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Engaging as Partners in Energy Efficiency:

A Primer for Utilities on the Energy Efficiency Needs of Multifamily Buildings and Their Owners

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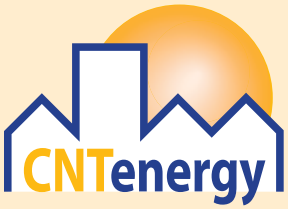
Anne McKibbin, CNT Energy



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- convening conferences and workshops;
- assisting and encouraging the media to cover energy efficiency policy and technology issues; *and*
- educating businesses and consumers through its reports, books, conference proceedings, media outreach, and website.

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Executive Summary

The multifamily building sector presents a unique set of challenges and opportunities for utilities seeking to implement effective energy efficiency programs. To deliver successful programs, utilities must understand what motivates building owners to take part in these programs, as well as barriers that may prevent participation.

There are 16 million renter-occupied apartments and condominiums in US buildings with five units or more. Collectively, these building owners and tenants spent nearly $22 billion on energy in 2009, an average of $1,141 per household.[1] If the best current multifamily energy efficiency programs were expanded nationwide, they would save nearly $3.4 billion per year.[2]

In addition to its large potential for savings, the multifamily rental housing sector offers relative ease of recruitment to energy efficiency programs relative to the single family and small commercial sectors. Multifamily building owners have formed tight networks in cities nationwide, and many own multiple buildings. Consequently, utilities can enlist building owners in efficiency programs relatively easily through existing networks, and sign up multiple buildings through one decision-maker.

But, the multifamily market presents unique challenges that must be addressed in order to deliver effective programs. One key challenge, for example, is the split incentive that exists when building owners are responsible for investing in energy efficiency improvements, while tenants reap the benefits via lower energy bills. Savings attribution can also be complicated in buildings with multiple fuel sources. In some cases, utilities have difficulty matching multifamily buildings to the appropriate program because their accounts may be categorized as commercial, residential, or some combination of the two.

This paper outlines the opportunities to meet energy efficiency goals with multifamily programs. It then describes the benefits that multifamily building owners gain from these programs, and the barriers they face to participation. The paper focuses on rental housing, because these buildings are owned by a single entity and form the largest sector of the multifamily housing market. The paper provides a framework to help utilities develop successful programs that maximize energy savings and create benefits for building owners, tenants, and communities. And lastly, the paper recommends nine program design considerations that can help attract multifamily building owners to utility energy efficiency programs.

Multifamily housing presents significant opportunities for utilities to create cost-effective energy efficiency programs. As utilities seek to expand their energy efficiency program offerings to meet increasingly stringent efficiency goals, multifamily buildings can provide deep savings, comparable to those achieved in commercial buildings. While multifamily building owners in many areas historically have not made energy efficiency investments a high priority, utilities can and have designed effective programs to deliver on the opportunity presented by the multifamily sector.

CHAPTER 1: Multifamily Buildings Are Important to Utility Energy Efficiency Programs

At some point in his or her life, nearly every American has lived in rental housing, and almost half have lived in a multifamily building. According to Harvard University's Joint Center on Housing Studies, 95 percent of Americans coming of age around 1980 lived in rental housing at some point between 1980 and 2000.[3] Today, 42 percent of these rental units are in buildings with five or more apartments.[4] Our apartment home may have been an Art Deco walkup in a quiet college town, a modern luxury high-rise in the city, or a mid-century garden apartment in the suburbs. But most likely, it would have benefited from an energy efficiency upgrade.

The multifamily sector has historically been difficult to reach with utility customer-funded energy efficiency programs. It suffers from split incentive problems, savings attribution for some buildings is complicated by multiple fuels and both residential and commercial accounts, and there just are not as many multifamily buildings as single family homes. But, because of this very complexity, multifamily buildings represent a huge untapped resource for energy efficiency savings, even in states with long histories of residential energy efficiency upgrade activity.

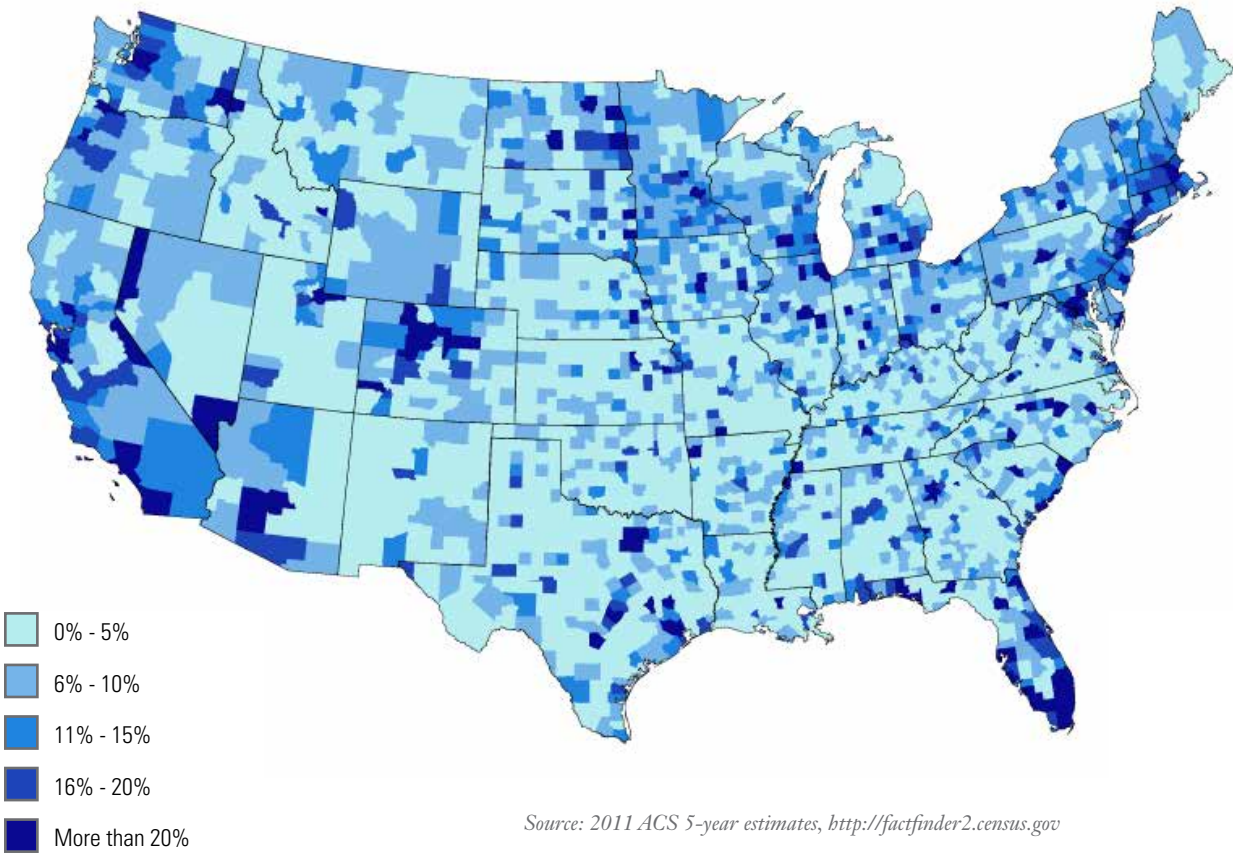
This paper will outline the importance of the multifamily market to utility sector energy efficiency programs and is intended to assist utility program designers in creating successful multifamily programs. The paper will discuss what motivates multifamily building owners to take part in these programs and the barriers they face, present a set of questions that utilities can use to design programs that adapt to multifamily sector conditions in their area, and go into detail on the design elements that spell success for multifamily utility efficiency programs.

The Multifamily Market Is Widespread and Can Generate Significant Energy Efficiency Savings

The multifamily sector represents a sizeable opportunity for well-targeted utility energy efficiency programs. The United States has more than 18 million occupied apartments and condominiums in buildings with five or more units, of which 16 million are renter-occupied.[5] Collectively, these building owners and tenants spent almost $22 billion on energy in 2009, an average of $1,141 per household.[6] Of that, $15.4 billion was spent on electricity, $5 billion on natural gas, and more than $1 billion on fuel oil. If the best current multifamily energy efficiency programs were expanded nationwide at scale, they would save almost $3.4 billion per year.[7] A 2009 survey of studies of energy efficiency potential by the Benningfield Group found that energy savings of 30 percent were achievable in multifamily buildings through efficiency improvements. If programs improved to capture these savings, Americans would save $9 billion each year.[8]

As shown in figure 1, multifamily buildings are widespread across the United States. Renters live in every corner of our nation, with the fewest in the Midwest (29 percent of households), and the most, 39 percent, in the West.[9] Of these renters, 43 percent of households are in buildings with five or more units.[10] With the coming of age of the echo-boomer generation (those born between roughly 1985 and 2004), and baby boomers looking for lower-maintenance lifestyles, up to half of all new households created between 2012 and 2022 are expected to be renters.[11]

FIGURE 1
PERCENTAGE OF TOTAL HOUSING UNITS IN MULTIFAMILY (5+ UNIT) BUILDINGS BY COUNTY



Source: 2011 ACS 5-year estimates, http://factfinder2.census.gov

The multifamily market is composed of several distinct housing types. Buildings are commonly characterized by size, whether they are owned or rented, and whether rents are market-rate or subsidized. The housing industry draws a distinction between small buildings with two to four units and larger buildings with five or more units. "Multifamily" is commonly defined in the mortgage markets as buildings of five or more units. This definition follows the categories contained in the US Census' American Housing Survey and the US Department of Energy's Residential Energy Consumption Survey, our nation's main sources of housing energy statistics. Coincidentally, the architectural and HVAC equipment characteristics of smaller buildings are often so significantly different than those of larger buildings that energy efficiency program implementers must apply a different set of measures to them. As a result, "multifamily" will be defined as buildings with five or more units throughout this paper.

Multifamily buildings can be further characterized by whether units are owned or rented. Condominium and cooperative apartment buildings are owned by many individuals. There are 4.7 million owner-occupied or for-rent condominiums and cooperative housing units in the United States.[12] Rental apartment buildings, in contrast,

are owned by a single entity, and form the largest segment of the multifamily sector, with 17.9 million units.[13] Whether units in a multifamily building are owned or rented has a significant effect on recruiting the building into an energy efficiency program, as described in more detail below.

Finally, rental buildings can be further divided into three categories with different motivations regarding energy efficiency: market rate, subsidized, and public housing. There are 13.3 million apartments in the United States that charge market-based rents.[14] These comprise most middle-income and more luxurious apartments. Market-rate apartments are the largest segment of rental buildings.

