

A SHORT GUIDE TO SETTING UP A CITY-SCALE RETROFIT PROGRAM

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INTRODUCTION ►

The seemingly insurmountable problems of climate change, poverty, and a nation dependent on dirty or foreign sources of energy are among the most serious challenges facing our country. But like all challenges, these present an opportunity—the opportunity to address all three problems at once—by building a domestic energy economy based on efficiency and renewable energy and focusing the job creation and training efforts that accompany such an economy on low-income communities. As Green For All founder Van Jones says, “we can beat pollution and poverty at the same time.”¹

Energy efficiency retrofits of our homes, schools, and workplaces can address climate change while putting people to work and reducing energy bills. Buildings represent 38.9% of U.S. primary energy use² and 38% of all CO₂ emissions in the U.S.³ Simple, relatively low-cost measures such as air sealing, insulation, and lighting and appliance upgrades can be done in almost every building to reduce energy use. Such a reduction can result in significant savings on utility bills, such that the improvements pay for themselves in a short time and provide continued savings in the long run. Energy efficiency improvements represent one of the lowest-cost and most cost-effective opportunities to reduce greenhouse gas emissions; they result in a net benefit or savings to the economy over the lifetime of the improvements.⁴ Auditing buildings for such opportunities and retrofitting them with the appropriate improvements are critical components of any plan to save energy, reduce costs, or prevent greenhouse gas emissions.

Building energy efficiency retrofits also can, if well planned, provide good, entry-level jobs with the potential to connect to career pathways. Workers with less than a four-year college degree can be trained to retrofit a building and reduce its energy use by 30 percent or more.⁵ In addition, low-income households spend 14 percent of their income on energy, compared with 3.5 percent by other American households, so retrofitting buildings owned and occupied by low-income individuals and families has the potential to provide significant savings to them and to stimulate local economies.⁶

Despite the fact that retrofitting is both good for the environment and a good economic investment, current retrofitting program capacity is only a fraction of what it needs to be. Further, many current retrofitting programs too often create only low-wage, short-term jobs for workers rather than providing pathways into sustainable careers in construction and green building. Most retrofitting work falls into one of three categories: upgrades of large industrial or institutional buildings performed by Energy Service Corporations (ESCOs) and/or large contractors; upgrades of low-income residential properties eligible for Weatherization Assistance Program⁷ (WAP) or similar funding often performed by Community Action Program (CAP) agencies; and upgrades of private residential properties done by small contractors. Weatherization assistance programs, the most measured sector of this market, have been chronically underfunded, and as a result only a tiny fraction (0.7 percent) of homes that would be good candidates for WAP are obtaining services each year.⁸

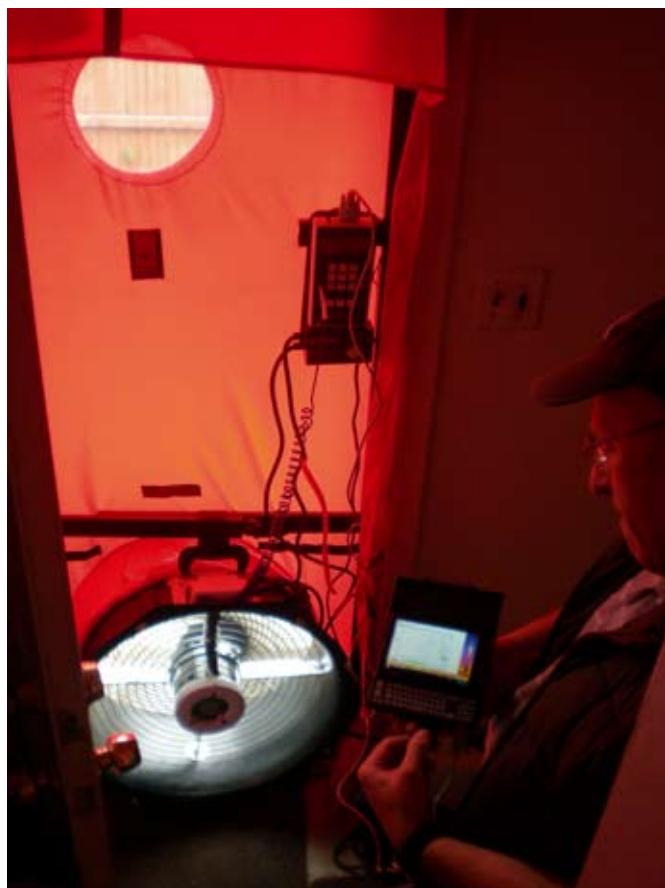
While current programs for weatherization and retrofitting often provide quality work, the scale of retrofit efforts must be greatly expanded if we want to realize all their potential. It will not be enough to simply grow existing programs, for several reasons. Most existing programs are either available only to income-eligible individuals or to individuals with sufficient up-front capital to pay for the work. Most existing programs rely on inefficient referral systems or trust customers to come to them. Most existing programs deal with residential or commercial buildings, but not both. Most existing programs don't aggregate individual building projects⁹ to take advantage of economies of scale. For these reasons and more, we need to design and implement new models for getting this work done. In addition, we must pay explicit attention to the organization and quality of retrofits and to the quality of the jobs in this industry. This is not to say that current work being done in this field is necessarily poor—just that the moment requires more and better programs, able to reach a broader market.

