Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings

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Contents

Executive Summary

In the hunt for energy savings, multifamily buildings are widely seen by energy efficiency program administrators as hard to reach. A number of challenges face multifamily building owners in undertaking energy efficiency in their properties, and program administrators in designing and implementing effective multifamily programs. Due to these challenges, multifamily households are often underserved by the energy efficiency programs they help to fund. A number of leading programs from across the country, however, are demonstrating that these challenges can be overcome, and that there is significant opportunity for cost-effective energy savings from the multifamily sector. This report recommends 10 best practices for designing and implementing effective multifamily programs and includes examples from leading programs. The results from these programs provide a snapshot of the possibilities for energy savings and reaching new customers.

BEST PRACTICES FOR MULTIFAMILY ENERGY EFFICIENCY PROGRAMS

The best practices we recommend provide strategies that program administrators can use to help building owners, managers, and developers overcome barriers to energy efficiency. These barriers include split incentives, limited financial and technical resources, uncertainty surrounding the potential benefits, and the time and complexity of tapping into energy efficiency programs. The best practices also help to confront some of the challenges program administrators face in designing programs that specifically target multifamily buildings. These challenges include integrating programs across commercial and residential portfolios as well as electric, gas, and water utilities, cost-effectiveness requirements, minimizing administrative costs, and encouraging owners to undertake projects with deep savings.

Case studies of programs currently utilizing these best practices are provided. The examples are not meant to be an exhaustive list but are used to illustrate how programs are incorporating one or more of the best practices.

The best practices and examples of programs using them are:

1. *Provide a one-stop shop for program services.* By providing building owners with a single point of contact throughout program participation (either at the utility or a partner organization), one-stop-shop programs can simplify the steps involved in each energy efficiency project and streamline any technical assistance that building owners may require.

   Examples
   - CNT Energy and Community Investment Corporation — Energy Savers
   - Low-Income Energy Affordability Network (LEAN) and the Massachusetts Utilities — Low-Income Multifamily Retrofit Program

2. *Incorporate on-bill repayment or low-cost financing.* Limiting or eliminating the upfront cost to building owners can enable them to undertake more substantial energy efficiency projects and to overcome traditional barriers related to the competition for scarce funding for capital projects. Low-interest financing and on-bill repayment can help owners spread out over time the cost of energy efficiency projects.

Example

- Public Service Electric and Gas (PSE&G) Residential Multi-Family Program

3. *Integrate direct installation and rebate programs.* Direct installation programs which offer no-cost energy efficiency measures can provide an opportunity to connect with building owners, complete an onsite energy assessment, and encourage owners to take advantage of rebates for more extensive improvements such as HVAC upgrades, weatherization, common area lighting retrofits, and other building shell improvements. The dual approach also allows programs to address both common areas and residential units.

   Examples

   - Puget Sound Energy Existing Multifamily Building Program
   - ComEd, Nicor Gas, North Shore Gas, and Peoples Gas Multifamily Comprehensive Energy Efficiency Program

4. *Streamline rebates and incentivize in-unit measures to overcome split incentives.* Program administrators should combine both commercial and residential rebates into one easy process. They should also provide incentives to building owners that are sufficient to encourage them to invest in high efficiency products in their tenants' spaces, even if owners do not benefit directly from the energy savings.

   Examples

   - Austin Energy Power Saver Multifamily Rebates
   - Energy Trust of Oregon Existing Multifamily Program

5. *Coordinate programs across electric, gas, and water utilities.* For owners who want to undertake comprehensive retrofits or just participate in a direct installation program, it is a burden to participate in separate programs for each utility. Coordinating programs can simplify the process for building owners, allow them to benefit from greater overall savings, and minimize the disruption to tenants.

   Examples

   - ComEd, Nicor Gas, North Shore Gas, and Peoples Gas Multifamily Comprehensive Energy Efficiency Program
   - Puget Sound Energy and the Saving Water Partnership
   - Austin Energy and Austin Water

6. *Provide escalating incentives for achieving greater savings levels.* In order to encourage building owners to take on more extensive projects (likely more expensive and time consuming), program administrators can require a significant but achievable level of energy savings and offer escalating incentives based on the projected and realized savings for a project.

Examples

- New York State Energy Research and Development Authority (NYSERDA) Multifamily Performance Program
- Sacramento Municipal Utility District (SMUD) Multifamily Home Performance Program

7. *Serve both low-income and market-rate multifamily households.* Either through programs designed specifically for low-income housing or by providing extra services and incentives for low-income-qualified buildings, program administrators should account for the unique challenges associated with low-income housing.

   Examples

   - Efficiency Vermont Market-Rate and Low Income Multifamily Retrofit Programs
   - CenterPoint Energy Low-Income Multifamily Bonus Rebates

8. *Align utility and housing finance programs.* Incorporating utility customer funding at the time of such affordable housing refinance and redevelopment can yield deeper, more comprehensive energy efficiency improvements. These extensive renovations involve replacing outdated building systems, and utility customer funds can be used to help cover the incremental cost of installing more efficient equipment than would otherwise be required.

   Example

   - District of Columbia Sustainable Energy Utility (DC SEU) Low-Income Comprehensive Retrofit Program

9. *Partner with the local multifamily housing industry.* While the multifamily housing sector is complex, it is relatively well organized, with robust local networks of property managers and owners. Taking advantage of these networks to create partnerships with local associations of multifamily owners, managers, and contractors can help program administrators identify and connect directly with potential program participants.

   Examples

   - Austin Energy and the Austin Apartment Association
   - Massachusetts Low Income Energy Affordability Network (LEAN)
   - Efficiency Vermont and the Vermont Housing and Conservation Board

10. *Offer multiple pathways for participation to reach more buildings.* Not every building owner will be ready, financially or otherwise, to take on a substantial retrofit project. By offering multiple pathways to participation, programs can reach and build relationships with building owners who are interested in faster, less extensive projects.

Examples

- ComEd, Nicor Gas, North Shore Gas, and Peoples Gas
- DC SEU
- Efficiency Vermont
- Energy Trust of Oregon
- NYSERDA
- Puget Sound Energy
- SMUD

RESULTS FROM LEADING PROGRAMS

The programs featured throughout this report demonstrate that well-designed multifamily energy efficiency programs that utilize the best practices recommended above can deliver significant cost-effective savings. The following table summarizes the savings per apartment unit for each of the programs, as well as the levelized cost of saved energy and cost-effectiveness testing results. [1]

Program	Annual budget	Annual participation	Annual savings per unit	Levelized cost of saved energy ($ per kWh and therm)[1]	Benefit-cost ratios[2]
CNT Energy Energy Savers	$2,505,952	Units: 4,126 Projects: 110	650 kWh 240 therms	Electric: $0.10 Gas: $1.00	TRC: 2.10 gas
Austin Energy Power Saver Multifamily Rebates	$1,600,000	Units: 18,213	433 kWh	Electric: $.0732	TRC: 1.3 UCT: 2.18
Energy Trust of Oregon Existing Multifamily Program	$6,046,110	Units: 21,765 Sites: 1,080	731 kWh 4 therms	Electric: $0.025 Gas: $0.412	UCT: 2.7 SCT: 4.7
LEAN Massachusetts Low-Income Multi Family Energy Retrofit[3]	$38,372,271	Units: 6,715(gas), 14,535 (electric)	165 therms 1209 kWh	Electric: $.145 Gas: $1.24	TRC: 1.73 electric, 1.43 gas
NYSERDA Multifamily Performance Program	$49,099,921[4]	Units: 28,429 Buildings: 411 Projects: 172	526 kWh 69 therms (2007-2012)	Electric: $.039[5]	S.I.R: 1.8
Puget Sound Energy Existing Multifamily Retrofit Program	$10,296,500	Units: 39,489	581 kWh 2 therms	Electric: $.037 Gas: $.36[7]	TRC: 2.42 electric, .91 gas UCT: 2.96 electric, 2.63 gas

[1]The levelized cost of saved energy represents the costs to the program administrator or utility of acquiring the lifetime energy savings resulting from the program. It is calculated by discounting the costs of the program over the lifetime of the savings. Discount rates vary based on state regulatory guidelines.

Program	Annual budget	Annual participation	Annual savings per unit	Levelized cost of saved energy ($ per kWh and therm)[1]	Benefit-cost ratios[2]
Public Service Electric and Gas (PSE&G) Residential Multi-Family	$14,042,457[6]	Units: 2,295 Buildings: 79 Projects: 11	810 kWh 153 terms	Electric: Approx. $.03 to $.05 per	UCT: 1.39 TRC: 2.9
Efficiency Vermont Multifamily Program for New Construction & Major Rehabilitation	$1,940,381	Units: 450 comprehensive services + additional rebates	Not available	Electric: $.07	TRC: 2.79
Sacramento Municipal Utility District (SMUD) Multifamily Home Performance Program	$1,700,000	Units: 1,200 (goal)	1,980 kWh 42 therms per unit (2009-2012)	Electric: $.08	Not available
New and Notable Programs					
CenterPoint Energy Low-Income Multifamily rebates	$287,250	Not yet available	Not yet available	Gas: $0.16[8]	UTC: 4.56 SCT: 4.70 PCT: 6.70
ComEd, Nicor Gas, and People's Gas Multifamily Comprehensive Energy Efficiency Program	$19,000,000	Units: 88,750 (goal) Projects: 900 (goal)	437 kWh (goal) 101 therms (goal)	Not available	Not available
DC SEU Low-Income Multifamily Comprehensive	$1,200,000	Units: 348 Projects: 5	2,222 kWh 33 therms	Not available	SCT: 1.88

Notes and sources: All figures are as reported through information requests submitted by each of the programs unless noted. [1] Levelized costs are as reported unless noted. [2]Benefit-cost ratios are determined using standard testing methods including the Total Resource Cost Test (TRC), Utility Cost Test (UCT), Societal Cost Test (SCT), and Savings to Investment Ratios (SIR). A value of 1 means the program costs and benefits, which are defined differently depending on the methodology used, are equal.[3] Participation, savings and benefit-cost ratios for the Massachusetts Low-Income Retrofit Program are reported statewide to the Massachusetts Energy Efficiency Advisory Committee (MA EEAC 2013). Levelized cost of saved energy was calculated using reported annual savings, utility costs, and average measure life and an assumed real discount rate of 5%. [4] Eight year NYSERDA program budget annualized. [5]Levelized cost of saved energy for System Benefit Charge funded activities only using a 5.5% discount rate as reported in NYSERDA 2012, Table 2-12. [6]Actual PSE&G 2012 expenditure as reported in Nowak et al 2013. [7]Levelized cost of saved energy calculated using PSE's reported savings, utility costs, and estimated average measure life (PSE 2013) and an assumed real discount rate of 5%. [8]CenterPoint Energy's levelized cost of saved energy calculated using projected savings, utility costs, and average measure life and an assumed real discount rate of 5%.

The opportunity for energy savings in the more than 20 million multifamily units nationwide is tremendous, making apartment buildings well worth the hunt for energy efficiency programs. The best practices recommended here and the programs that are utilizing them can help program administrators get on track to reach this large and growing sector.

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Introduction

The benefits of energy efficiency enjoyed by an increasing number of single-family households remain out of reach for many of the more than 23 million American households living in apartments and condominiums in multifamily buildings. Multifamily buildings can be more challenging to serve than large commercial buildings and single-family homes. As a result, they are often underserved by energy efficiency programs funded by utility customers, one of the most significant sources of energy efficiency investment nationwide.

The American Council for an Energy-Efficient Economy (ACEEE) recently assessed energy efficiency programs targeting multifamily buildings in the 50 metropolitan areas with the largest number of multifamily households. The survey found that 20 of the areas were not served by a multifamily energy efficiency program (Johnson & Mackres 2013). In all but 3 of the 30 areas with programs, the share of spending on multifamily programs trailed behind its share of the housing market.

Multifamily households are underserved by energy efficiency programs despite the significant potential for energy savings in multifamily buildings. The Benningfield Group (2009) has estimated that energy efficiency of multifamily buildings could be cost effectively improved by 30% by 2020, resulting in savings to multifamily households and property owners of $9 billion a year.

A number of challenges associated with reaching multifamily buildings explain why the energy efficiency program administrators often overlook or underserve the sector. These challenges include the financial barriers and limited time and technical capacity that building owners confront when deciding whether or not to invest in energy efficiency. Owners of assisted housing receiving funding from federal, state, and local programs to support affordable housing also face unique regulatory challenges. In addition, multifamily buildings differ from more familiar commercial and single-family residential buildings in terms of building stock, ownership, split incentives, and strategies to save energy

A number of utilities and program administrators are demonstrating that high performing programs designed to reach the multifamily sector can succeed in reaching more customers and achieving significant energy savings. This report expands on ACEEE's 2013 review of exemplary energy efficiency programs, *Leaders of the Pack,* which recognized three multifamily programs. The current report highlights additional programs using a variety of strategies to serve multifamily building owners and their tenants. The programs we highlight are by no means a comprehensive list of effective multifamily programs. Rather, we selected them to highlight a variety of approaches and diverse program administration models. Although the focus of this paper is on programs serving the existing multifamily building market, many of the concepts apply to new construction programs as well.

The report provides a summary of the challenges that effective programs must overcome to serve the multifamily sector and recommends ten best practices for the design and implementation of programs. We provide case studies of multifamily programs that have incorporated each of these best practices in an appendix. The concluding section of the

report offers several recommendations for policies that will help scale up across the country programs like the ones featured here.

Multifamily Program Models

Energy efficiency program administrators typically define the multifamily sector as including residential buildings with five or more units.[2] Program administrators usually assign multifamily buildings to either their residential or commercial program portfolios, or both. Therefore it is often the case from the program perspective that multifamily buildings have a dual identity. Due to their size, ownership, and the nature of their centralized systems and equipment, multifamily buildings are often primarily served by commercial building programs. On the other hand, measures installed in residential units, especially in separately metered properties, are often defined as residential for budget and reporting purposes.

In the previous ACEEE assessment of multifamily programs (Johnson & Mackres 2013), we identified three general types of programs or levels of services for the multifamily sector:

1. Direct installation of no-cost energy efficiency measures such as lighting, weather-stripping, and faucet aerators
2. Equipment and product rebates or incentives for the purchase and installation of energy-efficient equipment such as HVAC systems, appliances, insulation, and water heating systems[3]
3. Whole building programs for new construction and comprehensive retrofits—often involving additional work beyond energy upgrades—that provide incentives for all cost-effective energy efficiency measures identified by energy audits or modeling

Low-income-qualified programs, which can use one or more of the approaches above, restrict participation based on the income qualifications of a building's tenants and often provide higher incentives than non-income-qualified programs. These include programs aimed at both publicly and privately owned low-income housing.

The focus of this report is on current program models and the best practices that are driving their success. Not included here are policy drivers that can help support the market and demand for energy-efficient multifamily housing. Emerging local building benchmarking and disclosure polices require commercial and multifamily building owners to measure and report the energy performance of their buildings. These policies can serve as a catalyst for scaling up programs as owners and their potential tenants are able to evaluate the relative efficiency of their buildings. Six cities (Austin, Boston, Chicago, Washington, New York, and Seattle) currently have benchmarking and disclosure polices for large multifamily buildings (Institute for Market Transformation 2013). Programs that support voluntary building energy benchmarking, for example by incorporating benchmarking incentives or technical

[2]In some service areas, multifamily programs may include buildings with 3 or 4 units, reflecting the characteristics of the local multifamily building stock.

[3] These incentives can be awarded on a prescriptive basis (a pre-approved list of measures and rebates) or on a custom basis where the rebate level is calculated based on the performance of the equipment or system.

support, can also help encourage building owners to evaluate their portfolios and better understand the opportunity to reduce their energy costs.

Also outside the scope of this report are emerging pay-for-performance programs that involve energy service companies in the delivery of utility energy efficiency programs. Rather than providing incentives to the building owner for undertaking energy efficiency projects, the pay-for-performance programs that have been piloted in California and New Jersey compensate energy service providers based on the actual savings they achieve through a building retrofit. The energy service providers in turn complete the retrofits at little or no cost to the building owners. This model encourages comprehensiveness, as any energy efficiency measure with demonstrated savings can be installed. Another program area with considerable potential involves behavioral programs that target residents and operations and maintenance staff to save energy through behavior change and awareness. Behavioral approaches can complement programs such as those featured here that support equipment upgrades and capital improvements.

Challenges

Several well established challenges are associated with delivering energy efficiency to the multifamily housing sector. The key challenges for building owners and program administrators that influence program design and implementation are summarized below. A series of joint papers by CNT Energy and ACEEE on the opportunity for partnerships between the utilities and multifamily housing community explores each of these challenges and the unique characteristics of the multifamily housing market in more detail (McKibbin et al. 2012, McKibbin 2013). The best practices we recommend and the programs described throughout this report provide strategies for overcoming these challenges. Despite the obstacles, multifamily building owners do invest in energy efficiency for a number of reasons. They may make these investments when they need to replace outdated systems and equipment and lower operation costs, when they wish to lower their own utility costs for common areas and (in many cases) hot water systems, and when they are undertaking other substantial renovation work (McKibbin et al. 2013).