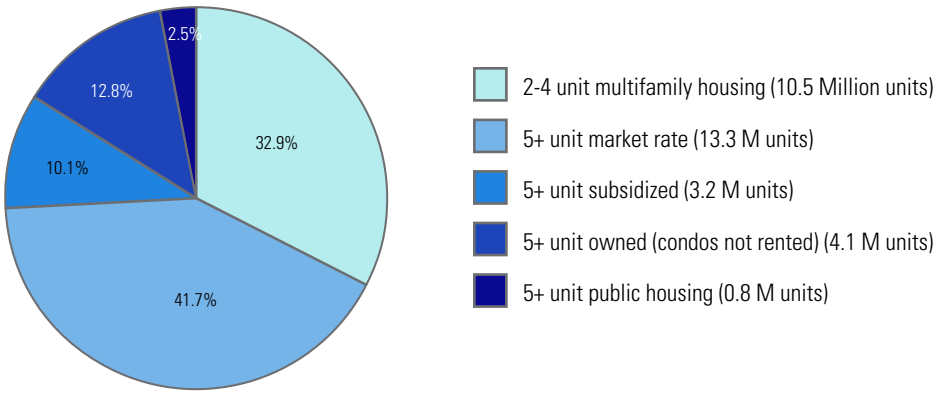
A second category of rental housing is subsidized housing. In 2011, 4.8 million low-income households were assisted by the main rental housing subsidy programs of the US Department of Housing and Urban Development (HUD), while two million units were subsidized through the Low Income Housing Tax Credit (LIHTC) program administered by the IRS.[15] There are two main types of housing subsidies: tenant-based subsidies, where the tenant receives a voucher to obtain housing in any market-rate privately owned building of their choice, and project-based subsidies that are tied to specific units. In some cases, subsidized units benefit from both types of subsidies, most commonly when a voucher holder leases a unit in a LIHTC development. Later, this paper will discuss the effects of both rental and project-based subsidies on building owners' motivation and ability to take advantage of utility energy efficiency programs.

The third category, public housing, is rental housing that is owned and rented to tenants at subsidized rates by a public housing authority. Public housing, while not the focus of this paper, is also a significant opportunity for utility programs. There are approximately 1.2 million units of public housing in the United States, and 65 percent of those units were built before 1970.[16] In addition, more than half of public housing units are located either in the second-coldest climate zone in the country or the warmest, and so have relatively high energy needs for heating and cooling.[17] HUD spends almost $7.1 billion per year on utility costs, either to tenants or building owners in assisted and public housing, highlighting the vast need for energy efficiency improvements in this sector.[18]

This paper characterizes buildings as either market rate, subsidized, or public housing to highlight the financial incentives that building owners face. However, the multifamily industry often characterizes certain buildings as "affordable," and the term may be used differently by various stakeholders. Generally speaking, millions of privately owned market-rate apartments are affordable because their rents are sufficiently low that they fit within the budgets of moderate- and low-income renters without subsidies. These buildings remain affordable by virtue of low competing rents in the local market. However, buildings with local, state, or national subsidies and public housing may be termed "affordable" as well.

This paper focuses on the energy efficiency opportunities in existing rental buildings with five or more units, because they are the largest sector of the multifamily industry. The paper discusses energy efficiency in condominium buildings to a lesser extent as a result of unique barriers condominiums face, which are discussed in more detail below.

FIGURE 2
COMPOSITION OF US MULTIFAMILY HOUSING MARKET



Source: American Housing Survey, HUD, Joint Center for Housing Studies

Despite Its Complexity, the Multifamily Industry's Organization Eases Recruitment of Program Participants

The energy efficiency potential of the multifamily rental sector compares favorably to the single family and small commercial sectors because it is large and, in some ways, more homogeneous and organized than these sectors. In contrast to the single family home market, where buyers and their financing organizations are only in close, frequent contact at the point of sale, owners of multifamily rental housing are in contact with finance organizations throughout the building's life cycle, and multifamily building owners have formed tight local networks in cities nationwide. Consequently, utilities can enlist multifamily building owners in energy efficiency programs more easily. Each building owner makes decisions for many housing units and is likely to participate in a building owner association with regular meetings that can be tapped for outreach and marketing opportunities. Many building owners renovate multifamily units regularly[19] and finance those renovations through a relatively small number of organizations. They also buy, sell, and refinance buildings more often than the typical homeowner. Financial institutions that lend to the multifamily industry provide a central place for utility efficiency programs to recruit building owners precisely when they are prepared to make changes to their buildings.

The energy efficiency characteristics of multifamily buildings can also be more homogenous than those of other small commercial utility customers. In a particular geographic area, multifamily buildings of similar size and age often have very similar energy efficiency upgrade needs. In contrast, small commercial efficiency programs must address dozens of different small business industries, such as restaurants and dry cleaners,

often located in leased space, with vastly different energy uses and energy efficiency needs.

Multifamily Energy Savings Can Benefit Utilities

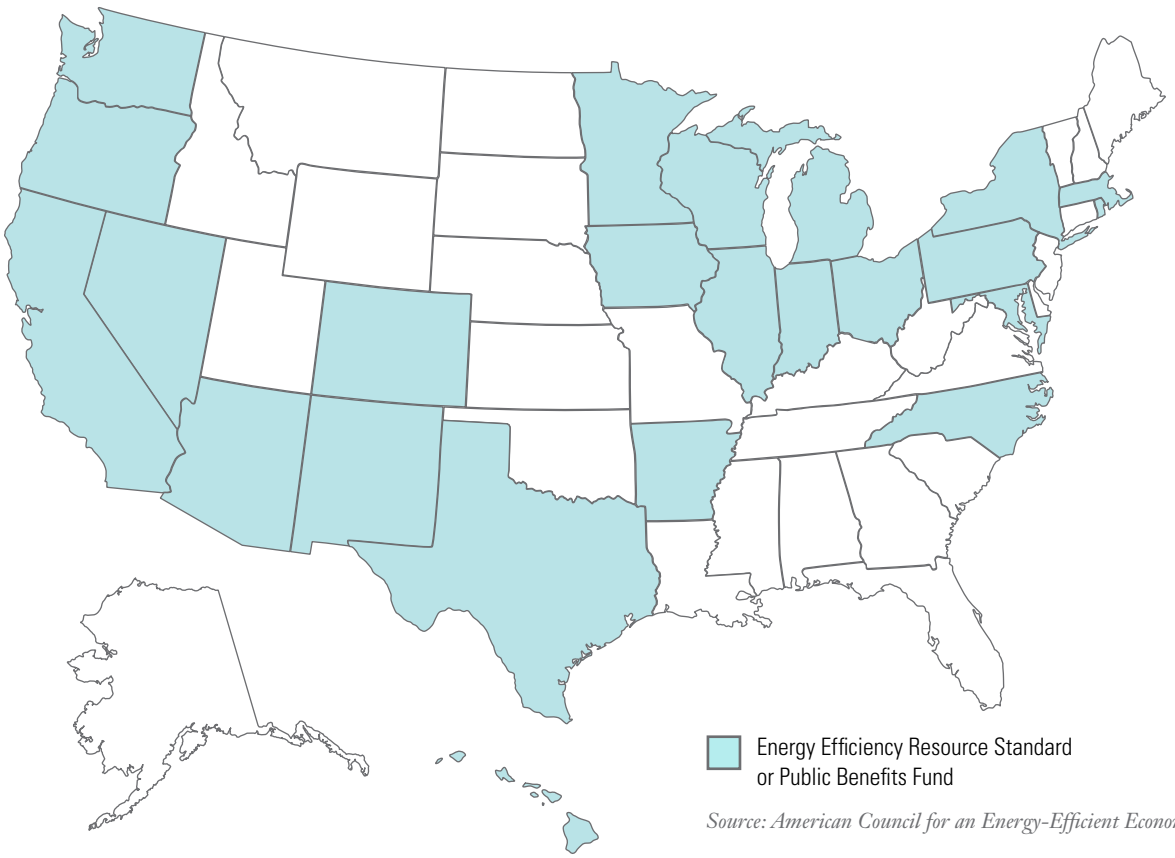
Utilities seek out energy efficiency savings for a variety of reasons. Devoting resources to energy efficiency can help utilities delay major investments in power plants and transmission and distribution infrastructure by reducing demand on these systems. In addition, energy efficiency is a low-cost resource that can help utilities meet their customers' needs at the lowest possible cost.

In addition, utilities in many states are subject to state laws and regulations that promote energy efficiency programs, such as energy efficiency resource standards (EERS), public benefits funds (PBF), and integrated resource plans (IRP). An EERS is a state law or regulation that requires utilities to institute energy efficiency programs that save a specified amount of energy, and have been adopted in 24 states.[20] Similarly, PBFs require utilities to collect funding from customers that must be used for energy efficiency programs, and IRPs require utilities to include energy efficiency resources in their system planning. In 2011, state requirements and utility planning processes spurred utilities to invest $7 billion in electric and natural gas efficiency programs nationwide.[21]

As utilities work to fulfill their energy efficiency goals and give energy efficiency resources equal standing with supply-side resources in system planning, they must continually find new ways to save energy. In states where these policies are relatively

FIGURE 3

Energy Efficiency Resource Standards in the United States (As of September 2012)



Source: American Council for an Energy-Efficient Economy

new, utilities typically achieve much of their residential efficiency goals with lighting programs. As time passes, the success of these programs means the lighting standards against which they are measured increase, and utilities inevitably move more efficiency program resources into other types of residential programs. In states such as Minnesota, California, Vermont, and Wisconsin, where successful efficiency programs have been running for 20 years or longer, utilities and program administrators have begun to put considerable resources into comprehensive programs that upgrade entire building systems and the building envelope. Direct install programs—which install low-cost measures such as efficient light bulbs, low-flow showerheads, and faucet aerators in multifamily units—have also become larger, installing energy efficiency measures in tens or hundreds of thousands of homes each year.

Multifamily programs are an excellent opportunity for utilities seeking a new source of energy efficiency savings. For example, multifamily buildings can provide economies of scale similar to commercial HVAC programs. Large multifamily high-rises can have central HVAC systems that are as large as those in a commercial building. Even smaller buildings with individual HVAC units in each apartment provide the opportunity to replace many identical systems at once. And smaller multifamily buildings are sometimes part of a complex of similar, adjacent buildings with identical equipment, all owned by the same owner and decision-maker. Multifamily building owners may also own numerous similar buildings in the same town or metropolitan area, which can all be updated as a group. Lighting, appliance, domestic hot water, and direct install programs can also benefit from this commercial-level scale.

