



CATALYZING EFFICIENCY

Unlocking Energy Information and Value
in Apartment Buildings

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Executive Summary

Multifamily housing in the United States represents a significant portion of the residential sector, with 12 percent of the country—almost 18.5 million households and close to 38 million residents—renting housing in buildings with five or more units.¹ These figures only stand to grow with market demand now at record levels as millennials and empty nesters increasingly choose urban density over suburban homes. And yet, many multifamily buildings are inefficient, preventing owners and managers, governments, efficiency implementers, residents, and financiers from reaping a wide range of economic and environmental benefits.

High utility bills affect renters in both market-rate and affordable housing units, with research demonstrating that the cost of energy utilities can disproportionately burden lower-income multifamily residents. Cost-effective energy upgrades in multifamily buildings have been estimated to improve efficiency by 15–30 percent, resulting in savings of close to \$3.4 billion annually for owners and residents.² In the past, the Institute for Market Transformation (IMT) found that a lack of available data about building energy performance prevented many multifamily building owners from implementing cost-effective energy efficiency improvements.³ However, in the past few years building performance data for the multifamily sector has become more broadly available nationwide, and the multifamily sector is beginning to track water alongside energy performance.

So, are multifamily apartment stakeholders putting this increasingly available energy and water data to its full use? The short answer is no. The multifamily sector underuses building performance data. For example, owners and managers often comply with benchmarking and transparency policies but are not analyzing and acting upon the data to achieve greater efficiency. Residents lack access to performance data while apartment shopping and consequently do not factor performance in decision making, which is a missed opportunity to motivate owners to invest in efficiency. Investors and appraisers have limited access to performance data for comparable buildings, and without the valuation context, they often under-value in efficient buildings. Thus, the data is still in its infancy in catalyzing efficiency investments.

This report examines why the market underuses performance data and recommends, based on examples that show early promise, how governments and efficiency program implementers⁴ can turn this

¹ “Quick Facts: Resident Demographics,” From Tables “U.S. Households- Renters & Owners” and “What Type of Structure Do Renter Households Live In?,” *National Multifamily Housing Council*, accessed August 25, 2016, <http://www.nmhc.org/Content.aspx?id=4708>.

² “The Multifamily Energy Savings Project,” *American Council for an Energy-Efficient Economy*, accessed August 26, 2016, <http://aceee.org/multifamily-project>.

³ Andrea Krukowski and Andrew Burr, *Assessing Energy Benchmarking and Disclosure Policies* (Washington, DC: Institute for Market Transformation, 2012), http://www.imt.org/uploads/resources/files/Energy_Trans_MFSector_IMT_Final.pdf.

⁴ IMT defines “efficiency program implementers” as organizations, often utilities and often funded by rate-payers, that are tasked with increasing efficiency in a certain territory or jurisdiction through demand-side management, incentive programs, technical assistance, outreach, and other means of engagement. Examples include CLEARresult, Elevate Energy, the New York State Energy Research and Development Authority, and Pacific Gas & Electric.

Until all core private and public stakeholders work together to use and value building performance data effectively in consistent, transparent formats, huge energy and water efficiency opportunities will be left unrealized.

growing wealth of information into action and better engage stakeholders to unlock economic and environmental benefits.

Turning Data into Action: Recommendations for Key Stakeholders

In an ideal multifamily market, stakeholders would routinely and fully factor a building's energy and water performance into investment, valuation, occupancy, operational, and leasing decisions and transactions, which would lead to greater efficiency investments. Governments and efficiency program implementers would set up conditions to access and distribute building performance data throughout the market, helping building owners and managers, as well as residents, lenders, and investors, use the data in their decision-making processes. Additionally, governments and efficiency program implementers would use the data to design and target their own efficiency programs and financing. Based on market feedback, this report recommends the following actions to better engage key stakeholders in widely adopting energy and water efficiency in the multifamily sector.

Engaging Owners and Managers (Page 20)

Governments and efficiency program implementers should play a leading role in helping owners and managers turn data into action and ensuring that benchmarking and transparency policies are working effectively through the following steps.

- **Improve communications around benchmarking compliance.** Data access remains a problem. Governments and efficiency program implementers should help building owners and

managers better understand how to access their building performance data; pair benchmarking and utility access legislation together; and include utility data access options in their benchmarking and compliance communications with building owners and managers.

In addition, the market is confused over the purpose of benchmarking and how it is a foundational tool that leads to greater efficiency. Governments and efficiency program implementers should help building owners and managers understand how to deploy the data to spur and track efficiency improvements, save on operational costs, and attract and retain residents; tailor benchmarking scorecards for owners and managers; develop tools for interpreting and comparing scores; reference year-to-year building performance changes; and provide examples and resources for action.

- **Improve benchmarking data quality.** The data is only as useful as it is accurate, and it is critical that governments and efficiency program implementers assure benchmarking data credibility. Governments should establish data quality standards and use their enforcement powers to hold submitters accountable for accurate data. Governments and efficiency program implementers should hold education and training programs for building owners and managers to ensure data accuracy.
- **Create programs to drive action.** With more and more governments and efficiency program implementers finally having access to multifamily performance data through benchmarking and transparency programs, now is the time for them to design more effective programs for building owners and managers to encourage investment in energy and water efficiency. Specifically, they should use performance data to analyze their multifamily building stock to understand owner and manager capacities and needs, provide tools for multifamily buildings including specialized data analysis support and financing programs for efficiency upgrades, tailor programs to owners and managers, and help them identify and create efficiency projects and access financing especially around major financial events including refinancing. Finally, to the extent feasible, governments should consider implementing mandatory building performance standards.

Engaging Residents (Page 33)

Governments and efficiency program implementers should support the private sector, where appropriate, in strengthening resident demand for energy and water efficiency through the following steps.

- **Help residents use benchmarking data while apartment shopping.** If residents factored building performance data into their apartment decision-making, building owners would be more motivated to invest in efficiency and maintain a competitive edge against their peers. Governments and efficiency program implementers should work with the private sector to build efficiency demand by providing current and prospective apartment residents with the resources to collect, analyze, and act upon energy and water performance data when deciding where to live. In areas with a large amount of multifamily rental units, programs can help residents understand where to get energy and water performance data and how that could impact occupancy costs.
- **Help promote high-performing market-rate apartments and establish resident demand.** The market perceives a lack of resident demand for efficiency. In the market-rate sector, governments and efficiency program implementers should work with the private sector, particularly building owners, to develop pilot programs that highlight the value proposition of high-performance buildings to residents and prove the demand. One example is for owners to offer renters efficiency packages that owners will install at the owner's cost and then charge

residents for the efficiency amenities services. Owners would track how residents value efficiency based on rent premiums, comfort, lease-ups, and turnover.

Engaging Lenders and Investors (Page 37)

Governments and efficiency program implementers should support innovative lenders and investors using energy and water performance data and encourage other lenders and investors to do the same through the following steps.

- **Engage lenders and investors to use energy and water performance data.** Benchmarking data, including metrics such as ENERGY STAR scores, are effective tools for communicating a simple performance indicator for lenders and investors, yet only a few innovative leaders are incorporating this data into their standard business practices. Governments and efficiency program implementers should consider engaging local lenders and investors to encourage them to use benchmarking data in their underwriting and due diligence and help them integrate building performance data into their standard business practices.
- **Encourage lenders and investors to improve product offerings to incentivize efficiency.** Lenders and investors can use benchmarking data to encourage building owners and managers to monitor and address their energy and water consumption, which in turn can improve a building's financial performance, reduce default risk, and build demand for efficiency. To assist this, governments and efficiency program implementers should consider creating efficiency financing partnerships that use building performance data. In addition, when governments and implementers provide real estate financing, they should reward owners and developers who are actively managing their energy use and, where appropriate, require small and medium owners to benchmark as a financing condition.

Until all core private and public stakeholders work together to use and value building performance data effectively, in consistent, transparent formats, huge energy and water efficiency opportunities will be left unrealized.

Introduction

Multifamily housing in the United States represents a significant portion of the residential sector, with 12 percent of the country—almost 18.5 million households and close to 38 million residents—renting housing in buildings with five or more units.⁵ These numbers only stand to grow as multifamily construction is at record levels with millennials and empty nesters increasingly choose urban density over suburban homes.

As this market grows, so too does the importance of utility costs. High utility bills affect renters in both market-rate and affordable housing units, with research demonstrating that the cost of energy utilities can disproportionately burden lower-income multifamily residents. Inefficient buildings penalize building owners and managers, as they unknowingly miss out on the economic benefits of high-performance properties. The American Council for an Energy-Efficient Economy (ACEEE) estimates that cost-effective energy upgrades in multifamily buildings could improve efficiency by 15–30 percent, resulting in annual savings of close to \$3.4 billion for owners and residents.⁶

In 2012, the Institute for Market Transformation (IMT) found that despite these massive potential benefits in reduced energy costs for building owners and residents, a lack of available building performance data was hampering the implementation of energy efficiency improvements in multifamily buildings.⁷ Put simply, you can't manage what you don't measure.

Since that finding, benchmarking and transparency laws have made energy and water performance information in the multifamily sector more broadly available in jurisdictions nationwide. Recognizing this, IMT sought to examine whether stakeholders in the multifamily apartment sector (including building owners, managers, residents, lenders, investors, governments, utilities, brokers, and nonprofits) are putting this data to its full use. To explore this, from late 2015 to early 2016 IMT conducted a series of interviews and two roundtable discussions with policy administrators; affordable and market-rate multifamily building owners and managers; lenders and investors; and for-profit and nonprofit energy service providers.

In speaking with these in-the-field experts, IMT concluded that the multifamily sector underuses building performance data. For example, owners and managers often comply with benchmarking and transparency policies but are not analyzing and acting upon the data towards greater efficiency. Residents lack access to performance data while apartment shopping and consequently do not factor performance in decision-making, which is a missed opportunity to motivate owners to invest in efficiency. Investors and appraisers have limited access to performance data for comparable

⁵ “Quick Facts: Resident Demographics,” From Tables “U.S. Households- Renters & Owners” and “What Type of Structure Do Renter Households Live In?,” *National Multifamily Housing Council*, accessed August 25, 2016, <http://www.nmhc.org/Content.aspx?id=4708>.

⁶ “The Multifamily Energy Savings Project,” *American Council for an Energy-Efficient Economy*, accessed August 26, 2016, <http://aceee.org/multifamily-project>.

⁷ Andrea Krukowski and Andrew Burr, *Assessing Energy Benchmarking and Disclosure Policies* (Washington, DC: Institute for Market Transformation, 2012), http://www.imt.org/uploads/resources/files/Energy_Trans_MFSector_IMT_Final.pdf.