FOR BUILDING OWNERS

Split Incentives

A split incentive occurs when one party is responsible for the cost of an energy efficiency upgrade, but another party will reap all or part of the energy savings benefit. This is the case with much of the multifamily housing stock. In buildings that are individually metered for one or more utilities, programs must encourage property owners to invest in energy efficiency measures that will save their tenants money. Overcoming split incentives, especially encouraging owners of individually metered buildings to invest in tenant spaces, has long been considered the primary barrier that energy efficiency programs for the multifamily sector must overcome. Programs can confront split incentives by providing rebates or incentives that cover the incremental cost of more energy-efficient equipment. Programs can also communicate the potential non-energy-related benefits to owners such as increasing property values, improving tenant comfort and satisfaction, and reducing operating and maintenance costs.

Recent evaluations of California's established multifamily rebate programs have shown that split incentives may not be as critical a barrier to multifamily property owners and managers as conventionally thought. The evaluators reached this conclusion based on surveys of participating and non-participating owners and property managers. They also noted the surprisingly low share of participants choosing to install energy efficiency measures in their common areas (where they pay for utilities and split incentives are not an issue) compared to those choosing to improve their tenant spaces. This research suggests that not only can split incentives be overcome, but owners see an economic benefit in improving the energy efficiency of their apartments. Some of the benefits cited by building owners and managers include increasing their property values and improving their tenants' ability to pay rent by lowering their energy costs (Dyson, Chen & Samiullah 2010).

Lack of Capital to Pay for and Capacity to Manage Retrofits

Most rebate and incentive programs require owners have access to capital in order to pay a portion of the upfront cost. Energy efficiency competes with many other potential maintenance and improvement projects for limited financial and staff resources. Low-income housing providers, in particular, have limited access to capital to pay for improvements (National Housing Trust 2013), and low-cost lending programs for energy efficiency projects are not widely available. Applying for energy efficiency funding and managing the various aspects of a retrofit project also require staff time that is in short supply. Property managers may also lack experience in the technical aspects of energy audits and in developing appropriate scopes of work.

Timing and Disrupting Tenants

Installing energy efficiency measures such as insulation, appliances, and air sealing will often require access to tenant spaces. Property owners and managers also need to coordinate building systems upgrades with other capital improvements and maintenance needs in order to minimize tenant disruption.

Multiple Decision Makers

Energy efficiency program staff may need to work with many contacts for each multifamily property including onsite maintenance and operations staff, property managers, portfolio managers, and owners. Each group has varying levels of authority to make decisions about building improvement spending and scheduling. For example, on-site property managers may have the authority to schedule a no-cost direct installation program, but will likely not be able to approve the purchase of new equipment. Decision making in buildings owned by real estate partnerships is further complicated by the different investment time horizons of the various partners. These varying horizons impact the return on investment the partners will require for capital investments.

Uncertainty about Energy Savings and other Non-Energy Benefits

Fluctuating fuel prices and lack of information about the aggregated energy use in their buildings can limit building owners' confidence in projected energy savings. Furthermore, many of the benefits of energy efficiency projects that matter most to owners are difficult to measure and predict. These benefits include reduced operations and maintenance costs, improved tenant comfort and lower turnover, and higher property values. Uncertainty

about the potential benefits is heightened when owners are unfamiliar with the contractors they will need to find and hire.

Market Confusion and High Transaction Costs

Once building owners decide to pursue energy efficiency improvements to their properties, they may be confused about which utility-customer-funded programs they are eligible for. If a program is not targeted directly to multifamily buildings, it is hard for building owners to figure out which residential or commercial rebates they may receive. In addition, participation in these programs can require high transaction costs in terms of the time it takes to determine eligibility and complete multiple applications to separate utilities for each installed measure.

Regulatory Obstacles for Assisted Housing

Owners of assisted multifamily buildings, those which receive subsidies in order to maintain low rents, face unique challenges as a result of the regulations governing public assistance programs. These include restrictions on how and when owners can use capital reserves to pay for improvements as well as on their ability to monetize energy efficiency improvements through higher rents. Split-incentive challenges are exacerbated in properties receiving rental assistance from the U.S. Department of Housing and Urban Development (HUD) because of the utility allowances HUD pays to tenants. It is often the case that the savings gained through energy efficiency improvements are passed along to HUD rather than to the building owner or tenant (Bamberger 2010, Harak 2010).

FOR PROGRAM ADMINISTRATORS

Coordinating across Residential and Commercial Portfolios

Many program administrators have traditionally organized their program portfolios by residential versus commercial and industrial building types. This classification guides how programs are implemented, as many administrators have separate implementation contractors for their commercial and residential portfolios. The classification also guides how budgets are allocated and how savings and expenditures are reported. Multifamily buildings, however, straddle the residential and commercial categories. Creating cohesive programs targeted to multifamily buildings will often require significant internal coordination across program teams as well as externally across implementation contractors and trade allies.

Meeting Cost-Effectiveness Test Requirements

Regulators in nearly every state where utility customers fund energy efficiency programs require program administrators to use specific tests to show the cost effectiveness of their energy efficiency portfolios, programs, and sometimes each of the covered energy efficiency measures (Kushler, Nowak & Witte 2012). Cost-effectiveness testing is meant to ensure customers are funding the most effective programs with the greatest potential for cost savings. In practice, however, these benefit-cost tests often fail to account for non-energy benefits such as improved property values, tenant health, safety, and comfort, and reductions in operations and maintenance costs (Neme & Kushler 2010). As a result, it is often difficult for multifamily programs to pass traditional cost-effectiveness tests, and especially so for comprehensive whole-building programs and those that provide generous rebates to overcome split incentives.

Balancing Targeted Programs with Minimizing Administrative Costs

Effective multifamily programs must be designed for and marketed to a diverse multifamily housing market. In some areas the multifamily market is highly segmented, involving various types of owners (public, private, and nonprofit) and property management structures. Program administrators must balance (1) the need for marketing, outreach, and specialized programs to achieve high levels of participation with (2) the need to minimize administrative and indirect costs that are often limited by regulators. Several programs we highlight throughout the report have partnered with local organizations of building owners, property managers, and contractors to help maximize awareness of their programs at minimal cost.

Integrating Programs Across Electric and Gas Utilities

Separate programs for electric and gas energy efficiency, as well as programs sponsored by water utilities, are challenging for property owners and managers who have limited capacity to apply for and manage energy efficiency projects. Administering separate programs requires allocating budgets and savings, communicating across various program administrators and implementers, and handling different planning cycles and funding levels. Integrated programs would simplify the application process, minimize disruption to tenants, and allow for deeper overall savings for building owners. Energy efficiency measures such as insulation and air sealing deliver electricity, gas, and in some cases water savings, so the ability to coordinate programs and share in the costs and savings can be important when determining the cost effectiveness of programs.

Encouraging Owners to Go Beyond No- and Low-Cost Energy Efficiency Measures to Address Building Systems

Due to the barriers that owners face, more expensive equipment upgrades, not to mention replacing entire HVAC and lighting systems, can be a tough sell. Program administrators must balance the cost effectiveness of their programs with offering incentives (and in some cases financing) generous enough for energy efficiency to make sense to property owners who may be splitting the energy benefits with their tenants. Furthermore, deeper retrofits that address building systems can most easily be accommodated during substantial rehabilitation of a property, but the long lifecycles of financing and completing these projects do not align well with annual program planning and budget cycles.

Best Practices

The ten best practices recommended in this section have helped energy efficiency programs overcome the challenges of serving the multifamily sector. Table 1 below shows which best practices address the specific challenges faced by building owners. Examples of programs using each best practice are highlighted in this section, and full case studies of each program are provided in the appendix.

Table 1. Challenges Faced by Multifamily Building Owners and Best Practices for Overcoming Them

Challenges / Best practices	Split incentives	Lack of capital	Lack of capacity	Timing and disrupting tenants	Multiple decision makers	Uncertain benefits	Market confusion and high transaction costs	Regulatory obstacles for assisted housing
1. Provide a one-stop shop for program services			■	■	■		■	
2. Incorporate on-bill repayment or low-cost financing	■	■						■
3. Integrate direct installation and rebate programs	■			■			■	
4. Streamline rebates and incentivize in-unit measures to overcome split incentives	■	■	■				■	
5. Coordinate programs across electric and gas utilities				■			■	
6. Provide escalating incentives for achieving greater savings levels	■	■				■		
7. Serve both low-income and market-rate multifamily households		■	■				■	■
8. Align utility and housing finance programs		■	■	■	■		■	■
9. Partner with the local multifamily housing industry					■	■	■	
10. Offer multiple pathways for participation to reach more buildings	■	■		■	■			

1. PROVIDE A ONE-STOP SHOP FOR PROGRAM SERVICES

By providing building owners with a single point of contact (either at the utility or a partner organization) throughout program participation, one-stop-shop programs can simplify the steps involved in each energy efficiency project and streamline any technical assistance that building owners may require. For retrofit projects, one-stop-shop programs may assist with the application, energy assessment, construction, quality assurance, post-installation monitoring, and verification of savings. For new construction, services may also include design review assistance. Interviews with building owners and property managers in California have shown that a one-stop shop or single point of contact that can deliver these services can go a long way toward reducing the high transaction costs, stress, and staff resources involved in planning and undertaking energy upgrades (Cities of Berkeley, Oakland, and Emeryville 2011). A true one-stop shop helps owners navigate the often overlapping utility programs (commercial or residential, low-income or market-rate) and evaluate which route and which contractors are best for them.

This continuity of contact and support is especially important for comprehensive energy efficiency retrofits or new construction programs, as building developers, managers, and owners may lack the technical expertise and staffing capacity to oversee major energy efficiency projects. The one-stop shop can reduce market confusion by helping building owners combine and apply for multiple sources of project funding and financing, including rebates from various utilities and loans from local financial institutions. This coordination is particularly beneficial in areas served by separate electric and gas utilities.

One-Stop Shops

ENERGY SAVERS — CHICAGO
Energy Savers is an energy retrofit program of CNT Energy and the Community Investment Corporation targeting existing mid-to-low-income, affordable, and subsidized properties in the Chicago area. The program draws on a diverse mix of funding sources including the Illinois utilities; state, local and federal governments; and foundations to provide property owners comprehensive and cost-effective energy retrofit services.

LOW-INCOME MULTI-FAMILY RETROFIT PROGRAM — MASSACHUSETTS
The Low-Income Multi-Family Retrofit program provides public, nonprofit, and for-profit owners of low-income housing with a one-stop shop for cost-effective energy efficiency improvements. Services include benchmarking tools, energy assessments, technical assistance, and grant funding for energy efficiency upgrades. The program is funded by Massachusetts electric and gas utilities and implemented by the Low-Income Energy Affordability Network (LEAN) to provide consistent and streamlined services for both electric and gas energy efficiency projects statewide.

The Energy Savers Multifamily program administered by CNT Energy and the Low-Income Multi-Family Retrofit program administered by a coalition of utilities and community organizations in Massachusetts have both created one-stop shops for multifamily retrofits. Both programs provide technical assistance and a single point of contact to owners throughout the retrofit process, starting with an energy assessment and developing a scope of work. CNT Energy then helps owners secure funding from local gas and electric utility programs as well as low-interest financing from their partner, the Community Investment

Corporation, a local Community Development Financial Institution (CDFI). The community organizations implementing the Massachusetts program, Action for Boston Community Development (ABCD) and Action, Inc. Gloucester, distribute funds directly from the administering utilities. Both Energy Savers and the Massachusetts program also provide owners with a list of qualified contractors and inspect the completed work to ensure quality installation. The level of support provided by these programs has helped drive deep savings for both electricity and gas. The focus on whole-building systems has enabled average gas savings of more than 20%.

2. INCORPORATE ON-BILL REPAYMENT OR LOW-COST FINANCING TO MINIMIZE OR ELIMINATE THE UPFRONT COST TO BUILDING OWNERS

If their upfront cost is limited or eliminated, building owners can undertake more substantial energy efficiency projects and compete more readily for scarce capital projects funding. Low-interest financing can help owners spread the cost of their projects over time. CNT Energy partners with the Community Investment Corporation to provide low-interest loans to the Energy Savers program. Likewise, participants in the Sacramento Municipal Utility District (SMUD) Multifamily Home Performance Program, described below, can apply for financing through the SMUD Residential Loan Program.

Not all owners, however, can or want to take on additional debt, especially if their property is already heavily leveraged or is financed by a number of parties who would have to approve new debt. Loans that are not real-estate secured, that is, not backed by the property, are especially important for these properties, as they avoid some of the high transaction costs associated with seeking approvals from other lenders. On-bill repayment or financing, which allows for energy efficiency improvements to be paid for over time through utility bills, provides unsecured financing to building owners who cannot take advantage of traditional financing.[4]

On-Bill Financing Program

PSE&G RESIDENTIAL MULTI-FAMILY PROGRAM — NEW JERSEY
The Residential Multi-Family Program targets whole-building retrofits of multifamily housing developments. In addition to project management assistance, PSE&G provides program participants with a combination of tools to eliminate barriers to energy efficiency. All project costs are covered upfront during construction, and a permanent cash incentive buys down the customer's share of those costs. Building owners then repay their share of project costs over time on their PSE&G utility bill, interest free. Projects are designed so that the owner's share of the cost of the energy efficiency upgrades is significantly offset by the cost savings recognized as a direct result of those upgrades.

On-bill repayment and finance programs are becoming more common, but are still rare for multifamily properties. The Public Service Electric and Gas (PSE&G) Residential Multi-Family Program is the largest multifamily program to incorporate on-bill financing. PSE&G provides incentives to buy down the upfront cost of whole-building energy efficiency projects. An energy audit identifies all cost-effective energy efficiency measures with a simple payback of 15 years or less. PSE&G incentives reduce the payback by seven years, but to no less than two years. Owners then repay the remaining share of the project cost through their utility bills, with no interest over a five-year period. (Projects funded by the New Jersey Housing and Mortgage Finance Agency repay over 10 years.) The on-bill financing helps owners who lack access to capital or who are unable to take on additional debt, by converting a capital cost into an expense item that can be paid for over time. Due in large part to the program's zero upfront cost, it has been popular with building owners,

[4]On-bill repayment refers specifically to programs where the capital for the loans is provided by a third party rather than by the utility itself. On-bill financing refers to loans that a utility makes using its own funds that are repaid through utility bills.

leading PSE&G to extend and double its budget from $19 to $39 million. Since its launch in 2010, the program has enrolled more than 10,000 units in 277 buildings, with an additional 47 owners representing 9,000 units on the waiting list.

PSE&G, CNT Energy, and SMUD all offer incentives in addition to financing or on-bill repayment options. For many building owners, incentives to buy down the upfront cost may be more desirable, and many owners may choose not to finance the remaining cost if they can use existing capital reserves. So while financing can help owners take on more extensive projects, it may not be sufficient to encourage them to undertake projects without incentives that help overcome split incentives and other challenges.

3. INTEGRATE DIRECT INSTALLATION AND REBATE PROGRAMS

Because they do not cost anything, direct installation programs that offer no-cost measures are an easy way to connect with building owners, offer them an onsite energy assessment, and encourage them to take advantage of rebates for more extensive improvements. These may include HVAC upgrades, weatherization, common area lighting retrofits, and other building shell improvements. While direct installation can achieve a high volume of participation, the typical measures (CFLs, low-flow fixtures) on their own provide relatively shallow energy savings compared to the energy efficiency measures typically covered by incentive programs such as replacing equipment and upgrading building systems.

Follow-up by programs and their trade allies is necessary to make the connection between no-cost measures and capital investments, especially when different decision makers are involved with direct install and more extensive projects. Based on recent market research and process evaluations completed by the Energy Trust of Oregon (Forrest 2013, Research into Action 2013), onsite property managers typically have the authority to schedule direct installation services, while the authority to agree to capital projects lies at the ownership level. No-cost measures do not always lead to more extensive improvements. Building owners might not even be aware that the measures have been installed, and onsite property managers may not follow up with owners on the capital investments recommended by the energy assessments. The Energy Trust of Oregon research underscores the need for program administrators to understand the local multifamily market and to target appropriate messages to the various decision makers.

Integrated Direct Installation and Rebate Programs

PUGET SOUND ENERGY MULTIFAMILY RETROFIT PROGRAM — SEATTLE, WA
The Puget Sound Energy Multifamily Retrofit Program provides incentives and direct installation of electric and gas energy efficiency measures for multifamily buildings and complexes. The program works with an alliance of contractors to follow up on recommendations identified by free onsite energy audits that are required for participation.

COMED, NICOR GAS, NORTH SHORE GAS, AND PEOPLES GAS MULTIFAMILY COMPREHENSIVE ENERGY EFFICIENCY PROGRAM — CHICAGO
The four electric and gas utilities serving the Chicago area offer a joint program that combines (1) direct installation of in-unit measures and an energy assessment at no cost with (2) a variety of prescriptive and custom rebates and discounted installation services from the utilities' trade ally partners.

