



Summary of Energy Efficiency Financing Program Interviews

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1.0 Introduction and Methodology

With concerns about climate change and energy security, governments at all levels and utility companies have recognized the importance of finding ways to limit energy usage and the accompanying GHG emissions in their jurisdictions. A large amount of communities' emissions come from their buildings. Fortunately, energy efficient technologies like HVAC systems, advanced insulation and Energy Star windows® can help homeowners reduce their energy consumption in ways that are cost effective for them. Many energy efficiency measures pay back their original cost from energy savings in less than ten years. However, despite the advantages of them, barriers like high up-front costs, short home ownership durations and risk aversion deter many homeowners from installing an economically efficient amount of energy-saving measures.

Many governments and utility companies have found that financing programs help to overcome many of these barriers and have implemented programs in their communities. With the recent stimulus programs to address the economic downturn, their number of energy efficiency financing programs has increased greatly. (A link to a full listing of American Energy Efficiency financing programs can be found in the appendix amongst resources.)

Vancouver is currently investigating financing programs to determine whether they can make a significant impact on GHG emissions in the city. In order to fully understand the challenges, opportunities and successes of implementing financing programs, we researched and interviewed the managers of 13 energy efficiency financing programs in North America and Germany.

Each of the programs was asked the following questions:

- What was the economic, environmental and regulatory context in which they decided on their financing tool program? Had they considered other options?
- Would they judge the program to have been a success? What metrics have they used to evaluate the program?
- What were some of the factors that contributed to the performance of their financing tool program?
- If they could implement the program again, are there any elements of their plan that they would change?
- Are there other programs that they'd advise we review?

2.0 Traditional Financing

2.1 Prince Edward Island-Prince Edward Island Energy Efficiency Grant & Loan Program

Program Context: While mandated before, the original stimulus for the 2-year-old program was the spike in oil prices. The PEI government wanted to help homeowners, of whom 94% had homes heated by oil, by helping them curb their energy costs through financing energy efficient home improvements.

Program Details:

Energy Efficiency Residential Loan Program

- **Administration:** The program was designed to complement existing federal energy efficiency programs. Loans are paid out through PEI Lending Service Agency
- **Funding:** through Trust Fund for Clean Air and Climate Change
- **Eligibility:** Homeowners of one to three-unit homeowner-occupied buildings that have had an energy audit. Through the PEI ecoEnergy Audit Assistance Program homeowners can receive pre- and post retrofit audits at a reduced rate of \$100 each. The Office of Energy pays the remainder of the cost, up to \$250. For households with income below a \$35,000 threshold, the program will pay all the costs of an audit to a maximum of \$500. The audit needs to be conducted by one of the three PEI companies sanctioned by NRCA.
- **Loan terms:** up to \$10,000 at an annual interest rate of 6% for the implementation of the recommended upgrades, excluding windows and doors. There are also loans of up to \$10,000, interest free for clients below the income threshold. Depending upon the amount borrowed, applicants will pay between \$90 and \$150 per month until the loan principal and interest are paid off.
- **Low-Income Loan Relief Program** – To assist low income families, the government either reduces the monthly payment with the same loan terms or reduces the loan term with a reduced monthly payment (for incomes up to \$15,000 it is reduced by 50%, for incomes between \$15,001 and \$35,000, it is reduced by 25%).

Success of program to date: Since the Office of Energy Efficiency (OEE) was established in early 2008, staff has been able to process 1,200 low-income household applications). Since the OEE began offering programs in March 2008, there have been 2,781 household energy audits completed (2,020 in 2008/09 and 761 since April 1, 2009). Roughly 6% of the province's housing stock has been audited. OEE anticipates completing another 2,000 audits this year. A total of 662 clients have completed work and received a loan or grant from the program. The average annual energy savings per household is 56 Gigajoules – \$1,200/year at current oil prices¹. (Since the beginning of

¹ <http://www.dailybusinessbuzz.ca/2009/09/01/pe-new-programs-boost-commercial-and-institutional-energy-efficiency/>

the fiscal year, April 1, 2008 to the end of November 2008, the office has loaned \$1.2 million from a budget of \$2 million).

Success Factors: They essentially offer a one-stop shop for federal and provincial energy efficiency programs, loans and grants, and serve as information mediator on all questions, which simplifies the process greatly for people. Marketing has been key, especially direct community outreach to community groups, church groups and women's institute—groups that don't traditionally get their information from the news. They have also developed strong relationships with building suppliers and other industry key players.

