

CE+BFI

Clean Energy and Bond Finance Initiative



Reduce Risk, Increase Clean Energy:

How States and Cities are Using Old Finance Tools
to Scale Up a New Industry

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Report Prepared for the Clean Energy and Bond Finance Initiative (CE+BFI)

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Clean Energy Group and
the Council of Development Finance Agencies

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Clean Energy Group (CEG)

CEG is a leading national, nonprofit advocacy organization working on innovative technology, finance, and policy programs in the areas of clean energy and climate change. CEG also manages the Clean Energy States Alliance, a coalition of state and municipal clean energy funds. For more information about CEG, visit www.cleangroup.org.



Council of Development Finance Agencies (CDFA)

CDFA is a national association dedicated to the advancement of development finance concerns and interests. CDFA is comprised of the nation's leading and most knowledgeable members of the development finance community representing public, private and non-profit entities alike. For more information about CDFA, visit www.cdfa.net.

CE+BFI

Clean Energy and Bond Finance Initiative

Clean Energy and Bond Finance Initiative (CE+BFI)

As the country looks for new sources of clean energy finance, a group of public and private investors, policy makers, and industry practitioners have agreed to explore new ways to scale up clean energy investment. This partnership, the Clean Energy and Bond Finance Initiative (CE+BFI), brings together public infrastructure finance agencies, clean energy public fund managers, and institutional investors across the country to explore how to raise capital at scale for clean energy development through bond financing. For more information, visit www.cebfi.org.

Table of Contents

EXECUTIVE SUMMARY	3
State and City Examples of New Financial Structures	5
Recommendations for State and City Governments on Clean Energy Finance.....	6
Recommendations for the Federal Government on Clean Energy Finance	7
The Finance Background for Clean Energy	8
Leading the Way to Reduce Financial Risk.....	10
Credit Enhancement and Clean Energy	12
Morris Model: Credit Enhancement to Support a New Bond/PPA Finance Model for Solar	12
A Primer on Credit Enhancement and Risk Reduction	13
Delaware Sustainable Energy Utility (DSEU): State Agency General Obligation Bonds Supported by ESCO Guarantees	16
Hawaii Green Infrastructure Loan Program: System Benefit Charges as Credit Enhancement for Bonds	17
Financing Energy Resiliency Following Hurricane Sandy: Loan Loss Reserves for Private Lenders...	19
Securitization of Energy Efficiency Loan Portfolios.....	20
Connecticut Energy Finance and Investment Authority (CEFIA): The First Green Bank.....	22
California State Treasurer’s Office: A Virtual Green Bank Using Existing Bond Authorities for Clean Energy	24
Federal Credit Enhancement: The State Clean Energy Finance Initiative (SCEFI).....	25
Conclusion: Towards a New Asset Class for Clean Energy.....	27
ENDNOTES.....	29

Authors' Note

This paper is a product of a joint alliance of the Clean Energy Group and the Council of Development Finance Agencies, through the Clean Energy and Bond Finance Initiative or CE+BFI (www.cebfi.org). CE+BFI is a project dedicated to expand the use of bond finance for clean energy, through a national partnership of clean energy and public finance officials across the country. This work is generously funded by the Surdna Foundation, the Tilia Fund, and the Kresge Foundation. The views and opinions in this report are the Authors' alone.

EXECUTIVE SUMMARY

Reduce Risk, Increase Clean Energy: How States and Cities are Using Old Finance Tools to Scale Up a New Industry

To make the old new again. That is the future of clean energy finance, if the state innovation taking place across the country tells us anything.

Innovation is typically the driver of the most profound business and financial successes. Across the country, state and municipal leaders have begun to embrace finance innovation that might well be the key to the sustained growth of clean energy. And for one of the most technologically advanced industries in the world, it's surprisingly low tech.

Financial innovation is offering one of the best hopes for scaling the clean energy industry. But it's not the invention of an entirely new class of complex tradable securities that's beginning to accelerate the industry's growth.

States and cities are showing us that we don't need entirely new financing models to scale up clean energy. Old, well established conventional tools such as bonds can meet much of the challenge to dramatically increase investment. With these tried and true financial instruments, clean energy projects can access low-cost, long-term capital markets, and investors will be able to purchase investment grade securities that meet their financial and environmental requirements.

But one critical change has to happen for this to work. Energy policy makers must figure out how to successfully transfer conventional credit enhancement tools to the clean energy sector.

Credit enhancements, simply put, are ways to reduce the financial risk of a project, to make lenders more secure that they will be repaid.

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Not flashy and often complicated to explain to those outside finance, they have been used in virtually every other sector to raise capital to scale. They are the bridge, the linchpin financial instrument, to get projects to capital markets.

This paper shows how a quiet revolution in clean energy financing is now happening at the state level. States and cities, for the first time, are beginning to use these credit enhancement tools to finance clean energy technology deployment.

A new framework for clean energy investment is arising, with states once again in the lead. From Hawaii to New York to New Jersey and Connecticut, and in cities like Toledo, in programs as diverse as solar PV and energy efficiency, states are crafting a new financial architecture for clean energy.

Public finance in clean energy is slowly beginning to resemble the policy framework that made it possible to finance cars and mortgages and other trillion-dollar capital markets. While the hard work of creating this new financial structure for clean energy is taking shape outside of Washington, the paper also proposes a new federal credit strategy to accelerate state innovation.

Over the last decade, the clean energy sector has made great strides in reducing the hard costs of a broad range of technologies, from wind to solar. But these hard cost reductions are not enough to drive scale. One reason is the stubbornly high cost of capital for clean energy investment. How competitive clean energy is with other energy technologies depends increasingly on what kind of financing is available and on what terms.¹

So to reduce the overall cost of clean energy, the focus now also must be on reducing capital costs for clean energy investment. The good news is that can be done by using many traditional methods that have raised cheaper financing through the capital markets.

As Richard Kauffman, a former senior adviser at the U.S. Department of Energy and who now leads New York State's energy finance efforts, said:

“Projects in the U.S. rely upon an old fashioned and anachronistic form of financing that is different than how other parts of the US economy are financed. Rather than use bond or stock markets, projects depend on non-capital market sources of so called tax equity, bank debt, and private equity where rates of return can approach typical private equity rates of return of 12-15 percent. [New strategies]... don't require going to the lab; they involve applying financing techniques that have already been invented and are used widely in other parts of the economy, but have not yet been applied to this sector.”²

That is the clear trend that the industry needs to follow. Just as America financed its emerging infrastructure, its roads and bridges and airports, the clean energy sector is following suit. It is moving from an emerging industry strategy that was driven solely by the need to reduce single technology costs, to one that must reduce risk—especially financing risk.

The states are leading us there. They show us a picture of new finance structures for clean energy that are just now coming into focus, like a blurry negative about to reveal a new way to look at and act in the world.

Just as America financed its emerging infrastructure, its roads and bridges and airports, the clean energy sector is following suit.

State and City Examples of New Financial Structures

Here are some of the ways states and cities are creating a new financial structure for clean energy finance, using credit enhancement and other tools to unlock capital markets for clean energy (more details of these examples follow in the remainder of the paper).

- ❖ In a first, Hawaii will use its utility system benefit charge as a credit enhancement to support bond finance for clean energy; this could be a national model as over twenty states have similar utility charges that could be used to float bonds.
- ❖ In another first in the country, New York State is figuring out ways to “securitize” energy efficiency loans, to sell them to Wall Street, but with an innovative approach—based on unprecedented EPA approvals—that will use the bond grade guaranty of its water infrastructure agency to finance clean energy, linking clean energy and water quality benefits.
- ❖ In a model that could be applied nationally, New Jersey municipalities have financed solar installations on public buildings through bond issuances that combine bond finance and solar leasing to reduce the overall cost of capital for solar financing.
- ❖ To expand the reach of energy efficiency installations, Delaware has pioneered the use of tax-exempt bonds combined with a dedicated organizational structure to raise millions of dollars for deeper efficiency investments.
- ❖ Innovation at the municipal level is occurring in places like Toledo where its port authority has issued a bond that was credit enhanced with a 10% debt service reserve account, which further reduced investor risk with a pledge secured by fees on municipal properties.
- ❖ To finance the increasing need to reduce power outages from future, extreme weather events, New York is considering ways to reduce credit risk to private lenders and lease financing entities to help them finance power resiliency improvements in critical public and private infrastructures.
- ❖ In another effort to raise funds to finance “resilient infrastructure” New York City has proposed that the state impose a surcharge on insurance property and casualty insurance policies, to provide revenue to float an infrastructure bond.