CITY-SCALE RETROFIT PROGRAMS ►

This paper explicitly focuses on the design and implementation of programs that have four key components: First, a way to capture the financial savings that result from energy efficiency retrofits and use them to pay for the retrofits so that programs are accessible to all, not just those eligible for state and federal subsidies or those with enough money in the bank. Second, a focus on job quality and training so that any jobs created are good jobs and provide training for a career pathway. Third, a scope that includes doing this work on a city or regional basis so that the program can achieve economies of scale and consider including both residential and commercial buildings. Fourth, a commitment to targeting the program to low-income communities, both in terms of where the work is done and who is hired to do it, which will necessarily involve outreach and education components.

Creating such programs is an exciting challenge, and one that is being taken up all over the country in different ways. We intend this paper to help anyone interested in designing, starting, or advocating for a city-scale energy efficiency retrofit program.¹⁰ There are many players who can be involved in the creation of such a program (see list in the Program Structure section). We encourage anyone embarking on this work to collaborate with these parties from the beginning.

Delivery of city-scale retrofitting activities can be achieved through permanent entities that coordinate public and private sector financing, marketing and outreach, hiring and training, and local operations. These entities could aggregate individual transactions into a meaningful economy of scale, serve as one-stop-shops, and coordinate marketing and outreach campaigns to attract broad participation. While there is no one-size-



Credit: Sammy Avedon, Town of Babylon

fits-all solution to getting energy efficiency retrofits done on a large scale, we spend the bulk of this paper discussing key elements in the design¹¹ of any such program, and suggesting tools or sources of further information (which are both hyperlinked in the text and included in the endnotes).

KEY PROGRAM ELEMENTS ►

1. Policy

Whether or not retrofit programs have a publicly run element, those designing and implementing the programs will need to know what state and local policies impact their work and what policies may need to be changed to allow the retrofit programs to succeed. There are four types of policy to pay attention to in particular: (1) policies that incent or mandate retrofits; (2) policies that enable certain financial structures to pay for retrofitting; (3) policies that govern job quality; and (4) policies that include local and targeted hire requirements. We briefly touch on these here.

There are a variety of policy drivers for energy efficiency.¹² Some states have energy efficiency goals to meet; others have committed to a certain reduction in greenhouse gas emissions. City-scale retrofit programs can help meet such goals. In addition, many state public benefits funds¹³ offer rebates or other financial incentives for making energy efficiency improvements to buildings. Some states and municipalities even have policies mandating retrofits when a property is sold.¹⁴ All such policies should be taken into account when designing a program.

Washington State's energy efficiency legislation,¹⁵ passed in May 2009, will use federal funding to provide grants and technical assistance to weatherization pilot projects throughout the state, which will create thousands of good, green-collar jobs, as workers retrofit residential and commercial buildings to make them more energy efficient. The work will also cut greenhouse gas pollution and save energy and money for low-income homeowners. Green For All is proud to have shaped this landmark green jobs bill.

A critical policy component is legislation that enables the desired financial structure for retrofit programs. Around the country, several structures have emerged (see section below on Financing for details), all of which require executive and/or legislative action at the municipal or state level. This should be one of the things that anyone wanting to start a retrofit program looks at first.

Another important component are policies covering job quality,¹⁶ such as prevailing or living wage laws, and policies requiring local hire, targeted hire, and first source hiring. These may be accomplished through project labor agreements and community benefits agreements, which are tools that can be used to ensure that the jobs created by retrofitting are quality jobs and to secure access to employment for local communities (see section below on Labor Standards and Workforce Development for details).

2. Program Structure

Any city-scale retrofit program will need to be managed by some entity, whether public or private. This may be an existing organization or governmental unit, or may need to be created. Either way, it will need to manage the day-to-day work of the retrofits, including but not limited to:

- recruiting, hiring, training, and certifying auditors, workers, and contractors to do the retrofit work
- identifying target buildings and neighborhoods and marketing to customers
- arranging financing and indentifying rebates, tax credits, and grants for eligible properties
- dispatching crews and managing job sites
- procuring materials
- managing customer accounts and the payback of loans
- staying on top of quality control and customer satisfaction

Many of these functions may be contracted out. For example, a city could handle the marketing and sign up households and then contract the work out, or a CAP agency could hire the crews but send them to a technical college for training. The goals are to first, have one entity ultimately responsible for the program, and second, to make the retrofitting experience as easy as possible for

the customer. This entity should be a one-stop-shop for anyone who wants to retrofit their home or business. (See section below on Targeting and Marketing for more on one-stop-shops.)