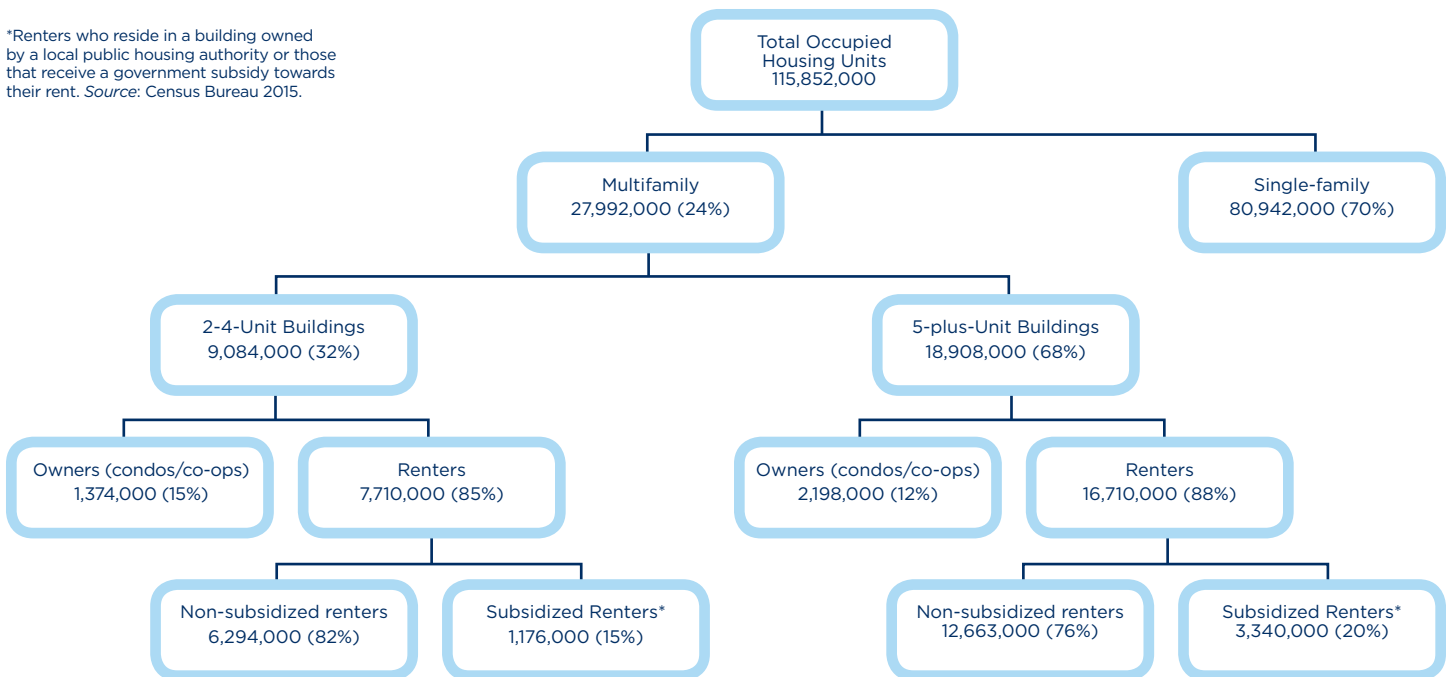
buildings, and without the valuation context, they often under-value and under-invest in efficient buildings. Thus, the data is still in its infancy in catalyzing efficiency investments. This report examines why and recommends, based on examples from leaders that show early promise, how governments and efficiency program implementers⁸ can turn this growing wealth of information into action and better engage stakeholders to unlock economic and environmental benefits.

⁸ IMT defines “Efficiency program implementers” as organizations, often utilities and often funded by rate-payers, that are tasked with increasing efficiency in a certain territory or jurisdiction through demand-side management, incentive programs, technical assistance, outreach, and other means of engagement. Examples include CLEARresult, Elevate Energy, the New York State Energy Research and Development Authority, and Pacific Gas & Electric.

Barriers to Energy Efficiency in the Multifamily Sector

The residential housing market in the United States is complex and diverse, both in ownership structure and size. Multifamily buildings are residential structures containing more than one separate housing unit, ranging from high-rise urban apartment buildings to low-rise, garden-style apartment complexes. This report focuses on the 16.7 million housing units (“apartments”) in multifamily rental buildings with five or more units, where residents pay rent to a building owner or property manager. IMT defines “small” apartment buildings as five to 20 units and “medium” apartment buildings as 21 to 49 units. IMT refers to “large” apartment buildings as 50 units or more.

FIGURE 1: ACEEE Residential Housing Market Snapshot⁹



⁹ Lauren Ross, Michael Jarrett, and Dan York, *Reaching More Residents: Opportunities for Increasing Participation in Multifamily Energy Efficiency Programs* (Washington, DC: American Council for an Energy-Efficient Economy, 2016) 4, <http://aceee.org/sites/default/files/publications/researchreports/u1603.pdf>. “Subsidized Renters” includes building units owned by public housing authorities and building units receiving government subsidies. “Non-subsidized renters” includes both market-rate and naturally-occurring affordable housing.

Despite massive potential benefits offered by efficiency in the multifamily sector, significant barriers prevent the market from realizing these benefits at scale.¹⁰ These obstacles vary greatly, depending on who owns the building and who occupies the building, and include:

- *Lack of data and data access challenges.* Lack of information on the energy and water performance of multifamily housing significantly limits the actions that can be taken to improve efficiency. Also, data may exist but is inaccessible to those who need it. Reasons for lack of data availability range from utilities having to invest resources to readily provide data, which can take years, to privacy concerns over sharing tenant data.
- *Lack of awareness.* With competing priorities, multifamily owners and property managers might not be aware of efficiency opportunities, or might not have adequate information to prioritize projects that would increase the efficiency of their facilities. Similarly, they might not have the expertise to know how to act on opportunities.
- *Lack of capacity.* Owners and managers might be constrained from more actively managing their buildings' energy and water use.
- *Complexity and fragmentation.* Complex ownership structures and financing considerations, varying codes regulations, differing occupancy profiles, and geographic dispersion, among other factors, make it difficult for policymakers to design and implement effective efficiency programs.
- *Split incentives and lack of explicit resident demand.* Where residents pay their own utility bills in multifamily buildings, owners might not recover investments in efficiency upgrades because residents benefit from the associated utility cost reductions. Also, owners and managers are uncertain about, or doubt, whether residents factor efficiency into their decision-making processes. Both concerns keep owners and managers from prioritizing efficiency investments.
- *Availability of capital.* While the need for efficiency financing solutions to address initial retrofit costs has been well documented, owners, particularly those of affordable housing, might face other budgetary impediments to efficiency. Owners of both market-rate and affordable housing might have other repair and maintenance items or building improvements that compete for capital allocation.

¹⁰ See, e.g. Energy Programs Consortium, *Multifamily Energy Efficiency: Reported Barriers and Emerging Practices* (2013), http://www.energyprograms.org/wp-content/uploads/2013/11/EPC_Report_MultiFamily_Housing.pdf; Phillip Henderson, *Program Design Guide: Energy Efficiency Programs in Multifamily Affordable Housing* (Washington, DC: Energy Efficiency For All, 2015), <http://energyefficiencyforall.org/sites/default/files/EEFA%20PROGRAM%20GUIDE.pdf>; Richard Yancey et al., *Evaluating New York City's Multifamily Building Energy Data for Savings Opportunities, Retrofitting Affordability* (New York, NY: Building Energy Exchange, 2015), http://be-exchange.org/media/BX_RetrofittingAffordability-20150618-Website-2.pdf.

Defining the Data Opportunity

Benchmarking and transparency ordinances collect and share building characteristic data and building performance data, and both types of information are important first steps to efficiency decision making.¹¹ Building characteristic data includes information on the building that is unlikely to change significantly over time—descriptive data such as age, location, square footage, number of floors, and qualitative data such as industry sector. Building performance data includes energy and resource consumption¹² and vacancy rates and may be at varying frequencies¹³ or may come from disparate sources, such as manual tracking, automated data feeds, or utility bills.

Benchmarking and transparency ordinances are policy tools designed to overcome a lack of data. These policies typically have two components: the collection of whole-building performance data from specific building types that exceed designated size thresholds in order to compare these buildings to their peers—known as benchmarking—and the publication of designated portions of that information for use in the market—known as transparency. Under these programs, building owners or managers typically submit monthly, whole-building energy consumption data through ENERGY STAR’s Portfolio Manager software to a jurisdiction, which generally sees compiled annual data.¹⁴ Some jurisdictions also collect water consumption data. Based on the monthly utility consumption information, Portfolio Manager determines a property’s site and source energy use intensity, total annual energy consumption, greenhouse gas emissions, and, if applicable, the water usage per square foot. In addition, owners submit physical characteristics about the property including square footage, rental unit number, and building age, as well as owner and manager contact information. Since the fall of 2014, multifamily building owners and managers submitting complete benchmarking data also generate an ENERGY STAR score, which shows on a scale of 1–100 how energy efficient the multifamily building is compared to similar buildings based on survey data that Fannie Mae, the U.S. Department of Housing and Urban Development (HUD), and other organizations supplied to the U.S. Environmental Protection Agency (EPA).¹⁵

In the United States, 11 local jurisdictions and one state have benchmarking and transparency requirements for multifamily buildings.

¹¹ Other building data, including system characteristics and types of installed equipment and appliances are also relevant to building performance, but this information is generally not collected through government benchmarking policies.

¹² Common resources tracked include electricity, natural gas, fuel oil, water, and waste.

¹³ Common frequencies include 15 minutes, 30 minutes, daily, weekly, monthly, and annually.

¹⁴ Two multifamily benchmarking systems—WegoWise and Brightpower’s EnergyScoreCards—are also widely used and provide more granular and actionable analyses. They have not been referenced in benchmarking laws because they are proprietary, but they robustly communicate with ENERGY STAR and so are often used as the main interface to comply with benchmarking laws.

¹⁵ U.S. Environmental Protection Agency, *ENERGY STAR Score for Multifamily Housing in the United States, Technical Reference* (2014), <https://www.energystar.gov/sites/default/files/tools/Multifamily.pdf>.

FIGURE 2: Comparison of U.S. Multifamily Building Energy Benchmarking and Transparency Policies¹⁶

	Public Data Available	Buildings Included	
Jurisdiction	Released	Size	First Reporting Date to Government
CITIES	Atlanta	- MF ≥50K MF ≥25k	Aug 1, 2015 Jun 1, 2017
	Austin	Yes	MF ≥ 5 units Jun 1, 2011
	Berkeley	-	MF ≥50K MF ≥25K Oct 1, 2016 Oct 1, 2017
	Boston	Yes	MF ≥50K/50 units MF ≥35K/35 units May 15, 2015 May 15, 2017
	Cambridge	-	MF ≥50 units May 1, 2015
	Chicago	Yes	MF ≥250K MF ≥50K Jun 1, 2015 Jun 1, 2017
	District of Columbia	Yes	MF ≥50K Apr 1, 2014
	Kansas City	-	MF ≥100K MF ≥50K May 1, 2017 May 1, 2018
	New York City	Yes	MF ≥50K May 1, 2011
	Philadelphia	-	MF ≥50K Jun 30, 2016
Seattle	-	MF ≥20K Apr 1, 2013	
STATES	California	-	MF ≥50K TBD

¹⁶ For a chart of commercial building energy benchmarking and transparency policies, see <http://buildingrating.org/graphic/us-commercial-building-policy-comparison-matrix>.

