

CITY
ENERGY

A JOINT PROJECT of NRDC + IMT

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ENERGY EFFICIENCY FINANCING PRIMER



ABOUT CITY ENERGY PROJECT AND THE CITY ENERGY PROJECT RESOURCE LIBRARY

A joint initiative of the Institute for Market Transformation and the Natural Resources Defense Council, the City Energy Project supported bold yet practical ways to deploy energy efficiency at the city level to boost local economies, reduce pollution, and create healthier, more prosperous communities nationwide.

The project partnered with 20 local governments across the U.S. from 2013–2018 to design locally appropriate energy efficiency policies and programs. Building upon the past successes and innovation of cities, the City Energy Project established best-in-class practices for energy efficiency to be customized and replicated nationwide. Models and recommendations have been distilled into the City Energy Project Resource Library. This curated set of resources contains the necessary blueprints for a city government to craft and implement customized solutions to productively manage energy efficiency initiatives across commercial, multifamily, and public buildings in its jurisdiction.

For more information on the participating cities and counties in the City Energy Project, and to search the City Energy Project Resource Library, visit cityenergyproject.org.

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INTRODUCTION

The goal of this primer is to provide city officials with information about energy efficiency financing options to help guide their efforts. It describes what city governments can do to increase availability of financing for energy efficiency improvements in public and private buildings.

Energy efficiency is an important policy area for cities to pursue as a way to achieve ambitious climate policy commitments. With increasingly greater availability of city and state energy efficiency financing programs, public and private sector investments in energy improvement projects are growing. However, building owners continue to struggle to access financing for energy efficiency at reasonable rates and terms.

Cities can help by making energy efficiency financing tools and information available to buildings in both direct and indirect ways. These financing tools can complement other city policies and initiatives to improve the energy performance of buildings, such as benchmarking requirements, audit and tuning programs, and voluntary challenges to reduce energy consumption. Cities can use innovative financing mechanisms to finance energy improvements in their own municipal facilities and also play an important role in helping to expand the options available to private buildings.

This primer provides an overview to key issues in energy efficiency financing. It lays out the barriers that currently exist for building owners in accessing financing and explains existing traditional financing options as well as emerging energy efficiency-focused financing mechanisms. It explains how city policymakers can develop a plan to expanding energy efficiency financing options for both public and private buildings and lists best practices used by other cities. This resource is connected to other City Energy Project financing resources including fact sheets and case studies on specific energy efficiency financing mechanisms.

ENERGY EFFICIENCY FINANCING CHALLENGES AND OPTIONS

There are efficiency financing programs available at the state level that open up funding streams for cities to take advantage of. In addition, more frequently, cities find that creating their own financing solutions can best address the specific efficiency financing needs of public and private buildings.

Although state and local support is increasing, there remain persistent challenges to finance efficiency investments in both public and private buildings.

CHALLENGES

- ✓ Knowledge and time to pursue energy project financing
- ✓ Split incentives between building owner and tenants
- ✓ Commercial ownership hold barrier (desire to turn over property in 4-7 year timeframe)
- ✓ Senior financial managers can have limited time to focus on energy management
- ✓ Facility managers often might not have the financial literacy to present a compelling case to senior management
- ✓ Access to up-front capital
 - Financing thresholds that are too large for smaller buildings and projects
 - Competition for capital dollars by other urgent investment needs (e.g. safety, compliance, etc.)
 - Limits on costs that can be passed through to tenants (e.g. affordable housing)
 - Shrinking capital budgets and operational budgets, limiting maintenance and exacerbating need for energy efficiency (e.g. government, schools)



STATE EXAMPLE

Iowa Green Bank

Iowa's Clean Energy Revolving Loans: The Iowa Green Bank offers \$50,000 to \$500,000 in the form of 1 percent interest loans for up to 10 years. While the initial capitalization of the fund (\$1.9M) was utilized by Nov 2016, repayments from previous loans are now funding a subsequent round of loans.



CITY EXAMPLE

Chicago

Elevate Energy and the Chicago Community Loan Fund are partnering to offer lower cost loans to 1-4 unit residential buildings for energy efficiency investments.

While cities are uniquely made up of different businesses and building sectors, there are some sectors in every city that need more help than others.

- Class B&C commercial real estate
- Affordable multifamily housing
- Schools
- Buildings whose owners have limited cash reserves

TYPICAL FINANCING FOR ENERGY EFFICIENCY PROJECTS

Traditional financing approaches are commonly used for energy efficiency but can have limits, including lack of upfront capital, getting banks and lenders comfortable with energy efficiency projects, and uncertainty around leasing energy efficient products. Energy efficiency focused financing mechanisms on the other hand offer creative options but have their own unique requirements.