The Puget Sound Energy (PSE) Multi-Family Retrofit Program provides customers with a single point of contact to tie together the energy audit, direct installation, and additional measures offered by the program, all of which can be bundled together with one application and payment. By bundling direct installation services with measures like requiring insulation upgrades when replacing windows and providing a free energy audit, the program encourages deeper savings than would be achieved with single measures. In addition, the program uses measures that are attractive to owners (e.g., windows) to encourage projects with greater savings (e.g., insulation and air sealing). PSE works with a network of contractors to follow up with property owners who have received direct

installation services. PSE also helps coordinate bids from various contractors within their network and refers contractors directly to the customers.

Treating its direct installation services as a gateway to property owners, the PSE program has penetrated a significant share of the multifamily market in its territory (49% or approximately 120,000 units) and encouraged 34% of the sites receiving services to complete additional energy efficiency projects (Forde 2013).The Chicago area electric and gas utilities recently launched an expansion of their joint program for multifamily building owners. Similar to PSE, the program combines no-cost direct installation of energy efficiency measures with an assessment to identify additional energy efficiency opportunities. The program then offers a variety of rebates and discounts on installation services provided by a network of trade allies.

4. STREAMLINE REBATES AND INCENTIVIZE IN-UNIT MEASURES TO OVERCOME SPLIT INCENTIVES

While multifamily buildings are often eligible for commercial or residential rebate programs, building owners have difficulty determining the incentives for which they are eligible. Another issue is that program administrators are often required to budget and report separately for program dollars spent on residential and commercial customers. Depending on how they are metered, multifamily buildings may fall into both categories. As a result, owners often have to apply separately for measures installed in their residential units and their commercially metered common areas. To ease this burden, program administrators should combine commercial and residential rebates into one easy application and participation process regardless of whether equipment is for residential or common areas.

To further break down the split-incentive barriers, programs should provide sufficient incentives to building owners to encourage them to invest in high-efficiency products in their tenants' spaces, even if the owners do not benefit directly from the energy savings. Bundling measures that target common areas like lighting retrofits with in-unit measures will also encourage owners to invest in tenant spaces.

Austin Energy's long-running multifamily rebate program starts with a free onsite rebate audit which gives property owners options for energy efficiency measures and an estimated rebate amount. Owners then choose which measures they will install, including windows, insulation, air duct sealing, solar window screens, and lighting. In order to ensure savings for tenants as well as owners, Austin Energy requires that measures be installed throughout the property. The only exception is HVAC system replacement, which requires that at least four systems (air conditioning or heat pumps) be replaced. Since its launch in 1989, the program has reached a large share of the multifamily housing units in Austin, including 90% of the largest existing communities (those more than 5 years old with over 200 rental units).

The Energy Trust of Oregon (ETO) Existing Multifamily Program offers incentives to building owners through one application process regardless of whether the measure is installed in units or common areas. Each ETO business development staff member works

Streamlined Rebate Programs

AUSTIN ENERGY POWER SAVER MULTIFAMILY REBATES
Austin Energy's multifamily rebate program provides cash incentives to property owners for the installation of energy efficiency measures in their common areas and dwelling units. A rebate audit identifies what measures an owner may qualify for and estimates the value of the rebates. The program delivers savings to tenants as well as owners by requiring that measures be installed throughout the property.

ENERGY TRUST OF OREGON EXISTING MULTIFAMILY PROGRAM
The Energy Trust of Oregon standalone program for existing multifamily buildings provides cash incentives for a variety of energy efficiency measures. Free onsite surveys help owners identify the incentives for which they may be eligible, and business development staff work directly with owners to guide them through the application process. The program captures energy savings opportunities at the point of equipment failure and replacement by providing incentives directly to equipment distributors.

with a subsegment of the multifamily market (e.g., affordable or condominiums) to develop relationships with owners and guide them through the application process. To further streamline the process and capture opportunities when equipment fails and needs to be replaced, ETO works upstream with major equipment distributors. With no need for the owner to apply, the distributor applies the value of the incentives directly to buy down the cost of energy-efficient products. The distributor then collects all the information that ETO needs from the owner in order to process the incentive payment. The upstream incentives make participation easier and quicker, increasing project volume and lowering transaction costs for property owners as well as for the program administrator. The upstream incentives helped ETO reach more than double the number of properties in 2012 compared to 2011 before the incentives were in place.

5. COORDINATE OR INTEGRATE PROGRAMS ACROSS ELECTRIC, GAS, AND WATER UTILITIES TO MAKE IT EASIER FOR BUILDING OWNERS TO PARTICIPATE

Multifamily buildings often receive their electricity, natural gas, and water from separate utilities. For owners who want to undertake comprehensive retrofits or just participate in a direct installation program, it is burdensome to participate in separate programs for each utility. Coordinating programs can simplify the process for building owners, allow them to benefit from greater overall savings, and minimize the disruption to tenants. Additionally, sharing the marketing and implementation expenses provides for a more cost-effective program from the perspective of the program administrators. While simply coordinating the marketing and timing of services can help, the best strategy is a truly integrated program that creates the one-stop shop recommended above and allows building owners to apply for electric and gas incentives through a single process.

In Northern Illinois, electricity is predominately supplied by ComEd while gas is supplied by one of three gas utilities: Peoples Gas, North Shore Gas, or Nicor Gas. Recognizing the potential to achieve higher savings and participation and the benefit to building owners of offering both electric and gas measures through one integrated program, the utilities began coordinating their no-cost direct installation program for multifamily buildings in 2011. Building on their previous collaboration, the new Multifamily Comprehensive Energy Efficiency Program (MCEEP) provides incentives for an expanded set of electric and gas measures through one streamlined process.

Integrated programs require significant behind-the-scenes coordination between program administrators and their implementation contractors. One approach is to identify a single utility as the lead administrator. The Chicago-area partners have identified the gas utility as the lead, as the majority of the savings from typical multifamily projects are from gas measures.

Integrated Electric, Gas, Water Programs

MULTIFAMILY COMPREHENSIVE ENERGY EFFICIENCY PROGRAM — CHICAGO AREA ELECTRIC AND GAS UTILITIES

The four Chicago-area electric and gas utilities–ComEd, North Shore Gas, Nicor Gas, and Peoples Gas–jointly administer the newly launched MCEEP program to provide integrated incentives and services for electricity and gas savings. The utilities coordinate the program planning, implementation, and reporting behind the scenes while providing building owners with no-cost energy assessments, free direct installs, prescriptive and custom rebates, and discounted installation services through their trade allies all under one roof. By coordinating across the gas utilities, the program offers one standardized program to building owners with properties in multifamily service territories.

INTEGRATED WATER AND ENERGY PROGRAMS

Puget Sound Energy: Provides rebates and energy/water audits in partnership with the Saving Water Partnership, a partnership of the Seattle and King County water utilities.

Austin Energy: In partnership with Austin Water, provides rebates for holistic energy and water savings projects. The water utility provides free high-efficiency kitchen and bathroom aerators and showerheads.

An alternate approach is to have a third-party organization integrate funding from the separate utilities. In the Massachusetts Low-Income Multifamily Retrofit Program, the program implementers, Action Inc. and Action for Community Development, coordinate funding and program requirements across the utilities to deliver integrated services to property owners. Similarly, the Energy Savers program described above also helps owners identify and apply for funding from a variety of sources.

Going even further, energy utilities can partner with local water utilities to help building owners save energy and water at the same time. As water bills are most often paid directly by owners, water savings can be more attractive financially to building owners than the energy savings they split with their tenants. Both the Austin Energy and Puget Sound Energy programs described above have partnered with local water utilities to jointly fund and administer programs (Young 2013). These partnerships allow the programs to identify both energy and water savings opportunities through the free assessments they offer. The programs also provide incentives for energy and water saving equipment and appliances such as clothes washers, dishwashers, and irrigation systems. The sharing of costs and savings across the utilities also helps to improve their cost effectiveness.

6. ENCOURAGE DEEPER RETROFITS BY PROVIDING ESCALATING INCENTIVES TO ACHIEVE GREATER SAVINGS LEVELS

Performance-Based Programs

In order to encourage building owners to take on more extensive (and likely more expensive and time consuming) projects, program administrators can require a significant but achievable level of energy savings and offer escalating incentives based on the projected and realized savings for a project. Escalating incentives for higher levels of energy savings encourage owners to go beyond what will meet the program requirements in order to earn the more valuable incentives. The higher incentive levels not only support projects with deeper savings, but they help to compensate owners for the perceived risk and uncertainty associated with projected energy savings. Typical performance programs begin with an energy audit and the creation of a customized energy reduction plan or scope of work. Owners can then choose which measures they want to install, as long as they are projected to meet the minimum energy savings requirement. Post-retrofit evaluation measures the actual level of savings.

Both the NYSERDA and Sacramento Municipal Utility District (SMUD) performance programs follow this model. Each provides a per-unit incentive for reaching the baseline requirement (15% electric and gas savings for NYSERDA and 10% electric savings for SMUD) and escalating incentives.[5] Participants are rewarded for actual rather than projected savings. NYSERDA pays incentives in stages, beginning with the approval of the scope of work and culminating with the final performance payment upon a one-year-post-project evaluation of actual energy savings. SMUD pays the full incentive after a post-retrofit audit completed by a certified energy rater. The energy raters are also eligible for incentives, which are paid in stages with final payment after completion of a post-retrofit analysis to confirm that the project has exceeded the 10% improvement threshold. The performance incentives have helped both programs achieve average savings per project that are significantly greater than the minimum requirements (23% electric and gas savings for NYSERDA and 29% electric savings for SMUD).

NYSERDA MULTIFAMILY PERFORMANCE PROGRAM — NEW YORK
The Multifamily Performance Program (MPP) provides per-unit incentives as well as low-cost financing for new construction and retrofits of existing multifamily buildings that achieve 15% energy savings (electric and gas). A member of NYSERDA's network of service providers performs an energy audit and creates an energy reduction plan to identify the possible opportunities to achieve the 15% target. Escalating performance incentives are paid to owners for achieving savings over 20%.

SACRAMENTO MUNICIPAL UTILITY DISTRICT MULTIFAMILY HOME PERFORMANCE PROGRAM
The Multifamily Home Performance Program (HPP-MF) targets existing multifamily buildings which commit to achieving 10% electricity savings through HVAC system upgrades and additional efficiency measures including windows, insulation, lighting, and hot water systems. SMUD provides an escalating performance incentive of $40 per unit for each additional 1% of energy savings.

[5] NYSERDA per-unit performance incentives escalate from a 15-19% energy savings baseline where they pay $700 for market-rate and $1,000 for affordable housing. Incentives increase by $150 for 20-22% savings, $200 for 23-25%, $250 for 26-28%, and $300 for 29% and above. SMUD per-unit performance payments escalate from a 10% energy savings baseline that pays $500, adding $40 for each additional 1% up to 50%.

7. SERVE BOTH LOW-INCOME AND MARKET-RATE MULTIFAMILY HOUSEHOLDS

Program administrators should account for the unique challenges faced by low-income property owners,[6] either through programs designed specifically for low-income housing or by providing extra services and incentives for low-income-qualified buildings. Affordable housing owners often operate with limited cash flow, and regulatory agreements may prevent them from applying cash reserves to the cost of upgrades or from monetizing the efficiency improvements in rents or property values (National Housing Trust 2013). In addition, the financing and development cycles for low-income housing are long and do not always align well with utility-sponsored programs.

Many states require program administrators to dedicate a certain percentage of their budgets to serving low-income customers. Additionally, states often use lower cost-effectiveness testing thresholds in programs that benefit low-income customers. Thus program administrators can offer more generous incentives or provide energy efficiency services at no cost to the owner, given the lower ability of low-income households and building owners to pay.

NYSERDA, for example, offers higher incentives for income-qualified buildings through its Multifamily Performance Program. CenterPoint Energy recently began offering bonus incentives to low-income property owners in Minnesota through its commercial heating and hot-water rebate program. While low-income property owners were previously eligible for rebates, the new bonus incentives allow CenterPoint to more directly target low-income housing owners and further lower the upfront cost of upgrades.

Serving both Low-Income and Market-Rate Buildings

CENTERPOINT ENERGY LOW-INCOME MULTIFAMILY BONUS REBATES — MINNEAPOLIS
Starting in 2013, CenterPoint Energy in Minnesota began providing a 25% higher rebate for all prescriptive measures covered by their commercial rebate offerings for owners of low-income multifamily properties. Eligible measures include HVAC, hot water, controls, and energy recovery ventilation. The bonus incentives help CenterPoint and its trade allies to directly target affordable housing owners. Even with the elevated incentive levels, the new program is projected to be highly cost effective.

EFFICIENCY VERMONT MARKET-RATE AND LOW-INCOME MULTIFAMILY RETROFIT PROGRAMS
Efficiency Vermont's suite of programs for multifamily property owners targets both low-income and market-rate buildings. In partnership with local weatherization agencies, Efficiency Vermont supports weatherization and deep energy retrofits of existing low-income housing through the Vermont Fuel Efficiency Partnership. The New Construction and Renovation program provides incentives and technical services to all developers to encourage energy-efficient buildings. Additional offerings provide equipment rebates, free easy-to-install measures, incentives for building shell improvements, and support for custom projects.

[6]Low-income households may live in assisted, public, or privately-owned market-rate properties. Assisted housing includes properties which receive federal, state, or local subsidies for maintaining low rents including Low Income Housing Tax Credits. However millions of lower-income households live in affordable but unassisted housing (Johnson and Mackres 2013, Joint Center for Housing 2011). These properties, typically older, lower-quality buildings, have naturally low and affordable rents and may not qualify for income-restricted programs.

Key to the success of low-income-qualified programs is establishing a definition of eligibility consistent with state and federal housing assistance programs. Then programs can make use of income data that owners have already obtained in order to streamline the eligibility determination process. However, it is important to note that by virtue of their low rents many multifamily properties are affordable without receiving assistance from public programs and may not qualify for low-income utility programs. Therefore, in order to broadly reach affordable multifamily properties, program administrators need to target multifamily properties beyond traditional low-income programs.

Efficiency Vermont has long-running and highly successful renovation, weatherization, and new construction programs for both low-income and market-rate buildings. Efficiency Vermont has strong partnerships with the state's weatherization agencies (which implement the federally funded Weatherization Assistance Program) and nonprofit affordable housing providers, as well as outreach to architects and contractors. Offerings include rebates for equipment and appliances, free CFLs and low-flow water fixtures, and incentives for insulation and air sealing. Virtually all affordable housing newly built or renovated by nonprofit developers in Vermont has taken advantage of the Efficiency Vermont programs over the last ten years.

At the same time, while 92% of Vermont's apartments house families that earn less than 80% of area median income, nonprofit providers own less than 30% of these apartments. In 2002 Efficiency Vermont began to expand its multifamily programs to include offerings for all income-qualified and market-rate multifamily properties. These included properties that did not meet low-income qualifications and ones that were not identified by their owners as low-income but were nonetheless affordable. Similarly, in Massachusetts, the utility program administrators sponsor both the low-income multifamily retrofit program described above and a statewide multifamily retrofit program for all property owners through Mass Saves.

8. COMBINE UTILITY-CUSTOMER-FUNDED PROGRAMS WITH PUBLIC FUNDING AVAILABLE AT TIME OF AFFORDABLE HOUSING REFINANCE

Align Programs with Affordable Housing Finance Programs

State housing finance agencies provide funding to a pipeline of affordable housing rehabilitation projects through Low-Income Housing Tax Credits (LIHTC) and other sources. Annually, about 100,000 new and rehabilitated housing units receive LIHTC financing. Incorporating utility-customer funding at the time of such refinancing can yield deeper, more comprehensive energy efficiency improvements including replacing outdated building systems. Utility-customer funds can be used to help cover the incremental cost of installing more efficient equipment than would otherwise be required. Once installed, these building systems can last for decades.

Reaching owners when they are redeveloping their properties can provide relatively inexpensive but deep and long lasting energy savings. The challenge is aligning the timing of energy efficiency programs with redevelopment project cycles that can span several years.

DC SUSTAINABLE ENERGY UTILITY (DC SEU) LOW-INCOME MULTIFAMILY COMPREHENSIVE PROGRAM — WASHINGTON DC
The DC SEU Low Income Multifamily (LIMF) Comprehensive Program offers financial incentives and technical assistance to affordable housing developers and property owners who work together with the DC SEU. The program incorporates energy-efficient systems and measures in the new development, redevelopment, and rehabilitation of affordable housing in DC. DC SEU is involved in the design and construction of these long-term projects to identify deep and long-lasting opportunities for energy savings.