A few quirks of the multifamily industry make it difficult for utilities to identify the scale of multifamily holdings from billing records. Unlike large commercial buildings, multifamily properties may be individually metered, which hides the size of the property and scale of the opportunity. Or, a single owner may own numerous multifamily buildings, each with utility accounts under a different business name. However, when multifamily building owners are identified, the utility has the opportunity to market its programs to their entire building portfolio.

CHAPTER 2: Making Energy Efficiency Work for Multifamily Building Owners

Multifamily building owners face well-established barriers to improving the efficiency of their buildings. Effective program designs can overcome these barriers to make multifamily building owners eager efficiency program participants. This chapter will discuss the barriers that multifamily owners face when considering efficiency projects. Then, it will discuss the benefits that motivate multifamily building owners to invest in efficiency. Chapter 3 will further examine program design elements that eliminate or circumvent these barriers.

Barriers Faced by Multifamily Building Owners

While the advantages of targeting multifamily housing for a utility energy efficiency program are significant, there are drawbacks that must be managed. Most importantly, the multifamily industry suffers from a split incentive problem when it comes to energy efficiency. This problem is not universal and some utilities are currently offering programs, described in more detail in chapter 4, that address the problem. Generally, the split incentive problem occurs when building owners do not see an immediate benefit to installing and maintaining energy efficient HVAC equipment and appliances because their tenants are responsible for paying the utility bills, and so garner the savings from the upgrades. To combat

this effect, utilities must highlight the benefits to building owners and design programs that realign the building owners' motivations to support energy efficiency.

Energy efficiency is also a relatively low priority for multifamily building owners who, like all businesses, have many demands on their resources. For a program to succeed, building owners must see it as a better investment than general building maintenance and upgrades, tax payments, water bill payments, landscaping improvements, building security investments, and pest control.[22] In addition, multifamily building owners often must find financing for energy efficiency improvements. While the availability of financing for these projects is improving, multifamily building owners have specific financing needs that must be accommodated.[23] The unique characteristics of multifamily building financing are discussed in more detail in chapter 3.

The decision to invest in efficiency is complicated by the fact that it is hard for building owners to predict the full benefit of energy efficiency investments before making the investment. A building owner's confidence in making energy efficiency investments can be undermined by fluctuations in fuel prices and uncertainty over whether savings will live up to engineering estimates. In addition, multifamily building owners who have made comprehensive energy efficiency investments report that one of the biggest project benefits—reduced tenant turnover rates—was totally unexpected to them.[24] Tenant turnover is a significant cost to building owners, and reducing it is a substantial indirect benefit of energy efficiency upgrades.

Multifamily programs are further complicated by confusion in determining which utility efficiency programs a multifamily building is eligible for. Multifamily buildings are often difficult to place within the context of standard utility rate classes and customer sectors. These classifications were created to ensure rational billing and rate systems, but often hinder the creation of multifamily programs with a whole-building approach.[25] For example, multifamily building common areas may be commercial accounts while tenant units are residential accounts. Or, a multifamily building's shared HVAC system may be a commercial account, while cooking gas and lighting for tenant spaces are residential accounts. The confusion is made worse in areas without combined natural gas and electric utilities. This problem is solvable with careful accounting by program administrators, but the extra effort and uncertainty poses a barrier to multifamily utility energy efficiency programs where programs must meet sector savings targets.

Benefits of Energy Efficiency to Multifamily Building Owners

Despite these barriers, energy efficiency provides significant benefits that can motivate multifamily building owners, some of which are not immediately obvious. Energy efficiency improves the bottom line for a multifamily building in three ways: by direct energy savings, lower maintenance and equipment costs, and lower tenant turnover. In addition, improved building comfort and savings attract tenants, who are learning to expect energy efficiency because of greater awareness of green building practices and the recent increase in municipal disclosure ordinances and green community labeling schemes. A well-designed multifamily energy efficiency program appeals to all of these motivators.

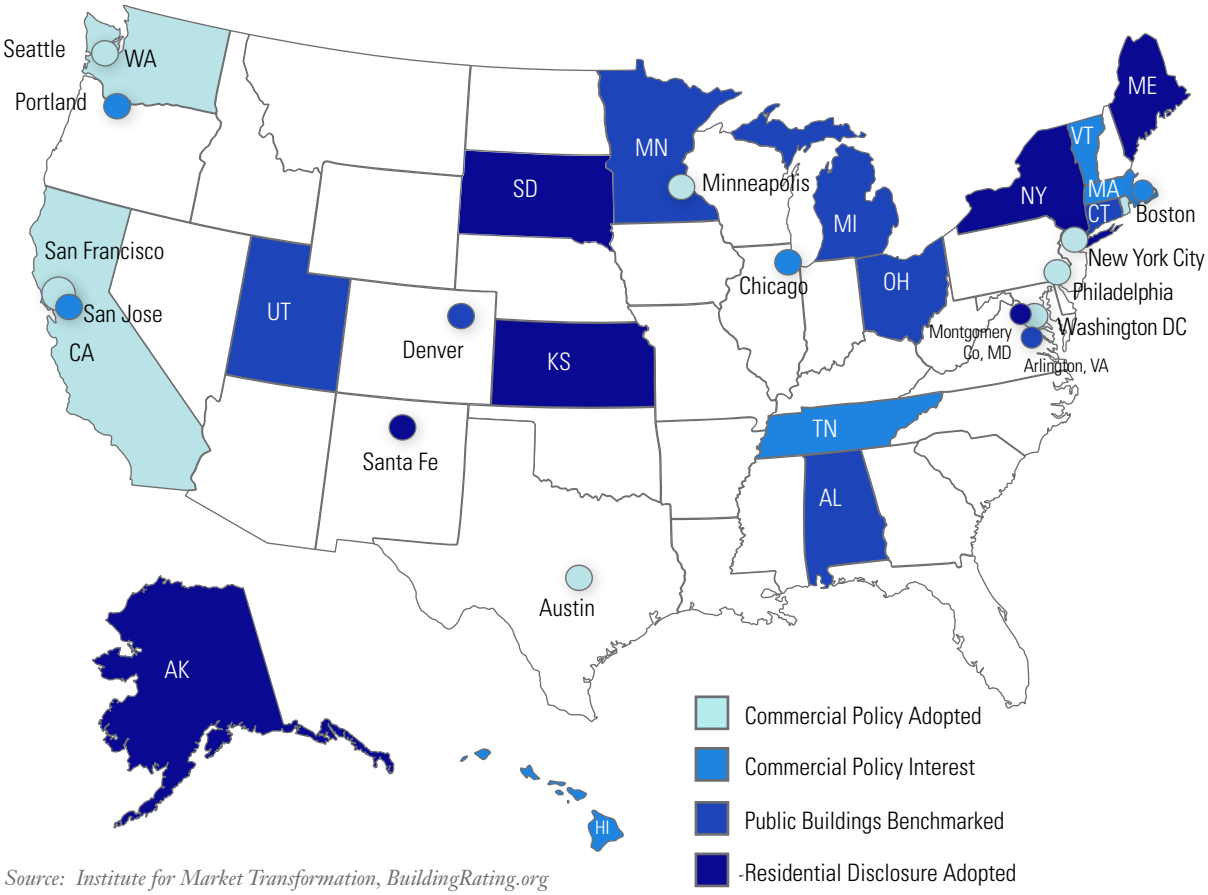
Most owners will immediately understand the direct energy savings component of an energy efficiency investment. Many owners will also appreciate the benefits of programs that save natural gas and also reduce water bills by installing faucet aerators and low-flow showerheads to reduce hot water usage. These savings are significant. In fact, in cold climates, utilities often comprise the second-largest operating expense for multifamily buildings, after debt service.[26]

Energy efficiency also reduces maintenance and equipment costs. Aging HVAC equipment often requires frequent repair and adjustment to work correctly. Replacing that equipment with new equipment can dramatically reduce maintenance costs. In addition, tuning up and repairing an existing HVAC system can make it run more efficiently, reducing maintenance costs and potentially increasing its lifespan.[27]

Many owners, however, may not realize that energy efficiency also reduces tenant turnover and related costs by providing a more comfortable, affordable, and pleasant living space. Tenant turnover is a major source of costs, equivalent to several months' rent,[28] for multifamily building owners, who must clean the unit and prepare it for a new renter, recruit a new tenant, and suffer lost rental income. Consequently, lower tenant turnover can improve the bottom line for a building owner significantly, and may even be the source of a building's entire profit margin.[29] However, this benefit of energy efficiency may not be immediately obvious to a building owner who has never before improved the efficiency of their building.

Energy efficiency also attracts tenants. Energy efficiency clearly benefits tenants who pay their own utility bills. But, even where tenants do not pay utility bills directly, energy efficiency improvements to a multifamily building will increase the comfort of tenants' units, block outside noise, reduce moisture problems and freeze

FIGURE 4
US BUILDING BENCHMARKING AND DISCLOSURE POLICIES



Source: Institute for Market Transformation, BuildingRating.org

damage to pipes, and improve indoor air quality and fire safety.[30] In addition, tenants have begun actively looking for energy efficiency and green features when finding their next home, incorporating expected utility costs into their financial decisions when finding a new place to live and placing a high priority on comfort. As a number of US cities enact building energy benchmarking and disclosure ordinances, tenants will increasingly be able to look for energy use disclosures and green building labeling to meaningfully compare buildings and incorporate their energy efficiency into the rental decision.[31] These ordinances apply to large multifamily buildings in New York City; Washington, DC; Austin; and Seattle. Multifamily building owners in these cities must periodically enter their buildings' characteristics and energy use into the US Environmental Protection Agency's Portfolio Manager or a similar tool and publicly disclose the results.[32]

In addition, green certification schemes, such as the US Green Building Council's LEED standards, the National Green Building Standard,[33] ENERGY STAR® buildings, and Enterprise Community Partners' Green Community standard,[34] are giving tenants and prospective buyers a measure by which to determine buildings that exceed the norm in energy savings and environmental performance. These labeling schemes and certifications have proliferated in recent years and are beginning to be incorporated into multifamily building finance, providing an additional incentive for multifamily building owners to upgrade the efficiency of their buildings. Fannie Mae, for example, is encouraging the development of a market for mortgage-backed securities based on buildings that have achieved these types of certifications.[35]

CHAPTER 3: Local Multifamily Circumstances Influence Successful Efficiency Program Designs

While it is important to understand the barriers that multifamily building owners face in the abstract, utilities must also understand local multifamily circumstances in order to design successful energy efficiency programs that eliminate or circumvent these barriers.[36] This chapter will help utilities identify local conditions that must be addressed in program design, including the architectural characteristics of the building stock, the extent of the split incentive problem, and multifamily building finance. Chapter 4 will highlight program design elements that can help address these conditions, discuss program delivery mechanisms, and identify key industry players who should be engaged during the program design phase.

