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Targeting Proposition 39 to Help California's Schools Save Energy and Money

Climate Policy Initiative

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May 2013

CPI Brief

Acknowledgements

Climate Policy Initiative thanks Kate Gordon and Claire Tomkins at Next Generation, Dian Grueneich and Cara Goldenberg at Dian Grueneich Consulting, and Mark Zimring, Merrian Goggio Borgeson, Chuck Goldman, and Peter Larsen at Lawrence Berkeley National Laboratory for their contributions to this study. We also thank the representatives of California school districts and other school energy finance experts we spoke with for their input.

Descriptors

Sector	Buildings
Region	U.S.
Keywords	Proposition 39, energy efficiency, California schools, energy savings, California Clean Energy Jobs Act
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About CPI

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Executive Summary

In November 2012, California voters approved Proposition 39, which changes the state tax structure for some multi-state businesses and directs the proceeds over the next five years — an estimated \$2.75 billion total¹ — to support energy efficiency and clean energy projects in schools and other public buildings. The proposition left it to the state legislature to implement this program, and the legislature and Governor's office are presently considering how to allocate those funds. Most of the proposals on the table would direct the funds to energy-saving projects in K-12 schools.

During the legislative discussions, it became clear to many working on this issue that there is little information available about the specific barriers to energy efficiency investment in schools. In order to inform this ongoing discussion, Climate Policy Initiative analyzed existing resources and gaps in financing for energy-saving projects in K-12 school districts. We conducted a series of semi-structured interviews with officials from a range of school districts and other practitioners and experts. We also modeled a set of representative K-12 energy projects to get a sense of their impact on district budgets given current financing sources, as well as the potential impact of Proposition 39 grant-based support.

This policy brief presents the findings from our analysis and, based on these findings, recommends a set of strategies to get the most energy-saving benefit out of a limited amount of Proposition 39 funds.

Key Findings and Recommendations

School districts are interested in energy efficiency because of the potential for immediate bill savings. Proposition 39 presents an opportunity to help school districts get more energy-saving projects done.

- Many California school districts are interested in energy efficiency and are already pursuing some energy-saving projects — most commonly lighting upgrades, solar panels, upgrades to heating and cooling systems, and lighting and thermostat controls.
- School districts face severe short-term budget pressure and are counting on energy-saving

projects to produce immediate budget relief through net bill savings. This budget pressure leads districts to focus on short-payback measures and measures for which generous rebates are available. They are generally not pursuing measures that cost more initially but produce greater energy bill savings over time.

For many districts, the biggest barrier to achieving energy savings is a lack of technical assistance to help navigate the range of energy-saving projects and financing options available to them.

- Most districts receive frequent sales calls from companies pitching energy-saving services and products, but many lack the staff resources or technical capacity to evaluate potential projects.
- Proposition 39 should offer assistance to school districts on vetting energy efficiency service provider proposals. School districts would like a source without a commercial interest to help them navigate project and financing options, review project proposals, and select reliable contractors. The California Energy Commission already provides this service through the Bright Schools program², but program funding is limited, as is awareness.
- Expanded assistance and outreach may also be necessary for small districts, which are less likely to receive communications and marketing materials about energy-saving opportunities from energy service companies. The energy savings potential in small districts is unknown.

1 2013-14 Governor's Budget Summary, http://www.dof.ca.gov/documents/FullBudgetSummary_web2013.pdf

2 The Bright Schools program is authorized by the Warren-Alquist State Energy Resources Conservation and Development Act, S25416(d). For more information, see <http://www.energy.ca.gov/efficiency/brightschools/>

Most districts can currently access private capital at low cost. This provides an opportunity to leverage Proposition 39 funds to help districts pursue projects with greater energy savings.

- Proposition 39 funds should target projects that achieve deeper and greater energy savings and that districts cannot finance within existing budgets. They should not support already economical projects such as lighting retrofits, which most districts can finance themselves through existing funding sources without taking a budgetary hit.
- More costly measures that produce deeper and greater savings are most easily financed when packaged together with shorter-payback measures. Therefore, Proposition 39 should complement and extend, rather than duplicate, financing for shorter-payback projects — for example, through matching grants to projects that achieve significant energy savings, along with technical assistance to help districts select projects and secure financing.
- Public loan funds may not have a significant impact on efficiency investment in the current environment, where private capital is available to most districts at very low interest rates.

grants, but should not duplicate the existing support.

- **For districts that cannot issue bonds but can access existing public or private loans for standalone energy-saving projects**, Proposition 39 funds could facilitate access to these funding sources and, through additional financial support, make it feasible for them to carry out projects with deeper energy-saving measures that would not otherwise be economical.
- **For districts that have difficulty accessing any of the existing funding sources** — because they are too financially strapped, too small to qualify for a sufficiently large grant/loan, or for other reasons — Proposition 39 may need to fully or mostly fund project costs. The number of districts in this category is unknown but could be sizable, given current fiscal conditions. The state School Facility Program's financial hardship program⁴ provides an example of how matching/leverage requirements can be relaxed given proof of financial hardship.

The optimal role for Proposition 39 funds depends on which existing funding sources are available to a particular school district.

- **For districts that are already funding ongoing facility improvements through local bonds and/or state modernization grants**, Proposition 39 would be most effective as a "sweetener," encouraging the district to add more energy-saving measures to already planned renovations. In particular, energy-saving projects receiving state modernization funding through the School Facility Program³ are already able to generate significant cost savings to the school district. Proposition 39 funds should facilitate adding further energy-saving measures to projects receiving modernization

3 The School Facility Program is authorized by the Leroy F. Greene School Facilities Act of 1998 (Senate Bill 50) and administered by the Office of Public School Construction. For more information, see <http://www.dgs.ca.gov/opsc/Programs.aspx>

4 For more information, see <http://www.dgs.ca.gov/opsc/Programs/financial-hardshipprogram.aspx>

Objective

Our objective is to identify how Proposition 39 funds can most effectively drive energy savings in schools, given that these funds are limited. Other researchers and observers have pointed to examples of effective programs financing K-12 energy efficiency projects in other states.⁵ In order to complement that work, we targeted our analysis toward understanding California's particular circumstances — identifying how Proposition 39 can best fill the gaps in existing funding sources and enable districts to achieve greater energy savings.

Our approach

We reached out to facilities and/or business managers from 22 school districts spanning a range of sizes, regions of the state, and bond financing histories. We made contact with officials at 15 of these districts. In phone calls of about 30 minutes each, we discussed how each district currently approaches energy efficiency and facilities upgrades.⁶ We focused on how districts identified opportunities for energy savings and how they financed energy-saving projects (including options considered and dismissed). A list of the districts contacted can be found in the Appendix. We also spoke with several practitioners and experts on school energy efficiency projects or school facility finance. In addition to the interviews, we modeled a set of school energy-saving projects to get a sense of their viability using existing financing sources and explore the potential role for Proposition 39.

We recognize that this is a very limited sample of California's 1,000+ school districts and of the people engaged in developing and implementing energy efficiency or facilities upgrades in California's schools. However, these conversations revealed a few first indications of the challenges facing school districts across a variety of circumstances.

Findings

Our findings are presented in four sections:

1. Districts' Familiarity and Experience with Efficiency (page 6)
2. Districts' Access to Technical Assistance (page 7)
3. Districts' Access to Financing (page 9)
4. Impact of Financing Options by Project Type (page 15)

5 Lawrence Berkeley National Laboratory, Financing Energy Upgrades for K-12 School Districts, April 2013, <http://emp.lbl.gov/sites/all/files/lbnl-6133e.pdf>

6 We spoke with representatives of 14 districts by phone; one provided an email response.

1. Districts' Familiarity and Experience with Efficiency

Many school districts have already made highly cost-effective improvements, and most are interested in doing more. Projects must generate immediate bill savings in order to be attractive.

Faced with extreme budget pressures, many school districts have already implemented energy-saving projects. In our conversations, district officials emphasized that the primary appeal of efficiency projects is their ability to generate immediate budget relief — a project must have a positive impact on the district's general fund in order to be viable.

