly innovative approach has a number of features that should appeal to PV owners, including: long-term, fixed-cost, attractive financing; loans that are tied to the tax capacity of the property rather than to the owner's credit standing; a repayment obligation that transfers along with the sale of the property; and a potential ability to deduct the repayment obligation from Federal taxable income, as part of the local property tax deduction.

For these reasons, Berkeley's program – which was first announced on October 23, 2007 – has received considerable nationwide attention in both the trade and general press. Since the announcement, cities from throughout California and the broader U.S. have expressed keen interest in the possibility of replicating this type of program. In California alone, the cities of Santa Cruz, Santa Monica, and Palm Desert are all reportedly considering similar programs,² while the city of San Francisco has recently announced its own program, portions of which closely parallel Berkeley's approach.³ In addition, a bill (AB 811) that would authorize *all* cities (not just “charter cities” like Berkeley⁴) in California to create this type of program was approved by the California General Assembly on January 29, 2008 and passed on to the State Senate for consideration.⁵

That local governments from across California and the broader U.S. are so genuinely excited about the prospect of supporting the installation

of residential PV in their communities through this type of program is no doubt an interesting development. Given, however, the potential for such programs to negatively interact with the residential solar ITC, it is important to evaluate the financial attractiveness of this specific type of loan program, particularly in advance of any broader state- or nation-wide “rollout.” This case study presents such an evaluation.

Because Berkeley appears to have the most-well-developed proposal at the moment, this case study begins by describing Berkeley's program, as currently planned, in more detail. It then discusses subsidized energy financing and the potential negative tax implications of this type of program. Next, taking Berkeley's proposed program as a case study, it uses a simple pro forma financial model to first assess the potential *financial* benefit of the program relative to other commercially available financing options, and then to assess how much of that relative benefit might be eroded by the possible loss of the Federal ITC. Finally, it concludes by discussing potential actions that cities contemplating this sort of program might take to clarify the issues and optimize the value provided to participating residents.

Berkeley's Proposed PV Program

As announced, the City of Berkeley would create a “Sustainable Energy Financing District” to enable its PV program. This financing vehicle is modeled loosely on existing “underground utility districts” that enable the City to finance the burying of utility wires through increased property tax assessments.⁶ Under the authority of this district, the City of Berkeley would facilitate the financing of 100% of the cost (after utilizing and accounting for up-front rebates available through the California Solar Initiative, or CSI) of installing a PV system on the home of any participating resident.⁷ Energy efficiency improvements,

² See <http://www.californiachronicle.com/articles/50580>

³ See the December 11, 2007 press release at:

http://www.sfgov.org/site/assessor_page.asp?id=72332

⁴ California cities are defined as either “general law” cities (which govern municipal affairs under the general laws of the state) or “charter” cities (which have adopted a home-rule charter to govern municipal affairs). Currently, only charter cities are eligible to offer this type of PV finance program, though AB 811 hopes to change this.

⁵ See http://www.leginfo.ca.gov/cgi-bin/postquery?bill_number=ab_811&sess=CUR&house=B&author=levine

⁶ See Berkeley's web page on its PV program at:

<http://www.cityofberkeley.info/mayor/GHG/solar.htm>

⁷ Although 100% financing is the preferred offering, Berkeley is also considering allowing participants to make cash down-payments in response to the potential anti-

particularly those that are permanently tied to the property (e.g., furnaces, HVAC, insulation), will likely be added to the program in the future.

As currently planned (the design of the program is still evolving), funding for the program would originate from local banks, which would either write checks directly to program participants, or alternatively channel the funds through the City to those participants. Either way, participants would receive favorable terms from the banks, because of the aggregation function performed by the City (effectively allowing participants to borrow in bulk) as well as the relative security of the repayment obligation (discussed below). Early indications are that participants would be able to borrow at somewhere between 1.5% below the Prime Rate and 2% above the 10-year Treasury Bond yield.⁸ With the Prime Rate at 6% and the 10-year bond yield at 3.6% (both as of January 31, 2008), participants' cost of funds would potentially be somewhere in the range of 4.5% to 5.6%, fixed over a 20-year term. These loan terms are generally more favorable – in both interest rate and maturity – than a homeowner would likely be able to obtain on its own outside of the program.

In return, participating residents would agree to repay the loan principal, plus interest and administrative expenses, through an increased property tax assessment lasting for a 20-year period.