The goal of these innovations is to firmly establish credit-enhanced clean energy bonds as a new asset class for institutional investors who could begin to invest in a clean energy asset that has an equivalent credit risk/return profile as any other similarly rated asset.

Recommendations for State and City Governments on Clean Energy Finance

With state bond agencies and clean energy officials beginning to work together to improve clean energy project financing, here are recommendations for how they might proceed and for how the federal government could effectively partner with them.

- ❖ In each state, the energy agencies and bonding authorities should develop a state partnership to create new public/private finance tools for clean energy.
- ❖ Rather than only offering grants and rebates, states should create new finance tools that work to reduce financial risk in clean energy deals.
- ❖ To finance energy efficiency improvements in public buildings, states should consider using tax-exempt bonds combined with a dedicated organizational structure as pioneered in Delaware.
- ❖ To finance solar installations on public buildings, states and municipalities should consider adopting Morris Model-type bond issuances that combine bond finance and solar leasing.
- ❖ States with utility system benefit charges for energy efficiency or clean energy should consider a Hawaii-type structure which uses a dedicated utility surcharge to provide credit-enhanced bond financing; such a bond structure can access the capital markets with an investment grade security that does not require the state's general obligation guaranty.
- ❖ States should consider creating a bank loan guaranty program similar to Vermont's, where a state agency provides loan loss reserve cash accounts to guaranty commercial energy efficiency loans.
- ❖ To address weather-related power outages, states should consider a New York proposal to provide credit enhancement to private lenders and lease financing entities that finance power resiliency improvements in critical public and private infrastructures.
- ❖ To float a bond to finance resiliency measures, states should investigate instituting a "Resiliency Assurance Charge" (RAC) on property and casualty (P&C) insurance policies, as New York City is considering.
- ❖ To access capital markets, state energy officials should consider various securitization strategies, such as working with state water bonding authorities that, under new EPA approval, can provide credit enhancement for energy efficiency loan pools to be sold to Wall Street.

These are but a few of the emerging new financing approaches that states can use to help clean energy projects gain access to capital markets and private investment.

Recommendations for the Federal Government on Clean Energy Finance

U.S. Department of Energy (DOE) Secretary Ernie Moniz has expressed strong support for more and stronger partnerships between the federal government and the states on clean energy. As DOE has done previously in creating technology and research partnerships with the states, it is now time for DOE to create dedicated partnerships to improve clean energy finance. Moreover, Congress should consider enacting appropriate legislation to support federal-state partnerships. In particular:

- ❖ Congress should consider passing a new credit enhancement program such as the *State Clean Energy Finance Initiative (SCEFI)* that would provide federal funds to state clean energy programs as credit enhancement to encourage state innovation for finance programs of the states' choosing. The SCEFI proposal is modeled after the State Small Business Credit Initiative that Congress enacted in 2010.
- ❖ DOE should establish a funded and dedicated program with the specific purpose of devising program and funding support for state clean energy finance initiatives.
- ❖ As part of that effort, DOE should consider providing more program funding and technical support to states to help them devise clean energy credit enhancement programs, which would leverage existing federal dollars but also additional public and private capital.
- ❖ Whether or not Congress enacts clean energy finance legislation, DOE should use the remaining DOE loan guarantee authority to fund state credit enhancement programs for clean energy or offer a modest credit subsidy in exchange for standardizing contracts and creating data for bond ratings.

See: http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=0488fbd8-d2b9-4fae-962f-04833e7f78d5.

The Finance Background for Clean Energy

The ultimate success for clean energy investment is to create finance products that can be bought and sold on Wall Street like any other publicly traded marketable security. Bonds and other fixed income securities are not a replacement for equity investment in clean energy, but a source of needed borrowed funds that leverages and increases the profits of equity investors.

This is a new challenge for the clean energy sector. It means moving away from the heavy reliance on tax equity driven, one-off transaction way of financing clean energy, with its attendant high transaction costs. Instead, financing clean energy has to start looking more like the bond market for other traditional infrastructure projects, such as highway and water treatment projects.

Most important is the need to reduce risk at each step of the finance value chain, from project development through the bundling and sale of securities to the institutional investor.

Credit enhancement is another term for these financial risk reduction methods. Credit enhancement simply refers to the various means a project or company uses to improve its credit worthiness and reduce its cost of borrowing. Through credit enhancement, the lender is provided with additional reassurance that the borrower will honor its financial obligation. That can be done through the pledge of additional collateral, the purchase of insurance, a third-party guarantee, establishing a cash reserve account, or some other financing tool.

Credit enhancement reduces the risk of default. That increases the overall credit rating of a project. In turn, that brings down the cost of capital needed to finance projects and companies.³

Credit enhancement is the key to the public infrastructure finance world; it is used to strengthen thousands of transactions every day by

reducing financial risk for lenders. The construction of the nation's roads, bridges, hospitals, airports—virtually every large infrastructure project in America—relies on credit enhancement, which can be done with bond insurance, letters of credit, and other mechanisms.

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This is the way trillions of dollars have been raised through the capital markets for needed public infrastructure investment.

Because we take our infrastructure for granted, it is easy to forget how important credit enhancement has been to the creation and continued growth of other industries. Eighty years ago, there was no such thing as the 30-year fully amortizing mortgage. Banks would only make short-term mortgage loans of five years or less, interest only, with the entire principal amount due and payable in a single payment at the end of the loan.⁴ It was a time when very few Americans were able to buy homes.

In response to this need for long-term, affordable mortgage financing, the U.S. Government created the Federal Housing Administration (FHA). As it does today, the FHA provided guarantees on mortgage loans to protect lenders and investors in the event the borrower defaulted.

A few years later, the Federal National Mortgage Association (“Fannie Mae”) was created to

purchase bank mortgage loans that had standardized terms and documentation, and then to bundle and sell them in the capital markets to private investors.

Similarly, the U.S. Small Business Administration (SBA) was established in 1953 to provide up to ninety percent guarantees for bank loans to qualifying small businesses. These loans complied with standardized terms and documentation, which allowed the bundling and sale of the guaranteed portions of the loans into a secondary market.

This is how a new asset class gets created, with government credit enhancement.

This is how a new asset class gets created, with government credit enhancement. By doing so, unrated individual loans gain access to long-term, low-cost capital markets.

We can do the same in clean energy. We can create a new asset class that would enable the sector to access low-cost capital from Wall Street and allow clean energy technologies to reach scale.

Leading the Way to Reduce Financial Risk

Risk. Much of the dramatic growth of the clean energy industry over the past 15 years has relied on grants, incentives, rebates, policy initiatives, and technical support from state and municipal clean energy programs. But continued growth will be limited as long as it relies primarily on deep public subsidy.

This basic issue hits at both the federal and state level. At the federal level, the country has begun to see a dramatic decline of federal support for clean energy, as more than seventy-five percent of federal program dollars for clean energy are coming to an end.⁵

In addition to the decline in direct federal support, the future of federal tax subsidies for clean energy—the key tool to finance the industry to date—remains in doubt. Production tax credits have been subject to the continual uncertainty of year-to-year approval, and clean energy investment tax credits are swept up in the current ongoing debate around tax reform.