Most school districts have a substantial backlog of planned facility improvements, including — though not limited to — energy-saving measures. The UC Berkeley Center for Cities & Schools estimates that California's schools need a total of \$117 billion in facility improvements over the next decade.⁷ Districts often combine energy-saving projects with other facility improvements at a given school site.

Of the districts we spoke with, some had a plan for future facility improvements, including energy-saving measures; others were aware of the possibility for energy-saving improvements but had not identified specific projects. The smallest districts were less likely to have future energy-related projects identified.

The energy-saving projects undertaken by the districts we spoke with are listed in Table 1. This represents the range of projects they pursued over roughly the last 10 years, although it is likely not comprehensive. The most common projects included lighting upgrades, solar panel installation, lighting and thermostat controls, and updating or replacing heating, ventilation, and air conditioning (HVAC) systems. Two of the districts we spoke with have not undertaken any energy-saving projects in the last 10 years, due to lack of staff capacity, lack of awareness, and/or funding constraints.

Table 1: Energy-saving measures implemented by sampled districts

MEASURE	NUMBER OF DISTRICTS (OUT OF 15 TOTAL)
Lighting upgrade	12
Solar installation	8
HVAC (upgrades or new systems)	8
Energy management systems, building controls	7
Behavioral programs	2
Other*	5
None	2

* Other measures included pool pump/water heater replacements, double-pane windows, daylighting projects, and an efficient trash compactor.

Payback and bill savings potential largely determine which projects a district pursues, but other factors play a role. Outreach and marketing have an influence, since most districts have limited in-house capacity to seek out and compare information on different options. Districts also favor projects that are visible and produce an easily measurable impact — both of which describe solar projects, for example.

At least four districts we spoke with used some form of ongoing energy service company (ESCO) contract, either for equipment installation and maintenance or for behavioral programs. Two districts received performance guarantees from an ESCO — these carry a cost, but in both cases were important in increasing the districts' comfort level with the project and achieving buy-in. District experience with ESCOs varied widely — some districts were very happy with the quality of work and advice provided by ESCOs, while others were dissatisfied with the quality of work or felt the companies did not transparently communicate the costs and benefits of their services.

⁷ Center for Cities & Schools, "California's K-12 Educational Infrastructure Investments: Leveraging the State's Role for Quality School Facilities in Sustainable Communities", <http://citiesandschools.berkeley.edu/reports/CCS2012CAK12facilities.pdf>.

2. Districts' Access to Technical Assistance

Most districts can access free energy audits, but many are asking for impartial advice and assistance planning projects.

In addition to financing, energy efficiency projects require that a district possess technical capacity to identify projects and plan their implementation. School districts may need a variety of assistance in each of these steps, as budget cuts have left district and school administrations with fewer staff to manage facilities projects, and districts often lose institutional knowledge when staff members leave.

Awareness, technical expertise, and staff capacity vary widely among school districts, and seem particularly varied among the smallest districts. Even energy service companies may not deliver targeted marketing to small districts, which may not have sufficiently large projects to cover client development costs.

A few examples from our conversations highlight the importance of technical assistance:

- A small school district's superintendent connected with an ESCO at a conference. The ESCO subsequently carried out an energy audit and helped the district identify funding for a lighting and solar project, using a combination of multiple grants, utility rebates, and both public and private loans. To check the ESCO's savings estimates, the district received advice from the California Energy Commission through the Bright Schools program, and also contracted with a third-party vendor. A district official involved in the project planning said that the district likely would not have been able to identify all the different funding pieces without the ESCO's guidance, and that it was very important to the district to have a neutral party (Energy Commission staff and the third-party vendor) check the ESCO's savings estimates before proceeding with the project.
- Another small district had a solar panel installed through a utility program several years ago. However, the district official who dealt with that project has retired, the utility has not kept up regular contact, and no current staff members are familiar with the solar panel or other energy

matters. After recent budget cuts, the district is not currently doing active facilities planning; they are generally aware of the potential for cost savings through efficiency projects, but they would need help getting started with any future efficiency projects.

Depending on a district's level of in-house capacity, needed assistance might include:

- Energy audits (though ESCOs provide free audits in many cases)
- Staff time and technical expertise to vet proposals by vendors
- Information on available funding sources
- Staff time and program knowledge to help the district clear bureaucratic hurdles to access funding sources (this could range from filling out a loan application to helping a district put together a bond measure and voter outreach strategy)
- Staff time and expertise to run a bid process to select ESCOs or project contractors

School districts have access to a range of technical assistance already, detailed in Table 2. Existing technical assistance tends to focus on energy audits over other forms of advice and program assistance.

Most districts also receive frequent inquiries and proposals from ESCOs and other vendors. ESCOs are an important source of information about energy-saving measures and financing sources. Districts told us that they often find out about new funding sources for facility projects because they receive a fresh wave of pitches from vendors, and this could happen with Proposition 39 as well.

However, some districts are wary of the information ESCOs provide, because they view it as part of a sales pitch. School district officials we spoke with were enthusiastic about the idea of an impartial resource (a government or non-profit entity, without a commercial interest) to help them plan projects and identify funding sources. At least one district turned to the California Energy Commission as an impartial reviewer to vet ESCO project plans, but others are not aware that this resource is available or have been unable to use it because of limited

Table 2: Existing sources of technical assistance

SOURCE	WHAT'S PROVIDED	LIMITATIONS
ESCOs	Free energy audits For customers, assistance identifying funding sources and accessing funding	Usually only available for districts where ESCO believes district has a viable project of sufficient size (over ~\$1 million) and can access private financing Often connected to a sales pitch, which some districts find difficult to assess independently
California Energy Commission, through the Bright Schools program ^a	Free energy audits (up to \$20,000) Additional program assistance, such as reviewing project plans and helping select contractors	Some up-front commitment required: District's governing board must sign a resolution that it "is willing to seek funding to implement viable energy-saving measure(s)" Limited availability at times due to funding constraints Assistance limited to \$20,000 per district
Utilities	Advice and information on energy conservation strategies May provide free energy audits connected to rebate programs	Varies by utility (investor-owned utilities tend to offer more services than smaller municipal utilities)
Other, including Collaborative for High Performance Schools, Alliance to Save Energy, U.S. Department of Energy, EPA	Information and general guidance on energy efficiency options	Not project-specific

a <http://www.energy.ca.gov/efficiency/brightschoools/>

program funds. This function is already part of the Bright Schools program and has worked in other states.

Given that many districts can already access some degree of free energy audits through existing sources, it may make sense to target Proposition 39 technical assistance funds to the functions that are not as well-covered. These include:

- Reviewing proposals submitted to districts by ESCOs or other vendors; connecting districts with third-party firms and providing funding for third-party analysis to check ESCO savings estimates
- Helping districts select reliable ESCOs or contractors
- Reaching out proactively to the smallest districts (who are too small to be attractive ESCO customers) to help them explore potential projects and start planning

3. Districts' Access to Financing

Projects are funded through a wide range of sources, but not all sources are available in every district. Districts prefer to fund projects through grants or bonds rather than loans, when possible. Most districts can access low-interest private leasing arrangements but view them as a last resort.

The districts we spoke with have used a wide range of existing funding sources to enable their energy-saving projects; these are listed in Table 3. Nearly all districts that pursued any energy-saving measures used multiple funding sources, except for two districts that have paid for small-scale projects from their general fund budgets.

The most common funding sources included local bonds, state modernization funding, and utility rebates. Notably, these funding sources allow districts to retain all energy bill savings from the projects. State modernization funds and utility rebates do not need to be paid back when spent on eligible projects, and bonds are repaid through

dedicated property tax increases, rather than from the district's existing budget.

Whether due to voter appetite for bonds, awareness of financing options, or district financial conditions, districts vary in their ability to access funding for energy improvements. The menu of available funding options can influence the types of projects districts select (e.g. shorter vs. longer payback) and the potential role for Proposition 39 funds. A critical takeaway of our research is that different types of districts may require very different financing options.