What they'd do differently: They'd like to find a way to overcome the application backlog that is caused by the limited number of auditors and the challenges processing applications through NRcan.

3.0 On-utility bill financing

3.1 Manitoba Hydro-Power Smart Residential Loan and Earthpower Loan

Program Context: Manitoba Hydro began actively promoting energy efficiency through its Power Smart programs since 1992. Power Smart includes several loan programs for energy efficiency upgrades, and the programs were developed, financed and administered solely by Manitoba Hydro. Customers province-wide are eligible to participate.

Program Details:

Available Loans:

Power Smart Residential Loan

- fixed rate of 4.9%
- wide variety of energy efficiency upgrades for homes are covered
- Maximum loan amount is \$7,500 per residence, maximum term of 60 months, minimum monthly payment is \$15.
- A wide variety of contractors are eligible under the program from which customers can choose.
- Any customers billed at the residential rate are eligible, including landlords, condominium owners, and condominium corporations

Residential Earth Power Loan – for homeowners who install a geothermal heat pump, maximum amount \$20,000

Success of Program to Date:

- Since 2001, 41,000 loans (\$167 mill) have been distributed
- 2007 loan volume was 8,100 loans with an average value of \$4,800

- Participation rate is 2% of residential customers each year. This is one of the best participation rates in North America.
- Default rate: well below the expected/target rate, and well below the default rate of the major chartered banks in Canada.

What they'd do differently: Manitoba Hydro is currently expanding the on-line application process to further reduce administration costs of the program. Otherwise they are satisfied with how it is currently functioning.

3.2 Midwest Energy (Kansas)—Headstart

Program Context: Midwest Energy (MWE), a customer owned (co-operative) utility, developed this program to address the barriers of landlord/tenant split incentives, high up-front costs and the lack of buyer/builder education about energy efficiency upgrades. This residential and commercial program was started in 2008, and is funded in co-operation between the State of Kansas (Kansas Housing Resources Corp) - 50% and Midwest Energy – 50%

Program Details:

- Loans repaid through surcharge on utility bill (less than amount of savings)
- Surcharge covers company investment, cost of capital, and program costs
- Maximum term: 180 months
- There is a “surcharge” rather than an interest rate but this surcharge is equal to an interest rate of 4-7%
- There are no administrative fees for customers. The level of surcharge is determined by MWE
- MWE also performs energy efficiency analysis of applicant homes to determine required upgrades
- Program covers permanent products that can't be moved from the property
- Available for residential and small commercial customers

Success of Program to Data:

- Relatively new program
- 60 projects completed, 130 pending, \$268,000 invested
- Average customer monthly payment= \$39.41, average monthly savings = \$49.12
- The program has won several best practice awards

What they'd do differently: They would address the issue of the free riders who only participate in the energy efficiency audit but don't take a loan (and pay, through the surcharge, for the administration of the program. This could be addressed through administrative fees. They would also increase the supply of eligible contractors which have created a 5-month backlog on projects.

3.3 Maui Electric—Maui Solar Roofs Initiative Program

Program Context: This pilot program financing solar water heaters was started in 2007 and is part of the Maui Electric Company's energy efficiency initiative. This program is offered by electric companies on Oahu, Island of Hawaii, and Maui County and is funded by a public benefit charge.

Program Details:

- Source of Funding: Public Benefit Charge
- Finances Solar/PV systems only
- Loans are interest free
- Repayment: On bill
- Residential programs only
- Honeywell is sole contractor for installations

Solar Saver Program

- newer (2007) pilot program
- for installation of Solar Water heating systems
- offered by several electric companies in the state
- money saved monthly on energy goes to repayment
- open to owners and renters (in case of sale the loan is passed to new owner via utility bill)

Success of Program to Date:

- There is a low uptake rate, partly due to the long (2-month) time for approval to attach payment responsibility to meter
- It has had no observable job creation impact
- Limited to energy efficiency measures covered by program

What they'd do differently: They would like to address the delays in approving the loan programs.

3.4 First Electric Co-operative (Arkansas)-Home Improvement Loan Program

Program Context: The program started in 2000 and is administered by the utility company. It mainly covers heat pump installation, although some other EE measures may be financed.