A recent report from the American Council for an Energy-Efficient Economy (ACEEE), *Scaling Up Energy Efficiency Programs for Multifamily Homes: A Metropolitan Area Assessment*, provides information on each of these local characteristics of the multifamily building stock at the metropolitan level.[37]

The Multifamily Housing Stock's Architectural and Equipment Characteristics

To understand how the multifamily housing stock's architectural and equipment characteristics affect multifamily efficiency program design, utilities should ask the following questions:

- What are the most important local residential uses for fuels provided by my utility and by other utilities?
- What are the architectural characteristics of local multifamily buildings and how do they relate to energy efficiency?

- How old are the multifamily buildings and typical multifamily HVAC and lighting installations in my area?

Multifamily efficiency program designers must understand local multifamily buildings' use of fuels provided by all utilities in their area, because it will dictate whether, and how much, a utility must partner and coordinate with other utilities to provide comprehensive programs at least cost. Nationally, 38 percent of units in multifamily buildings (7.2 million apartments) heat with natural gas, 47 percent (8.9 million units) with electricity, and 6.3 percent (1.2 million units) with fuel oil.[38] Of these, most are heated by single-unit equipment, but 31 percent of units (5.9 million) in multifamily buildings are heated with central, multi-unit systems.[39] In addition, more than half of apartments now have central air conditioning.[40]

The prevalence of heating, cooling, and hot water use varies by region, and energy efficiency programs must be designed accordingly. Depending on the climate, the greatest efficiency opportunities may be in heating, cooling, or domestic hot water loads. They may be in electricity, natural gas, or fuel oil. And, they may be in building shell measures or in lighting and appliances. In addition, pockets of opportunity may exist outside of the most prevalent fuel uses, for example in all-electric multifamily buildings in cold climates, where electric heating drives high wintertime utility bills.

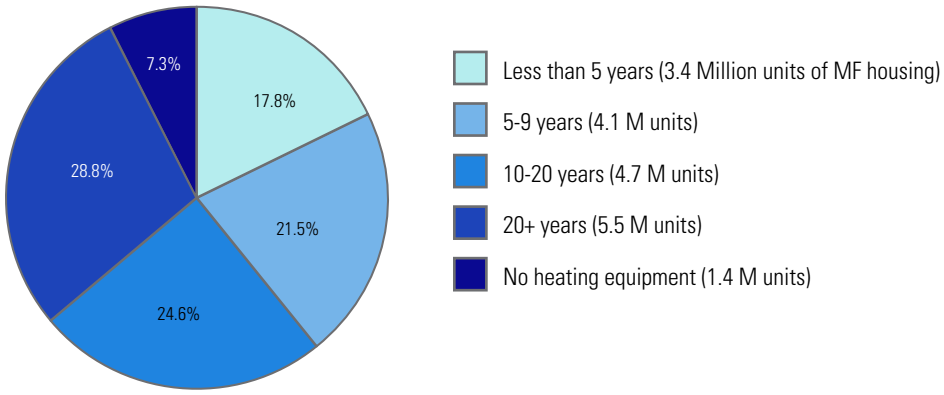
Surveying the predominant multifamily building types and ages within a utility's territory can help guide program design by identifying building types with the highest savings potential. The similarities among buildings of a particular architectural style can also provide guidance regarding the most important packages of energy efficiency measures. In Chicago and its inner suburbs, for example, thousands of three- to four-story masonry apartment buildings were built between 1880 and 1950, typically with 10 to 30 units arranged in a U-shape around a courtyard. They remain one of the area's most ubiquitous housing types. As shown in figure 5, they also have similar architectural characteristics that relate to energy efficiency: they are often uninsulated, with central natural gas-fired steam or hot water heating systems and some room to insulate between the roof deck and upper apartment ceiling, but no cavities for wall insulation.[41]

FIGURE 5

DESIGNING ENERGY EFFICIENCY PROGRAMS AROUND THE CHARACTERISTICS OF THE LOCAL HOUSING STOCK

Many communities have a predominant type of multifamily housing stock that utilities need to understand. In the Chicago region, for example, three- to four-story U-shaped masonry buildings, built between 1880 and 1950, are ubiquitous.

FIGURE 6
AGE OF HEATING SYSTEMS IN US MULTIFAMILY BUILDINGS



Source: US Energy Information Administration Residential Energy Consumption Survey 2009

Multifamily building architectural characteristics, systems, and age will vary locally, and no one characteristic can be used to reliably determine a building's energy efficiency. However, the median age of rental buildings in the United States is 38 years.[42] Nationwide, 9.8 million rental apartments in multifamily buildings were built before 1980.[43] An additional 4.3 million were built between 1980 and 2000.[44] More than half of multifamily buildings have heating systems that are more than 10 years old, and 29 percent have systems more than 20 years old.[45] Given the dramatic improvements in energy codes and equipment efficiency standards nationwide since 2006, identifying these older multifamily buildings and those with outdated systems in a utility territory will greatly improve the ability of efficiency programs to target the buildings that need an upgrade most.

Identifying the Extent of the Local Split Incentive Problem

A key factor in the design of successful multifamily energy efficiency programs is the extent to which tenants or building owners pay the utility bills. In the simplest case, where the building owner pays utilities for the entire building, simple energy efficiency incentives will attract owners, so long as they are easy for the building owner to use and give a return on investment that is preferable to other opportunities. However, utility programs must be more sophisticated where the split incentive problem exists. There, the utility must convince the building owner to act despite the fact that some, or most, of the direct savings from energy efficiency accrues to tenants.

The following questions can help utilities assess the extent of the split incentive problem in the most prominent building types in their area:[1]

1 For a different taxonomy of buildings, see Hynek, et al., which divides Wisconsin's multifamily buildings into four categories by public and private financing and operating capital sources and describes the extent of the split incentive problems encountered in each.

- Are the buildings' units rented or owned? And who makes decisions regarding building owner-paid utilities—the owners themselves, a board of directors, or a management company?
- Are rental buildings market-rate, publicly owned, or rent-subsidized?
- Are residential units master-metered, individually metered, or both?
- Do tenants or building owners pay for heat, water, domestic water heating, and common area utilities?

Are the units rented or owned, and who makes decisions?

Multifamily rental apartments are usually owned by a small business with clearly delineated decision-making authority. In fact, more than 70 percent of multifamily rental units are owned by sole proprietorships or partnerships.[46] While energy efficiency may not be a core competency of any particular building owner or manager,[47] successful owners are experienced at working with the building trades to complete major building-related projects. They may also employ management companies to run the day-to-day operations of their buildings. These companies can be a valuable ally and point of contact for energy efficiency programs, though sometimes the arrangement can make it more difficult to find the relevant decision-maker for a particular building.

In contrast, condominiums and cooperative buildings are owned by many individuals, and decisions regarding common areas and systems are usually delegated to an elected board of directors, while decisions regarding individual units are made by the unit owner. Boards of directors often have limited ability to enter into financing arrangements for common area improvements, and have no control over in-unit appliances and HVAC equipment. In addition, boards are made up of volunteers, and often must take significant time to research and acquire expertise before making a decision on a major building-related project. Consequently, programs targeting condominiums and cooperatives must spend significant resources on outreach and education, and prepare for long lead times on decisions needed to advance a project.

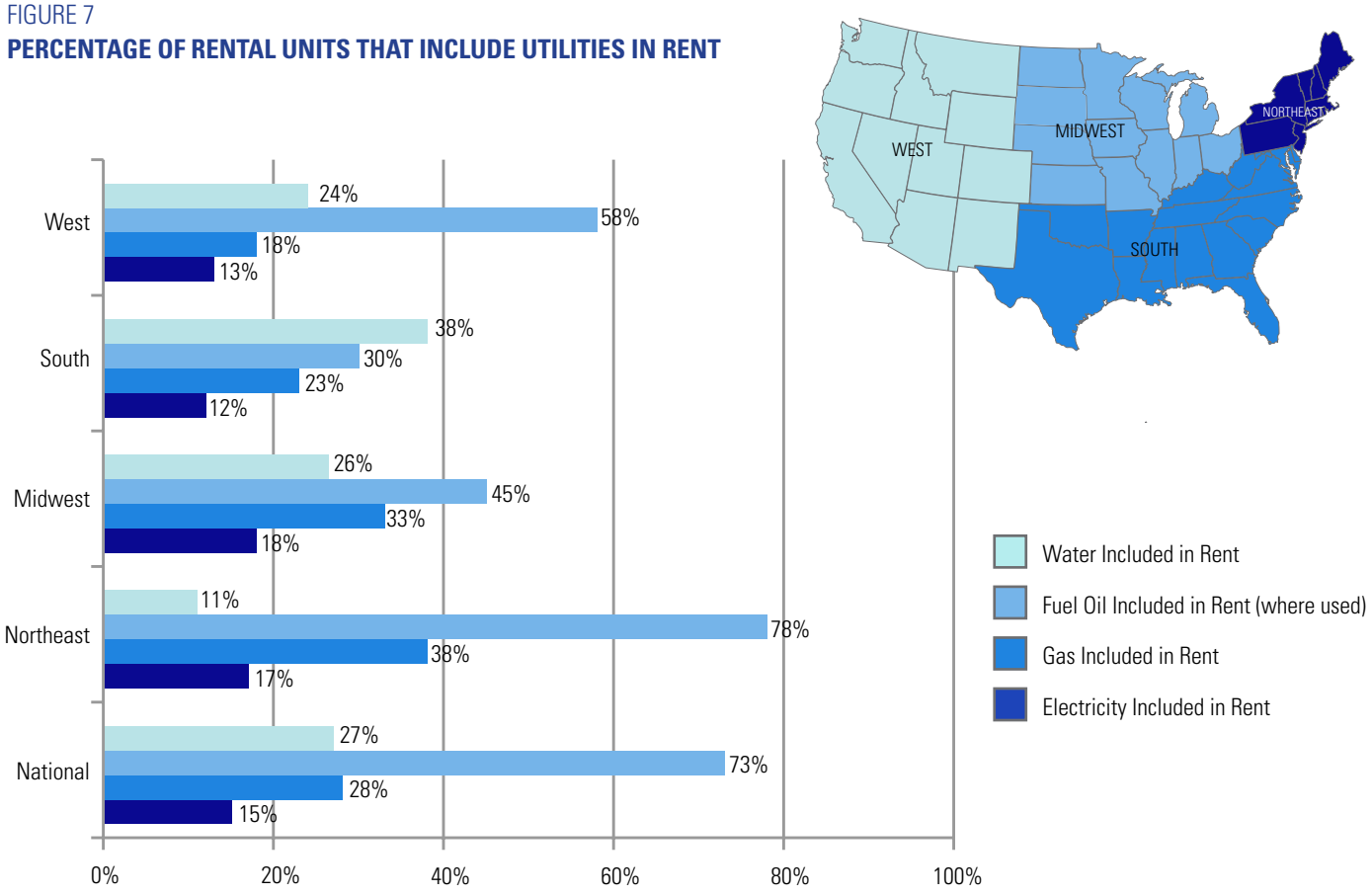
Are the buildings market-rate, publicly owned, or rent-subsidized?