TRADITIONAL FINANCING OPTIONS

- ✓ Commercial loans
- ✓ Equipment leasing
- ✓ Internal capital

ENERGY EFFICIENCY PROJECT FINANCING OPTIONS

- ✓ Energy savings agreement
- ✓ On-bill financing
- ✓ Performance contracting
- ✓ Revolving loan fund
- ✓ Self-funding

For more details on traditional and energy efficiency financing options, see [Table 1. Typical Financing Options for Energy Efficiency Projects](#).

Table 1. Typical Financing Options for Energy Efficiency Projects

	PUBLIC	PRIVATE
TRADITIONAL FINANCING OPTIONS		
COMMERCIAL LOANS		
<p>DESCRIPTION: Building owner obtains secured or unsecured loan from a commercial bank.</p> <p>KEY CONSIDERATIONS: It sometimes takes additional effort to get banks comfortable underwriting energy efficiency loans.</p>		●
EQUIPMENT LEASING		
<p>DESCRIPTION: Building owner leases energy efficiency equipment for fixed time period as financing mechanism.</p> <p>KEY CONSIDERATIONS: Most building owners prefer to keep equipment; limited energy efficiency projects eligible.</p>	●	●
INTERNAL CAPITAL		
<p>DESCRIPTION: Building owner uses own capital to invest in energy efficiency savings accrue to building owner.</p> <p>KEY CONSIDERATIONS: Some building owners don't have up-front capital needed, or do not prioritize efficiency for that capital.</p>		●
ENERGY EFFICIENCY FINANCING OPTIONS		
ENERGY SAVINGS AGREEMENT		
<p>DESCRIPTION: Service provider provides financing for energy efficiency through guaranteed energy savings on-bill.</p> <p>KEY CONSIDERATIONS: Offered by limited number of companies; relatively complex structures.</p>		●
ON-BILL FINANCING		
<p>DESCRIPTION: Utility enabled mechanism that allows energy efficiency to be repaid through utility bill.</p> <p>KEY CONSIDERATIONS: Requires regulatory approval and utility cooperation.</p>		●
PACE		
<p>DESCRIPTION: Government enabled special assessments allow for energy efficiency to be repaid through property tax bill.</p> <p>KEY CONSIDERATIONS: Requires enabling state legislation and local action, as well as administrative support.</p>		●
PERFORMANCE CONTRACTING		
<p>DESCRIPTION: Service provider installs turnkey energy efficiency service with savings guarantee and financing.</p> <p>KEY CONSIDERATIONS: Service providers usually focus on government/institutional customers; limited efficiency projects eligible.</p>	●	●
REVOLVING LOAN FUND		
<p>DESCRIPTION: Government or nonprofit seed loan fund to finance energy efficiency with proceeds used to fund new projects.</p> <p>KEY CONSIDERATIONS: Seed capital required and set-up and management of fund requires technical and financial expertise.</p>	●	●
SELF-FUNDING		
<p>DESCRIPTION: Government develops long-term plan for committing a set amount of funds into energy efficiency investments.</p> <p>KEY CONSIDERATIONS: Requires time and effort to educate internal decision makers including budget and finance officials.</p>	●	

A CITY'S ROLE IN FINANCING

Cities should play an active role in creating and ensuring energy efficiency financing mechanisms to provide funding for energy efficiency improvement projects.



STATE EXAMPLE

New York Green Bank

As of August 2018, the New York Green Bank's commitments of \$522.3 million is expected to mobilize between \$1.46 billion to \$1.7 billion in sustainable infrastructure investment in clean energy projects in New York State.

CITIES ARE A CRUCIAL LINCHPIN IN ENABLING PROGRESS ON ENERGY EFFICIENCY

- Cities account for 70% of greenhouse gas emissions and are crucial in enabling progress on energy efficiency.
- Cities and towns are increasingly making climate and clean energy policy commitments. Indeed, more than 400 mayors representing 70 million Americans have signed on to the Climate Mayors network, a group committed to upholding the Paris Agreement goals.

CITIES CAN ASSIST BUILDING OWNERS STRUGGLING TO ACCESS FINANCING FOR ENERGY EFFICIENCY AT REASONABLE RATES AND TERMS

- Many building owners do not have the up-front capital to invest in energy efficiency upgrades without access to additional financing.
- Traditional lenders have historically been reluctant to make loans for energy efficiency, due to perceived risks which include lack of technical knowledge about building energy systems and difficulty securing such a loan when the building is already covered by a mortgage.