This entity should be designed with input from a wide range of stakeholders, including but not limited to: citizen activists, neighborhood residents, local government, CAP agencies, building trades unions, contactors, workforce development boards, training providers, community or technical colleges, community based organizations in the targeted communities, job centers, social service agencies, utilities, public benefits funds, and financial institutions.

Another key early decision will be the scope of work done. Although each building is unique in what combination of retrofit measures it needs, there is a list of commonly used measures, which includes air sealing, HVAC system leak testing and sealing, insulation, heating and cooling system upgrades, appliance upgrades, hot water system insulation and/or upgrades, lighting, and basic education about energy savings practices. These measures vary in price and in payback time (the amount of time it takes for an individual measure to save enough money to pay for itself). Depending in part on the financing mechanism used, each program will need to determine the upper limit for financing and the acceptable payback time, which will determine what measures can be done. It is important not to “cherry-pick” the measures that will pay back quickly (such as lighting upgrades), but rather to combine them with others so as to get an overall lower payback time. We recommend looking at longer rather than shorter payback time frames.

3. Financing and Repayment Mechanisms

Sources of Financing

There are multiple potential sources of funding for energy efficiency retrofits, including the American Recovery and Reinvestment Act, particularly the Weatherization Assistance Program (WAP) funds, Energy Efficiency and Conservation Block Grants (EECBG), and Qualified Energy Conservation Bonds. Other potential public sources of funding include state public benefits funds, regular WAP or EECBG funds (both these programs have yearly allocations), and other bonding instruments. Utility companies may also be a potential source of initial capitalizing funds, especially if they are involved in run-

ning the program. Finally, there may be interest from private capital providers. Energy efficiency projects provide an impressive rate of return and can be more reliable than the financial markets.

Because of the high costs of doing a city-scale retrofit program, it is not realistic to expect outright grants, such as WAP funds, to be sufficient. Programs must have in place innovative repayment mechanisms for energy efficiency improvements that leverage public funds and/or private capital, use them to establish a revolving loan fund, and don't depend on them in the long term. The next section discusses repayment mechanisms that address this issue.

Repayment Mechanisms

There are (at least) three issues in financing retrofit work: First, the need to overcome the up-front capital barrier that keeps most people, particularly low-income people, from investing in energy efficiency improvements. Second, just as the benefit from retrofitting stays with the building, so should the responsibility to pay for the work done. Third, the need for initial funding to pay for the work done, before the savings are realized over time. The discussion that follows assumes that the work done under a city-scale retrofit program will be initially paid for by a loan which is then repaid via one of the following mechanisms. Programs may be able to leverage government programs such as grants, rebates, or tax credits to reduce the amount of the loan.

All the mechanisms discussed here attach responsibility for the loan to the property rather than a person. This means that participants are only obligated to pay the charge while they are paying for other services or benefits to the improved property. When they move out, the next occupant or owner assumes the obligation. The charges are more appropriately thought of as service charges or payment for benefits received, rather than a loan. If the charge is on a utility bill, it is said to “follow the [utility] meter.” When imposed by a non-utility, the charge is said to “run with the land” or “follow the property.”

Before describing these models, we should acknowledge that there are other possible structures, such as outright grants (the Weatherization program essentially gives grants in the form of work done) and loans or revolving loan funds where the responsibility lies with a person, not the property. While these have been, and continue to be, effective in some cases, they do not meet all the goals we seek to meet, nor have they been successful in doing this

work at scale. We believe the following structures have potential to do so.

a. Utility Bill Financing

Under this system, the electric and gas utility would provide the capital to do the retrofit as a loan to the resident(s) of the building. Funding for this could come from a variety of places (see previous section on financing). The loan, including administrative costs, would be paid back out of the savings realized by the work. If designed well, this system could ensure immediate savings to the residents by setting the loan payments lower than the expected monthly savings. This is an attractive model because it ties the costs directly to the benefits—customers could see the impact of the retrofit each month on their bill—and because it would allow renters, with permission from their landlords, to participate. The default rate on utility bills is relatively low because defaults can result in disconnection of utility service. Privately owned utilities regulated by states need approval from their public service commissions to put a charge for energy efficiency services on their customers' bills.¹⁷