Program Details:

- Source of funding: pool of funds available to national electric co-operatives
- Because of the low uptake rate it can be administered by First Electric staff with little impact on time
- On-bill financing, repayable over 5 years
- Interest free, payment amount is determined by amount of monthly savings

- Heat Pumps, First Electric Products (under \$500) and Portable home generators) are covered by this program

Success of Program to Data:

- Loan volume is low: 2007 – 11 loans for total of \$76,000
- Financially the program is breaking even

What they'd do differently: They would better market the program to improve uptake.

3.5 Sacramento Municipal Utilities-Residential Loan Program

Program context: Sacramento is one of the oldest energy efficiency programs, starting in 1991 to address power demand issues resulting from the closing of a local nuclear plant. As a utility it had few opportunities to choose regulation as a means to reduce emissions. It also did not have access to municipal funding. The program works in connection with rebates and other incentives.

Program Details:

- 5-10-year Residential loans of up to \$10,000 at a fixed rate (currently 8.5%) with a \$100 application fee (refunded if loan rejected)
- Loans may require credit check and collateral
- Includes funding for aerosol duct sealing, attic and wall insulation, cool roofs, central air conditioning, heat pumps, insulated siding, photovoltaic cells, solar domestic water heaters and windows

Success of Program to date: The program has issued \$474 million in financing to over 87,000 individuals and businesses. (Sacramento has 163,000 housing units.) They have not kept records about the emission reductions that they have achieved. The program is very politically popular. Default rate has been quite low 4% (2.5% this year). Due to the housing slowdown, they've had a lower number of loans this year

Success Factors: They developed key relationships with contractors who have done the vast majority of the marketing of the program through word of mouth. The longevity of the program has created its own momentum.

How it would be done differently: The program has evolved over time. They've tightened up credit restrictions including credit checks.

4.0 On-tax bill financing

4.1 Sonoma County Energy Improvement Plan

Program Context: The community had a mandate to reduce energy emissions from the community and its inhabitants by 25% below 1990 levels by 2020. This program emerged from California's Assembly bill 811 which gave permission to municipalities and counties to provide financing to residents to promote energy efficiency.

Program Details:

- They offer financing from \$2,500 with currently no upper limit at fixed rates of 7% for between 5-20 years
- They have no administrative fees but there are fees for researching property title of \$65
- This program covers energy and water conservation programs, solar heating and customized renovation with special permission

Success of Program to date: They've already issued \$22 million of loans and have a mandate to finance up to \$100 million. They have funded 300 projects. (Sonoma County has 198,000 housing units.) They did not create a data measurement system but hope to have one running within 60 days with first results emerging within another 60 days. It will be difficult, though, to determine whether it's the financing plan which has caused the emission reductions or other catalysts. It is too early to measure default rates but they don't anticipate it to be a problem. Their loans have caused an 8.5% spike in the construction industry where other counties have had stagnant industries.

Success Factors: They did not set loan limits or administrative fees in order to encourage uptake. They also allow audits to be financed by the plan. They are looking to become self-sustaining by using bonds of 3% and loans of 7% with the 4% differential covering the cost of administering the program.

What they'd do differently: In retrospect they would have developed a system to collect emission-reduction data before starting the program. Some people believe that there should also have been a better audit system. They are also looking into creating large-scale neighbourhood retrofits to achieve economies of scale.

4.2 Annapolis—Annapolis Energy Zone (EZ) Program

Context: Annapolis wanted to emulate the programs that had emerged in California and worked with Edison Wright to create a program. Due to one partner pulling out because of the credit crunch, their program was fully funded by stimulus dollars and worked in conjunction with Maryland Clean Energy. The program has just been launched this week.

Program Details:

- This program is administered through Edison Wright who arranges the details and collects payment. In return, they charge a spread of 200 basis points over the money that the banks are lending
- Currently the loans are at a fixed rate of 7.75%. They are hoping to lower the interest rate by lobbying the federal government to make the bank's interest revenue from these loans tax-exempt.
- Their loans are for energy efficiency initiatives and not renewable energy

Success of Program to date: This program has just begun. Although they've done no outreach, 10 homeowners have already volunteered for the 50 loans. They plan to use a software program, Beacon, which will calculate the amount of energy savings to be caused by weatherization. They recognize that there may be other factors that will affect energy usage. They will also gain access to loan program users' utility bills to help them determine the efficacy of the program

Success Factors: They made sure there were no upfront costs. Although there is an audit cost (to avoid program free-riders) this will be reimbursed when they get the work done on the house and it becomes a part of financing. The lack of upfront costs is perceived to compensate for the higher interest rate. The financing will not affect credit scores. Local legislation was passed to facilitate the program.