As described, Berkeley's proposed program, and in particular the use of property tax assessments as a financing vehicle, has a number of attractive features:

- 1) It offers the possibility of 100% financing at a fixed, favorable interest rate over a lengthy (i.e., 20-year) term.
- 2) The increased property tax assessment is tied to the property, rather than to the current owner. If the current owner sells the

property during the 20-year repayment period, then the new owner will pay the increased assessment over the remainder of that period. Given that the payback period for a residential PV system likely exceeds the average duration of home ownership in the U.S., this approach ensures that a PV owner will not forfeit remaining PV value if s/he moves within the 20-year repayment period.⁹

- 3) Because the loan is repaid through property taxes, the program is neither dependent on, nor does it impact, the homeowner's credit.
- 4) From the banks' perspective, property tax payments are relatively secure: in a default/foreclosure situation, the property tax tied to the PV system would be paid off prior to even the first mortgage on the property. Specifically, the "cascade" of payments to creditors would proceed as follows: *ad valorem* property taxes would be paid first, followed by special taxes and fees for services collected through property taxes (the PV tax would fall into this category), then first mortgages, and finally second mortgages and home equity loans.¹⁰
- 5) For those taxpayers who itemize their deductions from Federal taxable income, there is – at first glance – a potential ability to deduct *both* the principal *and* interest payments as part of the deduction for local property taxes paid that appears as a line item on Schedule A of Form 1040. If realized, this tax treatment would be even more advantageous than that afforded to mortgages and home equity loans, which feature tax-deductible interest, but not principal, payments.

With respect to this last point, an initial analysis of tax law suggests that principal payments will *not* be deductible from Federal taxable income. In particular, the instructions for Schedule A,

double-dipping issue described in this case study. This option is discussed in more detail in the concluding section.

⁸ Personal communication with Cisco DeVries, the chief architect of Berkeley's PV program, in December 2007 and January 2008.

⁹ Though it remains to be seen whether (or how much) a program participant trying to sell such a property might need to discount the asking price to compensate for the higher assessment.

¹⁰ Personal communication with Cisco DeVries, January 2008.

and also IRS Publication 530, specifically note several items that may be included in property taxes but may *not* be deducted on Schedule A. These include itemized charges for services rendered to specific property (e.g., trash collection fees) as well as charges for local benefits that tend to increase the value of the property (e.g., an assessment to build a new sidewalk, or perhaps install a PV system). IRS Publication 530 does, however, specifically state that one can “deduct assessments (or taxes) for local benefits if they are for maintenance, repair, or *interest charges* related to those benefits.” *[emphasis added]*

Taken together, this guidance seems to suggest that principal repayments related to a PV system are *not* deductible from Federal taxable income on Schedule A, but the associated interest charges *are* deductible (if properly itemized as such on the property tax bill). In other words, it appears that the tax treatment of this program would be as advantageous as that of mortgages and home equity loans, and certainly superior to that of consumer loans (which generally do not offer tax-deductible interest payments), but that additional tax advantages beyond those offered by mortgages and home equity loans are unlikely.

Subsidized Energy Financing?

One important concern related to this type of program is that the favorable interest rate may have unintended and undesirable consequences, *if* it jeopardizes the homeowner’s eligibility to receive the Federal solar ITC by triggering the anti-double-dipping provisions. The remainder of this case study explores this particular issue in more detail through both a rudimentary review of tax law as well as a quantitative analysis of the financial impact of potentially losing the ITC.

As mentioned earlier, EPAct 2005 established an investment tax credit (ITC) for residential solar installations. The ITC, implemented as Section 25D of the U.S. tax code, is equal to 30% of eligible costs, with a per-system cap of \$2000. The credit was originally set to expire on December 31, 2007, but was subsequently

extended for an additional year, through 2008. Efforts are currently underway to both modify and extend the credit.

Section 25D(e)(9) of the U.S. tax code states, with respect to the tax basis of the project, that “For purposes of determining the amount of expenditures made by any individual with respect to any dwelling unit, there shall not be taken into account expenditures which are made from subsidized energy financing (as defined in section 48 (a)(4)(C)).” In other words, the tax basis of the project to which the credit applies shall be reduced by the amount of any subsidized energy financing used to finance the system.¹¹

Section 48(a)(4)(C), meanwhile, defines the term “subsidized energy financing” to mean “...financing provided under a Federal, State, or local program a principal purpose of which is to provide subsidized financing for projects designed to conserve or produce energy.” The instructions to IRS Form 6497 (“Information Return of Nontaxable Energy Grants or Subsidized Energy Financing”) expand upon the Section 48 definition, noting that “Financing is subsidized if the terms of the financing provided to the recipient in connection with the program or used to raise funds for the program are more favorable than terms generally available commercially.” Moreover, “The source of the funds for a program is not a factor in determining whether the financing is subsidized.”

