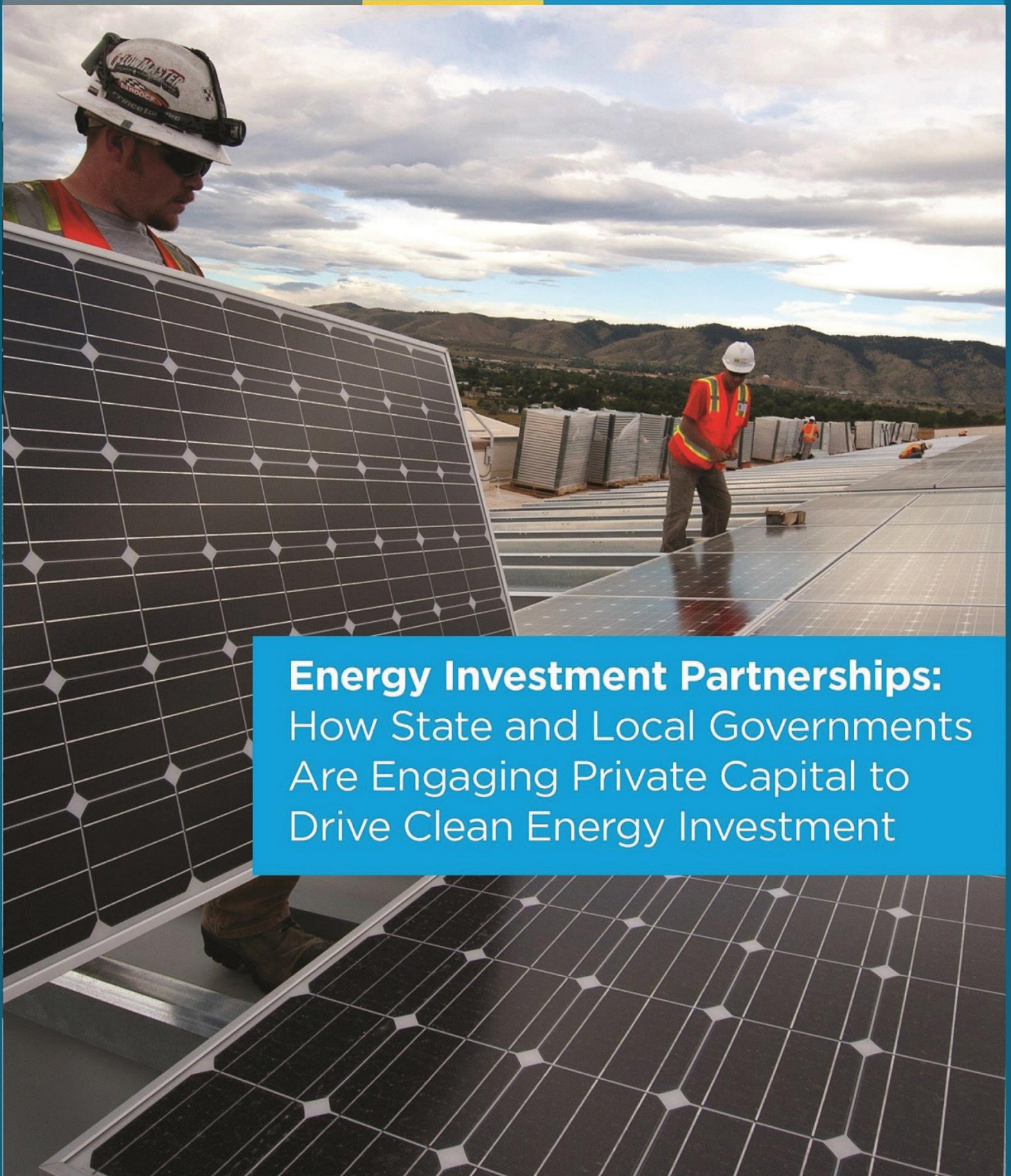




U.S. DEPARTMENT OF
ENERGY



Energy Investment Partnerships:
How State and Local Governments
Are Engaging Private Capital to
Drive Clean Energy Investment

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1. INTRODUCTION

State and local governments across the nation are continuing to spur investments in energy efficiency and renewable energy—from the State of California, to the City of Toledo, Ohio, to the State of New York. The fact that state and local governments are choosing to develop and grow their clean energy markets, despite the ongoing pressure to reduce government spending, underlines the significance of these investments.

Over the last five years, many states and local jurisdictions have seen the largest infusion of capital into energy efficiency and renewable energy projects fostered by the vast resources provided by the American Recovery and Reinvestment Act of 2009 (ARRA). While many of these programs advanced clean energy in their respective markets through grants, a few government jurisdictions used their limited state or municipal dollars to leverage significant amounts of private capital.

How are governments paying for these investments in energy efficiency and renewable energy in a time of limited budgets? By developing public-private partnerships and bringing the right mix of partners, authorities, and strategies to the table, each state, region, municipality, and market can create a unique—but effective—vehicle to support clean energy finance and deployment. The implementation of these entities, described as “Energy Investment Partnerships (EIPs),” and sometimes referred to as “Green Banks,” is typically a result of carefully structured public-private partnerships, cooperative political environments, legislative mandates, and access to credit enhancement tools.

An EIP can accomplish its primary goal of attracting private capital to clean energy projects in many ways, including through the traditional development-finance tools it has at its disposal. Some of these traditional methods include issuing bonds, co-lending with banks, and insuring or credit enhancing private loans. Each tool enables state and local governments to use their limited sources of funding to leverage larger amounts of private capital to support renewable energy and energy efficiency investments.

By leveraging private dollars, EIPs generate an impact well beyond what would be possible with public funds alone. Programs across the country are showing how these lending programs can leverage public dollars to increase investment in clean energy. Through issuing bonds, authorities in Connecticut and New York have sold clean energy loan portfolios on the secondary market. Florida’s nonprofit Solar and Energy Loan Fund (SELF) in St. Lucie County has leveraged private dollars into clean energy loans for low and moderate income (LMI) individuals by working with private banks’ Community Reinvestment Act (CRA) divisions and the Community Development Finance Institution (CDFI). Other EIPs have provided credit enhancements to private lenders, who in turn have financed clean energy projects directly. Finally, the issuance of securities has emerged as a mechanism through which EIPs can tap into private capital to support clean energy investments.

Creating and using public-private financing is not new to supporting energy infrastructure development. Infrastructure development, frequently including oil, gas, and coal energy facilities, has a long history of accessing both public and private capital. Tax-exempt bonds are the traditional tool for this development, although loans, tax increment, and tax credits are other common programs in this area. EIPs are expanding the legacy of financing infrastructure and economic development to clean energy deployment. Rather than simply offering generous tax credits and grants, these new partnerships focus

on facilitating financing through bonds, loans, credit enhancement, and other proven development finance tools.

The diversity in structure, markets, and execution across EIPs is a testament to the leaders and participants of these partnerships, and more generally to the determination and innovation of both public and private sectors. Qualified leadership and staff, with a combination of policy, financial, and technological experience surrounding investments in clean energy, are critical components to success.

Strategic partnerships with public, private, and nonprofit entities are also key means for an EIP to expand its capacity to market, analyze, and service investments in clean energy projects. EIPs can achieve long-term viability by combining initial public or foundation-based capitalization with loan repayments, fees, and other sources of revenue to recapitalize programs and cover administrative costs.

EIPs represent unprecedented community and statewide collaboration and creativity within the clean energy industry. Sections 2–9 highlight the partnerships and programs operating in eight states, with details about the creation, purpose, structure, and financing terms. To contextualize these descriptions, background information about development finance tools and programs is available for reference in Section 10.

The EIPs showcased present a diversity of innovative models that communities throughout the nation can replicate. These examples are primarily meant as inspiration, as the form of the EIP is immaterial. State and local leaders can structure their own EIP in the form that will best work to advance their own renewable energy and energy efficiency investment goals.

This trend is continuing to spread across the nation as additional state and local governments prioritize investments in clean energy. For example, in 2015, the State of Rhode Island passed legislation for the Rhode Island Infrastructure Bank, and Montgomery County, Maryland, also passed legislation for a “Green Bank”—both entities are now moving forward in their development. Other states and counties are following suit and are paving a path forward in the creation of EIPs. Due to the success and growth of these kinds of programs, there is much anticipation that additional state and local EIPs will emerge in the coming years.

1.1. Summary Table of Energy Investment Partnerships and Programs

State	Entity	Programs (in report)	Legal Structure	Capitalization	Market Sectors
CA	CA Alternative Energy & Advanced Transportation Financing Authority	PACE Loss Reserve; CA Hub for Energy Efficiency Financing	State agency	State allocation + CA Public Utility Commission allocation	Residential & commercial; efficiency & renewables
CA	CA Infrastructure and Economic Development Bank	CA Lending for Energy and Environmental Needs Center	State agency	Self-capitalized	State and local govt.; efficiency, renewable, water conservation, & distribution
CT	CT Green Bank	CT Solar Lease; Energize Connecticut Smart E-Loan; Commercial PACE; CT Solar Loan	State agency	Systems Benefits Charge + Regional Greenhouse Gas Initiative funds + U.S. Dept. of Energy grant + private investments + fees	Residential & commercial; efficiency & renewables
FL	Solar & Energy Loan Fund	Clean Energy Loan Fund	Nonprofit, CDFI	U.S. Dept. of Energy grant + private investments	Residential & commercial; efficiency & renewables
HI	Hawaii Green Infrastructure Authority	Green Energy Market Securitization	State agency	Bonds + utility fees	Resident & commercial; efficiency & renewables
NJ	NJ Board of Public Utilities	NJ Clean Energy	State agency	Self-capitalized	Residential & commercial; efficiency & renewables
	NJ Energy Resilience Bank	Wastewater and Water Treatment Plant Funding	State agency	U.S. Dept. of Housing & Urban Development grant	Utilities; renewables
NY	NY State Energy Research & Development Authority	Green Jobs – Green NY	State agency	Systems Benefits Charge + Regional Greenhouse Gas Initiative funds + U.S. Dept. of Energy grant + Qualified Energy Conservation Bonds	Residential & commercial; efficiency
	NY Green Bank	Clean energy financial products and advisory services	Division of a state agency, NYSERDA	Allocation of uncommitted Efficiency & Renewable Portfolio Standard & System Benefits Charge funds	Residential & commercial; efficiency & renewables
OH	Toledo-Lucas County Port Authority	BetterBuildings Northwest OH	Local agency	Fees + U.S. Dept. of Energy grant + tax levy	Residential & commercial; efficiency & renewables
	Greater Cincinnati Energy Alliance	Greater Cincinnati Home Energy Loan; Building Communities Loan	Nonprofit	U.S. Dept. of Energy grant + private impact investment + fees	Residential & nonprofit; efficiency & renewables
	Port of Greater Cincinnati Development Authority	Greater Cincinnati PACE	Local agency	Fees + county & city allocation	Commercial; efficiency & renewables
OR	Energy Trust of OR	General efficiency incentives	Nonprofit	System Benefits Charge	Residential & commercial;

Energy Investment Partnerships

Enhabit	General efficiency incentives	Nonprofit	Fees + U.S. Dept. of Energy grant	efficiency Residential; renewables
Craft3	Home Energy Efficiency Loan	Nonprofit, CDFI	Private investments + private contributions + grants	Residential; efficiency

2. CALIFORNIA ¹



2.1 Overview

California is a national leader in clean energy investment. The state's history with clean energy financing dates to the passage of the Warren-Alquist Act of 1974, which formed the California Energy Commission to decrease "wasteful, uneconomical, and unnecessary uses of energy in order to reduce the rate of growth of energy consumption and prudently conserve energy resources (Taylor 2012)." In 2006, the California Legislature passed the California Global Warming Solutions Act (California Assembly Bill 32, (AB32)) affirming California's support for climate change mitigation. AB32 established California's goals to reduce its greenhouse gas (GHG) emissions to 1990 levels by 2020. On April 29, 2015, Governor Edmund G. Brown Jr. issued Executive Order B-30-15 to establish a new interim California GHG emission reduction target to reduce GHG emissions to 40% below 1990 levels by 2030 to ensure the state meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 (GHG reduction goals).

Today, California maintains over a dozen major programs at the state level intended to support investment in renewable energy and energy efficiency developments. These programs reside in several different offices and branches of the state government, making coordination a challenge. In a recent report from the California Legislative Affairs Office, the state recognized the lack of one centralized agency and outlined a number of challenges, opportunities, and recommendations (Taylor 2012). Additionally, California presents a size challenge in terms of sheer geographic territory and population. These issues require an extremely large allocation of funds to make impactful investments.

Among state departments, the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA) is one of the aggregators of state resources and clean energy financing programs. CAEATFA, housed in the State Treasurer's Office, works with a variety of partners to support clean energy investments, including local governments, public and investor-owned utilities (IOUs), the California Public Utilities Commission (CPUC) and California Energy Commission, private sector clean energy developers, commercial lenders, private financial institutions, and state bond-financing agencies. In its energy efficiency-financing programs, CAEATFA has designed quality assurance measures to reflect utility energy assessments and leverage existing structures/requirements, which streamline the technical requirements for qualified loans.

The California Infrastructure and Economic Development Bank (IBank) is uniquely suited to help the state meet the GHG reduction goals by offering practical and sustainable solutions via leveraged, risk-adjusted, financial assistance for public clean energy, water, and environmental projects throughout California. IBank is governed by a five-member [Board of Directors](#) and is within the [Governor's Office of Business and Economic Development](#).

Led by the growth of Residential PACE, enabled by local governments across the state, around 40,000 clean energy building upgrade projects have been financed to date, with overall value (financed plus leveraged capital) of over **\$1.6 billion**. Table 2.1 shows the details.

¹ Information for the California section was provided by the California Alternative Energy & Advanced Transportation Financing Authority, The California Infrastructure and Economic Development Bank and the California Energy Commission

2.1 Overview of Privately Funded or Leveraged EE and/or Solar Financing Programs Operational in California (as of 8/2015)

Program Type	Program Administrator	Program Name	Geographic coverage	Eligible sectors	Loan size limits	Max loan period/ rate	Loan qualification terms	# of transactions made	Transactions \$ value	Private Funds leveraged
Residential PACE	Renew Financial CaliforniaFIRST, Ygrene, WRCOG HERO, CaliforniaFirst, Mpower, Counterpointe Energy Solutions, Sonoma & Placer County, Alliance NRG, Chula Vista, Green Finance SF, LA County, Clean Energy CV Upgrade	Various; Home Energy Renovation Opportunity, Ygrene Works, Alliance NRG, Energy Independence Program, etc.	Participating cities and counties (most major population centers)	Single-family residential	\$2500 to 15% of property value, Not to exceed \$200k(\$250k for LA County residents)	5 to 25 years / 5.75% - 8.39%	Owner's equity amount, property value, mortgage and tax payment history, improvement amount requested	37,384	786,700,000	710,300,000
Commercial PACE	Renew Financial, LA Co Nonresidential PACE DSRF, CaliforniaFIRST, WRCOG HERO Figtree PACE, Sonoma & Placer County Counterpointe Energy Solutions, Varies by jurisdiction (commonly Clean Energy "government name")	Various; LA County, Statewide, Various cities/counties statewide, Alliance NRG, Mpower, Home Energy Renovation Opportunity, etc.	Commercial, Industrial, Large Multi-family	Private Sector	Typically > \$250k, Minimum \$50k, Minimum \$50k and not to exceed 20% total property value	Up to 20 years, market rates (vary)	5-year tax payment history, mortgage payment, bankruptcy history, upgrades subject to permitting inspections	114	37,430,000	16,130,000

2.1 Overview of Privately Funded or Leveraged EE and/or Solar Financing Programs Operational in California (as of 8/2015)

Program Type	Program Type	Program Type	Program Type	Program Type	Program Type	Program Type	Program Type	Program Type	Program Type	Program Type
On Bill Repayment	City of Hayward & Bayren, Marin Clean Energy CCA	On Bill Repayment, PAYS	MCE service area	Single-Family Residential, multi-family Residential & Small Commercial	\$2.5k-\$30K, \$10k-\$265k	5-10 years/ fixed: 6.5% plus fees; 5% interest fixed		248	560,000	20,000
Other	CAEATFA, Santa Barbara County, CRHMFA, SoCalREN	CHEEF, Empower, CHF, Permit Compliance Pilot	IOU territories, Santa Barbara, San Luis Obispo and Ventura Counties, LA County & San Diego County, other counties	Single-Family Residential, multi-family Residential & Small Commercial	\$1k-\$25k, and up to \$50k	5year-15 years, 2%-6.5%	At least 70% loan must be used for eligible energy efficiency measures; min FICO scores; income verification if FICO between 580-640; min/max DTI ratios	2,084	42,818,314	21,489,134
Source: California Energy Commission and California Public Utilities Commission							Total	39,830	867,508,314	747,939,134

2.2 California Alternative Energy and Advanced Transportation Financing Authority

Organization Name:	California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA)
Address:	915 Capitol Mall, Room 457 Sacramento, CA 95814
Phone:	916-651-8157
Website:	http://www.treasurer.ca.gov/caeatfa/
Legal Structure:	Government agency
Year Established:	Established in the 1980s, CAEATFA relaunched in 2010 to administer tax exclusion.
Enabling Legislation:	Division 16, Section 26000, of the Public Resources Code
Capitalization:	CAEATFA receives capital from a state budget allocation, fees from users, and loans and bonds, as specific to programs.

CAEATFA provides financial assistance for the development and commercialization of advanced transportation and alternative energy technologies with a goal of reducing air pollution, conserving energy, and promoting economic development through job creation. The Office of the State Treasurer established CAEATFA to provide more affordable financing and to leverage private capital, both of which fall within the Treasury's core functions. After CAEATFA relaunched in 2010 to administer a sales and use tax exclusion for state and local manufacturing, it developed its focus on clean energy.

CAEATFA is unique among California state agency clean energy participants, as it does not have the burdens of energy regulation functions and is able to be proactive and innovative with its financing approaches. CAEATFA collaborates with a variety of public and private partners to optimize energy reduction per state dollar expenditure. CAEATFA has administered several clean energy-related programs over its life, including Qualified Energy Conservation and Clean Renewable Energy Bonds; a state sales and use tax exclusion for manufacturers of alternative sources, advanced transportation, and advanced manufacturing projects; and a loan loss reserve (LLR) program for residential energy efficiency retrofits. This report will focus on two elements: (1) a new Property Assessed Clean Energy (PACE) Loss Reserve Program, focused on supporting the unique challenges faced by residential PACE programs throughout the state, and (2) the California Hub for Energy Efficiency Financing (CHEEF) pilot programs, which are currently under development and the Legislature is considering for budgetary approval.

2.2.1 Property Assessed Clean Energy Loss Reserve Program

Program Name:	Property Assessed Clean Energy (PACE) Loss Reserve Program
Contact Information:	Deana Carrillo, dcarrillo@treasurer.ca.gov
Year Established:	2014
Borrower Profile:	Residential PACE programs
Projects Financed:	The PACE Loss Reserve Program finances renewable energy and energy efficiency projects.
Financing Range:	There is no limit on participants, \$10 million sits in one fund, under CAEATFA's control, and the necessary amount can be drawn down as needed to make lenders whole.
Term of Financing:	Determined by local PACE program.
Cost of Financing:	There is no cost of financing.