In market-rate housing, rent is set by the building owner and may or may not include the cost of utilities. Often, market-rate housing is affordable to low- and moderate-income households without any kind of subsidy, by virtue of local rental market conditions. There, split incentives are solely dependent on the way tenants and the building owner share responsibility for paying utility bills and buying equipment and appliances.

There are two types of housing assistance programs for low-income families, however, that utilities should consider. The first are federal, state, and local subsidies that accrue to the building unit itself. These subsidies can create limitations on the building owner's ability to finance further building improvements, like energy efficiency upgrades. The second type of housing assistance program is a rent subsidy, such as HUD's Housing Choice Vouchers, that accrues to the tenant. Because these subsidies come and go with tenants, building owners may not consider them when making retrofit decisions. Consequently, utilities should talk to the owners of subsidized buildings to better understand how subsidies affect their specific building and finances. HUD has invested substantial sums in other programs to help building owners upgrade their buildings with efficiency in mind, including $23 million in pilot programs in 2012.[48]

In contrast to privately owned subsidized housing, public housing is owned by a public housing authority. If tenants in these buildings pay their own utility bills, they receive an allowance from

FIGURE 7
PERCENTAGE OF RENTAL UNITS THAT INCLUDE UTILITIES IN RENT



Source: 2011 American Housing Survey, Table C-10-RO; these figures are for all renter-occupied units and include single family rentals.

the housing authority that ensures they do not pay more than a certain percentage of their income in rent and utilities.[49] Public housing authorities may be a good partner for utility multifamily energy efficiency programs, because of their interest in reducing tenant utility bills and their ownership of a portfolio of buildings.

Are residential units master-metered, individually metered, or both?

The extent of master and individual metering in local apartments indicates the extent of the split incentive problems that utility efficiency programs must circumvent, as master metering is a sign that the building owner may pay the utility bills. And, as discussed above, multifamily property metering can hide the size of the property and scale of its energy efficiency opportunity from utilities looking only at account-level billing data to determine the multifamily market's size or to target specific owners. The ACEEE paper *Scaling up Multifamily Energy Efficiency Programs: A Metropolitan Area Assessment* identifies the US metropolitan areas with the largest share of households living in master-metered buildings as Honolulu, with 30 percent, Washington, DC (24 percent), Providence (21 percent), Boston (19 percent), and New York (18 percent).[50]

Do tenants or building owners pay for heat, water, domestic water heating, and common area utilities?

Ultimately the split incentive problem arises when the building owner, who buys the appliances and building systems, does not pay the utility bills. Energy efficiency programs have been devised to address this split incentive problem, but utilities should understand the extent of these problems in their buildings so that they can craft offerings to address them. Each building will exhibit the split incentive problem to a different degree. There are any number of combinations of metering and utility payment arrangements for common areas and units served by natural gas, electricity, and water utilities. The important thing to note is that programs can be designed to circumvent the split incentive program, as discussed in chapter 4, and similarly situated buildings will be able to take advantage of these programs in a similar fashion. In addition, all building owners may gain some net savings from energy efficiency measures, likely from lower tenant turnover and improved efficiency in common areas, which can account for more than 25 percent of building energy use in some moderate climates.[51]

A significant percentage of rental units have one or more utilities included in the rent. Nationally, in 2011, 15 percent of rental payments on these units included electricity and 27 percent included water. Of units served by natural gas and fuel oil, 28 percent and 73 percent, respectively, included the cost in their rent.[52] These characteristics will vary by region, however. For example, in Wisconsin, fully 51 percent of tenants in large multifamily buildings pay for space heating through their rent.[53]

Multifamily Building Finance

Successful multifamily energy efficiency programs take advantage of the fact that it is significantly easier to integrate energy efficiency into a multifamily building at purchase, refinance, rehabilitation, or near the end of life for a piece of major equipment. Financing is available at that time, and the building owner is more likely to be considering building renovations. Successful programs must also address multifamily building owners' unique financing needs. To fully understand these needs, consider:

- Is the building privately or publicly financed and owned?
- Who finances multifamily properties in the utility's territory, and do they offer loans for energy-related upgrades?
- Is an on-bill repayment program available to multifamily building owners, and for what measures?

Is the building privately or publicly financed and owned?

As discussed above, public housing is financed and owned by a public housing authority, which may be a good partner for utility energy efficiency programs. In addition, the construction of privately owned affordable housing projects is often financed by several public entities, including HUD and state housing finance agencies. These agencies have close relationships with the owners of the affordable multifamily buildings in which they invest. These relationships may include restrictions and reporting requirements that positively or negatively affect the buildings' ability to finance upgrades or take part in a utility energy efficiency program. Utility efficiency programs must work with owners of these buildings to understand how their financing affects their ability to pay for efficiency upgrades. Alternatively, utilities may work with the financing agencies

themselves to identify and address buildings in their portfolio that need efficiency upgrades.

Owners of market-rate multifamily buildings with affordable rents often have additional financial difficulties securing loans for energy efficiency work. These buildings typically operate on slim margins and carry a relatively heavy debt load, making additional projects difficult to finance.[54] In addition, if their construction or renovation was financed with LIHTCs, they cannot be recapitalized for the first 15 years of their life.[55] During this period, they do not have the opportunity to take on additional debt to finance upgrades, without the consent of all financial stakeholders.[56] These building owners may, however, carry sufficient cash reserves to finance efficiency projects themselves, particularly those with a short payback period.

Who finances multifamily properties in the utility's territory, and do they offer loans for energy-related upgrades?

Owners of market-rate multifamily buildings may also use different financial institutions than other commercial or residential customers. Most major energy efficiency upgrades require a significant outlay of funding from the building owner. Comprehensive efficiency upgrades often cost $3,000–$5,000 per unit.[57] Consequently, a typical small multifamily building of 20 units would require $60,000–$100,000 to retrofit. While this is a substantial cash outlay for the building owner, these loans are far too small to attract direct commercial bank financing.[58]

Instead, building owners must often seek out community-based institutions that are more likely to finance multifamily housing projects. Community Development Financial Institutions (CDFIs), community banks, and credit unions are often willing to take on the additional risk and underwriting costs of these loans.[59] Loan pools offered by state or local governments for energy-related upgrades are another potential source of funding for multifamily building owners. However, if the multifamily owner community has not habitually taken advantage of this source of funding, utilities may need to ensure that they are aware of the opportunity. And, if these resources do not exist, utilities should support their creation as complementary to energy efficiency programs.

Is an on-bill repayment program available to multifamily building owners, and for what measures?

For building owners who pay utility bills directly, and are unable or unwilling to take on more conventional debt, on-bill repayment provides the ability to finance equipment upgrades out of energy savings.[2] At least 20 states, including Georgia and Kansas, are home to utilities that have implemented or are about to implement these programs.[60] Utilities need not fund on-bill programs, and on-bill programs can be structured to behave more like an energy services contract, with a third party funding the efficiency investments.[61] However, to be helpful to the multifamily sector, on-bill repayment programs must have underwriting criteria that allow a fully leveraged multifamily building owner to take advantage of them, such as allowing building owners to qualify based on past utility bill payment history.[62]

Condominium buildings face particular challenges in financing energy efficiency improvements. Condominium associations typically do not own assets sufficient to secure traditional debt financing. Consequently, they must finance common area energy efficiency improvements from cash reserves or collect a special assessment from unit owners to pay for the work. Unit owners, however, can often take advantage of rebate and other programs intended for single family home owners.

2 See Bell, et al, On-Bill Financing for Energy Efficiency Improvements: A Review of Current Program Challenges, Opportunities, and Best Practices, ACEEE Report Number E118, Dec. 2011 for a thorough examination of current on-bill programs and practices.

CHAPTER 4: Recommendations for Creating Energy Efficiency Programs that Attract Multifamily Building Owners