The DC Sustainable Energy Utility (DC SEU) Low-Income Multifamily Comprehensive Program exclusively targets substantial redevelopment and new construction projects. These large-scale projects often take multiple years, and DC SEU staff are involved through the design and construction stages to provide technical assistance and help owners, architects, and contractors identify opportunities for energy savings. Timing is critical for the program: the earlier DC SEU is involved in the project, the more flexibility they have to incorporate energy efficiency into the design of the redevelopment. DC SEU staff build relationships directly with owners, leading them to reach out to DC SEU when they receive initial financing for new redevelopment projects. In addition to technical assistance, DC SEU offers custom incentives based on the scope of work for the project. The value of the incentive is determined by measure life and projected energy savings. While all projects will have a payback that makes sense and can be incorporated into project financing without incentives, the upfront incentives help to overcome owner split incentives and provide energy savings to tenants.

The DC SEU focus on deep and long-term savings is reflected in the results from the first full year of the program. The per-unit electricity savings achieved by participants, more than 2000 kWh per year, were the highest of all the programs included in this report. The average estimated lifetime of the energy efficiency measures (both electric and gas) installed by the program in 2012 was just over 17 years.

9. PARTNER WITH THE LOCAL MULTIFAMILY HOUSING INDUSTRY TO MARKET PROGRAMS DIRECTLY TO BUILDING OWNERS AND MANAGERS

While the multifamily housing sector is complex, it is relatively well organized, with robust local networks of property managers and owners. Due to the market confusion noted above, building owners and managers can be difficult to reach through mass marketing. Programs can identify and connect directly with potential participants by creating partnerships with local associations of multifamily owners, managers, and contractors. These associations can provide program administrators with valuable insight into the local multifamily housing stock and the typical equipment found in their buildings.

Austin Energy's multifamily programs have a longstanding relationship with the Austin Apartment Association, which includes owners and managers of larger multifamily properties, and with its affiliate organization for small independent owners. The relationship has helped Austin Energy spread awareness of its programs throughout Austin's network of onsite and portfolio property managers and owners, and to adapt its programs to better meet their needs.

In addition to local associations of property managers and owners, nonprofit housing developers and owners often belong to local or regional associations of Community Development Corporations (CDCs), and they can also be reached through the state housing finance agencies and community development financial institutions (CDFIs) that provide them financing.

The Low-Income Energy Affordability Network (LEAN), which oversees the Massachusetts Low-Income Multi-Family Retrofit program, is an association of community action agencies that have been providing energy efficiency and weatherization services since 1997. In order to meet the needs of the state's low-income housing providers, LEAN created the Multi-Family Advisory Committee to bring together representatives from the utility, housing finance, community development, tenant, and ownership communities. The committee members help

Partner with the Local Multifamily Housing Industry

AUSTIN ENERGY AND THE AUSTIN APARTMENT ASSOCIATION
The Austin Apartment Association has been a key partner of Austin Energy's multifamily program for more than 15 years. The association helps spread the word about the program to owners and property managers, including harder-to-reach small and independent owners. Austin Energy listens and adapts to concerns raised by association members in order to improve its program.

THE LOW-INCOME ENERGY AFFORDABILITY NETWORK (LEAN)
The LEAN Multi-Family Advisory Committee oversees the implementation of the Massachusetts Low-Income Multi-Family Retrofit program. It brings together representatives from the electric and gas utilities, public housing authorities, community development corporations, tenants organizations, and other multifamily property owners. In addition to designing a successful program for low-income housing owners, the committee helps with outreach to the various actors in the multifamily housing market, including a geographically diverse group of public and private property owners.

EFFICIENCY VERMONT AND VERMONT HOUSING AND CONSERVATION BOARD
Efficiency Vermont collaborates with the Vermont Housing and Conservation Board to help develop energy efficiency standards for the affordable housing projects the board funds. Longstanding relationships with nonprofit affordable housing developers have contributed to the success of Efficiency Vermont's programs for new construction and substantial renovations.

with outreach to each of their communities and address program implementation challenges.

Partnering with affordable housing providers has also been a cornerstone of Efficiency Vermont's programs. As a result, 100% of the newly constructed affordable multifamily housing in Vermont has followed ENERGY STAR standards, and 100% of the major renovations have participated in Efficiency Vermont programs. Efficiency Vermont has also collaborated with the Vermont Housing and Conservation Board (the state housing finance agency) to develop energy efficiency standards for the projects they fund.

10. OFFER MULTIPLE PATHWAYS FOR PARTICIPATION TO REACH MORE BUILDINGS

Not every building owner will be ready, financially or otherwise, to take on a substantial retrofit project. By offering multiple pathways to participate, programs can build relationships with building owners who are initially interested in faster, less extensive projects. Such owners may only be thinking of prescriptive rebates for lighting and replacing in-unit appliances at present, but they may also have a plan for capital improvements to boilers, hot water, or HVAC systems in the near future. A program that combines prescriptive rebates with performance-based custom incentives for major renovation projects can attract owners at both stages. Like programs that integrate direct installation with incentives and rebates, multiple-pathway programs and their trade partners should be sure to follow up with owners who have chosen a less intensive path, guiding them to pursue additional projects when they fit with capital improvement schedules, or when equipment fails.

Many of the program administrators highlighted throughout this report offer multiple pathways for participation in their programs. Puget Sound Energy and the Energy Trust of Oregon provide free onsite assessments to help owners identify all the opportunities for energy savings in their buildings and then allow them the flexibility to pursue projects individually based on their current needs. These initiatives have among the highest cumulative rates of participation (49% and 16% respectively) among eligible customers of the programs featured. SMUD and NYSERDA also offer alternatives to their performance-based incentive programs. SMUD continues to offer prescriptive rebates to owners who are initially unable to invest in multiple measures. NYSERDA offers a fast-track program for small- and medium-sized buildings that streamlines the energy assessment and inspection process, allowing projects to get underway and completed on a shorter timeline. The DC SEU offers a no-cost direct installation program for buildings that are not undergoing substantial renovations.

Multiple Pathways for Participation

The following program administrators profiled throughout the report offer multiple pathways for properties to participate:

SMUD: Performance program which requires 10% improvement; prescriptive rebates.

DC SEU: Comprehensive whole-building incentives for new construction and substantial renovation; no-cost direct installation.

NYSERDA: Multifamily Performance Program and Fast Track Program for small- to medium-size buildings.

PUGET SOUND ENERGY: No-cost direct installation; appliance replacement; cash incentives for equipment upgrades.

ENERGY TRUST OF OREGON: No-cost direct installation of instant savings measures; cash incentives for existing buildings; performance-based incentives for new construction and substantial renovation.

EFFICIENCY VERMONT: New construction and major renovation program, Low-income weatherization and deep energy retrofits through the Vermont Fuel Efficiency Partnership; rebates and incentives for individual measures and projects.

COMED, NICOR GAS, PEOPLES GAS, AND NORTH SHORE GAS: No-cost direct installation and energy assessments; prescriptive and custom rebates for equipment purchases; discounted installation services through trade allies.

Analysis of the Results from Leading Programs

The programs featured in this report show that well-designed multifamily energy efficiency programs that use the best practices recommended above can deliver significant savings while overcoming many of the challenges traditionally associated with the multifamily sector. The following section summarizes the data collected on the performance of each program and interviews with many of the program administrators. Program descriptions and results are provided in the appendix.

Table 2 below summarizes the participation and savings achieved by each of the programs for which we completed case studies. Annual figures are for the most recent year available unless noted. The median savings per unit among all the programs was 757 kWh and 69 therms. The average savings per unit varied across the program administrators (from 433 to 2,222 kWh of electricity and 2 to 240 therms of natural gas per unit), based largely on the predominant fuel uses in each market served. Not surprisingly, programs in colder areas with higher heating demands (e.g., New York, Massachusetts, and Chicago) achieved the highest natural gas savings per unit. Programs that targeted comprehensive whole-building energy efficiency projects (like DC SEU's Low-Income Comprehensive Program for electricity and CNT Energy's Energy Savers program for gas) resulted in the deepest savings per unit. At the same time, the prescriptive and custom rebate programs offered by the Energy Trust of Oregon and Puget Sound Energy both achieved significant per-unit energy savings. (Both have separate programs for new construction and substantial rehabilitation projects that are not included here.) The average percentage savings per project was available for four of the programs, each demonstrating savings above 20% per project compared to pre-participation energy use.

Table 2. Participation and Energy Savings by Program

Established programs	Program type	Annual savings	Annual participation	Annual savings per unit	Percentage savings
CNT Energy Energy Savers	Comprehensive	2,681,900 kWh 990,240 therms	Units: 4,126 Projects: 110	650 kWh 240 therms	20-26% (gas)[1]
Austin Energy Power Saver Multifamily Rebates	Prescriptive and custom rebates	7,886,000 kWh	Units: 18,213	433 kWh	Not available
Energy Trust of Oregon Existing Multifamily Program	Direct install, prescriptive and custom rebates	15,909,686 kWh 96,767 therms	Units: 21,765 Sites: 1,080	731 kWh 4 therms	Not available
LEAN Massachusetts Low-Income Multi Family Energy Retrofit	Comprehensive, low-income qualified	17,574,000 kWh 1,110,072 therms	Units: 6,715 (gas), 14,535 (electric)	1209 kWh 165 therms	Approx. 20% (gas)
NYSERDA Multifamily Performance Program	Comprehensive	27,347,000 kWh 2,490,230 therms	Units: 28,429 Buildings: 411 Projects: 172	526 kWh 69 therms (2007-2012)	23% (electric and gas)
Puget Sound Energy	Direct install,	22,952,000 kWh	Units: 39,489	581 kWh	Not available

Established programs	Program type	Annual savings	Annual participation	Annual savings per unit	Percentage savings
Existing Multifamily Retrofit Program	prescriptive and custom rebates	90,156 therms		2 therms	
PSE&G Residential Multi-Family	Comprehensive	1,858,715 kWh 352,135 therms	Units: 2,295 Buildings: 79 Projects: 11	810 kWh 153 therms	Not available
Efficiency Vermont Multifamily Program	Comprehensive, prescriptive and custom rebates, low-income qualified	2,091,000 kWh 62,390 therms	Not available	Not available	Not available
SMUD Multifamily Home Performance Program	Comprehensive, prescriptive and custom rebates	2,000,000 kWh (goal)	Units: 1,200 (goal)	1,980 kWh 42 therms per unit (2009-2012)	29.5% electricity savings
New and Notable Programs					
CenterPoint Energy Low-Income Multifamily rebates	Prescriptive and custom rebates, low-income qualified	270,000 therms (goal)	Not yet available	Not yet available	Not available
ComEd, Nicor Gas, and People's Gas Multifamily Comprehensive Energy Efficiency Program	Comprehensive, prescriptive, and custom rebates, direct install	38,800,000 kWh (goal) 4,900,000 therms (goal)	Units: 88,750 (goal) Projects: 900 (goal)	437 kWh (goal) 101 therms (goal)	Not available
DC SEU Low-Income Multifamily Comprehensive	Comprehensive, low-income qualified	773,311 kWh 11,393 therms	Units: 348 Projects: 5	2,222 kWh 33 therms	Not available

[1]Actual measured savings using pre and post utility bills is 26%. Program evaluation using regression analysis to compare actual use with projected use estimated 19.8% (Navigant 2013).

Table 3 shows the annual budgets and cost-effectiveness criteria for each of the programs. The levelized cost of saved energy[7] ranges from $0.025 (Energy Trust of Oregon) to $0.145 (LEAN) per kilowatt hour for electricity and from $0.16 (CenterPoint Energy) to $1.24 (LEAN) per therm for natural gas. To compare, a forthcoming report from ACEEE found that the average levelized cost of saved energy across 18 states was $.029 for all program types and $.036 for residential programs (Molina 2014 forthcoming).[8] While some of the

[7] The levelized cost of saved energy represents the costs to the program administrator or utility of acquiring the lifetime energy savings resulting from the program. It is calculated by discounting the costs of the program over the lifetime of the savings. Discount rates vary based on state regulatory guidelines. One calculation, which uses the same method by which supply side resources are evaluated is:
Total cost of saved energy (in $/kWh) = (C) x (capital recovery factor)/(D)
Capital recovery factor = $[A*(1+A)^B]/[(1+A)^B-1]$
where A = discount rate, B = estimated measure life in years, C = total annual program cost, D = total kWh saved that year by the energy efficiency program (Friedrich et al. 2009).

[8] Levelized cost figures are preliminary and subject to change prior to the publication of the report.

programs are more expensive than these averages, they deliver savings to an important and often underserved sector. Low-income programs in particular are often designed to spend more per unit because of the limited resources of low-income customers and the additional societal benefits of helping these residents and property owners save on their energy bills and maintaining housing affordability. As a result, low-income programs are often not subject to the same cost-effectiveness testing requirements as other programs. In order to provide equal customer access to programs that multifamily residents and property owners contribute to funding via their utility bills, it is important that multifamily customers are also served by energy efficiency programs designed to help them save energy.

Even with the (in some cases) higher than average cost of saved energy, all the programs exceeded their cost-effectiveness requirements with benefit-cost ratios greater than one across the various methodologies used by the program administrators. The one exception was the total resource cost test (TRC) for the gas aspects of the Puget Sound Energy program, although the program as whole surpassed the requirements. The multifamily programs are especially cost effective from a societal perspective as shown by the high societal cost test (SCT) ratios. This test takes into account environmental and other benefits beyond energy savings, such as improved health and safety of buildings, property values, and tenant comfort.[9] The results of utility cost tests (UCT) show how cost effective the programs are from the perspective of the utility and compare the avoided cost of the energy savings with the cost of the program. The UCT results range from 1.39 to 4.56, demonstrating that from a utility perspective, multifamily programs can deliver high-value energy savings.

Table 3. Program Budgets and Cost Effectiveness

Program	Annual budget	Levelized cost of saved energy ($ per kWh or therm)[1]	Benefit-cost ratios[2]
CNT Energy Energy Savers	$2,505,952	Electric: $0.10 Gas: $1.00	TRC: 2.10
Austin Energy Power Saver Multifamily Rebates	$1,600,000	Electric: $0.073	TRC: 1.3 UCT: 2.18
Energy Trust of Oregon Existing Multifamily Program	$6,046,110	Electric: $0.025 Gas: $0.41	UCT: 2.7 SCT: 4.7
LEAN Massachusetts Low-Income Multi Family Energy Retrofit	$38,372,271	Electric: $0.145 Gas: $1.24[2]	TRC: 1.73 electric, 1.43 gas
NYSERDA Multifamily Performance Program	$49,099,921[3]	Electric: $.039[4]	S.I.R: 1.8
Puget Sound Energy Existing Multifamily Retrofit Program[5]	$10,296,500	Electric: $0.037 Gas: $0.36	TRC: 2.42 electric, 0.91 gas UCT: 2.96 electric, 2.63 gas

[9]The common reference for definitions of the five basic benefit-cost tests is the California Standard Practice Manual (CPUC 2001).

Program	Annual budget	Levelized cost of saved energy ($ per kWh or therm)[1]	Benefit-cost ratios[2]
PSE&G Residential Multi-Family	$14,042,457[6]	Electric: approx. $0.03 to $0.05	UCT: 1.39 TRC: 2.9
Efficiency Vermont Multifamily Program[7]	$1,940,381	Electric: $.07	TRC: 2.79
SMUD Multifamily Home Performance Program	$1,700,000	Electric: $0.08	Not available
New & Notable Programs			
CenterPoint Energy Low-Income Multifamily rebates[8]	$287,250	Gas: $0.16	UCT: 4.56 SCT: 4.70 PCT: 6.70
ComEd, Nicor Gas, and People's Gas Multifamily Comprehensive Energy Efficiency Program	$19,000,000	Not available	Not available
DC SEU Low-Income Multifamily Comprehensive	$1,200,000	Not available	SCT: 1.88

Notes: [1] Levelized costs are as reported unless noted. [2]Benefit-cost ratios are as reported by each program based on the standard testing they are required to use for reporting purposes. The standard methods include the Total Resource Cost Test (TRC), Utility Cost Test (UCT), Societal Cost Test (SCT), and Savings to Investment Ratios (S.I.R). A value of 1 means the program costs and benefits, which are defined differently depending on the methodology used, are equal. For a discussion of the various methods see Neme and Kushler 2010. [3]2007-2015 budget, annualized. [4]Levelized cost of saved energy for System Benefit Charge funded activities only using a 5.5% discount rate as reported in NYSERDA 2012, Table 2-12. [5] ACEEE calculated the cost of saved energy for Puget Sound Energy using a 5% discount rate and reported savings, expenditure, and average measure life for 2012. Benefit-cost ratios are as reported in PSE 2013. [6]Actual PSE&G 2012 expenditure as reported in Nowak et al 2013. [7]2012 expenditure. Levelized cost of saved energy calculated by ACEEE using 3% real discount rate approved by the Vermont Public Service Board, 2012 total resource acquisition costs, first-year electric savings, and 17-year measure life.[8]Levelized cost of saved energy calculated by ACEEE using 2013 budget, savings goal, estimated measure life, and 5% discount rate.