CITIES CAN HELP MAKE ENERGY EFFICIENCY FINANCING TOOLS AND INFORMATION AVAILABLE TO BUILDINGS IN BOTH DIRECT AND INDIRECT WAYS

- Energy efficiency financing tools are designed to help property owners finance the up-front costs of energy efficiency upgrades and to demonstrate to banks and other financial institutions the possible returns from these programs so that they will increase lending to this segment.
- These financing tools can complement other city policies and initiatives to increase efficiency retrofits, like benchmarking requirements, audit and retuning programs, and voluntary challenges to reduce energy consumption.
- Cities can use innovative financing techniques to finance their own investments and also play an important role in helping to expand the options available to private sector buildings.

TOOLS CITIES CAN DEPLOY TO FINANCE ENERGY EFFICIENCY OF PUBLIC AND PRIVATE BUILDINGS



TOOLS CITIES CAN USE ON THEIR OWN BUILDINGS

- SELF-FUNDING MODEL
- REVOLVING LOAN FUND
- PERFORMANCE CONTRACTING



VIEW FACT SHEET FOR AN INTRODUCTION TO ENERGY EFFICIENCY FINANCING OPTIONS FOR PUBLIC BUILDINGS

[VIEW FACT SHEET >](#)

WAYS CITIES CAN INCREASE ACCESS TO FINANCING FOR PRIVATE BUILDINGS

- EDUCATING LENDERS
- ENERGY SAVINGS AGREEMENTS
- ON-BILL
- PACE
- PERFORMANCE CONTRACTING
- REVOLVING LOAN FUND



VIEW FACT SHEET FOR AN INTRODUCTION TO ENERGY EFFICIENCY FINANCING OPTIONS FOR PRIVATE BUILDINGS

[VIEW FACT SHEET >](#)

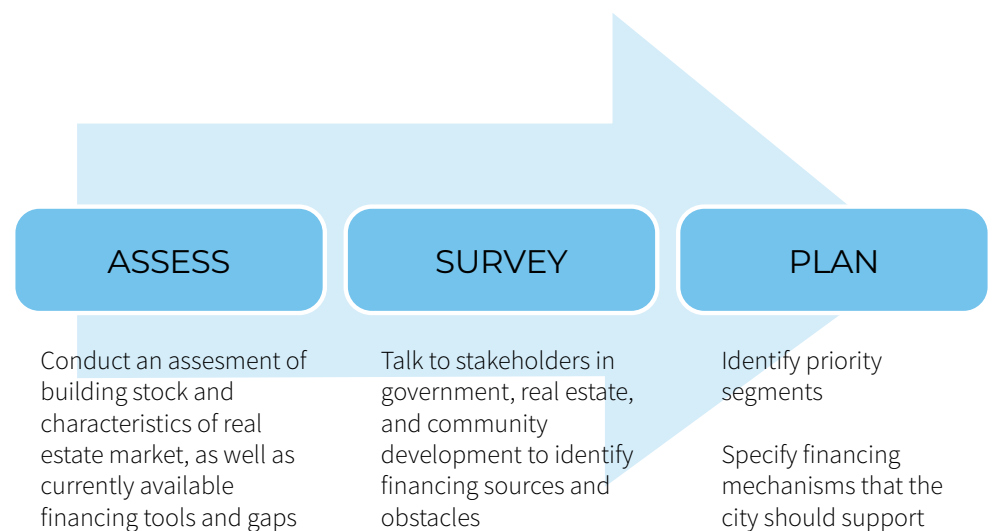


IDENTIFY THE FINANCING OPTIONS FOR YOUR CITY

Having strategic and robust energy efficiency financing options are fundamental to the success of any city's energy efficiency, sustainability or climate goals. It is crucial that cities be purposeful and strategic when providing support on efficiency financing. Cities need to understand the financing obstacles for their buildings and what their financings resources are, in light of their overall policy and programmatic goals. Only then can they identify and prioritize efficiency financings initiatives that will address financing obstacles and take advantage of local and state resources.

ASSESS, SURVEY, PLAN

A city should take a three-pronged approach to understanding and implementing financing options to improve building energy efficiency.



STEP 1. ASSESS

There are a variety of factors to determine the right financing options for your city. Start by analyzing public and/or private sector building stock information.