What they'd do differently: It is important to secure stable funders from the onset of the program.

4.3 Boulder County-Climate Smart Loan

Program Context: As part of its strategy to achieve long-term carbon neutrality and the interim Kyoto protocol target, Boulder County has developed a program to reduce the levels of countywide greenhouse gas emissions. The program started in November, 2008, and was modeled after the widely publicized City of Berkeley initiative. To facilitate this program the county had to work with the state to pass necessary legislation to allow the county to issue up to \$40 million in special assessment bonds to finance the clean energy improvements through the Climate Smart loan program.

Program Details:

- Climate Smart Loan Program for residential and commercial properties is administered by Boulder County and funded through sale of municipal bonds
- Repaid through special assessments on property tax statements (payments remain with the property when it is sold)
- 15-year Loans from \$3-50 thousand to a maximum of 20% of the property value at rates of 6.75-8.75%
- Loans to low-income recipients are capped at \$15,000
- \$75 application fee to cover administration costs.
- Wide variety of upgrades are eligible under the program, 40 different measures are covered

Success of the program to date:

- Over 600 loans from the large number of applicants have been issued since inception, at a value of over \$10 million.
- Because of the success, the county is seeking to double the amount of bonds it can issue to fund the loans
- Positive impact on maintaining and creating jobs in an economic downturn

What they'd do differently: They are looking to increase the amount available for loans in order to extend the program to non residential buildings like apartment buildings, churches and non-profits.

4.4 City of Palm Desert-Energy Independence Program

Program Context: The community had been in the process of lowering emissions by 30%. They had always been a leader environmentally. Their building and safety codes were already significantly stricter than both state and national standards. The program works in conjunction with rebates, incentives, residential energy audit program and educational program.

Program Details:

- They offer \$5,000-100,000 loans at a fixed interest rate loans at 7% for 20 years. (This is below the bond rate, which is 8% for a 20-year bond)
- They finance pool pumps, cool roofs, pool heaters, skylights, windows, glass doors, water heaters, thermal solar, evaporative coolers, HVAC and heat pumps
- All climate credits that result are the property of the city of Palm Desert

Success of program to date: The program has already issued \$10 million in loans to approximately 140 home owners. (Palm Desert has 28,000 housing units) They have a small default rate and because the taxes have the first lien on the property they don't anticipate this to be a problem. The program has been politically popular. Because the program has only been running for 1 year they do not yet have emission reduction data.

Success Factors: The program is embraced by the community. Because electricity prices, especially air conditioning costs, are high and there is an appropriate climate for solar power, this program is attractive. The 20-year payoff period is attractive especially to those on fixed income as many of the community's elderly are.

What they'd do differently: They wish they had secured more funding before start of the program. Their first tranche of funding was already used up in 3 weeks and it takes 6 months to issue a new bond and process applications before new financing can begin. They have also set a maximum loan in order to spread the results to more people. They've also set a policy to ensure that those with loans over \$30K get permission from their mortgage company.

4.5 Berkeley- Berkeley FIRST-Energy Funding L.L.C

Program context: In 2006, Berkeley voters endorsed a motion calling for aggressive GHG emission reductions. As part of efforts to reduce reductions city staff developed the Berkeley FIRST program to encourage the use of solar technology

Program Details:

- Berkeley 15-year loans at 7.75% averaged around \$28,000

- They financed the purchase and installation of photo-voltaic systems at a fixed rate of 15 years at 7.75%,
- The program is funded by a bond of 6.75%.
- There is an administrative fee of \$25.

Success of program to date- The program was sold out within 5 minutes. However, 27 of the 40 families withdrew from the program and the bond terms stated that they did not have time to replace the participants. Although few people participated, organizers feel the program had educational and awareness value, because many of those who dropped out of the program elected to get the solar upgrades with alternative financing.

Success Factors: They feel that the program was not a full success due to the low number of program participants. Nonetheless there was an interest in the community with the majority of participants doing the program for environmental rather than economic reasons. They also felt that the educational aspect of the program helped to promote good retrofits.