- For districts that are already funding ongoing facility improvements through local bonds and/or state modernization grants, Proposition 39 would be most appropriate as a "sweetener," encouraging the district to add more energy-saving measures to already planned projects. By our assessment, eight of the 15 districts we spoke with fell into this category, though some of these districts may move into the next category as they use up modernization fund support and if they struggle to pass bonds in the future.
- For districts that cannot issue bonds but can easily access existing public or private loans for standalone energy-saving projects, Proposition 39 funds could make it feasible for them to finance projects with deeper energy-saving measures that would not otherwise be economical. Between two and five of the 15 districts we spoke with fell into this category. (Three districts did not attempt major projects that would require a loan.)
- For districts that have difficulty accessing any of the existing funding sources — because they are too financially strapped, too small to qualify for a sufficiently large grant/loan, or for other reasons — Proposition 39 may need to fully or mostly fund project costs. At least two of the 15 districts we spoke with fell into this category.

Table 3: Funding sources employed by sampled districts

FUNDING SOURCE	TYPE	NUMBER OF DISTRICTS (OUT OF 13 TOTAL WITH ENERGY-SAVING PROJECTS)
State modernization grants	State	9
Local bonds	Local	8
Utility rebates, grants, direct-install programs	Utility	7
California Solar Initiative incentive	State	5*
Municipal lease (lease-purchase agreement)	Private	2
ECAA low-interest loan	State	2
Solar power purchase agreement	Private	2
High Performance Incentive Grant	State	1
On-bill financing	Utility	0
Federally subsidized bonds	Federal	0
District general fund/operating budget (for small projects)	Local	3
Other grants (developer fees, nonprofit grant, federal stimulus funds)	Other	3

* Two districts used third-party ownership structures for solar PV systems, and the installer presumably received a CSI incentive. One district received a solar panel through a utility direct install program.

In the following pages, we describe the major funding sources used by the districts in our sample for efficiency projects, as well as some options considered and rejected. For each funding source, we describe the terms of funding, outline its role in

funding efficiency projects for the districts we studied, and identify what we see as the most important barriers preventing districts from accessing it.

State modernization grants

Of the 13 districts in our sample that have undertaken energy-saving measures, nine used grants from the state

STATE MODERNIZATION GRANTS

60% matching grant from state

Energy measures usually incorporated into larger projects

Restricted eligibility

Current funding uncertain

Modernization Program to help fund their projects. Under the Modernization Program,⁸ the state offers a 60% matching grant to support renovations of school buildings at least 25 years old or portable classrooms at least 20 years old. The state

awards grants for individual school sites; districts cannot reallocate funds across sites. The grants are only available once every 25 years per school building (20 for portables), so districts often package several building upgrades — including efficiency measures — as part of large-scale modernization projects. The state also offers a similar 50% matching grant to support construction of new school buildings.⁹ Both programs are administered by the state's Office of Public School Construction.

If a district can demonstrate that it cannot meet the required local share, the state may provide all or part of the local share of funding under the Financial Hardship Program.¹⁰ In order to receive hardship funding, a district must demonstrate that it has levied the maximum allowable developer fees and made "reasonable effort" to raise local revenues¹¹ — for example, if the district's outstanding bonded indebtedness is at least 60% of its bonding capacity — and undergo a review to determine that it has no more available funds to allocate to the project.

Most of the districts we spoke with used local bonds to contribute the required local share (8 of the 9 districts

8 <http://www.dgs.ca.gov/opsc/Programs/financialhardshipprogram.aspx>

9 <http://www.dgs.ca.gov/opsc/Programs/newconstructionprogram.aspx>

10 <http://www.dgs.ca.gov/opsc/Programs/financialhardshipprogram.aspx>

11 Qualifying criteria for the Financial Hardship Program are found in Education Code Section 17075.10 and School Facility Program Regulation Section 1859.81(c).

that received modernization or new construction grants). One district that was unable to issue bonds used a combination of public and private loans to make up its share. None of the districts we spoke with mentioned the financial hardship program as a funding source for energy projects.¹²

ROLE IN FUNDING EFFICIENCY PROJECTS:

- These programs are critical funding sources for the districts we spoke with. One district official said that they track when school sites will become eligible for modernization funding and wait to undertake energy-saving improvements at those sites until they can be rolled into larger modernization projects.
- As demonstrated in the next section, if an energy-saving measure can be included in a modernization project, then even a measure with a very long payback period becomes a cost-saving opportunity for the district, without further subsidy.

LIMITS TO AVAILABILITY:

- Eligibility is restricted to existing buildings over 25 years old, or portable classrooms over 20 years old, that have not yet had renovations funded through the modernization program.
- Modernization funding can support many non-energy-related measures. For projects above a minimum size, the modernization must also include upgrades to make the building accessible under the Americans with Disabilities Act. These non-energy measures can consume a significant amount of the total grant, depending on building conditions.
- The state has recently fallen behind on issuing bonds to fund these grants. As a result, a large backlog of unfunded projects has built up in the last few years. Nearly \$1.5 billion in School Facility Program projects have been awarded bond authority awaiting revenues from future state bond sales. Districts on this list have state grants reserved for them and can proceed with projects

12 According to the Office of Public School Construction, two of the districts we spoke with have been approved for financial hardship support in the past; neither mentioned using those funds for energy projects during our interviews.

using local resources, but they do not know when the state funds will become available. In addition, nearly \$500 million in projects are awaiting bond authority from a future bond measure , and cannot be certain they will receive the state grants at all. An anticipated state bond measure in 2014 could relieve the backlog and make funds available for future projects.

- There are some proposals to link the size of modernization and new construction grants more directly with facility and district needs.¹³ If the form of these grants changes substantially in the coming years, the implications for Proposition 39 targeting would change as well.

Local bonds

Of the 13 districts in our sample that have undertaken energy-saving measures, eight used the proceeds from local bonds to help fund their projects. In at least one case, the district specified in its bond measure that the funds would go in part to support energy-saving projects.

LOCAL BONDS

Funded by voter-approved increases in local property taxes; district retains all energy bill savings

Energy measures usually incorporated into larger projects

Limited by local property values and voter sentiment

ROLE IN FUNDING EFFICIENCY PROJECTS:

- If they have the option, districts expressed a clear preference for funding energy-saving projects by issuing bonds than by taking out loans — bonds are repaid through new tax revenue, allowing the district to keep the full value of the energy savings. Additionally, bond measures allow a district to decide which projects it will seek funding for, in contrast to state funds that may be restricted to specific purposes.
- Bond-funded projects typically include many other facility improvements beyond energy-saving

¹³ Center for Cities & Schools, "California's K-12 Educational Infrastructure Investments: Leveraging the State's Role for Quality School Facilities in Sustainable Communities", <http://citiesandschools.berkeley.edu/reports/CCS2012CAK12facilities.pdf>.

measures. Bond measures may specify the range of eligible projects in greater or lesser detail. One interviewee related that when the district (in a conservative region of the state) carried out public opinion research in advance of a bond measure, they found voters to be highly supportive of energy conservation projects that save the district money. Other districts believe their voters are less supportive of energy-related projects because they are less visible than some other facility improvements, such as adding classrooms or athletic facilities.

- It takes time and resources to develop a bond measure and make the case to voters. As with the state modernization funds, districts typically seek to fund a larger pool of projects over several years with a single bond issuance — most districts would not issue bonds solely to fund efficiency measures. An exception is San Francisco, where voters have approved special funds for sustainability projects and green schools.
- Districts noted the need to use voter approval responsibly, and that there are many competing uses for bond funds that are ultimately limited by voters' willingness to pay. As such, the fact that a district has successfully raised bond money in the past does not necessarily mean that they can fund efficiency improvements from bonds at will and for any amount.

LIMITS TO AVAILABILITY:

- Total bonding capacity ranges between 1.25% and 2.5% of assessed property values in the district. This can be a limiting factor for small districts.
- New bond authority requires voter approval, and the districts we spoke with face a wide range of voter sentiment. In some districts, voters approve bonds regularly. In some, bond measures pass only occasionally and require significant outreach and advocacy efforts on the part of the district. In some districts, voters have soundly rejected school bond measures. Other districts have not attempted bond measures, perhaps because the transaction costs are too high and/or because they believe the measures are very unlikely to pass.¹⁴

¹⁴ Research by Next Generation shows that hundreds of districts have not

- Depending on the wording used in a bond measure, school districts may or may not have the flexibility to allocate bond proceeds associated with that measure to energy-saving projects, or to projects at particular school sites. However, bond measures are usually not so specific that they would foreclose using bond proceeds for energy-saving projects.
- Some districts have remaining authority to issue bonds (from earlier voter-approved bond measures), but are currently unable to use that authority because property values have not kept pace with projections at the time of the bond measure. In some districts where property values have fallen significantly, issuing new bonds would exceed the district's overall bonding capacity or would require a tax increase on the remaining tax base that is beyond the maximum level approved by voters. Two of the districts we spoke with are currently in this situation.
- Some bonds are more expensive than others. In particular, "capital appreciation bonds," which allow districts to postpone payments to decades in the future, have been widely used in recent years but are significantly more costly than traditional bonds.