- ✓ Building stock types
- ✓ Rents
- ✓ Years to balance
- ✓ Amount of space by type
- ✓ Cap rates
- ✓ Market cycle
- ✓ Vacancy rates
- ✓ Market absorption
- ✓ Value changes



TOOLS

U.S. Department of Energy SLED Tool

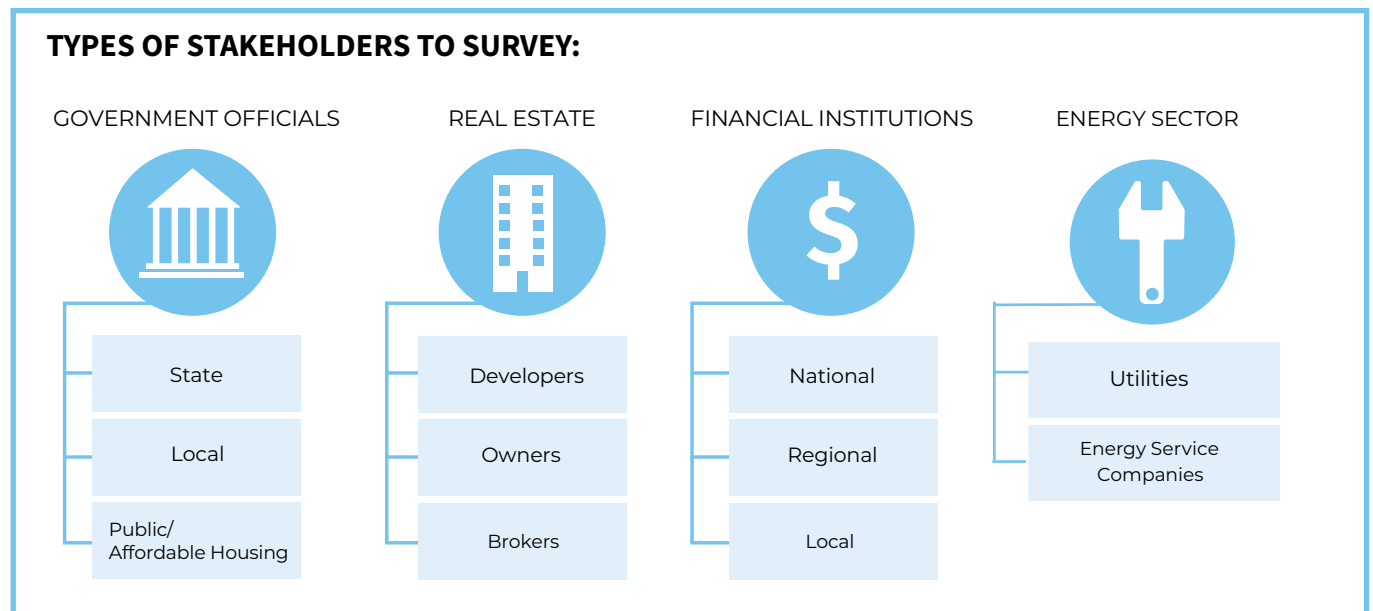
The **SLED** tool automatically links to data sources and pulls data for any zip code or city. It also aggregates information on energy use, carbon emissions, building stock, electricity generation, and other data.

National Renewable Energy Laboratory Resstock

The **RESSTOCK** tool helps states, municipalities, utilities, and manufacturers identify which home improvements save the most energy and money. It supports analysis of the technical and economic potential of residential energy efficiency improvements and packages and is available for 48 states, down to zip code level.

STEP 2. SURVEY

City officials should talk to local stakeholders to understand specific local energy financing needs, resources, and obstacles. There are many types of stakeholders to talk to about efficiency financing.





LEARN MORE

Engaging the Community in Policy Development

This guide provides key insights and recommendations for cities engaging the community and stakeholders to solicit feedback and participate in the planning and implementation of building performance policies and programs.

[VIEW GUIDE >](#)



STATE EXAMPLE

Connecticut Green Bank

Since 2011, the Connecticut Green Bank has deployed over a \$1 billion in capital for clean energy projects across the state. Projects recorded through 2016 show that for every \$1 of public funds committed by the Green Bank that an additional \$6 in private investment occurred in the economy.

SAMPLE QUESTIONS TO ASK GOVERNMENT AGENCIES:

- Is there financial flexibility in city budget?
- Have local financing programs for energy been used at the city level?
- Are there state or regional programs or capacity available?
- Are there other successful programs used in neighboring jurisdictions of interest?
- Who are the major utilities, and do they fund efficiency efforts?

SAMPLE QUESTIONS TO ASK REAL ESTATE:

- Who are the major developers and owners?
- What is being built or renovated now?
- What improvements are being made to existing buildings?
- Are there noteworthy sub-markets or neighborhoods in the city that need reinvestment or are now redeveloping?
- Common lease types?
- Green leasing?