Table 4 summarizes the number of units that have participated in each of the established programs and the share of the total number of eligible customers they have reached annually and cumulatively. Austin Energy's long-running rebate program has reached the largest share of eligible customers. Puget Sound Energy has also reached a large share (nearly half) of their eligible multifamily customers through their direct installation and rebate program. In some cases, properties may have participated in these programs more than once, so the total participation is likely higher that the absolute number of units served. The programs that focus on whole building retrofits (compared to rebates for individual measures and direct installation services) including NYSERDA, CNT Energy, SMUD, PSE&G, and the comprehensive services from Efficiency Vermont, are reaching about 1% of eligible customers each year, reflecting the programs' focus on deep savings per participant and the narrower market to which a comprehensive retrofit is appealing and appropriate.

Table 4. Summary of participation by program

Program	Year launched	Annual participation (units in the most recent year)	Annual participation rate (% of eligible customers)	Cumulative participation (units)	Cumulative participation rate (% of eligible customers)
Austin Energy Power Saver Multifamily Rebates[1]	1989	18,213	9%	191,309	93%[2]
Puget Sound Energy Existing Multifamily Retrofit Program	2006	39,489	16%	120,000	49%
Energy Trust of Oregon Existing Multifamily Program	2011	21,765	10%	35,718	16%
SMUD Multifamily Home Performance Program	2012	1,200	1%	12,100	10%
NYSERDA Multifamily Performance Program	2007	28,429	1%	180,352	7%
CNT Energy Energy Savers	2007	4,126	1%	14,422	4%
Efficiency Vermont Multifamily Program	1998	450 (comprehensive projects only)	1%	Not available	Not available
PSE&G Residential Multi-Family	2010	2,295	.5%	10,322	2%
LEAN Massachusetts Low-Income Multi Family Energy Retrofit	2010	6,715 gas, 14,535 electric	Not available	10,715 gas, 28,524 electric	Not available

Notes: [1]Austin Energy's eligible customers estimated using the number of households living in buildings with 3 or more units according to the 2011 American Community Survey (United States Census Bureau 2011). [2]Due to the longevity of Austin Energy's program, this percentage is slightly misleading since many of the buildings and units may have participated multiple times as the installed energy efficiency measures reached the end of their life cycle. Units are only counted once per year, regardless of how many measures are installed.

Conclusion

In conversations with each of the program administrators, several common themes and lessons learned emerged, including:

- The need to partner with the local multifamily housing industry through trade associations and trade allies in order to market programs successfully and understand the unique challenges multifamily building owners face
- The importance of providing upfront incentives to overcome owner split incentives and address capital constraints

- Flexibility on the part of program administrators to meet owners' needs for financial and technical assistance, and to align programs with the timing of capital and budget planning
- The important role of dedicated program staff or trained contractors and trade allies to help reduce transaction costs for building owners and guide them through the application process

In order to use many of the best practices recommended, program administrators need the support and encouragement of utility regulators. Regulators can support effective multifamily programs by:

- Enabling the integration of programs across utilities and accounting for the dual commercial-residential nature of multifamily buildings, a duality requiring regulatory guidance for planning, budgeting, and reporting
- Providing flexibility in determining the cost effectiveness of comprehensive whole-building projects that deliver both electric and gas savings to tenants and owners as well as substantial non-energy benefits. These benefits—often primary drivers of investments in energy efficiency for building owners—include improved tenant comfort, increased property values, and lower operations and maintenance costs.
- Allowing cost-effectiveness tests to be applied at the project or portfolio level rather than for individual measures. Program administrators noted that this reform would help them meet the needs of their customers and unique building situations.
- Partnering with and convening stakeholders from the multifamily housing community to clarify the barriers building owners and program administrators face and to help align utility-funded programs with housing finance programs

The nine established programs included in this report have cumulatively reached over 600,000 apartment units and achieved total savings of 344 million kWh and 17.9 million therms. These programs, coupled with the dozens of other utility-funded multifamily programs across the country, show that significant progress is being made to deliver energy efficiency to the multifamily sector. Yet there are millions of multifamily households that have not yet been reached. In order to achieve the full potential for savings and to reach the greatest number of multifamily households, existing multifamily programs must continue to adapt and improve, and program administrators not currently serving the multifamily sector should expand their programs using the best practices recommended here. The opportunity for energy savings in the more than 20 million multifamily units nationwide is tremendous, making the energy savings from apartment buildings well worth the hunt. The best practices illustrated by the programs featured in this report can help program administrators and regulators get on track to reach this large and growing sector.

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Appendix A: Case Studies of Leading Programs

Data presented in the following case studies are as reported by each of the programs in response to an information request from ACEEE unless otherwise noted.

AUSTIN ENERGY — POWER SAVER MULTIFAMILY PROGRAM

PROGRAM DESCRIPTION. Austin Energy has been offering energy efficiency rebates to multifamily property owners since 1989. The program currently provides prescriptive rebates of up to $200,000 per customer for common area and in-unit measures including windows (replacement and solar screens), insulation, roof coating, duct systems, HVAC, and lighting. Potential measures and rebate levels are determined by an onsite rebate audit. The guidelines for participation require that all measures chosen (except for HVAC systems) must be installed throughout the property, including in all tenant units. This requirement encourages owners to invest in tenant spaces and helps to overcome split incentives.

Austin Energy also implements the Energy Conservation Audit and Disclosure (ECAD) ordinance, a unique policy adopted by the city of Austin which requires multifamily and commercial buildings to disclose their energy use. It also requires very high relative energy users to make energy efficiency improvements. The two programs coordinate marketing and outreach. Information from the energy audit required by ECAD can be used to determine eligibility for rebates in lieu of the rebate audit.

In October 2013, Austin Energy will launch a redesigned program that will support more comprehensive whole-building retrofits. The new program builds on a pilot program funded by the U.S. Department of Energy Better Building Neighborhood Program. Rather than rebates for individual measures, it will award a total custom rebate based on the projected energy savings of all the measures chosen by the owner. The value of the incentive will increase with projected level of savings.

PROGRAM SUCCESSES AND LESSONS LEARNED. Austin Energy's longstanding partnership with the Austin Apartment Association has been a key driver of success. The strong network of property managers has helped build awareness and spread adoption of the program as managers move around to various properties and companies. Austin Energy also works with the Independent Renters and Owners Committee (IROC) that represents owners of multiple smaller properties and that educates onsite managers and maintenance staff that can influence decision making on the ground.

The redesign of the program draws on best practices and lessons learned during the comprehensive retrofit pilot. The application process will be simplified and deeper rebates will be offered to increase participation. The custom incentives will no longer be based on energy modeling completed by contractors, a process requiring intensive time and resources to manage and review. Instead, Austin Energy has developed a rebate calculator that estimates savings based on the average of the past performance for each measure. The program will be delivered by preferred contractors who have been trained to use the calculator at the time of the audit to provide an estimated rebate. This delivery model will require less staff time from Austin Energy at the front end on projects that never move

beyond the audit phase. The custom approach also allows flexibility to offer incentives for new measures including appliances and occupancy sensors.

PROGRAM AT A GLANCE

General program information			
Program name	Power Saver Multifamily Program		
Program sponsor and administrator	Austin Energy		
Program implementer	Austin Energy		
Website	Austinenergy.com/go/rebates		
Best person to contact for information	Jaime D. Gómez mfrebates@austinenergy.com		
Program start date	Original program: 1989 Re-designed program: October 2013		
Targeted segment(s) of multifamily market	All existing buildings with 4 units and up		
Eligibility	Existing building with 4 or more units, or any combination of duplex, triplex and fourplex buildings on contiguous lots that have a single point of contact for the project		
Types of energy efficiency measures covered	Rebates provided for windows (replacement and solar screens), insulation, roof coating, duct system remediation, HVAC, and lighting. Each energy efficiency measure chosen must be completed throughout the entire property, except for HVAC replacement, which requires at least four systems be replaced.		
Service provider model	Currently use of approved contractors is required for duct sealing but owner selects their own contractor for all other measures. New program will use registered and approved contractors only.		
Quality assurance and quality control procedures	Installation progress inspections for any work requiring entry to dwellings. One-time final inspection for all other measures.		
Participation and savings			
Annual and cumulative participation	Annual 2011: 10,989 units	Annual 2012[10]: 18,213 units	Cum. 1989-2012: 191,309 units
Estimate of total eligible customers	1,372 multifamily communities 206,410 households[1]		
Participation rate (percentage of eligible customers)[2]	2012 annual: 9% of households Cumulative 1989-2012: 93% of households		
Savings achieved in most recent year	2012 First year annual savings: 7,886,000 kWh, 5.5 MW 2012 Lifetime savings: 47,316,000 kWh		

[10]The significant increase in participation in 2012 was due in part to American Reinvestment and Recovery Act (ARRA) grant funding and a one-time increase in program budgets and incentives.

Cumulative annual savings achieved to date	1989-2012: 139,372,000 kWh
Average percentage savings by participant compared to pre-program use	Not available
Estimated average measure life	6 years
Budgets and expenditures	
Total annual energy efficiency budget	$ 17 million (2012 total expenditure)
Cumulative multifamily program budget	Not available
Annual multifamily program budget	2013: $1.6 million
Annual multifamily budget breakdown: incentives	$1.6 million
Annual multifamily budget breakdown: marketing	$55,000 shared with ECAD implementation
Multifamily program expenditure in most recent year	2012: $3,025,156 (included ARRA grant funds)
Levelized cost of saved energy	$.0732 per kWh, $552 per KW
Cost effectiveness: Benefit-to-cost ratio(s)	TRC: 1.3 UCT: 2.18
Funding sources	FY 2012 and prior years: Conservation Rebates and Incentives Fund (CRIF), Austin Energy budget line item FY 2013: Community Benefit Charge (part of customer utility bill)

Notes: All figures are as reported by Austin Energy (Gomez 2013; Austin Energy 2013). [1]Estimated number of Austin metropolitan area households in buildings with 3 or more units (U.S. Census Bureau 2011). [2]Due to the longevity of Austin Energy's program, this percentage is slightly misleading since many of the buildings and units may have participated multiple times as the installed energy efficiency measures reached the end of their life cycle. Units are only counted once per year, regardless of how many measures are installed at a given time.

CNT ENERGY AND COMMUNITY INVESTMENT CORPORATION — ENERGY SAVERS

PROGRAM DESCRIPTION: Energy Savers is an energy retrofit program for existing affordable multifamily buildings in the Chicago area. It was founded in 2007 by CNT Energy and the Community Investment Corporation, two local nonprofit organizations, as part of an initiative to preserve affordable rental housing. The program uses a one-stop-shop approach to provide building owners with technical assistance, utility-funded incentives, and low-cost financing for comprehensive energy efficiency retrofits. Services include:

- Free energy assessment and report conducted by CNT Energy
- Financial guidance and support in securing incentives from utility-sponsored programs, and access to a 3% fixed-rate, seven-year-term loan through the Community Investment Corporation
- Construction support and oversight including developing a scope of work, reviewing bids, hiring contractors, and scheduling and monitoring installation
- Monitoring, education, and continuing engagement to ensure that buildings are maintained and operated efficiently once the improvements are complete

Each building receives customized recommendations for comprehensive energy efficiency retrofits. Common measures targeted include insulation, air sealing, pipe insulation, high-efficiency boilers, high-efficiency hot water heaters, new boiler controls, and high-efficiency appliances.

PROGRAM SUCCESSES AND LESSONS LEARNED: The one-stop-shop model has been key to the success of Energy Savers, which has completed 356 projects. The model breaks down the traditional barriers that discourage building owners from undertaking energy efficiency projects by creating a hub of financial and technical assistance. The program team communicates with and guides building owners throughout the process and responds to their needs. CNT Energy has simplified its energy assessment reports to focus less on building science and more on the cost and energy savings projections that matter most to building owners. This has helped improve the percentage of audited buildings that move on to implement energy efficiency upgrades.

Energy Savers has also partnered extensively with the local housing community, including builders groups, housing authorities, and professional associations, to provide trusted messengers for program outreach. The program helps building owners who have completed projects to share their stories via case studies, building tours, and features in publications. . In addition to providing project financing, the Community Investment Corporation has helped the program identify potential participants through its multifamily lending activities.

PROGRAM AT A GLANCE

General program information		
Program name	Energy Savers	
Program administrator	CNT Energy and the Community Investment Corporation	
Website	http://www.cntenergy.org/buildings/energysavers/multifamily/	
Best person to contact for information	Jason Ransby-Sporn Multifamily Program Manager, CNT Energy (773) 269-4053. jransby-sporn@cntenergy.org	
Program start date	September 2007	
Targeted segment(s) of multifamily market	Mid-to-low income, affordable, and subsidized properties	
Eligibility	Buildings must have a minimum of 5 residential units, and tenant incomes or corresponding rents must fall at or below 80% AMI. Condominiums are excluded.	
Types of energy efficiency measures covered	Measures recommended are based on savings projections for each building and their relative cost effectiveness. The measures commonly recommended and installed are air sealing and insulation, balancing and optimizing heating systems, and heating and domestic hot water pipe insulation.	
Service provider model	CNT Energy staff complete an energy assessment and develop a scope of work with building owners. Owners are encouraged to choose from a database of prequalified contractors to complete installations.	
Quality assurance and quality control procedures	CNT Energy inspects 100% of contractor-proposed and -installed projects for quality. The chief engineer reviews 5% of all reports and field audits.	
Participation and savings		
Annual and cumulative participation	Annual (Jun 2012 — May 2013): 4,126 units 110 projects	Cumulative (Sep 2008 — Aug 2013) 14,422 units 365 projects
Estimate of total eligible customers	401,083 affordable multifamily housing units (less than 80% AMI) in Illinois	
Participation rate (percentage of eligible customers)[2]	Annual: 1% of eligible units Cumulative: 3.6% of eligible units	
Savings achieved in most recent year	First-year annual savings (2012 program year) 990,240 therms, 2,681,900 kWh	
Cumulative annual savings achieved to date	Sep 2008 to Aug 2013: 3,461,280 therms, 9,374,300 kWh	
Average percentage savings by participant compared to pre-program use	Actual measured natural gas savings (weather-adjusted): 26% Average natural gas savings across participants based on third-party regression analysis: 20%[1]	

Estimated average measure life	Typical lifetime range is 10-20 years.
Budgets and expenditures	
Total annual energy efficiency budget	Not applicable; program leverages multiple funding sources.
Cumulative program budget	Not available
Annual multifamily program budget	Not available
Annual multifamily budget breakdown: incentives	$5,269,094[2]
Annual multifamily budget breakdown: marketing	$2,505,951 (not including the values of loans provided)
Multifamily program expenditure in most recent year	Not available
Levelized cost of saved energy	$0.10 per kWh $1.00 per therm
Cost effectiveness in terms of benefit-to-cost ratio(s)	Total Resource Cost: 2.10
Funding sources	Energy Savers is supported by utility-customer funds through the State Energy Efficiency Portfolio Standard (EEPS) in partnership with the Illinois Department of Commerce and Economic Opportunity and the investor-owned utilities in Northern Illinois.

Notes: All figures are as reported by CNT Energy (Ransby-Sporn 2013). [1]Actual measured savings using pre- and post-retrofit utility bills are 26%. Program evaluation using regression analysis to compare actual-use with projected-use estimated savings at 19.8% (Navigant 2013). [2]Expenditures include program overhead, incentives, and the sum of private investment in the form of energy efficiency loans taken out.

ENERGY TRUST OF OREGON — EXISTING MULTIFAMILY PROGRAM

PROGRAM DESCRIPTION: The Energy Trust of Oregon Existing Multifamily Program has operated as a standalone initiative since 2011. The program targets existing buildings across the multifamily sector and provides no-cost energy assessments and direct installation of Instant Savings Measures (ISMs) as well as cash incentives for a variety of energy efficiency upgrades. Standard prescriptive incentives cover upgrades to windows, insulation, water heaters, demand controls, central air conditioning units, appliances, HVAC, and lighting. Custom incentives are also available for projects not covered by the standard incentives. The Energy Trust uses business development leads who specialize in a particular segment of the multifamily market in addition to general market-rate properties (condominiums, assisted and senior living, affordable housing, and campus living). They reach out directly to building owners to take a portfolio-wide approach to upgrading their properties. The business development leads guide owners throughout the process, including helping them complete applications, secure contractors, and complete any necessary inspections.

The Energy Trust also works with upstream equipment distributors in order to capture opportunities for energy savings at the point at which equipment fails and is replaced. When equipment fails, onsite maintenance staff can often make replacement decisions and use their preferred contractors without going through an owner approval process. In order to reach the onsite staff making these decisions, the Energy Trust provides incentives directly to the equipment distributors. The distributors then apply a discount to the sales price, eliminating the price premium for higher efficiency equipment and the need for building staff to apply for the incentive.