Credit: Sammy Avedon, Town of Babylon

The Portland Clean Energy Fund is a pilot program that will enable Portland homeowners to access low-interest, long-term financing for easy and affordable investments in energy efficiency and renewable energy improvements to their homes. Homeowners will be able to pay back the cost of the investments on their heating bill.¹⁸ Michigan Saves is a program being developed by the State that will use state and federal money to establish a revolving fund to provide loans for building audits and retrofits, which will be paid back on the customer's utility bill.¹⁹

b. Municipal Services Bill Financing

Many municipalities charge for services such as water, sewer, garbage pickup, etc. Some are considering adding energy efficiency to this list. Retrofits would be paid for up-front by a loan from the municipality to the resident or property owner (out of a revolving loan fund or via bonding), and the loan would be paid back over time on the municipal services bill. In the case of government bills, defaults typically become tax-liens and thus also have a low default rate. As part of its Green Building Capital Initiative, Seattle has developed a Residential Energy Performance Audit Pilot Program and Residential Energy Efficiency Loan Program using this mechanism.²⁰ Municipalities may need enabling legislation from the state to do this.

c. Benefit or Local Improvement Assessment Districts

An assessment district²¹ is a geographic area in which a municipality declares its intention to provide some benefit (often public improvements such as curb and gutter or sidewalks) and to charge property owners for some or all of the cost of the improvement via an assessment on their tax bill. This model could be used for energy efficiency improvements by making participation in the district voluntary. An advantage is the greater amount of capital that could be raised. A disadvantage is that renters could not participate in this type of program.

An assessment district addresses the issue of securing payback on the upfront cost of a retrofit because the assessment either goes on the tax bill or defaults to a tax lien if not paid. Creating an assessment district for energy efficiency could provide a large enough scale project to attract a contractor, negotiate a project labor agreement (PLA), and ensure a favorable purchase price on materials. The scale of an assessment district could also give the local agency leverage to negotiate a PLA that incorporates the creation of green jobs for local communities with barriers to employment. Local agencies that could form an energy efficiency assessment district include

a city, a county, or a utility district. Such agencies may again require state enabling legislation.

There are several examples of using assessment districts for energy efficiency. Berkeley FIRST²² is probably the most well known. In this case, the program is mostly designed to finance the installation of solar energy equipment, but it requires that the property be evaluated for energy efficiency and any needed work be done as a part of the program.²³ In Babylon, New York, the town established its Long Island Green Homes (LIGH) program under existing statutory authority for special assessments.²⁴ As part of LIGH, the Town passed a resolution expanding its definition of solid waste to include carbon, which, in effect, allows the Town to quantify home efficiency based on carbon emissions and to then use resources from its solid waste fund to improve energy efficiency in homes.²⁵ The Babylon model also resembles a Municipal Services Bill model, because customers are billed monthly rather than paying via their property tax bill.

4. Labor Standards and Workforce Development

Energy efficiency retrofitting presents an opportunity to provide training and to create jobs. For every \$1 million invested in energy efficiency work, 10 jobs are created directly, and additional jobs are created in related industries via multiplier effects.²⁶ If implemented well, city-scale retrofit programs can generate jobs for local workers. They can also establish mechanisms for workers to enter the construction field and obtain good, lasting jobs. Good jobs provide good wages, benefits, and working conditions. Good jobs also provide opportunities for career advancement. In order to fully realize this potential, city-scale retrofit programs will need to consciously engage in workforce development and adopt practices to provide good jobs. There are two important components to pay attention to: first, job quality and labor standards, and second, training programs and access to them.

Job Quality and Labor Standards

It is critical that city-scale retrofit programs set high wage and benefits standards. Living wages are important because they help move people up and bring people back into the middle class. Projects receiving federal funds²⁷ are generally subject to the Davis-Bacon Act²⁸

on prevailing wage, under which wage and fringe benefit rates are determined by the US Department of Labor. Prevailing wage requirements are designed to ensure that public investment in development results in high-quality workmanship and contributes to the economic well-being of the community by investing in its workforce.²⁹ However, it is unclear what job classifications apply to weatherization work (especially residential work), and both job classifications and wages in this sector change from county to county. Also, the prevailing wage in weatherization is highly variable, ranging from \$6.50 per hour in some places to \$50 per hour in others. In addition, states and municipalities may have living wage laws that apply. Regardless of the law, however, we encourage all retrofit programs to pay a living wage³⁰ and to provide benefits such as paid sick leave and health insurance to workers. We believe that such benefits assist in retention and worker morale, which result in higher quality work. In addition, money invested in workers has a positive ripple effect throughout the community and the local economy.

Training Programs and Access to Them

Industry partnerships have a long and successful track record coordinating supply and demand in local labor markets.³¹ These partnerships bring together employers, unions, community and technical colleges, community organizations, and workforce development agencies to assess the current state of the workforce, including the availability of jobs, current levels of training, and availability of training programs. Having this information is critical to determining what kind of training programs are needed or what efforts are required to make existing training programs more accessible. This group may also set standards for any credentials that may be desired or required, or work with existing standards from apprenticeship programs or technical colleges. Retrofit programs should not reinvent the training wheel but, rather, should build on established training pathways in state and local workforce systems, including community and technical colleges; union apprenticeship and apprenticeship preparation programs; and community-based training providers.

