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American Council for an Energy-Efficient Economy

Engaging as Partners in Energy Efficiency: Multifamily Housing and Utilities

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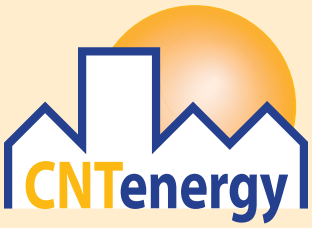

CNT Energy

CNT Energy (www.cntenergy.org) is a division of the Center for Neighborhood Technology. Since 1978, the Center for Neighborhood Technology (CNT) has been a leader in promoting urban sustainability—the more effective use of existing resources and community assets to improve the health of natural systems and the wealth of people, today and in the future. CNT Energy combines rigorous research with effective solutions to help consumers and communities control energy costs and become more energy efficient.

CNT Energy helps reduce energy costs in households, buildings and communities. CNT Energy invented and now administers the largest residential real-time pricing program, helping households in Illinois control energy costs by providing them tools, information, and pricing programs that reduce peak energy load and energy costs for everyone. CNT Energy helps reduce operating costs and preserve affordable housing by providing a one-stop energy efficiency shop that combines technical and financial assistance to make it easy for building owners to retrofit their buildings. CNT Energy also coordinates Energy Impact Illinois, an alliance of utilities, local government, and others, with the mission of removing barriers and unleashing demand for energy efficiency in Northern Illinois.

American Council for an Energy-Efficient Economy (ACEEE)

The American Council for an Energy-Efficient Economy (www.aceee.org) is a nonprofit organization founded in 1980 that acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors. ACEEE carries out its mission by:

- Conducting in-depth technical and policy analyses
- Advising policymakers and program managers
- Working collaboratively with businesses, government officials, public interest groups, and other organizations
- Convening conferences and workshops,
- Assisting and encouraging the media to cover energy efficiency policy and technology issues
- Educating businesses and consumers through our reports, books, conference proceedings, media outreach, and Web site

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Executive Summary

Energy use in multifamily buildings can be reduced substantially, with many cost-effective upgrades achieving savings of 15–30% in buildings with five or more residential units. At 2010 national average energy prices, the full expansion of these efficiency upgrade programs would translate into annual utility bill cost savings of almost $3.4 billion for the multifamily sector, nationwide.

Multifamily building owners are among the first to feel the squeeze of rising energy prices. As energy bills rise, upward pressure is put on rents, financial institutions become increasingly concerned about risk to their loan portfolios, and tenants continue to demand comfortable homes. Energy efficiency upgrades provide a solution by improving the bottom line for multifamily building owners, decreasing pressure on rents, decreasing financial risk and improving tenant comfort. Consequently, building owners nationwide are looking for ways to improve the efficiency of their buildings.

Building owners may have difficulty finding technical assistance, financing, or qualified contractors to upgrade their buildings. Building owners often need financial incentives to adopt new technologies or equipment with higher up-front costs. Despite this, studies have documented that affordable housing, often multifamily, receives a disproportionately small share of available energy efficiency funding. Our analysis confirms that states vary widely in their commitment of utility energy efficiency program resources to multifamily housing.

Public utilities represent a vast, largely untapped opportunity for engagement and leveraging of resources for improved energy efficiency. But historically, utility business models and regulation discouraged energy efficiency. Consequently, public policy intervention is needed to make strong engagement in energy efficiency compatible with utility business models.

Utility business models vary dramatically, and utilities are regulated primarily at the state level, with each state taking a different approach to the utilities' business and energy efficiency. These circumstances dictate current energy efficiency investment and the appropriate policy intervention to encourage utilities to partner for effective and comprehensive multifamily energy efficiency retrofit programs. As one example of the local details that can affect multifamily programs, some states classify multifamily housing as residential, some classify it as commercial, and some states have no consistent classification. As a result, it may be unclear whether multifamily housing qualifies a specific energy efficiency program, or any program at all.

Consequently, to align utility incentives with the multifamily industry's needs, building owners and other housing industry players must become partners with utilities, engaging with them directly and in local and state regulatory proceedings. No single strategy will work nationwide, but by joining existing efforts at the state and local levels, housing industry players can work with utilities to increase and improve the use of utility energy efficiency investments in multifamily housing.

This paper outlines the opportunity and strategies for the multifamily housing sector to engage electric and natural gas utilities* in order to expand resources available for energy efficiency retrofits and improve the use of these investments. Every state holds opportunities to improve the energy efficiency of our buildings. And our analysis shows that some states, particularly the District of Columbia, Florida, Illinois, and Texas, are particularly fertile ground for improving energy efficiency policy toward multifamily buildings. We also provide case

* Water utilities and propane gas and heating oil providers are also important potential partners in energy efficiency programs. However, their business models and regulatory oversight differ significantly from the electricity and natural gas industries. Consequently, they are outside the scope of this paper.

studies of numerous successful programs to illustrate the range of approaches that can be used by utilities to improve the energy efficiency of multifamily buildings.

Partnering with Utilities on Energy Efficiency: The Opportunity

Utilities are major players in the energy efficiency arena, having contributed $4.3 billion to electric and natural gas efficiency programs in 2009, and an expected $7.5–12 billion annually by 2020.[1] While investments are becoming more widespread, almost 80% of utilities' contribution occurred in just 10 states as recently as 2008.[2] Regardless of the concentration, this investment is substantial even when compared to the federal government's contribution through the American Recovery and Reinvestment Act of 2009, which made a one-time investment of approximately $17 billion in energy efficiency.[3]

Utility efficiency programs for multifamily buildings vary significantly and range from simple incentives to use energy efficient light bulbs and reduce hot water consumption to comprehensive energy efficiency improvement programs that combine energy audits, contractor selection and oversight, financing from multiple sources, and post-retrofit review of actual energy savings. These comprehensive programs combine building envelope, HVAC, systems, and maintenance and operations improvements and, over the long run, garner the greatest savings per dollar. But utilities only have incentive to participate in these programs where they see opportunities for financial benefit or are subject to government mandates. Even then, successful program delivery requires buy-in from this important and powerful stakeholder.

In 2005, U.S. energy bills in multifamily buildings* totalled approximately $18.03 billion. Of this energy 42% was used to heat and cool buildings while the remainder was used for lighting, water heating, refrigeration, appliances, and other equipment such as pumps and elevators.[4] These multifamily building expenditures have continued to increase as residential energy expenditures increased by 10.6% between 2005 and 2009.[5] Fortunately, much can be done to reduce this use and associated costs. As shown in the case studies throughout this paper, many owners have reduced their energy use and energy bills by 20% or more, improving cash flow and profits and freeing up money to pay for other building improvements.

Homes where low to moderate families live can benefit from energy efficiency as well. Some of this housing is subsidized by the government, but most of it consists of privately owned buildings. Studies have documented that affordable housing, often multifamily, receives a disproportionately small share of available energy efficiency funding.[6] A study by Charlie Harak of the National Consumer Law Center describes the issues confronting affordable housing and the tremendous cost burden that outdated and inefficient units and buildings present to the federal government and residents alike. Harak estimates that HUD spends upwards of $5 billion on energy costs for public housing and "privately owned housing where the owner or tenant receives rental assistance from HUD."[7] However, in 2007, HUD only shaved $^{2}/_{3}$ of 1% off of that bill with energy efficiency.[8] Despite the need for greater efficiency in these properties, they also get a disproportionately small share of utility incentive dollars in some states. While the affordable housing market (and policies to increase energy efficiency in that market, differs from the rest of the multifamily sector) it contributes to the substantial potential for savings from energy efficiency.

When scaled to the community and national levels, taking advantage of the available efficiency opportunities can yield very large savings.

* In this report, multifamily buildings are defined as having five or more units, except where noted.

Low Income Renovation: Pearl Brook Apartments, Lunenburg, Massachusetts

- **48-unit residential complex.**
- **The project received energy efficiency services valued at over $43,000 from Unitil and is estimated to save an additional 3,157 therms a year as a result of the improvements, which in turn will provide approximately $133,487 in lifetime savings.**
- **46 13-cubic foot ENERGY STAR refrigerators for a lifetime savings of over $129,000.**

The Pearl Brook apartment complex in Lunenberg is a 48-unit residential complex for income-eligible people over the age of 60 and disabled citizens. As part of a major renovation project in 2010 that included significant heating system retrofits, the Leominster Housing Authority, as development project manager for the Lunenburg Housing Authority, teamed up with the local electric and natural gas utility, Unitil, to explore what energy efficiency services and rebates were available to further augment their project. The Mass Save Low-Income Multifamily Energy Retrofit Program conducted a full energy assessment of the complex, and found a host of energy and cost-saving opportunities to add value and comfort to residents' units. Recommendations included replacement of old light fixtures with ENERGY STAR fixtures, insulation in the attic and basement, and air sealing throughout the building to prevent energy loss. The project received energy efficiency services valued at over $43,000 from Unitil and is estimated to save an additional 3,157 therms a year as a result of the improvements, which in turn will provide approximately $133,487 in lifetime savings.

Unitil also delivered 46 13-cubic foot ENERGY STAR refrigerators valued at $12,000 on December 21, just days before Christmas. The residents received quieter, more efficient refrigerators to replace the older, energy-hog models in their units. The Housing Authority will now save an estimated additional 45,448 kilowatt-hours annually, for a lifetime savings of over $129,000.

Aside from enjoying a new fridge, residents in the complex were pleased about the idea of cutting down on energy usage, saving money, and reducing pollution. "Anything that helps the environment, I'm for," Barbara Berry, a seven-year Pearl Brook resident, told the Fitchburg *Sentinel* and *Enterprise*. "We have to leave something for our grandchildren."

Source: Massachusetts Energy Efficiency Advisory Council and Massachusetts Department of Energy Resources

For example, if the energy savings from Energy Savers, a multifamily building energy efficiency retrofit program that has improved over 7,500 units in the Chicago area since 2007, is aggregated to all 854,000 multifamily units in Chicago, it would reduce energy bills by approximately $269 million each year.*

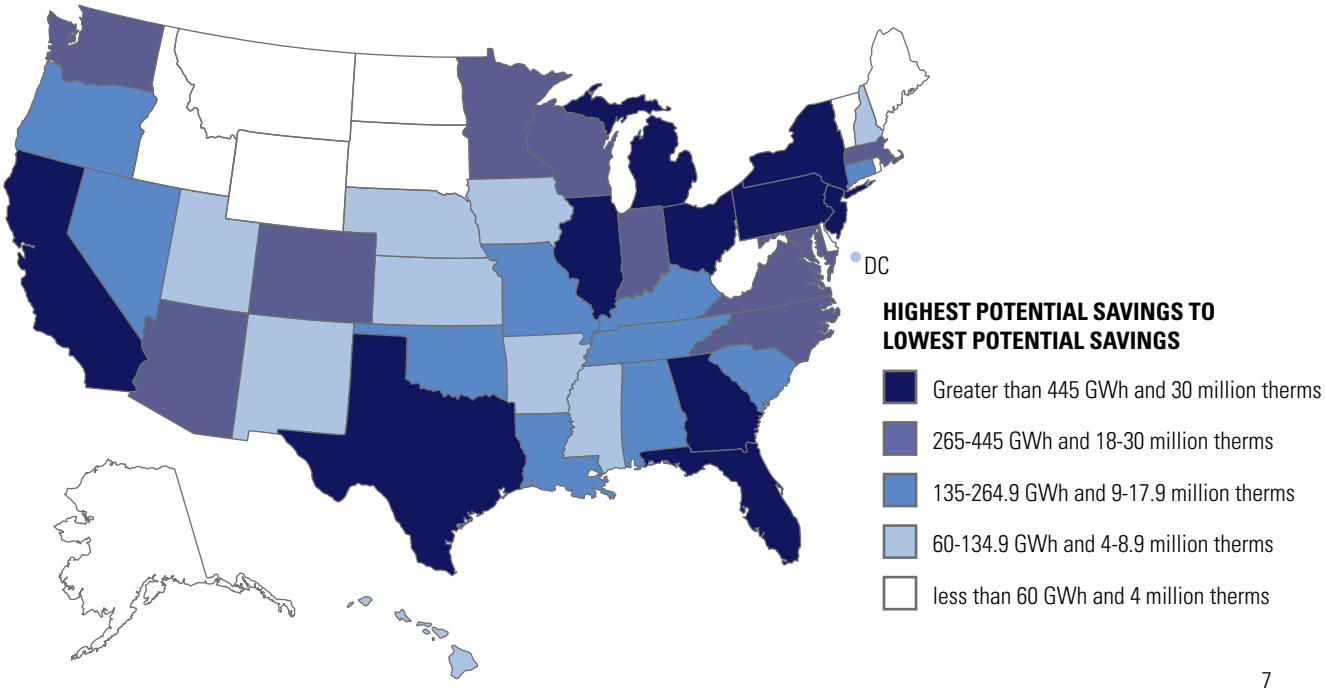
In addition, we can estimate the potential impact of applying quality multifamily energy efficiency programs to every multifamily building in the country. At the national level, and with 2010 national average residential energy prices, energy efficiency improvements of 15% for electricity and 30% for natural gas in all multifamily buildings would create annual utility bill savings of approximately $2.03 billion on electricity and $1.34 billion on natural gas.[9] Thus, the potential for energy efficiency savings from enrolling the entire multifamily sector in a quality program is over $3.4 billion. Even if we adjust these figures by removing the 25.52% of U.S. buildings built after 1990, the potential for energy efficiency savings is immense. These savings levels are consistent with savings reached by quality multifamily energy efficiency programs, including those found in the multifamily energy efficiency programs discussed below in Case Studies of Effective Programs and Partnerships. This level of savings is also consistent with a 2007 report surveying energy efficiency opportunities in multifamily housing.[10] Figure 1 shows the savings potential for each state based on the number of housing units in buildings of five or more units and the national average electricity and natural gas consumption per unit of multifamily housing.

Public utilities represent an enormous opportunity for engagement and leveraging of resources for improved energy efficiency. Utilities have

* On average, Energy Savers saves 650 kWh and 240 therms per unit annually. This is a 12% savings from the national average electricity use in a multifamily unit and just under 31% savings from the actual natural gas consumption for the improved buildings. At average Chicago energy prices, utility bills are reduced by $75 for electricity and $240 for natural gas annually per unit.