In September of 2013, the State of California authorized CAEATFA to establish a PACE Loss Reserve Program. CAEATFA established the program as a solution to the Federal Housing Finance Agency (FHFA) argument that first-priority PACE liens place the first-mortgage holder at risk of loss in the event of default. CAEATFA identified two situations under which a PACE lien on the property would potentially expose private mortgage lenders to a financial loss—foreclosures and forced sales. In a foreclosure situation, the mortgage lender may take possession of a property and be liable for property tax payments, including any PACE assessment. Additionally, because of PACE’s first-priority lien status under California law, in a forced sale, first-mortgage lenders may experience losses resulting from delinquent PACE assessments being paid before the outstanding mortgage balance.

With the PACE Loss Reserve Program, first-mortgage holders can receive risk mitigation for foreclosures and forced sales. More specifically, the program seeks to address FHFA’s concerns with a reserve fund that would reimburse first-mortgage lenders for direct losses in the event of a foreclosure or forced sale. The reserve fund provides a cushion against the FHFA’s identified risks to mortgage holders. In addition, the PACE Loss Reserve Program may assist California’s local PACE programs in securitizing their portfolios. As of June 2015, the PACE Loss Reserve was supporting over 36,720 enrolled projects totaling over \$810 million. To date, there has not been a claim on the fund.

2.2.2 California Hub for Energy Efficiency Financing

Program Name:	California Hub for Energy Efficiency Financing (CHEEF)
Contact Information:	Deana Carrillo, dcarrillo@treasurer.ca.gov
Year Established:	2013
Borrower Profile:	Residential, Multifamily and Commercial
Projects Financed:	CHEEF finances energy efficiency.
Financing Range:	Credit Enhancement; financing range is to be determined since the program is in its pilot phase.
Term of Financing:	The term of financing is to be determined since the program is in its pilot phase.
Cost of Financing:	The cost of financing is to be determined since the program is in its pilot phase.

In September 2013, CPUC allocated \$65.9 million toward a series of pilot programs testing a variety of financing structures through the state’s IOUs.² The suite of programs applies a diversity of credit enhancements, including on-bill repayment (OBR) and loss reserves, to several borrower profiles. Through its decision, CPUC created a new administrative body to oversee the pilot programs, California Hub for Energy Efficiency Financing (CHEEF). CPUC recommended that CHEEF reside within CAEATFA to complement and expand existing clean energy programming within the agency. The pilots provide an open marketplace, encouraging a variety of lenders and financial institutions to participate and enter into the energy efficiency market.

CAEATFA’s administrative responsibilities as the director of CHEEF are as follows:

² Content in this section is adapted from the CPUC’s *Decision Implementing 2013–2014 Energy Efficiency Financing Pilot Programs* (see References for more information).

- Management of the flow of funds and data collection
- Creation of simple, streamlined structures to allow stakeholders to participate
- Administration of an “open market” for energy efficiency in the state
- Program development, implementation, and reporting to CPUC
- Development of a statewide database that provides project, energy, and financial data.

CHEEF pilots are being developed in coordination with the four IOUs throughout the state, leveraging existing, private-sector knowledge of energy efficiency and use patterns to ensure robust data collection. Pacific Gas and Electric Company (PG&E) and Southern California Gas Company will administer separate project elements under CHEEF. CHEEF includes pilots for residential and non-residential energy efficiency projects.

Residential Pilots

CHEEF will direct three residential pilot programs, which will target Low & Moderate Income (LMI) households. To protect individuals participating in the pilot program, the program prohibits the disconnection of power for nonpayment of residential financial obligations. CPUC allocated a total of \$28.9 million to residential programs, with \$26 million targeting improvements to single-family homes.

Primarily, CHEEF’s intention is to attract a greater amount of private capital to the energy efficiency retrofit market by reducing risk to lenders, broaden the availability of lower-cost financing to individuals who might not have been able to access it otherwise, and address the upfront cost barrier to energy efficiency retrofit projects.

More detailed descriptions of the residential programs are below.

Residential Energy Efficiency Loan (REEL) Assistance Program – \$25 Million Allocation

REEL will provide a LLR available to direct and indirect loan providers to support single-family home improvements. The stated objective of the program is twofold: (1) incentivize private lenders to provide lower costs and broader access to financing, and (2) to build energy efficiency loan volume, which produces data and optimizes successful loan terms. OBR is not a requirement of the program.

Credit enhancements available under this pilot are not to exceed 20% of eligible loan value, and the lender’s loss recovery under REEL cannot exceed 90% of the original loan value. The total incentive available to a given financial institution is capped by the total available in the financial institution’s loss reserve portfolio. This program also includes a target to LMI homeowners as defined by the California Department of Housing and Community Development.

Energy Financing Line Item Charge (EFLIC) – \$1 Million Allocation

EFLIC is a sub-pilot designed to test OBR in the residential space. EFLIC’s intention is to drive residential demand for energy efficiency projects while improving repayment and reducing lender-servicing costs. This sub-pilot will be available to borrowers participating in REEL who wish to use OBR. EFLIC will not feature transferability of debt obligations upon the sale of the improved property. PG&E, an IOU with a similar program currently active within a limited geographical area, will implement EFLIC. The expectation is that using PG&E’s existing infrastructure will greatly reduce the cost of implementing EFLIC.

Master-Metered Multifamily Financing Program (MMMFP) with OBR – \$2.9 Million Allocation

MMMFP is CHEEF's only pilot addressing the LMI multifamily residential market. Property owners repay MMMFP obligations through their master utility bill without the risk of service disconnection in the event of nonpayment. Under current conditions, the risk of rising utility bills for master-metered multifamily properties falls on the owners of the property, placing an incentive to adopt energy efficiency measures. Improvements provide a tangible benefit to LMI renters in these properties as well. However, access to capital is a significant barrier to investments in energy efficiency for this sector. This is due to its complex capitalization structures, which often involve funding from private sources as well as federal, state, and local governments. The MMMFP includes a credit enhancement to reduce financial risk and incentivize lenders to develop loan products for this market sector.

This pilot is under development, and as originally envisioned would use a debt service reserve fund to cover any monthly shortfall to lenders, which may occur as a result of late or missed payments. MMMFP will target 5,000 units through properties of at least 20 units each. Participating utilities are responsible for applying all applicable rebates and incentives toward the program, reducing the principal amount of the loan eligible for credit enhancement through the reserve account. Southern California Gas Company will administer the early implementation of this pilot, without credit enhancement, to address strong, early demand for this program.

Nonresidential Pilots

The primary goal of CHEEF's nonresidential pilots is to build the deal flow necessary to test the value of OBR as a bridge to overcome traditional lending barriers in commercial markets. These pilots will assess OBR as a standalone incentive and in tandem with traditional credit enhancements, gauging OBR's value to private lenders. Two of CHEEF's nonresidential pilots target small businesses, while a third is available to businesses of all sizes.

OBR for Small Business with Credit Enhancement – \$14 Million Allocation

Eligible borrowers for the OBR pilot include small business owners as defined by the U.S. Small Business Administration. The program targets commercial property owners, and its design is less structured than the residential programs due to the phase of program development. CPUC or CHEEF have yet to determine specific levels and structures of credit enhancement, though CPUC currently prefers a limited LLR account with a cap of \$200,000 per financial institution.

Small Business Sector Lease Providers: Sub-Pilot with Credit Enhancement

This sub-pilot concentrates on the expansion of energy efficiency equipment lease financing in the small business sector. The sub-pilot allows for OBR, as well as traditional, off-bill payment methods. Financing products and services allowable under this pilot will be subject to competitive proposals and, as of yet, the structure of the pilot has not been fully determined. As with the REEL pilot, a LLR is currently the CPUC's preferred credit enhancement mechanism for the lease sub-pilot.

Nonresidential OBR without Credit Enhancement – \$0 Allocated

The nonresidential OBR pilot without credit enhancements will be available to all sizes of nonresidential utility customers. The CPUC determined in its proceeding that there was no clear need for credit enhancements to spur activity in this sector, so there are no allocated credit-

enhancement funds for this pilot. Consent-based transferability of debt obligations upon the sale of the property applies to this pilot, and payments are collected through the borrower's utility bill. The goal of the OBR pilot is to test the merit of OBR as a standalone feature, without additional credit enhancement, and to expand access to financing for a wider range of energy efficiency projects.

2.3 California Infrastructure and Economic Development Bank

Organization Name:	California Infrastructure and Economic Development Bank (IBank)
Address:	1325 J. Street, Suite 1823, Sacramento, CA 95814
Phone:	916-341-6600
Website:	http://ibank.ca.gov/Default.htm
Legal Structure:	State agency
Year Established:	1994
Enabling Legislation:	Bergeson-Peace Infrastructure and Economic Development Bank Act
Capitalization:	IBank receives capital through self-capitalization as well as tax-exempt and taxable revenue bonds.

In 1994, IBank was established pursuant to the Bergeson-Peace Infrastructure and Economic Development Bank Act contained in the California Government Code Sections 63000 et seq. (IBank Act). IBank's mission is to finance public infrastructure and private economic development that promote economic growth, protect and sustain the environment, support clean energy and efficiency, revitalize communities, and enhance the quality of life for the citizens of California. The IBank Act bestowed broad statutory authority on IBank to issue bonds and incur other indebtedness, to make financings, and to provide guarantees and other credit enhancements for a wide variety of projects and borrowers to achieve its mission.

IBank has exercised its broad statutory authority to approve (1) direct financings to state and local governmental entities and public-benefit, tax-exempt, nonprofit entities for infrastructure projects; (2) conduit bond financings for manufacturing businesses, nonprofit entities, and public entities; and (3) other financing transactions important to the state of California. IBank has gained experience in infrastructure financing and investment; has developed relationships with private investors; and has collaborated with the State Treasurer's Office, the California Energy Commission, additional state energy agencies, environmental advocates, and other stakeholders. IBank has experienced staff and understands that public and nonprofit entities face tight operating budgets and constitutional and regulatory limits of financings. It has established policies and procedures to evaluate projects and borrowers. In sum, IBank is well positioned to provide financial assistance to help California meet its GHG reduction goals.

2.3.1 California Lending for Energy and Environmental Needs

Program Name:	California Lending for Energy and Environmental Needs (CLEEN) Center
Contact Information:	Teveia Barnes, Executive Director; teveia.barnes@ibank.ca.gov
Year Established:	2014
Website:	http://ibank.ca.gov/clean_energy.htm
Borrower Profile:	State and local governments, universities, schools, and hospitals
Projects Financed:	CLEEN Center finances clean energy, water, and environmental projects.

Financing Range:	The financing range is \$500,000 to \$30,000,000 although the Board may approve larger projects.
Term of Financing:	The term may not exceed the lesser of the project’s useful life or 30 years.
Capitalization:	CLEEN Center receives capital through self-capitalization and tax-exempt Green Bonds.

IBank established in 2014 a new Clean Energy Finance Center (the Center) and created the Statewide Energy Efficiency Program (SWEET), which operates under the Center. In 2015, the Center was renamed the California Lending for Energy and Environmental Needs Center, or CLEEN Center. Through the CLEEN Center’s programs, IBank encourages and supports the protection of the environment and California’s vast natural resources. It also helps the state achieve its GHG reduction goals by offering financing to various state and local governmental subdivisions and certain nonprofit entities for projects that reduce carbon/pollution or result in other environmental benefits within California. IBank provides financing through the CLEEN Center to help enhance the quality of life of the citizens of California by promoting and stimulating economic growth, creating clean energy jobs, protecting and caring for the environment, and revitalizing communities.

Pursuant to the IBank Act, financial assistance may be provided for designing, acquiring, planning, permitting, entitling, constructing, improving, extending, restoring, financing, and generally developing an eligible facility. An eligible facility is any real and personal property, structures, buildings, equipment, and supporting components thereof that are used to provide industrial, recreational, research, commercial, utility or service enterprise facilities, or community, educational, cultural, or social welfare facilities, and any parts or combinations thereof, and all facilities or infrastructure necessary or desirable in connection therewith, excluding housing facilities. Thus, projects having the foregoing characteristics and employing any of the technologies listed below under 2.3.2. to the extent that the proposed technology is commercially proven, are eligible projects under the CLEEN Center’s programs.

Key strategies of the CLEEN Center are as follows:

1. Target projects such as generation, distribution, transmission, and storage of electrical energy, energy conservations measures, environmental mitigation measures, and water treatment and distribution.
2. Provide affordable financings to municipalities, universities, schools, and hospitals, for projects that reduce energy and water usage (conservation), provide clean energy additions, and achieve energy savings.
3. Offer established and innovative financing structures that control risks and maximize attainment of California’s GHG reduction goals.

Applicants

Eligible applicants under the CLEEN Center Programs include any subdivision of a local or state government, such as departments, agencies, commissions, cities, counties, nonprofit corporations formed on behalf of an applicant, enhanced infrastructure-financing districts, special districts, assessment districts, joint powers authorities within the state, or any combination of these subdivisions; as well as schools and hospitals that apply to IBank for financial assistance in connection with a CLEEN project.

Applicants must demonstrate reasonable ability to repay the proposed financing obligation and all other outstanding debt as well as the ability to maintain ongoing operations. Each applicant organization must authorize its local electric and gas utilities to provide at least 12 months (or a longer period as IBank may require) of past and ongoing usage and billing records to IBank. Direct financing of all CLEEN Projects will be subject to IBank’s Credit Underwriting Guidelines and Procedures.

Amount

CLEEN Projects may receive financings in amounts ranging from \$500,000 to \$30 million. The IBank Board may approve larger financing amounts depending on the availability of funding for the applicable CLEEN Center program and other factors including collateral and credit quality/review.

Term

The financing term cannot exceed the lesser of the CLEEN Project's useful life or 30 years. However, applicants may choose shorter maturities. Repayment of a direct financing will be targeted to begin within one year of financing origination. As required, interest payments can be made from capitalized interest included in the financing amount or other sources identified by the applicant as documented in the applicable financing agreements. Direct financings will generally be amortized on a level repayment basis, but IBank may require or approve other amortization structures, as appropriate in a given case.

2.3.2 Statewide Energy Efficiency Program (SWEEP) under CLEEN Center

SWEEP is a CLEEN Center program for small-, medium-, and large-scale energy efficiency upgrades and projects for California’s municipality, university, school, and hospital borrowers. The SWEEP Projects include comprehensive clean energy improvements to new and existing facilities that save energy.

IBank has identified the following clean energy and related water projects (SWEEP Projects)³ as eligible projects for the CLEEN Center:

1. Energy Efficiency

- a. Advanced metering systems to support conversion of master-metered buildings to sub-metering
- b. Data center, information technology, communications energy efficiency
- c. Energy management and/or control systems, including continuous commissioning
- d. Demand response programs
- e. Water conservation, wastewater management, pipeline, mining/extraction, and similar end-use processes, facilities, buildings, and infrastructure
- f. Lighting and control systems
- g. Heating, ventilation, and air conditioning systems
- h. Building envelope improvements
- i. Occupant plug load management systems
- j. Other electrical load reduction

³ Based on New York Green Bank – Illustrative Guidelines for Eligible Investments.

- k. Thermal and electric energy storage

2. Renewable Energy Sector

- a. Solar photovoltaic
- b. Distribution technologies
- c. Solar thermal
- d. Geothermal
- e. Thermal storage systems
- f. Onshore and offshore wind

3. Energy Storage

- a. Fuel cells (continuous duty)—natural gas fuel or hydrogen
- b. Advanced hydrological pump storage
- c. Other storage technologies

4. Water Sector

- a. Small hydroelectric/hydropower
- b. Waste heat recovery systems
- c. New low-impact run of facility

5. Alternative Technologies

- a. Biomass
- b. Biomass direct combustion
- c. Combined heat and power (CHP)
- d. Co-fire with existing fossil fuel (only biomass feedstock portion is eligible)
- e. Biothermal energy
- f. Biomass conversion technologies
- g. Biogas
- h. Landfill gas (methane)
- i. Sewage gas (methane)
- j. Manure digestion
- k. Anaerobic digestion
- l. Liquid biofuels

6. Alternative Fuels

- a. Biodiesel
- b. Methanol
- c. Bio-oil
- d. Biomass feedstock

7. Transportation

- a. Refueling stations for alternative fuel vehicles
- b. Electric vehicles
- c. Hybrid electric vehicles
- d. Alternative fuel vehicles

IBank may consider project technologies not listed above if they demonstrate the potential to increase energy efficiency or renewable energy and/or decrease GHG and/or produce other environmental benefits while maintaining low technology risk within the state.

2.3.3 Light-Emitting Diode (LED) Street Lighting Program

The LED Street Lighting Program is a CLEEN Center Program for the installation of LED street lights for municipality, university, school, and hospital borrowers as another energy efficiency strategy for California. LED street light projects are deemed SWEEP Projects. IBank requires investment-grade, commercially proven technology and may require that selected equipment comply with street light technology guidelines. IBank requires commercially reasonable equipment and labor warranties on all lighting projects, and it requires that installers demonstrate the ability to fulfill warranty obligations.

3. CONNECTICUT ⁴



3.1 Overview

Connecticut faces the burden of having the highest electric prices in the lower 48 states, aged and inefficient building stock, and major storms that increasingly threaten electric reliability. Faced with growing concern over delivering cheaper, cleaner, and more reliable sources of energy, political leadership in Connecticut has made attracting private investment in clean energy a priority for the state. Connecticut has implemented a renewable portfolio standard (RPS) requiring electric suppliers to source a minimum of 20% of their energy from renewables by the year 2020.⁵ A favorable bipartisan political climate, combined with tangible economic incentives associated with a transition to clean energy, has enabled Connecticut to form one of the strongest, most innovative EIPs in the nation.⁶

The Connecticut Clean Energy Fund (CCEF) gave birth to the Connecticut Green Bank (CGB) in 2011 to expand Connecticut's direct financing programs and increase private sector investment in clean energy. Connecticut houses the majority of state-level clean energy financing activities in one, centralized quasi-public agency, though active participation at the community level bolsters the administration of many of CGB's programs. CGB leads the state's financing efforts in energy efficiency and renewable energy improvement projects for residents, businesses, and institutions and has the following goals:

- Attracting and deploying private capital to finance the clean energy goals of the state.
- Developing and implementing strategies to bring down the cost of clean energy in order to make it more accessible and affordable to consumers.
- Reducing the market reliance on grants, rebates, and other subsidies and moving it toward innovative, low-cost financing of clean energy deployment.

3.2 Connecticut Green Bank

Organization Name:	Connecticut Green Bank (CGB)
Address:	845 Brook Street Rocky Hill, CT 06067
Phone:	860-563-0015
Website:	http://www.ctcleanenergy.com/
Legal Structure:	Quasi-public organization
Year Established:	2011
Enabling Legislation:	Public Act 11-80; Section 16-245 of the Connecticut General Statutes
Mission:	CGB's mission is to support the Governor's and state legislature's strategies to

⁴ Information for the Connecticut section was provided by the Connecticut Green Bank

⁵ State of Connecticut, Department of Energy & Environmental Protection, Public Utilities Regulatory Authority. "Connecticut Renewable Portfolio Standards Overview." Retrieved from:

<http://www.ct.gov/pura/cwp/view.asp?a=3354&q=415186>

⁶ "The Connecticut Green Bank was established in 2011 to develop programs that will leverage private sector capital to create long-term, sustainable financing for energy efficiency and clean energy to support residential, commercial, and industrial sector implementation of energy efficiency and clean energy measures." - Governor Dannel P. Malloy

Capitalization:

achieve cleaner, cheaper, and more reliable sources of energy while creating jobs and supporting local economic development by leveraging public funds to attract private capital investment in clean energy.