Taken together, this language seems to suggest that regardless of the source of the funds (i.e., whether Berkeley finances the program through local banks, or by tapping its bonding authority

¹¹ The basis of the system will also be reduced by the amount of any *non-taxable* grants received by the system owner. Because the California Solar Initiative (CSI) is administered by the state’s investor-owned utilities, it appears that grants or rebates for residential PV systems provided under the CSI qualify for an exclusion from taxation under Section 136 of the US Tax Code, which excludes “utility energy conservation subsidies” from gross income. For more information, see an earlier case study in this series, titled “Exploring the Economic Value of EPAct 2005’s PV Tax Credits” and available at: http://eetd.lbl.gov/ea/ems/cases/LBNL_59928.pdf.

or reserves, or by some other means), if Berkeley's PV program enables a participant to access financing on terms that are "more favorable than terms generally available commercially," then Berkeley's program, which could be considered a "local program a principal purpose of which is to provide subsidized financing for projects designed to conserve or produce energy," will be considered subsidized energy financing.

As mentioned earlier, indications from local banks suggest that Berkeley's program might, in fact, provide participants with financing terms that are more favorable than are otherwise commercially available to such homeowners. This, in turn, suggests that the program might be considered to be subsidized energy financing, therefore reducing the value of the residential solar ITC. Moreover, because Berkeley's program intends to finance the *full* cost of the system (less any CSI rebates), the tax basis of the system would be reduced to zero, meaning that none of the credit's value would remain.¹²

This issue, however, should *not* be considered resolved: subsidized energy financing is a complex topic, tax law is highly factual in nature, and the author of this case study is not a tax lawyer. As such, qualified tax counsel should be consulted, though it is likely that only the IRS will be in a position to provide definitive guidance as to whether this type of program would be considered subsidized financing for the purposes of the solar ITC.

Notwithstanding this uncertainty, in order to illustrate the economic importance of this potential issue, this case study proceeds to quantitatively analyze the overall financial value of the proposed program, as well as the financial impact of potentially losing the ITC due to subsidized energy financing.

¹² It is important to note that total loss of the Federal ITC may not be an issue for some residents who lack adequate income tax liability to use the credit, *regardless* of the tax impact of Berkeley's program.

Modeling Analysis

Taking Berkeley's proposed PV program as a case study, this section uses a simple pro forma financial model to examine the potential financial value of the program relative to commercially available financing products, as well as the potential economic impact of the negative tax consequences described in the previous section. Input assumptions to the model include the following:

- Installed costs of \$10.75/W for a 1 kW system, \$10/W for a 2 kW system, and \$9.5/W for a 3 kW system.¹³ Different system sizes are modeled because the Federal ITC cap does not impact all system sizes equally.¹⁴
- Annual system performance of 1350 kWh/kW (which equates to a 15.4% capacity factor), degrading at a rate of 0.5%/year (i.e., 10% over the 20-year loan period and assumed project life).
- An expected performance-based buy-down (EPBB) amount of \$2/W, below the \$2.2/W currently available to the CSI reference system in PG&E's service territory by an amount consistent with the annual performance described in the previous bullet. The EPBB is assumed to be exempt from Federal taxation under the Section 136 exclusion, and is also exempt from State taxation under State law.
- Annual O&M costs of 0.5% of installed cost per year, intended primarily to amortize the cost of one inverter replacement during the 20-year loan period.
- Avoided electricity costs starting at \$0.15/kWh and escalating at a nominal 3%/year. No value is assumed for the project's renewable energy credits (RECs).
- Homeowner falls into the 28% Federal income tax bracket and 9.3% State income tax bracket. State income taxes are deductible from Federal taxable income.

¹³ These installed cost assumptions stem from a December 19, 2007 review of the CSI program statistics for residential systems. Rated capacity is expressed in CEC-PTC terms.

¹⁴ This issue is analyzed further in "Exploring the Economic Value of EPC 2005's PV Tax Credits" (see http://eetd.lbl.gov/ea/ems/cases/LBNL_59928.pdf).