So the federal and state finance trends are clear—the industry will have to do more with less public funding in the future.

This has important implications for how public agencies shape their funding support for the industry. Public clean energy programs must design “smart subsidies” that effectively leverage additional investment. Instead of just grants or rebates, states need to pursue a better integrated approach that provides public financial support in the form of credit enhancement to leverage more private capital.

The good news here is that many state programs are already starting to move in this direction. State clean energy funds (state CEFs) have been leaders in building the market for clean energy.⁶ The emergence of state clean energy funds as leaders in funding clean energy

coincides with a welcome trend towards de-federalization in the clean energy sector. The last decade has seen much greater support at the state and local program level for clean energy deployment and project financing strategies.

In the past two years, state CEFs also have begun to focus their clean energy and economic development resources in support of newly organized “green banks.”⁷

This trend with state CEFs is reinforced by a growing interest in clean energy from state and local development bond authorities, something they had not often pursued in the past. The public finance agencies have entered into a partnership with state clean energy leaders to work on ways to apply bond tools to the clean energy sector.⁸

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Many bond authorities have expressed strong interest in greater clean energy investment, just as many state CEFs are committed to leveraging their funds to attract new sources of capital to clean energy. There is a broad range of traditional finance industry professionals—private sector bond counsel, underwriters and project developers—who now have an interest in adapting development finance tools to clean energy projects.

Reducing Risk. What is happening now is a closer collaboration between these worlds—the state and municipal clean energy officials

and the country's development finance agencies. The challenge is to accelerate the learning curve for clean energy and the bond development experts, and create a new clean energy bond "asset class" that institutional investors and Wall Street can readily purchase.

This collaboration takes place at a time when commercial banks are still faced with much greater credit oversight than in the recent past. They have tightened their credit standards in the aftermath of the Great Recession of 2008.

In the past, most renewable energy projects have had to rely on bank financing. But ongoing concerns regarding the adequacy of collateral and borrowers' debt capacity have resulted in many of these clean energy commercial loans now not being made. These projects, however, provide 20 years or more of fixed returns, something that appeals to bond investors.⁹

So these are the trends: declining federal subsidy support and tighter bank lending, and a growing interest in bond financing.

Public officials designing clean energy investments must develop finance products that address these trends. They must design more creative public financing tools. They must address lending constraints. They also must match the project developer's need for long-term capital with the bond investor's need for

long-term fixed returns from investment grade securities.

Credit enhancement has a significant part to play to create this new asset class for clean energy.

Just as credit enhancement has been essential for life insurance companies and pension funds to purchase mortgage securities, credit enhancement will be needed to reduce financial risk in the creation of a clean energy asset class.

As in the last few decades, states are leading the way in this strategy, adapting new and creative approaches to the finance challenges of clean energy.

So these are the trends: declining federal subsidy support and tighter bank lending, and a growing interest in bond financing.

Credit Enhancement and Clean Energy

Building upon these traditional credit enhancement approaches, states are developing new financing initiatives to draw significant private investment into clean energy. There is a growing movement to use conventional finance tools to scale up clean energy finance. It is a trend that is likely to change the way the country funds clean energy projects and companies.

These financing programs use a range of credit enhancement tools ranging from general obligation guarantees and creation of loan loss reserves to the pledging of utility system benefit charges and securitization strategies.

The following financing approaches demonstrate the importance of the creative use of state and municipal credit enhancement for gaining access to capital markets and private investment.

Morris Model: Credit Enhancement to Support a New Bond/PPA Finance Model for Solar

The Morris Model is an innovative financing structure that has been implemented repeatedly in New Jersey. The model is an example of a public-private partnership (“P3”) because the potential risks—and benefits—of public improvements are shared with private firms. The primary credit enhancement in this structure is the general obligation guaranty of the participating New Jersey counties.

In the case of the Morris Model, the purpose of the P3 is to realize public sector energy savings by installing solar panels on public buildings. The finance model involves four entities—the county, a separate county authority, a solar developer, and the public facilities themselves—and is structured to take full advantage of bond financing, tax credits, state solar incentives, lease revenue, and a power purchase

This financing structure is a hybrid model by which a public entity issues a government bond at a low interest rate and transfers that low-cost capital to a developer in exchange for a lower PPA price.

agreement (PPA). The low cost of capital is passed through to the county entity in a lower PPA price; the county entity avoids having to develop, own, and operate solar generation equipment themselves. The solar developer instead owns, operates, and maintains the PV panels. In exchange for assuming this responsibility, the solar company receives low-cost capital from bond proceeds, as well as benefits through accelerated depreciation, the sale of New Jersey’s Solar Renewable Energy Certificates (SRECs), federal tax credits, and PPA revenue.

This financing structure is a hybrid model by which a public entity issues a government bond at a low interest rate and transfers that low-cost capital to a developer in exchange for a lower PPA price. Under the model, a public entity (the administrator) issues a request for proposals for a solar developer to build, operate, and own one or more solar projects on public buildings (local hosts). The administrator sells bonds to finance the development costs of the PV installation and then enters into both a lease-purchase agreement with the winning bidder and a PPA (on behalf of the local hosts) to buy the electricity from the PV system.

The bonds issued for the Morris Model are “double-barreled,” which means they rely on both project revenue, in this case generated from the PPA, and a county general obligation guaranty, which is a pledge from the county to pay bondholders if there were a default in bond payments.

A Primer on Credit Enhancement and Risk Reduction

Credit enhancement is financial risk reduction, simply stated. It is a set of financial measures that reduce credit risk and strengthen the credit rating of a financial transaction. By strengthening the credit rating, it lowers the cost of financing. Common forms of credit enhancement include:

- **Loan guarantees.** A loan guaranty is a legally binding agreement whereby the guarantor is obligated to pay some or all of what is due on the debt in the event the borrower fails to pay. In regard to bond financing, one form of guaranty is state *general obligation* support, in which the state pledges its full faith and credit to the issuances of local governments or to a pooled bond issuance. Many states may be reluctant to pledge their general obligation support as they have statutory limitations on the amount of general obligation debt they can issue and so must prioritize which projects will receive this credit enhancement. Also, many states may be experiencing considerable fiscal pressure, which limits their ability to provide general obligation support.
- **Debt service reserves and loan loss reserves.** Debt service reserves refer to cash held in a dedicated account that is available to pay interest and principal payments on a loan for a designated number of months in the event the borrower fails to make scheduled payments. Loan loss reserves, which may be funded with assistance from a public agency, may be required to cover losses in the event of a loan foreclosure. It strengthens the collateral available in a transaction by providing liquid funds (i.e., cash or readily converted to cash) held in a dedicated account. In regard to bond financing, *cash collateral accounts* are frequently used for these purposes, and are funded either with available cash reserves or borrowed funds.
- **Subordinated debt.** A public agency or other lender may agree to allow their loan to hold a lower priority position than senior lenders in a transaction. If there is a loan default, lenders with subordinated debt will generally not be repaid until after the senior debt holders are paid in full. This places the senior lenders in an enhanced position in relation to cash flow and collateral, and reduces their risk. Similarly, pools of loans can be bundled and resold to investors through bond issuances. This is commonly done with residential mortgages, commercial mortgages, auto loans and credit card debt obligations. Often, these securitizations may be divided into classes or “tranches,” which are structured according to an agreed priority of cash flows and collateral. Those tranches that are most deeply subordinated are the riskiest and provide protection to the holders of the senior class of securities.