Additional Elements			
	Transparency	Water Tracking	Other Requirements
	Sept 2016 Sept 2017 (Energy Star >50)	✓	Audits every 10 years
	Time of Lease	-	Audits & mandatory upgrades for high energy use properties
	>Oct 1, 2016 >Oct 1, 2017	-	Periodic/time of sale or lease energy reports for all buildings
	Oct 1, 2016 Oct 1, 2018	✓	Periodic energy assessments and/or other energy efficiency actions
	Sept 1, 2016	✓	
	>Jun 1, 2016 >Jun 1, 2017	-	Data verification by licensed professional 1st year & every 3 years
	Annually >Apr 1	✓	
	Sept 1, 2018 Sept 1, 2019	✓	
	Annually on Sept 1	✓	Audits & retro-commissioning (LL 87), lighting upgrades & submetering (LL 88)
	>Jun 30, 2017	✓	
	Late 2016	-	
	TBD	-	TBD

The ultimate aim of benchmarking and transparency tools is to drive action.
... However, benchmarking data alone will not identify an actionable list of retrofit initiatives.

In addition to these laws, voluntary initiatives exist to engage multifamily properties. For example, in 2013, in partnership with HUD, the U.S. Department of Energy (DOE) expanded its voluntary Better Buildings Challenge to include multifamily housing, having previously only supported the commercial and industrial sectors. The Challenge asks participating building owners and managers to publicly commit to a 20 percent reduction in energy consumption over 10 years. HUD and DOE set a target of engaging 100 voluntary multifamily leaders to join the Challenge, representing 400,000 households. Through fiscal year 2016, 114 multifamily organizations representing 650 million square feet and 700,000 housing units have joined.¹⁷

¹⁷ Ted Toon, email message to Megan Houston, August 11, 2016. See also “Better Buildings Challenge,” *U.S. Department of Housing and Urban Development*, accessed August 25, 2016, <https://www.hudexchange.info/programs/better-buildings-challenge/>.



Integrating Data into the Decision-Making Process

The ultimate aim of benchmarking and transparency tools is to drive action. In the multifamily sector, this means driving practices or facility improvements that lower a facility’s energy and water consumption, thereby reducing the cost of occupancy for its residents and potentially increasing the asset value for the owner. However, benchmarking data alone will not identify an actionable list of retrofit initiatives. Rather, benchmarking is a foundational step to help building owners and others decide when it is appropriate to dig deeper via tools such as energy audits, or help residents and lenders quickly decide whether they want to invest their resources in a property. Benchmarking can also inspire companies to focus on energy and water management where it may not have been a part of their operational practices.

Multifamily owners and property managers can use building performance information at differing levels of granularity—in interval, frequency, and detail such as at the system or resident level—to take a variety of actions and make more-informed decisions. At the building level, this data may inform decisions to improve overall building operations, while at an investment level, owners may combine the data across a portfolio to present an overall assessment and business case for future financing to investors and partners.

FIGURE 3: Beyond Benchmarking: Building-Level Actions to Improve Performance

<p>ACTION</p> <p>Bill multifamily residents for their energy use</p>	<p>ACTION</p> <p>Make capital improvements, with energy efficiency as a consideration</p>	<p>ACTION</p> <p>Implement a near-real-time energy management program</p>
<p>DATA NEEDED</p> <p>Monthly tenant-level performance data (energy and water consumption)</p>	<p>DATA NEEDED</p> <p>Whole building and system-level characteristics, monthly whole building performance data</p>	<p>DATA NEEDED</p> <p>Whole building and system-level information at sub-hourly frequency</p>
<p>SPECIAL CONSIDERATIONS</p> <p>Most multifamily residents who do not have separate utility meters are billed based on whole-building consumption allocated to their unit based on square footage, or a flat utility rate is built into their rent.</p> <p>To bill based on actual energy consumption, resident permission will need to be obtained (likely through the lease) and submeters installed to monitor tenant-level energy consumption.</p>	<p>SPECIAL CONSIDERATIONS</p> <p>Using the energy consumption of the building and the specifications of the current and proposed equipment (boilers, HVAC systems, lighting), a building owner can calculate the expected energy savings of a potential upgrade or contract with an engineering firm to make the assessment.</p> <p>Seasonal, or monthly, data by fuel type are especially useful in considering HVAC and building envelope as part of improvements.</p>	<p>SPECIAL CONSIDERATIONS</p> <p>Near-real-time energy management programs may not be cost effective for multifamily properties - the scope of action that the owner or manager can take based on real-time feedback is limited to central systems and common areas, while the actions of the residents are largely outside of the owner or manager's influence. In resident spaces, owners and managers can influence consumption through lighting upgrades, appliance upgrades, and stakeholder engagement to inform residents about energy efficient behaviors.</p>

Figure 3 details some common building-level actions, the associated data required, and special considerations.

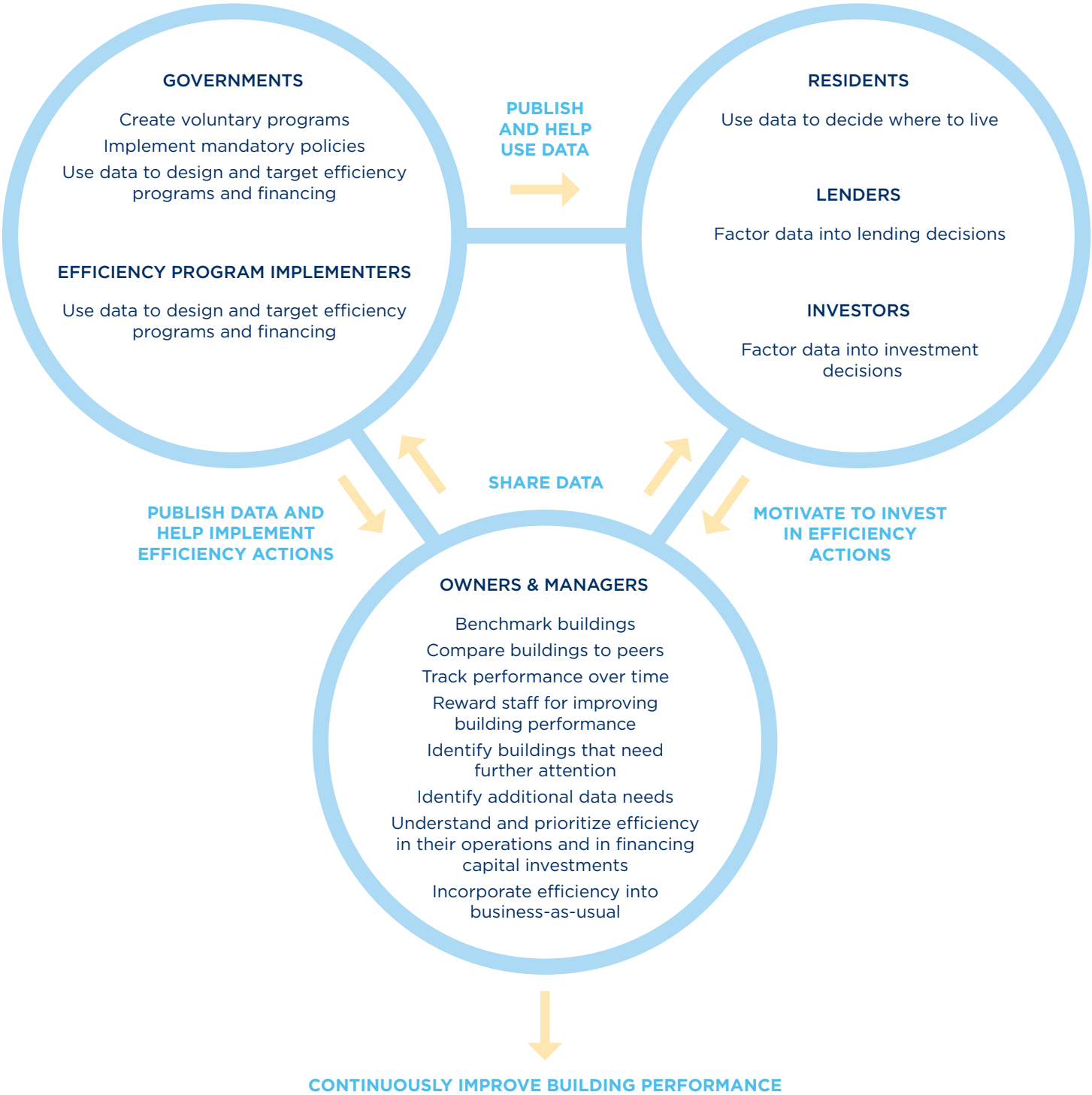
Figure 4 details actions that an individual owner or portfolio owner may take at an investment level.

FIGURE 4: Beyond Benchmarking: Investment-Level Actions to Improve Performance

<p>ACTION</p> <p>Set policies and goals that are consistent throughout portfolio</p>	<p>ACTION</p> <p>Prioritize efficiency projects in properties with the highest need and highest return</p>	<p>ACTION</p> <p>Report portfolio data to corporate benchmarking agencies</p>	<p>ACTION</p> <p>Continue to strategize on engagement by monitoring trends of peers and competitors</p>
<p>DATA NEEDED</p> <p>Once data baselines are established, need automatic and simplistic reporting that analyzes year over year trends</p>	<p>DATA NEEDED</p> <p>Compiled building characteristic and performance information for the portfolio at the building level</p>	<p>DATA NEEDED</p> <p>Detailed building characteristic and performance information for the portfolio at the building level</p>	<p>DATA NEEDED</p> <p>Peer data allows a portfolio manager to determine if portfolio performance standards aligns with industry</p>
<p>SPECIAL CONSIDERATIONS</p> <p>In order to monitor progress, routine reporting of easy to understand internal trends should be published frequently. Whether by spreadsheet or a software platform, custom reports are often necessary to tell a portfolio's story specifically. As the building stock of the portfolio changes, current intensity or consumption must be comparable to baseline data.</p>	<p>SPECIAL CONSIDERATIONS</p> <p>Procure software tools that allow for summary dashboard information on properties, and are able to diagnose and prioritize efficiency issues. These tools should allow data import from multiple sources (manual entry, utility billing upload, connection to each building's metering or BAS infrastructure) and should provide actionable information that is understandable by the decision-maker.</p>	<p>SPECIAL CONSIDERATIONS</p> <p>Different reporting platforms require differing levels of detail on the building stock. Some, such as GRESB, require data to be further refined to include portions of the building that are owner or tenant controlled.</p>	<p>SPECIAL CONSIDERATIONS</p> <p>Data, or well-used data methodologies from others, must be readily available in order to benchmark against peers. Companies seeking to benchmark must often subscribe to a service in order to receive the data, and incur yearly subscription fees.</p>

In an ideal market, multifamily stakeholders would incorporate benchmarking data into business as usual, which would lead to greater efficiency investments. While building owners and managers are typically the stakeholders who ultimately decide whether and how they will use benchmarking data to improve their multifamily apartment building's energy and water performance, other multifamily stakeholders are essential to facilitating this process. Government organizations and efficiency program implementers would set up conditions for building performance data to be accessed and distributed throughout the market and use the data internally to design and target efficiency programs and financing. Meanwhile, residents, lenders, and investors would use benchmarking data to decide whether and how they want to invest in an apartment unit or building. Figure 5 depicts a transformed market where these actions work in harmony to benefit all stakeholders.