In order to create pathways out of poverty, retrofit programs should include targeted hiring from disadvantaged communities—for example, by setting aside a subset of total work hours for apprentices³² and workers with barriers to employment³³—and think well about the kind of training and support that is needed for these workers. Many communities are served by community-based, non-profit organizations that provide life skills and job

readiness training. These can be invaluable partners for organizations wishing to provide the first step on the pathway out of poverty. It's important to note that their services may be required after an individual is hired, not just in preparation for obtaining the job. In addition, it's important to keep a focus on training and advancement, so that all workers have an opportunity to learn new skills and advance to better-paid positions, or to obtain a higher-skilled job in another organization.

Setting local hiring targets or using a first-source local hire program is a way to ensure that a city-scale energy efficiency retrofit program is available to local workers, particularly those in targeted neighborhoods. For example, a local hire can be defined as a community area resident (one who is a city resident and who lives in the project impact area) or a local resident (one who is a city resident and who lives in a high unemployment zip code).³⁴ This is one way to capture the benefit of retrofit programs for low-income communities (the other being providing savings on energy bills). Requiring that a certain portion of the people hired to work on retrofit projects are local residents will also generate a range of jobs in local home services industries, increase the local tax base, indirectly support other jobs, and help keep money in the local economy.

Unions

Another important consideration in setting up a city-scale retrofit program is the involvement of unions. Traditionally, union contractors have not been involved in WAP work or in residential retrofits because the diffuse nature of the work precludes reaching economies of scale that can support union wages. However, in several cities, the Laborers International Union³⁵ are finding ways to enter this market. Anyone organizing a retrofit program should be in touch with the local building trades unions. One technique that is being considered to make the participation of union contractors possible is the aggregation of work, in which an organization would “bundle” homes in a neighborhood to receive services at the same time. The aggregation of retrofitting work will achieve economies of scale, thereby making higher wages and benefits more cost-effective, regardless of whether or not the contractors are unionized. It is also the *efficient* way to run an energy retrofit program, making it easier to conduct the marketing and outreach that are essential to the success of such programs.

Achieving economies of scale also opens up opportunities for labor negotiation. In particular, Project Labor Agreements (PLAs) may be a key tool to help clear up job classifications, set workforce standards and targets, integrate other best practices outlined above, and apply the agreement to a whole project area. These agreements also put a lot of people to work at once. They may provide a way for building trades to collaborate on projects. The Los Angeles Construction Careers Policy, which includes a Project Labor Agreement and a local hire element, is a key example of successful labor negotiation that led to guaranteed standards for workers on the job and hiring from local communities.³⁶

5. Targeting and Marketing

Energy bills represent a much larger burden for low-income individuals and families as a proportion of their household income than they do to the average household. Low-income households spend 14 percent of their income for energy, compared with 3.5 percent by other American households.³⁷ Low-income people also often live in the least efficient housing stock. Based on these two facts alone, low-income households and communities need, and will benefit most from, energy efficiency improvements that alleviate their high energy cost burdens. Providing energy efficiency services to some of society's neediest citizens also stimulates local economic development (because savings are quickly spent locally on other necessities), improves health and safety by eliminating energy-related hazards, and lays the groundwork for self-sufficiency and long-term energy independence.³⁸ Targeting retrofit services to low-income neighborhoods makes sense from a greenhouse gas reduction perspective as well as from a social justice perspective. However, low-income households are also targeted by the weatherization program, so it will be important to coordinate or partner with the local WAP provider. It's also important to think outside the “residential box.” Businesses also can benefit from energy efficiency improvements, and money saved may enable the preservation of jobs.

Regardless of the target market, any retrofit program will need to pay attention to marketing and outreach. Energy efficiency, while important, is often not at the top of people's minds, and they often don't understand all of the elements of doing a retrofit: efficiency measures, cost, payback, financing, eligibility for various funding sources,

who is qualified to do the work, etc. Thus, any retrofit program faces several marketing issues: it must sell the concept of energy efficiency and the financial savings possible, and at the same time reassure potential customers about the comprehensive nature of its services—the “one-stop-shop” concept. In Portland, Oregon, an [Energy Advocate](#)³⁹ will explain recommended measures and financing options to homeowners and help them through the installation process.

In addition, property owners need to understand how energy efficiency can increase the value of their building. To this end, developing some sort of energy savings rating that can be advertised when renting or selling a building could be useful. Programs are best served by unifying around a system that effectively rates retrofits through a simple uniform process that financial institutions, residents, and other stakeholders agree upon and understand. Finally, it may be fruitful to enter into partnerships with community-based groups, municipalities, the state public benefits fund, or other partners to market a retrofit program.

6. Quality Control and Evaluation

Last, but certainly not least, retrofit programs must be prepared to gather baseline data and track certain metrics over time. Measures like energy saved, money saved, payback rate, and greenhouse gas emissions avoided may be complemented by number of jobs created, number of individuals trained, loan default rate, number of buildings or percentage of neighborhood retrofitted, and the like.