- **Interest rate buy-downs.** A public agency, in order to accomplish certain policy objectives, may “buy down” the market interest rate of a loan by providing grant funds that preserve or enhance the lender’s interest rate spread at the same time providing a below-market interest rate loan to the borrower. The lower cost financing increases the borrower’s cash available to repay the loan and reduces the lender’s risk.
- **Bank letters of credit.** Similar to a guaranty, banks issue standby Letters of Credit (LOCs) on behalf of a borrower to provide comfort to a lender that the obligation will be repaid in accordance with the terms of the letter of credit agreement. Normally, the bank, the beneficiary lender, and borrower do not expect that a standby LOC will be drawn upon. However, it provides immediate cash liquidity to repay the indebtedness in the event of a payment default, reducing risk to the lender.
- **Credit insurance products.** For bond financing, insurance can be obtained from specialized insurance companies (also called monoline insurance companies) that agree to make scheduled payments of interest and principal on a bond in the event that a payment default occurs by the issuer. Because of this risk reduction, insured bonds are often priced higher, have lower interest rates, and are more liquid (i.e., can be bought and sold easily without a sharp loss in value).

The bonds are also issued for a pool of projects, rather than as an individual issue for each public building. Because of the county's general obligation guaranty, this structure yields an affordable source of capital for the solar projects. The county's strong agency-rated guaranty reduces financial risk for bondholders, which decreases the interest rate, and the pooling of projects lowers the costs of issuance per building.

For the Morris Model to be widely replicated in other states, there are a number of policy and legal requirements that need to be in place.¹⁰

- **Renewable energy law:** States must have a sufficient renewable portfolio standard (RPS) or similar renewable energy support policy to attract third-party developers. These policies may include a strong RPS, solar set-asides, active renewable energy certificate (REC) markets, tax credits, and other financial incentives.

- **Regulations surrounding third-party PPAs:** In some states, laws governing the regulation of public utilities limit opportunities for third-party developers to own a host's solar PV system. In other states, public utility regulation allows potential project hosts to enter PPAs with third-party developers.
- **Laws governing public contracts:** 15 year contracts or longer with a creditworthy entity are important for financing a third-party PPA. Laws that impose contract length limitations may impede use of the hybrid model by administrators.
- **Laws governing public procurement:** Administrators often want to select the winning bidder based on criteria beyond price. State and local regulations may vary with respect to how competitive solicitations for goods and services may be structured.

Alaska:

Loan and Bond Guarantees to Finance Small to Medium-Sized Projects

In July 2012, Alaska Governor Sean Parnell signed legislation to create a fund within the Alaska Industrial Development and Export Authority (AIDEA) to provide loans, both directly and through banks and credit unions, to finance small to medium-sized energy projects in the State.

AIDEA can make direct loans to borrowers for energy projects or participate in loans through banks or credit unions. The authority is also able to insure project obligations by offering a loan or bond guaranty. Examples of eligible projects include improving energy efficiency in commercial buildings and clean energy generation development

The authority is able to offer loan or bond guarantees as well. The new energy fund began operations with an initial capitalization of \$125 million. The fund is one of a number of finance tools needed to help the state achieve its goal of 50 percent electricity generated by renewable energy by 2025.

See: <http://www.alaskajournal.com/Alaska-Journal-of-Commerce/June-Issue-3-2012/Gov-Parnell-signs-bills-expanding-AIDEA-finance-ability/>

Delaware Sustainable Energy Utility (DSEU): State Agency General Obligation Bonds Supported by ESCO Guarantees¹¹

The Delaware Sustainable Energy Utility (DSEU), a state created nonprofit organization, has issued \$70.2 million in tax-exempt bonds to finance energy efficiency improvements in state public buildings. In this case, the credit enhancement takes the form of a general obligation guaranty of each state agency that is implementing efficiency measures, combined with the guaranty of each participating, pre-qualified energy services company (ESCO).

The DSEU was set up in 2007 by the Delaware Legislature to finance energy efficiency upgrades in public buildings as an infrastructure finance program. DSEU is authorized to issue bonds to finance efficiency projects, with payments to the bond holders to be made solely from agency installment payments funded through state agency budget appropriations and backstopped by guaranteed energy savings agreements for each agency retrofit project. The issued bonds are not deemed to constitute a debt or liability of the State and interest on the bonds is exempt from state income tax.

DSEU bond proceeds have funded a broad range of lighting and building upgrades. DSEU has pre-qualified energy service companies (ESCOs) to implement the efficiency improvements. The ESCOs enter into Guaranteed Energy Service Agreements with the agencies, and in turn the agencies enter into Installment Payment Agreements (IPAs) with DSEU to pay for the improvements. DSEU executes Construction Funding Agreements with ESCOs to pay for the capital improvements, and the DSEU issues bonds that are secured by payments under the agency IPAs with DSEU to finance those capital improvements. The obligation of each agency to make payment is absolute, subject to appropriation. This full recourse against each agency is further strengthened by a memorandum of understanding (MOU) with the state Office of

Management and Budget (OMB). In the MOU, the State recognizes that the agency is obligated to make payments under the Installment Payment Agreement. It also recognizes that by law, payments from the State to an agency cannot be reduced during the life of the contract.

Further, the agency agrees to request the Installment Payment Agreement amounts in its annual budget request, and the state OMB agrees to work with the agency and the legislature to ensure appropriate levels of funding are received. Finally, the agency agrees it will transfer sufficient funds to make its payments at the beginning of each year, and OMB agrees it will initiate the transfer and make payments directly to the trustee, out of appropriated funds available to make the payments.

As assurance to the state and its agencies, each ESCO contractor enters into a Guaranteed Energy Savings Agreement with the agencies, guaranteeing a targeted annual savings level for the term of the agreement. Each agency is therefore guaranteed to receive energy efficiencies and savings.

Again, each agency's obligations under its Installment Payment Agreement are absolute, whether or not the guaranteed energy savings levels are achieved under its Guaranteed Energy Savings Agreement.¹²

In July, 2011 Citi closed on a \$70.2 million bond offering that was rate AA+.

In July, 2011 Citi closed on a \$70.2 million bond offering that was rate AA+. In addition to the structure described above, the state legislature authorized \$11.3 million from the General Fund in further support of the bond issuance.

It is likely that the ESCO guaranty was less a factor in the bond's strong credit rating than

the state agencies' obligation and the \$11.3 million additional state authorization to support the bond. However, the ESCO guaranty was an essential condition for the State legislature being able to authorize this additional credit enhancement.

Efforts are now underway to replicate this financing model in Sonoma County, California, as well as in Washington, DC. Ideally, this model will be expanded to include non-public buildings, and will not require an authorization of public funds on top of the government agency guarantees.

Vermont: Loan Loss Reserves Provide Guarantees for Bank Energy Efficiency Loans

The Vermont Economic Development Authority (VEDA) is managing a new bank loan guaranty program. Using its own funds together with funds from Efficiency Vermont and the Vermont Clean Energy Development Fund, VEDA will provide loan loss reserve cash accounts held at participating banks that provide a seventy-five percent guaranty on qualified commercial energy efficiency loans. Approximately \$10 million in private capital is expected to be leveraged through this program.

See: <http://governor.vermont.gov/gov-shumlin-legislative-leaders-and-others-propose-vermont-clean-energy-loan-fund>.

Hawaii Green Infrastructure Loan Program: System Benefit Charges as Credit Enhancement for Bonds

In May 2013, the State Legislature of Hawaii passed Senate Bill 1087¹³ that authorized a new loan fund model to finance the purchase and installation of clean energy and efficiency equipment in participating residences and businesses. For the first time, this program combines bond financing that has been credit enhanced with a dedicated utility surcharge (the "green infrastructure charge") with utility on-bill repayment for participating customers. It accesses the capital markets with an investment grade security that does not require the state's general obligation guaranty.

What is unprecedented in this model is the use of a state's existing clean energy systems benefit charge mechanism as credit enhancement to support a bond issuance. A systems benefit charge (SBC) is a charge on a consumer's bill from an electric distribution company that is dedicated to helping pay for the costs of certain public benefits programs, in this instance clean energy and efficiency programs. In most states, these SBC funds are managed by a public entity that deploys the funds in various subsidy and financing programs.