- Per current law, the Federal residential ITC for solar stands at 30% of the project's basis, capped at \$2000. Two other ITC scenarios are also modeled to reflect ongoing policy discussions surrounding the extension and potential modification of the credit: (1) a \$4000 cap, as was contained in a recent Federal energy bill, before the tax package was stripped out; and (2) no dollar cap at all. In all three cases, the credit is assumed to be captured at the end of the first year of the project, when income taxes are filed.
- Berkeley borrowing costs of 5.0% over 20 years, which is near the middle of the 4.5%-5.6% likely range indicated earlier. Interest payments levied and itemized via property tax bills are assumed to be deductible from both Federal and State taxable income, while principal payments are not deductible.
- A nominal discount rate of 6.0% (i.e., equal to the Prime Rate as of January 31, 2008), intended to crudely reflect the homeowners' opportunity cost of capital, and used only to calculate the net present value (NPV) of after-tax cash flows over the 20-year period, which will be used as the principal metric of comparison in this analysis.
- Based on a January 31, 2008 review of current terms and lending rates from Wells Fargo (which has a strong presence in Berkeley), homeowner financing alternatives to the Berkeley program are assumed to include a 20-year mortgage refinance (at 5.5% fixed interest), a 15-year home equity loan (at 7.75% fixed interest), a 10-year secured consumer loan (also at 7.75% fixed interest), and a 5-year unsecured consumer loan (at 12.5% fixed interest). Interest on the first two types of loans is Federal and State tax-deductible, while interest on the two consumer loans is not. These loans are also assumed to be for 100% of the outstanding project cost, after CSI rebate.
- The analysis does not include consideration of any financing fees (e.g., closing costs) for the conventional loans or the administrative costs of the Berkeley program.

The analysis is fairly straightforward, and begins by calculating the net present value of after-tax cash flows for a program participant under the "Berkeley Ideal" case – i.e., a scenario in which Berkeley's program *is not* considered to be subsidized energy financing and participants are therefore able to access the full Federal ITC. As the most-advantageous outcome, the "Berkeley Ideal" case (denoted by the x-axis at \$0 in Figure 1) is the benchmark to which all subsequent scenarios are compared.

The analysis then considers the relative economics of a PV system owner that does not participate in the program (a "non-participant"), and that instead uses one of the four competing commercially available financing alternatives described above: the 20-year mortgage, the 15-year home equity loan, the 10-year secured consumer loan, or the 5-year unsecured consumer loan. Since these four financing alternatives do not negatively impact the Federal ITC, the after-tax economics of these scenarios relative to the "Berkeley Ideal" scenario depend solely on the relative attractiveness of the financing terms available, and the resulting comparison can be used to estimate the best-case financial value that can be obtained through a Berkeley-style PV finance program.

As shown by the thin bars in Figure 1, the 20-year mortgage is only slightly inferior to the "Berkeley Ideal" scenario, due to its slightly higher interest rate. The 15-year home equity loan loses quite a bit more value: roughly \$1000, \$2000, or \$3000 for a 1, 2, or 3 kW system, respectively. Although it carries the same interest rate as the home equity loan, the 10-year secured consumer loan is considerably less-attractive, due its shorter term and lack of tax-deductible interest. Finally, the 5-year unsecured consumer loan is the worst of all options for these same reasons, as well as its high interest rate. Thus, if a home equity loan or consumer loan are the only viable financing alternatives – which is perhaps the most likely situation in a PV retrofit application (which may not warrant a full mortgage refinance) – then the Berkeley program potentially provides a substantial financial value to participants (at least under the "Berkeley Ideal" scenario, or

even a scenario where the residential ITC expires and is not renewed). In addition, the program may offer other potential benefits not quantified here.

Next, the analysis examines the after-tax economics of program participants if the Berkeley program is considered to be subsidized energy financing. The wide bars in Figure 1 illustrate the incremental impact (again, relative to the “Berkeley Ideal” case) of losing the ITC under the three different ITC dollar cap scenarios described above. For program participants installing a 1, 2, or 3 kW PV system, losing the Federal ITC reduces the NPV of 20-year after-tax cash flows by almost \$2,000 under current law, relative to the “Berkeley

Ideal” case (in other words, for each system size, the \$2,000 cap is binding, and the loss is not exactly \$2,000 due to one year of discounting). If the ITC cap is increased to \$4,000 (as proposed in a recent Federal energy bill), then the loss increases to nearly \$4,000 for the 2 and 3 kW systems. The 1 kW system, however, is not bound by the \$4,000 cap, and so loses only about \$600 of additional value (nearly \$2,500 total). Finally, if the ITC dollar cap is eliminated altogether (as has also been discussed in policy circles), the 1 kW system is not incrementally impacted, the 2 kW system experiences additional moderate losses, and the 3 kW system is severely compromised (by nearly an additional \$2,600, or more than \$6,000 total).