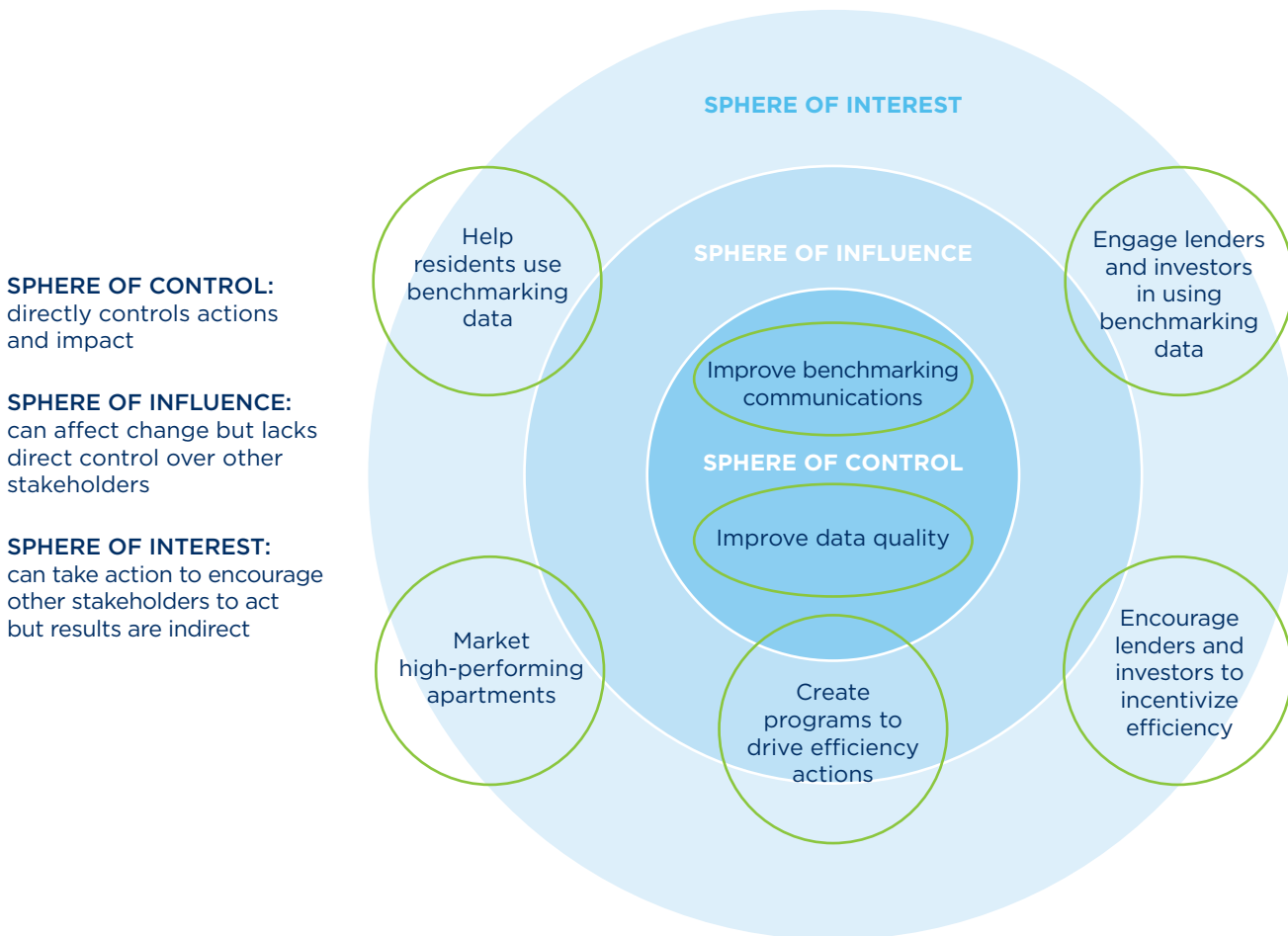
FIGURE 5: Snapshot of a Transformed Market: Integrating Data from Benchmarking into Decision-Making



Unfortunately, multifamily stakeholders underuse building performance data. This report draws from in-the-field feedback and recommends actions for how governments and efficiency program implementers can help stakeholders overcome existing hurdles to wider adoption of energy and water efficiency.

In responding to the recommendations, governments and efficiency program implementers should begin by prioritizing areas where they have the most control. For example, Figure 6 illustrates a city government’s sphere of control for the recommended actions. As one moves from the center circle to the outer circle, the impact of the actor’s actions become more indirect as the underlying market changes rely more heavily on other stakeholders. City governments should prioritize improving benchmarking communications and benchmarking data quality, as these areas are directly within a city government’s control, before dedicating resources to engage residents, lenders, and investors, where governments have interest but less influence or control over stakeholders. Because the level of control an actor has for one action depends on the circumstances, some recommended actions may fall within multiple spheres. Other governments and efficiency program implementers will have different spheres of control.

FIGURE 6: How a City Government Should Prioritize Recommended Actions Based on Sphere of Control



Turning Data into Action: Key Findings and Recommendations

Actions to Engage Owners and Managers

Enacting benchmarking and transparency ordinances is one of the first steps toward transforming the multifamily apartment market into an efficient building stock. Through the following recommendations, governments and efficiency program implementers can ensure that these policies are working effectively and are actively helping owners and managers turn data into action.

Improve Benchmarking Communications

Help owners and managers understand how to access utility data

Owners and managers need accurate, consistent, and streamlined access to whole-building utility consumption information to make data-driven decisions in their buildings and across their portfolios. This typically means access to 12 months of historic whole-building data via an industry standard such as ENERGY STAR Portfolio Manager. Unfortunately, very few owners have this data readily available.

For example, an owner who pays for all the utilities in a master-metered apartment building typically has access to monthly whole-building data via their utility bill. Yet, for separately metered multifamily buildings, monthly whole-building information can be difficult to access. If an owner's utilities do not offer whole-building data, owners must collect the information from tenants, which is very time consuming and labor intensive, may invoke privacy concerns not covered by the lease, and rarely results in 100 percent compliance.¹⁸ Alternatively, owners may pay an energy services company to retrieve the data on behalf of the owner, though even those most interested in actively managing their energy and water use could be deterred from collecting the data if the process is too burdensome or costly.

Fortunately, over 20 utilities now offer programs that provide whole-building data directly to multifamily building owners in some of the largest cities in the United States.¹⁹ Depending on the program, a multifamily building owner may sign into an online utility portal to request and access whole-building data and have the option to automatically send the information to their Portfolio Manager account. However, utility data access in most of the country remains the primary challenge to using building performance data for decision making.

In some locations, such as California, governments pair benchmarking and reporting requirements with requirements for utilities operating in the jurisdiction to provide the data to building owners. Where politically feasible, governments should consider pairing benchmarking and utility access legislation together. Without such requirements, the availability of data in most of the country

¹⁸ This report does not delve into the legal aspects of utility data access. For general information on data access stakeholder engagement, privacy concerns, and utility best practices, see the U.S. Department of Energy Better Buildings Energy Data Accelerator Toolkit, <http://betterbuildingssolutioncenter.energy.gov/toolkits/energy-data-access-blueprint-action>.

¹⁹ U.S. Environmental Protection Agency, *Utilities Providing Energy Data for Benchmarking in ENERGY STAR Portfolio Manager* (2016), https://www.energystar.gov/sites/default/files/tools/Web_Services_Fact_Sheet_01202016_508_1.pdf.

is subject to the discretion of the utility companies, with mixed results. At a minimum, before a government passes a benchmarking and transparency ordinance for multifamily buildings, there needs to be a clear understanding of what data is available through local utilities. Once implementing an ordinance, compliance communications should include instruction about data access. If whole-building aggregate data is unavailable to owners through the utilities, then governments will likely have to phase in the applicability of the program to the multifamily sector, as Atlanta has discovered with its Commercial Building Energy Ordinance, passed into law in April 2015. If utilities are providing whole-building aggregate data to owners, governments should coordinate with owners and managers about how to pull this data from utilities and upload it into the benchmarking software.

Finally, although benchmarking is useful to small and medium multifamily buildings, these structures often are not included in benchmarking laws due to concerns of it being too burdensome a process for these owners and managers. Thresholds are often set as applying to buildings at least 50 units or 50,000 square feet. As it becomes easier for owners to access whole-building data, governments should consider expanding benchmarking ordinances to include small and medium multifamily buildings as well. For example, in Seattle where accessing whole-building data is relatively easy to access for owners, the benchmarking policy applies to buildings at least 20,000 square feet in size.

Better illustrate the significance of benchmarking data, providing local context as necessary

Benchmarking and transparency ordinances help owners and managers generate, among other metrics, a building's energy use intensity, water use intensity, and an ENERGY STAR score. EPA's introduction of an ENERGY STAR score for multifamily buildings has been a significant accomplishment, and it has become the industry standard. However, as with any tool, the score has limits to the types of data it evaluates, the number of buildings upon which the score is based, and regional sampling. Consequently, many owners and managers of both market-rate and affordable apartments question what the ENERGY STAR score is telling them, especially when they are used to making building-level comparisons instead of national comparisons.

A recent Institute of Real Estate Management (IREM) Financial Analysis of Building Energy Efficiency survey found that owners and managers are more likely to use property-level and portfolio-level energy data to make energy comparisons than national data.²⁰ When asked what scale of comparison the multifamily owners and managers make when comparing energy performance data for a single property:

- 81% use previous data for that property
- 40% use portfolio performance data
- 32% use local performance data
- 21% use regional performance data
- 11% use national performance data

Owners and managers often group buildings by the same physical characteristics, location, building class, and whether energy use is landlord or tenant controlled. Currently, they are unsure if an ENERGY STAR score provides the context needed to make comparisons. For example, Prometheus Real Estate Group is a privately held market-rate multifamily owner of over 13,000 apartments on

²⁰ The Institute of Real Estate Management, *Financial Analysis of Building Energy Efficiency: Insights from Investment Real Estate Professionals* (2016 forthcoming). IREM is a member organization for multifamily and commercial real estate managers. Survey participants were from IREM and BOMA groups, with property managers being the well-represented at 44 percent of the participants.

the West Coast. Its Director of Ancillary Services, Mary Nitschke, has had great success in using internal tools that analyze consumption data and compare Prometheus's portfolio against itself to figure out where to concentrate energy and water conservation efforts.²¹ Prometheus looks at sites on a per-unit basis, comparing similarly situated building class, climate, and property types within its portfolio.