CGB's programs receive funding from a variety of sources, including a system benefit charge on residential and commercial electric bills, Regional Greenhouse Gas Initiative allowance proceeds, federal funds and grants, private capital from investors, financial returns from project loans and investments, and other sources.

CGB traces its roots back to the 1998 establishment of the CCEF, a suite of direct incentive programs housed within the state's quasi-public venture capital division—Connecticut Innovations. Upon its establishment in 2011, CGB inherited and subsequently phased out many of CCEF's programs, while shifting the state's focus from a subsidy model to a financing model; leveraging the limited ratepayer and taxpayer resources, it has to attract multiples of private capital investment in clean energy deployment in the state. CGB seeks to lower the cost of energy efficiency and renewable energy financing for commercial, industrial, institutional, nonprofit, government, and affordable housing sectors. CGB co-administers a website for end users, <http://www.energizect.com/>, which provides comprehensive details to consumers and contractors seeking information about the organization's and state's diverse programs.

CGB currently houses an array of clean energy financing programs and initiatives, having phased out the support of early-stage clean energy technology innovation, workforce development, education, and the majority of subsidy programs in the process of transitioning to its new mandate. A sampling of CGB's most significant programs and pilots include the following:

Solarize Connecticut

Through a partnership with SmartPower, CGB offers a bulk solar-purchasing program to individual communities—the more households that sign up for solar installations, the deeper the group discounts that become available.

Residential Solar Investment Programs

CGB offers declining performance-based or upfront incentives, along with a suite of financing products, to make solar photovoltaics (PV) more accessible and affordable to consumers.

Dominion Bridgeport Fuel Cell Park⁷

Working with Dominion Energy Resources and Fuel Cell Energy, CGB contributed \$7.35 million (\$1.55 million grant from the CCEF, \$5.8 million loan from CGB) in financing toward the development of a 14.9 megawatt (MW) fuel cell park in the City of Bridgeport, Connecticut—the second-largest fuel cell park in the world.⁸

⁷ Goddard, K. (2013, December 27). "Fuel Cell Energy Completes 14.9 Megawatt Fuel Cell Park on Schedule for Dominion, the Project Owner." *GlobeNewswire*. Retrieved from: <http://globenewswire.com/news-release/2013/12/27/599333/10062543/en/FuelCell-Energy-Completes-14-9-Megawatt-Fuel-Cell-Park-on-Schedule-for-Dominion-the-Project-Owner.html>

⁸ Clean Energy Finance and Investment Authority. "Board of Directors of the Clean Energy Finance and Investment Authority" (Agenda Item #1, Call to Order, November 30, 2012). Retrieved from: http://www.ctcleanenergy.com/Portals/0/board-materials/CGB_BOD_113012.pdf

The Solar Lease, Solar Loan, Smart-E Loan, and Commercial Property Assessed Clean Energy (C-PACE) programs, as well as the recent sale of the C-PACE portfolio, and CGB’s developing crowdfunding initiative illustrates the diversity of financing models created to leverage private capital and lower the cost of renewable energy and energy efficiency improvements for Connecticut residents and businesses. Information on additional CGB’s financing programs and pilots can be found online at www.ctgreenbank.com



Figure 1. U.S. Environmental Protection Agency Administrator Gina McCarthy speaking about the importance of clean energy on environmental protection and economic development at the Dominion Bridgeport Fuel Cell Park

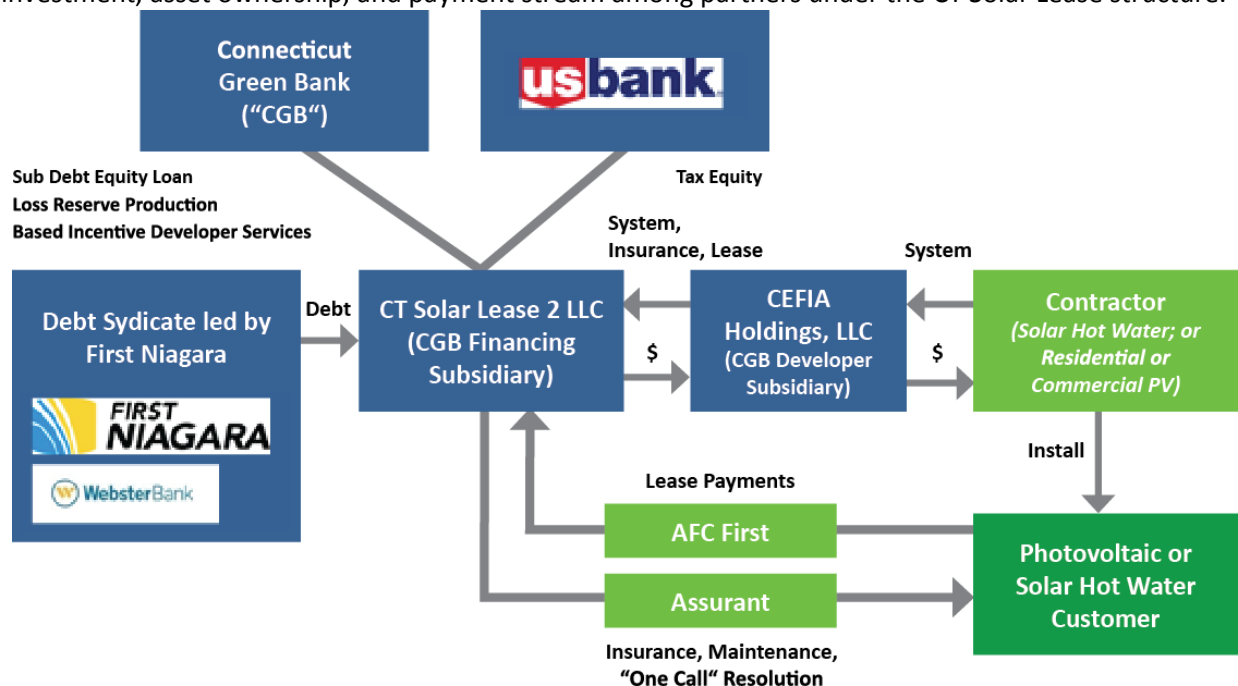
3.2.1 CT Solar Lease

Program Name:	CT Solar Lease
Contact Information:	Ben Healey/benjamin.healey@ctcleanenergy.com
Year Established:	September 2013
Borrower Profile:	Residential, single-family, and commercial (for-profit, nonprofit, and municipal)
Projects Financed:	CT Solar Lease has financed renewable energy projects, including solar PV and solar hot water.
Financing Range:	The financing range for residential properties is up to 10 kilowatts (kW) (\$45,000), and for commercial properties, it is up to 350 kW (~\$1.25 million).
Term of Financing:	The term of financing is 20 years with intermediate purchase options after five years.
Cost of Financing:	The cost of financing is approximately 6.50%–10.00%, depending on project structure.

CGB’s CT Solar Lease program is the second iteration of a pilot residential solar lease program (2008–2011), designed to provide energy consumers an alternative to purchasing solar PV and solar hot water systems for their homes or solar PV for municipal entities, nonprofits, or for-profit businesses. The revised lease structure lowers direct state investment and dramatically increases the total private capital available to invest in projects (\$60 million fund). Partnering with private banks, insurers, a tax equity investor, and servicer AFC First, CGB oversees a complex network of legal and cash flow relationships among public and private entities to ensure that system and installation costs remain affordable for lease customers. After five years of successful repayment, lessees receive an annual opportunity to purchase the system.

In almost all CT Solar Lease installations, there is no requirement for solar PV or solar hot water system lessees to make down payments, and monthly payments fall below traditional utility charges. The program can also work under a C-PACE structure, allowing non-investment grade businesses, which are normally not considered creditworthy for these kinds of long-term, third-party agreements, to access solar power.

Debt providers, including First Niagara Bank, Webster Bank, Liberty Bank, Peoples United Bank, and tax equity investor U.S. Bank, invested over \$50 million in private capital for the purchase of solar PV and solar hot water equipment for the CT Solar Lease program.⁹ Assurant Inc. provides a comprehensive insurance and warranty management package, providing a vital measure of security to private investors and end users. AFC First services lease payments, and CGB ensures that the payment stream from CT Solar Lease projects flow back to the lenders and investors. The diagram below illustrates the flow of investment, asset ownership, and payment stream among partners under the CT Solar Lease structure.



⁹ Connecticut Green Bank. *Connecticut Green Bank Press Release*. Retrieved from: <http://www.greentechmedia.com/articles/read/connecticuts-green-bank-a-model-for-public-private-renewables-partnerships>

Figure 2. Legal structure of the CT Solar Lease

Source: CGB

The CT Solar Lease yields an appropriate rate of return to the capital providers commensurate with the risks they are taking. It also provides local contractors with an important sales tool and gives customers access to affordable no-money-down financing and peace of mind for clean energy.

As of June 2015, a year after the program’s implementation, CT Solar Lease had received over 1,349 applications from 21 solar installers.¹⁰ Additionally, 689 leases had closed for a total of \$25.0 million and 5,478 kilowatts (kW), with another 660 projects approved in the pipeline for \$23 million and 5,197 kW. At the same time, over 3 MW in commercial-scale projects had been approved with a pipeline of an additional 4 MW.

CGB’s \$9.5 million investment in the CT Solar Lease program has attracted \$50 million in private capital from debt providers and a tax equity partner, yielding an approximate 1:5 leverage ratio.¹¹ With the expected investment return to CGB from the CT Solar Lease, the reinvestment of ratepayer dollars into new projects in the future can occur, thereby limiting the need for ongoing ratepayer subsidies.¹² Through an innovative, multifaceted structure, CGB leverages substantial private capital to supply solar energy to Connecticut residents, businesses, municipalities, and organizations unable or unwilling to purchase or commit 100% of the upfront costs for PV or solar hot water systems.

Thanks to the success of the CT Solar Lease and the growth of the private market for lease financing, after the CT Solar Lease fund was fully committed, CGB transitioned to a privately funded product. CGB has partnered with Sunnova to offer an attractive lease option to Connecticut residents to complement the numerous other lease products that have entered the market since the introduction of the CT Solar Lease.

3.2.2 Energize Connecticut Smart-E Loan Program

Program Name:	Energize Connecticut Smart-E Loan Program
Contact Information:	Kerry O’Neill, kerry.oneill@ctcleanenergy.com
Year Established:	May 2013
Borrower Profile:	Residential, owner-occupied, one-to-four units
Projects Financed:	The program finances energy efficiency and renewable energy projects, fuel conversions, and healthy homes measures.
Financing Range:	The financing range is \$500–\$25,000+. (The maximum varies by lender but must be at least \$25,000.)
Term of Financing:	The term of financing is 5–12 years.
Cost of Financing:	The cost of financing is 4.49%–6.99%, depending on the term (maximum rates).

¹⁰ Information provided by CGB

¹¹ Press Release (note #11) Retrieved from: http://www.ctcleanenergy.com/Portals/0/board-materials/CEFIA_Due%20Diligence%20Package_Programmatic_Solar_Lease_2REVISED.pdf

¹² Farnen slides (note #12)

The Energize Connecticut Smart-E Loan Program provides an excellent example of how to incentivize private lenders to provide clean energy loans through the use of credit enhancements. Smart-E Loans are private loans offering low-cost, long-term financing for energy efficiency and renewable energy improvement projects—including up to 20% of the value of the project to support healthy home measures (i.e., asbestos remediation, lead abatement, knob and tube wiring, etc.). CGB has structured the parameters of the program through agreements with participating lenders, who must adhere to a set of predetermined guidelines, including maximum interest rates and terms. Loans are unsecured, and prepayment carries no penalty to homeowners. Thirteen banks and credit unions currently participate in the Smart-E Loan program.¹³

To incentivize bank adoption of the loan program, CGB sets guidelines for Smart-E projects. Such guidelines include insurance and licensing requirements and inspection protocol for eligible technologies and qualified contractors. As further incentive, CGB has provided a LLR (importantly, a “second loss” reserve after the lender to ensure effective credit underwriting on the part of CGB’s partner banks) to participating lenders in the event of default. Federal grant dollars from ARRA capitalized this reserve fund, rather than state ratepayer capital, further reducing Connecticut’s direct investment in these projects.¹⁴

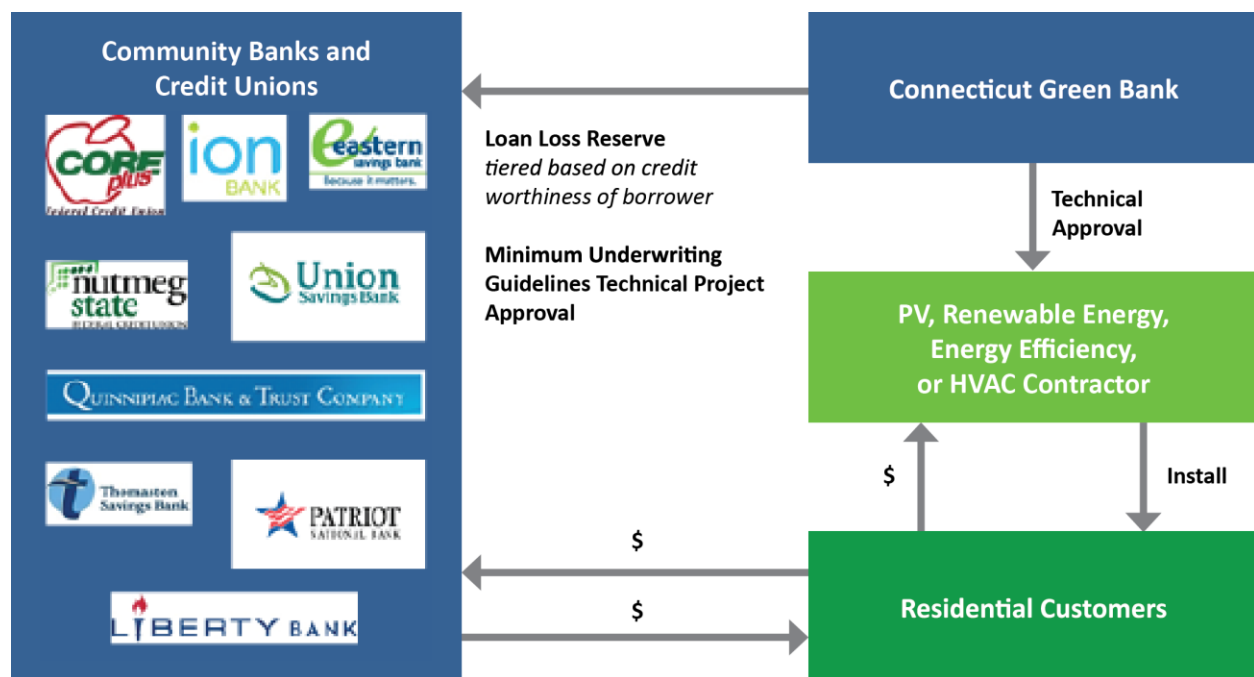


Figure 3. Legal structure of the Smart-E Loan

Source: CGB

To support contractors participating in the Smart-E Loan program, CGB has designed the program to provide a progress payment to contractors. To further mitigate contractor credit concerns by offering

¹³ Energize Connecticut. “Programs: Smart-E Loans” (click on the “LENDERS” tab). Retrieved from:

<http://energizect.com/residents/programs/smart-e>

¹⁴ Energize Connecticut. “About Energize Connecticut’s Smart-E Loans.” Retrieved from:

<http://ctcleanenergy.com/Portals/0/1%20%20Smart-E%20Contractors%20Info%20Sheet%20V10022013.docx>

financing to their customers, CGB partnered with Webster Bank to provide working capital lines of credit secured by cash flow, project finance, and accounts receivable.

Through a relatively small state investment, CGB’s Smart-E Loan Program addresses the needs of all participants in clean energy projects:

- Homeowners have access to low-cost, unsecured financing for energy efficiency and renewable energy projects. CGB’s eligibility requirements for qualified contractors and technologies, which are consistent with the implementation of Connecticut’s Comprehensive Energy Strategy, mitigate concerns about technology performance.
- Community banks and credit unions can mitigate default risk through access to a LLR fund. Technology risk is mitigated through qualified contractor and equipment eligibility requirements issued through CGB that are consistent with the policy of the state.
- Eligible contractors can increase their client base by targeting Smart-E consumers. Working capital for Smart-E projects is available through progress payments and specialized loan products administered by CGB and operated through partnering financial institutions.

As of June 2015, Smart-E had received 534 applications from 111 contractors for energy efficiency and renewable energy improvement projects, and approximately \$9.4 million had been approved or funded.¹⁵ Additionally, 230 contractors had received training, broadening the pool of eligible partners for the loan product. CGB continues to focus on driving demand for Smart-E through improvements to its Energize Connecticut website, lender campaigns, media campaigns, and continued outreach and training for Smart-E contractors.

3.2.3 Commercial Property Assessed Clean Energy Program

Program Name:	Commercial PACE (C-PACE)
Contact Information:	Genevieve Sherman, genevieve.sherman@ctcleanenergy.com
Year Established:	January 2013
Borrower Profile:	Commercial, industrial, and multifamily (five or more units) property owners
Projects Financed:	C-PACE finances energy efficiency and renewable energy projects.
Financing Range:	Existing projects are in the range of \$80,000–\$2,500,000; CGB targets \$150,000 and above.
Term of Financing:	The term of financing is 10–20 years.
Cost of Financing:	The cost of financing is 5.00%–6.00%, depending on the length of the term (January 2014).

Like many EIPs, CGB administers a C-PACE throughout its service area—the entire State of Connecticut. C-PACE is a structure through which commercial property owners can finance energy efficiency and renewable energy improvements through a loan repaid by a voluntary benefit assessment on their property tax bill.¹⁶ A tax lien, or benefit assessment, is placed on the improved property as security for the loan, and CGB requires lender consent from existing-mortgage holders prior to approving a C-PACE

¹⁵ Information provided by CGB

¹⁶ <http://www.cpace.com/about-c-pace>

project. CGB maintains a warehouse of capital from which it finances C-PACE transactions and sells to capital markets upon completion.

Prior to the establishment of C-PACE in a given municipality, its legislative body must pass a resolution enabling the municipality to enter into agreement with CGB and to assess, collect, remit, and assign tax assessments against C-PACE borrowers' liabilities.¹⁷ CGB reimburses municipalities for costs incurred in the servicing of C-PACE loans, encouraging the adoption of the program. Municipalities are responsible solely for collecting and remitting C-PACE payments, with no liability for delinquency. CGB takes assignment of the lien, and in the event of delinquency, it enforces collection on the building owner.

Connecticut's C-PACE program allows for the transfer of the obligation and its associated tax lien to the next building owner in the event of a property sale. In the event of a default or foreclosure, the succeeding property owner must make all delinquent payments current. Because of this feature, financed improvements must be permanently fixed to the property—eligible "fixed" improvements include insulation, mechanicals, solar rooftop installations, fuel cells, and underground natural gas piping.¹⁸ CGB also requires a savings-to-investment ratio of greater than one over the life of the project improvements.

CGB specifies minimum underwriting criteria for C-PACE borrowers, while enabling private lenders to customize the terms and conditions of individual loans. Borrowers utilizing CGB's warehouse line of credit must have the following:¹⁹

- Positive operating profit and net income in each of the last two fiscal years
- Positive cash from operations in each of the last two fiscal years
- Earnings before interest, taxes, depreciation, and amortization/debt service (including the proposed C-PACE assessment after considering savings expected to result from the financing) of at least 1.25x for the last fiscal year
- Current ratio of at least 1.25:1.00
- Total liabilities /tangible net worth not in excess of 2.00:1.00
- Interim statements that disclose no material adverse change in financial condition.