These data will not only help improve operations; they will assist in making the case for the program.

In addition, paying attention to quality control and customer satisfaction will be critical to the success of any program. To this end, programs should pay close attention to training for employees and contractors and to the quality of materials used. On the first, in addition to high quality training (see section on Workforce Development and Training above), programs may want to look into requiring the appropriate certification for auditors, and making sure that the work and the evaluation of the work is not done by the same contractor. On the second, programs should examine their supply chain and invest in high-quality materials that will protect worker and customer health and avoid indoor air quality problems. For example, using insulation made from recycled cotton or newspaper instead of fiberglass, or soy-based spray foams instead of petroleum-based spray insulation, is just as effective and much better for worker health, and the health and safety of low income (or any) housing. This may mean that programs cannot adopt a lowest-cost bid standard, as WAP providers are currently required to do, but rather should practice best-value contracting.⁴⁰



*Two-part foam insulation.
Credit: Alex Moore, www.waptac.com*

CONCLUSION ►

We have tried to lay out here the major components that we believe are necessary in the establishment of any city-scale retrofit program. We feel it is critical that retrofit programs be done at the city scale. Proceeding at the current pace of weatherization and retrofitting will not achieve the greenhouse gas reductions needed to slow the progress of global warming, nor will it achieve the financial savings and job creation benefits we desire. It is also critical that these programs be designed to be financially self-sustaining—that is, that they allow customers to pay for the cost of retrofitting out of the energy savings

achieved. Finally, we believe there must be explicit workforce development and social justice components to these programs for them to achieve their full potential.

As organizations, Green For All and COWS are committed to providing advice and assistance to individuals or groups seeking to establish such programs. We encourage anyone interested to follow up on the resources referenced in this paper, and to connect with the [Efficiency Cities Network](#)⁴¹ and the [Retrofit America’s Cities Community of Practice](#)⁴² for more information and support.

ENDNOTES ►

1. TIME, “Heroes of the Environment 2008: Van Jones,” www.time.com/time/specials/packages/article/0,28804,1841778_1841781_1841811,00.html
2. Environmental Information Administration, EIA Annual Energy Outlook 2008.
3. Energy Information Administration, Assumptions to the Annual Energy Outlook 2008.
4. Jon Creyts et al, McKinsey & Company, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?* (2007) at 34.
5. Center for American Progress, Center for Working Families, *Green Jobs/Green Homes New York: Expanding home energy efficiency and creating good jobs in a clean energy economy* (2009) at 5, 16; see also Green For All, Green Collar Jobs Overview, www.greenforall.org/resources/green-collar-jobs-overview.
6. John Millhone, Carnegie Endowment for International Peace, “Weatherization—A Test Case” (2009) at 3.
7. U.S. Department of Energy Efficiency and Renewable Energy, Weatherization Assistance Program, <http://apps1.eere.energy.gov/weatherization>.
8. U.S. Department of Energy, Energy Efficiency and Renewable Energy, “Weatherization Assistance Program—The American Recovery and Reinvestment Act of 2009” at 1, available at http://apps1.eere.energy.gov/weatherization/pdfs/wx_recovery_fact_sheet.pdf. About 38 million households are currently eligible for WAP services. About 15 million of all eligible households are good candidates for weatherization. The average assistance level per dwelling unit is capped at \$6,500. Even with the \$5 billion provided by the Recovery Act, WAP would only be able to service about 770,000 dwelling units. *Id.*