What is unprecedented in this model is the use of a state's existing clean energy systems benefit charge mechanism as credit enhancement to support a bond issuance.

But this is the first time these funds have been used as credit enhancement for a bond issuance.

The green infrastructure bonds to be issued are revenue bonds repaid primarily by the underlying loan payments from participating residents and businesses. The bonds issued under the program do not require the State's general obligation guaranty and are excluded from the calculation of the State's debt limit. This can be

done because the key credit enhancement for the prospective bonds are the non-bypassable fees and charges that the PUC is authorized to impose and collect on all existing and future electric utility customers through the SBC mechanism. These SBC funds are to be deposited in the green infrastructure bond fund and pledged and applied to the repayment of the bonds.

It is this ability to recover any shortfall in loan payments from participating consumers through potential charges on all ratepayers that results in an investment grade rating for these bonds. Furthermore, the Public Utility Commission (PUC) must ensure that all reasonable costs incurred by electric utilities to start up and implement the loan program may be recovered as part of the electric utility's revenue requirement.

It is expected that this finance model will remove barriers to deploying clean energy projects by accessing low cost utility tariff-financed bonds that are sold to private investors such as pension funds. In turn, participating utility customers can readily obtain low cost loans that are repaid through on-bill charges on their utility bills. The state legislature expects the new program to be instrumental in meeting the state goal of seventy percent clean energy by 2030, one of the highest in the country. The state plans to initially capitalize the loan fund with \$100 million in bonds.

Another benefit of the program is the opportunity for a broad spectrum of residents and companies who previously were unable to install clean energy, efficiency and demand response technologies to now be able to do so. In the past, most people who participated in solar PV programs were those who had sufficient upfront capital or access to conventional financing to take advantage of the available solar rebates and tax credits.

With the Green Infrastructure Loan Program, lower-income residents and those having trouble qualifying for conventional bank loans will have access to low-cost financing for solar

PV and related energy technologies. Furthermore, many renters of homes will be able to install solar PV panels with the approval of their landlords because the payment continues to attach to the meter, not the tenant.

This model has the potential for quickly scaling clean energy deployment in the near term.

Using SBC funds as a true-up credit enhancement tool for a pool of loans that is then securitized and sold to investors could leverage a great deal of private capital at very favorable terms. Concerns regarding the potential for overburdening ratepayers with additional utility surcharges can be addressed by capping the amount of cost recovery that utilities can expect.

Hawaii's legislative approval of the Green Infrastructure Loan Program coincides with a growing interest at the state level in adapting proven utility tariff bond structures to finance clean energy.

Hawaii's legislative approval of the Green Infrastructure Loan Program coincides with a growing interest at the state level in adapting proven *utility tariff bond structures* to finance clean energy. Traditionally, utility tariff bonds have been used to finance various stranded asset costs. When regulated utility companies incur expenses that result from legislation that dramatically impacts the economic viability of prior investment decisions, the associated costs are said to be stranded, and can often be partially or completely recovered through rate tariffs. More than \$40 billion of AAA-rated bonds have been issued for this purpose.¹⁴

What is new here is using a future, SBC tariff credit enhancement mechanism to issue these top-rated bonds for future investment in clean energy. The key requirement for issuing these top-rated bonds is obtaining the legislative and

regulatory approvals necessary to establish an irrevocable tariff collection “true-up” mechanism. To achieve this, the following actions are needed:

- A special tariff needs to be established as a clear property right.
- Enabling legislation, the tariff and related regulations must be irrevocable by subsequent legislatures and commissions.
- Applicable statutes need to include a non-impairment pledge.
- A utility tariff true-up mechanism must be established and applied annually.
- The legislation and regulations must provide for non-bypassable charges to be imposed and collected from customers connected to the distribution network.

The benefits of taking these actions are considerable:

- The tariff credit enhancement mechanism addresses institutional investors’ credit concerns and obviates concerns over insufficient payment performance data regarding each clean energy asset class.
- It addresses the traditional difficulty of residential and small commercial projects in accessing the institutional investor market, which has clear portfolio credit rating and yield requirements.
- By accessing low-cost, AAA-rated capital, a larger pipeline of projects can now qualify for financing on economically feasible terms.
- By scaling demand and the number of financeable projects, institutional investors begin to see the scale of investment opportunity they need in order to model their portfolios with clean energy as a specific asset class. With scale and increased volume, transaction cost efficiency will increase as well.

Financing Energy Resiliency Following Hurricane Sandy: Loan Loss Reserves for Private Lenders

More than 8.5 million people lost electric power following Hurricane Sandy, many for weeks or longer. Severe power outages at critical public facilities, like NYU Medical Center in Manhattan and at public housing such as in Red Hook, Brooklyn, called into question the reliability of our power system to protect vulnerable populations during disasters.

With more frequent, climate-related storms in our future—and their devastating economic and environmental impacts—it is clear that our long-standing, centralized electric power supply system needs to change to become more resilient and distributed.

A major challenge and opportunity facing public officials in the aftermath of Sandy is how to finance investments in a more resilient power system, to make electric power more reliable, cleaner and safer for residents in New Jersey, New York, and Connecticut.

A major challenge and opportunity facing public officials in the aftermath of Sandy is how to finance investments in a more resilient power system, to make electric power more reliable, cleaner and safer for residents in New Jersey, New York, and Connecticut. These states, as well as others, are exploring how to apply existing bond instruments—such as Qualified Energy Conservation Bonds (QECBs) and pooled municipal bonds—to finance essential upgrades to local power systems, including the installation of energy storage, microgrids, and new solar systems to secure critical power loads at hospitals, police stations, public housing and community centers for which new resilient power systems represent great public benefit.

New York has responded to this challenge by designing the *Resiliency Retrofit Fund (RRF)*¹⁵ from the New York State Energy Research and Development Agency (NYSERDA). RRF will provide credit enhancement to private lenders and lease financing entities that finance resiliency improvements. According to its state Sandy recovery plan submitted to the federal government for disaster funding, NYSEDA has proposed to use federal Community Development Block Grant (CDBG) funds to create a \$30 million resiliency retrofit fund from which it will deposit an agreed amount into the loan loss reserve account held by each participating lender.

The objective of the Resiliency Retrofit Fund is to provide credit enhancement to incent private lenders and lease financing entities to extend financing for energy-related resiliency projects, and to offer the financing on more attractive terms. In the event of default by a borrower or lessee on a NYSEDA-approved RRF financing, NYSEDA will reimburse the participating lender for eighty percent of the outstanding principal balance of the RRF financing.

Eligible energy resiliency improvements will include distributed generation (DG); combined heat and power (CHP); battery storage; solar thermal systems; facility system hardening associated with DG, CHP, battery storage and energy efficiency; and load management projects. It is anticipated that future funding through RRF will include credit enhancement for bond issuances.

Although it is unclear as of this writing whether CDBG funds will be the source of funds for the loan loss reserve accounts, NYSEDA appears committed to leverage private lenders' capital for resilient power projects by providing this credit enhancement tool.

Securitization of Energy Efficiency Loan Portfolios

It is widely agreed that it will be difficult if not impossible to greatly scale clean energy without reliably accessing capital markets through securitization strategies. Securitization refers to the pooling of various types of loans—residential mortgages, automobile and credit card debt—that are then credit enhanced and sold to investors as bonds or other security instruments.

Although broad success in securitizing clean energy loan portfolios remains elusive, steady progress is now being made. Efforts through a number of state-led initiatives to securitize clean energy loan portfolios have focused on

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the standardization of legal documents and the development of rigorous energy performance databases. Other efforts have included the design of a proposed bundling mechanism for the

sale of energy efficiency loan portfolios into a secondary market.¹⁶

Many of these initiatives have realized the critical importance of credit enhancement to the successful securitization of these loan portfolios, especially given the absence of extensive data on the payment performance of these portfolios over time.