Public or subsidized loans

If districts are unable to issue bonds, they are likely to turn to either public or private loans to finance energy-saving projects.

PUBLIC OR SUBSIDIZED LOANS

Below-market rate loans paid back through energy savings

Caps on loan size, titling concerns, and payment flexibility limit some districts

Low profile, limited availability

Public and subsidized loans available to school districts include low-interest loans offered by the California Energy Commission under the Energy Conservation Assistance Act (ECAA), as well as utility ratepay-

er-funded on-bill financing (OBF) programs.

These programs typically offer lower interest rates than private loans. They may be available to districts that do not meet underwriting criteria for private loans. The Energy Commission bases loan decisions on characteristics only of the proposed energy-saving project (not on the district's financial condition) and has never had a borrower default.

In today's low-interest-rate environment, these programs offer only a modest discount from private loans for creditworthy districts. If interest rates rise in the future, there would be more room for these programs to make a difference in project finance.

ROLE IN FUNDING EFFICIENCY PROJECTS:

- These loans are paid back through energy bill savings and are limited to funding energy-saving measures, rather than more comprehensive renovations.

We spoke with officials at two districts that received recent ECAA loans; we were referred to these districts by Energy Commission staff. Both districts combined ECAA loans with other funding sources (utility rebates or private loans) to finance projects.

- While a few districts were aware of OBF and would potentially consider it in the future, none had used it. This is perhaps unsurprising, as OBF has only been available since 2010.
- Our modeling in the next section suggests that ECAA is often a more attractive option than OBF, since the OBF amount and term limits would constrain school-scale projects. Neither is a true game-changer relative to lease arrangements.

LIMITS TO AVAILABILITY:

- Loan size is limited for some programs. This makes them less attractive for larger projects: The transaction costs associated with combining multiple funding sources may not be worth the lower interest rate.
 - » OBF loans are available for ten times the first year's savings, up to a \$250,000 per meter or \$1 million total cap.
 - » The maximum ECAA loan size is 13 times the first year's savings, up to a \$3 million cap.

issued bonds since the mid-1980s. Next Generation, "Which CA schools need energy upgrades? Bond finance paints a picture," <http://thenextgeneration.org/blog/post/prop39-school-bonds>

- ECAA loans require that the district own the equipment being funded by the loan. This requirement may make it difficult to combine ECAA loans with lease-purchase agreements, under whose terms the district may not own the equipment until the end of the lease term.
- Overall program size is limited. The ECAA loan program is currently oversubscribed, and school districts are competing with other local government entities for the same limited pool of funds.
- Payment schedules may not be flexible. The ECAA loan program offers some flexibility in scheduling payments, but not as much flexibility as a municipal lease may offer. OBF loans must be paid back in equal installments over 10 years. At least one district official commented that flexibility of financing terms — in this case matching the timing of grant receipts to payments — was an important criterion for choosing among options.
- Districts facing general fund deficits — currently including more than 10% of all California school districts — face administrative constraints to taking out loans. Under the state’s fiscal oversight system, if a district projects that it will not meet its fiscal obligations in the current or subsequent fiscal years, it must receive approval from the county office of education prior to issuing non-voter-approved debt.¹⁵ One district official said they felt they could get permission from the county for an energy efficiency loan that would generate immediate bill savings, but this would at least be a further administrative cost, if not a barrier. Since the economic downturn, districts’ fiscal situation has worsened, and more than 100 school districts currently face this constraint.¹⁶

- Districts’ awareness of these programs is uneven. Not all of the districts we spoke with had heard of the California Energy Commission’s low-interest loan program.

Private loans or lease-purchase agreements

“Municipal leases,” or private loans structured as lease-purchase agreements, are the primary source of private financing for school efficiency projects. Municipal leases are currently available at rates of 2.25-5% for a

LEASE-PURCHASE AGREEMENTS

Primary source of private financing for school efficiency projects

Readily finance short-payback projects; longer-payback projects often require additional support

Underwriting criteria limit access for districts with declining enrollment, heavily indebted districts, or districts that otherwise have cash flow problems

15-year term. ESCOs typically direct their customers to municipal leases if loans are required to fund a project.

There are some pooled financing vehicles that primarily serve to lower transaction costs and enable more districts to access municipal leases or other forms of private capital, including the SoCalREC Master

Lease program¹⁷ and financing programs offered by the California School Boards Association.¹⁸

ROLE IN FUNDING EFFICIENCY PROJECTS:

- We spoke with two districts that used municipal leases — one as part of a project with multiple funding sources, another as the single source of funding for a project.
- Districts have some ability to combine energy-saving measures and non-energy measures into a single municipal lease, but the project as a whole must still pay for itself.
- As our modeling below shows, short-payback projects can readily be financed without cost to the district’s general fund using lease-purchase agreements. Longer-payback projects require

15 A district is assigned “negative” certification status if it projects that it will have an insufficient balance in its general fund in the current or subsequent fiscal year. A district is assigned “qualified” certification status if it projects that it will have an insufficient general fund balance in either of the two subsequent fiscal years. Either negative or qualified certification triggers the requirement for county review of non-voter-approved debt. Legislative Analyst’s Office, “School District Fiscal Oversight and Intervention,” <http://www.lao.ca.gov/reports/2012/edu/school-district-fiscal-oversight-and-intervention/school-district-fiscal-oversight-and-intervention-043012.aspx>

16 Current list of districts with negative or qualified certification: <http://www.cde.ca.gov/fg/fi/ir/first1213.asp>

17 <http://screc.energycoalition.org/financing>

18 <http://www.csba.org/ProductsAndServices/Financing.aspx>

some form of additional support in order to be attractive to the district.

LIMITS TO AVAILABILITY:

- Banks decide whether to offer a municipal lease, and on what terms, based on the district's fiscal characteristics. If a district's enrollment is declining, if it is facing general fund imbalances, or if it has too much outstanding debt already, a bank is unlikely to offer a lease on terms attractive to most school districts.

Utility Rebates

Electric and gas utilities frequently offer rebates for energy-efficient equipment purchased by school districts.

UTILITY REBATES

Frequently used to fully or partially fund lighting and HVAC

Availability and uptake varies by utility, efficiency measure, and district relationship with utility

Rebates are funded by utility ratepayers. Utilities may offer dedicated programs for school projects or include schools in a broader category of programs for non-residential customers. Under "direct install" programs, utilities

fully fund and install energy efficiency measures themselves. In other cases, rebates typically take the form of a fixed dollar amount per unit.

ROLE IN FUNDING EFFICIENCY PROJECTS:

- Most districts that implemented energy-saving measures used utility rebates or direct install programs, most commonly for lighting and HVAC projects. Some districts used rebates to fully fund small projects; others, to partially fund larger projects.
- Districts' relationships with their utilities vary. For some, utilities keep in regular contact and are an important source of information on energy-saving opportunities. Other districts hear from their utilities only infrequently.

LIMITS TO AVAILABILITY:

- Available rebates vary by utility and by efficiency measure. In particular, we heard that some

smaller utilities don't offer as much support as the investor-owned utilities, which (coupled with generally lower electricity rates) makes projects harder to finance. Even among investor-owned utility customers, some comparably sized districts received more attention from the utilities than others.

Other funding sources

The state's High Performance Incentive Grant¹⁹ is available for new construction or major modernization projects that meet a set of standards for "high-performance" buildings, including energy efficiency and indoor air quality. Modernization projects can receive at least \$250,000; this base amount can rise based on the specifics of the project. Since the modernization funding is already generous, the high performance grant provides a small incremental incentive towards high performance but is likely not an important core financing source.