FIGURE 1

ANNUAL SAVINGS BY STATE WITH 15% ELECTRIC AND 30% NATURAL GAS EFFICIENCY IMPROVEMENT IN MULTIFAMILY BUILDINGS

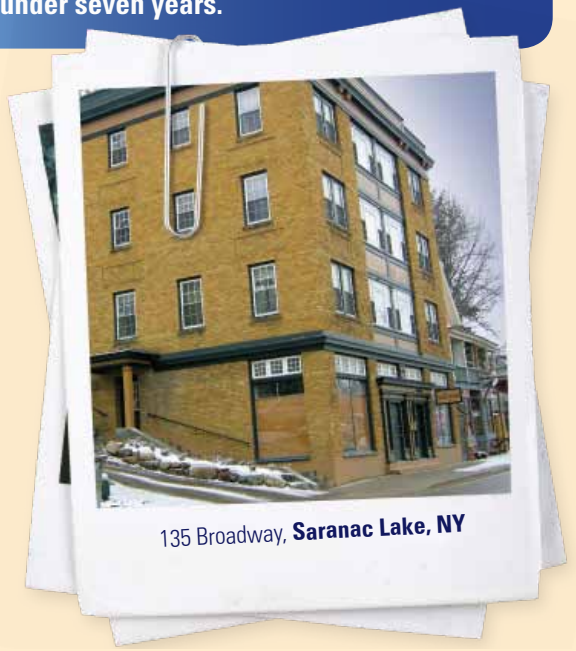


NYSERDA Energy $mart Multifamily Performance Program: 135 Broadway, Saranac Lake, NY

The beautiful, well-preserved buildings of Saranac Lake offer timeless charm. Unfortunately, that often comes with a negative side effect: energy inefficiency. The building at 135 Broadway was a perfect example of this predicament. The 90-plus-year-old building offered its first-floor commercial tenant and the occupants of its 13 residential units a classic downtown space in which to live and work. But the building was drafty and relied on dated, inefficient equipment. Its energy consumption soared during icy North Country winters, driving utility bills up along with it.

With energy costs continuing to rise, TSB Development, LLC, the owner of the building, decided to make some changes. With implementation of the recommended improvements complete, 135 Broadway serves as proof that an older building can reduce its energy use and operating expenses, increase comfort, improve safety for occupants, and stay affordable—all while maintaining its classic charm.

• **Today, the building saves its owners and occupants a combined total of $6,495 each year. Expected total savings during the life of the improvements are $41,913, and the project will have paid for itself in just under seven years.**



135 Broadway, **Saranac Lake, NY**

With incentives and support from NYSERDA's Multifamily Performance Program and logistical assistance from an MPP Partner, TSB completed a full selection of energy efficiency improvements. The company replaced an aging boiler, adding new temperature controls. It swapped inefficient windows and appliances with better-performing models, upgraded lighting, added a new domestic hot water heating system, and installed carbon monoxide and smoke detectors.

The improved 135 Broadway was a groundbreaking success. It achieved energy savings of 27%, and was the first MPP project to earn New York's Energy $mart label and plaque. Since its renovation, 135 Broadway has been a key inspiration for the dozens of projects that have followed in its footsteps. Today, the building saves its owners and occupants a combined total of $6,495 each year. Expected total savings during the life of the improvements are $41,913, and the project will have paid for itself in just under seven years.

Source: Michael Colgrove, NYSERDA

> " Energy efficiency improvements of 15% for electricity and 30% for natural gas in all multifamily buildings would create annual utility bill savings of approximately $2.03 billion on electricity and $1.34 billion on natural gas."

longstanding, energy–centered relationships with building owners, as well as unique access to customer usage data that can be used to design and target effective, comprehensive energy efficiency retrofit programs. But because utility incentives regarding energy efficiency vary dramatically, no single policy will encourage them to partner for effective efficiency programs. Instead, building owners must engage utilities based on each utility's regulatory circumstances and the local markets to align utility incentives with effective, comprehensive energy efficiency retrofit programs.

To achieve the greatest benefit from energy efficiency, building owners and utilities must work together to jointly fund comprehensive multifamily efficiency improvement programs in ways that meet building owners' needs. Building owners must find ways for utilities to share data with program delivery providers so that these providers can assess energy costs, prioritize buildings for improvement, and secure financing. Regulators, legislators, and building owners must work to align utility incentives with comprehensive efficiency improvement programs and responsible data sharing.

Aligning Utility Business Models and Energy Efficiency: Policy Intervention Required

UTILITY AND REGULATOR MOTIVATIONS

There are four major types of electric and natural gas utilities, each with their own unique business model: (1) publicly owned utilities, (2) rural electric cooperatives, (3) investor-owned utilities (IOUs), and (4) competitive electric and natural gas providers. Each of these types of utilities is discussed in more detail in Appendix B: Types of Utilities and Their Investments in Energy Efficiency. Absent intervening public policy that encourages efficiency, each utility type faces different financial incentives and regulatory and legal requirements regarding energy efficiency.

Historically, the main business of electric and natural gas utilities was to sell electricity or natural gas, and energy efficiency directly contradicted this business model. Public policy has altered this situation, often with the support and leadership of forward-thinking utilities, by mandating utility participation in energy efficiency programs or providing an incentive to do so. But even today, energy efficiency affects utility financial goals in varying ways.

When seeking to obtain utility and regulator support for investments in multifamily building retrofits, it is important to understand the issues that motivate and constrain decision-making. Multifamily buildings tend to be concentrated in metropolitan areas and the vast majority of metropolitan areas are served by investor-owned utilities. Mechanisms to align utility financial incentives with multifamily energy efficiency are discussed in the next section, "The Multifamily Housing Industry and Energy Efficiency in the States."

Utilities also care about promoting a strong economy in their service territory, as their sales depend in part on the local economy, and unlike

some companies, utilities cannot move to the Sun Belt or overseas. Many utilities, for example, partner with local economic development agencies to promote their regions, include economic development information on their websites, and employ economic development staff to assist potential customers.[11] Thus, utilities may be responsive to arguments that multifamily retrofits can strengthen neighborhoods and local economies.

In addition, as regulated monopolies, utilities care about the opinions of their regulators. Regulators in turn are elected or appointed by governors and care about protecting public health and safety while also keeping energy bills in check. Energy efficiency addresses these issues by reducing emissions from power plants, reducing the need for expensive new power plants, and, in some cases, allowing old, dirty power plants (often located in urban areas) to be retired.* Energy efficiency also reduces energy bills by lowering energy consumption and typically slows, but does not eliminate, rate increases since, as shown in Figure 2, energy-efficiency is less expensive than building new power plants.

* For example, Pacific Gas & Electric used energy efficiency as part of its strategy to retire the Hunters Point Power Plant in San Francisco.

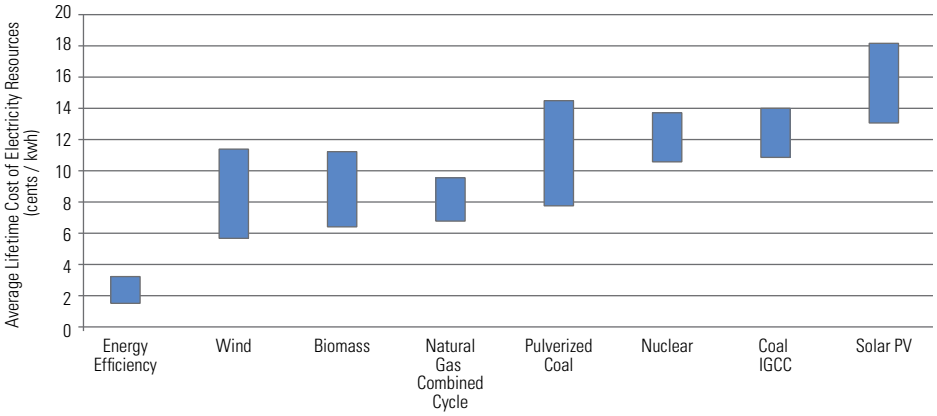
UTILITY REGULATION

Electric and natural gas utilities are regulated primarily at the state level, but there is also some regulation at the federal and local levels. In addition, electric utilities may participate in regional wholesale electric markets. Each of these levels of regulation effects utility incentives and energy efficiency investments. This section will briefly describe the mechanisms that federal, regional, state, and local entities use to regulate utilities. Each of these mechanisms provides an opportunity for housing industry stakeholders to increase and improve utility energy efficiency investments.

CONSIDERATIONS FOR ENGAGING WITH REGULATORS		
	Pros	Cons
Federal	Nationwide reach of policy change	No jurisdiction over utility efficiency programs
Regional	May encourage energy efficiency through planning processes and market mechanisms	No jurisdiction over utility efficiency programs
State	Full jurisdiction over utility energy efficiency programs	Must engage in every state
Local	Existing building owner relationships with local government	Little jurisdiction over utility energy efficiency programs

FIGURE 2

AVERAGE LIFETIME UTILITY COST OF ELECTRICITY RESOURCES[12]



State Regulation

State regulatory commissions implement state electricity and natural gas–related laws, and typically consist of three to five elected or appointed commissioners and a multidisciplinary staff of attorneys, judges, economists, accountants, and engineers. Each state commission's authority differs according to its authorizing statute and willingness to interpret that statute for efficiency. Some commissions are cautious in their interpretation, rarely taking steps that are not explicit in legislation, while others interpret broader public interest obligations as giving authority to regulate more widely.[13] Most state regulatory commissions:

- determine utility rates;
- approve comprehensive generation resource plans;
- authorize (or reject) merger proposals;
- approve the entry of competitive suppliers into the state's market; and
- approve cost recovery for utility investments, including energy efficiency programs.

The National Association of Regulated Utility Commissioners (NARUC) is also an excellent forum for the sharing of ideas among commissioners, although it has no regulatory authority itself. NARUC's Committee on Consumer Affairs has recently adopted a resolution supporting fair expenditure of energy efficiency funds in all customer sectors, and pays particular attention to the needs of multifamily housing.[14] The National Association of State Utility Consumer Advocates (NASUCA) has adopted a similar resolution.[15]

Regulatory commissions enact most IOU and competitive provider regulation and invite stakeholder input. Legislatures are also active in creating utility laws around energy efficiency. State legislators shape regulation by specifying state regulatory commissions' duties and the state's industry structure. In addition, most major energy efficiency portfolio standards and public benefits funds result from state legislation. Because the governing boards of rural electric cooperatives and publicly owned utilities are, at least in theory, directly answerable to their customers and residents, these utilities are less often subject to state regulation.

Federal Regulation

The Federal Energy Regulatory Commission (FERC) does not have authority to regulate the in-state operations of electric and natural gas utilities. Consequently, it does not have jurisdiction over utility energy efficiency programs. The commission, however, has stated its policy to encourage energy efficiency and price-related programs that encourage energy efficiency.[16] As such, the FERC has ordered that regional electric transmission planning processes take all types of resources, including energy efficiency, into account.[17]

Local Regulation

The relationship between local governments and IOUs, rural electric cooperatives, and, to a lesser extent, competitive energy suppliers is governed by a patchwork of informal relationships and formal contractual agreements. These may include franchise agreements and municipal aggregation statutes. These agreements may present opportunities to negotiate increased energy efficiency program cooperation and resources.

Utilities are often subject to franchise agreements with municipalities or other governments within their territory. These long-term agreements often include compensation for work on public streets, requirements for the construction and location of utility facilities, tree-trimming authority, and a mechanism for the municipality to buy utility assets, if desired.[18]

A 2010 U.S. EPA study reviewing electricity and natural gas franchise agreements from 55 Midwestern municipalities found that, with the exception of Ann Arbor, Michigan, no franchise agreement "offered any recognition of

the importance of, nor mandates for, energy efficiency, renewable portfolio standards, greenhouse gas emission reductions, or the decoupling of energy sales from utility revenues."[19]

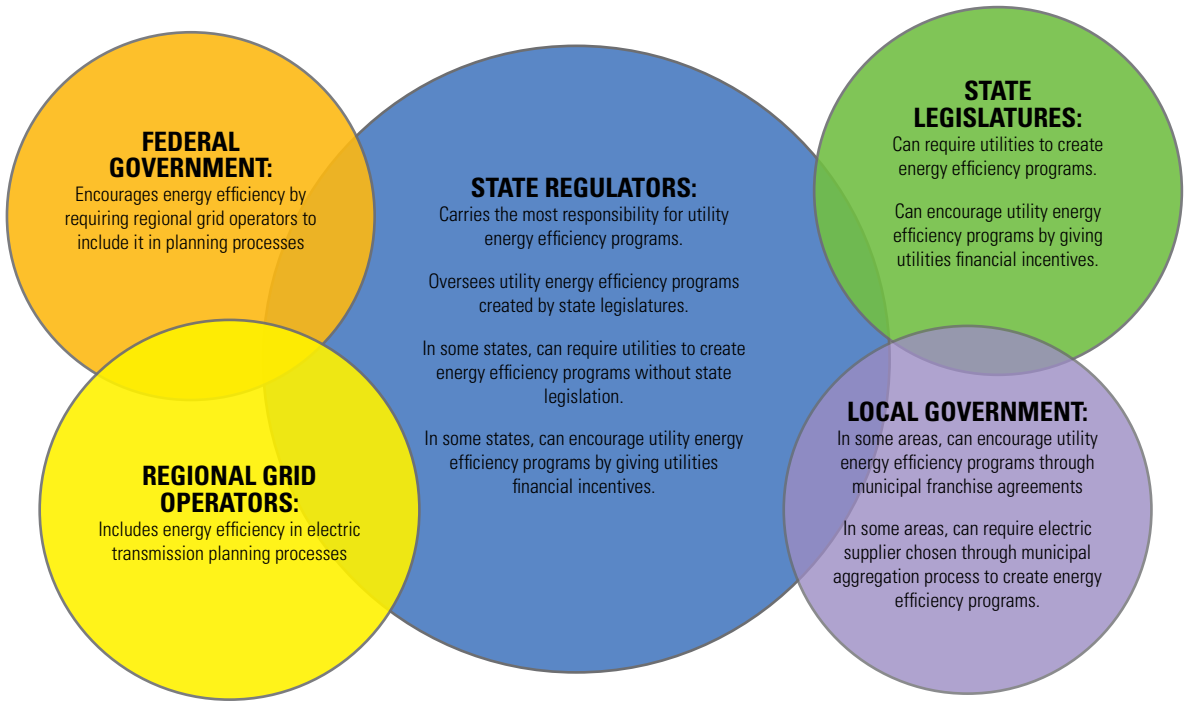
Some restructured states allow municipalities to choose competitive electric and natural gas providers for their residents through municipal aggregation statutes.[20] The threat of losing (or gaining) so many residential customers at once may motivate IOUs and competitive providers to negotiate increased energy efficiency to satisfy municipalities, residents, and businesses.