In looking for energy and water opportunities among poor-performing buildings, Nitschke offered a rental-rate analogy: the market would not expect a Class A building to have the same rental rate as a Class C building, as amenities, building age, and location factor into the rental rates; so, she would only compare Class A buildings with other Class A buildings for this analysis. Similarly, she looks for physical explanations for why a building may not perform as well as another property. "You can't expect a garden-style, 30-acre property to use the same water as a 1.5 acre, podium-style property," Nitschke noted, as the garden-style has lush landscape and the podium style is mostly concrete.²² She questioned whether the ENERGY STAR score has enough physical property information to compare similarly situated properties and identify conservation opportunities.²³

LINC Housing Corporation, a nonprofit owner and manager of affordable housing throughout California, experiences similar challenges to interpreting ENERGY STAR scores. Samara Larson, LINC's Vice President for Sustainability and Property Services, enters all of LINC's properties into ENERGY STAR Portfolio Manager for the DOE Better Buildings Challenge.²⁴ Larson wonders if a low ENERGY STAR score can be explained by affordable multifamily buildings performing lower than market-rate buildings in general, by building stock age, or by the building being located in an energy-demanding microclimate.

Governments and efficiency program implementers should educate owners and managers about using ENERGY STAR scores to make "apples-to-apples" comparisons, as well as promote owners' use of benchmarking data to make property, portfolio, and local-level comparisons. Governments and efficiency program implementers should work with multifamily apartment stakeholders to identify the physical attributes that would make benchmarking data more meaningful. They could then share this information with the EPA or a third party who could develop a new tool or analysis method using the new set of attributes. Also, as the ENERGY STAR score is based on a static data set and does not update scores based on real-time information, governments and efficiency program implementers should help stakeholders assess how their local peers are performing annually.

In this regard, Seattle has begun to help its owners analyze data at a local level. Owners can enter their energy use intensity, ENERGY STAR score, and building age, as well as whether the multifamily building is low-, mid-, or high-rise into Seattle's online performance dashboard.²⁵ The dashboard then shows how the building compares to other Seattle buildings of the same age range and building height.

"You can't expect a garden-style, 30-acre property to use the same water as a 1.5 acre, podium-style property."

—Mary Nitschke,
Director of Ancillary
Services, Prometheus
Real Estate Group

²¹ Mary Nitschke, interview by Megan Houston, January 29, 2016.

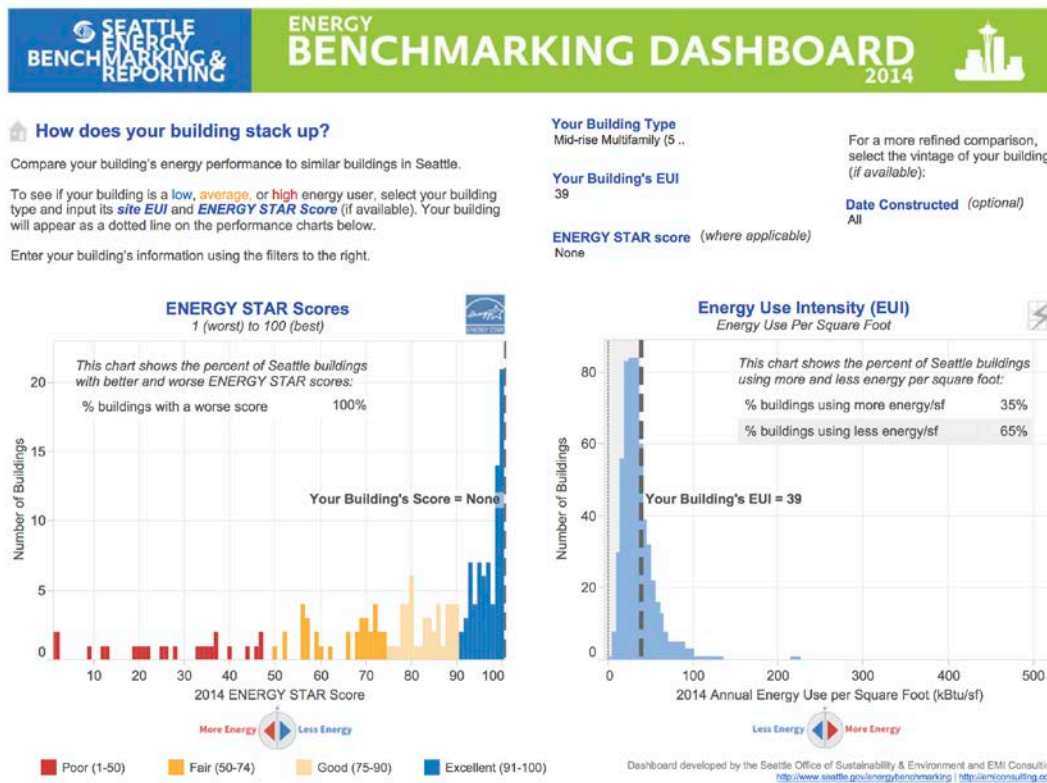
²² Ibid.

²³ Ibid.

²⁴ Samara Larson, interview by Megan Houston, January 12, 2016.

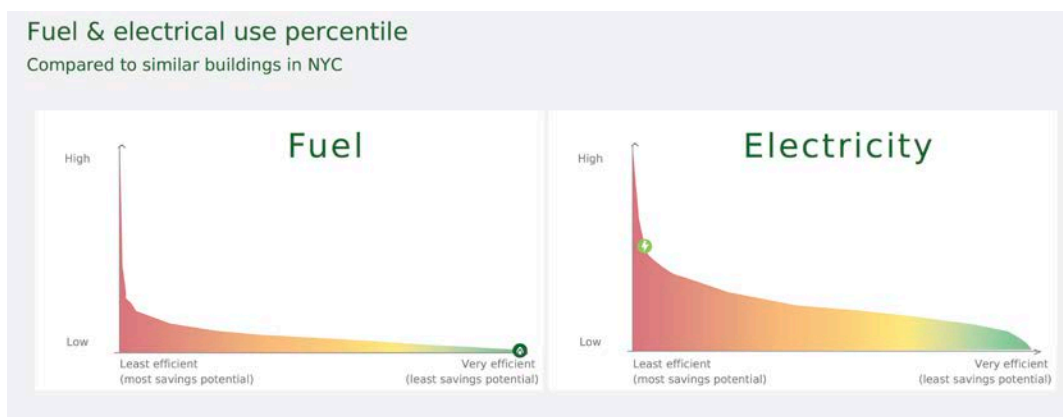
²⁵ "Energy Benchmarking Dashboard," *Seattle Office of Sustainability and Environment*, accessed August 26, 2016, https://public.tableau.com/profile/seattle.benchmarking#!/vizhome/Seattle_Benchmarking_2014_Dashboard_o/EnergyBenchmarkingDashboard.

FIGURE 7: Seattle Energy Benchmarking Dashboard



Similarly, “efficienSEE,” a new tool from the New York City Energy Efficiency Corporation (NYCEEC) and Steven Winter Associates, incorporates New York City’s benchmarking data and the New York State Energy Research and Development Authority (NYSERDA) project data to estimate energy savings potential.²⁶ The tool displays how a building compares to similar buildings in New York City for fuel and electricity efficiency.

FIGURE 8: New York City Energy Efficiency Corporation efficienSEE Calculator Dashboard



²⁶ “efficienSEE Calculator,” *New York City Energy Efficiency Corporation*, accessed August 26, 2016, <http://nyceec.com/efficiensee/>.

Moreover, while the federal government has invested significant resources to make the EPA's ENERGY STAR score, the tool remains under-resourced and challenged by multiple competing priorities. The federal government should invest more aggressively in ENERGY STAR to help improve its tool and the data it compiles.

Finally, it is important for governments and efficiency program implementers to explain to building owners and managers that in addition to the ENERGY STAR score, the process of benchmarking provides other useful data that can be used to look across portfolios and monitor year-to-year changes in building performance. For example, TIAA Global Asset Management, an organization that owns a \$60 billion portfolio of real estate including approximately 30,000 multifamily units nationwide, requires its portfolio to be benchmarked and sets annual energy targets for each property.²⁷ The company's goal is to operate each property at its optimal level. TIAA properties are not required to attain a minimum ENERGY STAR score; however the average portfolio-wide score is 84.²⁸

Help owners and managers share data across internal and external teams

Some owners are beginning to share operations and maintenance data with their asset management and property management teams. JP Morgan Asset Management benchmarks its 51,861 market-rate apartment units by requiring all its properties to enroll in Bright Power's EnergyScoreCards.²⁹ The company also meets with its asset managers on a quarterly basis to review the EnergyScoreCards.³⁰ Similarly for TIAA, benchmarking is an ongoing process—properties have to update their energy data on a monthly basis.³¹ Third-party property management teams receive the utility invoices for the buildings they manage and use the invoices to populate Portfolio Manager. From Portfolio Manager, TIAA's sustainability consultant aggregates the energy data and creates quarterly reports, which are provided to both portfolio and asset managers. Through its sustainability maintenance policies, Forest City Realty Trust requires property managers to review their energy use annually and conduct an energy audit.³² These templates are loaded into Forest City's property management systems so that maintenance receives this instruction as it would other maintenance work orders.

However, many owners lack the resources of TIAA, JP Morgan Asset Management, and Forest City to develop a protocol for sharing building performance data with their management teams. Instead, they merely comply with benchmarking requirements. Owners often hire managers whose duties include complying with benchmarking laws. Management companies may hire one person to lead all of their energy and sustainability efforts, and some managers feel they spend too much time assembling benchmarking reports and not enough time working with owners to act on the information.³³ The managers might submit benchmarking data to the city but never share the results with the owner, which is a missed opportunity to implement efficiency actions.

Even when the same organization owns and manages properties, there can still be an internal disconnect between those who comply with benchmarking policies and those who are in a position to act on the information. Distributing reports to property and asset managers can be one of the biggest challenges, as it involves creating a system to do so and then providing resources to help the property manager interpret the data. As LINC Housing's Samara Larson explains, ideally LINC Housing would share benchmarking data with its asset managers through tailored reports, showing

²⁷ Nicholas Stolatis, interview by Leonard Kolstad, January 15, 2016.

²⁸ TIAA, *TIAA Global Real Estate Sustainability Initiative Quarterly Benchmarking Report* (July 2016).

²⁹ Nicholas Stolatis, interview by Leonard Kolstad, January 15, 2016.

³⁰ Donald Rederscheid, interview by Megan Houston, May 9, 2016.

³¹ Nicholas Stolatis, interview by Leonard Kolstad, January 15, 2016.

³² Joyce Mihalik, email message to Megan Houston, August 8, 2016.

³³ Market-Rate Multifamily Energy Efficiency Value Roundtable, Institute for Market Transformation, Washington, DC, February 23, 2016.

what they expect the property to consume, its actual performance, and trends.³⁴ Yet, LINC Housing has just one staff person in charge of building performance data. Developing reports and resources for asset managers is a huge lift, especially for many small and mid-sized apartment owners who lack the time to develop a protocol. In addition, while third-party energy service providers such as Bright Power or WegoWise offer competitively priced services and help make creating reports and sharing results easier, many apartment owners are reluctant to take on additional upfront expenses.