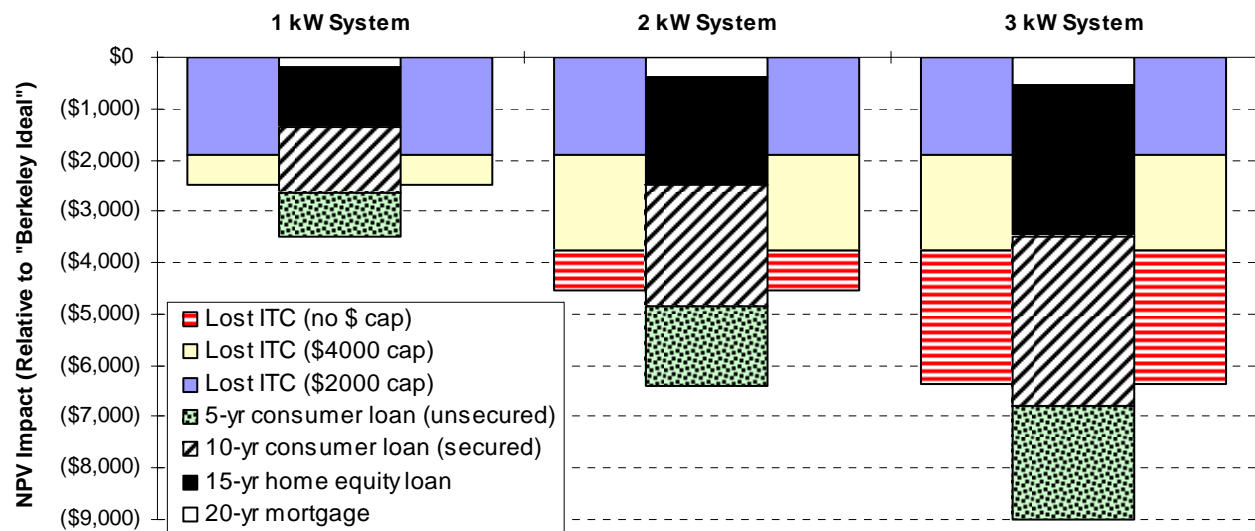


Figure 1. NPV of After-Tax Cash Flows Relative to the “Berkeley Ideal” Case

If one assumes that the “Berkeley Ideal” case is not attainable (i.e., that the ITC will be lost due to subsidized energy financing), then a comparison of the thin and wide bars in Figure 1 shows that non-participants will *always* (for all three system sizes and all three ITC cap scenarios) do better financially than program participants *if* non-participants are able to access a 20-year mortgage at an interest rate within the range of that provided by the Berkeley program. A 15-year home equity loan is also superior for the 1 kW system under the \$2,000 ITC cap, and for all three system sizes under a \$4,000 ITC cap. Finally, both the secured and unsecured

consumer loans with non-deductible interest payments are inferior to the Berkeley program under all three ITC cap scenarios.

In summary, if the Berkeley program does offset the full ITC, then this analysis suggests that it will not offer financial value beyond that offered by a home mortgage, but may still be competitive with a home equity loan (depending on the dollar size or existence of the ITC cap). The program’s primary beneficiaries, however, will likely be those residents who cannot access traditional home-backed forms of credit, and that otherwise might be inclined to use consumer

loans to finance their PV system (or those residents who cannot use the ITC anyway, due to insufficient income tax liability). Additionally, notwithstanding this financial analysis, some residents might benefit from the program's other attractive features (e.g., loans not based on consumer credit, or loan repayment tied to property taxes rather than following the homeowner).

Discussion and Recommendations

Taken together, the information presented in the text above and the modeling results shown in Figure 1 paint a picture of a new and innovative type of PV financing program that has many positive features, but that may nevertheless prove to be financially unattractive in some (but not all) situations due to potential negative interaction with the Federal ITC for residential solar installations.