PROGRAM SUCCESSES AND LESSONS LEARNED: The Energy Trust recently completed a process evaluation (Research into Action 2013) and market research (Forrest 2013) that confirmed that decision making about energy efficiency in the multifamily sector is highly complex and segmented. Owners, portfolio managers, and onsite property managers have varying levels of authority and involvement in decision making depending on the type of project. While onsite property managers can schedule direct installation services and energy assessments, decisions about capital projects are made at the ownership level. This limits the ability of direct installation to serve as a gateway to larger projects. Based on the findings of their market research, the Energy Trust is working to developing messaging and market materials that target the varying levels of decision makers as well as the different sectors of the multifamily market. The Energy Trust has learned that different language and information are needed to influence market-rate as opposed to affordable building owners. The Energy Trust has also learned that multifamily building owners, like their commercial counterparts, are motivated by earning a return on their investment and improving the value of their properties, rather than by saving energy for their tenants as a marketing and retention strategy. As a result, the Trust's business development leads are now working with owners to get energy efficiency upgrades included in budget and capital improvement planning cycles.

PROGRAM AT A GLANCE

General program information		
Program name	Existing Multifamily Program	
Program sponsor and administrator	Energy Trust of Oregon	
Program implementer	Lockheed Martin Services, Inc.	
Website	http://energytrust.org/commercial/multifamily/	
Best person to contact for information	Scott V. Swearingen Senior Project Manager, Multifamily (503) 546-3625. scott.swearingen@energytrust.org	
Program start date	January 1, 2011	
Targeted segment(s) of multifamily market	Existing multifamily structures including market-rate, affordable, retirement/assisted living, campus living, condo/townhome, homeowners associations	
Eligibility	2+ attached units served by Portland General Electric, Pacific Power, NW Natural, or Cascade Natural Gas in Oregon	
Types of energy efficiency measures covered	Direct installs of CFLs and faucet aerators in the tenant spaces, energy surveys and custom incentive solutions, as well as cash incentives for common-area lighting, appliances, insulation, windows, hot water, and HVAC	
Service provider model	Direct installation of instant savings measures (showerheads, aerators, and CFLs) completed by the subcontractor to Lockheed Martin. All other work is installed by contractors affiliated with Energy Trust's Trade Ally Network or owner-selected own contractors.	
Quality assurance and quality control procedures	Post-install verification on all measures, including lighting, that receive more than $3,000 in financial incentives, all weatherization projects, and all self-installed projects regardless of incentive amount. In addition, the PMC randomly selects 3% of projects that receive less than $3,000 for post-install verification. Energy Trust also performs quarterly audits of physical project folders and project entries.	
Participation and savings		
Annual and cumulative participation	Annual 2012: 21,765 units 1,080 sites	Cumulative 2011-12: 35,718 units 1,591 sites
Estimate of total eligible customers	229,000 rental units in 55,000 buildings in Energy Trust service territory	
Participation rate (percentage of eligible customers)[2]	Annual: 10% of eligible units Cumulative: 16% of eligible units	
Savings achieved in most recent year	First-year annual savings 2012: 15,909,686 kWh, 96,767 therms Lifetime savings 2012: 195,370,944 kWh, 1,262,815 therms	
Cumulative annual savings achieved to date	2011-12: 29,677,984 kWh, 148,342 therms	

Average percentage savings by participant compared to pre-program use	Not available		
Estimated average measure life	2012: 12.3 years electric measures, 13.1 years gas measures		
Budgets and expenditures			
Total annual energy efficiency budget	2013: $154 million (not including renewable energy programs)		
Cumulative program budget	Not available		
Annual multifamily program budget	2013 $6,046,110		
Annual multifamily budget breakdown: incentives	2013 $3,334,770		
Annual multifamily budget breakdown: marketing	2013 $250,000		
Multifamily program expenditure in most recent year	2012 $3,966,924		
Levelized cost of saved energy	Electric: $0.025 Gas: $0.412		
Cost effectiveness in terms of benefit-to-cost ratio(s)	2012 electric and gas: Utility: 2.7 Societal: 4.7	2012 electric only: Utility: 2.8 Societal: 5.0	2012 gas only: Utility: 1.7 Societal: 2.7
Funding sources	Energy Trust is funded by the ratepayers of Portland General Electric, Pacific Power, NW Natural, and Cascade Natural Gas who pay a small percentage on their utility bills into a public-purpose charge fund. Energy Trust receives the majority of these funds to invest in energy efficiency and renewable energy for the benefit of ratepayers. Other public-purpose fund recipients are Oregon Housing and Community Services for low-income housing and weatherization, and the Oregon Department of Energy for energy efficiency in schools. Energy Trust is overseen by the Oregon Public Utility Commission and submits quarterly and annual reports and financial statements.		

All figures are as reported by Energy Trust of Oregon (Swearingen 2013).

LEAN MASSACHUSETTS — LOW-INCOME MULTI FAMILY ENERGY RETROFITS

PROGRAM DESCRIPTION: The Massachusetts Low-Income Multi-Family Energy Retrofit program is a statewide initiative targeting privately and publicly owned low-income housing. It is sponsored by the Massachusetts electric and gas utilities and overseen by the Low-Income Energy Affordability Network (LEAN) and its Multi-Family Advisory Committee. The program arose to address barriers that the affordable housing community faced in accessing the existing multifamily programs offered by the utility program administrators. These barriers included the complexity of navigating multiple programs with varying requirements and incentives, and an inability to afford copayments.

The program is now fully integrated across the utilities and in most cases provides funding for the full cost of energy efficiency upgrades to existing multifamily properties. The program is implemented by Action for Boston Community Development (ABCD) and Action, Inc. Gloucester, both community action agencies with experience in the Weatherization Assistance Program. The implementation agencies help owners complete an onsite energy assessment, develop and approve a scope of work, procure contractors, and inspect the work along the way. The program generally covers the full cost of the project and pays contractors directly, with no direct cost to the building owners.

PROGRAM SUCCESSES AND LESSONS LEARNED: One key to the program's success is its replacement of separately administered multifamily programs with a single point of contact. Another key is the program's statewide coordination across the utilities and the affordable housing community through the Advisory Committee. This group includes representatives of electric and gas utilities, public housing authorities, community development corporations, tenant organizations, and multifamily property owners. Committee members work together to solve problems and market the program to their constituencies. A Best Practices Group which includes the utility program administrators meets regularly to help align the program incentives and requirements across the utilities and to consider how to incorporate new measures.

Aligning the program across the utilities is an ongoing challenge. Utilities still lack a single system for determining the cost effectiveness of eligible measures and approving project proposals, contracting guidelines, and preferred vendors. The program is also constrained by the substantially higher statewide budgets for electricity measures compared to natural gas. The uneven budgets do not always reflect the biggest opportunities for energy savings and allow the program implementers to pursue and meet the full demand for energy efficiency heating systems in particular.

PROGRAM AT A GLANCE

General program information		
Program name	Low-Income Multi Family Energy Retrofits	
Program sponsor and administrator	NSTAR, National Grid, Western Massachusetts Electric, Unitil, Columbia Gas, Berkshire Gas, New England Gas, Blackstone Gas, Cape Light Compact	
Program implementer	Action for Boston Community Development (ABCD) as lead vendor for NSTAR and Columbia Gas; Action, Inc. Gloucester as lead vendor for National Grid.	
Website	http://leanmultifamily.org/	
Best person to contact for information	John Wells Action for Boston Community Development	
Program start date	2010	
Targeted segment(s) of multifamily market	Low-income multifamily properties owned by public housing authorities, nonprofit organizations, and for-profit developers. The program aims for an equal split in participation between public, nonprofit, and for-profit owners.	
Eligibility	Multifamily properties (5+ units) that meet the income qualifications (50% of tenants at 60% of AMI)	
Types of energy efficiency measures covered	The program conducts building assessments to help determine cost-effective energy efficiency opportunities. All measures that are cost effective are covered including replacement or repair of heating and hot-water heating systems, air sealing and insulation, lighting upgrades, appliance upgrades, and ventilation upgrades.	
Service provider model	The program implementers provide a full range of services, including access to the WegoWise benchmarking tool, energy audits, project management, assigning a contractor to carry out the work, and quality assurance. In some cases owners can use their own qualified contractors.	
Quality assurance and quality control procedures	Regular in-process inspections and final inspection conducted by auditor for all insulation and air sealing projects. Heating systems include inspection and commission by manufacturers' representatives	
Participation and savings[1]		
Annual and cumulative participation	Annual 2012: 6,715 gas units 14,535 electric units	2011-12: 10715 gas units 28,524 electric units
Estimate of total eligible customers	Not available	
Savings achieved in most recent year	2012 annual savings (preliminary): 17,574MWh, 1,110,072 therms 2012 lifetime savings (preliminary): 143,785 MWh, 25,458,394 therms	
Cumulative annual savings achieved to date	Not available	

Average percentage savings by participant compared to pre-program use	Estimate 20% or more for heating systems, 20-30% for building shell improvements, 4-5 year payback for lighting upgrades
Estimated average measure life	Electric: 8 years Gas: 23 years
Budgets and expenditures	
Total annual energy efficiency budget	Statewide program administrator budget for 2013: $706,166,252
Cumulative program budget	2013-15: $119,558,838
Annual multifamily program budget	2013: $38,372,271
Annual multifamily budget breakdown: incentives	Not available
Annual multifamily budget breakdown: marketing	Not available
Multifamily program expenditure in most recent year	2012: $18,592,972 (gas), $16,489,865 (electric), $35,082,837 (total)
Levelized cost of saved energy	Electric: $.14per kWh Gas: $1.24 per therm
Cost effectiveness in terms of benefit-to-cost ratio(s)	For the 2013-15 planning period: TRC: 1.73 electric, 1.43 gas
Funding sources	Utility customer funding from all of the Massachusetts program administrators including all of the investor-owned electric and gas distribution companies and the Cape Light Compact.

Notes and sources: All information is as reported by the program implementers (Wells 2013) except where noted. 12012 annual savings, expenditure, and participation figures are for all program administrators statewide as reported by the Massachusetts Energy Efficiency Advisory Council (MA EEAC 2013, Electric Summary Comparison Table).2Calculated by dividing the preliminary lifetime savings by the preliminary annual savings as reported. 3Budgets and benefit cost ratios are from the joint three-year plan filed by all program administrators with the Massachusetts Energy Efficiency Advisory Council (Mass Saves 2012).4Calculated using 2012 reported annual savings, measure life, and an assumed 5% real discount rate.

NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY (NYSERDA) — MULTIFAMILY PERFORMANCE PROGRAM

PROGRAM DESCRIPTION: The NYSERDA Multifamily Performance Program (MPP) provides incentives and low-cost financing for existing multifamily building retrofits and new construction projects that achieve at least a 15% reduction in energy use. Incentives escalate as buildings achieve a higher energy use reduction. The program relies on a network of service providers called Multifamily Performance Partners (MPPs) with whom building owners are required to work to guide them through the program and provide the necessary technical services. These include completion of an energy audit (or energy modeling for new construction projects) and creation of a customized energy reduction plan. The energy reduction plan identifies the opportunities for cost-effective energy efficiency improvements and the estimated reduction in energy use and corresponding incentive level. Owners are free to choose whichever energy efficiency measures they prefer, as long as the projected savings are above the 15% program requirement. The performance partners then arrange for the necessary inspections. One year after completion of the project, they evaluate the actual energy usage information to confirm the realized energy savings. Incentives are paid to owners in stages, with the final installment of any bonus incentives (for savings above 15%) paid upon completion of the one-year follow-up evaluation. By structuring the bonus incentive payments in this way, NYSERDA rewards actual energy performance and encourages performance partners to accurately project energy savings.

PROGRAM SUCCESSES AND LESSONS LEARNED: Since its inception in 2007, the program has proved that its 15% energy reduction requirement is achievable, with an average of 23% savings achieved per project. The program also has shown that their network of partners can provide a one-stop shop of services to guide building owners throughout the process. In addition to the required audit and energy reduction plan, many partners offer optional services such assistance with bid solicitation, contractor selection, and construction management. NYSERDA does not provide incentives directly to their partners, who are free to structure their fees as they choose. They often use the projected value of the NYSERDA incentives paid to building owners to offset their fees for completing the audit and energy reduction plan.

In order to minimize time and participation costs for smaller buildings (5-49 units), NYSERDA has developed a Fast Track program that requires a less intensive energy audit and fewer inspections. In addition, NYSERDA constantly tries to make it easier for owners to identify and connect with MPPs. Benchmarking incentives help owners who may not be ready for comprehensive projects to learn more about their building's current performance, work with a multifamily performance partner, and acquire information about low- and no-cost efficiency opportunities.

While most owners are brought into the program directly by an MPP, some owners will need to find and connect with one. The Locate-a-Partner tool on NYSERDA's website helps owners find MPPs serving their area and lets them filter the list by the partners' building types and level of services. The tool also lists the number and size of the MPP projects completed by the Partner. To make it even easier for owners to get started, NYSERDA is planning to add a feature which will allow owners to send service requests to MPPs directly

through the website, cutting down on the time the owners need to spend following up with partners.

PROGRAM AT A GLANCE

General program information		
Program name	Multifamily Performance Program	
Program sponsor and administrator	New York State Energy Research and Development Authority (NYSERDA)	
Program implementer	NYSERDA in collaboration with its implementation contractor, TRC Solutions and its quality assurance contractor, Taitem Engineering	
Website	http://www.nyserda.ny.gov/BusinessAreas/Energy-Efficiency-and-Renewable-Programs/Multifamily-Performance-Program/Multifamily-Performance-Program.aspx	
Best person to contact for information	For Program information: Lindsay Robbins (212) 971-5342 x3008. lrr@nyserda.ny.gov	For potential participants: Ryan Romard (212) 971-5342 x3614 rmr@nyserda.ny.gov
Program start date	May 2007	
Targeted segment(s) of multifamily market	Existing buildings (both low-income and market-rate) and new construction (both low-income and market-rate)	
Eligibility	All buildings with 5 or more units qualify, although depending on system configuration, some low-rise buildings may be served by NYSERDA residential programs for 1-4 unit buildings. In order to qualify for low-income incentives, a property must show that 25% or more of its units are affordable to those making 80% or less SMI, or the building must meet one of the low-income proxies which are based mainly on the reception of certain federal and state subsidies.	
Types of energy efficiency measures covered	Every project develops a customized energy efficiency workscope that must reduce overall energy usage in the building by 15% or more. Any type of efficiency measure is allowed as long as it meets minimum performance standards.	
Service provider model	MPP has a network of service providers called multifamily performance partners. Building owners are required to work with a certified partner to guide them through program participation and provide technical assistance to design and install the energy efficiency workscope. Owners can choose their own contractors or do the work in house.	
Quality assurance and quality control procedures	NYSERDA and TRC staff provide quality control. NYSERDA or TRC staff must approve energy models and workscopes and inspect all measure installation. Taitem provides quality assurance analysis on the program as a whole and conducts formative evaluation on a sample of projects.	

Participation and savings				
Annual and cumulative participation	2012 participation: Projects: 172 Buildings: 411 Units: 28,429		Cumulative participation: Projects: 1,127 Buildings: 4,663 Units: 180,352	
Estimate of total eligible customers	New York State has approximately 2.6 million dwelling units located in multifamily buildings with 5 or more units			
Participation rate (percentage of eligible customers)	Annual: 1% of units Cumulative: 7% of units			
Savings achieved in most recent year	Not available. Savings are tracked cumulatively.			
Cumulative annual savings achieved to date	Since 2007: 1,236,287.65 mmBtu, 12,362,877 therms 94,882,032 kWh			
Average percentage savings by participant compared to pre-program use	23% (electric and gas)			
Estimated average measure life	17.1 years			
Budgets and expenditures				
Total annual energy efficiency budget	Not available			
Cumulative multifamily program budget[1]	$392,799,368.90 (2007-2015)			
Annual multifamily budget breakdown: incentives	$348,466,849.38 (2007-2015)			
Annual multifamily budget breakdown: marketing	$8,498,492.38 (2007-2015)			
Multifamily program expenditure in most recent year	(2007-2015) $238,209,613			
Levelized cost of saved energy	$.039 per kWh[2]			
Cost effectiveness in terms of benefit-to-cost ratios	Savings to Investment Ratio: 1.8	Total Resource Cost Test: 1.3	Program Administrator Cost Test: 3.2	Participant Cost Test: 2.6[3]
Funding sources	Systems Benefit Charge Rate Payer Funds (2007-2009), Energy Efficiency Portfolio Standard Rate Payer Funds and Regional Greenhouse Gas Initiative Funds (2010-present)			

Notes: [1]NYSERDA does not budget annually. Budgets shown are for the entire program period (2007-2015).[2]Levelized cost of saved energy for System Benefit Charge funded activities only using a 5.5% discount rate as reported in NYSERDA 2012, Table 2-12). [3]TRC, PACT, and PCT results for System Benefit Charge funded projects through 2011 (NYSERDA 2012).