Regional Regulation

In some parts of the country, regional grid operators, also known as independent system operators, control the electric grid and regional wholesale electric markets. They determine when, and which, power plants place electricity on the grid and ensure that it flows where needed. They also plan transmission infrastructure. Where there is no wholesale market, utilities manage the transmission grid themselves.[21]

Wholesale markets in areas with significant transmission constraints have an incentive to encourage energy efficiency as a way of alleviating these constraints, which result in higher electricity prices. Transmission constraints can occur where electricity demand growth has outpaced the building of new electric transmission lines, where geologic features make it difficult to site new lines, or where new electric generation resources, such as wind farms, have filled the capacity of existing transmission lines. These constraints may affect a single town or county, or can cover large areas, such as the wind generating regions of the Dakotas and West Texas. Regional wholesale markets that choose to encourage energy efficiency may do so by including energy efficiency in their transmission

FIGURE 3
ROLES OF GOVERNMENT AND REGIONAL GRID OPERATORS IN ENERGY EFFICIENCY



planning processes and allowing energy efficiency resources to bid into capacity market auctions.[22] However, each system operates independently, and so their planning processes vary significantly from region to region.

Utility Circumstances Dictate Energy Efficiency Investment in Multifamily Housing

The U.S. electric and natural gas utility industries are heavily regulated, decentralized, and complex. Consequently, no single strategy for aligning utility and building owner incentives will work nationwide. Even policies that are appropriate nationwide must be applied at the local or state levels because of the industries' regulatory structures. This section outlines the types of legal rules that govern utility energy efficiency programs. Each of these rules create opportunities for efficiency and barriers that can be overcome, if improved upon by engaged and active stakeholders.

Two types of statutory regimes promote utility energy efficiency programs in the states. First, energy efficiency portfolio standards (EEPS) and public benefits funds (PBF) set targets for efficiency savings and program funding by utilities. An EEPS is a state law or regulation that requires utilities to institute energy efficiency programs that save a specified amount of energy. Similarly, PBFs require utilities to collect funding from customers that must be used for energy efficiency programs, often administered by a third party. Second, procurement processes require utilities to plan or pay for efficiency programs.

The details of these laws have a profound effect on utilities' willingness to collaborate on robust energy efficiency programs. In addition, rules governing the use of customer-energy use data play an important role in the ability of advanced efficiency providers to design and implement comprehensive energy efficiency retrofit programs.

ENERGY EFFICIENCY PORTFOLIO STANDARDS AND PUBLIC BENEFITS FUNDS

EEPS and PBFs have been the strongest drivers of utility energy efficiency investments in the past decade. EEPS have been adopted in 26 states[23] and PBFs add several more. In addition, quite a few states have requirements for Integrated Resource Planning (IRP), sometimes called Least-Cost Planning, thatsometimes drives significant utility efficiency investments. In 2009, EEPS and PBFs spurred utilities to invest more than $4.3 billion in electric and natural gas efficiency programs nationwide.[24] EEPS, PBFs, and IRPs are not, however, without their limitations. If improperly configured, their terms can encourage utilities to invest in cheap, short-term programs that result in lower overall savings than would be achieved by more comprehensive programs. This section describes typical EEPS and PBF terms and their effect on energy efficiency programs. The next section, The Multifamily Housing Industry and Energy Efficiency Efforts in the States, contains strategies for aligning these terms with utility incentives to promote energy efficiency.

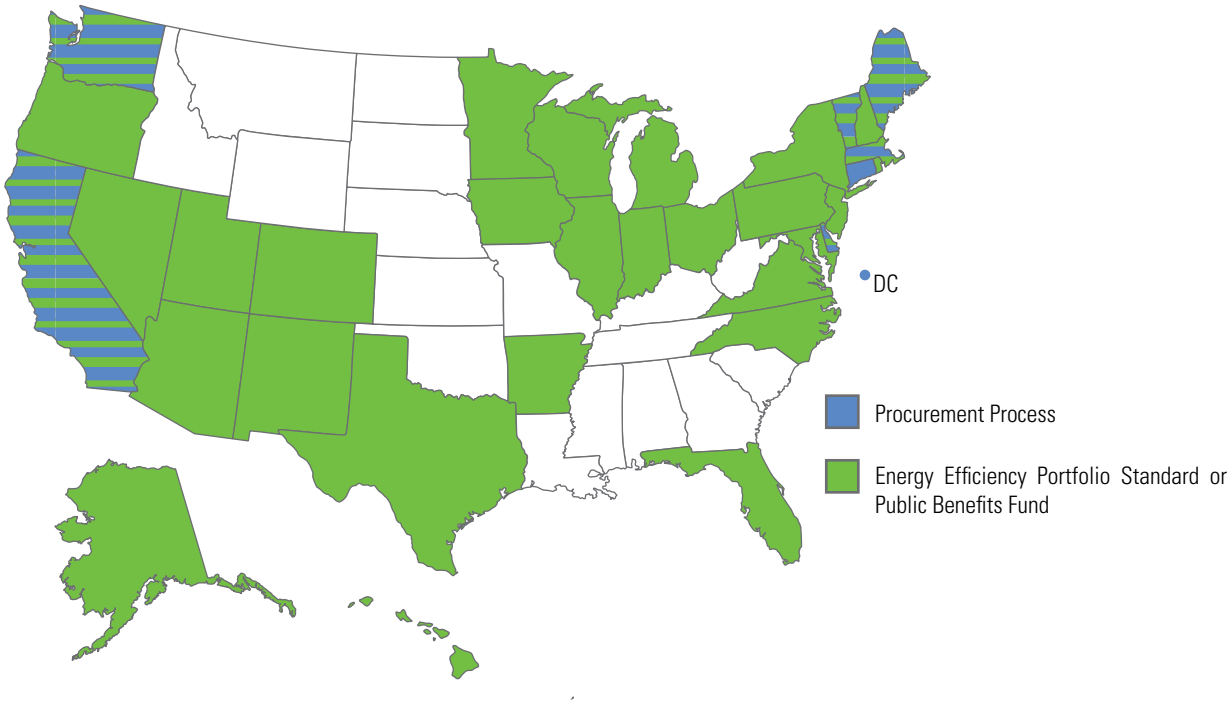
Energy Savings and Funding Targets

EEPS energy savings targets are most often expressed as a percentage of previous years' electricity or natural gas sales. This target usually starts at a low level and ramps up over time, often up to 1–2% of annual sales. In contrast, PBFs include targets for efficiency program funding. Without additional safeguards, funding targets can provide incentives for spending without ensuring significant energy savings.

Cost-Benefit Tests

EEPS and PBFs typically require the application of cost-benefit tests to ensure that energy efficiency programs are cost effective. Cost-benefit tests can be applied across the entire portfolio of energy efficiency programs, across individual programs (such as a multifamily retrofit program), or across the smaller efficiency measures that make up each

FIGURE 4
RULES THAT GUIDE UTILITY ENERGY EFFICIENCY INVESTMENT[25]



program (such as the installation of compact fluorescent light bulbs (CFLs) as part of a multifamily retrofit program). The application of cost-benefit tests plays a significant role in determining utility incentives. Cost-benefit tests are designed and implemented in many different ways, significantly impacting the type of program that can be considered in each state.

Cost Recovery and Financial Incentives

Every EEPS and PBF provides a method for utilities to recover the cost of energy efficiency programs. However, some regulators also employ financial incentives that allow utilities to earn a return on efficiency investments, share proven savings with customers, or obtain a bonus payment for exceeding performance targets. States that use these types of incentives tend to exceed the national average energy savings.[26]

Spending Caps

Illinois, Michigan, North Carolina, and Pennsylvania cap utility spending on energy efficiency programs. In these states, regulators may excuse utilities who meet the spending cap from their obligation to meet savings targets.[27] While these caps are typically intended as a consumer protection measure, they ignore the fact that, if the utility does not implement energy efficiency, it must buy or generate electricity, which is often more expensive than energy efficiency, as shown in Figure 2. Thus, in addition to reducing the availability of efficiency programs, the cost caps may actually increase customer utility bills.

Administration

Under an EEPS, utilities may be allowed to administer energy efficiency programs themselves or may be required to hire or pay for an independent, third-party administrator. In Vermont, for

example, every utility program is administered by a single administrator chosen by the Public Service Board. Unlike an EEPS, PBFs are most often administered by a non-utility program administrator or state agency. Unfortunately, funds housed at government agencies may be vulnerable to raids by state government officials in times of budget crisis. Connecticut, the District of Columbia, and New Jersey have approved plans to raid energy efficiency funds in recent years.[28]

Measuring Savings

Compliance with an EEPS is measured by independent evaluators. However, evaluation criteria vary by utility, by state, and over time. Consequently, utilities that plan their programs before evaluation criteria are settled or when criteria are changing face the risk that their programs will miss their EEPS savings targets when they are implemented, triggering financial or other penalties. Utilities in this situation may hesitate to undertake new, more complex types of efficiency programs such as comprehensive building efficiency retrofits.

PROCUREMENT PROCESSES

The second type of statutory regime used by states to promote energy efficiency is the procurement process. California, Connecticut, Delaware, Maine, Massachusetts, Rhode Island, Vermont, and Washington have adopted a process, called a "loading order," to guide their regulatory decisions regarding energy.[29] In California, the order prioritizes energy efficiency, requiring California utilities to "optimize all strategies for increasing conservation and energy efficiency" before they procure electricity or natural gas from other sources.[30] To implement this policy, the California Energy Commission estimates the maximum achievable savings from energy efficiency programs. The California Public Service Commission uses these savings to set energy savings goals and determine the funding required to meet them. California's utilities then submit efficiency plans that meet these goals.[31]

Many vertically integrated states undergo integrated resource planning processes to estimate future electricity demand and plan for the power plants or other resources needed to meet that demand at the lowest cost. However, few of these states have explicitly prioritized energy efficiency or put that prioritization into practice.

Illinois' system for making energy resource decisions is unique and requires a state agency, the Illinois Power Agency, to buy electricity for its IOUs. Unfortunately, the agency's requests for regulatory approval to purchase verifiable energy efficiency savings in lieu of energy have been denied. Efforts are underway to pass legislation to clarify the agency's authority.

DATA-SHARING RULES

In addition to EEPS, PBFs, and procurement processes that encourage energy efficiency, states also create rules to govern the use of customer energy use data. These rules play an important role in the ability of advanced efficiency providers to design and implement comprehensive energy efficiency programs.

Sophisticated energy efficiency providers can use customer-specific energy use data to design, target, and continuously improve advanced energy efficiency programs. Utilities, which have a responsibility to protect customer information, are loath to share data for fear of backlash from privacy groups and worries about losing competitive advantages in restructured markets. Unfortunately, few states have addressed these barriers to comprehensive energy efficiency retrofit programs in any coordinated way.

One common method of protecting customer data, removing or hiding addresses and account numbers, can make the data unusable for some efficiency-related purposes. This "scrubbed" data does not allow efficiency providers to identify homes most in need of efficiency upgrades or to

compare homes with groups of nearby homes or homes with similar building type.

California's Public Utilities Code allows energy efficiency providers to access customer energy use data to implement their programs, if the utility and efficiency program delivery provider have a contract requiring reasonable security procedures and practices.[32] While the law ensures that customer-identifying information can be used for successful program implementation, it requires the utility to hide customer addresses when the information is being used to design new programs by parties that are not contracted with utilities.[33]

In Vermont, the Public Service Board oversees the state's energy efficiency programs, which are administered by a non-utility administrator. The Public Service Board's contract with the third-party administrator provides for sharing of customer-specific data between the energy efficiency administrator and the state's utilities, and it requires the administrator to put privacy safeguards in place.[34]

In addition, building owners may not have access to tenant energy use data in a format that allows them to use whole-building labelling programs such as Energy Star. Where data is available, it is often in a form that is time consuming and expensive for building owners to manage at scale. A few utilities are working with commercial building owners to facilitate the provision of tenant data. ComEd, in northern Illinois, is a leading provider of free automated benchmarking services for its customers. According to the Institute for Market Transformation, ComEd's program has "resulted in the benchmarking of thousands of commercial buildings in Chicago in just a few years."[35]

ON-BILL FINANCE

Currently, 14 states have utilities that offer on-bill finance programs to their customers, and more are considering such programs. On-bill finance programs allow utility customers to choose and install energy efficiency measures, often from a list of approved measures, and repay the cost of those measures over time through an additional charge on their utility bill. The programs can be structured to appeal to residential, commercial, or industrial customers, and to apply to multifamily common areas and individual tenant units. While this paper does not address the details of these programs, interested readers should consult *On-Bill Financing for Energy Efficiency Improvements: A Review of Current Program Challenges*, *Opportunities*, *and Best Practices*, a December 2011 Research Report by the American Council for an Energy Efficient Economy (ACEEE).

COMMON UTILITY ENERGY EFFICIENCY PROGRAMS

Utility efficiency portfolios include programs for residential, commercial, and industrial customers. Utilities that are new to energy efficiency typically include a heavy dose of residential and commercial lighting programs, which are inexpensive, simple to administer, and achieve significant savings.

In the residential sector, utilities often include lighting and appliance rebates, weatherization programs and so-called "direct install" programs. Weatherization programs seek to improve insulation, heating and cooling systems and reduce leaks of conditioned air to the outside. They can range from rebates for attic insulation to comprehensive retrofit programs in which many opportunities to reduce energy use are examined and a comprehensive package of efficiency improvements are assembled and financed. Direct install programs involve a home visit to install energy efficiency products, which typically include CFLs, basic weather-stripping, and faucet aerators to reduce hot water use. The better direct install programs also seek to sign owners up for an energy audit and feed customers into comprehensive programs.