As of June 2015, 109 towns (of 169 statewide) had opted into CGB's C-PACE program, giving over 88% of the commercial and industrial properties in the state access to C-PACE financing. Over 200 contractors had received training for participation in the program, and 16 capital providers had received approval. Additionally, over \$57 million in C-PACE assessment advances had been approved. Interest in the C-PACE program has been high among Connecticut businesses, with a significant pipeline of businesses lined up to take advantage of the program in 2014–2015.²⁰

Clean Fund, a CGB C-PACE capital provider, purchased an initial portfolio of \$30 million comprising 32 energy efficiency and solar PV projects across a dozen municipalities in March 2014. Using an auction

¹⁷ Clean Energy Finance and Investment Authority. September 2013. "C-PACE Program Guidelines, Version 3." Retrieved from: http://s3.honestbuildings.com/client/c-pace/Program_Guidelines_v3_0_FINAL-1.pdf

¹⁸ [Ibid.](#)

¹⁹ [Ibid.](#), p. 10.

²⁰ Information provided by CGB

process, CGB solicited bids for the portfolio across all of its capital providers. CGB encouraged bidders to offer various structures and pricing, with or without credit enhancement, and to bid for one or more projects. The selected structure has Wisconsin's Public Finance Authority use proceeds from Clean Fund (in return for a single class of senior "A" bonds) to fund 80% of the portfolio purchase price. To credit enhance the transaction, CGB has taken back, in equal measure, subordinated "B" and "C" bonds. The structure is, in effect, a "private securitization" of the underlying portfolio.²¹

3.2.4 CT Solar Loan

Program Name:	CT Solar Loan
Contact Information:	Ben Healey, benjamin.healey@ctcleanenergy.com
Year Established:	March 2013
Borrower Profile:	Residential, owner-occupied, one-to-four units
Projects Financed:	CT Solar Loan finances renewable energy—solar PV—projects.
Financing Range:	The financing range is up to \$55,000.
Term of Financing:	The term of financing is 15 years.
Cost of Financing:	The cost of financing is approximately 6.49% (including 0.25% Automated Clearing House payment benefit).

CGB partnered with Mosaic Inc., an emergent online crowdfunding platform specializing in solar installations, to tap into their growing capital base. Crowdfunding involves soliciting capital from a number of small, individual investors and aggregating the investments into an equity or loan investment in a specific project or pool of projects. Sungage Financial, another partner in the project, designed the underlying loan product along with CGB and provided a marketing, origination, and servicing platform for homeowner loan applications, underwriting, and ongoing cash flow management.

CGB provided \$5 million in warehouse financing for the crowdfunding initiative, directed toward initial loan origination via Sungage.²² Mosaic joined with CGB in the project, committing to invest \$4 million in a pool of fully funded consumer loans.²³ The expectation is that the majority of the purchasers of these investments on Mosaic's platform will come from qualified private investors with an interest in funding clean energy projects. As the U.S. Securities and Exchange Commission refines its rules regarding crowdfunding investments, Mosaic will accept investments only from individuals meeting the "Accredited Investor" qualifications determined by Regulation D of the U.S. Securities Act of 1933.²⁴ According to Mosaic, California and New York permit unaccredited investors because state legislators

²¹ Information provided by CGB

²² Puttre, Michael (2014, February 6). "Mosaic And Connecticut Team Up On Crowd Funding Of Residential Solar." *Solar Industry*. Retrieved from:

http://www.solarindustrymag.com/e107_plugins/content/content.php?content.13778

²³ Clean Energy Finance and Investment Authority (2014, February 6). "Sungage Financial, CEFIA, and Mosaic Announce \$5 Million Deal to Offer New, Crowdsourced Residential Solar Loans." *BusinessWire*. Retrieved from: <http://www.businesswire.com/news/home/20140206005031/en/Sungage-Financial-CEFIA-Mosaic-Announce-5-Million>

²⁴ Investopedia. "Accredited Investor." Retrieved from:

<http://www.investopedia.com/terms/a/accreditedinvestor.asp>

have approved broader investment criteria for Mosaic projects.²⁵ As a result of the successful CT Solar Loan pilot, the Green Bank helped position Sungage Financial to attract a \$100 million commitment from Digital Federal Credit Union. Now no longer requiring CGB support, Sungage Financial has fully transitioned over to a private capital partner with Digital Federal Credit Union and will offer its new financing product in Massachusetts, New Jersey, and New York—alongside Connecticut.²⁶

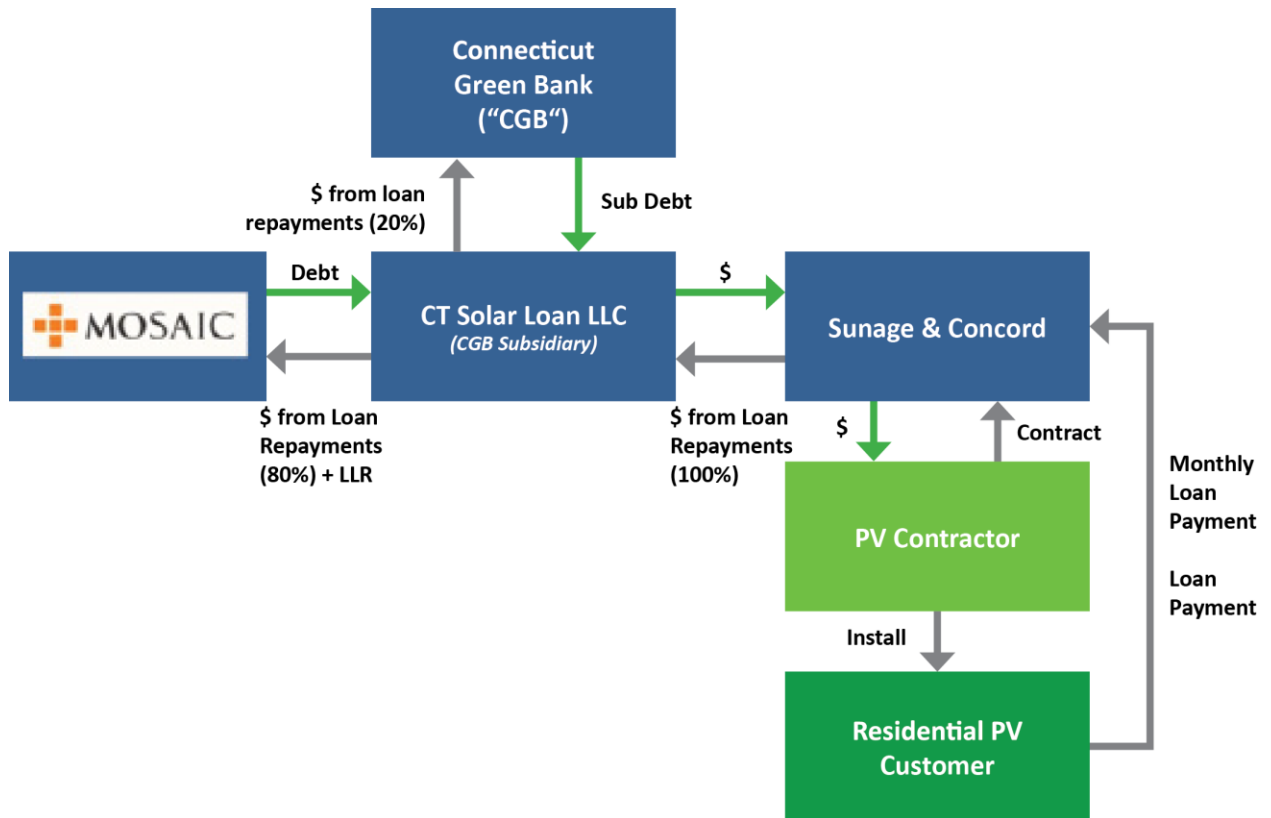


Figure 4. Legal structure of the CT Solar Loan

Source: CGB

The CT Solar Loan yields an appropriate rate of return to the capital providers commensurate with the risks they are taking, provides local contractors with an important sales tool, and gives customers the ability to own solar PV through low-interest and long-term financing along with access to the federal investment tax credit.

CGB structured its crowdfunding program as a pool into which individuals can invest, rather than a series of individual projects. Sungage contributes underwriting expertise to ensure that each borrower within the pool is of strong credit. To enhance the investment opportunity for senior investors Mosaic/

²⁵ Curtis, Lisa (2012, January 21). "Solar Energy Projects Get Investment Boost through Crowdfunding." *Mother Earth News*. Retrieved from: <http://www.motheearthnews.com/renewable-energy/clean-energy-investing-zw01301zpit.aspx>

²⁶ Wesoff, Eric (2014, October 20). "\$200 Million More Flows to Residential Solar Loans Through Sungage and Mosaic." *Greentech Media*. Retrieved from: <http://www.greentechmedia.com/articles/read/200-Million-More-Flows-to-Residential-Solar-Loans-Through-Sungage-and-Mosa>

CGB accepted the first risk of loss for the crowdfunding program by remaining in the permanent capital stack over the life of these loans, ensuring that the debt service coverage ratio remains above 1.25x for these investors. Additionally, CGB contributed \$300,000 in ARRA State Energy Program grant funds to a LLR as a credit enhancement for the pool of crowdfunded projects.

The crowdfunded projects generally cost homeowners 6.49% in annual interest, with a 5% expected return to investors annually. Homeowners have the option to use proceeds from the federal investment tax credit to re-amortize their loans. The program requires contractors to stand behind each solar PV system's performance, providing borrowers and investors an additional incentive to participate in the program. Collateral on the loans consists solely of a Uniform Commercial Code-1 (UCC-1) filing on the installed solar system. In the event of a default on a loan from the portfolio, CGB or Mosaic, acting on behalf of its investors, has the right to reclaim project equipment and either liquidate or redeploy the solar system to a new borrower.

Through credit enhancement and direct investment, CGB lowers the barriers to Connecticut homeowners seeking to install solar installations, working in partnership with Sungage and Connecticut's base of local installers to originate loans and to encourage the participation of private investors.

As of June 2015, CT Solar Loan had received 279 applications from 19 solar installers.²⁷ Two hundred seventy-nine loans have closed for a total of \$6.0 million and 2,186 kW.

²⁷ Information provided by CGB

4. FLORIDA²⁸



4.1 Overview

The recession and housing market collapse significantly affected Florida, which continues to struggle economically, with new home construction down, tourism reduced, and the citrus industry in decline. In 2012, the foreclosure rate in Florida was among the highest in the nation, and unemployment throughout much of the state was above the national average.²⁹ LMI communities have traditionally lacked access to emerging clean energy technologies and typically do not have the disposable income or equity available to afford the high upfront costs of energy retrofits and renewable energy alternatives.

Florida spends approximately \$58 billion per year purchasing carbon-based fuels from other states and nations (the seventh-highest such expenditure in the nation), and electricity costs have been steadily increasing statewide by an average of 4.7% per year.³⁰ Florida's aging energy infrastructure relies heavily on fossil fuels. Despite its nickname of the Sunshine State, Florida lags behind the nation in solar power production (below 3%), and few state programs exist to promote energy efficiency and renewable energy alternatives.

A report prepared by Navigant Consulting for the Florida Public Service Commission, the Florida Governor's Energy Office, and Lawrence Berkeley National Laboratory found solar technologies to have the largest renewable energy potential in the state.³¹ Despite these findings, an insignificant portion of the state's energy portfolio is currently invested in solar.³² Due to the lack of a robust rebate program or a state policy agenda toward catalyzing investment in clean energy, Florida's limited clean energy development activities have created opportunities for a bottom-up strategy by local and regional entities targeting solar PV.

In 2010, the U.S. Department of Energy's (DOE's) Energy Efficiency and Conservation Block Grant program (EECBG) selected a St. Lucie County-based CDFI, the Solar and Energy Loan Fund (SELF), as one of 20 programs in America to receive funding. SELF began operations in February 2011, providing education, energy audits, and affordable financing to help property owners identify and make cost-effective energy efficiency and renewable energy upgrades.

²⁸ Information for the Florida section was provided by the Solar and Energy Loan Fund

²⁹ Solar and Energy Loan Fund. "SELF Overview." Retrieved from:

http://cleanenergyloanprogram.org/solar_energy_loan/SELF_Overview_October%202013.pdf

³⁰ Ibid.

³¹ Florida Public Service Commission. December 2008. "Florida Renewable Energy Potential Assessment." Retrieved from: http://www.psc.state.fl.us/utilities/electricgas/RenewableEnergy/FL_Final_Report_2008_12_29.pdf

³² Coward, D. and Andrade, D. (2014, February 19). Telephone Interview between Council of Development Finance Agencies and Solar and Energy Loan Fund - Department of Energy, Energy Investment Partnership Publication.

4.2 Solar and Energy Loan Fund

Organization Name:	Solar and Energy Loan Fund (SELF)
Address:	2400 Rhode Island Ave Fort Pierce, FL 34950-4852
Phone:	772-468-1818
Website:	www.SolarEnergyLoanFund.org
Legal Structure:	501(c)(3) nonprofit organization – Certified CDFI as per U.S. Treasury CDFI
Year Established:	2010
Enabling Legislation:	N/A
Mission:	SELF’s mission is to provide energy expertise and favorable financing to underserved residents, small businesses, and communities in order to yield sustainable community development, local employment and economic development opportunities, enhanced quality of life, greater efficiencies, clean energy alternatives, and energy independence.
Capitalization:	DOE’s EECBG program, banks, and faith-based organizations currently capitalize SELF.

SELF, a 501(c)(3) nonprofit organization headquartered in St. Lucie County, Florida, operates throughout Florida. Founded in 2010, SELF helps low-income residents face the steadily rising cost of utilities, addresses a need for greater energy independence, and increases access to capital and clean energy solutions in the Sunshine State.

SELF is a certified CDFI, as recognized by the U.S. Department of the Treasury, and provides energy expertise, affordable financing, and project management to enable LMI homeowners to identify and install cost-effective energy improvements in their homes and businesses.

SELF is the only CDFI in Florida that targets clean energy investments. SELF provides financing for two dozen different types of energy efficiency and renewable energy products. SELF’s product research committee, a panel of specialized employees, board members, and external experts, performs research to evaluate clean energy technologies prior to approving them for inclusion in financing projects.

Initially capitalized by DOE’s EECBG program, SELF has leveraged the initial EECBG grant with an additional \$4 million in grants and non-governmental loan capital from banks, faith-based investors, impact investors, and worldwide crowdfunding. SELF persists to actively seek diversification of its capital sources for continued growth. SELF initially struggled to attract investment from private lenders, especially the banking CRA investments, but that situation has improved now that SELF has nearly five years of demonstrated loan repayment data, as well as four years of clean financial audits. The ability to tap into grants and private loans provides more flexibility and allows for longer financing terms, increasing the organization’s investment capacity to sustain its operations and finance longer-term investments.

SELF operates the Green CDFI and serves as the administrator for St. Lucie County’s C-PACE program. This report will focus on the SELF CDFI loan program. SELF aims to address the high upfront cost of energy efficiency improvements and renewable energy alternatives, such as PV solar panel systems, specifically in underserved markets. The ability to attract investment from private lenders will allow SELF to expand its services into new products and markets. Readers can review the full range of SELF’s

financial services and products by accessing its website at www.cleanenergyloanprogram.org.

4.2.1 Clean Energy Loan Fund Program

Program Name:	Empowering and Rebuilding Underserved Communities
Contact Information:	Doug Coward, dougc@solarenergyloanfund.org
Year Established:	2011
Borrower Profile:	Residential
Projects Financed:	SELF finances energy efficiency and renewable energy projects.
Financing Range:	The financing range is \$1,000–\$50,000, depending on the category of borrower and improvement
Term of Financing:	The term of financing is 3–5 years, depending on the category of borrower and improvement
Cost of Financing:	The cost of financing is 5.00%–9.5%, depending on the category of borrower and improvement

SELF is a microloan program established in 2011. Definitions of microloans vary from source to source. The Small Business Administration Microloan Program offers loans with a maximum principal value of \$50,000 and an average size of \$13,000 (U.S. Small Business Administration 2014). Microloans are a financing mechanism intended to improve access to capital for small or underserved borrowers. SELF's dedication to underserved markets coincides with the strength of microloan strategies and has proven to be highly successful.

CRA Investments: A Path to Leverage Private Capital

CDFIs initiate relationships with private lenders to access flexible, long-term capital to expand financial products and extend loan terms to borrowers. This relationship has proven to be mutually beneficial, as banks are able to satisfy requirements of CRA by investing in CDFI activities. CDFIs benefit from enhanced liquidity, leverage, financial advice and expertise, and the mutual interest in serving LMI borrowers. The activities of CDFIs align with many CRA-qualified objectives, such as lending to LMI individuals, promoting economic development opportunities for small businesses, supporting activities that "revitalize or stabilize" an LMI geography, and expanding potential markets and borrower pools. SELF's borrower profile is highly attractive to banks seeking to meet CRA requirements.

CDFIs should follow these steps before approaching a private bank to seek CRA qualifying capital:

- Assess current service market(s) and capital needs
- Assure services offered align with requirements of CRA
- Demonstrate a need for funds
- Develop a plan for expending the capital
- Provide historical portfolio data demonstrating creditworthiness and acceptable loan performance metrics
- Research the bank's operations and mission.

SELF's process begins with education and training. Once a client is preapproved, a state-certified energy rater performs an energy audit on the client's property. SELF's energy experts then assist clients in reviewing the audit and identifying the most cost-effective projects for their specific situation. These audits structure financing projects, which include all eligible technologies and installation costs.

Limitations tied to existing funding sources currently require borrowers to repay SELF loans within five years. The high upfront cost of solar installations means that larger projects frequently do not have cash flow within the five-year period, leading to a high monthly payment burden for borrowers. In order to mitigate risk, SELF requires a UCC-1 on all removable project equipment as well as the participation of a co-borrower to encourage positive repayment. In addition to traditional underwriting practices incorporating projected cash flow from utility savings, SELF employs a scorecard considering alternative factors related to character and determination for loan repayment.

Since the program began lending in 2011, SELF has closed nearly 500 loans totaling \$4 million. Loans carry an average size of \$8,579.33 at an average annual percentage rate of 4.59%. More than 2/3rds of loan borrowers reside in LMI census tracts. Additionally, characteristics of the borrowers are as follows: 34% of borrowers have very low income, 41% have women as the heads of households, and 18% are minority borrowers. Approximately 85% of SELF loans have supported energy efficiency retrofits, with the remaining 15% going to renewable energy installations (solar PV). Despite the fact that these loans are virtually unsecured, the delinquency rate is currently under 1% and the default rate is also under 1%.

5. HAWAII³³



5.1 Overview

Spurred by the realization that Hawaii's overreliance on oil is unsustainable for the long term, the State of Hawaii has implemented policies to dramatically shift away from imported oil. Since 2008, the state has characterized this agenda as the Hawaii Clean Energy Initiative. The Initiative, which began as a groundbreaking partnership between the State of Hawaii, DOE, the military, and the private sector, is now in its second phase. It was clear that the original goal of 40% renewable energy by 2030 was too conservative. Therefore, in 2015, Hawaii passed Act 97³⁴ that set new RPSs of 100% renewable energy by 2045 and increased Hawaii's 2020 target to 30%. The Hawaii Clean Energy Initiative also has Energy Efficiency Portfolio Standards (EPPSs) reducing 2008 electrical energy consumption by 30% by 2030. The Hawaii Clean Energy Initiative is helping grow Hawaii's innovation sector by stimulating deployment of clean energy infrastructure as a catalyst for economic growth, energy system innovation, and test bed investments.