A good case study is NYSEDA's efforts to securitize their \$26 million residential energy efficiency loan portfolio. NYSEDA entered into discussions with a national rating agency to provide a rating on a proposed bond issue that would be repaid from its portfolio of residential energy efficiency loans, for which it hoped would receive an A rating for investors.

Securitizing a Charge on Property and Casualty Policies for a Resiliency Bond

As part of its resiliency planning following Hurricane Sandy, New York City (NYC) is exploring instituting a “Resiliency Assurance Charge” on property and casualty (P&C) insurance policies written in NYC in order to fund resiliency measures to protect against extreme weather events. This insurance includes automobile, homeowner, general liability, commercial multi-peril, and certain other forms of insurance. Because the amount of P&C insurance policies written each year in NYC is so large, even a small surcharge (1.5% per annum) would provide sufficient cash flow to service a \$5 billion bond. This surcharge would translate to just over a dollar a month for a homeowner’s insurance policy with a \$1,000 annual premium.

A surcharge on P&C policies to support a bond issuance will require state legislative or administrative action. But this model has been used in other states to pay for insured losses after extreme weather events, including Florida, Louisiana, and Texas. However, in these states surcharges on P&C policies are generally assessed to pay for insured losses that cannot otherwise be covered, rather than, as being explored by NYC, to reduce the risk that those losses will happen in the first place.

See:

http://nytelecom.vo.llnwd.net/o15/agencies/sirr/SIRR_singles_Lo_res.pdf

Unfortunately, because the underlying loans were all relatively new, there was limited data on the payment performance of the portfolio to be rated. Even though Pennsylvania’s Keystone

HELP program, which is a similar residential energy efficiency loan portfolio, shared its payment data as a proxy portfolio for evaluation, the level of detail and length of payment performance was not sufficient to satisfy normal rating agency requirements for an investment grade security.

In order to create an investment-grade bond for institutional investors to purchase, credit enhancement would be necessary. Ideally, an AAA-rated issuer could be found to issue and guaranty a bond for this purpose.

New York State’s Environmental Facilities Corporation (EFC), a bond authority that provides financing to municipalities, businesses, and NY State agencies for environmental projects, was deemed an excellent prospective issuer. But their issuances were primarily related to clean and waste water projects, and nonpoint source pollution abatement and control projects. It was this last category of projects that presented an opportunity that NYSERDA has worked to develop into a new credit enhancement tool to finance energy efficiency projects.

Following extensive discussions between NYSERDA and EFC, EFC submitted a letter to the U.S. Environmental Protection Agency to ask for concurrence that energy efficiency financing is an eligible program purpose under the federal EPA’s Clean Water State Revolving Fund (CWSRF) program.¹⁷ EFC’s argument was that burning fossil fuel to generate heat and electricity in New York State contributes to atmospheric deposition of air pollutants into the state’s bodies of water. New York’s Nonpoint Source Management Program (NY NPS Program) had already identified this atmospheric deposition from fossil fuels as a significant source of water quality impairment. One of the program’s existing strategies was to control and reduce this atmospheric deposition of air pollutants into New York’s waters. NYSERDA’s residential energy efficiency program, financed with its portfolio of consumer loans, arguably had a direct

impact on mitigating this nonpoint source of water pollution.

The EPA has concurred with EFC and NYSERDA's request and approved NYSERDA's Residential Energy Conservation Projects as qualifying for financial assistance from the CWSRF under Section 603(c)(2) of the Clean Water Act and the federal guidelines governing the Clean Water State Revolving Fund (CWSRF).¹⁸ EPA's concurrence is necessary but not sufficient in itself; further credit enhancement will be required for EFC to issue an investment grade bond.

In addition to the bond being backed by NYSERDA's Residential Energy Conservation loan portfolio, it will also likely be supported by a contingent guaranty of New York State's CWSRF funds in the range of \$18-\$24 million. The bond will be over collateralized by the loan portfolio, with anticipated loan cash flows well in excess of the principal and interest due on the bond. It is anticipated that NYSERDA will be able to establish a \$9 million loan loss or debt service reserve funded by a grant from the U.S. Department of Energy Better Buildings program. These reserves would be available to meet bond payments prior to drawing upon the CWSRF guaranty.

As of this writing, these negotiations remain in process and definitive agreements have not been completed. But state officials have made numerous public statements about this model and their expectation that the bond will be issued by the end of third quarter, 2013. Even without this transaction having closed as of this writing, the EPA concurrence and the creative work of these NY State agencies warrant attention.

If completed, this is a nationally replicable model as all states have water bonding authorities that leverage EPA's revolving loan funds.

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It would allow state bonding agencies that currently issue bonds with strong credit ratings under the CWSRF program to now issue bonds or provide credit enhancement for clean energy. It would overcome the ratings challenges that clean energy projects have often faced in obtaining financing through the bond markets.

Connecticut Energy Finance and Investment Authority (CEFIA): The First Green Bank

Acknowledged as the first "green bank" in the country, CEFIA was established in July 2011 to promote and invest in clean energy and energy efficiency projects. CEFIA is the successor to the Connecticut Clean Energy Fund, which was and remains supported from funding through a SBC mechanism.

CEFIA leverages public and private funds to attract private investment and scale up clean energy deployment in Connecticut. One of CEFIA's new finance programs is their Commercial Property Assessed Clean Energy (C-PACE) program, which provides commercial, industrial, and multi-family property owners with access to affordable, long-term financing for clean energy and efficiency upgrades to their buildings.¹⁹

The primary collateral for the C-PACE investors are property assessments in the amount of the financed energy improvements. Much like a sewer tax assessment, the property assessment is secured by a lien on the property, which is senior to other secured and unsecured creditors.

CEFIA will consider additional credit enhancement for C-PACE financed transactions, which may include subordinated capital, loan loss reserves, or interest rate buydowns.

Property owners pay for the improvements over time by agreeing to an additional voluntary charge on their property tax bill, and the repayment obligation transfers automatically to the next owner if the property is sold. As the C-PACE program develops, CEFIA plans to pool loans and fund them through the issuance of a bond.

Another new finance program is CEFIA's CT Solar Lease program that will complement CEFIA's solar rebate program. By providing subordinated debt, loan loss reserves and equity, CEFIA will leverage \$50 million of private capital to create a \$60 million fund (see text box).

CEFIA leverages public and private funds to attract private investment and scale-up clean energy deployment in Connecticut.

Connecticut: Subordinated Debt and Loan Loss Reserve for Solar Leases

The Clean Energy Finance and Investment Authority (CEFIA) has announced the creation of a new public-private solar leasing option for households and businesses in Connecticut. CEFIA, the country's first state green bank, has provided \$9.5 million of subordinated debt and equity as a managing member of the new leasing entity, as well as an additional \$3.5 million loan loss reserve to provide credit enhancement to the senior lenders. In turn, these funds are leveraging \$50 million of private capital that is provided by a consortium of five banks. Called "CT Solar Lease II," the program has packaged tax equity investment, senior bank debt, third party program management and servicing, and bundled property, casualty and liability insurance for a statewide solar leasing program.

The program is expected to finance approximately 1500 residential solar PV systems, 400 residential solar thermal (hot water) systems, and 40 commercial solar systems over a two-year period, resulting in the deployment of nearly 14 megawatts of solar PV.

See:

http://www.ctcleanenergy.com/NewsEvents/PressRoom/tabid/118/ctl/ViewItem/mid/1364/ItemId/280/Default.aspx?SkinSrc=/Portals/default/Skins/subpages/subpage_level0.

California State Treasurer's Office: A Virtual Green Bank Using Existing Bond Authorities for Clean Energy

The California State Treasurer's Office has been a national leader in using its bond authorities to leverage private capital to finance clean energy and efficiency. One of the State Treasurer's bond authorities is the California Pollution Control Financing Authority (CPCFA), which has provided tax-exempt private activity bonds to California businesses since 1972.