9. The Green Jobs/Green Homes Campaign proposed by the Center for Working Families in New York is an example of such aggregation. The program aggregates jobs into bundles of houses to lower transaction costs and allow higher-skilled workers to be deployed over several projects. See Center for Working Families, “Policy Brief: Green Jobs/Green Homes”, available at www.centerforworking-families.info/cleanenergygreenjobs/CWF%20GJGH%20Policy%20Brief.pdf
10. We use “city-scale” to mean programs that intend to cover, or at least have the potential to cover (through cost-recovery), most or all buildings in a metropolitan area.
11. See Joel Rogers, “Seizing the Opportunity (for Climate, Jobs, and Equity) in Building Energy Efficiency (2007), available at <http://cows.org/pdf/rp-seizing-07.pdf> for more discussion of program design.
12. See Apollo Alliance, “New Energy for Cities” (2006), at 13, available at http://cows.org/pdf/rp-new_energy_cities.pdf.
13. See Database of State Incentives for Renewables & Efficiency, <http://www.dsireusa.org/Index.cfm?RE=0&EE=1>.
14. For example, see City of Berkeley Residential and Commercial Energy Conservation Ordinances (CECO/RECO), available at <http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=20068>.
15. See Green For All, “Historic green jobs bill signed in Washington state,” www.greenforall.org/blog/historic-green-jobs-bill-signed-in-washington-state.
16. For examples, see Apollo Alliance, “New Energy for Cities” (2006) at 46, available at http://cows.org/pdf/rp-new_energy_cities.pdf; Phillip Mattera, “High Road or Low Road? Job Quality in the New Green Economy,” available at <http://apolloalliance.org/downloads/gifgreenjobsrpt.pdf>; and Pablo Mitnik, “Cities and Jobs: Local Strategies for Improving Job Quality and Access,” available at http://mayorsinnovation.org/pdf/article1_DW.pdf.
17. A utility in Kansas, Midwest Energy, successfully filed such a tariff for its How\$mart Tariff. The tariff, partially quoted below, explains six elements of the How\$mart program charge.
 1. No up-front investment is required by participating Customers. The initial cost of approved efficiency measures will be paid by the Company.
 2. The How\$mart™ repayment obligation shall be assigned to the premises and will survive changes in ownership and/or tenancy.
 3. How\$mart™ program costs shall be recovered through a monthly line item How\$mart™ Project Charge on the utility bill.
 4. The How\$mart™ Project Charge shall be treated the same as Company’s charges for electric and/or natural gas service....
 5. The How\$mart™ Project Charge must be less than ninety (90) percent of the estimate monthly average savings associated with the investment.
 6. Company will be responsible for estimating resource savings and developing a Conservation Plan upon which the How\$mart™ Project Charge will be based.
18. See City of Portland Bureau of Planning and Sustainability, “Portland Clean Energy Fund: Frequently Asked Questions,” available at <http://www.portlandonline.com/osd/index.cfm?a=242544&c=50152>; and City of Portland Bureau of Planning and Sustainability, “Portland Clean Energy Fund,” www.portlandonline.com/osd/index.cfm?c=50152&.
19. Michigan Public Service Commission, Michigan Saves, available at http://michigan.gov/mpsc/0,1607,7-159-16377_47107_51666--,00.html.
20. The City of Seattle has launched a Residential Energy Performance Audit Pilot Program and Residential Energy Efficiency Loan Program. The residential home energy audit pilot will provide 5,000 audits in 18 months at a cost of \$95 per participant, using an Energy Performance Score framework to determine an “energy MPG” for each residential building. The residential energy efficiency loan program will establish a revolving loan program to catalyze energy efficiency upgrades. It will provide loans ranging from \$8,000 to \$20,000 primarily to homeowners to invest in upgrading lighting, furnaces, water heaters, and windows, among other items. The program will use a tiered payment structure with a greater subsidy provided to lowest-income borrowers. The city hopes to establish a municipal bill repayment system, but does not yet have the authority to do so. These programs are elements within the Seattle Green Building Capital Initiative. See www.seattle.gov/environment/GBtaskforce.htm.