It is within this context that legislation to fund clean energy technologies was enacted as Act 211, Session Laws of Hawaii 2013, which established the Hawaii Green Infrastructure Authority and a green infrastructure-financing program for the state. This program, the Green Energy Market Securitization (GEMS) Program, engages the capital markets in order to facilitate clean energy financing for underserved consumers, particularly nonprofits, renters, and homeowners.

5.2 Green Energy Market Securitization Program

Organization Name:	Green Infrastructure Authority
Address:	P.O. Box 2359 Honolulu, Hawaii 96804
Contact Information:	Merissa Sakuda, merissa.h.sakuda@hawaii.gov
Phone:	(808) 586-2366
Website:	http://energy.hawaii.gov/testbeds-initiatives/gems
Legal Structure:	Public organization
Year Established:	2014
Enabling Legislation:	Act 211, Session Laws of Hawaii 2013
Mission:	GEMS' mission is to support Hawaii's strategies to democratize access to clean energy through the development of financing programs that overcome market barriers and access to capital markets.
Capitalization:	GEMS is funded through the issuance of low-cost rate-reduction bonds, which are secured by a green infrastructure fee assessed to all utility ratepayers.

The Hawaii Public Utilities Commission provided final approvals for implementation of the GEMS Program in 2014. In accordance with Act 211, the Hawaii Public Utilities Commission approved two different GEMS-related orders that approved GEMS' purpose, structure, and capitalization. The regulatory process was precedent setting. Hawaii now has the first EIP that is capitalized through a

³³ Information for the Hawaii section was provided by the Hawaii Energy Office

³⁴ Act 97, Session Laws Hawaii 2015, signed into law on June 10, 2015.

capital markets bond transaction, which is secured by a nonbypassable, irrevocable charge on all utility ratepayer bills, the “Green Infrastructure Fee.” Moody’s Investors Service, Standard & Poor’s, and Fitch Ratings rated the GEMS Bonds as Aaa/AAA/AAA, respectively. The credit rating ensured the capital costs were low, which in turn keeps consumer rates for GEMS as low as possible. Based on the \$150 million issuance, the Green Infrastructure Fee is less than \$1.50 a month for residential customers and is offset by a reduction of the existing public benefits fee.

In addition, GEMS will give Hawaiian consumers the ability to repay their loans through the Public Utilities Commission’s OBR program once this program is established. This added security will enable GEMS to serve a broader segment of the market than the private sector would likely ever do alone. The diagram below illustrates how GEMS’ innovative source of capital—a rate reduction bond backed by the Green Infrastructure Fee—supports a market-driven clean energy financing program designed to benefit underserved Hawaii consumers.

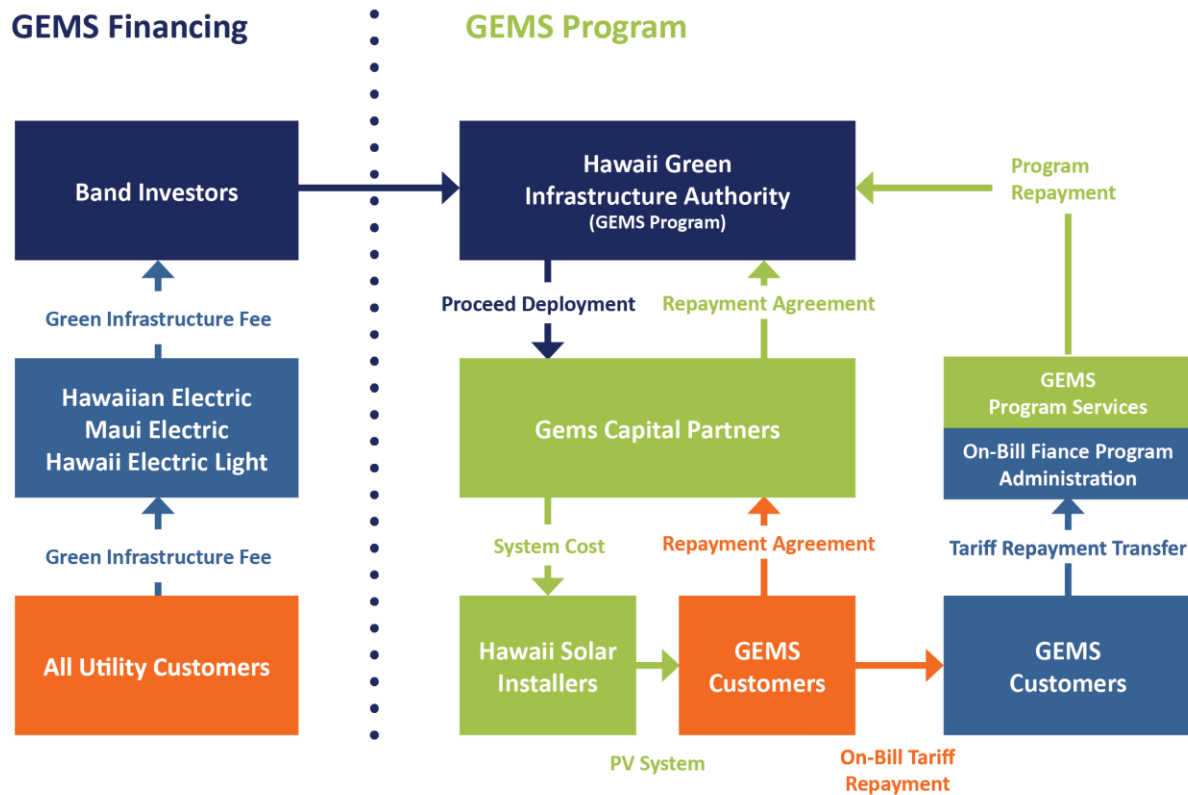


Figure 5. Structure of Hawaii’s GEMS Program

Source: Hawaii Energy Office

Overall, GEMS has five primary policy goals, all of which guide program development. Those goals are to accomplish the following:

1. Address financing market barriers to increase the installation of clean energy projects and infrastructure to meet the state’s clean energy goals, including the RPS and EEPS.

2. Democratize clean energy by expanding access and affordability of renewable energy and energy efficiency technologies for identified underserved markets while expanding the market generally.
3. Enable more ratepayers to reduce their energy use and energy costs by helping them finance clean energy improvements.
4. Partner with and support existing market entities in the clean energy and financing sector to ensure the GEMS Program can bridge market gaps and facilitate a sustainable and efficient private sector market.
5. Balance these policy goals with repayment risk to achieve an appropriate rate of return on investment.

Taken together, these objectives have the potential to make GEMS an important and impactful tool as the state seeks to achieve ambitious milestones related to its clean energy goals.

In its first phase, GEMS is focusing primarily on deploying solar PV technologies. GEMS chose solar PV for its first phase of deployment because of its low technology risk and because Hawaii has a robust solar PV market. Thus, GEMS is able to design financial products that fit within current market channels, rather than trying to activate completely new products for the market. In 2015, GEMS launched its consumer solar PV product and its nonprofit solar PV product. The program is also working on finalizing a commercial solar PV product and financing commercial energy efficiency.

6. NEW JERSEY ³⁵



6.1 Overview

Since 1999, the State of New Jersey has dedicated funding to the New Jersey Clean Energy Program (NJCEP) to advance energy efficiency and renewable energy technologies. The New Jersey Board of Public Utilities, which is also the state’s energy office, oversees and manages NJCEP. While the specific objectives of NJCEP have evolved over time in response to a constantly changing energy marketplace, NJCEP generally seeks to reduce energy consumption, increase reliance on renewable resources, including solar, and mitigate the environmental impacts caused by power generation.

NJCEP has enjoyed tremendous success over the past 15 years and has helped contribute to New Jersey’s third-in-the-nation ranking in solar generation. Additionally, the American Council for an Energy-Efficient Economy always ranks NJCEP’s energy efficiency initiatives in the top tier.

While NJCEP has historically focused on cleaner, more efficient energy systems, following Superstorm Sandy in October 2012, the state also has explored ways to encourage and develop more resilient energy systems. The sustained power outages after Sandy had devastating impacts across the state, but several facilities were significantly less affected by the outages because they had invested in resilient, distributed energy resource technologies that allowed them to continue to operate as “islands of power” while the electrical grid was down. In some instances, these systems—CHP, fuel cells, solar with storage, etc.—with built-in islanding capacity could operate for a week or more without needing power from the electrical grid.

Recognizing the benefits of resilient distributed energy systems, but understanding that the considerable initial investment of implementation is a deterrent, the state has sought to incentivize implementation of resilient energy technologies at critical facilities. Through extensive market research, stakeholder outreach, and financial modeling, the state designed the New Jersey Energy Resilience Bank (ERB), which seeks to provide technical assistance and attractive financing to operators of the state’s critical facilities and infrastructure, including water and wastewater treatment facilities, acute care hospitals and long-term care facilities, and shelters.

6.2 The New Jersey Clean Energy Program

Program Name:	The New Jersey Clean Energy Program (NJCEP)
Address:	44 South Clinton Avenue, Trenton, NJ 08625-0350
Phone:	866 NJ SMART (866-651-6278)
Website:	http://www.njcleanenergy.com/
Legal Structure:	State government agency within the NJ Board of Public Utilities
Year Established:	2001
Enabling Legislation	The Electric Discount and Energy Competition Act of 1999, N.J.S.A. 48:3-61
Mission:	NJCEP’s mission is to advance and promote energy efficiency, demand

³⁵ Information for the New Jersey section was provided by New Jersey departments and agencies through the New Jersey Governor’s Office.

Capitalization:	response programs, and clean energy generation, including renewable energy and CHP/fuel cells. NJCEP receives capital from a societal benefits charge through the NJ Board of Public Utilities.
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In 1999, New Jersey signed the Electric Discount and Energy Competition Act, N.J.S.A. 48:3-49-109 into law. The act tasked the Board of Public Utilities with advancing energy efficiency and renewable energy programs through the Societal Benefits Charge, N.J.S.A. 48:3-60(a)(3). Today, the Board of Public Utilities' Office of Clean Energy administers a suite of programs that offer New Jersey residents, business owners, and local governments financial incentives, programs, and services that reduce energy demands, save money, and protect the environment.

In 2011, Governor Chris Christie's Administration adopted a new Energy Master Plan that proposed a roadmap to usher in a responsible energy future, including sufficient and reliable energy supplies that are both environmentally responsible and competitively priced. The Energy Master Plan's primary goal is the promotion of cost-effective energy conservation and energy efficiency, and it also calls for the expansion of distributed generation and to assist in improving and enhancing system reliability and fuel efficiency.

Consistent with the policy directives embodied in the Energy Master Plan, the Clean Energy Program portfolio contains the following initiatives:

Residential Rebates and Incentives

NJCEP offers a suite of programs for residential customers, including: New Jersey Home Performance with ENERGY STAR—energy efficiency home upgrades; New Jersey ENERGY STAR Homes—promoting energy efficiency in new construction; rebates to incentivize the recycling of old refrigerators and freezers; and various other rebates to encourage energy-efficient washers, dryers, fluorescent light bulbs, and heating and cooling equipment.

Financial Incentives for Commercial, Industrial, Nonprofit, and Governmental Customers

NJCEP offers significant incentives for commercial, industrial, nonprofit, and governmental customers to integrate energy-efficient and renewable technologies into new construction, upgrades, and cooling and heating equipment installations. One program geared toward the commercial sector encourages various types of distributed generation technology designed to enhance energy efficiency through on-site power generation with recovery and productive use of waste heat.

Renewable Energy

NJCEP is making renewable energy technologies like solar, wind, and biopower more affordable and practical through initiatives such as the Renewable Energy Incentive Program, which provides grants through a competitive solicitation, and the Solar Renewable Energy Certificate Registration Program, which provides energy certificates and long-term financing to solar investors.

Over time, NJCEP has successfully advanced energy efficiency, demand response, and clean energy generation, including renewable energy and CHP. On an annual basis, NJCEP provides approximately \$200 million in rebates and incentives, including loan rate buy-downs for energy efficiency loans. The

majority of the incentives are for the energy efficiency and CHP/fuel cell programs, and these incentives are helping to transform the market from rebates to financing. Some highlights include the following:

- Development of a Solar Renewable Energy Certificate system that provided for financing of solar systems, which contributed to New Jersey's third-in-the-nation ranking with over 31,000 solar installations that produce over 1,400,000,000 kilowatt-hours per year
- Installation of 958 MW of distributed generation, including more than 300 MW of CHP installations.

Superstorm Sandy

On October 29, 2012, Sandy caused significant damage to New Jersey's energy infrastructure, disrupting delivery of electricity, petroleum, and natural gas to customers across the state and causing widespread power outages. Sandy impacted 71% of New Jersey's electrical distribution systems. Flooding and high winds damaged high-voltage lines, substations, and distribution components throughout the state, leaving 2.8 million electric utility customers without power. At least one-third of New Jersey residents lacked power for at least six days after the storm.

The state's critical infrastructure was not immune to Sandy's impacts on the electrical grid. The outages significantly compromised the state's drinking water and wastewater operations, leading to widespread and prolonged service disruptions and the discharge of raw, untreated sewage into local bodies of water. The storm forced hospitals, nursing homes, and long-term care facilities to contemplate evacuation in light of prolonged power outages. These are just some examples of how the prolonged power outage after Sandy affected New Jersey critical facilities.

While the effects of the prolonged failures of the electrical grid were widespread, there were several facilities in storm-impacted areas that maintained power despite the sustained outages. These facilities had distributed generation units with "blackstart" technology and islanding capabilities, which allowed them to operate as microgrids while the electrical grid was down. For example, Princeton University's CHP microgrid operated for a week when the larger grid failed, saving the University millions in documented, avoided loss in hundreds of irreplaceable research projects. Similarly, the College of New Jersey's CHP microgrid provided heat, power, hot food, and hot showers to 2,000 mutual aid workers from other states that helped to restore power after the storm. These examples highlighted the opportunity to protect certain critical infrastructure and enhance disaster response capabilities by pursuing technologies that allow facilities to operate independently from the electrical grid while utilizing cleaner and more energy efficient technology.

6.3 New Jersey Energy Resilience Bank

Program Name:	New Jersey Energy Resilience Bank (ERB)
Contact	New Jersey Economic Development Authority
Address:	36 W. State Street, Trenton, NJ 08625
Phone & Email:	609-858-6767 erb@njeda.com
Year Established:	2014
Borrower Profile:	Initial products target water and wastewater treatment facilities as well as hospitals and critical care facilities
Website:	www.njerb.com
Projects Financed:	The NJ ERB finances installation or retrofitting of commercially available and cost effective resilient energy technologies at critical facilities.
Capitalization:	Two hundred million dollars from the U.S. Department of Housing and Urban Development's (HUD's) Community Development Block Grant–Disaster Recovery program currently capitalizes the ERB

In spite of the successes of the handful of facilities that had invested in resilient energy technologies prior to Sandy, the majority of critical facility operators have not pursued these technologies. Substantial outreach by the state along with DOE identified three major impediments to implementation of resilient energy systems: (1) the technology is too complex, (2) the financial arrangements do not work within existing capital budgets, and (3) current incentives are insufficient. In many cases, the ability to “island” increases an energy project’s total price tag by 10% to 30%.

To address these barriers to energy resilience, New Jersey initially allocated \$200 million of Community Development Block Grant–Disaster Recovery funds to capitalize the New Jersey ERB. The ERB will use this financing to develop or enhance distributed energy resource technologies at critical facilities—largely lifeline and life-safety facilities—that Superstorm Sandy or other disasters directly or indirectly impacted and the U.S. Department of Housing and Urban Development’s (HUD’s) guidelines deem eligible. The New Jersey Economic Development Authority manages the ERB program with technical assistance and support from the New Jersey Board of Public Utilities.

While technology agnostic, the ERB is presently focusing on existing commercially available and cost-effective distributed generation technologies, including CHP, fuel cells, battery storage and resilience upgrades for renewable technologies. Nevertheless, the ERB can adapt to the emergence of new markets and new technologies that are practical, cost-effective, and offer the same or greater resiliency benefits as current distributed generation technologies.

The ERB launched its first product in October 2014 that will provide financing of up to \$65 million for public, nonprofit, or certain eligible for-profit wastewater treatment plant and water treatment plant operators. After receiving necessary regulatory approvals from HUD, the ERB recently launched a new product in October 2015 for hospitals and their related healthcare facilities. For non-profit and public applicants, the ERB will finance 100% of unmet funding needs for an eligible project. Eligible for profit applicants must make an equity contribution as required by HUD. The percentage of the unmet funding need/funding gap to be provided as a grant/forgivable loan is determined during the underwriting process and based on program criteria, which may include but not be limited to, ownership structure, project economic feasibility, rate of return, and other policy considerations. Extensive, sector-specific

market research and stakeholder outreach following Sandy developed the program structure and financing terms. ERB may announce future funding rounds for additional critical facilities depending on available funds.

7. NEW YORK ³⁶



7.1 Overview

As one of the most populous states in the nation, New York faces unique challenges and opportunities in scaling its clean energy deployment across the rural and urban communities from Long Island to Buffalo.

From the recently released 2015 State Energy Plan:

“In 2014, Governor Andrew M. Cuomo launched New York’s signature energy policy, Reforming the Energy Vision (REV). REV will build an integrated energy network able to harness the combined benefits of the central grid with clean, locally generated power.

The [State Energy] Plan, as a roadmap for REV, fosters economic prosperity and environmental stewardship – government and industry working together through public-private partnerships to achieve our shared goal of a healthier and stronger New York economy.

The initiatives outlined in the State Energy Plan, along with private sector innovation and investment fueled by REV, will put New York State on a path to achieving the following clean energy goals:

- 40% reduction in greenhouse gas emissions from 1990 levels
- 50% of energy generation from renewable energy sources
- 600 trillion British thermal units (Btu) increase in statewide energy efficiency³⁷

In setting out to accomplish these goals, Governor Andrew M. Cuomo has launched an expansive effort to improve energy affordability, to design a cleaner, more resilient and flexible power grid, to give customers more control over their energy use, and to better align energy innovation with market demand.

The state coordinates its clean energy investment activities through several state agencies, including the New York State Energy Research and Development Authority (NYSERDA). NYSERDA leads the state’s efforts in market transformation, promoting the widespread development and use of innovative technologies to improve the state’s energy, economic, and environmental well-being.

7.2 New York State Energy Research and Development Authority

Organization Name:	New York State Energy Research and Development Authority (NYSERDA)
Address:	17 Columbia Circle Albany, New York 12203-6399
Phone:	518-862-1090 / 1-866-NYSERDA
Website:	http://www.nysERDA.ny.gov/
Legal Structure:	Government agency

³⁶ Information for the New York section was provided by the New York Governor’s Office, NYSERDA and the NY Green Bank

³⁷ New York State. “New York State Energy Plan.” Retrieved from: <http://energyplan.ny.gov/>

Year Established:	1975
Enabling Legislation:	Article 8, Title 9 and Title 9A of the State Public Authorities Law
Mission:	NYSERDA’s mission is to advance innovative energy solutions in ways that improve New York’s economy and environment.
Capitalization:	State ratepayers primarily fund NYSERDA through the System Benefits Charge. Energy efficiency programs, research and development initiatives, low-income energy programs, and environmental disclosure activities have received System Benefits Charge funds. Other funding sources include the Regional Greenhouse Gas Initiative and DOE’s Energy Efficiency and Conservation Block Grant-American Recovery and Reinvestment Act (EECBG-ARRA) Grant, under the Better Buildings Neighborhood Program.