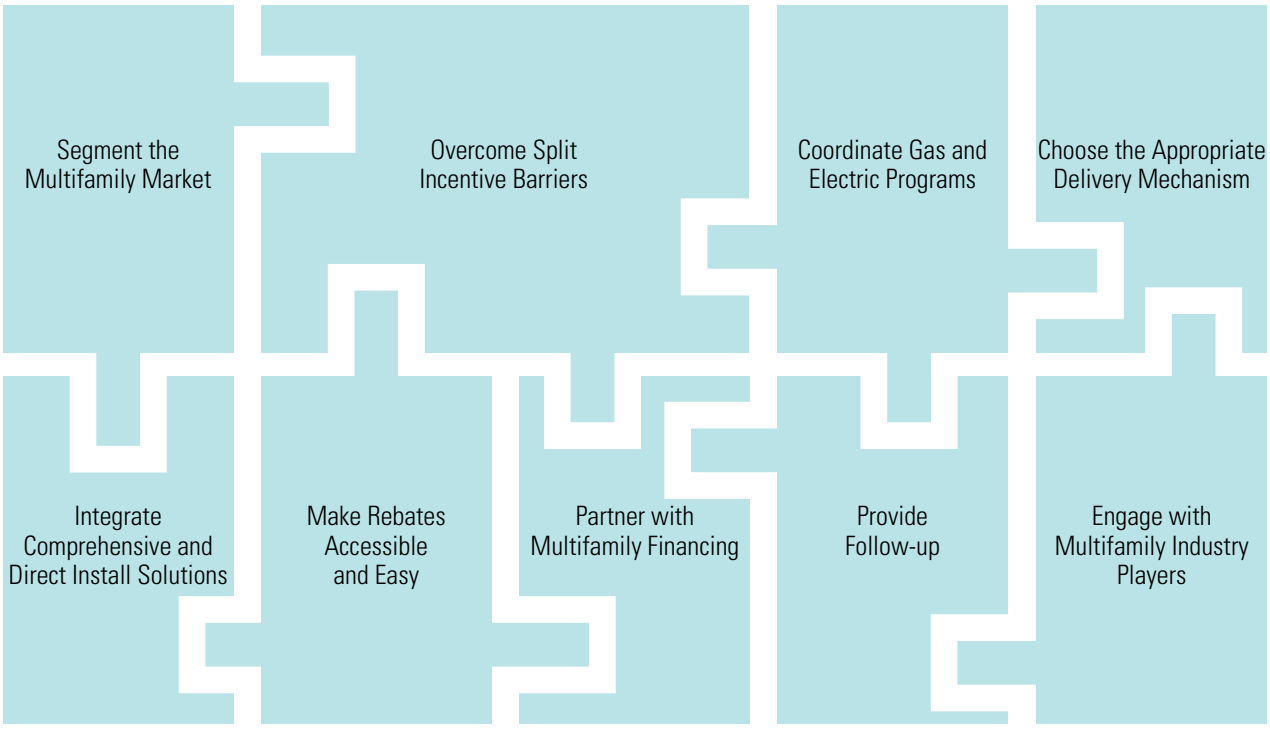
Multifamily building owners can be attracted to energy efficiency programs that take their specific business needs into account and overcome their barriers to participation. This chapter discusses how utilities can attract multifamily building owners to their programs by segmenting the market, overcoming the split incentive barrier, developing joint gas/electric efficiency programs, integrating comprehensive and direct install efficiency programs, making rebates more accessible to the multifamily sector, and partnering with financing programs that meet multifamily building owner needs.

Segment the Multifamily Market

Segmenting the multifamily market into several common local building types, ages, and split incentive structures will increase program efficiency and improve service. Using this segmentation and knowledge of multifamily financing needs, utilities can choose the most promising building types and develop a strategy to address their barriers to program participation.

Market segmentation by building type can also help determine whether it is appropriate to recommend a standard package of energy efficiency measures or financing packages to most buildings in a particular group. Where appropriate, using standard measure packages (that is, recommending the most commonly needed measures for buildings with a particular set of architectural, ownership, and other characteristics) can

FIGURE 8
RECOMMENDATIONS FOR CREATING ENERGY EFFICIENCY PROGRAMS THAT ATTRACT MULTIFAMILY BUILDING OWNERS



eliminate the need for a formal energy efficiency assessment or reduce the scale of that assessment. Utilities may collaborate with a local financial institution to design standard finance packages that meet multifamily needs, providing both an additional incentive to participate in the utility program, and an additional marketing channel.

Design Programs that Overcome Split Incentive Barriers

Multifamily efficiency programs can overcome split incentive barriers. To do so, they must provide sufficient incentives to make building owners prefer efficient appliances and equipment and provide that incentive either at the time the building owner is making a replacement or in support of an early replacement. Both program design and persuading building owners of indirect benefits, such as reduced common area and tenant turnover costs (discussed in chapter 2), can alleviate this barrier to energy efficiency program participation.

All multifamily building owners replace appliances, HVAC, and domestic hot water equipment at some point, whether at failure or through a planned upgrade program. Programs such as California's Statewide Multifamily Energy Efficiency Rebate program (MEER), and Austin Energy's Power Saver Multifamily Rebate program, give incentives to building owners who invest in energy efficient equipment inside tenant spaces and in common areas such as hallways and laundry rooms.[63] These programs overcome the split incentive barrier by providing incentives for in-unit equipment that are sufficient to make efficient equipment the least expensive alternative for the building owner. Since inception, the Austin program has provided rebates to more than 48,000 apartment units, and the four utilities that offer the MEER program (San Diego Gas & Electric, Southern California Edison, Pacific Gas & Electric, and Southern California Gas) collectively spent $14.8 million on these rebates in 2011.[64]

Building owners can also be encouraged to undertake low-cost building shell measures such as air sealing and insulation and equipment tune-ups in buildings where tenants pay their own utility bills. In these situations, coupling rebates with a focus on reducing common area costs, increasing tenant comfort, and lowering tenant costs and tenant turnover will often convince the building owner to make the investment. Utility programs can play an important role in ensuring that building owners consider all of the financial benefits of this work as they make their decision.

In addition, utilities may play a role in encouraging the use of "green lease" terms that align building owner and tenant incentives with energy efficiency, by providing links to resources such as the Green Lease Library. The library, a partnership of federal agencies, environmental nonprofits, and real estate industry groups, contains standard lease language and related guidance for building owners.[65]

Coordinate Gas and Electric Programs

Single-utility programs are daunting for building owners, particularly owners of smaller portfolios who want to do a comprehensive efficiency upgrade. These owners may not have the manpower or expertise to coordinate applications to several programs. Coordinating administration across utilities by providing similar paperwork, coordinating timelines and eligibility requirements, and providing one administrator and one point of contact simplifies and speeds the process considerably for multifamily building owners.[66] In addition, in areas without multi-fuel utilities, joint gas/electric energy efficiency programs are an excellent way to reduce energy efficiency program costs. Indianapolis Power and Light Company and Citizens Gas, for example, offer a joint direct install program for multifamily properties.[67] While these programs do require coordinated planning and administration on the part of the utilities, they gain efficiencies by requiring fewer site visits and by using larger jobs to secure better pricing from contractors.[68]

Building audits should always include both electric and gas measures. Standard audit modeling tools look at the whole building as a system, ensuring that all savings possibilities are considered. From a customer service standpoint, presenting a building owner with an audit that addresses all utilities more accurately represents the relative cost of recommended measures within the context of the owner's entire utility costs.

Choose the Most Appropriate Delivery Mechanism for the Program

A successful multifamily efficiency program requires program delivery that takes the unique characteristics of the multifamily industry into account. Program eligibility is not sufficient to drive participation in efficiency programs among building owners. As mentioned previously, program convenience is a key to inducing building owners to participate. Like all businesses, multifamily building owners have many competing demands on their time. The effort necessary to research program options, apply for energy efficiency incentives and finance measures, and oversee contractors can be a significant barrier to program participation. Programs that are convenient and use trusted partners such as community organizations to help educate potential customers break down these barriers. And, once those barriers are overcome, the program has access to multiple households at once.

Utilities should consider whether their multifamily efficiency program is best delivered by a broad trade ally network, by a one-stop shop model that centralizes program administration and provides a single point of contact for the building owner, or by a combination of the two, like the New York State Energy Research and Development Authority (NYSERDA)'s Multifamily Performance Program. NYSERDA's program combines a centralized intake system that determines the building owner's basic needs, with a network of program providers who serve as the single point of contact throughout the retrofit process.[69] As discussed above, multifamily-centric contractor networks are essential for ensuring that the most energy efficient equipment and appliances are used to replace failed equipment.[70] However, a one-stop shop or hybrid model is more useful when proactively approaching a building owner to sell comprehensive whole-building efficiency upgrades and coordinated direct install programs.

A one-stop shop model, such as the Energy Savers program profiled on page 20, centralizes program administration into one point of contact for the building owner. This contact can then lead the building owner through the entire building upgrade process, from the building assessment to hiring contractors, applying for rebates and incentives, assisting with financing, overseeing contractor work, and performing final quality control checks on installations. The one-stop shop administrator should be able to assist building owners who prefer a hands-off approach with all of the functions that must be performed throughout the process, leaving the building owner with only the need to make decisions and provide information. Or, the owner can exercise more control, with the one-stop administrator filling a facilitation role.

The one-stop shop model creates efficiencies in whole-building and comprehensive upgrades by increasing coordination among utilities and programs. The increased convenience from the customer's perspective helps sell additional upgrades and can result in owners enrolling more of their portfolio in the program than if they managed the process themselves. This model can also make use of the same contractors that install equipment under multifamily replace-at-fail programs, building a deeper relationship with the contractors and eliminating the need to create two separate contractor networks.

CASE STUDY

CNT Energy and Community Investment Corporation—Energy Savers Program

The Energy Savers program is a joint project of Chicago-based nonprofit organizations CNT Energy and Community Investment Corporation (CIC), a Community Development Financial Institution. Energy Savers is a full-service energy efficiency resource for building owners, offering free energy assessments, financial assistance, construction oversight, and post-retrofit building performance tracking to multifamily building owners in Northern Illinois. In addition, Energy Savers helps participating building owners apply for energy efficiency incentives available from multiple sources, including the Illinois Department of Commerce and Economic Opportunity and local electricity and natural gas utilities (Nicor Gas, Peoples Gas, North Shore Gas, and CommonwealthEdison).

Free Energy Assessments and Practical Recommendations

CNT Energy analysts assess building efficiency needs and guide building owners through the retrofit process, offering a single point of contact throughout all phases of the retrofit. The depth and scope of each building upgrade is tailored to meet the needs of each building owner. Energy Savers retrofits often include adding insulation, air sealing, HVAC system improvements, hot water heater improvements, and lighting systems. The program serves primarily multifamily residential building owners who offer affordable rents for low- and moderate-income tenants.

Financing Packages to Pay for the Upgrades

CIC offers special financing to pay for energy efficiency improvements. The Energy Savers loan is fixed at three percent (half the prime rate) for seven years. CIC is a nonprofit mortgage lender that provides financing to buy and rehab multifamily apartment buildings.

Energy Savers also helps participants take advantage of grants and rebates offered by their gas and electric utilities. Illinois's electric and natural gas utilities offer coordinated rebate programs for many energy efficiency upgrades. CNT Energy's analysts suggest applicable incentives along with building recommendations, and help with the application processes, ensuring that building owners can easily access all available rebate and incentive programs.

Construction Oversight and Building Performance Tracking

CNT Energy analysts help building owners solicit bids from contractors, using a list of preferred contractors with experience working on multifamily energy efficiency systems. The program also oversees the construction process and provides post-installation quality control checks. After the retrofit, CNT Energy staff help monitor the owner's energy bills to verify savings. Then, they follow up where needed to steer building owners toward more comprehensive multifamily retrofits and best practices for energy efficient operations and maintenance. If the building does not meet savings expectations, CNT Energy offers a free tune-up consultation.

Source: ACEEE Case Study, May 2011; CNT Energy.