21. See Sacramento Regional Flood Control Agency, Assessments, www.safca.org/assessments/whatisassessment.html.
 22. See City of Berkeley, Energy & Sustainable Development Ordinances and Resolutions, www.ci.berkeley.ca.us/ContentDisplay.aspx?id=15538.
 23. California's BerkeleyFIRST (FIRST stands for "Financing Initiative for Renewable and Solar Technology.") program covers the cost of installing solar-energy systems and allows participants to pay back their cost through a voluntary assessment. As one of California's Charter Cities, Berkeley did not need to rely on specific enabling legislation to create an assessment district. See www.berkeleyfirst.renewfund.com.
- Research from Vote Solar has suggested that other states do need to change their legislation to create their own CityFIRST programs. Colorado has been the quickest to move. In 2008, that state amended its laws to give Colorado cities authority to create special energy districts (Local Improvement Districts, LIDs) such as the district Berkeley established. Under Colorado House Bill 1350, property owners can choose to opt-in to the district and, by so doing, agree to pay the cost of the energy installations or improvements over a 15 or 20 year period.
24. The Long Island Green Homes (LIGH) project in Babylon, NY is a home retrofit plan, part of the Town's green building initiative and programs to combat global warming. As part of LIGH, the Town passed a resolution expanding its definition of solid waste to include carbon, which, in effect, allows the Town to quantify home efficiency based on carbon emissions, and to then use resources from its solid waste fund to improve energy efficiency in homes. This type of financing is structured as a "benefit assessment," meaning that the municipality provides a specific improvement on a parcel of property for a public purpose, assessing the cost of the benefit against the property. Under New York's Real Property Tax Law §102(15), special assessments are charges "imposed upon benefited real property in proportion to the benefit received by such property to defray the cost . . . of a special district improvement or service or of a special improvement or service"
- Following a home performance evaluation done by a licensed, private contractor to determine a resident's options for improving their home energy efficiency, the resident chooses the work plan that best fits their needs and then receives a benefit assessment from the Town to pay for the work, which is done by a licensed, private contractor. The Town provides for energy efficiency improvements costing up to \$12,000 per home, and the homeowner pays for the work through a monthly benefit assessment fee, designed to be less than the monthly energy bill savings the resident obtains based on the improvements. To finance the costs of running LIGH, a 3 percent administrative fee is built into residents' monthly payments. The benefits and costs of the program stay with the property, so participants will not continue paying for the retrofits after they decide to sell their home, even if the work has not yet been paid for in full. The design of LIGH means that homeowners will be able to make energy efficiency improvements to their homes without taking on new debt. As a result, each home will be able to reduce its energy use by 20-40 percent, and thereby lower its energy costs by an average of \$1,160 per year. Because the cost to consumers is designed to be less than their energy savings each month resulting from the retrofits, the cost barriers that typically prevent low- and middle-income households from undertaking residential retrofits do not exist. See www.ligreenhomes.com.
25. April Jimenez, "Babylon Green Homes Fight Greenhouse Gases," Green Living Babylon (Aug. 13, 2008), available at www.townof-babylon.com/uploads/pdf/files/Long%20Island%20Press%20LIGH.pdf.
 26. Sarah White & Jason Walsh, *Greener Pathways: Jobs and Workforce Development in the Clean Energy Economy* (2008), at 15.
 27. All projects funded with ARRA funds must comply with the Davis-Bacon Act and pay no less than prevailing wages to laborers and mechanics employed on the projects. See Section 1606, available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h1enr.pdf.
 28. 40 U.S.C.A. §§ 276a to 276a-5.
 29. For more information on prevailing wages, see Partnership for Working Families, "Prevailing Wage," available at www.communitybenefits.org/article.php?id=1197#requirements.
 30. For more information on living wages, see Partnership for Working Families, "Living Wage", available at www.communitybenefits.org/article.php?list=type&type=96&printsafe=1.
 31. Jobs With a Future & Center on Wisconsin Strategy, *How Workers Win: Building Workplace Skills Through the Industry Partnerships Project* (2005), available at <http://cows.org/pdf/rp-workerswin.pdf>.
 32. For more information on policies that require training funding and apprenticeship utilization, see Partnership for Working Families, "Policies that Require Training and Apprenticeship Utilization," available at www.communitybenefits.org/article.php?id=1197#utilization.
 33. For more information on project labor agreements that include local hiring requirements, including set asides for workers with barriers to employment, see Partnership for Working Families, "Project Labor Agreements that Include Local Hiring Requirements," available at www.communitybenefits.org/article.php?id=1197#pla. For example, in the Los Angeles Construction Careers Policy, workers with barriers to employment are referred to as disadvantaged workers. A disadvantaged worker is defined as a city resident who has a household income less than 50 percent of average medium income or faces one of the following barriers to employment: homelessness, chronic unemployment, lack of a GED or high school diploma, criminal record or other involvement with the criminal justice system, serving as a custodial single parent, or receiving public assistance.
 34. For example, see definitions of community area resident and local resident in the Los Angeles Construction Careers Policy, available at www.communitybenefits.org/downloads/CRA%20Construction%20Careers%20Policy.pdf.
 35. See Green For All, "Newark Green Jobs Pilot Program," www.greenforall.org/what-we-do/building-a-movement/community-of-practice/case-studies/newark-green-jobs-training.
 36. For more information on project labor agreements that include local hiring requirements, see Partnership for Working Families, "Project Labor Agreements that Include Local Hiring Requirements," available at www.communitybenefits.org/article.php?id=1197#pla.
 37. John Millhone, Carnegie Endowment for International Peace, "Weatherization—A Test Case" (2009), at 3.
 38. *Id.*
 39. See "Portland Clean Energy Fund, Frequently Asked Questions," available at www.portlandonline.com/osd/index.cfm?a=242544&c=50152.
 40. See Apollo Alliance, "New Energy for States" (2006) at 39, available at http://cows.org/pdf/rp-new_energy_states.pdf.
 41. See Efficiency Cities Network, www.energycities.us.
 42. See Retrofit America's Cities, www.greenforall.org/community-of-practice.

Green For All is a national organization dedicated to improving the lives of all Americans through a clean energy economy. The organization works in collaboration with the business, government, labor, and grassroots communities to create and implement programs that increase quality jobs and opportunities in green industry—all while holding the most vulnerable people at the center of its agenda.

The Center on Wisconsin Strategy (COWS) is a national “think and do” tank focused on high-road economic development—a competitive market economy of shared prosperity, environmental sustainability, and capable democratic government.

As organizations, Green For All and COWS are committed to providing advice and assistance to individuals or groups seeking to establish city-scale retrofit programs. We encourage anyone interested to follow up on the resources referenced in this paper, and to connect with the [Efficiency Cities Network](#) and the [Retrofit America’s Cities Community of Practice](#) for more information and support.

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CREDITS

Cover image: Amanda Farria is installing radiant barrier, which will help reduce attic temperatures by 30 degrees in the summer, thereby saving money on air conditioning bills. Courtesy of Alliance for Affordable Energy.

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