While lighting and appliance rebates are inexpensive and easy to administer, their savings are

not as significant or long lasting as those of comprehensive energy efficiency retrofit programs. Consequently, EEPS and PBF policies must be carefully crafted to encourage comprehensive efficiency programs.

ROLE OF MULTIFAMILY BUILDINGS IN ENERGY EFFICIENCY PROGRAMS

Multifamily building residents and owners are generally eligible for lighting and appliance programs. And multifamily buildings may be eligible for weatherization programs that are primarily designed to serve single-family homes. Some utilities have special programs targeting the unique needs of multifamily buildings and devote significant resources to this sector.

To provide a snapshot of program accomplishments and multifamily programs' status within overall residential energy efficiency spending, we reviewed six established statewide multifamily program portfolios. Residential energy efficiency programs in most states can be categorized into three broad categories: multifamily (typically buildings with five or more units, but sometimes extended to buildings of two or more units), single-family (one unit homes, sometimes including duplexes or other small buildings with more than one unit), and cross-cutting (residential efficiency improvements that apply to all housing types such as appliances, lighting, heating and air conditioning). Table 1 provides a summary of the multifamily energy efficiency program budgets for Arizona[36], California[37], Colorado[38], Illinois[39], Massachusetts,[40] and New York.[41]

A comparison of multifamily efficiency program budgets in these states and the actual distribution of housing units shows that while multifamily programs are funded in keeping with their portion of housing in leading states (California, Massachusetts, and New York), they are relatively underfunded in the other states reviewed. These other states (Arizona, Colorado, and Illinois) are more typical of multifamily program status in the majority of U.S. states, with the important caveat that many states have no multifamily programs at all. In each leading state, the portion of the combined single-family and multifamily budgets (disregarding cross-cutting funds available to both residential building types, which creates a more accurate comparison) allocated to multifamily programs falls somewhere between the portion of housing units in buildings of two or more units and the portion in buildings of five or more units. By this measure, Massachusetts has the largest commitment to multifamily programs with 33% of its combined budget set aside for multifamily while 19.9% of its units are in buildings of five or more units. California, Massachusetts, and New York also allocate budgets large enough to reach a significant number of multifamily units: program funding per unit of multifamily housing in these leading states range from $8.96 to $58.63.

Arizona, Colorado, and Illinois have much poorer performance relative to these metrics. In Arizona, where 15.9% of housing units are in buildings of five units or more, only 0.12% of the combined multifamily and single family budget is devoted to multifamily units (these 2010 funds were used to plan a multifamily program expected to expand in the future). In Colorado 5% of the combined budget is allocated to multifamily, while five or more unit buildings provide nearly 20% of homes in the state. Illinois looks better, but this is mostly because the majority of its residential program budget is allocated to cross-cutting programs rather than housing-type-specific programs (multifamily programs represent 5.2% of the total residential budget, much lower than in the leading states). The state only provides $3.05 to multifamily programs for every multifamily unit in the state. Still, this is much better than Arizona or Colorado, which provide $0.03 and $1.14 respectively.

TABLE 1

MULTIFAMILY ENERGY EFFICIENCY PROGRAM BUDGETS AND SAVINGS GOALS COMPARED TO TOTAL RESIDENTIAL PROGRAM PORTFOLIOS

	Arizona	California	Colorado	Illinois	Massachusetts	New York
% of housing units in MF 5+ units	15.9%	22.5%	19.9%	20.2%	19.9%	32.4%
2010 Multifamily budget (gas and electric)	$14,053	$26,729,513	$479,073	$3,228,752	$31,830,246	$52,751,515
- as % of total residential budget	0.06%	12.5%	1.8%	5.2%	20.0%	28.3%
- as % of MF and SF combined budget	0.12%	29.2%	5.0%	47.3%	33.0%	34.0%
2010 Funding per unit of MF 5+	$0.03	$8.96	$1.14	$3.05	$58.63	$20.51

* Programs included in this comparison are: Arizona Public Service Company's Multifamily Energy Efficiency program (planning stage, numbers are actual spending and savings), California's Statewide Multifamily Energy Efficiency Rebate Program, Colorado's Low-Income Multifamily Weatherization, ComEd's Multifamily All Electric Sweep, Ameren's Multifamily In-Unit Efficiency Program and Common Area Lighting Programs, IL Department of Commerce and Economic Opportunity's Low Income Energy Efficiency Moderate Rehab program, Massachusetts' Multifamily Retrofit low income program, and NYSERDA's Multifamily Performance program and utility multifamily energy efficiency programs.

The Multifamily Housing Industry and Energy Efficiency Efforts in the States

Because of the utility industry's complexity, no single strategy for aligning utility and building owner incentives will work nationwide. Instead, multifamily housing stakeholders should join existing efforts to increase and improve the use of utility energy efficiency investments in the states. Building owners can identify their local utilities' circumstances and the appropriate strategies to align utility incentives with energy efficiency. Then, they must find an opportunity to put these strategies into play. This section identifies states that are most likely to benefit from improved multifamily energy efficiency policies, common forums in which to engage utilities, and strategies to align utility incentives with building owner needs. In addition, Appendix C introduces the non-utility parties who most frequently participate in state regulatory proceedings about energy efficiency.

REGIONS THAT WOULD BENEFIT FROM IMPROVED ENERGY EFFICIENCY POLICY

Opportunities to see significant savings from multifamily energy efficiency programs are not distributed evenly across the United States, and are determined by three factors: the size of the multifamily building market, the portion of multifamily building energy that comes from utilities, and existing energy efficiency policies. We applied these factors to create the map (Figure 5) which identifies states with a large share of multifamily housing units and utility-provided energy, where improvements in utility energy efficiency policy would significantly improve the state's energy efficiency resources. States identified as "High Multifamily" have more than 110% of the national average of multifamily units and utility-provided energy, and "Low Multifamily" states have less than 90% of the national average of these factors. We further used ACEEE's 2010 State Energy Efficiency Scorecard ratings for state energy efficiency policies to identify states with room for policy improvement. The states that would benefit most from improved energy efficiency policy toward multifamily buildings include the District of Columbia, Florida, Illinois, and

Texas. More information on these factors is located in Appendix F.

FORUMS FOR ENGAGING UTILITIES

Some utilities may simply be unaware of the savings created by comprehensive multifamily retrofit programs or of vendors who can administer these programs. Consequently, to increase the resources available to multifamily building owners for energy efficiency projects, a first step should be to engage the utility outside of any regulatory or legislative proceeding. While these proceedings provide unique opportunities, a more informal meeting can help assess the company's concerns regarding efficiency, confirm their circumstances, and find common ground. The recognition that multifamily buildings cut across the residential and commercial markets and therefore may not be adequately served by programs geared toward either sector, is often an important starting point for discussions. If issues remain after informal discussions, it may be useful to engage further in these more formal proceedings.

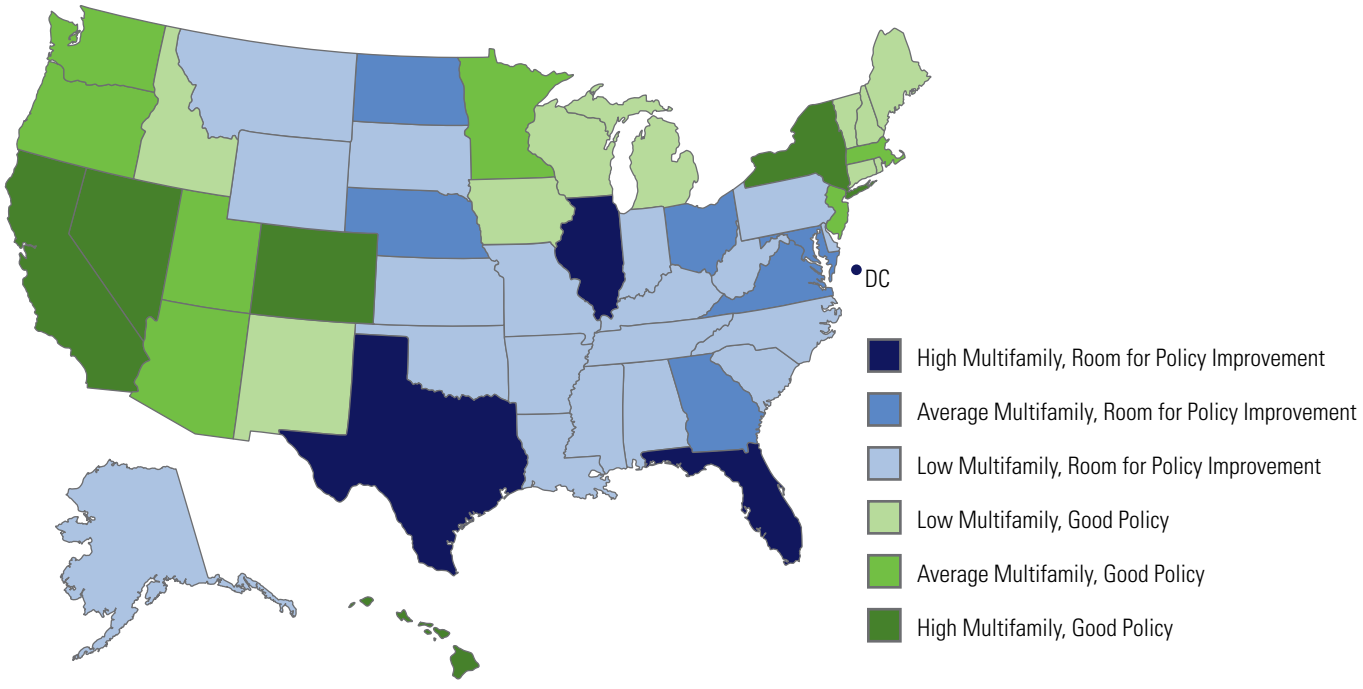
Discretionary Regulatory Actions

In jurisdictions where state regulatory commissions oversee utility efficiency programs or have authority to mandate efficiency programs and their terms, they have an opportunity to do the following:

- Require that utilities participate in comprehensive energy efficiency retrofit programs for multifamily housing.
- Ensure that comprehensive energy efficiency retrofit programs are funded appropriately.
- Insist on the use of cost-benefit tests that encourage comprehensive energy efficiency retrofit programs.
- Remove spending caps that encourage utilities to prioritize cheap, easy programs that do not create the greater long-run savings of comprehensive programs.

FIGURE 5

STATES THAT WOULD BENEFIT MOST FROM IMPROVED MULTIFAMILY ENERGY EFFICIENCY POLICY.



Most regulatory commissions allow public comment. In addition, full participation as an intervener to a contested regulatory proceeding allows a party to testify before a judge and negotiate for its interests in settlement talks. Procedural rules vary by state, but the regulatory commission or an experienced utilities attorney can provide details of how best to participate.

Utility Rate Cases

State regulatory commissions determine utility rates for IOUs and, sometimes, municipal utilities and rural electric cooperatives. In these proceedings, the regulator typically has authority to apportion the recovery of utility costs among customer sectors and usage levels.

Rate cases may be an appropriate time to advocate for mechanisms that allow utilities to earn financial rewards for effective energy efficiency programs. Rate cases are usually contested, trial-like proceedings that require an attorney and expert witnesses. Nevertheless, they may provide an excellent opportunity to align utility and building owner incentives.

Merger Approval Cases

State regulatory commissions must approve utility mergers. Approval proceedings provide utilities and other interested parties a chance to negotiate for energy efficiency programs, funding, and other resources. Parties may also agree to put a portion of the estimated savings from post-merger consolidated operations into a revolving loan fund or other mechanism to help finance efficiency improvements.

Franchise Agreement Negotiations

Franchise agreements are the result of negotiations between utilities and municipalities. These agreements are long-term, sometimes up to 50 years in length, but when they are renewed, they present an opportunity to negotiate for funding or other resources for energy efficiency for municipal residents and businesses. Building owners who are interested in franchise agreements should contact their municipal officials to express their concern and inquire about the ability to renegotiate these contracts.

Legislation

Legislated EEPS and PBFs have been extremely successful at increasing the resources available for multifamily residential energy efficiency. However, policymakers must take care to configure these policies to avoid the perverse incentives described in the previous section. Building owners who are interested in these policies may be able to align with the utilities or environmental and consumer advocates to support improved policies in their state legislatures.

National Leadership

National leadership can point the way for states to remove barriers to effective partnerships. The following are possible directions for action by federal agencies or national organizations such as the National Association of Regulatory Utility Commissioners (NARUC):

- Provide guidelines for allocating credit toward energy efficiency requirements to utilities that participate in jointly funded programs.
- Develop data-sharing agreements to be used by utilities and efficiency providers, and identify a third-party neutral data aggregator that can combine data from multiple utilities.
- Provide guidance to states that are establishing evaluation criteria, to help assure certainty over time and consistency across jurisdictions.

In recent years, Congress has considered, but not passed, a nationwide energy efficiency portfolio standard. Such a standard would set energy efficiency savings targets in each state. In the past, this standard has been included in bills to create a comprehensive system of regulating climate pollutants. Those bills have not, however, been

successful, and the U.S. Senate's Committee on Energy and Natural Resources solicited comment from interested parties in April 2011 on a separate Clean Energy Standard.[42] To date, that standard has not been defined in legislation. Nationwide EEPS targets would boost efficiency in states without existing EEPS or PBFs. However, policymakers should take care to ensure that a nationwide standard does not undermine states with aggressive existing standards (e.g., permit states to exceed the federal standard) and avoid perverse incentives for utilities subject to the target.