PUBLIC SERVICE ELECTRIC AND GAS (PSE&G) — RESIDENTIAL MULTI-FAMILY PROGRAM

PROGRAM DESCRIPTION: In 2010 PSE&G began offering the Residential Multifamily Housing Program to customers in its service territory, which includes many of New Jersey's urban areas and has a high proportion of affordable multifamily housing. The program was designed to eliminate the upfront cost to building owners through incentives and on-bill financing for the customer share of the program costs. Building owners receive an energy audit of their building(s) at no cost, and all cost-effective energy efficiency measures identified by the audit as having a simple payback of 15 years or less may be eligible for installation under the program. Owners can then choose their own contractors to complete the work, with oversight and assistance from PSE&G. Incentives are paid to owners throughout the project to buy down the upfront cost, and then owners repay their remaining share of the costs over time on their PSE&G utility bill, interest free. The program incentives will buy down project costs by up to seven and not less than two years. Low-income-qualified multifamily projects that receive New Jersey Housing and Mortgage Finance Agency (NJHMFA) funding repay their share of the program costs over ten years; non-NJHMFA projects repay over five years.

PROGRAM SUCCESSES AND LESSONS LEARNED: PSE&G partnered with NJHMFA to develop the program to specifically address the unique needs of multifamily affordable housing, namely, owners' limited cash flow and lack of capital for building upgrades. The NJHMFA goal was to reduce upward pressure on rates by lowering operating costs in the properties it financed while minimizing the debt owners needed to take on to undertake energy efficiency upgrades. The PSE&G on-bill payment option offers an alternative to traditional financing and allows building owners to start saving with no upfront costs. The partnership with NJHMFA and their portfolio of multifamily properties also gave PSE&G direct access to interested building owners and projects. More than 42 projects with over 10,000 units are currently in the program pipeline.

PSE&G has learned the importance of incorporating flexibility into their program's structure to align it with the customer's project lifecycle. The substantial renovation projects targeted by the program have long lifecycles, sometimes up to 24 months, resulting in long lag times between the dates an audit is conducted, contractors are hired, and work is completed. PSE&G has planned their program resources accordingly to stretch beyond an annual time frame. The incentive payment schedule was also adapted to align with participants' construction schedules and cash flow. Initially the program provided three equal incentive payments at set points in the project cycle; now it offers smaller, multiple payments timed to match the cash flow needs of the project.

PSE&G has also adapted its energy audit requirements to make it easier for smaller and newer properties to participate. For many of these properties, a less intensive audit (ASHRAE Level II) is appropriate at a cost significantly lower than the investment grade audit (ASHRAE Level III) initially required for all participants. In some cases the cost differential made the difference in determining a project's cost effectiveness and eligibility to participate in the programs. Providing simpler, less costly audits where appropriate also saves the program money and allows a greater number of participants to use program funding.

PROGRAM AT A GLANCE

General program information		
Program name	Residential Multi-Family Program	
Program sponsor and administrator	Public Service Electric and Gas	
Program implementer	Public Service Electric and Gas	
Best person to contact for information	Rachael P Fredericks (732) 939-2401, rachael.fredericks@pseg.com	
Program start date	2010	
Targeted segment(s) of multifamily market	Existing multifamily buildings in PSE&G service territory including high-rise/low-rise, mass-metered/individually metered units, and market-rate/low-income properties	
Eligibility	PSE&G electric and gas customers. Multifamily buildings must be 5+ units.	
Types of energy efficiency measures covered	All cost-effective energy conservation measures identified by the energy audit as having a simple payback of 15 years or less. Measures may include energy-efficient lighting/CFLs, low-flow aerators and showerheads, corridor and stairwell lighting, ventilation improvements, ENERGY STAR refrigerators, programmable thermostats, boiler upgrades, motors, energy recovery, heating and cooling upgrades, and air sealing.	
Service provider model	PSE&G uses third-party vendors hired through a competitive bid process to perform the audit, project engineering, and site inspections. Building owners select their own installation contractor. PSE&G provides assistance in the form of bid-ready documents and engineering.	
Quality assurance and quality control procedures	PSE&G inspects projects throughout the construction phase as required. At a minimum, site inspections are conducted at the 50% and 100% complete phases. PSE&G also requires copies of all contracts, invoices, and receipts to verify project progress.	
Participation and savings		
Annual and cumulative participation	Annual (2012 completed projects): 11 projects 79 buildings 2,295 units	Cumulative (including projects currently in construction): 42 projects 277 buildings 10,322 units
Estimate of total eligible customers	Approximately 500,000 multifamily rental units statewide	
Participation rate (percentage of eligible customers)[2]	Annual 2012: 0.5% of eligible units Cumulative (projects currently in construction): 2%	
Savings achieved in most recent year	Annual savings (2012): 1,858,715 kWh 352,135 therms	Lifetime savings (2012): 27,880,725 kWh 6,338,430 therms
Cumulative annual savings achieved to date	Same as above	

Average percentage savings by participant compared to pre-program use	Not available
Estimated average measure life	15-18 years
Budgets and expenditures	
Cumulative multifamily program budget	Phase 1: $19 million Phase 2: $20 million
Annual multifamily program budget	Program budgets are not planned on a per-year basis, but rather a lump sum as filed with the New Jersey Board of Public Utilities. The initial program budget was $19 million; an extension of the program provided another $20 million in funding. PSE&G expects to propose additional program funding at significantly higher levels in the near future.
Multifamily program expenditure in most recent year	$14,042,457 (2012)
Cost of saved energy	Earlier in the program with fewer projects the cost was $.05 per kWh. Now with a greater number of projects the cost is estimated at $.03-.04 per kWh.
Cost effectiveness in terms of benefit-to-cost ratio(s)	2011 UCT: 1.39 2011 TRC: 2.9
Funding sources	PSE&G investment. PSE&G will submit a request for rate recovery after investment.

All figures as reported by PSE&G (Fredericks 2013).

PUGET SOUND ENERGY — EXISTING MULTIFAMILY RETROFIT PROGRAM

PROGRAM DESCRIPTION. The Puget Sound Energy (PSE) Existing Multifamily Retrofit Program offers no-cost installation of energy efficiency measures, appliance replacement, and incentives for additional upgrades to appliances, windows, insulation, lighting, and heating and hot water systems. The program targets existing multifamily buildings and complexes, excluding low-income buildings and new construction, which are served through separate programs.[11] As a first step, PSE conducts a free walk-through energy audit to identify potential energy efficiency upgrades, ensuring that owners know the full range of opportunities. The audit also provides PSE with information on the complex that it can use to market future program offerings. Owners can then choose to schedule direct installation of no-cost measures including lighting (LED and CFL), low-flow fixtures, and water pipe insulation. Once contractors are onsite for the installation, they evaluate whether the in-unit appliances are eligible for free replacement. Additional measures are installed by contractors selected from PSE's network or chosen by the owner. While owners can choose which additional measures they want to install and in what order, PSE does require insulation to be upgraded with any window replacement projects.

PROGRAM SUCCESSES AND LESSONS LEARNED. A driver of the program's success has been the relationships that PSE has built with both owners and contractors. In order to build relationships and minimize the burden for owners, the program provides seamless services and a single point of contact, even when internal coordination is needed for custom projects such as boiler replacements that require review by the PSE engineering team. Contractors are both the program's workforce and its sales force. PSE offers them the opportunity to join their Contractor Alliance Network, which provides them with customer referrals and allows them to co-brand their services with PSE. The network allows PSE to follow up on audits by providing owners with contractor referrals, helping them to coordinate bids. The three-way relationship between PSE, contractors, and owners has helped encourage owners to undertake multiple projects. The flexibility of the program allows owners to undertake projects as they are able and when they fit with their capital improvement schedules.

In order to streamline the application process and reduce upfront costs, PSE now allows owners to assign the incentives they receive directly to their contractors. This strategy reduces the amount owners have to pay up front to contractors and motivates contractors to ensure that their installations will meet PSE requirements. It also gives them a marketing tool as they are able to offer discounted pricing.

[11]PSE's program for low-income weatherization funds county agencies which combine PSE, state, and federal funds to weatherize both single and multifamily low-income housing. Properties that are eligible for the low-income program may also receive incentives through the standard multifamily program if the measures are not provided by the local weatherization agencies.

PROGRAM AT A GLANCE

General program information		
Program name	Existing Multifamily Retrofit Program	
Program sponsor and administrator	Puget Sound Energy	
Program implementer	Puget Sound Energy and Ecova Inc.	
Website	http://pse.com/savingsandenergycenter/ForCondosApartments/Pages/default.aspx	
Best person to contact for information	John Forde (415) 456-2616. john.forde@pse.com,	
Program start date	August 2006	
Targeted segment(s) of multifamily market	Existing non-low-income multifamily buildings/campuses, both apartments and condominiums. PSE operates separate multifamily low income and new construction programs.	
Eligibility	5+ more attached units. If buildings located in a multifamily campus are less than 5 attached units or there are nonresidential buildings (cabana, laundry facilities, offices, etc.), the program will serve the entire campus.	
Types of energy efficiency measures covered	Measures include window and insulation upgrades, air sealing, appliance, lighting, HVAC and water heating upgrades, and calculated commercial upgrades including boilers and solar pool heaters.	
Service provider model	PSE directly installs in-unit measures including lighting (CFL and LED), showerhead replacements, appliance replacements (fridges and clothes washers), and pipe wrap. Owners are free to choose their own contractors for other installed measures. Contractors may join the PSE Contractor Alliance Network; PSE refers contractors to customers, and contractors co-brand with PSE.	
Quality assurance and quality control procedures	Contractor training prior to installation of incentivized measures, in-progress verifications, post-installation verification of up to 15% of units affected.	
Participation and savings		
Annual and cumulative participation	Annual 2012: 39,489 units	Cumulative 2006-2012: 120,000 units
Estimate of total eligible customers	Approximately 245,000 multifamily customers	
Participation rate (percentage of eligible customers)[2]	2012 annual: 16%. Cumulative (2006-2012): 49% of customers	
Savings achieved in most recent year	2012 first-year annual savings: 22,952,000 kWh, 90,156 therms 2012 lifetime savings: 393,057 kWh, 1,982,772 therms	
Cumulative annual savings achieved to date	2006-2012: 94,000,000 kWh, 275,000 therms	
Average percentage savings by participant compared to pre-program use	Not available	

Estimated average measure life	Blended average is 18 years (22 years for gas, 18 years for electric)	
Budgets and expenditures		
Total annual energy efficiency budget	2012: $111 million	
Cumulative program budget	2006-2012: $30,962,000	
Annual multifamily program budget	2013: $10,066,500 (electric), $230,000 (gas)	
Annual multifamily budget breakdown: incentives	$8,866,00 (electric), $169,000 (gas)	
Annual multifamily budget breakdown: marketing	$42,000 (electric), $2,500 (gas)	
Multifamily program expenditure in most recent year	2012: $10,247,241 (electric), $451,953 (gas)	
Levelized cost of saved energy	$.037 per kWh $.36 per therm	
Cost effectiveness in terms of benefit-to-cost ratio(s)	2013 TRC estimate: Electric: 2.42 Gas: .91	2013 UCT estimate: Gas: 2.63 Electric: 2.96
Funding sources	Funding is realized from a customer contribution included in residential customers' electric and natural gas utility bills.	

Notes and sources: All figures are as reported by PSE (Forde 2013) unless noted. Levelized cost of saved energy calculated using 2012 savings, utility costs, and estimated average measure life as reported to Washington Department of Commerce (PSE 2013, Exhibit 2) and a 5% real discount rate. [2]Benefit-cost ratios are based on 2012 results (PSE 2013, Exhibit 2).

SACRAMENTO MUNICIPAL UTILITY DISTRICT — MULTIFAMILY HOME PERFORMANCE PROGRAM

PROGRAM DESCRIPTION: The Sacramento Municipal Utility District (SMUD) launched the Multifamily Home Performance Program (HPP-MF) n 2009 to support comprehensive energy retrofits of existing buildings with federal funding from the American Recovery and Reinvestment Act. In 2012 SMUD launched a new version of the program funded by its utility-customer public benefit funds. The current HPP-MF program requires projects to achieve energy savings of 10% over existing use and provides performance-based incentives that increase with the level of energy savings achieved.[12] The federal grant funds helped create a workforce of certified energy raters (HERS II). SMUD now relies on these raters to complete energy audits pre- and post-installation, help owners identify potential energy efficiency improvements, and provide oversight and quality insurance throughout the project. The raters are paid incentives of $85 to $150 a unit depending on the size of the building, allowing many to offer energy audits at no cost to the building owner.

The HPP-MF pathway requires building owners to install at least two energy efficiency measures including HVAC system upgrades throughout their properties. In addition, SMUD offers lower prescriptive rebates for individual measures. The HPP-MF program remains the focus and accounts for all but approximately 5% of projects.

PROGRAM SUCCESSES AND LESSONS LEARNED: In 2012, SMUD began transitioning from grant funding in order to make the program more cost effective and sustainable. SMUD now manages and funds the project rather than using an outside program implementation contractor. By simplifying program delivery, gradually lowering incentive levels, and allowing owners to use their own contractors, SMUD has lowered overhead costs and improved the cost effectiveness of the program. Its core remains the same: owners may choose any cost-effective measures that enable them to meet the 10% requirement, and incentives escalate with higher energy savings. Even with the lower incentive levels, the program maintains a waiting list and is fully subscribed for 2014.

While the program remains expensive in terms of dollars per kilowatt saved, SMUD recognizes its importance in reaching previously underserved customers. Prior to the grant program, SMUD provided rebates for common-area improvements but had not delivered savings directly to tenants. The current program offers incentives high enough to offset a significant portion of the installation cost of in-unit measures. Savings for both the tenants and the building owners typically result from the escalating performance incentives and the requirement that owners install at least two separate types of energy efficiency measures (HVAC replacement and at least one additional measure including cool roofs, windows, insulation, indoor lighting, and water hearers).

[12]SMUD only provides electricity, so the performance requirement and measures are for electric savings only. Potential heating system retrofits are referred to Pacific Gas and Electric's multifamily rebate program.

PROGRAM AT A GLANCE

General program information		
Program name	Multifamily Home Performance Program	
Program sponsor and administrator	Sacramento Municipal Utility District (SMUD)	
Program implementer	SMUD staff	
Website	smud.org/en/residential/save-energy/rebates-incentives-financing/multifamily-housing.htm	
Best person to contact for information	Misha Sarkovich (916) 732-6484. msarkov@SMUD.org,	
Program start date	Current program design launched April 1, 2012	
Targeted segment(s) of multifamily market	Existing multifamily buildings (market rate and affordable multifamily housing) with 3+ units	
Eligibility	To qualify for the performance-based incentives, multifamily properties must contain 3+ units and improve energy efficiency levels by a minimum of 10%.	
Types of energy efficiency measures covered	There are two program pathways. The Home Performance Program for Multifamily (HPP-MF) provides comprehensive retrofits of existing buildings (at least two changes to an existing building's envelope, electric water-heating system, space-conditioning system, or lighting system. Prescriptive rebates are offered to property owners who are not willing or able to invest in major comprehensive energy efficiency improvements.	
Service provider model	SMUD provides HPP-MF or prescriptive rebates directly to the property owners, who are free to select their own contractors.	
Quality assurance and quality control procedures	HPP-MF requires HERS II rater participation, HERS II raters provide oversight and quality control assistance, for which SMUD pays separate incentives to the raters (on average $85 per unit).	
Participation and savings		
Annual and cumulative participation	Annual participation goal 2014: 1,200 units	Cumulative (2009-present): 5,500 units
Estimate of total eligible customers	Approximately 125,000 units in SMUD service territory	
Participation rate (percentage of eligible customers)[2]	Annual: 1% Cumulative (2009-present): 4%	
Savings achieved in most recent year	Not yet available. 2014 program goal is 2,000,000 kWh and 0.8 MW	

Cumulative annual savings achieved to date	2009-2013: 10, 800,000 kWh, 1.75 MW
Average percentage savings by participant compared to pre-program use	Since program inception: 29.5%
Estimated average measure life	Most common measures (window replacement and HVAC) have 20+ years life
Budgets and expenditures	
Total annual energy efficiency budget	2014: $37.6 million
Cumulative program budget	2009-2013: $10.75 million
Annual multifamily program budget	2014: $1.7 million
Annual multifamily budget breakdown: incentives	2014: $1.57 million
Annual multifamily budget breakdown: marketing	2014: None; full waiting list for 2014
Multifamily program expenditure in most recent year	Not yet available
Levelized cost of saved energy	$0.08 KWh
Cost effectiveness in terms of benefit-to-cost ratio(s)	Not available
Funding sources	SMUD ratepayer public service funds

All figures are as reported by SMUD (Sarkovich 2013).