Integrate Comprehensive and Direct Install Solutions

Comprehensive whole-building programs that address HVAC systems and the building shell should be integrated, wherever possible, with direct install programs that provide low-cost, easy-to-install measures. Combining the two activities into one project has several benefits. Utility program implementers can achieve economies of scale by hiring contractors to perform both types of work at once. Combined programs give owners and program implementers a single point around which to communicate with tenants about improvements. Reductions in usage from the direct install program and building envelope upgrades can immediately be taken into account as the implementers plan and install HVAC and domestic hot water improvements. And, doing both kinds of work at the same time reduces the number and severity of disruptions for tenants and the building owner.

In addition, direct install programs can serve as a gateway to energy efficiency for building owners who are not ready to undertake more comprehensive retrofits. Direct install programs provide a chance for the utility and contractors to create a relationship with the building owner. Then, as direct install measures demonstrate the benefits of energy efficiency to building owners and tenants in the first few months after installation, utilities can follow up with building owners to promote additional savings opportunities such as rebates or comprehensive retrofits. In addition, building this relationship can also increase the likelihood that building owners will take advantage of utility efficiency programs when a system fails.

Arizona Public Service's multifamily energy efficiency program (see case study on page 22), for example, offers direct install measures and rebates for buildings undergoing major renovations, organized together under one program umbrella.

Make Rebates Accessible and Easy

Most multifamily buildings are owned by small businesses. As a result, convenience is an important determinant of participation. Rebates are an excellent way to induce multifamily building owners who pay utility bills to replace HVAC equipment and appliances before failure. Even when replacing at failure, rebates motivate multifamily building owners whose tenants pay the utility bills to invest in more efficient appliances. But, to make rebate programs accessible to multifamily building owners, and to ensure that utility rebate programs achieve as much savings as possible from this sector, programs must be convenient and easy for owners to use.

First and foremost, coordination among utilities and across programs is essential. As mentioned above, wherever possible, natural gas and electric programs operated by overlapping utilities should be coordinated. This is especially true when utilities incentivize measures that benefit both utilities, such as insulation in areas with seasonal natural gas heating and electric air conditioning.

In addition, utilities should consider handling all relevant incentives within their multifamily program, to avoid shuttling the customer from program to program. This can be confusing and can cause potential customers to lose interest in the program. Every aspect of the rebate process, including application processes, forms, and protocols for determining the rebate amounts for multi-utility measures, should be considered from the customers' perspective and made as simple as possible for them. Close coordination may also make it easier for both gas and electric utilities to claim savings from measures that benefit both fuels, such as insulation.

To encourage multifamily building owners to claim rebates when replacing equipment at failure, utilities should consider making contractors who serve multifamily buildings a central partner in the program.[71] But, because contractors work

CASE STUDY

Arizona Public Service—Multifamily Energy Efficiency Program

Arizona Public Service Company (APS)'s Multifamily Energy Efficiency program offers owners of existing buildings common area energy assessments, in-unit direct install measures, and access to rebates for common area efficiency improvements. The program also offers packages of rebates for new construction and major renovation work and an incentive to help developers pay for energy modeling when designing their buildings. To date, the program has retrofitted more than 10,000 units of housing, and is a good example of a program that makes rebates accessible and easy.

Free Energy Assessments and Practical Recommendations

The program's common area energy assessment identifies opportunities for efficiency savings and determines the building's eligibility for rebates. The assessment is conducted at no charge to the building owners. Assessors examine all common areas, including pool houses, club houses, community facilities, laundry rooms, and vending areas. Building owners can then apply for rebates for energy efficient common area equipment, including lighting, HVAC, laundry facilities, vending machines, and pool pumps through the utility's commercial-sector rebate program.

In-Unit Direct Install Measures

After the assessment is complete, APS's multifamily program provides free direct install measures, including compact fluorescent light bulbs, low-flow shower heads with temperature shut-off valves, and low-flow faucet aerators, to building owners. Building staff install the measures and notify APS when the installation is complete. Then, an APS representative inspects the installations for program compliance.

New Construction and Major Renovation Rebates

APS offers three prescriptive rebate packages for new construction and major renovations. Rebates increase as more efficiency measures are installed. Alternatively, builders and owners can choose a performance-based rebate, with increasing rebate levels for Home Energy Rating System (HERS) scores of 81, 78, and 75.

Energy Design Incentive

APS also offers a rebate of 50 percent of the cost of an energy modeling study, up to $5,000, for builders, developers, or owners who plan to apply for new construction or major renovation rebates.

Eligibility

Owners and property managers of apartment buildings with five or more units are eligible for direct install measures and the common area assessment and rebates. Builders and developers of new buildings of five or more units are eligible for new construction rebates, and energy design incentives are available to builders or developers who are seeking or plan to seek new construction or major renovation rebates.

Additional Multifamily-Friendly Program Features

When a building is accepted into the program, funding is earmarked and set aside for rebates, so funding cannot run out when the building is mid-process. The application for existing buildings is a single page, and the only additional documentation required is one monthly utility bill. And, to increase program efficiency, APS is piloting a new approach to more fully integrate common area energy assessments and rebate processes into the rest of the multifamily program.

Source: APS. Information on the program, along with application forms, is available at http://www.aps.com/main/green/choice/choice_130.html.

face-to-face with customers and often rely on repeat business, they are particularly sensitive to program changes that negatively affect their credibility with building owners. Consequently, utilities should plan carefully to avoid unexpected program changes, funding cutoffs, and scheduling delays. Similarly, utilities should plan to roll out changes in a manner that allows contractors and program implementers sufficient time to change forms and processes and train their employees on new procedures.[72] Above all else, it is important to complete all projects in a program's pipeline before ending the program, to ensure a positive experience for customers who have invested time and money to participate.

Partner with Sources of Attractive Multifamily Financing

Multifamily energy efficiency upgrades often require a source of financing. Consequently, utilities should partner with sources of financing that are attractive to multifamily building owners. Utilities should seek out organizations that multifamily building owners go to for their financing, and consider opportunities for the financing partner to educate its multifamily clients about efficiency upgrades when they seek other financing. Since efficiency upgrades ultimately improve the financial resilience of tenants and building owners, financing organizations should be encouraged to see them as a means to reduce their own risk.

For example, the Energy Savers program was founded in partnership with a CDFI, Chicago's Community Investment Corporation, that specializes in lending to multifamily buildings. While this specialty is helpful in marketing the program to likely clients, it is not necessary to create a successful partnership. Another example of a partnership between an energy efficiency program and a financing organization is in New Jersey, where the state Housing Finance Agency has partnered with Public Service Electric and Gas Company to offer financing for the cost of energy efficiency investments.[73]

In addition, financial partners who lend to the multifamily industry can be an excellent source of program referrals. When they refinance, building owners are often planning changes to their buildings that can be expanded to include energy efficiency improvements. For owners contemplating a gut rehab, especially, there's no better time to decide to insulate and air seal their buildings.

Provide Follow-Up and Aggregated Building Energy Use Data

Quality control is critical to the success of any energy efficiency upgrade program, reducing rework and improving customer satisfaction.[74] Utility programs routinely contain a post-installation quality control element, but should consider more intense follow-up to steer building owners toward more comprehensive multifamily retrofits. Follow-up as far as one to two years from the time of installation can be useful to ensure that savings persist, and consistent follow-up provides the program implementer an excellent opportunity to ensure customer satisfaction and suggest further building efficiency improvements, either on the building in question or the rest of the owner's portfolio.[75]

In addition, utilities should ensure that multifamily building owners can gain access to aggregated building energy use data. As multifamily building owners become subject to local energy use benchmarking and disclosure ordinances and become interested in benchmarking after seeing the savings that result from a multifamily efficiency program, demand for this service will grow. The utility industry's Green Button initiative provides tools that utilities can use to help customers access these data in a secure and standardized way.[76] A number of utilities, including Pacific Gas & Electric, Commonwealth Edison, and Oncor, have committed to providing these data to their

customers.[77] To the extent that these, or related, data are made public by disclosure ordinances, they can also offer an opportunity for the utility to identify properties that would benefit from programs and reach out to their owners.

Engage with Key Multifamily Industry Players

Delivering effective multifamily programs requires continuous engagement with a number of multifamily industry participants, in addition to regulatory agencies and consumer and environmental advocates who have a more general interest in energy efficiency. In some situations, this engagement will take the form of formal partnerships, but more often, it will require only informal discussion and coordination. This section discusses the roles of key players in the multifamily industry, how collaboration with these organizations can heighten the impact of a multifamily energy efficiency program, and forums for engagement.

Multifamily building owners

The majority of US multifamily buildings are owned by smaller building owners, who are excellent partners for multifamily efficiency programs, often owning multiple buildings which in turn often have similar HVAC systems, architectural styles, and ages. These owners are particularly amenable to one-stop shop efficiency program models that relieve them of the day-to-day administration of a larger energy efficiency project. And, once owners have had a positive experience with the program, they are more likely to enroll the rest of their building portfolio into the project. Owners are also likely to be members of peer organizations and neighborhood and community organizations, and a satisfied building owner can serve as a trusted messenger to other owners about the program. These organizations are excellent forums for recruiting business owners and engaging the multifamily community in the program design process.

Large building owners are natural partners with utility energy efficiency programs and are sophisticated in their ability to partner with utilities for the benefit of their portfolios. In 2011, four of the five largest apartment building owners in the United States were affordable housing owners.[78] Affordable housing developers such as Enterprise Community Partners and Mercy Housing develop and rehabilitate multifamily housing at scale nationwide, providing a substantial pipeline of projects that could be fed into utility programs. They also serve as housing advocates and intermediaries and so are discussed more below. Other large multifamily owners, such as real estate investment trusts, are becoming similarly interested in energy efficiency for their buildings, particularly as benchmarking and disclosure ordinances begin to take hold.[79]

Real estate management companies

Real estate management companies operate on behalf of the owner. Their capacity to make decisions on the owner's behalf and to coordinate on building upgrades varies widely. In addition, it may be difficult to discern exactly who is making the decisions, either within or outside the management company. However, a management company that has a positive experience with a multifamily efficiency program can become an ally in recruiting other building owners and their portfolios. Management companies can also ensure that building operating procedures result in the greatest possible efficiency gains and can perform building energy use benchmarking.

Energy efficiency program implementers

Utilities often contract with outside companies to implement their energy efficiency programs. The degree of autonomy these companies have, particularly regarding program design, varies by utility and vendor experience, resources, budget, and interest. In any case, utilities benefit by hiring multifamily program vendors with significant

experience and knowledge that is specific to the multifamily market.