Governments and efficiency program implementers should provide feedback to owners so that the benchmarking submission moves beyond mere compliance. The City of Chicago sends out an energy scorecard to building owners after they submit their benchmarking reports. The scorecard tells owners how their buildings compare to similar buildings and links owners with utility rebates.³⁵ Seattle is also working to get performance scorecards directly into owners' hands by emailing them to property managers or those who submitted the benchmarking data, and mailing paper copies to the owners. Energy efficiency program leads with Seattle City Light tripled after the scorecards were sent in mid-November 2015, from an average of about 12 leads per month to 36 leads per month.³⁶

To help capacity- and resource-strained owners, governments and efficiency program implementers should consider whether to contract with third-party service providers to offer free services to affordable housing. Chicago's Energy Savers and Massachusetts's Low Income Multi Family Energy Retrofits Program have both done this, providing grant-subsidized Bright Power and WegoWise services respectively to qualified owners enrolled in the programs.³⁷

Lastly, owners need to communicate internally and externally that benchmarking data should be tracked, shared, and acted upon accordingly. While these changes are largely outside of government and efficiency program implementer control, they can still provide owners with high-quality data and encourage owners to ask managers and third parties who submit owners' benchmarking reports to provide monthly or quarterly statements about the owners' buildings' comparable energy use in prior years. If third parties pointed out potential energy and water conservation problems, this would likely help motivate owners to take action.

Improve Benchmarking Data Quality

Apartment owners and managers may be unmotivated to act upon benchmarking data if they question the data's reliability. As IMT's Market-Rate Multifamily Energy Efficiency Value Roundtable participants generalized, apartment owners and managers distrust the benchmarking data that they submit, whether they work with utilities or a third-party service provider to collect meter data.³⁸ If a building has a low or high score, owners and managers often will double-check the data because they suspect—and find—data quality issues, giving them less time to act upon it. Even if data is accurate, it may be categorized or accounted for differently over time, as units and billing periods change, and resolving these discrepancies take time and analysis. As one roundtable participant explained, "If people lose confidence in data, then it's meaningless. This is a real danger."³⁹ A Resources for the Future workshop also found that "[d]ata quality has been an issue in [benchmarking and transparency] programs in virtually all cities," citing problems that include

Distributing reports to property and asset managers can be one of the biggest challenges, as it involves creating a system to do so and then providing resources to help the property manager interpret the data.

³⁴ Samara Larson, interview by Megan Houston, January 12, 2016.

³⁵ Amy Jewel, interview by Zachary Hart, January 15, 2016.

³⁶ Seattle Office of Sustainability and Environment, *Seattle Energy Benchmarking Performance Profiles* (April 2016).

³⁷ Elevate Energy and Community Investment Corporation, *Energy Savers Loan for Apartment Building Owners* (2014), <http://www.elevateenergy.org/wp/wp-content/uploads/Energy-Savers-Loan-Info-Sheet-2014.pdf>; "Low Income Multi Family Energy Retrofits," accessed August 26, 2016, <http://leanmultifamily.org/>.

³⁸ Market-Rate Multifamily Energy Efficiency Value Roundtable, Institute for Market Transformation, Washington, DC, February 23, 2016.

³⁹ Participant, Market-Rate Multifamily Energy Efficiency Value Roundtable, Institute for Market Transformation, Washington, DC, February 23, 2016.

incomplete submissions and unreliable data.⁴⁰ Assuring the quality of data should be a top priority of any jurisdiction with a benchmarking law.

Governments should establish standards for acceptable data quality, including levels of accuracy and completeness, and use their enforcement powers to hold submitters accountable for accurate data. Some jurisdictions have implemented a number of measures to improve the quality of owner-reported data and require the benchmarking report to be completed under the supervision of a qualified benchmarking person as determined in the ordinance or regulation. Other jurisdictions such as Chicago and Montgomery County, Md., allow anyone to complete the benchmarking report but require that the report be verified by the holder of one of a number of certifications. To help ensure that owners and managers have accounted for all building meters, Washington, D.C. asks owners to verify that they have collected and submitted whole-building information, either through collecting data from individual utility meters or through whole-building aggregate data provided by the utility.⁴¹

Many data quality issues can be addressed by educating and training building owners. Governments and efficiency implementers often use reporting checklists and manuals, webinars, and workshops to help owners complete their benchmarking reports accurately. Additionally, a benchmarking help center with well-trained staff can reduce data errors. Finally, jurisdictions have begun using data cleansing techniques to remove erroneous records from their datasets, improving the quality of their analysis.

Create Programs to Drive Action

In an ideal market owners and managers would do all of these actions:

- Compare their portfolios to peers
- Track building performance over time
- Reward staff for improving building performance
- Identify buildings needing further investigation into energy and water consumption
- Identify additional data needs
- Understand and prioritize efficiency into their operations and financing of capital investments
- Incorporate efficiency into business-as-usual

However, these actions can require building owners and managers to invest significant resources, and interviewees from city governments with benchmarking and transparency policies stressed that, in their experience, multifamily owners—even the most innovative ones—generally do not know where to go to or what to do to improve efficiency.

Capacity barriers are a notable hurdle. Multifamily owners and managers have difficulty with even the initial step towards building improvement—benchmarking compliance. As Washington, D.C. reports, multifamily owners have less capacity and fewer resources to devote to benchmarking than their commercial counterparts; they usually try to comply with benchmarking on their own instead of hiring third parties.⁴² Consequently, the District has had to provide more support to D.C.

⁴⁰ Resources for the Future, *Energy Benchmarking and Disclosure, Summary of a Workshop on City Experiences, Market Impacts, and Program Evaluation* (March 2015), <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-15-10.pdf>.

⁴¹ District of Columbia Department of Energy and Environment, *Energy Benchmarking of Existing Buildings Whole Building Data Confirmation Form*, accessed August 26, 2016, <http://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Multifamily%20Whole%20Building%20Data%20Confirmation.pdf>.

⁴² Marshall Duer-Balkind, interview by Caroline Keicher, January 13, 2016.



multifamily owners and managers than commercial owners and managers, and multifamily owners make up the bulk of the benchmarking help center calls.

Moreover, small and medium building owners likely experience more severe capacity constraints than owners of large buildings, as large buildings are often professionally managed or use third-party energy management companies. In Chicago, the first benchmarking deadline for commercial and multifamily buildings applied only to buildings over 250,000 square feet. The city saw 91 percent compliance for multifamily and 92 percent for commercial buildings.⁴³ When Chicago commercial buildings between 50,000 square feet and 249,000 square feet reported their benchmarking data for the first time, commercial compliance dropped to 65 percent. While Chicago multifamily buildings of this size have not yet reported their energy use, a similar drop in compliance would seem likely.

Another challenge is that stakeholders are now not only asking for owners to collect data but also for owners to become experts in data management.⁴⁴ Many large building owners contract for data analysis and energy management services provided by companies including American Utility Management, Aquicore, Bright Power, EnergyCap, Greenprint, Lucid, NWP, Schneider Electric, and WegoWise. As Drew Ades with Housing Partnership Equity Trust claims, “the value in something like WegoWise or Bright Power is the ability to manage a portfolio and quickly identify areas to focus on” based on

⁴³ City of Chicago, Chicago Energy Benchmarking Report (2015) 24, http://www.cityofchicago.org/content/dam/city/progs/env/EnergyBenchmark/2015_Chicago_Benchmarking_Report_Web_16DEC2015.pdf.

⁴⁴ Joyce Mihalik, email message to Megan Houston, August 8, 2016.

budget, staff resources, and retrofit needs.⁴⁵ These companies provide software tools to help owners and managers access utility data, automatically upload data into ENERGY STAR Portfolio Manager, evaluate building performance data, and provide analytics and support. Yet, not every multifamily building owner or manager has the financial resources to invest in energy management tools.

Even if apartment owners and managers want to proceed with making building improvements, they still must overcome the split incentive challenge where owners make decisions but do not pay utilities in the tenant space. Many owners prioritize building energy performance data for the portion of the building in which they pay the utility bills and find whole-building data not as useful when it includes tenant-metered utility information.⁴⁶ Pamela Darmofalski, the Director of National Accounts and Sustainability at Greystar, one of the biggest apartment management companies in the U.S., says that even when whole building data is available, owners are more interested in the common area utilities than the tenant utilities because owners have immediate control over the common areas.⁴⁷ They can improve operating margins by controlling common area use.

In addition, affordable housing owners struggle with how to recoup investment savings when making whole-building improvements in buildings with separately metered tenants. As Samara Larson of LINC Housing noted, even if she benchmarks her properties, analyzes the data, decides what actions to take, and creates a strong business proposal, she would have trouble accessing financing to pay for the upgrades. “I don’t have cash to pay back the loan, and we can only repay savings from owner usage. Yet, 90 percent of the data that I collect is tenant data. Even though I’m very interested in helping these tenants, I have to do so in a way that’s not using my money.”⁴⁸

Multifamily apartment owners and managers are interested in moving beyond simple benchmarking compliance. For example, the previously cited IREM survey found that 37 percent of multifamily building owners and managers were “somewhat interested” and 44 percent were “very interested” in obtaining additional energy management education.⁴⁹ Similarly, 70 percent wanted additional education on energy management for their maintenance teams.⁵⁰ To help owners and managers overcome barriers and turn data into action, governments and efficiency program implementers need to create programs on top of benchmarking and transparency policies and provide more intensive levels of assistance to help owners and managers improve their building performance. DOE, among others, is working diligently to create such programs, but a higher promotion level of its efforts is needed.

Analyze multifamily building stock

Governments and efficiency program implementers need to understand the capacity of owners and managers and tailor assistance accordingly. Specifically, it would be helpful for them to understand how many buildings the owner or manager has in his or her portfolio, whether the owners use third-party managers, and the business formation of these organizations. For example, knowing how much of a city’s apartment stock is owned by individuals, limited liability corporations, or real estate investment trusts could help cities estimate the need for additional resources within the multifamily sector, as individual owners usually have less capacity for efficiency actions. One example of a survey providing the level of detailed information needed to develop a multifamily

“The value in something like WegoWise or Bright Power is the ability to manage a portfolio and quickly identify areas to focus on” based on budget, staff resources, and retrofit needs.

—Drew Ades, former President and CEO, Housing Partnership Equity Trust

⁴⁵ Drew Ades, interview by Megan Houston, February 1, 2016.

⁴⁶ See also, Bright Power, *EnergyScoreCards Minnesota: Results from Energy and Water Benchmarking in 500+ Minnesota Multifamily Buildings* (June 30, 2015), <http://mn.gov/commerce-stat/pdfs/bright2016-mfbenchmark-final.pdf> (highlighting that building owners were most interested in owner utility performance).

⁴⁷ Pamela Darmofalski, interview by Megan Houston, February 29, 2016.