Statutory language combined with shortfalls in other state funding have prevented districts from fully using the high performance grant. The grant is only available for projects that are also receiving new construction or modernization funding from the state — districts cannot receive the high performance grant on its own. Currently, tens of millions of dollars in funding for the high performance grant remain unused because funding for the modernization and new construction programs has temporarily dried up.²⁰

All or nearly all of the solar installation projects received California Solar Initiative incentives. Of the eight districts we spoke with that installed solar PV systems, two districts chose leasing structures (e.g., SolarCity), five districts own the units themselves, and one received a solar panel through a utility direct install program.

Developer fees associated with new home construction have helped fund efficient new buildings at school districts in growing areas. These fees are directed toward expenses related to growing enrollment — typically meaning new buildings, classrooms, or supplies, rather than retrofits of existing facilities. Their availability depends on the state of the local housing market.

19 <http://www.dgs.ca.gov/opsc/Programs/highperformanceincentivegrantprogram.aspx>

20 Bill Orr, Collaborative for High Performance Schools, personal communication.

4. Impact of Financing Options by Project Type

Private loans can easily finance small, short-payback projects. ECAA and OBF cannot always offer loans large enough to match a typical school district-scale project. Larger, longer-payback measures would likely require additional grant-based support.

To supplement our interview findings, we built a simple project finance model and analyzed several typical K-12 school energy projects. To characterize typical projects, we relied on data on ESCO projects gathered by Lawrence Berkeley National Laboratory (LBNL) under contract with the National Association of Energy Service Companies.²¹ We gathered information on funding sources from program documents and, in the case of municipal leases, from our interviews with school districts and school finance experts. We provide full documentation on the model and data in the Appendix.

The project types are described in Table 4. Each category encompasses a wide range of projects, and many projects combine multiple energy-saving measures.

For each project type, we estimated the budget impact under five financing options.

- **Lease:** A municipal lease at 3% interest,²² with the term of the lease corresponding to the measure lifetime.
- **ECAA:** An ECAA loan at 1% interest, with the term set at the measure lifetime or 13 years, whichever is shorter. Capped at \$3 million or the amount that can be paid back with 13 years of bill savings, whichever is smaller. In cases where the

ECAA loan could not fully cover the cost of the measure, we do not show ECAA as an option.

- **OBF:** On-bill financing at 0% interest, with the term set at 10 years. Capped at \$1 million or the amount that can be paid back with 10 years of bill savings, whichever is smaller. In cases where OBF could not fully cover the cost of the measure, we do not show OBF as an option.
- **Lease with Modernization 60% Grant:** A municipal lease at 3% interest to cover 40% of the project cost, with a modernization grant covering the remaining 60%.
- **Lease with Prop 39 25% Grant:** For all projects, we also include a Proposition 39 matching grant for illustrative purposes, with the grant covering 25% of the project cost. This could be an actual 25% match, or the expected outcome of a competitive process targeting 3-1 leverage. We assume a municipal lease at 3% interest covers the remaining 75% of the project cost.

The first-year net savings under each of these options — the energy bill savings remaining after the loan payment — is shown in the graphs in the following section. We focus on first-year bill savings because of its importance in school districts' decision-making.

For all funding approaches, we assume that utility rebates (including the California Solar Initiative grant for solar projects) cover 20% of project costs.

We did not include bond financing in this modeling exercise because bonds are repaid through dedicated tax revenues, meaning that all of the energy bill savings go to the district's general fund.

In addition to financing costs, these options also carry varying levels of administrative costs. These are discussed in the previous section, but we did not attempt to quantify them here.

Finally, this exercise does not consider the fact that projects are often tailored to the specific provisions of the available financing sources. For ECAA and OBF most specifically, projects can be designed to come in underneath the cost and payback caps. However, those caps may well be constraining projects from including more measures

21 These data are self-reported to LBNL by the National Association of Energy Service Companies. As ESCOs are not required to report these projects, the set of projects they do report may not be fully representative of typical projects. Projects that do not involve ESCOs are not represented at all. We skipped the category "Other" in the LBNL taxonomy, which covered projects too varied to provide ready intuition. We made a number of assumptions to generate California-specific values; see the model documentation for details. Our model is simple and would need to be well-vetted and likely expanded before being used for any application requiring precise results.

22 This value was commonly within the range of rates quoted to us as current, and the specific rate would vary based on term and school district financial status. Unsurprisingly, the districts we spoke with who had used municipal leases in the past quoted higher rates, generally between 4.5 and 5%. As our goal is to reflect the current status of financing options, we chose the current number. These differences in interest rate do not greatly alter the results in any event.

Table 4: Definitions of retrofit projects modeled

PROJECT TYPE	EXAMPLE OF ENERGY CONSERVATION MEASURES INCLUDED
LIGHTING-ONLY	Only lighting efficiency measures, controls, and strategies
PROJECT INCLUDING MINOR HVAC	Less capital-intensive HVAC measures and controls; may also include lighting; excludes major HVAC replacements
PROJECTS INCLUDING MAJOR HVAC	Major HVAC equipment replacements (e.g. boilers, chillers, cooling towers, HVAC dist. improvements); may also include lighting, controls, and/or minor HVAC
PROJECTS INCLUDING ON-SITE GENERATION	Installation of on-site generation equipment (e.g. solar PV, fuel cells, biomass, other); may also include lighting, controls, and/or HVAC measures
PROJECTS INCLUDING NON-ENERGY MEASURES	Roof or ceiling replacement, asbestos abatement (i.e. measures that are not installed primarily for their energy savings, but may have other types of savings); may also include lighting, controls, and/or HVAC measures

Source: Larsen et al., "Evolution of the U.S. Energy Service Company Industry: Market Size and Project Performance from 1990-2008", LBNL-5447-E, July 2012

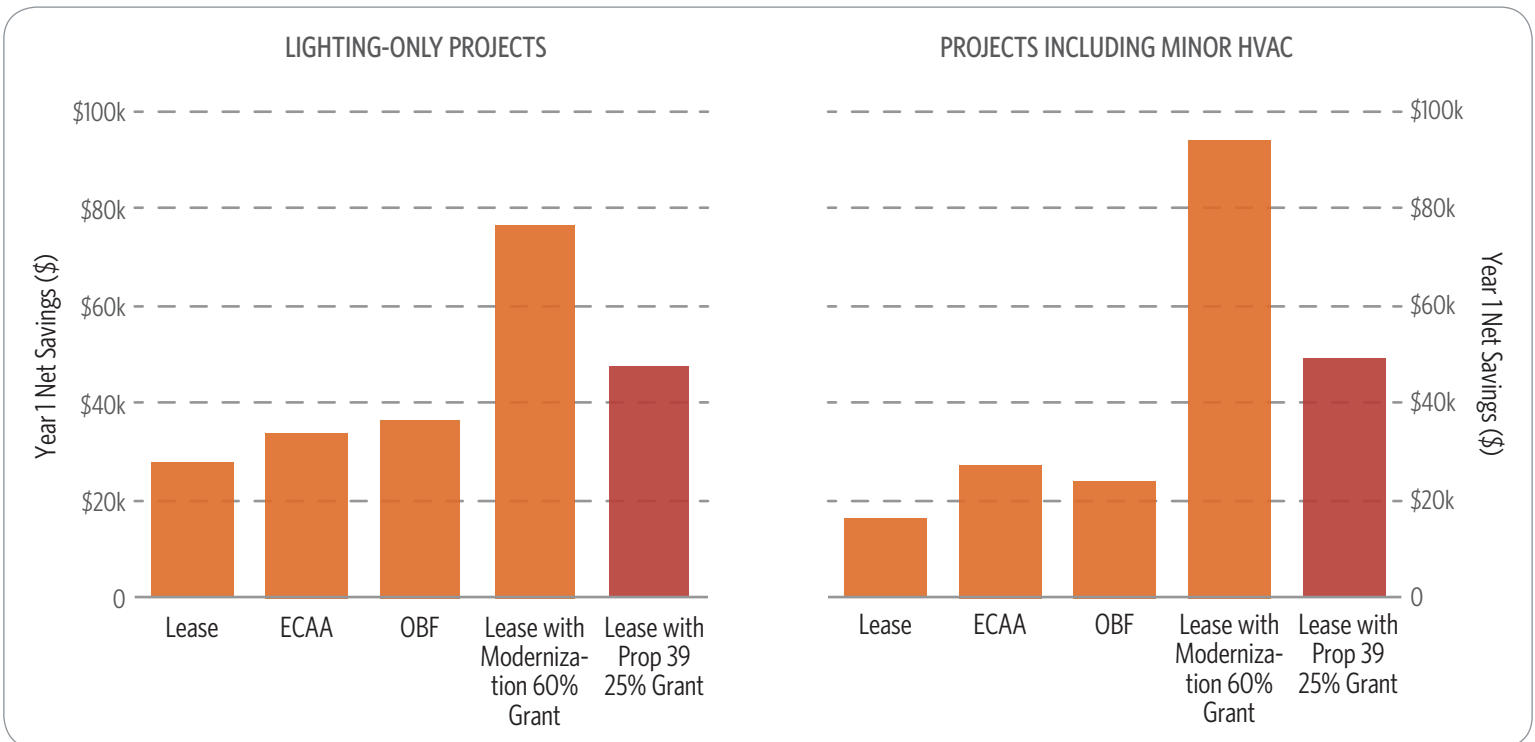
and achieving deeper savings; the data imply that many school district-scale projects are larger than these caps.