Utilities can look for several characteristics to help ensure their multifamily efficiency program vendor will implement a well-designed program. First, program implementers should have a solid track record with multifamily building programs to ensure that they understand the complexities of the multifamily market. Second, program implementers must have existing relationships with networks of local building owners, the local contractor pool, and other multifamily market actors who can introduce building owners to the program, such as financial institutions. Third, program implementers should have a thorough understanding of the nature of the multifamily housing stock in their area, including its age, prevalence of master and individual unit metering, and equipment and insulation characteristics. And fourth, program implementers should have internal quality assurance and quality control capacity, such as post-retrofit inspectors, to ensure that jobs are being done right.

Contractors

Contractors can play a crucial role in whether and how energy efficiency improvements are installed in a building.[80] HVAC, boiler, insulation, and other contractors can be a significant source of referrals to the efficiency program. But, contractors with little experience with these measures may be reluctant to install them and need instruction to ensure a quality job. Consequently, communications between the efficiency program and the relevant contractor pool is an important component to a successful program. Contractors who participate in multifamily energy efficiency programs can reduce their own marketing and new customer acquisition costs, gaining more customers at a lower cost.

Public housing authorities

Public housing authorities own affordable multifamily buildings, and also operate federal housing voucher programs. Consequently, they benefit when affordable multifamily housing is made more energy efficient. Public housing authorities plan ahead and save cash reserves for major system replacements, reducing the need for financing and opening the possibility of early replacements. As mentioned above, public housing authorities may be a good partner for multifamily utility efficiency programs because their incentives align with energy efficiency and they own or influence a substantial portfolio of buildings.[81]

Housing advocates and intermediaries

National housing advocates, intermediaries, and owners are important partners for utilities who run, or are designing, multifamily energy efficiency programs. In addition to representing a significant portion of the housing stock through their members, business partnerships, and building portfolios, they are also an excellent resource for information on the multifamily housing industry, business practices, and local multifamily industry contacts. These organizations include diverse groups such as Enterprise Community Partners, Housing Partnership Network, the Local Initiatives Support Corporation, the National Housing Trust, NeighborWorks America, Raza Development Fund, and Stewards of Affordable Housing for the Future. They play a crucial, and very practical, role within the multifamily housing industry by developing, financing, and providing technical assistance to developers of affordable market-rate multifamily buildings. In 2011, for example, Enterprise created or preserved more than 16,000 units and invested more than $1 billion in communities nationwide.[82] Enterprise has a keen interest in the energy efficiency of its buildings, and has developed the nation's first green building standard for affordable housing to ensure that this sector is taking advantage of best practices in the field.[83] In

addition, the National Housing Trust is working to connect the multifamily housing industry with utility energy efficiency experts nationwide.[84]

There are also regional and local nonprofit housing developers, owners, and advocates with an interest in improving the maintenance and operations of multifamily housing and reducing tenant bills. Local and regional groups, such as Action-Housing in the Pittsburgh area, are natural outreach partners in educating building owners about utility programs and in educating tenants about direct install programs in their area. They also have a rich knowledge of multifamily business practices and potential local partners. Utilities should consider these groups as a resource and reach out to them for input into programs and to assist with marketing and tenant education.

Financial institutions[3]

Commercial lenders do not often finance multifamily energy efficiency retrofits. Instead, many multifamily building owners turn to community-based financial institutions, such as local banks, credit unions, and CDFIs, that are more willing to make smaller loans and consider building owners' financial situations in a more individualized manner. CDFIs are local, nonprofit lending organizations that specialize in community-level economic development financing. These lenders are often smaller than traditional lenders like commercial banks, but have important experience making nontraditional loans to meet both financial and social goals.[85] These lenders are accustomed to managing risk by using multiple sources of capital, and are not subject to the same regulations as banks.[86] Some CDFIs, such as Chicago's Community Investment Corporation, which finances the acquisition and rehab of multifamily buildings, specialize in a particular type of lending. Others, such as the Pacific Northwest's Craft 3, New York's Community Preservation Corporation, and the Reinvestment Fund in Philadelphia, have experience with energy efficiency-related lending.[87] Consequently, CDFIs are well-positioned to assist a utility energy efficiency program with complementary financing products and marketing of energy efficiency programs to their customers in the multifamily sector.

Several utilities and electric cooperatives have also had longstanding partnerships with credit unions, which focus primarily on the residential market. Efficiency Vermont, for example, has partnered extensively with Opportunities Credit Union.[88] In addition, the partnership between municipal electric utility and Velocity Credit Union in Austin, Texas, has generated significant customer satisfaction and financial benefits for the credit union.[89] While that particular program targets single family homes and duplexes, its results indicate that partnering with a credit union can be quite successful for both the utility and the financial institution.

Housing finance agencies

State housing finance agencies do not own buildings, but help finance their construction by administering federal affordable housing tax credit programs and other programs. Finance agencies have close relationships with the owners of affordable multifamily buildings in which they invest. These relationships can be leveraged to ensure that the buildings are operated, maintained, and upgraded with energy efficiency in mind. For example, buildings funded by housing finance agencies are often required to plan ahead and save a cash reserve for large system replacements, instead of replacing only on failure.[90] Consequently, they are well-positioned to make proactive equipment upgrades in order to reduce utility costs.

3 For a more detailed scan of the types of potential financial partners for efficiency programs, see Joel Freehling's August 2011 ACEEE White Paper titled "Energy Efficiency Finance 101: Understanding the Marketplace."

Energy service companies

Energy service companies (ESCOs) use a performance contracting model to install, maintain, and arrange financing, often through large commercial banks, for energy efficiency improvements in exchange for sharing the savings with the building owner.[91] According to Lawrence Berkeley National Lab, 2011 projected revenues for the ESCO industry were around $7 billion.[92] While public and institutional markets account for about 84 percent of ESCO revenues, "several ESCOs have increased their activities in the residential market, mainly through managing and/or implementing utility residential energy efficiency programs."[93] As a result, the residential market made up six percent of ESCO revenues in 2008, and the National Association of Energy Service Companies lists six of its members as providing services to the multifamily sector: AMERESCO, Burns & McDonnell, Eaton Corporation, Johnson Controls, Navitas, and Siemens Industry, Inc.[94] Remaining revenues come from commercial and industrial accounts,[95] which may include large multifamily buildings. Consequently, utilities can partner with ESCOs in two ways: ESCOs can perform the program implementer role, or the ESCO can drive participation among its own large multifamily customers in HVAC and lighting rebate programs.

Federal and state government agencies

As mentioned above, HUD administers the nation's rental subsidy programs, including Housing Choice vouchers. It also assists those who build and rehabilitate affordable housing, primarily through financing, and has begun to use these programs to encourage building owners to implement green building principles. Its Mark to Market program serves buildings with an average of 100 units, and encourages building owners to use green building principles in major rehabilitation efforts.[96] HUD has also partnered with several dozen housing organizations to assist with energy efficiency upgrades in 2012.[97] Utility programs can partner with these and other HUD-financed properties to help them achieve their green building-related goals.

The Small Business Administration (SBA) has several loan products that can be used to fund energy efficiency. SBA's 504 loan program, for example, funds building renovations and modernization by all kinds of small businesses.[98] Utilities may also be able to partner with US Department of Energy programs such as the Weatherization Assistance Program, which is administered by the states, to make the most of their combined resources. Utilities can also join programs such as the Better Buildings Challenge as an allied organization, to assist challenge participants in reaching and documenting their goals.[99]

In addition, utility programs may be able to partner or coordinate with state energy offices and weatherization agencies that administer energy efficiency programs.

Local government

Local governments may devote resources directly to programs that help building owners improve the energy efficiency of their units, or they may set local policies to require energy efficiency improvements as a condition of other public support or licensing.[100] Boulder, Colorado, does both. The City of Boulder's SmartRegs program requires that its existing multifamily housing stock meet an energy efficiency performance standard. The city helps building owners comply with SmartRegs by providing technical assistance and direct install measures through a program called EnergySmart, funded by the American Recovery and Reinvestment Act of 2009.[101]

In addition, local governments encourage energy efficiency improvements through building energy use benchmarking and disclosure ordinances, and they may assist with the financing of energy efficiency, particularly through Property Assessed Clean Energy (PACE) loan programs that allow

building owners to pay back certain loans on their tax or other municipal bills.[102] While residential PACE programs are on hold nationally, commercial PACE programs are moving forward, and apply to multifamily buildings.[103] These types of local government-sponsored programs can drive participation toward a utility multifamily efficiency program, and should be coordinated with any utility offerings.

Conclusions

Multifamily housing presents a sizeable opportunity for utilities to create cost-effective energy efficiency savings. Recent estimates suggest that the achievable efficiency savings in this sector is $9 billion per year.[104] As utilities seek to expand their energy efficiency program offerings to meet increasingly stringent efficiency goals, multifamily buildings can provide deep savings, akin to those from commercial buildings, from a well-organized local pool of potential program participants. While multifamily building owners in many areas have not historically made energy efficiency investments a high priority, effective multifamily energy efficiency programs are being run in several areas of the country.

Utilities are currently offering programs, such as those highlighted here in case studies, which overcome the split incentive barrier and effectively engage building owners and other partners to garner significant energy savings. These programs can be replicated and adapted to a particular market's circumstances. Utility programs will begin to capture the $9 billion of annual savings potential from the multifamily market when these programs are adapted into well-coordinated, multiple fuel programs that address the most promising local building and equipment types, are easy for building owners to take part in, and provide financing and follow-up. In designing these programs, utilities have a number of potential partners within the multifamily industry.

About the Author

Anne McKibbin is policy director for CNT Energy. In this role, she develops and implements policy initiatives and advocacy efforts related to energy efficiency and residential hourly electric pricing programs. Ms. McKibbin monitors and participates in state and federal regulatory proceedings. She is responsible for monitoring state and federal legislative activities and working with CNT Energy's director of research and other staff members to coordinate and prepare reports, publications, and presentations on CNT Energy's work. Ms. McKibbin also represents CNT Energy in a number of environmental and energy industry forums and stakeholder groups, including the Illinois Energy Efficiency Stakeholder Advisory Group.

Before joining CNT Energy in May 2010, Ms. McKibbin managed public policy projects for the Midwest Energy Efficiency Alliance and served as a regulatory attorney and policy analyst with the Citizens Utility Board of Illinois. Ms. McKibbin began her career in utilities as an economist for the telecommunications division of the Public Utility Commission of Texas.

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