One recent example of CPCFA's use of credit enhancement is the design of a new loan program for energy and environmental efficiency loans to small businesses. Providing \$10 million of its State Small Business Credit Initiative (SSBCI) federal allocation as subordinated debt, CPCFA will issue a request for proposals (RFP) to private lenders who wish to participate in the loan pool.²⁰ A \$50 million loan participation pool will be created in which CPCFA will subordinate its loan portion to the senior lenders. Each dollar lent by will leverage private loans on a 1:4 basis. CPCFA expects to bundle the loans that are made under the program and sell them to investors to replenish the pool of funds in order to make additional loans.

The California State Treasurer's Office has been a national leader in using its bond authorities to leverage private capital to finance clean energy and efficiency.

Another State Treasurer's bond authority is the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA). This bond authority administers the Clean Energy Upgrade Financing Program, which has up to \$25 million available for loan loss reserves to financial institutions that make loans to finance clean energy and efficiency systems and retrofits on residential properties.²¹ For each qualified loan, participating lenders receive an initial fifteen percent contribution to a loan loss reserve account held at the financial institution, which can be used to provide up to one hundred percent coverage on qualified loan defaults. CAEATFA also issues Qualified Energy Conservation Bonds (QECCBs) and Private Activity Bonds for District Heating & Cooling.

Toledo, Ohio Floats Energy Efficiency Bonds

The Toledo-Lucas County Port Authority raised \$5,325,000 in private investment through a 2012 bond issue that was credit enhanced with a 10% debt service reserve account. The City of Toledo further reduced risk to investors by agreeing to pledge a secured interest in the fee assessments placed on municipally-owned properties that participated in the energy efficiency program.

Project improvements included lighting, HVAC, air handlers, building controls and sensors, boilers and hot water tanks.

See: <http://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=ohee13-caleb-chris-todd-kevin.html>

Federal Credit Enhancement: The State Clean Energy Finance Initiative (SCEFI)

As the previous models show, there is a broad range of credit enhancement tools that leverage private capital for clean energy and efficiency projects and enterprises. However, these programs could always use additional capital to expand their offerings of credit enhancement tools, and to enable them to access capital markets and grow to scale.

This is where a new federal program could come in. While continued public incentives and funding for clean energy at the state level will be needed for some time, the support must be designed in ways that better leverage, and not replace, private capital.

And while funding through federal programs has been reduced, there could be a new role for the federal government to provide funding to support greater state financial innovation in clean energy, leaving decisions to the states and decentralizing clean energy finance whenever possible. This is especially important in these times of tight credit when lenders are reluctant to lend on favorable terms. It is now when the federal government should be looking to provide not more subsidy, but credit enhancement that supports the states' efforts to attract private capital to the clean energy space by reducing credit risk with loan loss reserves, subordinated debt, and other inducements.

The authors of this paper have developed a proposal for a new federal credit enhancement proposal for clean energy called the State Clean Energy Finance Initiative or SCEFI.²²

There is a federal model for small business credit support that can be the basis for a new clean energy initiative.

And while funding through federal programs has been reduced, there could be a new role for the federal government to provide funding to support greater state financial innovation in clean energy, leaving decisions to the states and decentralizing clean energy finance whenever possible.

The State Small Business Credit Initiative (SSBCI) was passed by Congress as part of the Small Business Jobs Act of 2010. The legislation provides the U.S. Department of the Treasury (Treasury) with \$1.5 billion to strengthen state programs that support small business lending. Under this innovative delivery mechanism, federal funds are made available as credit enhancement for finance programs of the states' choosing, although Treasury must approve program designs. The ultimate goal of the program is to leverage billions of dollars in private lending alongside the public funding; the goal for all programs funded is a 5:1 to 10:1 portfolio-wide ratio of private-to-public capital.

The SSBCI model could be adapted to raise capital for clean energy and efficiency investment through a proposed State Clean Energy Finance Initiative (SCEFI). In this way, clean energy supply chain companies could obtain financing on favorable terms for working capital, equipment, real estate acquisition or improvements to their business premises, and project developers could more readily access long term, low cost private investment for project financing of on-site clean energy generation, energy efficiency and related measures.

As with SSBCI, this SCEFI Initiative would also be housed in Treasury. However, the underwriting and credit enhancement roles would be placed at the state and local levels where these roles belong. Treasury would develop guidelines that would identify a toolbox of qualified credit enhancement structures, and Treasury would approve each state's clean energy credit support programs.

Each state would have the right to select only the programs it wants to offer.

SCEFI would also establish a target leverage ratio of private-to-public investment for the program in the 5:1 to 10:1 range.

With the support of SCEFI-funded debt service reserves, letters of credit, and other means of credit

enhancement, clean energy projects and companies would qualify for financing on more favorable terms and at lower cost. SCEFI also would fund credit enhancement tools providing credit support for bond finance structures, such as pooled bond funds and small issue bonds for manufacturers in the clean energy supply chain.

This approach is certainly consistent with the current Administration's commitment to "Pay for Success" (PFS) contracting and financing models, which leverage third party investment with credit enhancement in other social service areas. PFS is a mechanism whereby investors fund social or environmental interventions that save the government money, either because these approaches prevent more expensive future problems, such as early childhood programs that reduce instances of learning disabilities, or they use a more cost-effective approach, such as energy efficient housing retrofits. These programs are loosely called Social Impact Bonds or SIBS. If the program does not achieve its stated outcomes, the government does not repay the investor—thus the name, "Pay for Success."

In the fiscal year 2014 budget, President Obama proposed the creation of a new, \$300 million PFS Incentive Fund, which will catalyze PFS approaches with credit enhancements that reduce the risk to government, nonprofit and philanthropic investors. This is important because PFS projects to date have often required credit enhancements to reduce financial risk to investors.²³ Without credit enhancement, investors in these new PFS instruments would likely demand a rate of return that state and

local governments could not afford, making the model uneconomic.

The PFS Incentive Fund for social impact investing operates on the same premise as SCEFI would for clean energy.

By mitigating risk for

investors, SCEFI-funded credit enhancement would raise more capital more efficiently at lower cost to multiple energy projects. Unlike the Department of Energy (DOE) administered loan guaranty program, SCEFI would not create any federal guaranty or obligation in regard to the state-financed projects. The federal role would be limited to providing credit enhancement dollars to state financing programs and creating program guidelines.

Congress would need to either determine an appropriate funding level or direct agencies like DOE to repurpose existing funds. The great advantage, however, is that every dollar in appropriations or repurposing of federal money would need to leverage an additional five to ten dollars in state and private capital. Billions of dollars in private and other capital for clean energy companies and projects in every state in the nation could be raised requiring little if any additional federal administrative burden. Moreover, agencies like DOE could start small and develop regional pilots to test these approaches around the country, building a basis for consideration for a national initiative.

Billions of dollars in private and other capital for clean energy companies and projects in every state in the nation could be raised requiring little if any additional federal administrative burden.

Conclusion:

Towards a New Asset Class for Clean Energy

The Clean Energy and Bond Finance Initiative (CE+BFI) was created a year ago by the Clean Energy Group and the Council of Development Finance Agencies to explore clean energy finance from a perspective focused on capital markets and bond issuance. CE+BFI has created a forum that supports practitioners seeking to increase clean energy development through established capital markets models.²⁴

A priority of this work is to evaluate and address institutional investors' requirements that need to be met to facilitate the purchase of clean energy and energy efficiency bonds. Its goal is to increase bond financing for clean energy and efficiency by an additional \$5 billion to \$20 billion in private capital over the next five years.

One of the primary goals of this work is to support and develop ways to reliably access the vast capital resources of pension funds, life insurance companies, and other long-term institutional investors like foundation endowments.