⁴⁸ Samara Larson, interview by Megan Houston, January 12, 2016.

⁴⁹ The Institute of Real Estate Management, *Financial Analysis of Building Energy Efficiency: Insights from Investment Real Estate Professionals* (2016 forthcoming).

⁵⁰ Ibid.

market profile is HUD's Renter Housing Finance Survey. The survey collects data on apartment financial and managerial characteristics, such as ownership structure and mortgage information.

In addition, governments and efficiency program implementers should look to use existing survey data about building metering configurations to identify multifamily buildings that are master metered. For example, Apartment Insights provides property information that includes utility fuel types and metering configuration.⁵¹ By knowing where these buildings are and who owns them, governments and efficiency program implementers should identify and potentially target those in need of retrofits where owners might not be stifled by the split incentive barrier. Governments should also explore working with utility service providers to collect such data. The utility serving an area could potentially collect energy distribution and metering information when a building owner fills out a utility application for service and provide it to the government without infringing on privacy laws.

Help owners and managers analyze building performance data

Governments and efficiency program implementers should help owners and managers understand how to use benchmarking data to identify buildings needing further investigation and understand what kind of investigative options are available, whether it is sub-metering, equipment inventory, audits, or retro-commissioning. The goal is to help owners and managers create an actionable list of cost-effective efficiency measures.

Third-party tools exist to do this, and governments and efficiency program implementers should provide multifamily building owners and managers with resources on the types of analytical tools available, the reasons for using each tool, and its cost. They should also develop a questionnaire for property and asset managers to ask maintenance personnel about common problems they experience during building management, providing them a channel for clearer communication. Asset managers desiring to benchmark may not understand the facilities and maintenance aspects thoroughly enough to communicate effectively with personnel who have daily building management responsibilities.

In addition, governments and efficiency program implementers should promote free analysis tools that already exist in the marketplace. For example, Stewards of Affordable Housing for the Future, funded by HUD's Energy Innovation Fund, developed the "EZ Retrofit" tool, "a free, do-it-yourself Excel-based audit tool that gives multifamily property owners and managers an easy way to identify cost-effective energy and water efficiency upgrades."⁵²

Finally, governments and efficiency program implementers should showcase multifamily owners and managers who have successfully gone through the process of turning data into action. Since benchmarking data alone will not identify an actionable list of retrofit initiatives, it is important for apartment owners and managers to understand exactly the steps that their peers are undertaking and the tools they are using to improve their building performance.

Form partnerships to create integrated programs that help owners and managers turn data into action

Governments and efficiency program implementers should consider creating programs that help owners and managers lower the burden and cost of improving energy and water performance. They should evaluate benchmarking data, and other resources to determine what owners and managers need to implement efficiency actions, determine available resources, and create programs that help owners and managers turn data into action.

⁵¹ Apartment Insights, <https://www.apartmentinsights.com/>.

⁵² "EZ Retrofit: Save Energy, Water and Money at Your Multifamily Property," *Stewards of Affordable Housing for the Future*, accessed June 4, 2016, <http://www.sahfnet.org/ezretrofit.html>.

Governments and implementers should consider providing information and funding to address both owner and tenant spaces regardless of metering configurations. Owners are most interested in common area meter performance as they have the most control over its performance and benefit directly from improvements. Yet, benchmarking data is presented to owners in whole-building form. Third-party energy companies including Bright Power and WegoWise provide services and tools for owners to compare their performance for the owner-paid utilities and identify cost-effective common area improvements, and governments and efficiency program implementers should provide tools that similarly make it easy for owners to assess performance and identify such improvements.⁵³ At the same time, governments and implementers should help overcome the split incentive barrier by creating whole-building incentive programs to ensure owners and managers address efficiency in tenant-controlled spaces. For example, NYSEDA's Comprehensive Option for Multifamily Affordable Buildings aims at buildings achieving 25 percent energy savings and gives enhanced incentives per unit based on achieving even greater energy savings.⁵⁴ These programs often include local partnerships between city governments, efficiency program implementers, utilities, and lenders.

Some jurisdictions are offering more integrated programs using a third party—filled either by a city entity or a nonprofit—to create a “one-stop shop” to offer greater assistance to owners in procuring energy auditing services, selecting projects, hiring contractors, and securing financing. The Seattle RENEW Multi-Family Housing Program, run through Emerald Cities Seattle, walks nonprofit providers of affordable housing through the process of benchmarking their properties, selecting improvement projects, and then implementing and financing them.⁵⁵

Cambridge Energy Alliance, a government outreach organization in Cambridge, Mass., works on ways to use benchmarking data to better target outreach and connect multifamily owners to the Mass Save program.⁵⁶ The Alliance is also piloting WegoWise benchmarking software with 32 multifamily buildings and assists with implementation of the software.⁵⁷ Finally, they are developing a multifamily program with Eversource to offer buildings with five to 50 units a single point of contact to interpret the energy assessment, create an energy efficiency and renewable energy action and finance plan, and coordinate contractors for implementation of the plan.⁵⁸ The pilot will include monitoring results through WegoWise or similar software from Eversource.

In Kansas City, Mo., Elevate Energy, a Chicago-based nonprofit, has collaborated with Blue Hills Community Services, a local nonprofit, on a comprehensive efficiency pilot program for affordable multifamily buildings, which is unaffiliated with the city government.⁵⁹ The service helps owners benchmark their properties, conduct an energy audit, examine potential savings opportunities, and obtain financing and incentives, while providing construction oversight and monitoring of post-construction savings. The program's intent is to spare the owner from having to navigate the complexities of developing an energy project on their own.⁶⁰ In Chicago, Elevate helps building

⁵³ See, e.g. Bright Power, *EnergyScoreCards Minnesota: Results from Energy and Water Benchmarking in 500+ Minnesota Multifamily Buildings* (June 30, 2015), <http://mn.gov/commerce-stat/pdfs/bright2016-mfbenchmark-final.pdf>.

⁵⁴ “Comprehensive Option for Multifamily Affordable Buildings,” *New York State Energy Research and Development Authority*, accessed October 7, 2016, <https://www.nyserda.ny.gov/All-Programs/Programs/MPP-Existing-Buildings/Comprehensive-Option/>.

⁵⁵ Emerald Cities RENEW Multi-Family Housing, *Emerald Cities*, accessed August 26, 2016, <http://emeraldcities.org/renewretrofits/housing>; Steve Gelb, interview by Caroline Keicher, January 8, 2016.

⁵⁶ Cambridge Energy Alliance, <http://cambridgeenergyalliance.org/>.

⁵⁷ Seth Federspiel and Hanaa Rohman, interview by Caroline Keicher, December 15, 2015.

⁵⁸ John Bolduc, email message to Megan Houston, August 9, 2016.

⁵⁹ “Community Services, Building Efficiency Solutions,” *Blue Hills Community Services*, accessed August 26, 2016, <http://www.bhcsmo.org/energy.asp>.

⁶⁰ Stacy Purvis and Louise Sharrow, interview by Zachary Hart, January 22, 2016.

owners make energy-saving improvements as a way to preserve affordable housing.⁶¹ The program provides a free assessment, recommends practical energy and water saving improvements, solicits bids from qualified contractors, assists with financing options, provides construction oversight, and monitors utility bills for two years post-retrofit. Elevate partners with Community Investment Corporation to finance energy efficiency measures in multifamily buildings.

The City of New York's Retrofit Accelerator helps owners and operators of privately owned buildings reduce operating costs and increase the sustainability of their properties through energy and water upgrades.⁶² The Accelerator takes advantage of insights gleaned from the city's benchmarking ordinance, Local Law 84, and its Energy Audits and Retrocommissioning ordinance, Local Law 87, to implement data-driven outreach to identify and assist building owners that have a high opportunity for energy savings.⁶³ Once these building owners have been engaged, the Retrofit Accelerator team of efficiency advisors provides independent, customized technical assistance at no cost to help speed the uptake of energy and water upgrades. The technical assistance can take the form of referrals to qualified firms for project financing or information about available city, state, and utility incentives. In addition to the Retrofit Accelerator, the City of New York created the Building Energy Exchange, a nonprofit dedicated to providing educational resources and research on energy efficiency in buildings.⁶⁴ The Building Energy Exchange hosts classes and events that aim to increase contact between design and construction professionals and real estate professionals.

While these one-stop shop programs undoubtedly address barriers such as time constraints, lack of knowledge, and lack of access to capital, they are expensive to maintain. However, these extensive programs offer benefits beyond reducing energy and water consumption, including creating local jobs and investments and addressing mayoral and other climate commitments. An area worth further research is why costs have been so high and whether other entities can reduce costs for these services. It remains an open question if one-stop shops can become self-sustaining entities in the multifamily energy services market. As in other industries, if there is more demand among government entities for this service, more market entrants will likely occur, lowering costs and improving quality of service.

Provide support for small and medium buildings

As small and medium building owners and managers need significant support, governments and efficiency program implementers should consider developing programs tailored to support this sector. The NYC Department of Housing Preservation and Development (HPD) has begun to focus on the needs of owners of small and medium buildings who may lack capacity and expertise to tackle complicated retrofit projects. NYC HPD's Green Housing Preservation Program (GHPP) helps small and medium multifamily buildings improve efficiency through forgivable and no-interest loans for energy and water efficiency improvements,⁶⁵ often leading to 10 percent or more in utility cost savings.⁶⁶ In exchange for the favorable loans, at least half of the project hard costs

⁶¹ "Multifamily Buildings," *Elevate Energy*, accessed August 26, 2016, <http://www.elevateenergy.org/for-building-owners-managers/multifamily-buildings/>.

⁶² NYC Retrofit Accelerator, <https://retrofitaccelerator.cityofnewyork.us/>; Ufei Chan and Ali Levine, interview by Caroline Keicher, December 22, 2015.

⁶³ The Accelerator also does work with Housing Preservation and Development and the Housing Development Corporation to come up with strategies specific to the affordable housing sector.

⁶⁴ Building Energy Exchange, <http://be-exchange.org/>.

⁶⁵ New York City Department of Housing Preservation and Development, *Green Housing Preservation Program Term Sheet* (January 2016), https://www1.nyc.gov/assets/hpd/downloads/pdf/developers/term-sheets/green-housing-preservation-program-term-sheet_january-2016.pdf; New York City Department of Housing Preservation and Development, *Green Housing Preservation Program (GHPP) Technical Assistance Services Frequently Asked Questions for Firms and Borrowers* (March 2016), <http://www1.nyc.gov/assets/hpd/downloads/pdf/GHPP-TA-FAQ.pdf>.

⁶⁶ New York City Department of Housing Preservation and Development, "City Housing Agencies Announce New Green Housing Preservation Program to Deliver on Key Commitments in Mayor's Affordable Housing Plan and OneNYC," May 13, 2015, <http://www1.nyc.gov/site/hpd/about/press-releases/2015/05/05-13-15.page>.

must go towards energy and water conservation measures and the property must remain affordable for a certain period. NYC HPD is focusing on an underserved market here, as projects that already receive Low Income Housing Tax Credits and HPD assistance are ineligible for the GHPP.