What they'd do differently: They would have a better mechanism to replace those who had dropped out of the program. They also would encourage people to look for other funding rather than just their own program as this is a good way to leverage public money. They would increase the administrative fees in order to discourage people from dropping out of the program. The application process should have been done through a lottery rather than by a first come first serve basis as this gives the advantage to those who have the technology or time to capitalize on the system.

5.0 Alternative Programs

5.1 City of Toronto-Toronto Atmospheric Fund-Towerwise Green Loan

Program Context: The fund was created in 1992 as a corporation without share capital to help Toronto meet its goal of reducing GHG emissions by 20 percent by 2005. The City of Toronto appoints the board of directors and has additional powers over the activities of the fund.

Program Details:

- Towerwise program: convening a high-powered group of residential high-rise owners, managers and energy-efficiency specialists to address this large source of carbon emissions, with a special focus on financing deep retrofits. Its programs include financing and also outreach education to bring best practices in energy efficiency to the sector through a website, newsletters, seminars and webinars.
- Green Loan fund: \$ 4 million in total, which is enough for 8 loans to prove to the market that the concept works
- High-rise condo developers commit to invest energy efficiency capital in various measures in the building and reduce energy costs by more than 20%.

- TAF finances 100% of EE measures in common building areas (not in-suite)
- The loan is advanced before the closing of the condo sale and the turnover meeting when the board of directors takes over, the funds are advanced to the development corporation
- Loan terms: An average of \$500,000 for 7-10 years, at market rate: now 6.5% to 7%

Success of Program to Date:

- Only financed one building so far but it had had six buildings lined up when the financial crisis hit. The loan was issued four years ago, but it takes three years to build the apartments
- The refitted condo achieved energy savings of 30% and reduced CO2 emissions by 500 tons.
- A second loan will be advanced in January 2010 and loans for 6 more buildings in 2011
- Meanwhile, the City of Toronto came up with a new green building code: 25% more energy efficient than the national building code. This means that the TAF loans will change. Now they'll only fund measures that will help condo owners exceed 25% improvements
- Projects supported by TAF and implemented by the municipality have already reduced the City of Toronto's emissions by approximately 30% (from 1990 levels); projects financed by TAF loans have saved the City \$17.5 million — over \$2.7 million annually → not all building related, projects include e.g. solar hot water systems for city buildings
- TAF model spread to City of London and Chinese communities

What they'd do differently: There can often be challenges with loans because of turnover on the strata council. As a result, they'd like to develop a better continuity plan. They would also like to spend more time educating banks about the advantages of lending to condos. They are lobbying the government to allow landlords to have a 100% write off of energy improvement features.

5.2 City of Berlin-Energy Savings Partnerships

(Performance Contracting – Energy Efficiency Partnerships)

Program Context: The program was developed and implemented in 1996 with the aims of climate protection and energy savings in the face of a tight budgetary position

Program Details: A group of buildings are collected into a “building pool”. These can be town halls, schools, Kindergartens and other public buildings. They run a competitive tendering process to transfer the financing, planning, implementation and monitoring of energy savings to a private energy partner, creating a 5-15 year contract. The Private Energy Service company is reimbursed through taking a predetermined share of the client's energy cost savings for the building. The client benefits from the full value of the savings when the contract has expired.

The contractor in accepting the contract must agree on specific technologies to use with the energy improvements. They also must guarantee the client a minimum level of energy savings. They only gain if the savings are reached and therefore carry the risk of the financing.

Success of Program to Date:

- Since 1996, successfully implemented 19 energy savings partnerships in Berlin
- More than 500 contracts/ and 1300 public buildings have been modernized
- Over €60 million invested by private energy contractors, including maintenance
- Energy costs have been cut by 25% in public buildings (schools, pre-schools, university, administration buildings), a level that a public building owner normally could not reach on his own
- CO2 output reduced by more than 600,000 tonne, saving the City €2.4 million annually
- There is still lots of public buildings with 30% energy savings potential so there is a good likelihood of continued success

Success Factors:

- Using building pools avoids having contractors only pick the most promising buildings
- Contractor supplies the investment and commits himself legally to reduce the energy costs by a certain amount, amount is guaranteed and will be paid to the client even if the targeted energy savings are not reached,

What they'd do differently: It is necessary to ensure that all parties have a solid understanding of the current situation and clearly define the targets which can be adjusted according to climate, price and consumption levels. They would also run checks on smaller buildings to see whether a partnership would be worthwhile for both parties.