Lighting and Minor HVAC

The average lighting project is a good candidate for ECAA and OBF, as it fits under all total dollar and payback time caps for both programs. Moreover, the economics of these projects are favorable enough that they can be readily financed through lease-purchase agreements at current rates, too. Matching grants — through the modernization fund or Proposition 39 — make an already attractive project even more so.

The average minor HVAC project is qualitatively similar to lighting projects, though the attractiveness of OBF begins to decline as the project's simple payback period extends beyond the ten-year OBF loan cap.

Unsurprisingly, many of the districts we spoke with have undertaken projects in these categories already and have made the financing work.



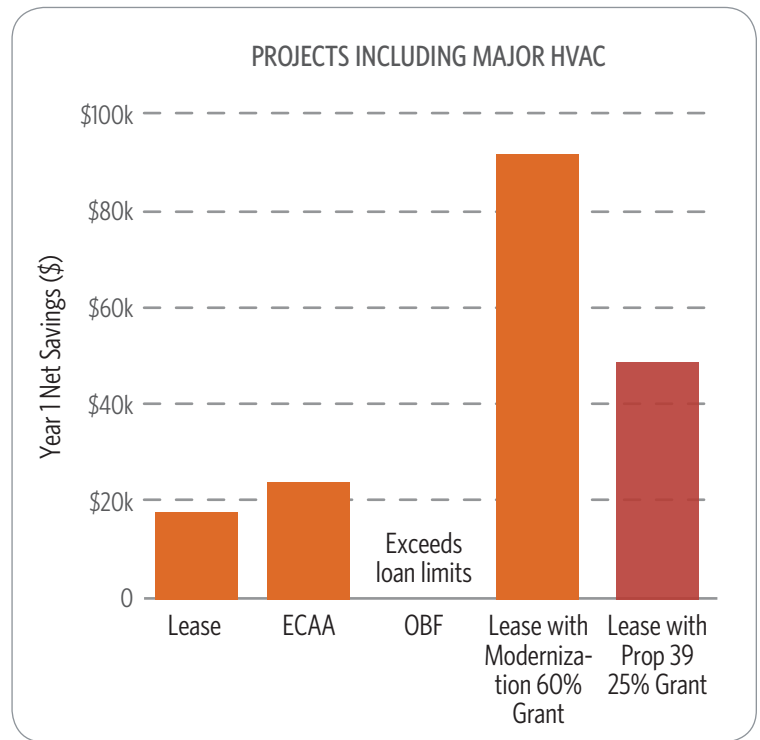
Major HVAC

The average major HVAC project is budget-positive for lease-purchase. ECAA again improves returns slightly, but OBF cannot cover this project.

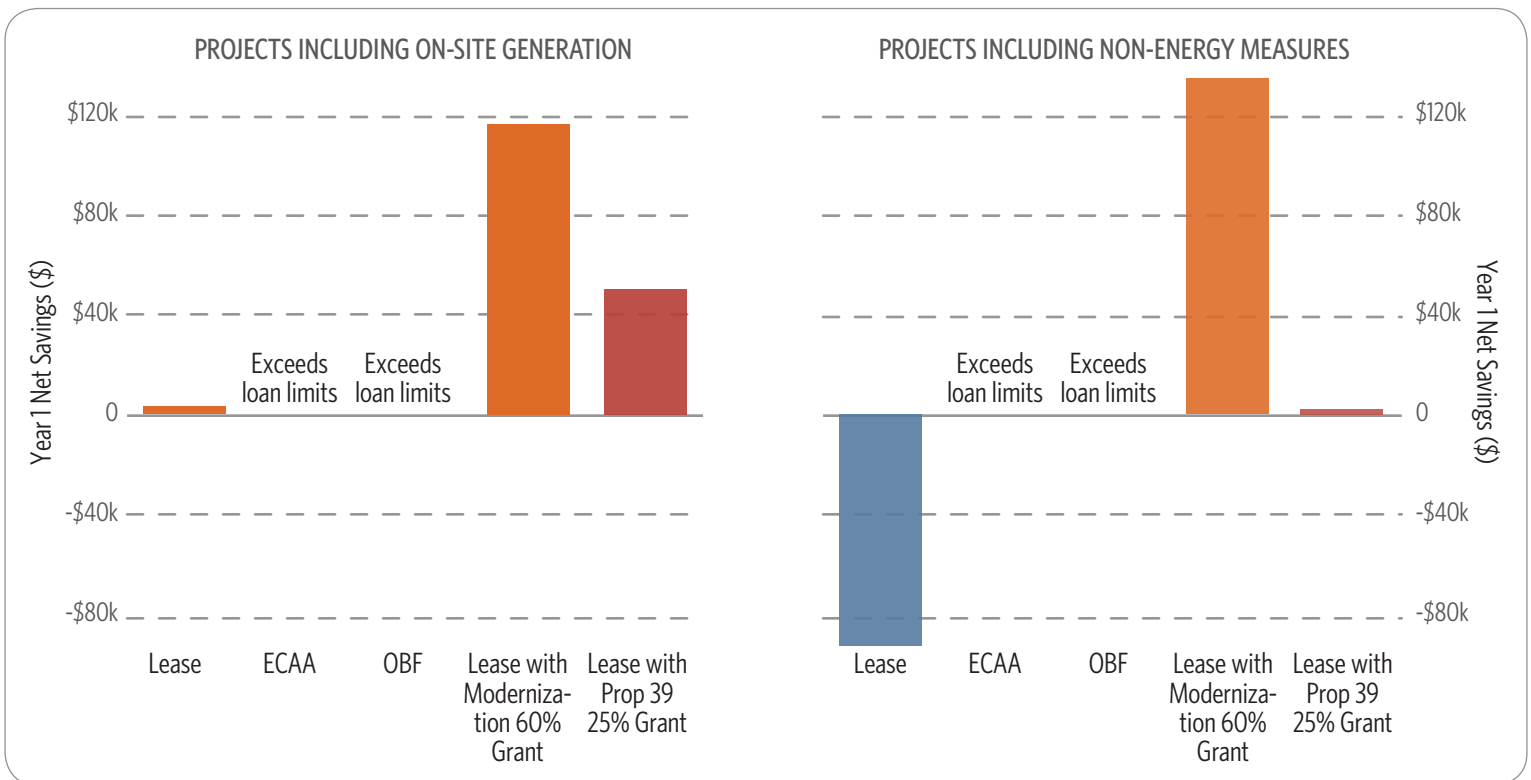
The LBNL data suggest that ESCOs combine shorter-payback measures with major HVAC measures — otherwise, major HVAC measures would have considerably longer payback. A representative from a prominent ESCO also confirmed this approach with us. Adding a major HVAC replacement to an existing energy-saving project almost certainly drags down the overall project return, but the project can still be budget-positive.