STRATEGIES TO ALIGN UTILITY INCENTIVES WITH BUILDING-OWNER NEEDS

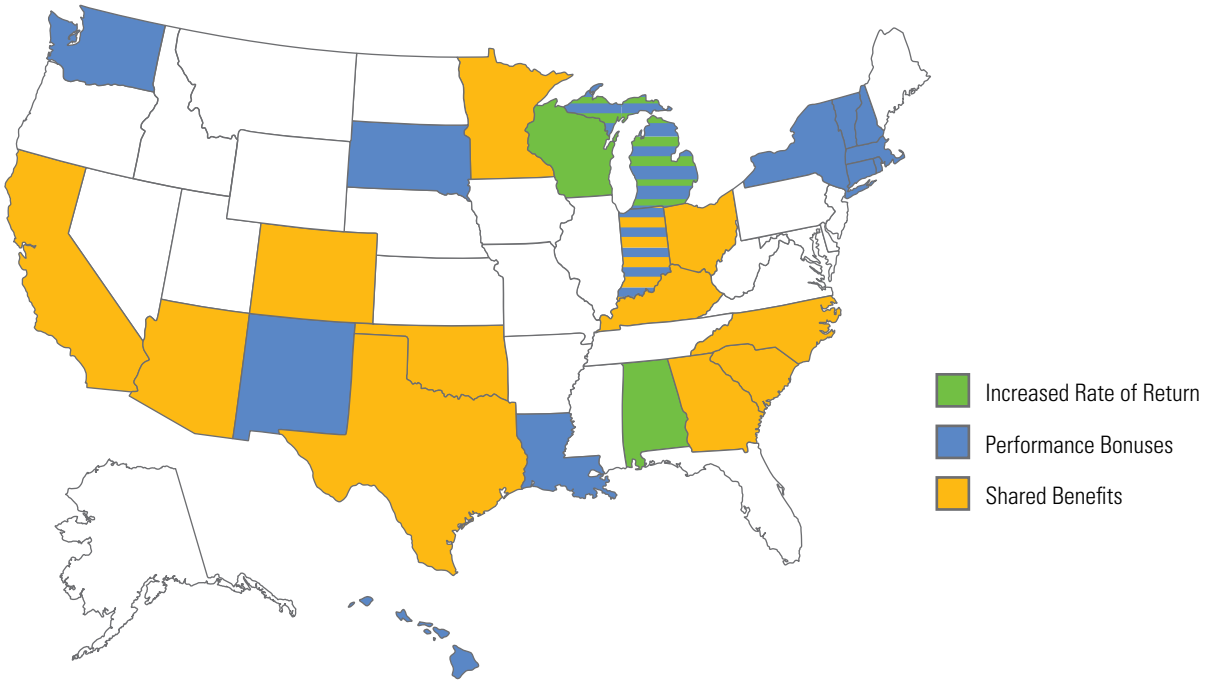
Utility incentives regarding energy efficiency vary dramatically by the type of utility, its regulators and stakeholders, and the rules that apply in each state. There is no single policy that will encourage utilities to collaborate for effective programs. Instead, building owners, interested finance organizations, and housing advocates can identify their utility's circumstances and work to align utility incentives with effective, comprehensive energy efficiency retrofit programs.

Comprehensive programs that install multiple, long-lasting energy efficiency measures to save both electricity and natural gas are, in the long run, most beneficial to building owners. Unfortunately, utility incentives and the details of state energy efficiency policies do not always encourage, and sometimes discourage, these types of programs. The following provides a guide to general patterns of incentives and strategies to align them with building owner needs.

Utility Risk Aversion and Compliance Focus

Heavily regulated utilities have a strong compliance culture. While this culture helps ensure that utilities abide by energy efficiency mandates, it also dampens interest in exceeding existing mandates. Without a profit incentive, any extra efficiency

FIGURE 6
STATE EFFICIENCY INCENTIVE MECHANISMS[43]



is seen as "using up" the efficiency resource, thus reducing the utility's ability to meet mandates in future years. Historically, technological change has consistently made additional efficiency gains possible, but utility risk aversion prevents use of this past trend to plan for the future.

To encourage utilities to exceed mandates, 18 states allow them to earn a rate of return on energy efficiency spending, earn performance bonuses, or share savings with customers. States that use these types of incentives tend to exceed the national average energy savings.[44]

Incentives to Oppose Non-Utility Efficiency Programs and Regional Coordination Efforts

Similarly, utilities may see non-utility efficiency programs as exhausting the efficiency resource and making it more difficult for them to meet efficiency mandates. Utilities may also oppose regional or statewide coordination efforts if that coordination supports non-utility programs. Creating comprehensive programs, however, often requires linking utility programs with other public sector resources.

To encourage utilities to collaborate in efficiency programs that are funded by non-utility sources and to support regional coordination, states should ensure that utility participation in these initiatives gains the utility credit toward its government-mandated savings targets. Attributing credit for all program savings to the utility will fully align utility incentives with effective, well-coordinated programs. California, Florida, Massachusetts, Michigan, Minnesota, and North Carolina apply this full-attribution rule to American Recovery and Reinvestment Act-funded projects that involve utilities.[45]

Shifting Regulatory Requirements Discourage Comprehensive Programs

Shifting regulatory criteria are seen as risky by utilities intent on meeting mandated energy savings targets. This uncertainty encourages use of cheaper, shorter-term efficiency programs, which result in lower energy savings in the end.

To encourage utilities to invest in comprehensive energy efficiency retrofit programs, states must create certainty around regulatory criteria over time. They must also create certainty that, if programs are designed under one set of criteria, their savings will be judged based on those criteria after the program is implemented.

Program Evaluation Details Can Discourage Multi-Fuel Programs

Where electric and natural gas EEPS are not well coordinated or where evaluators only allow the utility to count savings from its own fuel toward its efficiency goals, utilities may not undertake programs that save both fuels. In this instance, a utility may avoid programs that promote insulation, for example, in a home with natural gas heating and electric air conditioning.

To encourage utilities to invest in comprehensive, multi-fuel programs, states should encourage separate but geographically overlapping electric and natural gas utilities to collaborate on programs. States must ensure that their evaluation criteria fairly apportion savings from these programs to the utilities.

Program Evaluation Details Can Discourage the Use of Financial Leverage

Utilities focus their resources on measures that allow them to meet their energy savings targets. However, when utilities contribute to a program that leverages funds from multiple sources, they may only receive credit for savings proportional to their contribution to the larger funding pool. In some cases, where evaluation criteria require a direct connection between savings and the dollars contributed, they may receive credit for even less savings. Consequently, these utilities have little incentive to make the maximum use of financial leverage in their programs.

To encourage utilities to invest in comprehensive energy efficiency retrofit programs that leverage funds from multiple sources, evaluation criteria should allow utilities to fully or at least partially count savings from funds that they help leverage.

Cost-Benefit Tests May Discourage Comprehensive Programs

Policymakers generally require that utility energy efficiency programs pass a cost-benefit test. The details of these cost-benefit tests can influence utilities' flexibility in meeting savings targets and the kinds of efficiency programs that they offer. These cost-benefit tests may be applied at the portfolio, program, or measure level. At the portfolio level, the test is applied to all of the energy efficiency programs offered by the utility collectively. At the measure level, the test may be applied to each element of a program. For example, a home retrofit program may include elements such as air sealing, low-flow faucet installations, and insulation.

LEVEL OF EVALUATION	EXAMPLE
Portfolio of Programs	Evaluation of all residential programs offered by the utility
Individual Programs	Evaluation of a single program such as a comprehensive retrofit program
Specific Measure	Evaluation of specific energy efficiency measures such as insulation

If cost-benefit tests are applied to the utility's entire energy efficiency program portfolio, the utility may offset less cost-effective programs with more cost-effective programs. This allows a utility to implement experimental yet promising programs that may not be sufficiently successful in their early years to pass a cost-benefit test at the program level. Similarly, applying a cost-benefit test at the program rather than measure level facilitates comprehensive energy efficiency retrofit programs by allowing the utility to install every possible energy efficiency measure in one visit to the home or business. This increases savings and decreases program costs.

Furthermore, the details of cost-benefit tests can have a large impact on comprehensive programs. Two cost-benefit tests are commonly used: the utility-cost test and the total resource cost test. The utility-cost test looks at the cost of a program to the utility and compares this to the benefits of generating less power. The benefits of generating less power are based on the amount sales are reduced, and the marginal cost savings of generating one less kWh of electricity or delivering one less cubic foot of natural gas (marginal costs tend to be less than rates since some of the costs included in rates are fixed, and some variable). A well-designed comprehensive program will generally pass the utility-cost test.[46]

The total resource cost (TRC) includes not just utility costs and benefits, but also costs and benefits to program participants. So, if building owners help pay for improvements, the money they spend is included under costs. Energy saving benefits are still valued at the marginal cost to the utility. In addition, other benefits, if any, should be included. Examples of other benefits can include reduced bad debt, because when energy bills are lower, non-payment tends to decrease and the value of non-energy benefits to owners and tenants such as improved comfort, safety, or higher resale value.[47] These other benefits can be quantified but this is not easy to do.[48] Comprehensive energy efficiency retrofit programs may have difficulty passing the TRC test unless efforts are made to quantify some of these non-energy benefits.[49]

To encourage utilities to invest in comprehensive and forward-looking programs, states should provide flexibility in their cost-benefit tests for pilot programs and should primarily apply cost-benefit tests at the program and not the measure level. Such tests should either consider all costs and benefits, or should be calculated from just

the utility perspective. In addition, to help utilities meet cost-benefit tests while still engaging in necessary program marketing and regional coordination efforts, states should leverage non-utility funding to pay for these shared expenses wherever possible.

EEPS Spending Caps Discourage Comprehensive Programs

Spending caps that are set too low may limit energy efficiency savings by preventing utilities from meeting savings targets. While policymakers may intend these caps to ensure economical programs, in fact, they may raise customer bills by limiting efficiency programs, which are less expensive than buying energy.

Ideally, states should support expenditures on any energy efficiency program that results in savings that cost less than an equivalent amount of energy. Strategies like California's loading order, or a well-administered integrated resource planning process, can ensure that a state is procuring as much efficiency as possible when its total cost is cheaper than the total cost of generating and delivering the energy it replaces. Alternatively, states with spending caps should review them periodically and ensure that they do not prevent utilities from procuring an optimal amount of energy efficiency savings.

Annual Savings Caps Discourage Comprehensive Programs

When utilities must meet annual savings targets and budgets are constrained, they have an incentive to choose measures with a high first-year savings, even when another measure may result in greater long-term savings at lower cost.

To encourage utilities to provide programs that save the most energy over the long term and at the lowest total cost, states should allow utilities who exceed their targets in one year to apply the excess savings to subsequent years' savings targets. These "banking" provisions allow for smoother program implementation, especially in the early years of utility programs. An alternative solution is to allow the utility to meet multiyear targets, for example, requiring compliance on a three-year timeframe.[50]

Providing a Strong Business Case for Utility Investments in Energy Efficiency

As previously discussed, some utilities' revenue is dependent on selling more units of energy, creating a disincentive to engage in effective energy efficiency programs. To address this problem, many utilities and energy efficiency advocates are supporting a "three-legged stool" approach to remove the disincentives and instead provide incentives for utility investments in energy efficiency. The three "legs of the stool" are:

1. Cost recovery for approved utility energy efficiency programs. Once the programs are approved by a state utility commission, the direct cost of the programs are incorporated into rates.
2. "Decouple" utility revenues from sales. Under traditional utility regulation, rate cases establish a revenue requirement and then divide it by expected sales to determine average rates. If sales are higher than expected (due, for example, to programs to build a utility's load), the utility receives extra revenue, if sales are lower than expected (due, for example, to energy efficiency), the utility loses revenue. Several different mechanisms have been used by states to address this problem.[51]
3. Provide positive financial incentives. Utility shareholders earn a rate of return on their power plant and distribution infrastructure investments, contributing to profits. A similar profit-making opportunity should be offered for energy efficiency programs. Three main mechanisms have been used by states:

a. Shared savings mechanisms calculate the net ratepayer benefits of utility energy efficiency programs (savings minus costs) and provide a small share of these benefits (typically around 10%) to shareholders. Ratepayers keep the rest. This is the most common approach as it is easier to understand, although the details of the calculations can be complicated.
b. Performance incentives provide specific goals for utilities to meet and an incentive payment if they meet it. For example, the goal might be to reduce annual electricity use by 50 million kWh through utility energy efficiency programs offered in a calendar year, and if the goal is met, the shareholders are paid $5 million out of rates. This approach requires more analysis up-front to set goals and incentives, but is easier to implement after the goals and incentives are set.
c. Rate of return mechanisms provide utilities with a return on their energy efficiency investments, just as they earn a return on their capital investments. This approach is rarely used, as utilities and financial analysts prefer that this approach be used only for hard assets, such as power plants that utilities own, and not for soft assets, such as investments in energy efficiency measures that customers own.

For more information on these approaches and how well they have worked, see Hayes et al. 2011.[52]

Data Privacy Concerns Prevent Sharing Data Needed for Comprehensive Programs

Utilities are justifiably concerned about the security of their customers' energy-use data. However, access to this data is critical to the design and implementation of the most cost-effective energy efficiency programs.

To assure customer privacy and data security, while allowing data access in order to design, improve, and target comprehensive energy efficiency retrofit programs, states should develop comprehensive systems, such as a neutral data aggregator, who can combine data from multiple utilities and other sources, such as tax assessor building characteristic databases, while assuring the data's privacy and security. At a minimum, states should create consistent data-sharing agreements for use by utilities, efficiency program designers and implementers, and research institutions. Alternatively, the federal government could create a neutral data aggregator for this purpose, based on the model presented in the Home Mortgage Disclosure Act (HMDA), which requires lending institutions to maintain mortgage loan information in a central registry. An HMDA-like system could allow energy-use data to be merged with address-identified tax assessor data for meaningful comparisons between homes by area or building type, while still ensuring the data's security and customer privacy. While a utility-data solution need not follow the HMDA template closely, its existence as a solution to data sharing concerns for sensitive mortgage data indicates that a solution to the utility data problem can be found. Data-sharing is a solveable problem that can have significant impact on promoting efficiency goals.

Case Studies of Effective Programs and Partnerships

Successful multifamily energy efficiency programs share several common themes. At their most basic level, multifamily efficiency programs provide technical assistance to help building owners assess their building's needs and financing and financial incentives to assist in implementing the recommended improvements. However, the best programs also integrate electric and natural gas efficiency measures, even when those fuels are provided by different utilities; provide standardized processes; assist building owners in finding qualified contractors to make the improvements; and oversee the quality of that work. In short, the best multifamily energy efficiency programs make it easy for building owners to squeeze the most efficiency from their buildings. Below, are five outstanding multifamily energy efficiency programs run by, or in partnership with, electric and natural gas utilities.