EFFICIENCY VERMONT — MULTIFAMILY PROGRAMS

PROGRAM DESCRIPTION: Efficiency Vermont offers a suite of programs targeting both new and existing multifamily buildings. The Building Performance program provides incentives for contractor-installed insulation, air sealing and ventilation system improvements. The New Construction and Renovation program provides developers with technical assistance and financial incentives to support above-code and ENERGY STAR certified building projects. Existing property owners can take advantage of a range of both custom and prescriptive rebates for appliances and equipment upgrades. Since most multifamily building owners in Vermont do not pay for any of their tenants' utilities, the incentives for equipment and appliance replacement are higher for rental property owners than for homeowners to help overcome split incentives.

In addition to these programs that are open to all property owners, Efficiency Vermont partners with the local weatherization agencies in the Vermont Fuel Efficiency Partnership to provide additional funding for weatherization services for income-qualified properties. Efficiency Vermont funds allow the weatherization agencies to install electric measures in addition to the thermal measures covered by federal funding and achieve deeper savings than traditional weatherization projects, specifically in multifamily buildings. The Partnership provides project management and higher incentives for energy retrofits that achieve at least 25% savings. These projects often include replacing heating systems and installation of solar technologies.

PROGRAM SUCCESSES AND LESSONS LEARNED: Since its inception, Efficiency Vermont has maintained strong relationships with the nonprofit affordable housing providers in the state. As a result of these relationships and outreach to architects and designers, virtually all the multifamily housing that has been built or renovated in Vermont by the nonprofit community over the last ten years has participated in Efficiency Vermont programs. However, while 92% of Vermont's apartments house families earning less than 80% of area median income, nonprofit providers own less than 30% of apartments. Recognizing the need to reach multifamily properties beyond the affordable housing community, in 2002 Efficiency Vermont sought to expand participation in its programs. They learned, however, that the small, independent owners of much of Vermont's multifamily housing stock were less willing to undertake major rehabilitation projects, especially as few of them paid any of the buildings' utilities themselves. In order to serve this part of the market, Efficient Vermont developed its Building Performance and residential rental property rebate programs to provide owners incentives for whatever energy efficiency projects made sense for their buildings. Efficiency Vermont has developed a partnership with the Vermont Apartment Association in order to reach these owners directly through the Association's newsletter and events.

While Efficiency Vermont funding comes largely from electricity customers, its programs have successfully leveraged thermal energy and water savings by incentivizing projects with multiple benefits. State regulators encourage seeking such opportunities for multiple benefits and allow Efficiency Vermont to apply the additional energy and water savings towards the total resource benefits used to evaluate the cost effectiveness of their programs. The fact that Efficiency Vermont is able to use its funding to deliver comprehensive savings is attractive to building owners, who are more likely to pay for water themselves.

PROGRAM AT A GLANCE

General program information	
Program name	Multifamily Services
Program sponsor and administrator	State of Vermont Public Service Board, Efficiency Vermont
Program implementer	Vermont Energy Investment Corporation
Website	http://www.efficiencyvermont.com
Best person to contact for information	Neil Curtis (802) 540-7612. ncurtis@veic.org
Program start date	1998
Targeted segment(s) of multifamily market	New construction and existing buildings Market rate and low income Comprehensive and individual measures
Eligibility	5 units or more; smaller building and scattered site projects may be served by on a case-by-case basis.
Types of energy efficiency measures covered	Measures vary by program pathway: Weatherization Add-On Program: Partnering with low income weatherization program providers, provides funding for electric saving materials and their installation. Vermont Fuel Efficiency Partnership: Collaboration between energy efficiency and affordable housing programs to provide technical assistance and cash incentives for comprehensive energy efficiency retrofits. http://vfep.org/ New Construction/Major Retrofit: Per-unit rebate for comprehensive high-performance building measures. Includes technical assistance, plan review, construction inspections, and ENERGY STAR certification. Rental Property Rebate Program: Free CFLs, low-flow showerheads and faucet aerators; rebates on refrigerators and ventilator fans provided directly to multifamily property owners. Commercial Lighting Rebates: Rebates for common-area lighting Building Performance Program: Up to $5,100 in incentives for whole-building efficiency improvements including air sealing, insulation, and heating system upgrades. For buildings with 5+ apartments and less than 10,000 square feet. (Home Performance with ENERGY STAR program serves 1-4 units) HVAC Rebates: For boilers, furnaces, heat pumps, pellet heating systems

	Custom: For projects that do not fall within the initiatives listed above, property owners can request a custom incentive, and will be assigned an energy consultant for review and analysis of project.
Service provider model	Weatherization Add-On Program: Contracted to Vermont's Low Income Weatherization Network VT Fuel Efficiency Partnership: Program implementation subcontracted to Central Vermont Community Action Council (a WAP provider) New Construction/Major Rehabilitation: Efficiency Vermont engineering staff provide direct technical assistance and confirm completed projects meet specifications. Rental Property Rebate Program: Free products provided directly. Rebates are provided for some products (refrigerators, ventilation fans). Commercial Lighting and HVAC Rebates: Preferred contractor/trade ally network. Property owners submit rebate application and proof of purchase. Building Performance Program: Preferred contractor/trade ally network.
Quality assurance and quality control procedures	All Efficiency Vermont services are included in annual audit provided through funding contract. Site inspections are performed for a sample of projects enrolled in all contractor-based programs, including Weatherization Add-On, Vermont Fuel Efficiency Partnership, and Building Performance. Rental Property Rebate program includes phone discussion with property owner and site visits to a sample of projects.
Participation and savings	
Annual and cumulative participation	Multiple initiatives may provide services to a single apartment, but bundled through a single energy consultant for ease of service. Overall apartment participation numbers are not available. Deep/comprehensive services provided to approximately 450 apartments per year. Many more apartments are served through narrower appliance and lighting retrofit initiatives.
Estimate of total eligible customers	44,000 apartments
Participation rate (percentage of eligible customers)[2]	Annual: approx. 1% (deep/comprehensive services) Cumulative: not available
Savings achieved in most recent year	First year annual savings 2012: 2,091,000 kWh; 6,239 mmBtu (equivalent to 62,390 therms) Lifetime savings 2012: 34,122 MWh, net at generation; 98,703 mmBtu (equivalent to 987,030 therms)
Cumulative annual savings achieved to date	2000–2012: 67,688,000 kWh
Average percentage savings by participant compared to pre-program use	Not available

Estimated average measure life	17 years
Budgets and expenditures	
Total annual energy efficiency budget	2012 resource acquisition costs: $31,999,637
Cumulative program budget	2000-2012 multifamily resource acquisition costs: $13,380,496
Annual multifamily program budget	2012 multifamily resource acquisition costs: $1,940,381
Annual multifamily budget breakdown: incentives	2012 incentives: $546,017
Annual multifamily budget breakdown: marketing	Not available
Cost effectiveness in terms of benefit-to-cost ratio(s)	Multifamily total resource benefits, year 2012: $5,420,671 Multifamily resource acquisition costs, year 2012: $1,940,381 Benefit-to-cost ratio: 2.79
Funding sources	Vermont Electric Systems Benefits Charge Northeast Regional Greenhouse Gas Initiative Forward Capacity Market

All figures are as reported by VEIC (Curtis 2013).

Appendix B: Case Studies of New and Notable Programs

The following programs have recently launched, and while it may be too early to evaluate their performance, they are demonstrating innovative approaches to serving the multifamily sector and may serve as examples to program administrators looking for new program ideas.

DC SUSTAINABLE ENERGY UTILITY (DC SEU) — LOW-INCOME MULTIFAMILY COMPREHENSIVE PROGRAM

The DC SEU, which is a project of the Vermont Energy Investment Corporation under contract to the District Department of the Environment, launched the Low-Income Multifamily Comprehensive program in March 2012 to achieve deep and lasting energy savings in new and substantially renovated affordable housing. By targeting developers at the point of redevelopment, the DC SEU gets involved early in the planning phase, providing technical assistance and financial incentives to offset the incremental cost of improving the project's energy efficiency. Using an account manager model, DC SEU staff work with project stakeholders including owners, architects, and contractors throughout the design and construction process. Flexible incentives meet the needs of each project, and incentive levels are determined by measure life and efficiency to encourage deeper and longer-term savings. All projects have a payback that makes financial sense without incentives, but the incentives motivate developers to invest in energy efficiency measures that deliver savings to their tenants as well as reduce their own operating costs. The following table provides an overview of the program and a snapshot of the initial results.

General program information	
Program name	Low-Income Multifamily Comprehensive
Program sponsor and/or administrator	District of Columbia Sustainable Energy Utility (DC SEU)
Program implementer	DC SEU
Best person(s) to contact	Jogchum Poodt (202) 479-2222. info@dcseu.com
Website	http://www.dcseu.com/for-your-business/low-income-multifamily
Program start date	March 2012
Targeted segment(s) of multifamily market	New construction and substantial rehabilitation or redevelopment of existing buildings
Eligibility	All properties must be income qualified showing that at least 66% of the units per building are occupied by residents earning 60% or less of the area median income.
Participation and savings	
Savings goals	FY2012: 319,000kWh

Estimate of total eligible customers/buildings	Estimated 65,000multifamily affordable housing units in DC	
Estimated average measure life	FY2012: 17.229 years	
Savings achieved in most recent year	FY2012 first-year annual savings: 773,311 kWh	FY2012 lifetime savings: 11,339,943kWh
Budgets and expenditures		
Total annual energy efficiency budget	FY2013: $15.4million	
Annual multifamily program budget	FY2013: $1.2million	
Annual multifamily budget breakdown: incentives	FY2013: $954,501	
Annual multifamily budget breakdown: marketing	FY2013: $150,000	
Cost effectiveness in terms of benefit-to-cost ratio(s)	Societal Cost Test: 1.88	
Funding sources	DC ratepayers fund the Sustainable Energy Trust Fund through a surcharge on monthly Pepco and Washington Gas bills.	

All figures are as reported by DC SEU (Poodt 2013)

COMED, NICOR GAS, PEOPLES GAS, AND NORTH SHORE GAS — MULTIFAMILY COMPREHENSIVE ENERGY EFFICIENCY PROGRAM (MCEEP)

In 2013, the four Chicago-area electric and gas utilities launched a new integrated program to provide comprehensive energy efficiency services to multifamily building owners. ComEd supplies electricity throughout most of northern Illinois, while gas is supplied by one of three utilities: Peoples Gas, North Shore Gas, or Nicor Gas. The utilities recognized the benefits to themselves and to building owners of offering both electric and gas measures through one integrated program, and they began coordinating their no-cost direct installation program for multifamily buildings in 2011. Building on this earlier collaboration, the new program provides incentives for an expanded set of electric and gas measures through one streamlined process. Now, in addition to a free onsite energy assessment and direct installation of in-unit measures at no cost, owners can apply for a variety of prescriptive and custom rebates and receive discounted installation services from the utilities' trade ally partners. The utilities coordinate program budgets, planning, and reporting behind the scenes. MCEEP incorporates many of the best practices recommended throughout this report, including integrating direct installation and rebate programs and providing and streamlining the process to minimize transaction costs for owners.

General program information		
Program name	Multi-Family Comprehensive Energy Efficiency Program	
Program sponsor and/or administrator	ComEd, Nicor Gas, North Shore Gas, and Peoples Gas	
Program implementer	Franklin Energy	
Best person(s) to contact for information about the program	ComEd: Julie Hollensbe Nicor Gas: Mike King	
Website	http://www.nicorgasrebates.com/programs/mceep	
Program start date	June 2013 (new program design launched)	
Targeted segment(s) of multifamily market	Existing buildings	
Eligibility	Nicor Gas: 5+ units North Shore Gas and Peoples Gas: 3+ units Low-income qualified properties are served separately by the Department of Commerce and Economic Opportunity (DCEO).	
Types of energy efficiency measures covered	Direct installation: CFLs, water measures, pipe insulations, programmable thermostats, vending misers Discounted trade ally services: a network of participating trade allies installs measures at fixed pricing. This includes a specific list of products including lighting, lighting controls, steam pipe insulation, and boiler tune-ups. Standard rebates: lighting, HVAC, building insulation, domestic hot water systems and other energy-efficient products. Custom Rebates: incentives for other energy-efficient products and services not included in the standard rebate process.	
Service provider model	3 options: direct installation, trade ally network, self-selection of contractors	
Participation and savings goals		
Annual participation goal (June 2013-2014)[1]	Units Nicor Gas: 48,750 North Shore Gas/Peoples Gas : 40,000	Projects Nicor Gas: 400 North Shore Gas/Peoples Gas: 500
Annual savings goals (June 2013-2014)	ComEd : 38,800 gross MWh Nicor Gas: 4,900,000 gross therms	
Estimate of total eligible customers/buildings	1.2 million ComEd multifamily customers, including low-income customers eligible for Illinois Department of Commerce and Economic Opportunity funding	
Estimated average measure life	12 years	

Budgets and expenditures	
Total annual energy efficiency budget (June 2013-2014)	ComEd: $155 million (includes Illinois Power Authority funded programs) Nicor Gas: $35 million
Annual multifamily program budget (June 2013- May 2014)	$19 million (total for four utilities)
Annual multifamily budget breakdown: incentives	$10.5 million (does not include labor)
Annual multifamily budget breakdown: marketing	$300,000
Funding sources	Rate payer funded

Notes and sources: All figures as reported by ComEd and Nicor Gas (King and Hollensbe 2013). [1]All units served will be ComEd electricity customers and either Nicor or North Shore/People's gas customers.

CENTERPOINT ENERGY — LOW-INCOME MULTIFAMILY REBATES

Recognizing low-income housing owners' difficulty in paying the upfront cost of energy efficiency upgrades, in 2013 CenterPoint Energy began offering bonus rebates to low-income multifamily property owners. The new program provides a 25% higher rebate for measures covered under the existing Commercial Heating and Water Heating program that is marketed directly to multifamily owners. During conversations between utility and housing regulators organized by the National Housing Trust, ACEEE, and the National Consumer Law Center, it became clear to CenterPoint that low-income multifamily property owners faced unique regulatory challenges that made it difficult for them to participate under the current utility regulatory framework. More work needs to be done to align housing and utility policies and program cycles to make it easier for owners to incorporate energy efficiency when they apply for redevelopment financing from the Minnesota Housing Finance Agency. But in the short term, CenterPoint recognized that they could at least help owners by further reducing the upfront cost of higher efficiency equipment. Current commercial program rebates, especially for heating and hot water systems, are highly cost effective, making it possible to increase the rebate level while maintaining cost effectiveness. The higher rebates reflect the fact that energy efficiency has the additional benefit of helping to preserve housing affordability.

General program information	
Program name	Low-Income Multi-Family Building Rebates
Program sponsor and/or administrator	CenterPoint Energy
Program implementer	CenterPoint Energy
Website	www.centerpointenergy.com/lowincomemultifamily
Best person(s) to contact	Nick Mark (612) 321-4613. nick.mark@centerpointenergy.com
Program start date	January 1, 2013
Targeted segment(s) of multifamily market	Low-income, existing buildings or new construction
Eligibility	Commercially-metered 5+-unit buildings, Non-owner-occupied, minimum 66% of units occupied by low-income households, operated by recognized low-income housing provider (including but not limited to: government entities, nonprofit agencies, and private-market Section 8 providers)
Types of energy efficiency measures covered	All prescriptive measures under CenterPoint Energy's commercial rebate offerings are covered and receive a 25% higher rebate than would be paid through the Commercial Heating and Water Heating rebate program. Eligible measures include HVAC, hot water, controls, and energy recovery ventilation.
Service provider model	Owner selects contractor and applies for rebate (standard rebate program model); rebates through this program are 25% higher than for other commercial customers. Trade allies are eligible for an incentive equivalent to the trade ally incentive offered through the standard commercial heating/water heating program.
Quality assurance and quality control procedures	Building owners and trade allies are responsible for ensuring measures are installed correctly and appropriately. Periodic discussions between the utility and providers of low-income multifamily rental housing and other key stakeholders assess effectiveness of installed measures to achieve operational energy savings, and determine overall impact on property owners, operators, and low-income tenants.
Participation and savings	
Participation goal (in units or buildings)	300 rebates
Savings goals	270,000 therms per year (program runs 2013-2015)
Estimated average measure life	8 years
Budgets and expenditures	
Total annual energy efficiency budget (all energy efficiency programs, including multifamily, in most recent year)	2013: $24,633,371
Annual multifamily program budget (current year)	2013: $287,250 (low-income multifamily only)

Annual multifamily budget breakdown: incentives	$186,500
Annual multifamily budget breakdown: marketing	$25,000
Levelized cost of saved energy[1]	$0.16 per therm
Cost effectiveness in terms of benefit-to-cost ratio(s)	3-year (2013-2015) cost-effectiveness: Ratepayer: 0.75 Utility: 4.56 Societal: 4.70 Participant: 6.70
Funding sources	Ratepayer-funded Conservation Improvement Program (costs recovered through base rates plus annually adjusted rider)

Notes and sources: All figures as reported by CenterPoint (Mark 2013) unless noted. 1Levelized cost of saved energy was calculated using the projected annual savings and average measure life provided by CenterPoint Energy and a 5% real discount rate.