Appendices

Appendix 1: Graph of surveyed programs

Program Location	Financing conditions	Focus	Uptake	Investment size	Financially self-sustaining	Type
Prince Edward Island	14-year loans up to \$10K, at 6% interest, pre-loan audits subsidized, some loan subsidies for low-income families including interest free loans	Energy Efficiency	2.700+ audits, (6% of housing stock), 600 loans grants/loans	\$2 million	No	Traditional financing
City of Toronto	7-10 year loan at 6.5-7% interest, averaging \$500K	Energy Efficiency above the required 25% improvements	1 loan to large condos (<1% housing stock)	\$4 million	Uncertain	Alternative financing (Green fund)
City of Berlin	External contractor develops a partnership with a client for between 5-15 years to deliver energy savings where they finance, maintain energy efficiency measures and receive the savings	Energy Efficiency	500 contracts/1300 public buildings modernized	€60 million	yes	Alternative financing model-energy service contracts
Boulder County	Loans from \$3-50K with a maximum of 20% of property value for 15 years at 6.75-8.75% interest with a \$75 admin fee and a 1.07% processing fee	Energy efficiency and solar for residential and commercial	600 loans (<1% of housing stock)	\$40 million	Likely	Property tax assessment
Manitoba Hydro	5-year loans of up to \$7,500 at 4.9% fixed rate. Up to \$15,000 for geo-thermal installations	Energy Efficiency and Geo Thermal	41,000 loans (2% participation rate)	\$167 million	Doubtful at 4.9% interest rate	

Program Location	Financing conditions	Focus	Uptake	Investment size	Financially self-sustaining	Type
Midwest Energy (Kansas)	Up to 15-year loan at 4-7%, surcharge covers cost of program	Energy efficiency	60 completed, 130 pending	\$850,000	Unlikely due to low interest rate	Utility bill financing
Maui Electric	Interest free loans , payments contingent on level of savings by customer	Solar photovoltaic and solar water heaters for residential consumers	Low response	Uncertain	No	On-bill financing
First Electric Co-operative (Arkansas)	1-5-year loans of between \$500-\$15,000, interest fee with payments contingent on level of energy savings	Heat pump installation and some energy efficiency measures	11 loans of \$76,000	\$100,000	Although they claim to break even this is only possible if administrative labour is free	On-bill financing
Sacramento Municipal Utilities	3-10-year loans at 8.5% fixed interest rate. There is a \$100 administrative fee which is refundable if rejected	Energy efficiency and photo voltaic upgrades for residences and commercial units	87,000 loans (more than 50% of housing stock)	\$474 million	Likely	On-bill financing
City of Palm Desert	\$5-100K Loans of up to 20 years at 7% fixed rate	Energy efficiency and solar power	140 loans, (<1% of housing stock)	\$10 million	Yes	City tax financing
Sonoma County	Loans from \$2500 with no upper limit, for between 5-20 years. No administrative fee but some costs for title searches. Fixed rate of 7%	Energy Efficiency	300 loans (<1% of housing stock)	\$22 million	No	On-tax bill financing

Program Location	Financing conditions	Focus	Uptake	Investment size	Financially self-sustaining	Type
City of Berkeley	15-year loans of up to \$37,000 at 7.75% fixed interest with an administrative fee of \$25.	Solar photo-voltaic	13 loans (<1% of housing stock)	\$1 million	Uncertain	On Tax bill financing
Annapolis/Edison-Wright	7.75% interest rate with no administrative fee but an audit cost	Energy efficiency	10 loans and 40 more planned (<1% of housing stock)	Uncertain	In theory	On-tax bill financing

Appendix 2: List of Resources

Comprehensive list of Energy Efficiency Programs:

<http://www.dsireusa.org/incentives/index.cfm?EE=1&RE=0&SPV=0&ST=0§or=Residential&searchtype=Loan&sh=1>

Berkeley's Guide to Developing Financing Programs

http://www.ci.berkeley.ca.us/uploadedFiles/Planning_and_Development/Level_3_-_Energy_and_Sustainable_Development/Guide%20to%20Renewable%20Energy%20Financing%20Districts2009.pdf

CMHC Survey of Vancouver Renovations

<https://www03.cmhc-schl.gc.ca/catalog/productDetail.cfm?csid=1&cat=134&itm=1&lang=en&fr=1267299100495>