SAMPLE QUESTIONS TO ASK LENDERS:

- Who are the major lenders? National, regional, community players
- Do banks have sustainability/green efforts?
- What are conventional loan products?
- Lending terms for conventional mortgages: refinance and construction, rates and lending ratios.
- Is there interest on the part of borrowers for efficiency improvements?
- What are the finance cycles? Are large cohorts due for refinance?
- What percentage of properties are underwater?

SAMPLE QUESTIONS TO ASK ENERGY SECTOR:

- What is level of participation in efficiency incentive programs?
- What are key reasons building owners decide not to move forward with efficiency investments?
- Do you offer any financing support, and if so, what has interest in that program been like?
- Are there areas of the grid in the city where you face reliability issues and where targeted efficiency investments could be helpful?



CITY EXAMPLE

New York City

New York City Energy Efficiency Corporation (NYCEEC), launched in 2011 using seed capital from the American Recovery and Reinvestment Act of 2009 grants, and has provided \$134 million in loans, credit enhancements and energy service agreements to private sector buildings in New York City.

- Would you be willing to help partner a city-led effort to expand access to financing for efficiency?


STEP 3. PLAN

Based on the information collected when assessing the building stock and interviews with stakeholders, cities can use information about local building stock, real estate conditions, and efficiency financing needs to develop priority plans. This process can be an iterative one, whereby city officials develop a preliminary plan, share that with stakeholders and then refine the plan and proposals based on stakeholder feedback.



BEST PRACTICES FOR CITIES TO KEEP IN MIND

- ✓ Leverage private sector capital when feasible.
- ✓ Combine financing with comprehensive customer outreach and education and strong program administration.
- ✓ Link financing to other events, programs and stakeholders.
 - Funding for energy efficiency work can be added to existing building financings, such as loan for purchase, refinancing, or tenant build out.
 - Create partnerships with local financing institutions.
 - Make efficiency standards a condition for other government benefits such as tax credits or economic development incentives.
- ✓ Encourage market transformation.
 - Demonstrate how energy efficiency transactions are implemented.
 - Encourage lenders and building owners to complete projects so they experience successful outcomes.
 - Share success stories broadly.



ADDITIONAL CITY ENERGY PROJECT FINANCING RESOURCES

OVERVIEWS AND BACKGROUND INFORMATION

- Overview: [Energy Efficiency Financing Tools for Municipal Buildings](#)
- Overview: [Energy Efficiency Financing Tools for Private Buildings](#)

EDUCATING LENDERS

- Fact sheet: [How Cities can Educate Lenders on Energy Efficiency](#)

ON-BILL FINANCING

- Fact sheet: [Introduction to Utility On-Bill Financing](#)
- Case Study: [California Investor-Owned Utility On-Bill Financing Program](#)

PACE

- Fact sheet: [Introduction to Property Assessed Clean Energy \(PACE\) Financing](#)
- Case Study: [Connecticut C-PACE: Program Administration and Transparency](#)
- Case Study: [Minnesota PACE: Financing Partnerships and Creativity](#)

REVOLVING LOAN FUNDS

- Fact sheet: [Introduction to Revolving Loan Funds](#)
- Case Study: [New York City Energy Efficiency Corporation Revolving Loan Fund](#)
- Case Study: [San Antonio's Municipal Revolving Loan Fund](#)

SELF-FUNDING

- Case Study: [New York City's Approach to Self-Funding of Municipal Buildings](#)

ABOUT THE INSTITUTE FOR MARKET TRANSFORMATION AND THE NATURAL RESOURCES DEFENSE COUNCIL

ABOUT THE INSTITUTE FOR MARKET TRANSFORMATION

The Institute for Market Transformation (IMT) is a national 501(c)(3) nonprofit organization that catalyzes widespread and sustained demand for energy-efficient buildings. Founded in 1996 and based in Washington, D.C., IMT specializes in driving the intersection of real estate and public policy to make buildings more productive, affordable, valuable, and resilient. A trusted, non-partisan leader, IMT focuses on innovative and pragmatic solutions that fuel greater investment in energy-efficient buildings to meet local market priorities. IMT offers hands-on technical assistance and market research, alongside expertise in policy and program development and deployment and promotion of best practices and knowledge exchange. Its efforts lead to important policy outcomes, widespread changes in real estate practices, and lasting market demand for energy efficiency—resulting in greater benefits for all people, the economy, and the environment. Visit us at www.imt.org and follow us on Twitter [@IMT_speaks](https://twitter.com/IMT_speaks).



ABOUT THE NATURAL RESOURCES DEFENSE COUNCIL

The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization with more than 3 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Bozeman, MT, and Beijing. Visit us at www.nrdc.org and follow us on Twitter [@NRDC](https://twitter.com/NRDC).





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