ENERGY SAVERS

Since 2008, the Energy Savers program has offered a one-stop shop that helps multifamily building owners in Chicago improve energy efficiency and reduce operating costs in their buildings. Energy Savers evaluates each building and helps owners identify the most cost-effective energy efficiency improvements for their building. Then they work with the building owner to assemble low-cost financing to implement the recommendations. The Energy Savers construction manager assists owners in choosing and supervising qualified contractors, and energy analysts review annual energy bills to create performance reports and guide the team in tuning up buildings that do not perform as anticipated. A typical participating multifamily owner with a 3-story, 24-unit masonry structure with 24,000 feet of heated space saves nearly $10,000 per year in energy costs, with a payback time of just over five years. From 2008 to 2011, Energy Savers upgraded over 7,500 units.

The program is a project of CNT Energy and the Community Investment Corporation. Other project partners include The John D. and Catherine T. MacArthur Foundation, the Chicagoland Natural Gas Savings Program, the Chicago Metropolitan Agency for Planning, the City of Chicago, Enterprise Community Partners, Grand Victoria Foundation, the Illinois Department of Commerce and Economic Opportunity (IL DCEO), the Office of the Illinois Attorney General, Peoples Gas, PNC Bank, Polk Bros. Foundation, and the Urban Land Institute.

The program's low-cost loans, with interest rates that are half of market rate, are provided by the Community Investment Corporation, using a fund established by several project partners. In addition, the program helps building owners take advantage of incentives and grants for energy efficiency measures provided by local utilities, the IL DCEO, and the Illinois Attorney General's office. Funds provided by local utilities and the IL DCEO are generated by the Illinois EEPS, and have varied substantially over time. Utilities and the program administrators have worked together to address data sharing, savings attributions toward EEPS targets, and other programmatic issues, and are currently working to establish the utilities' ability to claim EEPS credit from regional coordination efforts.[53]

EFFICIENCY VERMONT

Efficiency Vermont is a statewide energy efficiency utility, operated by a nonprofit corporation under a twelve-year franchise-like order of appointment from the Vermont Public Service Board.[54] Efficiency Vermont implements all energy efficiency programs for Vermont's utilities, except for the Burlington Electric Department. An energy efficiency charge on customers' electric bills funds most of the programs.[55] Efficiency Vermont is notable for two reasons: its structure avoids many of the utility disincentives discussed in this paper, and it leverages outside funding to create comprehensive, whole-home efficiency programs wherever possible. The scarcity of outside funds, however, creates a major challenge for the program and limits its ability to do comprehensive work.

Efficiency Vermont's structure avoids the perverse incentives that can occur with improperly configured EEPS or PBFs in several ways:

- The funding mechanism assures consistent funding, even if utilities have a financial incentive to prefer other investments.
- Separating the efficiency provider and the utility avoids disincentives to efficiency at utilities whose revenues depend on sales.
- Separating the efficiency provider and the utility even compares favorably to utilities whose revenues do not depend on sales, by ensuring that programs are provided by a company whose core competency is efficiency.
- A performance-based compensation structure ensures that the efficiency provider seeks the maximum available efficiency savings, instead of mere compliance with a savings target.
- The order of appointment includes a mechanism to ensure that customer energy usage data is shared by the utilities, stored and handled in a safe and secure manner, and used only for energy efficiency purposes.
- A three-year performance period, and a twelve-year order of appointment, gives Efficiency Vermont flexibility to fund more comprehensive programs with longer-term savings and to move funds from programs that do not deliver savings as expected.
- Oversight by the Vermont Public Service Board assures utilities that these mechanisms are carefully developed and reduces utility risk.

Most Vermonters heat their homes with fuel oil, propane, or wood. Because these fuels are unregulated, they do not fall under the Efficiency Vermont funding mechanism. Consequently, while Vermont's electric efficiency programs are robust, it faces a major challenge in funding efficiency for non-utility fuels. To address this problem, Efficiency Vermont leverages outside funds, such as revenues gained from the Regional Greenhouse Gas Initiative and New England ISO's Forward Capacity Market, to fund the heating fuel portions of these programs. This revenue is insufficient to meet the state's needs. Efficiency Vermont is pursuing a number of other policy options to encourage private capital to enter this market and help them save energy for Vermont residents and businesses.[56] However, Vermont has not yet created a funding mechanism for unregulated fuel efficiency that is comparable to its regulated fuel efficiency programs.

CALIFORNIA STATEWIDE MULTIFAMILY ENERGY EFFICIENCY REBATE PROGRAM[57]

The California Statewide Multifamily Energy Efficiency Rebate Program (MEERP) is a collaboration among California's four major IOUs: Pacific Gas and Electric Company, San Diego Gas and Electric Company, Southern California Gas Company, and Southern California Edison. Together, they promote energy efficiency and provide equipment rebates to owners and tenants of multifamily properties of five or more units, and residential apartment buildings, condominium complexes, and mobile home parks with two or more units. The program began in 2002 and each IOU administers the program in its own service territory.

The California IOUs have been very active in administering and promoting the program, and thus have developed substantial relationships within the multifamily market sector. The Multifamily Statewide Team meets on a regular basis to discuss program issues, coordinate energy efficiency messaging, and ensure consistency in program delivery throughout the state. Because of these regular meetings, the majority of improvements recommended by program evaluations have been implemented.

MEERP encourages the installation of qualifying energy-efficient products in tenant units and in common areas. The program offers multifamily property owners rebates up to $1,500 for energy efficiency products and improvements, including ENERGY STAR® interior and exterior hardwired fixtures and other permanently installed energy-efficient equipment and products.

Rebate offerings for measures associated with apartment dwelling units include: interior and exterior hardwired fixtures; T8 linear fluorescents; ceiling fans; CFLs; clothes washers; dishwashers; water heaters; natural gas central furnaces; and, attic and wall insulation. Rebate offerings for common areas include: LED exit signs, occupancy sensors, photocells, high-performance dual-paned windows, central water heaters, and boilers and boiler controls.

MEERP has achieved significant energy savings throughout its history. The program was renewed for the 2010 to 2012 planning period and has continued to achieve significant energy savings. In the 2004–05 and 2006 program years, for which we have data from all the implementing utilities, the program improved energy efficiency in over 410,000 housing units resulting in annual savings of over 141 million kWh of electricity and nearly 6 million therms of natural gas. Although we only have updated program results for 2007 to 2010 from PG&E and Southern California Gas, it is clear that their implementation of the program continues to get significant participation and energy savings each year.

The program overcomes the split-incentive barrier by providing incentives to property owners to invest in the installation of energy-efficient measures inside the tenant dwellings. Through the program's design and utilities' influence on market actors, the bulk of product installation has occurred in individually metered tenant dwelling units.

CALIFORNIA MULTIFAMILY STATEWIDE TEAM ACCOMPLISHMENTS					
2004–05	**INCENTIVES PAID**	**# OF SITES TREATED**	**UNITS**	**KWH SAVED**	**THERMS SAVED**
PG&E	$8,366,773	862	50,800	22,703,451	1,688,151
SCE	$11,262,000	967	93,000	43,904,000	N/A
SoCalGas	$4,267,681	1,058	52,900	N/A	2,349,935
SDG&E	$6,081,596	900	45,000	23,262,861	814,674
TOTAL	**$29,978,050**	**3,787**	**241,700**	**89,870,312**	**4,852,760**
2006					
PG&E	$8,822,359	1,117	47,637	20,694,196	182,664
SCE	$8,480,000	1,350	80,000	25,269,000	N/A
SoCalGas	$854,832	538	26,900	N/A	756,029
SDG&E	$2,545,418	280	14,000	5,333,695	133,785
TOTAL	**$20,702,609**	**3,285**	**168,537**	**51,296,891**	**1,072,478**
2007					
PG&E	$15,071,131	1,616	69,554	41,678,992	196,710
SoCalGas	$772,609	526	N/A	3	313,941
2008					
PG&E	$6,149,740	1,848	48,461	22,605,108	158,139
SoCalGas	$794,723	523	N/A	5	259,313
2009					
PG&E	$3,112,014	1,064	88,663	5,728,230	143,085
SoCalGas	$288,789	315	N/A	3	127,317
2010					
PG&E	$3,397,722	555	85,591	5,717,990	497,800
SoCalGas	$541,863	752	N/A	6,499	371,324

NATIONAL GRID'S ENERGYWISE, MULTI FAMILY RETROFIT, AND HOME ENERGY SOLUTIONS[58]

In 1992, National Grid first offered its Multifamily Retrofit Program in Massachusetts. The program has since expanded to Rhode Island, New Hampshire, and New York; been extended to natural gas customers; and seen several name changes. But it remains an energy efficiency success, achieving significant penetration of the multifamily market in New England, and showing high customer satisfaction.

The program serves public housing authorities, low-income, and market-rate multifamily facilities. Eligible structures include multifamily buildings with five or more units, as well as single family customers in Rhode Island and New Hampshire. In New York, the program serves customers in multifamily buildings with between five and fifty units.

The program is funded through a state legislated system benefit charge and had a budget of $15.9 million in 2010. The program is delivered by independent energy service providers selected through a competitive bidding process. Work completed by the program's energy service providers and their subcontractors must meet standards set by the Building Performance Institute. The program is marketed through direct contact with interested customers and homeowners, property owners' associations, bill inserts, customer newsletters, National Grid's website, home shows, and direct mail. National Grid often coordinates directly with public housing authorities and large volume property owners. Customers prioritize their facilities in terms of greatest need, ensuring that high energy-use facilities are served first.

At the initial site visit, customers receive a comprehensive energy assessment that includes, where appropriate, an evaluation of efficient lighting opportunities, diagnostic air leakage tests, duct leakage, heat pump testing, insulation levels, water heating equipment, and refrigerator efficiency. Customers receive energy education and the installation of low cost measures such as ENERGY STAR® light bulbs, hot water measures, and air sealing for electrically heated buildings at no direct cost. All reasonable measures—building envelope, mechanical equipment and systems and controls, lighting and appliances—are screened for cost-effectiveness in multifamily facilities. Major measures, such as lighting fixture, thermostat, and insulation upgrades; air sealing; and replacement of inefficient refrigerators are put out to competitive bid for facilities with more than twenty units. In some cases, improvements may be implemented by related National Grid programs.

The following table tracks savings since 1998. In that time, the electric program has delivered more than 189,000 MWH savings to more than 242,000 customers. In 2010, a natural gas program was started in Massachusetts and New York, serving over 5,000 households and saving more than 553,000 therms in its first year.

NATIONAL GRID NEW ENGLAND AND NEW YORK MULTIFAMILY PROGRAMS

	ELECTRIC PROGRAM		GAS PROGRAM	
	Annual MWh	Households	Annual Therms	Households
1998	13,656	13,723		
1999	12,198	14,812		
2000	20,976	22,286		
2001	22,601	22,702		
2002	12,581	18,637		
2003	10,766	21,182		
2004	10,722	11,818		
2005	13,967	17,517		
2006	12,776	18,093		
2007	13,779	16,451		
2008	12,722	15,200		
2009	14,834	20,819		
2010	18,094	29,237	553,350	5,376
TOTAL	**189,672**	**242,477**	**553,350**	**5,376**

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

The Multifamily Performance Program was created to consolidate NYSERDA's varied multifamily program offerings into one comprehensive program that would offer New York State's diverse multifamily market a user-friendly single point of entry to obtain both financial and technical assistance. The program serves both existing buildings and new construction projects and provides a standardized process for all projects. It also has incentive schedules that enable owners and developers to understand what level of incentives they are eligible to receive before applying to the program. The program relies on a market-based approach to technical service provision that allows owners and developers to choose their own energy service provider from a pre-approved group of energy consultants.

The initial version of NYSERDA's Multifamily Performance Program was launched in May 2007. The program was suspended temporarily from July 2009 until fall 2010 while the program was redesigned to meet the requirements of new funding sources. The current version of the program was launched in September 2010.

The Multifamily Performance Program challenges participants to reduce their energy usage by 15% (formerly 20% in the initial version of the program). In order to achieve this goal, building owners and developers choose from a group of pre-approved energy service providers that lead them through the process of performing a comprehensive energy audit, developing an Energy Reduction Plan, implementing that plan, and ensuring that energy conservation measures are properly installed.

Any residential building with 5 or more units that pays the state's systems benefits surcharge on their bill is eligible to participate. Projects that wish to receive affordable housing level incentives must supply adequate documentation of affordability.

The program is based on the idea that each project is different and gives project participants the flexibility to develop their own strategy for achieving the program's 15% reduction target. The Energy Reduction Plan that the participant works with their energy service provider to evaluate a comprehensive suite of energy conservation measures and determine which of those measures are the most cost-effective and practical to implement in each particular project. The program's only requirement is that the scope of work must meet NYSERDA's cost-effectiveness standards and that measure evaluation follows the program's rigorous technical standards.

The performance of the existing buildings component of the program from 2007 to 2011 is summarized in the table below:

NYSERDA MULTIFAMILY PERFORMANCE PROGRAM (MAY 2007 TO JULY 2011)

PROGRAM COMPONENT	PARTICIPATING UNITS	ELECTRICITY SAVINGS (KWH)	AVERAGE % ELECTRIC SAVINGS FROM BASELINE	FUEL SAVINGS (MMBTU)	AVERAGE % FUEL SAVINGS FROM BASELINE
Multifamily Performance Program total	113,810	171,706,079	20.60%	1,962,210	22.69%
MPP - Energy Reduction Plan (ERP) Only	16,014	58,608,595	49.96%	616,474	50.65%
MPP - ERP and Construction Phase	97,796	113,097,484	15.79%	1,345,736	18.11%

Notes: (1) Numbers listed as Energy Reduction Plan Only are those that have identified as potential savings through the program. ERP and Construction Phase numbers are for those measures that have been installed. (2) Data on average percentage savings from baseline are from best available data from on pre-participation consumption in participant units.