Of course, as noted earlier, it is not certain that this type of program actually constitutes subsidized energy financing. Even if it does qualify as such, it is possible that Congress could alter or even eliminate the anti-double-dipping provisions in the future, making this issue moot.¹⁵ Finally, the possibility that the residential ITC will simply expire at the end of 2008 without being renewed cannot be dismissed. Under any of these three scenarios, the type of program described in this case study would be very attractive, as it would offer easily accessible and favorable long-term financing that transfers with the property and does not suffer any associated negative tax consequences.

Notwithstanding the above, however, there is certainly more than a passing chance that this type of program *will* be considered subsidized energy financing, and will therefore offset the ITC. As such, it is prudent to examine ways to resolve or otherwise work around the issues discussed above, with the goal of improving the

economics of the program for all participants, under all situations. To this end, the following suggestions may help to clarify how best to proceed in order to maximize participant value.

- 1) **Consider seeking formal IRS guidance.** Although it is possible that Berkeley's proposed PV program (and others that follow in its footsteps) would, as proposed, be considered a form of subsidized energy financing, tax law is complicated and highly factual in nature, and alternative arguments may persuade the IRS otherwise. As such, cities pursuing this type of program should consider working with qualified counsel (and perhaps also together) to seek IRS guidance on this issue, prior to considering other alternatives.
- 2) **Consider allowing participants to provide a cash down-payment.** Cash down-payments would not be considered subsidized energy financing, and therefore would not impact the ITC. With a \$2,000 ITC cap, a cash down-payment of \$6,666.67 (i.e., \$2,000/30%) would be sufficient to allow a participant to take the full \$2,000 ITC. At a \$4,000 cap, the requisite down-payment increases to \$13,333.33 (which may exceed the post-rebate installed cost of smaller PV systems). Although this strategy avoids the double-dipping issue, it presents other difficulties, such as the need for residents to provide up-front cash (and in some cases a large proportion of up-front cash, if the intent is to take the *full* ITC).
- 3) **Consider more-advantageous sources of funding.** If working with local banks is going to be considered subsidized energy financing anyway, perhaps cities should explore other financing options in an attempt to maximize the "subsidy." For example, dipping into general or reserve funds might enable cities to offer program participants a lower cost of capital than that offered by local banks, with no additional negative tax consequences.

¹⁵ There is some precedent for this: several years ago, Congress inserted language into Section 45 of the tax code limiting the maximum loss from double-dipping to 50% (down from 100%) of the full value of the production tax credit for wind power and other resources.

4) **Consider guaranteeing the loan.** Past IRS guidance with respect to Section 48 and subsidized energy financing has found that government-sponsored loan guarantee programs are *not* considered to be subsidized energy financing. As such, adding a city guarantee of the loan might result in the same (and perhaps superior, through lower interest rates) benefits to participants as the currently proposed program, but without the negative ITC consequences. Such a guarantee could potentially be layered right on top of the

as-proposed program, continuing to utilize the property tax system as the repayment vehicle.

If nothing else, this brief analysis should serve as the basis for further exploration of this important issue. This is particularly true in light of the potential benefits offered by this type of program, the considerable amount of buzz that Berkeley's proposed program has generated nationwide, and the numerous public expressions of interest in replicating it.

ABOUT THIS CASE STUDY SERIES

A number of U.S. states have established clean energy funds to support renewable and clean forms of electricity production. This represents a new trend towards aggressive state support for clean energy, but few efforts have been made to report and share the early experiences of these funds.

This paper is part of a series of clean energy fund case studies prepared by Lawrence Berkeley National Laboratory and the Clean Energy States Alliance. The primary purpose of this case study series is to report on the innovative programs and administrative practices of state (and some international) clean energy funds, to highlight additional sources of information, and to identify contacts. Our hope is that these case studies will be useful for clean energy funds and other stakeholders that are interested in learning about the pioneering renewable energy efforts of newly established clean energy funds. To access or download all the case studies, see: <http://eetd.lbl.gov/ea/ems/cases/> or <http://www.cleanenergystates.org/>

ABOUT THE CLEAN ENERGY STATES ALLIANCE

The Clean Energy States Alliance (CESA) is a non-profit initiative funded by members and foundations to support the state clean energy funds. CESA collects and disseminates information and analysis, conducts original research, and helps to coordinate activities of the state funds. The main purpose of CESA is to help states increase the quality and quantity of clean energy investments and to expand the clean energy market. The Clean Energy Group manages CESA, while Berkeley Lab provides CESA with analytic support.

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