Founded in 1975, NYSERDA was part of the state’s reconstituted Atomic and Space Development Authority. NYSERDA focused initially on research alone, finding ways to reduce the state’s consumption of petroleum. Over time, the agency’s activities shifted to the research and promotion of energy efficiency and renewable energy generation technologies.

NYSERDA has developed a diverse and robust suite of programs and services, including research in energy technologies, environmental concerns, and energy pricing and consumption data. Education and workforce development efforts address the skill sets required by a clean energy economy. Research and development programs include attention to market demand and clean energy technology commercialization. Finally, NYSERDA administers a variety of financing programs designed to increase energy efficiency and renewable energy projects across diverse sectors.

This report concentrates on the recently established New York Green Bank (NYGB), a division of NYSERDA, as well as the financial design and recent securitization of NYSERDA’s Green Jobs–Green New York (GJGNY) program. These two initiatives offer unique approaches to the concept of securitization and the movement of New York from a subsidy-based model to one accessing capital markets. The agency oversees many additional financing programs, and readers can review NYSERDA’s conduit bond activities, Industrial and Process Efficiency Program, Agriculture Energy Efficiency Program, and other incentive programs on the NYSERDA website at www.nysesda.ny.gov.

7.2.1 Green Jobs – Green New York

Program Name:	Green Jobs – Green New York (GJGNY)
Contact Information:	Karen Hamilton, keh@nysesda.ny.gov
Year Established:	2009 (2012 for OBR)
Borrower Profile:	Residential, multifamily/single-family, small commercial, nonprofit
Projects Financed:	GJGNY finances energy efficiency, net-metered projects.
Financing Range:	The financing range is at a maximum of \$25,000 for single-family residential properties and at a maximum of \$50,000 for commercial and nonprofit properties.
Term of Financing:	The term of financing is at a maximum of 15 years.
Cost of Financing:	The cost of financing is 3.44%, on average.

GJGNY is a comprehensive program established in NYSERDA through the GJGNY Act of 2009. In addition to providing financing to residential, commercial, and nonprofit property owners, GJGNY offers technical services and educational opportunities for clean energy jobs. GJGNY partners with constituency-based organizations, typically nonprofit independent contractors, in targeted communities to market program services and support property owners through the application process.

The GJGNY 2013 Annual Report anticipates that financing activities under the program will sustain themselves through recapitalization from existing loan repayment (NYSERDA June 2013). Other services and workforce development initiatives will deplete existing funding within the next year, however, NYSERDA proposed work to continue through New York State's Clean Energy Fund (<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FC3FBD53-FBAC-41FB-A40E-3DA0A5E0866A}>). GJGNY's financing options include direct loans for energy efficiency or renewable energy improvements to single- and multi-family residential, small commercial, and nonprofit properties.

Applicants for GJGNY financing must engage in a qualified energy audit to determine the exact improvements to be made. Calculations of the total cost of improvements to the property, less any rebates or subsidies available to the borrower, determine the project size. Eligible costs include equipment or system removal, purchase, and installation, as well as related services and the customer's expense for an energy audit (NYSERDA June 2013).

With the receipt of an EECBG-ARRA Grant, under the Better Buildings Neighborhood Program, from DOE, NYSERDA has allocated approximately \$8.5 million toward LLRs and debt service reserves to back the GJGNY portfolio. The resulting collateral reserve account was an important piece in the sale of the portfolio in August 2013. Figure 6 explains this sale further.

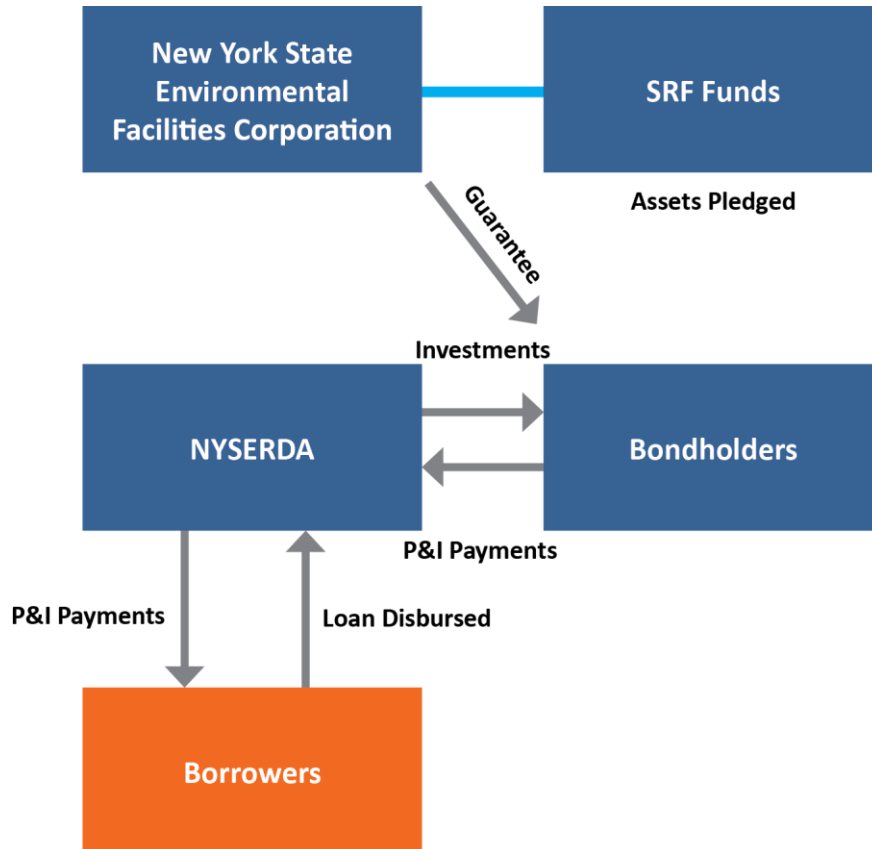


Figure 6. Structure of GJGNY

Source: NYSERDA

One-to four-family residential buildings comprise the portfolio segment with the greatest amount of activity to date for GJGNY. As of June 2014, funds disbursed to this borrower profile total over \$57 million in value—94% of all GJGNY loans. (<http://www.nyserda.ny.gov/-/media/Files/EDPPP/GJGNY/Annual-Report-GJGNY/2014-gjgny-annual-report.pdf>) Small commercial and nonprofit borrowers comprise the smallest segment of the portfolio at \$515,553. However, with the average loan size for commercial borrowers topping \$52,000 (and \$27,000 for the NYSERDA share of the loan), loans in this segment are significantly larger than those in the one-to-four-family residential segment (approximately \$9,700 per loan).

7.2.2 New York Green Bank

Organization Name:	New York Green Bank (NYGB)
Address:	1359 Broadway New York, NY 10018
Phone:	212.379.6260
Website:	http://www.greenbank.ny.gov/
Legal Structure:	Division of New York State Research and Development Authority (NYSERDA), a Government agency established in 1975
Year Established:	2013
Mission:	NYGB’s mission is to accelerate clean energy deployment in New York State

Capitalization: by working in partnership with the private sector to transform financing markets.
The New York State Public Service Commission approved NYGB’s initial capitalization on December 19, 2013, in the “Order Establishing New York Green Bank and Providing Initial Capitalization,” calling for the reallocation of \$165.6 million in uncommitted NYSERDA EEPS I and System Benefits Charge III funds, uncommitted utility EEPS funds, and NYSERDA RPS funds for the purpose of capitalizing NYGB.

New York’s creation of NYGB is evidence of the state’s dedication to accelerating the transition to a cleaner energy economy through powerful public-private partnerships that animate the private sector in more meaningful ways. NYGB is a \$1 billion state-sponsored specialized financial entity working in partnership with the private sector—including financial institutions, project developers, property managers, and energy service companies—to increase private sector investments into New York’s clean energy markets, ultimately transforming those markets and creating a more efficient, reliable, and sustainable energy system.

NYGB enables greater private investment in New York’s clean energy marketplace by opening up financing markets. Through innovative financing solutions and strategic partnerships with private sector intermediaries, it significantly accelerates the deployment of commercially proven clean energy technologies throughout the state. NYGB is a cost-effective and complementary addition to New York State’s evolving portfolio of clean energy programs. Using demonstrated financing tools to promote self-sustaining markets, while enabling private sector capital to expand the frontiers of current commercial clean energy lending opportunities, NYGB increases the deployment of proven clean energy technologies throughout New York State.

In February 2014, NYGB officially opened for business by issuing an open solicitation to clean energy market participants. Through this request for proposals, NYGB accepts investment opportunities from interested parties who are achieving success in clean energy markets, but who find that a lack of availability of financing limits their success.

Proposals must meet NYGB’s investment requirements, which at a minimum include the following:

1. Transactions will have expected financial returns such that the revenues of NYGB on a portfolio basis will be in excess of expected portfolio losses.
2. Transactions will contribute to financial market transformation in terms of scale, improved private sector participation, level of awareness and confidence in clean energy investments, and/or other aspects of market transformation.
3. Transactions will have the potential for energy savings and/or clean energy generation that will contribute to GHG reductions in support of New York’s clean energy policies.

From NYGB’s recently released updated 2015 Business Plan:

“Demand for NYGB investments and participation in transactions, in dollar terms and by technology, is evidenced by proposals that have been submitted to NYGB in response to its investment request for

proposal. To date,³⁸ proposals requesting over \$734.0 million of NYGB capital have been received, in connection with total proposed clean energy investments in New York State of an estimated \$3.0 billion³⁹ (including private sector capital).”

NYGB is a leading example of a larger trend in EIPs. Subsidy models and direct public investment in energy efficiency and renewable energy projects are yielding to innovative partnership models, wherein the public sector requires significant private investment per government dollar expended. This scaling of private investment is most readily achieved through innovative project structuring and the use of credit enhancements such as LLRs, warehousing, guarantees, securitization, certifications, and other proven development finance tools.

³⁸ From NYGB inception through and including June 12, 2015.

³⁹ Sixty-seven percent of the proposals received by NYGB identify the total project value of the investments proposed at \$2.3 billion. While 33% of the proposals received do not specify the total project value of investments, these have been estimated at just under \$1.0 billion.

NYSERDA/NYSEFC Bond Issuance

Issuer: NYSERDA

Total Issuance: \$24.3 million

Rating: AAA/Aaa

Bond Underwriter: Citigroup Global Markets Inc.

Bond Counsel: Hawkins, Delafield & Wood LLP

Type of Bond: Taxable, Qualified Energy Conservation Bond

Issuance Date: August 13, 2013

Final Cost of Financing: Roughly 3.21%

Type of Portfolio: Energy Efficiency

On August 13, 2013, NYSERDA issued over \$24 million in Qualified Energy Conservation Bonds in a sale of its GJGNY residential energy efficiency portfolio. The bonds received the highest possible rating from Standard & Poor's Financial Services LLC and Moody's Investors Service due to a unique collaboration with the New York State Environmental Facilities Corporation (NYSEFC). As a credit enhancement, NYSEFC provided a guarantee of gross principal and interest payments on the bonds. The guarantee involved applying the assets of NYSEFC's Clean Water State Revolving Fund, regulated by the U.S. Environmental Protection Agency (EPA). To use these funds as backing for the GJGNY portfolio, NYSEFC submitted a letter to the EPA requesting approval on the basis that the energy efficiency improvements financed through NYSERDA's portfolio reduced the accumulation of air pollutants in the state's waters. The EPA consented to this use of the state revolving fund.

Funding from an Energy Efficiency Block Grant helped to establish an \$8.5 million collateral reserve account to protect the NYSEFC and its state revolving fund asset, in an additional layer of credit enhancement. The collateral reserve account would reimburse NYSEFC in the event that draws from its state revolving fund were required to service the bonds. Payments on the principal go toward reducing the balance of the collateral reserve account and returning funds go to NYSERDA on a pro rata basis. For more information about this bond issue, please see the Clean Energy + Bond Finance Initiative's *Anatomy of the Deal: CE+BFI Examines Innovative NYSERDA Energy Efficiency Bond Deal*.

8. OHIO ⁴⁰



8.1 Overview

The State of Ohio holds a strong industrial and political legacy, hosting the eighth-largest economy in the nation (U.S. Department of Commerce 2013). The state has strong manufacturing and agricultural industries, with ready access to the largest cities in the Northeast, South, and Midwest. Fossil fuels play a large part in Ohio's economy, as Appalachian counties on the eastern side of the state yield abundant coal and natural gas deposits. Ohio also has a RPS requiring a minimum of 12.5% of their energy must come from renewable sources.⁴¹

Competing state interests largely decentralize financing programs for clean energy projects, resulting in regional development finance entities offering individual programs within their area of service. Under Chapter 4582 of the Ohio Revised Code, the state enabled the development of port authorities. Ohio law authorizes these entities to engage in activities that “enhance, foster, aid, provide, or promote transportation, economic development, housing, recreation, education, governmental operations, culture, or research within the jurisdiction of the port authority.” The law also authorizes port authorities to issue a variety of bonds, allowing them to tap into private capital to finance projects in the public interest.

Two Ohio port authorities have made great strides in financing commercial clean energy improvements in their regions. The first is the Toledo-Lucas County Port Authority (TLCPA), which resides in the heavily industrial northwestern part of the state. The second, the Port of Greater Cincinnati Development Authority, sits in the southwestern part. Among nonprofit organizations active in financing clean energy projects in the state, the Greater Cincinnati Energy Alliance has developed several programs of interest—in addition to a collaborative C-PACE program administered with the regional port authority. The clean energy investment activities in these two regions of Ohio are explored in greater detail below.

8.2 Toledo-Lucas County Port Authority

Organization Name:	Toledo-Lucas County Port Authority (TLCPA)
Address:	One Maritime Plaza, Suite 701 Toledo, OH 43604-1866
Phone:	419-243-8251
Website:	http://www.toledoportauthority.org/en-us/home.aspx
Legal Structure:	Government agency – port authority
Year Established:	1955, entered business finance arena in 1988
Enabling Legislation:	Chapter 4582 of the Ohio Revised Code
Mission:	TLCPA concentrates on transportation and economic development. TLCPA focuses on three initiatives: maritime, aviation, and development.
Capitalization:	Ninety-three percent of Port Authority funding comes from revenue generated by its operating divisions and its finance programs. This revenue

⁴⁰ Information for the Ohio section was provided by the Toledo-Lucas County Port Authority and the Greater Cincinnati Energy Alliance

⁴¹ Ohio's Renewable Portfolio Standard is required under ORC Section 4928.64.

pays for all administrative costs including staff salaries. The other 7% comes from revenue generated by its tax levy, used exclusively for capital improvement projects.

TLCPA’s founding occurred in 1955 to develop transportation infrastructure and boost economic vitality within northwestern Ohio. The impetus for its establishment was to develop the region’s access to the St. Lawrence Seaway system, thereby opening the Great Lakes to the Atlantic Ocean. TLCPA was the first port authority established in Ohio (Toledo-Lucas County Port Authority 2014).

As an Ohio Port Authority, TLCPA has the capacity to issue bonds for certain development and capital improvement projects through the Northwest Ohio Bond Fund. In 1988, TLCPA entered into business finance to grow its regional economy. Since then, TLCPA has closed nearly 300 economic development projects, investing more than \$1 billion to create and retain over 15,000 jobs. In 2010, supported by startup funding from DOE’s, EECBG-ARRA Grant, under the Better Buildings Neighborhood Program, TLCPA entered into clean energy finance (Toledo-Lucas County Port Authority 2014).

TLCPA directs clean energy financing applicants to a suite of supplemental, complementary subsidy and rebate programs offered through utilities companies and other sources. TLCPA also has a wide range of economic and infrastructure development financing products unrelated to clean energy improvements, including small business, new construction, and brownfield site redevelopment. This report concentrates on TLCPA’s BetterBuildings Northwest Ohio (BBNWO) program and its flexible structure that uses revolving loan funds, bonds, and PACE assessments to customize financing for commercial property owners seeking to make clean energy improvements.

8.2.1 BetterBuildings Northwest Ohio

Program Name:	BetterBuildings Northwest Ohio (BBNWO)
Contact Information:	Kevin Moyer, kmoyer@toledoportauthority.org
Year Established:	2010
Borrower Profile:	Funds are available to owners of the following types of buildings: industrial/manufacturing, educational, commercial/retail, healthcare, government/municipal, and nonprofit. BBNWO has the flexibility to cover any sector other than casinos, zoos, aquariums, and golf courses per DOE requirements. Its focus includes office buildings, private schools, small healthcare, convenience stores and groceries, auto dealerships, restaurants, and other small-to-medium-sized businesses. BBNWO offers revolving loan funds and/or bond funds through the PACE structure.
Projects Financed:	BBNWO finances renewable energy projects and energy efficiency building retrofits.
Term of Financing:	The term of financing is 15 years.
Cost of Financing:	The cost of financing is 4.50%–5.50% depending on term, project tax status, and U.S. Treasury rate.

BBNWO offers competitive, fixed-rate financing for projects that implement energy savings measures through energy efficiency and alternative energy retrofits to existing facilities. The program can finance energy efficiency improvements to all types and sizes of buildings. The program provides 100% financing

of all project costs, including evaluation and design, equipment, installation labor, and other transaction and financing costs (Moyer 2013). TLCPA's BBNWO offers financing to growing and underserved small-to-medium-sized businesses and nonprofit markets. Utilizing program revolving loan funds to begin construction and aggregate smaller projects, TLCPA BBNWO is able to package projects into efficiently sized bond issues to minimize bond issuance costs. PACE assessment payments predominantly provide the revenue backing for bond issuances (80%), with the balance supplied by power purchase agreements, Loan and Security Agreements, and Energy Service Agreements. TLCPA BBNWO has also augmented financing packages with Qualified Energy Conservation Bonds and loans from the Ohio Development Services Agency's Energy Loan Fund. Energy savings for projects can range from 20% to 50% or more and give building owners the cash flow to make the energy efficiency improvements. The PACE structure allows commercial building owners to pay for the improvements through a voluntary special assessment on the property tax duplicate.

The PACE structure also provides the financing entity with a senior lien position in the event of a default and foreclosure. First-mortgage holders must have lender consents to the special assessment placed on the property for energy project improvements. Lenders usually grant such consents, as they recognize that the projects increase property value, extend the building's and its critical systems' economic life, and provide current and future cash flow benefit to the business.