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Appendix B: Types of Utilities and Their Investments in Energy Efficiency

There are four major types of electric and natural gas utilities, each with their own unique financial incentive structure. Each is discussed below. While each type of utility is important, it should be noted that investor-owned utilities provide the majority of the U.S. electricity, particularly in urban areas with higher concentrations of multifamily housing.[59]

TYPE OF ELECTRIC UTILITY	PERCENT OF TOTAL U.S. ELECTRIC CONSUMPTION	REGULATORY OVERSIGHT
Publicly Owned	15%	Varies by State
Cooperative	10%	Varies by State
Investor Owned	66%	State Oversight
Competitive	9%	Varies by State

PUBLICLY OWNED UTILITIES

Publicly owned utilities include municipal utilities and utilities owned by states, special public utility districts, and joint municipal agencies. Public electric utilities serve 45 million customers, provide approximately 15% of electricity consumed in the United States, and are governed by elected boards or appointed boards that are accountable to elected officials.[60]

Energy efficiency investments by publicly owned utilities vary widely. Several municipal utilities such as the Sacramento Municipal Utilities District and Austin Energy are at the forefront of innovative efficiency programming, largely because of local interest in climate and environmental goals. On the other hand, many publicly owned utilities have little financial or political impetus, and no regulatory or statutory requirement, to invest in energy efficiency.

Some publicly owned electric utilities have invested heavily in energy efficiency as a way to delay expensive power plant investments.[61] However, many are small and have little institutional capacity to design and implement efficiency programs. In addition, publicly owned electric utilities may buy their electricity through long-term contracts with existing power plants. Utilities with inexpensive contracts have little incentive to institute efficiency programs, because savings from efficiency will be correspondingly low.

Natural gas utilities have faced declining energy sales over the past few decades, but must still recover the fixed costs of extensive underground mains. Consequently, natural gas utilities are under intense pressure to restructure rates so that their revenues are not wholly dependent on sales. Pending achievement of this goal, even municipally run utilities have incentives to keep natural gas sales high so they can cover their costs.[62] Electric utilities also face this incentive, though to a lesser extent because electricity use is increasing.

ELECTRIC COOPERATIVES

Electric cooperatives are customer-owned utilities, often governed by a customer-elected board. They provide 10 percent of U.S. electricity.[63] These cooperatives' incentives around energy efficiency are similar to the incentives of small publicly owned utilities. Like publicly owned utilities, electric cooperatives' interest in energy efficiency often mirrors the interests of its customers. While many electric cooperatives have little institutional capacity to design and implement their own custom-efficiency programs, the National Rural Electric Cooperative Association and state associations have helped overcome this barrier by developing energy efficiency programs that meet cooperatives' implementation constraints. In addition, electric cooperatives often buy their electricity through long-term contracts with existing power plants.

INVESTOR-OWNED UTILITIES

Investor-owned utilities include the major corporate providers of electricity and natural gas. They face different market conditions and regulatory regimes in each state. In addition, many IOUs serve both natural gas and electricity customers.

Several well-known utility holding companies, such as Duke Power and American Electric Power, own utilities in several states. These subsidiary utilities may be similar and have common beliefs about the value and implementation of energy efficiency. However, each utility's efficiency programs reflect the unique regulatory circumstances it encounters within each state.

Electric IOUs

IOUs provide 66 percent of U.S. electricity and fall into two categories: vertically integrated IOUs in traditionally regulated states, and the so-called "wires only" IOUs in states that have been restructured.[64] Vertically integrated utilities earn revenues by generating electricity and transporting it to customers or other utilities, while restructured utilities, who do not own power plants, earn revenues only from transmitting electricity to customers.

Vertically Integrated States

Traditional regulation governs all aspects of the relationship between a vertically integrated electric utility and its customers. Historically, all electric IOUs were organized as vertically integrated utilities and regulated by states to manage their natural monopoly power. Vertically integrated utilities perform four functions: (1) generate electricity at their own power plants, (2) sell generated electricity to retail customers and other utilities, (3) purchase electricity for distribution to retail customers, and (4) distribute electricity to retail and utility customers. However, regulators decide how the utility recovers its costs and its rate of return. Regulators may structure utility rates using per-unit fees, flat rates, or a combination of the two. Thus, a vertically integrated utility's incentives regarding energy efficiency largely depend on whether it generates more revenue through the sale or the transmission of electricity.

Aligning a vertically integrated utility's incentives with robust energy efficiency programs requires government efficiency mandates that make efficiency programs more attractive than electricity sales. Alternatively, regulators or legislators may create financial incentives to make efficiency more profitable than electricity sales, while retaining significant benefits for customers. In rare cases where a utility enjoys higher profit from selling electricity to other utilities than to its own retail customers, the utility may willingly undertake energy efficiency programs to allow it to sell more surplus electricity to other utilities. In addition, a utility may undertake energy efficiency programs to minimize the purchase of electricity at times when prices are extremely high.

In addition, vertically integrated utilities may see energy efficiency as a useful cost-saving device. If a vertically integrated utility is facing an imminent need for more power supply or transmission system improvements, it may choose to forego building a power plant or making expensive system upgrades through improved energy efficiency.[65]

Restructured States

In the late 1990s, new power plant technology changed the economics of electricity generation, persuading 15 states and the District of Columbia to restructure their electric industries, deregulating power plants while retaining regulated transmission and distribution utilities. Another seven states began restructuring, but then suspended it after the California energy crisis.

In restructured states, the local utility that provides electricity to multifamily housing does not own power plants. Thus, electric utilities in restructured states perform one function: buying electricity on the wholesale markets and

distributing it to retail customers. The restructured utility's incentives regarding energy efficiency largely depend on its ability to generate revenue independent of transmitting more units of electricity.

As with vertically integrated utilities, aligning a restructured utility's incentives with robust energy efficiency programs requires government efficiency mandates or financial incentives that make efficiency more profitable than electricity sales. Restructured utilities' incentives to implement stringent energy efficiency programs vary with the method of cost recovery allowed for these programs, and with the level of separation between the transmission and distribution utility and its parent, if that parent company owns power plants. Utilities that receive financial incentives, over and above their costs, for example, have greater incentives to provide robust energy efficiency programs. However, a utility that is closely aligned with a parent company that holds power plants may have little incentive to provide robust energy efficiency savings, as doing so would reduce the market for its parent's plants' output.

Some restructured IOUs view energy efficiency programs as a way to connect with and provide service to their retail customers. Many of these utilities have historically been monopoly utilities with little customer contact, and energy efficiency programs help them reengage the customer.

FIGURE 7
ELECTRICITY RESTRUCTURING IN THE STATES[66]

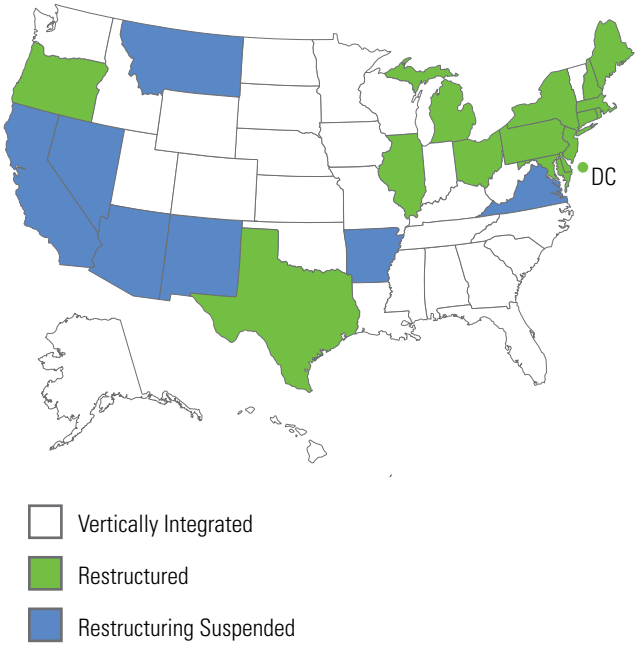
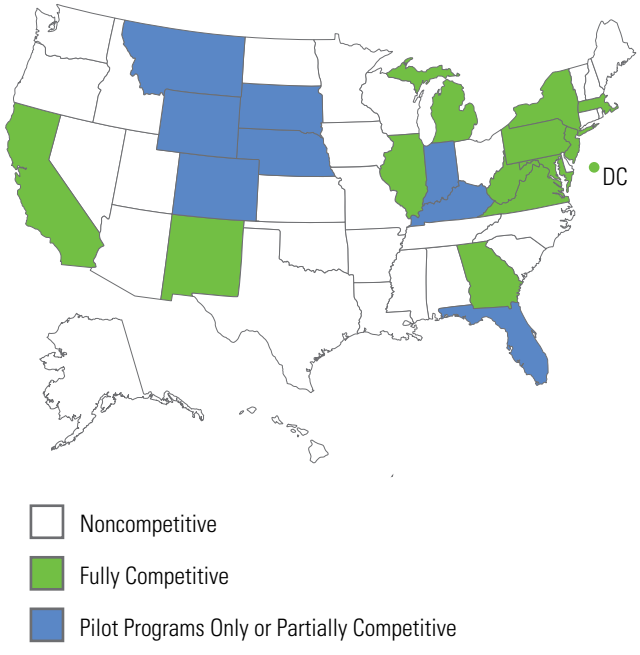


FIGURE 8
NATURAL GAS COMPETITION IN THE STATES[67]



Natural Gas

Natural gas utilities also exhibit a patchwork of state restructuring, which causes their incentives regarding energy efficiency to vary widely.

Noncompetitive States

In 29 states, customers can purchase natural gas only from their traditionally regulated utility. Natural gas utilities in noncompetitive states are regulated much like electric utilities in vertically integrated states, and they perform two functions: (1) sell natural gas to retail customers, and (2) distribute the natural gas to their customers' homes and businesses. As with vertically integrated electric utilities, a natural gas utility's incentives regarding energy efficiency depend on whether efficiency reduces its overall revenue.

Like electric utilities in vertically integrated states, natural gas utilities require government mandates or a financial incentive to align with energy efficiency. As previously discussed, natural gas utilities have experienced declining energy sales, creating intense pressure to restructure rates so that revenues are not wholly dependent on sales. Until a natural gas utility achieves this goal, it has strong incentives to keep sales high.[68]

Competitive States

Twenty-one states and the District of Columbia allow customers to choose their natural gas supplier—a process called "retail choice"—at least as a pilot program. In 10 of these states, a majority of natural gas customers have access to competitive suppliers. Unlike with electric restructuring, natural gas utilities in competitive states retain both functions: selling natural gas to customers and distributing natural gas to customers' homes and businesses.

As with natural gas utilities in noncompetitive states, aligning utility incentives with robust energy efficiency programs requires either government efficiency mandates or a financial incentive to make efficiency more profitable than sales. As with electric utilities in restructured states, the incentives of natural gas utilities in competitive states regarding the adoption and implementation of stringent energy efficiency programs vary with method of cost recovery allowed for these programs, and with the level of separation between the utility and its parent company or affiliates, if the parent company owns a competitive natural gas supplier.

Like electric IOUs in restructured states, natural gas IOUs in competitive states view energy efficiency programs as a way to reengage and provide service to retail customers.

COMPETITIVE ELECTRIC AND NATURAL GAS PROVIDERS

All restructured and competitive states allow customers to buy electricity or natural gas from competitive suppliers, who are regulated, but not as heavily as utilities. These companies buy electricity and natural gas and then contract with the utility to deliver that energy over its distribution network. In areas where competitive suppliers have made significant inroads into the residential market, they may see the provision of energy efficiency programs as a way to distinguish themselves from the utility and other competitive providers. Energy efficiency portfolio standards have not been applied to competitive suppliers in the U.S. but have been applied to competitive suppliers in Europe.[69]

Appendix C: Participants in State Regulatory Proceedings

ATTORNEYS GENERAL AND CONSUMER ADVOCATES

Attorneys general and consumer advocates are often the most active stakeholders in the regulatory and legislative processes surrounding electric and natural gas utilities. Some states have dedicated state agencies that serve as the state's utility ratepayer advocate. These agencies' resources vary considerably and may be subject to political and budgetary pressure.

A few states, including California, Illinois, Oregon, and Wisconsin, have active nonprofit utility ratepayer consumer advocates.[70] These groups also vary in their resources, but their grassroots nature may give them disproportionate influence. In addition, their funding is often free of political influence, coming from private sources and court-cost reimbursement statutes.

Attorneys general and consumer advocates collaborate through the National Association of State Utility Consumer Advocates (NASUCA, www.nasuca.org), which meets regularly to discuss issues of importance to members and to adopt non-binding resolutions that guide the advocacy activities and programs of its members and NASUCA staff. NASUCA's organizational structure includes an electricity committee, a natural gas committee, and a consumer protection committee, among others. The consumer protection committee has passed a resolution, subsequently adopted by NASUCA's membership, urging an equitable expenditure of energy efficiency funds on affordable multifamily housing units.[71]

ENVIRONMENTAL ADVOCATES

In many states, environmental advocates are just beginning to make their presence felt at the regulatory agencies, as energy issues become a more important part of the environmental protection agenda. These advocates hire experienced regulatory attorneys and expert witnesses, and they are becoming an important force in utility regulation, particularly around energy efficiency and renewable energy.

INDUSTRIAL CONSUMER GROUPS

Industrial customers often band together to represent their interests before state commissions, legislatures, the Federal Energy Regulatory Commission (FERC), and regional wholesale market governance boards. While supporting energy efficiency in principle, these groups often work to exempt the industrial sector from utility-provided energy efficiency programs. Typically, they argue that the sector already dedicates significant resources to achieving energy efficiency and so should not be required to pay for additional energy efficiency programs.

HOUSING AND COMMERCIAL REAL ESTATE GROUPS

Housing and commercial real estate industry engagement of utilities around energy efficiency varies. At the federal level, and in several large cities, including New York and Boston, large community development corporations, housing developers, large rental apartment owners, and commercial building owners may engage around energy efficiency efforts. In other areas, however, these groups may interact around little beyond weatherization initiatives.[72] Participation by rental building owners also depends on whether the owner or the renter pays utility bills.