However, based on our interviews, many districts have already done lighting and controls retrofits. Major HVAC replacements on their own have a long payback in the California climate, and the economics of HVAC replacement on its own for districts that have already implemented short-payback measures will be much more challenging. Therefore, many HVAC-only projects would require significant non-loan support (local bond revenues or grants) to be viable. Offering support to lighting and controls projects may actually be counterproductive, as they easily self-finance and once done become a barrier to deeper measures.

Some major HVAC measures, such as boiler replacements, may be most likely to occur as emergency replacements. Proposition 39 could be targeted to help districts make up the difference in initial cost between a more efficient and less efficient unit, since the district will be making the investment either way.



On-Site Generation and Non-Energy Measures



Average on-site generation projects (from our interviews, this meant solar panel installation) come out very close to budget-neutral using a municipal lease. Projects combining energy and non-energy measures do not pay for themselves using a municipal lease; a Proposition 39 25% matching grant gets the average combined energy/non-energy project very close to budget-neutrality. Neither ECAA nor OBF can cover these projects. Given modernization fund support, both are extremely budget-positive for districts.

Note that these data are based on ESCO projects and may not be representative of all school facility projects. In particular, bond-funded projects often include a wide range of non-energy-related facility improvements, but ESCO projects include a more limited range of non-energy-related measures (see Table 4).

Conclusions from Modeling Exercise

In today's low-interest-rate environment, many projects can be financed through existing sources — including lighting-only projects, most projects combining lighting and HVAC, and some projects combining on-site generation with shorter-payback measures. In this context, Proposition 39 presents an opportunity to expand existing projects to achieve deeper energy savings, which are not as appealing to school districts because of their high upfront costs and longer payback.

This exercise underlines that cost of capital is not the predominant barrier to school energy efficiency improvements. In this context, the ideal functions for Proposition 39 include:

- Supplemental grants to facilitate deeper energy savings
- Technical assistance to help districts plan projects and access existing financing sources
- Targeted grants to assist districts that cannot access existing funding sources

Recommendations

The experiences of these 15 school districts, as well as our preliminary modeling of district project finance, suggest the following three recommendations on uses of Proposition 39 funding:

Provide technical assistance to help navigate the range of energy-saving projects and financing options available to them. Most districts receive frequent sales calls from companies pitching energy-saving services and products, but many lack the staff resources and technical capacity to evaluate potential projects. This could include:

- Assistance reviewing project proposals and selecting reliable contractors
- Expanding assistance and outreach may also be necessary for small districts, which are less likely to receive communications and marketing materials about energy-saving opportunities from energy service companies

Leverage current low interest rates to help districts pursue projects with greater energy savings.

- Proposition 39 grants should target projects that achieve deeper and greater energy savings and that districts cannot finance within existing budgets. They should not support already economical projects such as lighting retrofits, which most districts can finance themselves through existing funding sources without taking a budgetary hit.
- More costly measures that produce deeper and greater savings are most easily financed when packaged together with shorter-payback measures. Therefore, Proposition 39 should complement and extend, rather than duplicate, financing for shorter-payback projects — for example, through matching grants to projects that achieve significant energy savings, along with technical assistance to help districts select projects and secure financing.
- In order to accommodate more comprehensive projects, Proposition 39 funds could be used to expand the scope of existing public loan programs (ECAA and/or OBF) — making loans available in larger amounts, or for longer or more flexible terms. However, public loan funds may not have a significant impact on efficiency investment in

the current environment, where private capital is available to most districts at very low interest rates.

Tailor Proposition 39 support to meet districts' different financing needs and avoid displacing existing support.

- For districts that are already funding ongoing facility improvements through local bonds and/or state modernization grants, Proposition 39 would be most effective as a “sweetener,” encouraging the district to add more energy-saving measures to already planned renovations.
- For projects receiving modernization grants, facilitate adding further energy-saving measures, but do not duplicate the existing support. This could be accomplished by specifying that modernization funds do not count toward whatever leverage Proposition 39 grant-making requires or considers, or by directing Proposition 39 funds to modernization projects in the form of technical assistance rather than grants.
- For districts that cannot issue bonds but can access existing public or private loans for standalone energy-saving projects, Proposition 39 funds could facilitate access to these funding sources and, through additional financial support, make it feasible for them to carry out projects with deeper energy-saving measures that would not otherwise be economical.
- For districts that have difficulty accessing any of the existing funding sources, extend partial or full grant support. School districts that face general fund deficits, have declining enrollment, or are unable to pass local bond measures may all fall into this category. The number of these districts is unknown but could be sizable, given current fiscal conditions. The state School Facility Program's financial hardship program provides an example of how matching/leverage requirements can be relaxed given proof of financial hardship.

If Proposition 39 funding is allocated in a way that takes school district resources and needs into account, it can help California's schools start saving energy to help close budget holes immediately. And by taking advantage of existing sources of low-cost financing, Proposition 39 can help districts undertake more comprehensive, longer-lived projects, so that they can continue saving energy into the future.

Questions for Further Research

Our analysis suggests the following areas for further research to guide Proposition 39 implementation:

- Working to identify how many, and which, districts cannot access specific funding sources, in order to target potential hardship assistance. Examples include:
 - » How many districts are ineligible for modernization grants, and how often districts use the maximum modernization grant
 - » How many districts are at or close to their bonding capacity given current property values
 - » How many districts would currently qualify for hardship funding under the School Facility Program
 - » What form of assistance would make it possible for districts in fiscal distress to undertake energy-saving projects
- Further analytic work to better define how Proposition 39 assistance should be targeted to depth of retrofit, type of measure, energy savings potential, etc. — including how to target districts that have already implemented short-payback measures
- Further research on the resources and needs of small districts, given their diversity (see Appendix)

Appendix

Districts Surveyed

SELECTION METHODS:

- California Energy Commission staff referred us to Scott Valley and Taft City because they had recently taken out low-interest loans under the ECAA program.
- We reached out to San Francisco and Los Angeles to ensure that we had the perspective of large city school districts, given that they make up a significant share of the total student population.
- For other districts, we segmented the full list of California school districts into groups based on enrollment, climate zone, rural status, and financial characteristics, such as districts' history of passing bond measures.²³ We selected members of each group at random to ensure that we included a diverse range of districts.

NOTE ON VARIABILITY AND SMALL DISTRICTS:

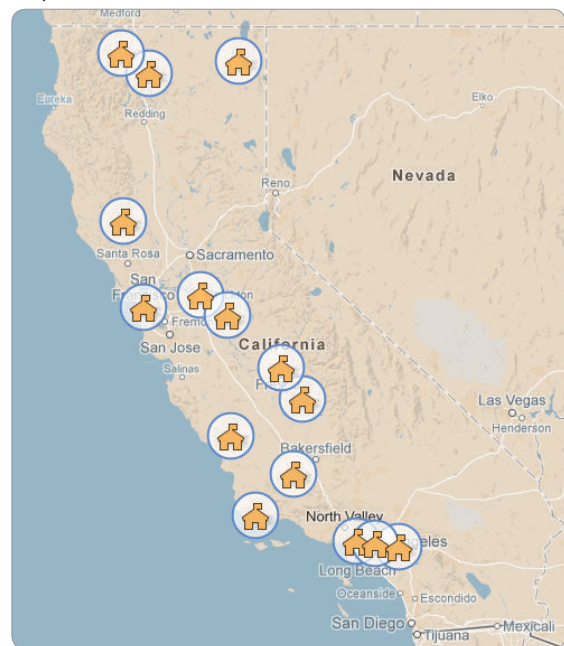
There is a great deal of variability and nuance in districts' technical capacity and ability to access financing. This variability is particularly pronounced among small districts. Further research on a broader sample of districts would be very helpful to guide Proposition 39 implementation. Districts with fewer than 1,000 students comprise more than 40% of California school districts, though they serve only 2.3% of students.²⁴

Table 5: Names and selected characteristics of school districts responding to Climate Policy Initiative inquiries