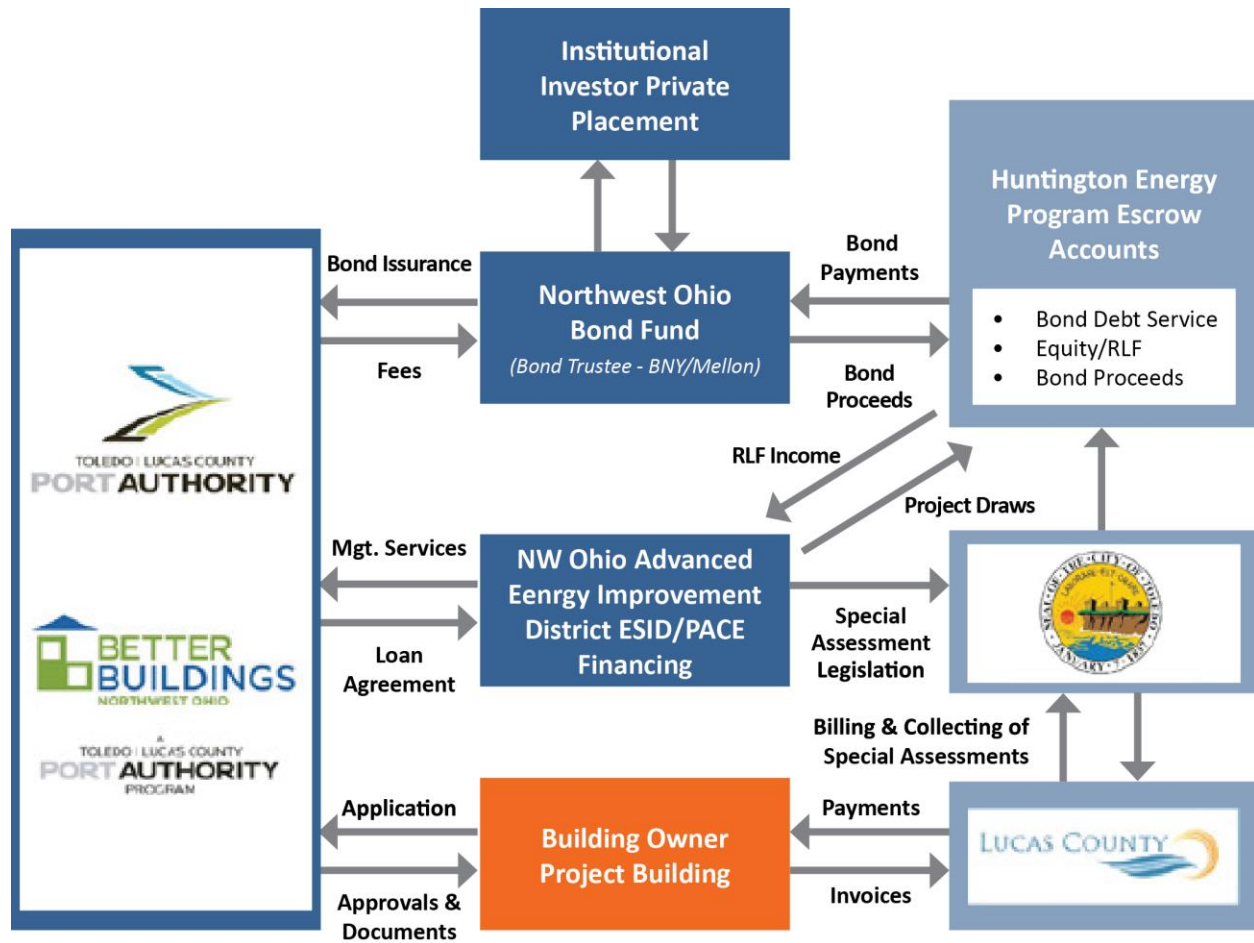


Figure 7. Structure of BetterBuildings Northwest Ohio

Source: BBNWO

The Midwest Energy Efficiency Alliance, PACENow, the Council of Development Finance Agencies, DOE, and many other national and regional energy finance groups have profiled the BBNWO business model and solution to challenging clean energy projects. Because of its efficient funding structure and flexible terms for borrowers, BBNWO has had a wide-ranging impact on northwestern Ohio’s aging commercial building stock.

As of December 2013, BBNWO had completed 60 projects, with 20 in construction, and had attracted \$30 million in capital including \$17 million in bonds, \$8 million in equity and tax grants, \$3 million in revolving loan funds, and \$2.7 million in state energy loans. BBNWO has a current pipeline of \$32 million in developing projects. Demand in northwest Ohio is high for TLCPA’s energy efficiency financing programs, and continual improvements have scaled BBNWO’s application to a broader scope of clients. PACE financing continues to be a rapidly emerging and growing financing and economic development tool for communities in Ohio as well as on the national stage.

The Greater Cincinnati region of southwestern Ohio is an emerging force within the national clean energy finance landscape. As Ohio takes a decentralized approach to establishing EIPs, Cincinnati is one of several highly active regions within the state working to drive private investment in energy efficiency

and renewable energy generation projects. The Cincinnati region’s partnership consists primarily of two entities: the Greater Cincinnati Energy Alliance (GCEA) and the Port of Greater Cincinnati Development Authority (the “Port”).

8.3 Greater Cincinnati Energy Alliance

Organization Name:	Greater Cincinnati Energy Alliance (GCEA)
Address:	200 W. 4 th Street, Suite 600 Cincinnati, Ohio 45202
Phone:	513-621-3000
Website:	http://www.greatercea.org/
Legal Structure:	Regional, nonprofit economic development agency
Year Established:	2009
Enabling Legislation:	N/A
Mission:	GCEA’s mission is to develop and deliver energy efficiency and renewable energy solutions that provide a sustainable return on investment to stakeholders.
Capitalization:	GCEA initially received capital from a \$17 million EECBG-ARRA grant from DOE under the Better Buildings Neighborhood Program. GCEA has since raised capital from other public and private investors.

GCEA’s founding occurred prior to the availability of funds through ARRA, which granted seed capital to clean energy programs on a national scale. Seven counties in southwestern Ohio and northern Kentucky contributed capital to GCEA to establish programming, as they believed that a regional nonprofit could scale clean energy financing more effectively than individual municipal governments funded through EECBG. GCEA’s early efforts involved education and outreach to drive demand for clean energy projects. GCEA later added complementary services, such as contractor certification, financial incentives, and lending, to its programming.

GCEA offers a broad selection of services and incentives to residential, commercial, and nonprofit building owners seeking to make energy efficiency improvements to their properties. The organization’s website provides links to city and state incentives, in addition to direct financial resources. GCEA also provides a listing of energy audit and contractor partners for commercial and nonprofit clients and directly performs residential audits at a low cost for homeowners (free for whole-home loan recipients). This report concentrates on GCEA’s financing programs, Greater Cincinnati Home Energy Loan Program (GC-HELP) and the Building Communities Loan Program, and addresses Greater Cincinnati-PACE (GC-PACE) after introducing GCEA’s primary partner in the program.

8.3.1 Greater Cincinnati Home Energy Loan Program

Program Name:	Greater Cincinnati Home Energy Loan Program (GC-HELP)
Contact Information:	Chris Jones, cjones@greatercea.org
Year Established:	2011
Borrower Profile:	Single-family, residential
Projects Financed:	GC-HELP finances energy efficiency and renewable energy projects.
Financing Range:	The financing range is \$1,000–\$20,000.
Term of Financing:	The term of financing is at a maximum of 10 years.

Cost of Financing:	The cost of financing is 6.99%–9.99%, depending on the scope of the project.
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GC-HELP is GCEA’s residential loan program targeting energy efficiency projects. Single-family and duplex homeowners are eligible to apply for up to \$20,000 in financing for improvement-specific projects (such as attic insulation or furnace replacement) or whole-home retrofits. The program provides borrowers with a prequalified pool of contractors and energy assessment services and assists borrowers with accessing all applicable cash incentives.

An allocation of GCEA’s EECBG-ARRA grant from DOE under the Better Buildings Neighborhood Program and an impact investment from the Greater Cincinnati Foundation capitalize GC-HELP. Applications are accessible on GCEA’s website. GCEA contracts AFC First to underwrite and service the loans, although they remain on GCEA’s balance sheet throughout the term. A UCC-1 lien on the improvements made to the property secure the GC-HELP loans to ensure a broad pool of eligible borrowers.

Since the program’s inception, GCEA has approved more than 140 GC-HELP loans for over \$1.3 million in principal. Only three loans have been written off, for less than \$7,500; this amounts to a default rate well below 1%. Though the program is still in its early years, GC-HELP has demonstrated demand for its loan product and exhibits excellent repayment performance to date. The first asset-backed security transaction of unsecured consumer energy efficiency loans securitization included a portion of the GC-HELP loan pool. This securitization of over \$12.5 million was through Warehouse for Energy Efficiency Loans partnered with Renew Financial, Citi, and AFC First.

8.3.2 Building Communities Loan Program

Program Name:	Building Communities Loan Program
Contact Information:	Chris Meyer, cmeyer@greatercea.org
Year Established:	May 2013
Borrower Profile:	Nonprofit organizations
Projects Financed:	The program finances energy efficiency projects.
Financing Range:	The financing range is \$5,000–\$25,000.
Term of Financing:	The term of financing is five years.
Cost of Financing:	The cost of financing is 3.00%–5.00%.

The Building Communities Loan Program started in May 2013 and received its initial capital through a grant from DOE’s EECBG-ARRA Grant, under the Better Buildings Neighborhood Program, and an impact loan from the Greater Cincinnati Foundation. Targeting nonprofit organizations within GCEA’s territory, Building Communities contributes up to \$25,000 to eligible energy efficiency improvements.

The Cincinnati Development Fund, a CDFI with extensive commercial underwriting experience, administers underwriting for the Building Communities loan program. A UCC-1 filing on project equipment secures Building Communities loans, without the requirement of a property lien. This gives an alternative for applicants who do not fit the PACE model described below. So far, GCEA has closed two loans worth approximately \$60,000 through the Building Communities program.

8.4 Port of Greater Cincinnati Development Authority

Organization Name:	Port of Greater Cincinnati Development Authority (the “Port”)
Address:	299 East Sixth Street, Suite 2A Cincinnati, Ohio 45202
Phone:	513-621-3000
Website:	http://www.cincinnatiport.org/
Legal Structure:	Government agency – port authority
Year Established:	2000
Enabling Legislation:	Chapter 4582 of the Ohio Revised Code
Mission:	The Port’s mission is to revitalize properties by increasing value, creating jobs, and improving the lives of residents.
Capitalization:	Port operations receive funding from city and county budget allocations, revenue from financing products and services, foundation and corporate grants, issuance of infrastructure debt through tax increment financing/special improvement district holdings, and state financing. The City of Cincinnati will make additional capital contributions toward specific projects.

The Port is primarily an economic development entity. With activities in bond finance and tax increment finance, the Port developed expertise in structuring deals to accommodate a wide variety of project structures and barriers to financing. In recent years, the development finance industry as a whole has prioritized clean energy investments, and the Port has assessed its current financing programs for applicability to energy efficiency and renewable energy within the Greater Cincinnati region. Because of the Port’s history of revitalizing brownfield sites and aging industrial properties, manufacturing facilities emerged as logical prospects for an expansion into financing energy efficiency projects.

The Port worked with regional partners to determine the barriers encountered by building owners seeking financing for energy efficiency projects. After discussions with the nonprofit Green Umbrella, TLCPA, and GCEA, the Port decided to partner with GCEA on a new PACE program designed to fit the needs of southwestern Ohio. The Port saw a successful application of traditional economic development financing tools to clean energy through Toledo’s model and relied on the services and technological expertise offered by GCEA.

8.4.1 Greater Cincinnati Property Assessed Clean Energy Program (GC-PACE)

Program Name:	GC-PACE
Contact Information:	Chris Jones, cjones@greatercea.org
Year Established:	2014
Borrower Profile:	Commercial, industrial, and nonprofit building owners
Projects Financed:	GC-PACE finances energy efficiency and renewable energy projects.
Financing Range:	The financing range is \$25,000–\$10,000,000.
Term of Financing:	The term of financing is at a maximum of 30 years.
Cost of Financing:	The cost of financing is at 4.50%–7.00%.

Combining bonding authority or private debt with other financial incentives and services, the recent partnership between GCEA and the Port has created the new GC-PACE program, opening investment in commercial clean energy projects to private lenders and bondholders.

The GC-PACE program allows building owners to finance energy efficiency and renewable energy generation improvements through a voluntary assessment on their property tax bill. The State of Ohio passed legislation in 2010 allowing development finance entities to implement the PACE financing model through the creation of Energy Special Improvement Districts.⁴²

GC-PACE financing can come from either the Port or a third-party lender, depending on the credit of the borrower and the structure of the project. This is a unique feature to the program, as the Port has agreed to direct property owner applicants to the best financing structure for the needs of their business. Monthly cash flow and the total cost of financing will inform the determination of the best lender for a given project. The Port will not finance all GC-PACE deals, allowing private financiers in the region to invest in commercial clean energy projects.

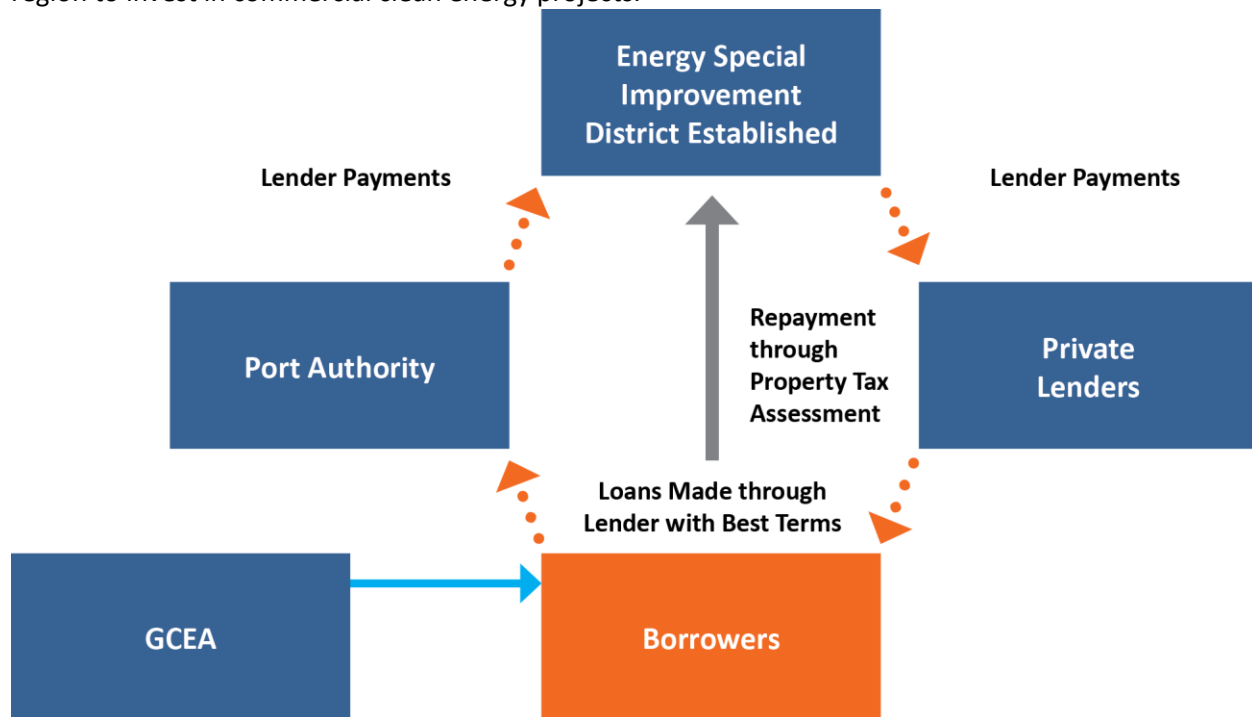


Figure 8. Structure of Greater Cincinnati Property Assessed Clean Energy Program (GC-PACE)

Source: GCEA

The exact terms of GC-PACE will solidify over time, as the Port and GCEA determine the needs of the regional business community and assess program performance. In the interim, the design of the program allows it to be highly flexible to encourage deal flow and assess barriers to financing clean energy projects in the region. PACE loans take a tax lien on the improved property as collateral, allowing long-term debt capital to be raised from the private sector. GC-PACE will work with capital providers, whether potential bondholders or private financial institutions, to determine appropriate collateral on a

⁴² See Senate Bill 232 passed in 2010: http://archives.legislature.state.oh.us/bills.cfm?ID=128_SB_232

deal-by-deal basis. The GC-PACE program has stipulated that transferability applies the debt obligation transfers automatically to the next property owner upon the sale of an improved property.

9. OREGON ⁴³



9.1 Overview

The State of Oregon has been a historic leader in crafting policies to support clean energy and has diversified its energy portfolio through significant use of hydroelectric power. According to the Oregon Department of Energy, nearly 39% of the state's consumed electricity comes from hydroelectric generation, 36% comes from coal, 16% comes from natural gas, 4% comes each from wind and nuclear, and 1% comes from other sources (Oregon Department of Energy 2014). The state has implemented a RPS, requiring utilities to source a minimum of 25% of their energy from renewable sources by 2025.

Since 1975, state leaders in Oregon have advocated for the transition of the state's energy sources from fossil fuels to renewable alternatives (Oregon Department of Energy 2011). In the midst of an energy crisis, Governor Tom McCall established the Oregon Department of Energy to facilitate the adoption of renewable energy and alleviate strain on the state's infrastructure, setting an initial tone of support for clean energies. The Oregon Department of Energy instituted the first loan program of its kind in 1979, financing small-scale energy projects throughout the state. In 2009, this program expanded to allow for a larger volume of small loans to businesses and individuals seeking energy efficiency and renewable energy improvements (Ibid.).

A number of organizations with a large geographic footprint have collaborated in Oregon to structure a unique residential energy efficiency product, reducing the upfront cost of improvements for single-family homeowners. The Energy Trust of Oregon (ETO) provides incentives to nonprofit Enhabit (formerly Clean Energy Works Oregon) to finance origination fees and borrower equity contributions for loan applicants. Rather than directly financing and servicing energy efficiency loans, Enhabit acts as an aggregator for borrowers, lenders, and contractors. To illustrate the flow of incentives through Enhabit, this report briefly describes each participating entity then focuses on a nonprofit lender's energy efficiency portfolio under Enhabit's program.

9.2 Energy Trust of Oregon

Organization Name:	Energy Trust of Oregon (ETO)
Address:	421 SW Oak Street #300 Portland, OR 97204
Phone:	503-493-8888
Website:	http://energytrust.org/
Legal Structure:	Nonprofit organization
Year Established:	2002
Enabling Legislation:	Senate Bill 1149
Mission:	ETO's mission is to provide comprehensive, sustainable energy efficiency, conservation, and renewable energy solutions to ratepayer clients.
Capitalization:	ETO primarily receives funding through a public purpose charge on the

⁴³ Information for the Oregon section was provided by CRAFT3 and Oregon departments and agencies through the Oregon Governor's Office

ratepayers of Portland General Electric, Pacific Power, NW Natural, and Cascade Natural Gas.

In 1999, Oregon Senate Bill 1149 established a public purpose charge on ratepayers of several utilities, with proceeds to go toward incentivizing energy efficiency improvements. The 3% charge on ratepayers supplied about \$60 million per year toward the establishment of energy efficiency programs. This legislation led to the creation of the ETO, chartered by the Oregon Public Utilities Commission to administer ratepayer fees and programs funded with these monies.

In March 2002, ETO began operations subsidizing energy efficiency through cash incentives, reducing the cost of energy efficiency improvements (Energy Trust of Oregon 2014). ETO’s operations support only ratepayers within the territories of participating utilities, as not all utilities in Oregon pay into the system. ETO delivers technical assistance and cash incentives, including rebates based on purchases and energy savings.

ETO provides services and incentives to individuals and also arranges annual or multiyear contracts with lending allies and other partners supporting demonstrated energy savings. These arrangements help reduce the upfront cost of financing clean energy projects. Enhabit, one such partner, aggregates eligible projects to receive financing from ETO and passes savings on to homeowners financing property improvements.