Appendix D: NARUC Resolution

Resolution Supporting Fair Expenditure of Energy Efficiency Funds in All Customer Sectors

WHEREAS, Natural gas and electric companies, along with other energy efficiency program administrators, expended more than $5 billion on energy efficiency programs in 2009, as estimated by the Consortium for Energy Efficiency; and

WHEREAS, Some States, in cooperation with their utilities, have already committed to substantially increasing their energy efficiency expenditures, with some States planning to double or triple those expenditures in the near future; and

WHEREAS, Energy efficiency programs for owners of, or tenants living in, multifamily affordable housing have in the past not always been well-designed for easy access; and

WHEREAS, It is important for all consumers to benefit from energy efficiency programs including low-income households, the elderly, those living on fixed incomes, and owners and tenants in multifamily affordable housing; and

WHEREAS, Multifamily affordable housing, including housing assisted by the federal Department of Housing and Urban Development and state housing finance agencies, or receiving assistance via the Low-Income Housing Tax Credit, provides critically needed housing for some of the poorest families in America; and

WHEREAS, This same multifamily affordable housing stock is, on average, older than the entire U.S. housing stock; contains older appliances; and is generally less energy efficient than other housing; and WHEREAS, Energy efficiency programs result in more affordable utility services for lowincome consumers in multifamily buildings and, therefore, reduce the number of customers disconnected for non-payment; and

WHEREAS, Utility companies could achieve significant cost-effective energy savings by investing more of their energy efficiency programs funds in affordable multifamily housing, while also helping to preserve that energy costs are as affordable for the tenants; now, therefore be it

RESOLVED, That the Board of Directors of the National Association of Regulatory Utility Commissioners, convened at its 2011 Summer Committee Meetings in Los Angeles, California, finds that utilities and other program administrators which expend energy efficiency funds collected via utility bills should consider spending a fair share of those funds in each of the customer sectors served, including, but not limited to, the affordable, multifamily housing sector; and be it further

RESOLVED, That utilities and other energy efficiency program administrators that deliver energy efficiency programs to affordable multifamily buildings should consider ensuring that such programs improve awareness of energy costs and the importance of energy efficiency among tenants and owners in rental properties, reasonably meet the needs of those owners and tenants, and offer the opportunity for "one-stop shopping"—that is, offer the owner of multifamily housing a simple, single point of entry to apply for utility-funded energy efficiency services, even if the owner's property includes a mix of individual (tenant-paid) meters and master meters, and/or a mix of building size and types (e.g., low-rise, high-rise, duplex, townhouse); and be it further

RESOLVED, That public utility commissions, in proceedings in which utility expenditures onenergy efficiency are being raised, should use their discretion when appropriate to investigate theextent to which the company's energy efficiency programs are fairly serving all customersectors, including but not limited to the affordable multifamily sector.

Sponsored by the Committees on Energy Resources and the Environment and Consumer Affairs

Adopted by the NARUC Board of Directors July 20, 2011

Appendix E: NASUCA Resolution

NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES

RESOLUTION 2011-14

URGING AN EQUITABLE EXPENDITURE OF ENERGY EFFICIENCY

FUNDS ON AFFORDABLE MULTIFAMILY HOUSING UNITS

Whereas, natural gas and electric companies, along with other energy efficiency program administrators, expended more than $5 billion on energy efficiency programs in 2009, as estimated by the Consortium for Energy Efficiency;* and

Whereas, many states have already committed to substantially increasing their energy efficiency expenditures over the next one to three years, with some states planning to double or triple those expenditures between 2009 and 2012; and

Whereas, energy efficiency programs have in the past not always been well-designed for easy access by owners of, or tenants living in, multifamily affordable housing; and

Whereas, multifamily affordable housing, especially housing assisted by the federal Department of Housing and Urban Development and state housing finance agencies, or receiving assistance via the Low-Income Housing Tax Credit, provides critically needed housing for some of the poorest families in America; and

Whereas, this same multifamily affordable housing stock is, on average, older than the entire U.S. housing stock; contains older appliances; and is generally less energy efficient than other housing; and

Whereas, energy efficiency programs and weatherization should result in more affordable utility services for low-income consumers in multifamily buildings and, therefore, reduce the number of customers disconnected for nonpayment; and

Whereas, utility companies could achieve significant cost-effective energy savings by investing more of their energy efficiency programs funds in affordable multifamily housing, while also helping to preserve that housing as affordable for the tenants;

Now, therefore, be it resolved, that NASUCA supports the following principles regarding the expenditure of energy efficiency funding:

1. That utilities and other program administrators that expend energy efficiency funds collected via utility bills should spend an equitable share of their available energy efficiency funds on cost-effective energy efficiency programs for the affordable, multifamily housing sector, giving just and due consideration to (a) the percentage of sales (kWh, therms, or ccf, as applicable) to multifamily buildings in the utility's service territory, in comparison to total sales, and (b) the percentage of any systems benefit charge, or other energy efficiency charge, that is collected from owners or tenants in affordable multifamily housing, in comparison to the total collected through the systems benefit charge, or other energy efficiency charge;

2. That utilities and other energy efficiency program administrators should specifically design cost-effective energy efficiency programs to improve awareness of energy costs in rental

* Nevius, M., R. Eldridge, and J. Krouk, "The State of the Efficiency Program Industry: Budgets, Expenditures, and Impacts 2009," Consortium for Energy Efficiency (March 2010), available at http://www.cee1.org/files/StateofEEIndustry2009.pdf.

facilities, meet the needs of the owners and tenants of affordable multifamily housing, and offer the opportunity for "one-stop shopping;"*

3. That such specifically designed programs should address these obstacles: (a) that affordable multifamily housing buildings often have a mix of master (owner-paid) and individual meters, which may result in the owner and tenants having to make multiple applications and/or apply to both "commercial" and "residential" programs, rather than being able to make a single application; (b) that a particular multifamily property may include a mix of building types, such as low-rise townhouse buildings and high-rise towers, which may result in the owner having to submit multiple applications and/or speak to different staff and departments at the utility company; and (c) that a utility may have existing programs that are well-designed for residential properties containing 1 to 4 units, and to commercial buildings and properties, but not have any program for larger residential buildings;

4. That utilities and other energy efficiency program administrators will best succeed in equitably meeting the energy efficiency needs of affordable multifamily housing by working in collaboration with a broad group of representative of the owners and tenants of that housing, including representatives from agencies that administer state and federal programs in support of affordable multifamily housing;

5. That public utility commissions, in utility proceedings in which utility expenditures on energy efficiency are or could be raised as an issue, should investigate the extent to which the company in question is expending an equitable portion of its energy efficiency budget on cost-effective energy efficiency programs for the affordable multifamily housing sector and making reasonable efforts to overcome any existing barriers to the participation by owners and tenants of affordable multifamily housing in the company's energy efficiency programs;

Be it further resolved, that NASUCA authorizes its Executive Committee to develop specific positions and take appropriate actions consistent with the terms of this resolution. The Executive Committee shall advise the membership of any proposed action prior to taking action if possible. In any event the Executive Committee shall notify the membership of any action pursuant to this resolution.

Submitted by Consumer Protection Committee
Approved June 28, 2011
San Antonio, Texas

* In this context, "one stop shopping" means offering the owner of multifamily housing a simple, single point of entry to apply for utility-funded energy efficiency services, even if the owner's property includes a mix: of individual (tenant-paid) meters and master meters, of building size and types (e.g., low-rise, high-rise, duplex, townhouse), and of loads (gas and electric).

Appendix F: Potential to Increase Resources for Energy Efficiency by Improving State Policy

Opportunities for a state to save energy with multifamily energy efficiency programs are determined by three factors: the size of the multifamily building market, the portion of multifamily building energy that comes from utilities, and existing energy efficiency policies. In Figure 5, we used data on these variables to identify states with a large share of multifamily housing units and utility fuels and where improvements in utility energy efficiency policy would significantly improve the available energy efficiency resources.

To determine which states would most benefit from improved energy efficiency policy, we must consider each state's absolute and relative energy efficiency opportunity, as represented by multifamily housing's proportion of all residential units. While the current level of energy efficiency in these buildings varies geographically, the vast majority of multifamily buildings in every state would benefit from cost-effective energy efficiency measures. In the absence of detailed state level energy consumption data for the multifamily sector, the number of multifamily units is a sufficient high-level indicator of energy savings potential. Data from the 2005–9 American Community Survey indicates that, nationally, buildings of five or more units represent over 17% of total residential units, while buildings of two or more units provide nearly 26%. Multifamily buildings of five or more units represent over 20% of units in California, the District of Columbia, Florida, Hawaii, Illinois, Maryland, Nevada, and New York.

The number of multifamily units heating with utility-provided natural gas or electricity indicates how much of the sector derives its energy from utilities. In some states, particularly in the northeast U.S., a large portion of the residential market heats with non-utility fuels such as fuel oil. In most states, these nonutility fuels are not eligible for energy efficiency programs, unlike electricity and natural gas, which are regulated and eligible for the programs. Because data on heating fuel is not available for the multifamily sector specifically, we substituted data for the residential sector as a whole, from the 2005–9 American Community Survey. In the U.S. nearly 84% of occupied housing units are heated with natural gas or electricity from a utility. States with less than 60% of homes heated by a utility fuel are Alaska, Connecticut, Hawaii, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Combining these two factors with a measurement of policy effectiveness allows us to determine which states have policies that, if improved, would significantly increase energy efficiency resources in a state. The Utility and Public Benefits Program and Policy chapter of the ACEEE 2010 State Energy Efficiency Scorecard measures institutional support for energy efficiency programs on a 20 point scale.[73] States with higher scores spend more on energy efficiency, achieve higher savings, and have policies in place that contribute to long-term energy-efficiency investments by utilities. The overall score includes points for 2009 electricity efficiency program budgets (5 points), 2008 electricity efficiency program energy savings (5 points), 2009 natural gas efficiency program budgets (3 points), energy efficiency targets (energy efficiency portfolio standards) (4 points), and utility incentives and removal of disincentives (3 points). The top five scoring states in 2010 in descending order were Vermont (19.5 points), California (18.5), Rhode Island (16), Massachusetts (15.5), and Minnesota (15). The arithmetic mean for the scores of all fifty states is 6.52. Figure 5 summarizes our findings. More information on specific policies in effect in each state is available from ACEEE's 2010 State Energy Efficiency Scorecard and the Database of State Incentives for Renewables and Efficiency.[74]

TABLE 2

MULTIFAMILY HOUSING UNITS, HEATING FUEL TYPES, AND AN ENERGY EFFICIENCY POLICY RATING

STATE	MULTIFAMILY UNITS (IN 5 + UNIT BUILDINGS)	MULTIFAMILY AS % OF TOTAL HOUSING UNITS	% OCCUPIED UNITS USING UTILITY-PROVIDED ELECTRIC OR NATURAL GAS FOR HEAT	UTILITY AND PUBLIC BENEFITS PROGRAMS AND POLICIES SCORE FROM ACEEE'S 2010 SCORECARD
Alabama	228,868	10.7	88.3	0
Alaska	38,864	13.9	58.7	0
Arizona	422,933	15.9	93.1	9
Arkansas	111,541	8.7	85.0	1.5
California	2,983,403	22.5	91.3	18.5
Colorado	421,965	19.9	91.4	10
Connecticut	252,808	17.6	45.6	10.5
Delaware	52,605	13.6	67.6	1.5
District of Columbia	141,050	49.7	93.5	5
Florida	2,056,756	23.8	96.0	4
Georgia	585,120	14.8	91.0	1.5
Hawaii	163,254	32.3	37.5	12
Idaho	46,745	7.5	82.4	8.5
Illinois	1,057,085	20.2	94.0	5.5
Indiana	339,011	12.2	87.4	5.5
Iowa	163,178	12.3	81.7	12
Kansas	134,452	11.1	89.0	0.5
Kentucky	202,438	10.6	87.1	3.5
Louisiana	189,951	9.9	95.1	0
Maine	60,939	8.7	8.4	10.5
Maryland	488,389	21.1	82.0	6
Massachusetts	542,892	19.9	59.9	15.5
Michigan	565,188	12.5	84.9	8
Minnesota	384,314	16.7	81.4	15
Mississippi	101,673	8.1	81.6	0
Missouri	294,239	11.1	84.3	1.5
Montana	36,849	8.5	75.9	4
Nebraska	116,100	14.9	87.8	0.5
Nevada	236,696	21.7	93.5	11
New Hampshire	81,527	13.8	27.1	9
New Jersey	692,571	19.8	82.2	7
New Mexico	83,652	9.7	81.5	6.5
New York	2,572,352	32.4	61.2	12
North Carolina	482,582	11.7	79.9	5
North Dakota	61,104	19.	76.4	0.5
Ohio	694,486	13.7	87.8	4.5
Oklahoma	172,614	10.6	88.3	1.5
Oregon	255,224	15.9	85.7	14.5
Pennsylvania	610,179	11.1	69.7	4.5
Rhode Island	69,982	15.5	56.0	16
South Carolina	234,589	11.6	89.9	1.5
South Dakota	46,329	13.0	73.1	4
Tennessee	326,468	12.0	91.2	1.5
Texas	1,781,577	18.9	94.6	3
Utah	122,585	13.3	95.1	11.5
Vermont	31,767	10.2	18.3	19.5
Virginia	551,761	16.9	82.8	1.5
Washington	530,883	19.3	87.2	12.5
West Virginia	60,133	6.8	82.3	0
Wisconsin	370,895	14.5	78.7	13
Wyoming	19,499	8.0	81.5	2.5
United States	22,272,065	17.4	83.7	6.52

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ABOUT THE AUTHORS

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Steven Nadel is Executive Director of ACEEE and has worked in the energy-efficiency field for more than 30 years, with over 100 publications on energy-efficiency issues. Prior to his promotion to Executive Director in 2011, he was ACEEE's Deputy Director and also headed ACEEE's Buildings and Utilities programs. Prior to ACEEE he planned and evaluated energy efficiency programs for New England Electric (a utility serving parts of Massachusetts, Rhode Island and New Hampshire), directed energy programs for the Massachusetts Audubon Society (a statewide environmental group), and served as Energy Coordinator for the Home Maintenance Organization (a nonprofit housing organization serving poor neighbourhoods in New Haven, CT).

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74. Ibid; *Database of State Incentives for Renewables & Efficiency*, www.dsireusa.org. DSIRE is a project of North Carolina State University and the U.S. Department of Energy.