DISTRICT	REGION	ENROLLMENT ^a	PERCENTAGE OF STUDENTS RECEIVING FREE OR REDUCED-PRICE LUNCH
ALVORD UNIFIED	Southern California	19,741	75.2
CLOVIS UNIFIED	Central Valley	39,040	33.5
LOS ANGELES UNIFIED	Southern California	662,140	74.3
LUCERNE ELEMENTARY	Northern California	216	77.4
MODOC JOINT UNIFIED	Northern California	846	55.9
SAN FRANCISCO UNIFIED	Bay Area	56,222	60.4
SAN MIGUEL JOINT UNION	Central Coast	610	63.1
SCOTT VALLEY UNIFIED	Northern California	672	62.7
SISKIYOU UNION HIGH	Northern California	622	58.5
STOCKTON UNIFIED	Central Valley	38,810	81.7
TAFT CITY	Central Valley	2,107	75.7
VISALIA UNIFIED	Central Valley	27,268	60.0
VISTA DEL MAR UNION	Southern California	101	30.1
WALNUT VALLEY UNIFIED	Southern California	14,658	13.3
WATERFORD UNIFIED	Central Valley	3,883	62.8

^a Enrollment and free/reduced-price lunch data from Education Data Partnership, <http://www.ed-data.k12.ca.us/Pages/Home.aspx>

Map of interviewed districts



²³ Bond measure data compiled by Next Generation: <http://thenextgeneration.org/blog/post/prop39-school-bonds>

²⁴ Education Data Partnership, <http://www.ed-data.k12.ca.us/Pages/Home.aspx>

Model Documentation

Overview

We built a simple project finance model to analyze the potential effects of different funding sources on the financing of five common K-12 school energy efficiency projects (lighting, major HVAC, minor HVAC, on-site generation, and non-energy projects). To build the financial profile of a typical project in each category, we relied on data on ESCO projects gathered by LBNL under contract with the National Association of Energy Service Companies and data from the California Database for Energy Efficient Resources. We then assessed these typical projects against five funding sources: a municipal lease, a 1% ECAA loan, on-bill financing, a municipal lease plus a 60% matching state modernization grant, and a municipal lease plus a hypothetical 25% Proposition 39 grant.

Project Financial Profile

We constructed three metrics (total cost, simple payback period,²⁵ and measure lifetime) from aggregated data in LBNL's ESCO database and the California Database for Energy Efficient Resources.²⁶

- Total cost represents the median nationwide value for that category, rounded to the nearest \$100,000 to avoid implying precision.
- Simple payback figures are based on the median nationwide value for each category; however, we lengthened the HVAC, on-site generation, and non-energy payback periods slightly to account for California's mild climate. The LBNL data show

Table 6: Assumptions on total cost, simple payback, and measure lifetime used in model

PROJECT TYPE	TOTAL COST	SIMPLE PAYBACK (YEARS)	MEASURE LIFETIME (YEARS)
LIGHTING-ONLY	\$700,000	7.5	10
INCLUDING MINOR HVAC	\$1,200,000	10	11
INCLUDING MAJOR HVAC	\$1,400,000	12	14
INCLUDING ON-SITE GENERATION	\$2,600,000	17	18
INCLUDING NON-ENERGY MEASURES	\$3,500,000	13.5	11

that the median California simple payback is one year longer than the median national simple payback. Building on this, we added one year to minor HVAC, on-site generation, and non-energy project payback values, and two years for major HVAC projects. We made no change to lighting payback. We rounded to the nearest half-year to avoid implying precision.

- For measure lifetime, we turned to the California Database for Energy Efficient Resources,²⁷ a set of values officially approved by the California Public Utilities Commission for use in evaluation, measurement, and verification of savings from energy efficiency programs. We filtered the data to include only non-residential measures, then took averages of the measures that seemed most logically associated with each project type, again rounding to the nearest half-year. In all cases, we assumed that projects included multiple measures; therefore, for example, we included lighting measures in the other project types when considering measure lifetime.
- The database does not include measure lifetime for on-site generation projects or (of course)

projects including non-energy measures. Instead, we assumed a 20-year lifetime for on-site generation measures before averaging with other measures. For combined energy/non-energy projects, we assumed the lifetime of the energy measures in the combined projects was the same as the minor HVAC projects.

Table 6 summarizes the resulting parameters for each project type.

25 Simple payback is project cost divided by annual energy savings.

26 In addition to the five project types shown, the LBNL data also includes an "Other" category, which we disregarded. These project types were set by LBNL and have been used in LBNL publications based on these data. We also received both California and national data on the overall median K-12 school projects regardless of category. (We could not access California-only K-12 data on each project type, as there were not enough projects in each category to avoid violating nondisclosure restrictions on the data.) Data source: Lawrence Berkeley National Laboratory (LBNL). 2013. Statistics from the LBNL/National Association of Energy Service Companies database of projects. Personal communication with Peter Larsen, April.

27 <http://www.energy.ca.gov/deer/>

Financing Sources

The body of the paper largely describes existing funding sources and their constraints. We assume that utility rebates covered 20% of the cost of each project. This is based on data from National Association of Energy Service Companies showing that utility rebates pay 20% of K-12 ESCO projects on average,²⁸ and from California Solar Initiative data showing that the average incentive delivered to non-profit and government solar projects accounted for 20% of total reported system costs. The one exception is non-energy projects, which by definition include many measures for which rebates are not available. Instead, we assumed that rebates equal the Minor HVAC rebate (\$240,000).

If the project cannot be fully financed under ECAA or OBF due to total cost or term caps, we do not show that financing source. This may be an overly limiting assumption (see limitations below).

Calculating Year 1 Net Savings

For each financing source, we assume that the principal is fully amortized over the term of the loan or lease. The term is the measure lifetime or the maximum allowable (10 years for OBF, 13 years for ECAA), whichever is shorter. We are thus calculating an “annual” net savings amount. However, since we do not build energy price escalation into the model, the calculated value represents first-year net savings. Net savings would increase if energy costs rise.

Limitations

As with all modeling exercises, we made many assumptions. Varying values in small ways does not change the qualitative messages of the modeling exercise, but our results should not be used for applications requiring quantitative precision without further vetting with the K-12 energy efficiency financing community.

First, the projects modeled are, we hope, typical of the types that K-12 districts might pursue, but given the wide variability of district sizes, school sizes, climate conditions, energy costs, etc., many projects would not conform closely to the typical projects we have modeled.

Second, our assumptions about measure lifetimes, and thereby terms of financing arrangements, may be conservative. Municipal lease arrangements of 15 and 20 years came up in several of our interviews; these are longer than the assumed measure lifetimes for any of the projects. Longer lease terms would improve first-year net savings and further erode any advantage ECAA and OBF might have for those projects.

Third, measure lifetimes and repayment schedules are simple in our model. In reality, no single measure lifetime applies for projects that package multiple measures. Further, in some cases, districts negotiate repayment schedules to match the project savings profile and other financing arrangements. For one district we spoke with, this flexibility was important in arranging the financing. However, a financing expert at an ESCO indicated that repayment schedules are often set simply and terms based on weighted average lifetimes for projects. This suggested that, at least for some projects, our approach is not wildly oversimplified.

Fourth, we have assumed that if ECAA and OBF cannot cover the full costs of the project, they cannot easily be “backstopped” by a municipal lease. We therefore do not show municipal leases in combination with ECAA and OBF as a financing option. How true this is remains unclear. One interviewed district combined a (small) ECAA loan with a municipal lease. However, an ESCO representative said there may be difficulties with such combined funding arrangements. ECAA requires that districts own any equipment the program finances. How this applies to lease-purchase arrangements, which presume that the district will own the equipment after the term of the lease is complete and grant title to the equipment upon lease signing, is unclear — to us and perhaps to the market participants themselves.

Finally, we selected these five typical projects based on past project data. This likely undersells the potential utility of the programs with lending limits: ECAA and OBF. Districts can design projects around the terms of these programs — for example, buying down excess project costs from any other revenue sources they may have available or limiting the scope of the project in order to fit the project into the funding source. This, of course, does not mean that program limits do not constrain these projects. Indeed, a natural interpretation of the cost and payback data we accessed is that these limits are significant for K-12-scale projects and, if relaxed, could make ECAA and OBF considerably more attractive.

28 “Using California Proposition 39 to Maximize Job Creation and Public Facility Capital Improvements,” National Association of Energy Service Companies white paper, February 2013, p. 6.