9.3 Enhabit

Organization Name:	Enhabit ⁴⁴
Address:	1733 NE 17 th Avenue Portland, OR 97212
Phone:	855-870-0049
Website:	https://enhabit.org/
Legal Structure:	Nonprofit organization
Year Established:	2010
Enabling Legislation:	N/A
Mission:	Enhabit’s mission is to impact three areas of its service territory—energy, economy, and equity. Enhabit works to connect homeowners to financing options, which generate good jobs, increase access to opportunity, and minimize energy waste.
Capitalization:	Enhabit received a \$20 million DOE, EECBG-ARRA Grant, under the Better Buildings Neighborhood Program. The organization leverages existing incentives and partnerships to finance many of its programs.

Enhabit serves as an intermediary, standardizing and aggregating financing products and services for homeowners seeking clean energy improvements. Originating as Clean Energy Works Portland in 2009, Enhabit operates within a 19-county region in Oregon to give low-cost financing, free home energy assessments, and information on available incentives to homeowners seeking to reduce energy

⁴⁴ Enhabit, formerly known as Clean Energy Works Oregon, operates in both Oregon and Washington. This report uses the functional name of the organization while concentrating on its Oregon-specific efforts.

consumption.⁴⁵ Enhabit seeks to provide benefits to the community by improving residents' comfort. It provides environmental benefits by reducing energy consumption and the use of fossil fuels and creates jobs targeted to women and people of color through the establishment of qualified contractors and technical service providers.

Enhabit partners with private lenders to supply capital for its home energy efficiency loan program. Within its service region, each county is able to select among three and eleven loan products for its energy efficiency project. Some of Enhabit's clients pay cash for the improvements to their property or make use of home equity lines of credit. Roughly half of Enhabit's applicants who require financing for their home efficiency upgrades select Craft3 as their lender.

9.4 Craft3

Organization Name:	Craft3
Address:	203 Howerton Way, SE Ilwaco, WA 98624
Phone:	888-231-2170
Website:	www.craft3.org
Legal Structure:	501(c)(3) Nonprofit organization – U.S. Treasury CDFI
Year Established:	1995
Enabling Legislation:	N/A
Mission:	Craft3's mission is to strengthen economic, ecological, and family resilience in Pacific Northwest communities.
Capitalization:	Craft3 receives funding from donations, grants, and loans from financial and corporate entities, philanthropic and religious institutions, and government agencies.

Craft3 started in rural Ilwaco, Washington, in 1995 with a mission to invest in entrepreneurs and individuals without access to traditional bank financing (Craft3 2014a). The nonprofit established a suite of supporting services for these clients, including training, networking, and advocacy opportunities. Craft3 takes a triple bottom line approach to its development activities, incorporating social equity, economic, and environmental goals into its strategies and programming. Craft3 has a service area composed of rural and urban residents throughout the Pacific Northwest, and a recent strategic plan identifies regional development initiatives in central and eastern Oregon and Washington as targets for expanded services in the coming years.

As part of its commitment to ecological resilience, Craft3 has developed investment strategies to address conservation of sensitive lands, preservation of water quality, and energy efficiency. Single-family homeowners in several counties of Oregon are eligible to receive a Craft3 loan through Enhabit's Home Energy Efficiency Loan Program (Craft3 2014b).

Craft3 provides a comprehensive financing solution for clean energy projects. In addition to financing homeowners who are installing energy efficiency improvements, Craft3 offers a line of credit for qualified contractors performing the improvement work. Up to \$100,000 is available to contractors, with an

⁴⁵ Enhabit. (2014). *About Us*. Retrieved from: <https://enhabit.org/about/>

advance available for 50% of the cost of any associated project loan. Contractors pay a 2.49% fee on the advanced amount to access the financing. Though Craft3 offers a variety of financial products, this report concentrates on Craft3’s lending activities related to Enhabit in the residential energy efficiency sector.

9.4.1 Craft3/Enhabit Home Energy Efficiency Loan Program

Program Name:	Craft3/Enhabit Home Energy Efficiency Loan Program
Contact Information:	Adam Zimmerman, azimmerman@craft3.org
Year Established:	2009
Borrower Profile:	Residential, single-family homes in Benton, Clackamas, Clatsop, Columbia, Crook, Deschutes, Hood River, Jackson, Josephine, Jefferson, Klamath, Lake, Lane, Marion, Multnomah, Polk, Tillamook, Washington and Yamhill Counties
Projects Financed:	Craft3/Enhabit finances energy efficiency projects.
Financing Range:	The financing range is at a maximum of \$30,000.
Term of Financing:	The term of financing is at a maximum of 15 years.
Cost of Financing:	The cost of financing is 5.99%.

Craft3’s Home Energy Efficiency Loan Program uses the structure set forth through Enhabit to provide fixed-rate financing to homeowners making energy efficiency improvements. Cash incentives flow through ETO to Enhabit to subsidize the cost of financing, as Enhabit aggregates energy savings from Craft3’s projects for submission in bulk to ETO. This structure offers benefits to homeowners within ETO’s service territory, using a regional collaboration to invest in clean energy projects.

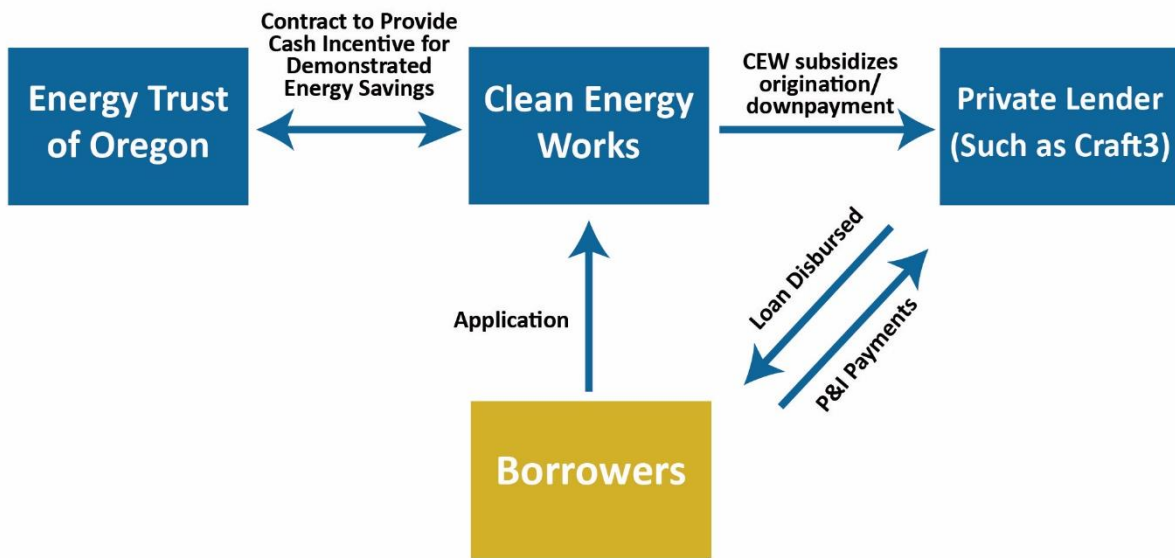


Figure 9. Craft3/Enhabit Home Energy Efficiency Loan Program
Source: Craft3

Craft3 is a CDFI and leverages multiple public and private sources of capital to issue its energy efficiency loans. The structure of financing and subsidies from ETO incentivize private capital to enter the portfolio. Craft3 uses OBR to underwrite borrowers and collect loan payments through the borrower’s

utility bill, a mechanism that has demonstrated a reduction in payment risk to lenders. The use of OBR mitigates loss risk, as a UCC-1 on installed equipment collateralizes Craft3's loans. Customer payments go toward utilities first to ensure that there will not be a disconnection of the customers' power or gas for lack of payment on the loan.

Through June 2015, Craft3 has issued more than 3,000 loans in Oregon, for a total principal investment exceeding \$40 million. Under the Aeris rating system, a third-party independent assessment of CDFI performance in meeting financial and social ("impact") goals, Craft3 has received the highest possible rating in program impact and a 2/5 rating (where 1 indicates the strongest position) for finance strength and performance (Craft3 2014c). Craft3's successful financing of energy efficiency projects in the State of Oregon has enabled the organization to participate in a private sale of its Enhabit assets, providing liquidity to the energy efficiency portfolio. For more information on the resale of the Craft3 loan portfolio to Self-Help Credit Union, go to http://emp.lbl.gov/sites/all/files/craft3-policy-brief_0.pdf.

10. ACCESSING THE CAPITAL MARKETS

10.1 Overview

A primary feature of EIPs is the ability to attract private capital to finance clean energy projects. Private sector participation lowers the need for a significant public investment, allowing the government to deploy funds elsewhere. Additionally, as private investors see consistent returns from clean energy projects, consumer access to financing will rise and the need for public participation in financing these deals will decrease. EIPs currently make use of a variety of mechanisms to attract private capital into clean energy projects, directly or indirectly.

At the project level, EIPs can use credit enhancements, bonds, CDFI leverage, or crowdfunding to attract private investment. An EIP can also attract private investment through secondary markets by issuing bonds or asset-backed securities to capitalize or sell off portfolios of clean energy loans. EIPs can use credit enhancements at this level as well, to improve bond ratings or lower the cost of financing. EIPs already employ many of these mechanisms throughout the country. The following sections describe established finance tools and their application to clean energy projects and portfolios.

10.2 Credit Enhancement

Credit enhancement involves improving the creditworthiness of a deal in order to obtain favorable terms. This usually involves providing additional security to lenders or equity investors through the use of third-party guarantees, additional collateral, or insurance. Credit enhancement lowers the risk of default for a lender, thereby increasing the credit rating of the deal and lowering the interest rate. Credit enhancement can also allow portfolio sales to take place at parity so EIPs don't take a loss on the transaction.

10.2.1 Guarantees

By providing a guarantee, a third-party entity agrees to assume the obligation of the borrower in the event of a default. In many cases, the guarantor for a transaction is a government entity, and the tool is frequently used in a variety of development finance transactions to correct for market failures, allowing smaller or less-established borrowers to access the same financing terms as larger, more-established firms. Upon default, a guarantor must make payments on the debt through its maturity, under conditions specified in the project's loan documents.

Guarantees provide a way for EIPs to participate indirectly in a transaction by pledging future revenues to service any defaults in a portfolio. In a portfolio sale, an EIP or government partner's guarantee can raise the credit rating of the instrument. The risk of loss is minimal, granted the portfolio follows responsible underwriting guidelines. The use of guarantees, which lower the cost of financing for borrowers, can incentivize private lenders or investors to require lower return rates.

For example, NYSEERDA made use of a guarantee from NYSEFC in its September 2013 sale of the GJGNY portfolio. The NYSEFC guarantee, backed by the assets of its state revolving fund, allowed the deal to earn an AAA/AAA rating from Standard & Poor's Financial Services LLC and Moody's Investors Service.

With its excellent risk rating, NYSERDA was able to sell bonds with an interest rate of approximately 3.21%.

10.2.2 Loan Loss Reserve

A LLR fund is a deposit of cash pledged by an entity to provide partial risk coverage on any write-offs in a loan portfolio. When provided by third parties to a transaction, LLRs can decrease the total exposure of a lender or investor to bad loans. Most LLRs cover first losses on a portfolio for a set percentage of the total portfolio principal—up to 20% of the portfolio’s value, for example. LLRs can serve to lower credit requirements on deals and/or reduce the cost of financing to a borrower.

EIPs commonly use LLRs to incentivize private participation in programs and to strengthen the sale of loan portfolios on the secondary market. EIPs have applied LLRs to loan programs financed largely or solely through private lenders, as in CGB Smart-E Loan Program. CGB designed the loan product for private banks, providing lists of qualified contractors and products to reduce the banks’ need for technical review. To encourage bank adoption of the program while ensuring sustainable underwriting practices, CGB established a “second loss” reserve on Smart-E losses. Nine banks participate in the program with a minor investment from CGB.

10.2.3 Technological Support

Much of the cash flow generated from clean energy projects requires a technical assessment of the property and the specific improvements to be made. A lack of technical expertise in this area can deter private lenders from investing in clean energy projects. Many EIPs have developed this expertise, either in-house or through contracted partnerships with certified energy auditors. Providing free or reduced-cost energy assessments can compensate for a private lender’s lack of technical expertise in clean energy projects. Audits can also provide an estimate of cash flow savings, which can support financial projections in the bank’s underwriting process.

For example, GCEA uses reduced-cost energy assessments to incentivize private lender and property owner participation in commercial and residential energy efficiency programs. GCEA delivers these services directly to residential borrowers at reduced rates (or free for whole-home borrowers), while listing acceptable contractor partners for commercial property owners. GC-PACE borrowers, whose loans public (port authority) or private lenders may finance, must complete energy audits.

10.2.4 Insurance

Insurance products supply a guarantee for a loan in exchange for premium payments. Some types of insurance are common in financial transactions, such as Federal Housing Administration insurance for home mortgages or optional credit insurance on revolving accounts. Additional insurance projects can enhance a deal by reducing risk and lowering the cost of financing for borrowers. EIPs have applied insurance to leverage private financing into clean energy projects.

For example, CGB’s Solar Lease Program uses insurance as part of a structure to leverage a 5:1 ratio of private to public investment. Assurant, Inc., an established insurance provider active in a broad spectrum of services, insures solar installations throughout the life cycle of the investment. This

insurance, in combination with an LLR, offers an additional level of security to debt and equity investors involved in the deal.

10.3 Bonds

Bond financing has emerged over the past 100 years as a mechanism to address essential governmental functions, such as the provision of transportation, infrastructure, clean water, and environmental remediation. Bonds are one of the most prevailing financial mechanisms for addressing development projects through a variety of structures and schemes. A bond is essentially a loan with the entity issuing the bond on the capital markets in return for cash. The cash is then put into projects, and dedicated revenue streams such as taxes, assessments, fees, and tolls eventually repay the loans.

A distinguishing feature of tax-exempt bonds, such as those issued by state and local municipal entities, is that the interest income earned by the bondholder is exempt from federal income taxes.⁴⁶ Typically, states also exempt the interest income from bonds issued by the state, its agencies, and political subdivisions from its state and local income taxes. The tax-exempt feature of municipal bonds makes them attractive to individuals and other buyers in higher-margin tax brackets. The tax exemption enables state and local governments and their various political subdivisions to come to capital markets and borrow funds at lower interest rates than those prevailing in the taxable markets such as the corporate bond market.

EIPs have used bond financing to sell off multiple clean energy loan portfolios. NYSERDA's 2013 bond sale recapitalized the GJGNY program, for example. Other organizations have applied bond proceeds to finance large, utility-scale projects or capitalize new revolving loan programs. When paired with credit enhancements, these existing bond deals prove that clean energy portfolios can obtain high credit ratings and effectively scale clean energy investment from the private sector.

10.4 The CDFI Model

CDFIs provide financial products to underserved markets without access to traditional bank financing. The U.S. Treasury's CDFI Fund, which also capitalizes these institutions through a variety of programming (U.S. Department of the Treasury 2014), certifies CDFIs. CDFIs typically have social and financial goals, requiring a targeted approach to eligibility criteria.

CDFIs leverage private funding from bank CRA investments and foundation grants, in addition to public funds from local, state, and federal government agencies. CDFIs pool this funding and apply individual financing packages to borrowers who meet the social and financial investment requirements from capital providers. CDFIs typically operate within a limited territorial footprint, basing their lending activities on the needs of borrowers and the requirements of investors.

SELF in St. Lucie County is an example of a CDFI active in lending to clean energy projects. Based in a working-class community, SELF has invested 70% of its loans in LMI individuals seeking capital for clean

⁴⁶ Section 103(a) of the U.S. Internal Revenue Code (IRC) of 1986 specifically exempts the interest income earned on municipal bonds from federal taxation. The Tax Reform Act of 1986 represents the most recent fundamental reform of the tax exemption to a select number and type of municipal bonds.

energy improvements. Another CDFI active in clean energy finance is Craft3, which offers energy efficiency financing to King County in Washington and multiple counties in Oregon.

10.5 Crowdfunding⁴⁷

Crowdfunding is a relatively new and evolving method of using the Internet to raise capital to support a wide range of ideas and ventures. An entity or individual raising funds through crowdfunding typically seeks small individual contributions from a large number of people. Individuals interested in the crowdfunding campaign – members of the “crowd” – may share information about the project, cause, idea or business with each other and use the information to decide whether to fund the campaign based on the collective “wisdom of the crowd.”

Title III of the Jumpstart Our Businesses Act of 2012 (“Title III”) added a new Securities Act Section 4(a)(6),⁷ which provides an exemption from the registration requirements of Securities Act Section 58 for certain crowdfunding transactions. To qualify for the exemption under Section 4(a)(6), crowdfunding transactions by an issuer (including all entities controlled by or under common control with the issuer) must meet specified requirements, including the following:

- The amount raised must not exceed \$1 million in a 12-month period
- Individual investments in all crowdfunding issuers in a 12-month period are limited to:
 - The greater of \$2,000 or 5% of annual income or net worth, if annual income or net worth of the investor is less than \$100,000
 - Ten percent of annual income or net worth (not to exceed an amount sold of \$100,000), if annual income or net worth of the investor is \$100,000 or more
- Transactions must be conducted through an intermediary that either is registered as a broker-dealer or is registered as a new type of entity called a “funding portal.”

10.6 Conclusion

EIPs seek to access private capital through a variety of financing mechanisms. EIPs can apply credit enhancements at the program level to enhance the sale of loan portfolios on secondary markets. EIPs may access capital through leveraging funds as a CDFI, soliciting individual investments via a crowdfunding platform, working with financial institutions to issue asset-backed securities, or issuing bonds directly or in partnership with an issuing government agency.

As EIPs develop new projects in collaboration with the private sector, a new investment class is beginning to emerge. Private investors are becoming more familiar with clean energy portfolio investments, and the role of the public sector is diminishing, with credit enhancement to private activities replacing direct government investment. EIP activities aim to reduce government involvement further and eventually help clean energy projects reach private investors without the need for government involvement.

⁴⁷ U.S. Securities and Exchange Commission. Retrieved from: <https://www.sec.gov/rules/final/33-8518.pdf>

11. CONCLUSION

This report highlights the essential drivers behind some of the country's most innovative and effective EIPs. By establishing state and regional partnerships to repurpose existing funding sources and attract private capital, each EIP has generated an impact well beyond savings on utility bills. The diversity in structure, markets, and execution illustrates a multitude of ways that EIPs can increase investment in clean energy projects. The EIPs profiled in this document represent a few of the ways that public and private funding sources can combine to optimize access and affordability of financing for businesses and homeowners.

Through the development of strategic partnerships with public, private, and nonprofit entities, each EIP has expanded its capacity to market, analyze, and service investments in clean energy projects. Financial products and services vary among EIPs, and EIPs customize them to deliver solutions to customers within defined state and local conditions. The ability to offer a variety of approaches has proved necessary to address the needs of both private investors and property owners implementing clean energy improvement projects.

The potential impact of EIPs extends across environmental, fiscal, social, and physical boundaries. This report distills some of the core characteristics of successful state- and community-scaled partnerships advancing clean energy investment. This report can serve as a reference to provide insight into some of the most novel characteristics of environmental and financial policies and programs in place throughout the nation. Through forming partnerships and addressing the diverse needs of stakeholders, EIPs contribute valuable direction toward reducing the need for public capital in the transition to a clean energy economy.

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