Now, direct investment in individual renewable energy projects is very difficult for institutional investors, unless the investment is through rated investment grade bonds.²⁵ Few institutional investors are willing to develop the internal capacity to evaluate and underwrite individual clean energy projects. One reason for this is off-and-on again nature of federal and state policies. It is difficult for many institutional investors to justify building an investment team with expertise in underwriting unrated individual clean energy projects when policy uncertainty could at any time affect fundamental project economics. Finally, most pension funds and insurance companies will only invest in liquid, marketable securities such as rated bonds.

Given the above, it is clear why credit enhancement is so important to the development of a clean energy asset class for institutional investors. Financial innovation is needed to create assets that institutional investors can purchase. By replacing the credit risk of an individual new clean energy project or enterprise with the credit rating of an existing investment grade entity, it is possible to create a clean energy asset that has an equivalent credit risk/return profile as any other similarly rated asset.

This is why the state examples cited here could fundamentally change the clean energy finance landscape.

Whether it is New York State's use of water bonds, or the Morris Model for solar, or the Hawaii model to create utility surcharge supported bonds, these kinds of new credit enhancement products could begin to gain ready access to low-cost, long-term capital markets. Over time, investors will be able to invest in highly rated, investment grade securities that meet their financial requirements and their environmental principles.

What is clear is that the creation of this new asset class for clean energy will be achieved more quickly by the rapid adoption and replication of these credit enhancement tools for clean energy across the country.

But this will not happen on its own, or certainly not at the scale needed to address our environmental problems.

At the state and municipal level, this will require a long-term commitment to work to bring together the once separate worlds of traditional capital markets finance intermediaries, the

state clean energy funds, and state and local development finance agencies.

We will also need a strong commitment from the federal government to put clean energy finance innovation at the front and center of its funding programs, to support more state collaboration, and to repurpose funding to create pilot credit enhancement programs across the country.

We will not scale up the clean energy industry without new clean energy financing tools that mimic older tools like bonds and credit enhancement instruments.

It is not necessary to reinvent the clean energy finance wheel; we just need to make new ones that look and work like the old ones.

A new “clean energy federalism” is needed to reach this goal—our state, city, and federal efforts must be focused intensively and collaboratively on ways to create this new clean energy asset class.

ENDNOTES

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² Richard Kaufman, former Special Adviser to U.S. Department of Energy Secretary Chu (July 25, 2012). See also Statement of Richard L. Kauffman, Chairman of Energy and Finance for New York State and Chairman of the New York State Research and Development Authority before the Senate Energy and Natural Resources Committee Hearing on Clean Energy Financing, July 18, 2013, http://www.energy.senate.gov/public/index.cfm/file_s/serve?File_id=0488fbd8-d2b9-4fae-962f-04833e7f78d5.

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¹⁰ See “Morris Model, Clean Energy Bond Finance Model,” CE+BFI at <http://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=cebfi-model--morris.html>, and “Financing Solar PV at Government Sites with PPAs and Public Debt,” NREL Fact Sheet Series on Financing Solar PV at Government Sites, December 2011 at <http://www.nrel.gov/docs/fy12osti/53622.pdf>.

¹¹ See <http://www.neep.org/public-policy/policy-outreach-analysis/state-activities/delaware>.

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¹⁹ See: <http://www.ctcleanenergy.com/YourBusinessorInstitution/CommercialPropertyAssessedCleanEnergyCPACE/tabid/642/Default.aspx>.

²⁰ See <http://www.treasurer.ca.gov/cpcfca/ce3lpp/summary.pdf>

²¹ See http://www.treasurer.ca.gov/caeatfa/abx1_14/index.asp

²² See: “State Clean Energy Finance Initiative,” Clean Energy and Bond Finance Initiative, January 2013, <http://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=cebfi-scefiproposal13.html>.

²³ An example is New York City’s announcement that they will enter into a PFS contract with a nonprofit social services provider (MRDC) to reduce recidivism among a target population of young male offenders on Rikers Island. This contract will be financed by a \$9.6 million PFS social impact bond provided by Goldman Sachs. A \$7.2 million grant from Bloomberg Philanthropies will be made to MRDC and held in a guarantee fund as credit enhancement for Goldman Sachs’ loan. The primary repayment of the PFS social impact bond is from NYC’s PFS contract payments to MRDC; but if MRDC does not achieve its specific recidivism reduction goals, then NYC is not obligated to make its contract payments to MRDC. The guaranty fund will be called on only to the extent that recidivism reduction goals are not achieved and contract payments are insufficient to make scheduled bond payments. See <http://www.goldmansachs.com/what-we-do/investing-and-lending/urban-investments/case-studies/social-impact-bond-pdf.pdf>

²⁴ See <http://www.cleangroup.org/publications/> and <http://cleanenergybondfinance.org/cebfi/web.nsf/pages/resources>.

²⁵ See “The Challenge of Institutional Investment in Renewable Energy,” by David Nelson and Brendan Pierpont, Climate Policy Initiative, March 2013, <http://climatepolicyinitiative.org/wp-content/uploads/2013/03/The-Challenge-of-Institutional-Investment-in-Renewable-Energy.pdf>.

About the Authors

Robert G. Sanders

With over twenty-five years of experience in community development and energy-related commercial finance, Rob Sanders provides consulting services in the areas of sustainable development, clean energy and community development. Mr. Sanders was formerly the Managing Director of Energy Finance for The Reinvestment Fund, a leading innovator in the financing of neighborhood and economic revitalization with \$700 million dollars under management from 800 investors. In this capacity, he served as Fund Manager for the Sustainable Development Fund, a \$32 million fund created by the Pennsylvania PUC to promote renewable energy and energy efficiency, as well as TRF Fund Manager for the Pennsylvania Green Energy Loan Fund and the Philadelphia metropolitan area EnergyWorks Loan Fund – representing \$80 million of new public and private resources for building-related clean energy projects. As lead for all energy investing, Mr. Sanders made loans, leases, equity investments and performance-based grant incentives and positioned TRF as a leader in energy finance among community development financial institutions (CDFIs). Mr. Sanders holds an MCP from the University of California at Berkeley and a BA from Stanford University.

Lewis Milford

Lewis Milford, President and founder of Clean Energy Group and the Clean Energy States Alliance, manages two nonprofit organizations that work with state, federal and international organizations to promote clean energy technologies. He is a non-resident Brookings Senior Fellow with the Metropolitan Policy Program. He has worked on many finance related matters involving clean energy, including working on designing several state renewable energy funds; drafting strategies for implementation of such funds; writing and advising on new ways to leverage public funds through private financing options; working with pension funds on clean energy investment strategies and identifying new finance tools like public bonds to address the question of how to scale clean energy finance. Prior to founding CEG in 1998, Mr. Milford was a vice president of the Conservation Law Foundation, where he conducted litigation and advocacy relating to a variety of energy and environmental issues and testified before numerous legislative and regulatory agencies. Previously, Mr. Milford was a New York Assistant Attorney General representing the State of New York in the Love Canal hazardous waste case, and a law professor and director of the public interest law clinic at American University in Washington, D.C., where in federal court and before Congress he represented Vietnam War veterans harmed by Agent Orange. He has a J.D. from Georgetown University Law Center.

Toby Rittner

Toby Rittner runs the day-to-day operations of the Council of Development Finance Agencies (CDFA), which includes management of a 32-member Board of Directors, and the organization's various educational, advocacy and research initiatives. Prior to joining CDFA, Mr. Rittner was the Director of Legislative Affairs and former Director of Training for the International Economic Development Council (IEDC). IEDC is the nation's largest membership organization dedicated to the advancement of the economic development profession. In his various capacities with IEDC Mr. Rittner conducted numerous technical assistance projects for state and local governments in the area of development finance. He also directed the organizations large-scale legislative affairs efforts and worked to secure and improve valuable federal programs for economic development. Mr. Rittner holds a Bachelor of Arts in Political Science and a Master's of City and Regional Planning degree from the Ohio State University. He is a Certified Economic Development Finance Professional (EDFP) through the National Development Council (NDC).

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