Use data to shape government and efficiency programs and target resources

In jurisdictions that collect building performance data, governments and efficiency program implementers should use that information to create targeted programs that address the best efficiency opportunities.⁶⁷ As of July 2016, several jurisdictions had published benchmarking reports giving summary statistics about their building stocks that reveal interesting patterns in the data. For example, New York City's first benchmarking report found a correlation between the number of asthma-induced emergency room visits and the average energy use intensity in a neighborhood, identifying a potentially interesting area of further investigation.⁶⁸ Over time as jurisdictions shift their focus away from implementing new policies, they will be able to turn their attention to mining benchmarking data for further insights into the nature of their local building stocks.

Insights from benchmarking data and other sources such as audits can be used to improve the design of programs and incentives and optimize marketing. Particularly actionable findings may be possible in those jurisdictions that collect a combination of operational and asset data. New York City's Retrofit Accelerator and Building Energy Exchange have used benchmarking and audit data to discover the most promising efficiency investments in the city's multifamily building stock. The report "Retrofitting Affordability" found that 77 percent of the recommended energy conservation measures in energy audits for affordable multifamily buildings had a simple payback of less than 10 years, over 50 percent of the measures paid back in five years or less and 26 percent paid back in less than three years.⁶⁹

In Chicago, staff at Elevate Energy stressed that audit data collected from the multifamily program has helped them make better energy conservation recommendations, improve their savings predictions, and increase their familiarity with the prevalent building types in their market. In addition to improving the quality of their services, energy audit data has helped Elevate Energy more accurately target segments of owners when doing program outreach.⁷⁰

Governments and efficiency program implementers may find it useful to create programs that integrate benchmarking data with critical entry points into an owner's financial cycle. For example, refinancing is an optimal time for owners to implement efficiency measures, as owners are likely already considering capital improvements. Governments and implementers could use benchmarking data to conduct well-timed outreach to target low performing buildings approaching refinancing and provide incentives that encourage efficiency measures.

Finally, as governments and efficiency program implementers begin to analyze their annual data to create programs, they may find that they want to collect more detailed data than annual benchmarking information. For example, Cambridge, Mass., is interested in using monthly data to analyze seasonal trends and conduct certain energy modeling but some staff are uncertain as to why EPA will not provide this data to them.⁷¹ Governments and efficiency implementers interested

⁶⁷ For background on why utilities benefit from using benchmarking data, see Andrea Krukowski, *Creating Value from Benchmarking: A Utility Perspective* (Washington, DC: Institute for Market Transformation, August 2014),

⁶⁸ City of New York, New York City Local Law 84 Benchmarking Report (August 2012), 9. http://www.nyc.gov/html/gbee/downloads/pdf/nyc_ll84_benchmarking_report_2012.pdf.

⁶⁹ "Richard Yancey et al., *Evaluating New York City's Multifamily Building Energy Data for Savings Opportunities, Retrofitting Affordability* (New York, NY: Building Energy Exchange, 2015), http://be-exchange.org/media/BX_RetrofittingAffordability-20150618-Website-2.pdf.

⁷⁰ Kathryn Eggers, Marjorie Isaacson, and Jason Ransby-Sporn, interview by Zachary Hart, January 26, 2016.

⁷¹ John Bolduc, email message to Megan Houston, August 9, 2016.

in such detailed data should work with the EPA and other stakeholders to assess the feasibility of accessing this information from the existing ENERGY STAR Portfolio Manager reporting system.

Consider mandatory building performance standards

Governments should consider requiring building owners to make investments in the performance of their buildings. If they do so, they should use these policies as they do with energy codes to require a minimum efficiency performance for buildings subject to the standard.⁷² For example, in Austin, Texas, the city's audit requirements for multifamily buildings mandates building efficiency improvements if a building's audit results show that it uses more than 150 percent of the average energy per square foot of Austin multifamily buildings. High energy users are given 18 months to reduce their energy consumption by 20 percent.⁷³

Jurisdictions implementing mandatory building performance standards should ensure that multifamily building owners have the technical and financial resources to comply with the law, and that those owners understand how efficiency investments may offer long-term financial savings. Austin Energy, the utility that runs the city's energy benchmarking and audit policy, uses the data from multifamily energy audits to connect owners with rebates and reported that building owners implemented over 100 projects using utility funding in each of the first two years of the policy.⁷⁴ Owners and property managers have indicated that they would not have pursued the building improvements without the combination of the policy requirements and the rebates.⁷⁵

Actions to Engage Real Estate Stakeholders

Benchmarking and transparency laws generate data to better allow real estate market actors beyond building owners and managers—residents, investors, and lenders—to factor the value of energy and water efficiency into their purchasing and leasing decisions. Governments and efficiency program implementers should support the private sector, where appropriate, in strengthening resident demand for energy and water efficiency. Governments and efficiency program implementers should support innovative lenders and investors using energy and water performance data and encourage other lenders and investors to do the same.

Help Residents Use Benchmarking Data and Value Efficiency

Residents are an underused resource to motivate owners to invest in efficiency. In a perfect market, renters would prefer energy- and water-efficient apartments, which in turn would translate into increased rents for market-rate owners. In addition, as renters in high-performing buildings should experience increased comfort and steadier utility bills compared to more standard apartments, the residents may stay longer in that apartment. “A key to maximizing [net operating income] is through resident retention,” as owners and managers benefit from reduced vacancies, fewer tenant

⁷² In addition, by raising awareness and increasing the cost of energy, and thereby increasing the cost savings resulting from energy efficiency, a robust price on carbon might motivate building owners to increase energy efficiency investments and serve as a complement to (or substitute for) building performance standards. For a discussion of the potential economy-wide impact of putting a price on carbon, see https://www.wri.org/sites/default/files/Putting_a_Price_on_Carbon_Emissions.pdf.

⁷³ “ECAD Ordinance FAQs,” Austin Energy, accessed August 27, 2016, http://austinenergy.com/wps/portal/ae/energy-efficiency/ecad-ordinance/for-multifamily-properties/faqs!/ut/p/a1/jZBBU4MwEIV_iweONAu0Fb3RqFBoxYuUcnFSGiAzkMQdOqvN7YeHEdq95Z93-6-F1SgHBWcvLGaaCY4ab_exfwFXN-NMLjL8Nr1IQjxIpllj86NDwbY_gTS-_QollmaBwMCIcTehfMjFcb_8_EFB1y1xusaFZLoxma8EiivhLK7odWslh1rD7ZUQIKlGe2NRL57EHFcbMTzabOApw49ZoHCFbTGM9xAhB638C56CdgPJsxX7did_znbcB3nm9cKlpRRdVkUKbdaC1vLbCADL1mnHKq6sOkFJoF77K3QAqlSWtkasFJtGIVsZJRJh5MqyR7W6g944SXBhmPfu77y10jeo3y366Q7J7zj1UE7Knb-H1w9Ql24qy2/dl5/d5/L2dBISEvZoFBIS9nQSEh/.

⁷⁴ Jaime Gomez and Brian Kennedy, interview by Caroline Keicher, January 14, 2016.

⁷⁵ Ibid.

If owners and managers believe that prospective and current residents factor building energy and water performance data into their decision-making processes when deciding where to live, they will be more motivated to improve their building performance and stay competitive among their peers.

turnovers, and increased lease conversions.⁷⁶ In the affordable housing market, where rents are regulated and demand for subsidized units is strong, vacancy rates and rent premiums generally do not apply. However, factors such as increased comfort and lower turnover do come into play when discussing how energy and water efficiency provide advantages to affordable housing owners.

Owners and managers constantly try to understand, predict, and provide the amenities and services that residents value. If owners and managers believe that prospective and current residents factor building energy and water performance data into their decision-making processes when deciding where to live, they will be more motivated to improve their building performance and stay competitive among their peers. However, where apartment residents lack an easy way to identify how a multifamily apartment is performing, as is the current situation in most jurisdictions, owners and managers often believe that residents ignore energy and water performance in their leasing decisions.

Some innovative owners and managers market building performance data to their residents. AvalonBay implements a Green Label program in all its new construction that demonstrates to customers how much they may save on utilities compared to an average older apartment in the

⁷⁶ National Apartment Association, National Multifamily Housing Council, and Institute of Real Estate Management, *Multifamily Housing: A Comprehensive Guide for Investors, Developers, Apartment Professionals, Suppliers and Students* (2015), 22.

neighborhood.⁷⁷ Prometheus tests how to market a particular efficiency feature and then instructs its leasing agents across the portfolio to carry out the same effective messaging. For example, it installed energy-efficient windows at one unit on a property and achieved a premium in rent for that apartment over other apartments within the same property by marketing the quietness and sound proofing that the windows helped produce.⁷⁸ Forest City provides green and energy efficiency brochures as part of its leasing packets for new buildings to draw attention to design features.⁷⁹

Yet, IMT's roundtable participants asserted that the majority of owners and managers do not believe that residents value high performance in a way that translates into the owner's bottom line, which is consistent with other market feedback.⁸⁰ IREM's survey found that 78 percent of the respondents characterized prospective renters as either neutral or unwilling to pay more for a unit in an energy-efficient apartment building.⁸¹ Bill Green with Woods Partners found that there is not a premium for green buildings, though high performance may increase the value of the property and help with a resale.⁸² JP Morgan Asset Management's Donald Rederscheid said that residents use energy efficiency as a tiebreaker, depending on the location of the property, but will not pay more for an ENERGY STAR-labeled apartment than a non-ENERGY STAR apartment.⁸³ Energy efficiency helps keep JP Morgan Asset Management's properties competitive but in contrast, the company is beginning to explore if residents will pay a premium for wellness, as this term has been easier to market to residents.⁸⁴ NMHC's vice president of industry technology, Rick Haughey, acknowledged that the discrepancy between what renters say about valuing a building's sustainability and what owners believe deserves further analysis.⁸⁵

Help residents use benchmarking while apartment shopping

The long-term prospects for efficiency in the multifamily sector likely rest on the emergence of residents expressing stronger demand for energy- and water-efficient apartments. Governments and efficiency program implementers should ensure that multifamily apartment residents have the tools, resources, and knowledge needed to collect, analyze, and act upon energy and water performance data.

A few city and state agencies are working on this. Through its Clean Energy Fund initiative, NYSERDA is launching a National Building Label campaign designed to help the market access a label that easily communicates a building's energy performance. This initiative is in progress and it is too early to tell how the label will help residents, but it is promising. In addition, the Urban Sustainability Directors Network and Global Philanthropy Partnership awarded the City of Bloomington, Ind., funding to create Rent.Rocket.org, a map-based online tool that allows renters to search for housing and compare utility costs.⁸⁶ Fourteen other cities are participating, including Columbia, Mo.; Ann Arbor, Mich.; and Evanston, Ill., and are launching websites for their cities.

⁷⁷ AvalonBay, *Reaching Scale, Corporate Responsibility Report* (2015), http://www.avaloncommunities.com/~/_media/Images/Corp/CorporateResponsibilityRevamp/2015-Corporate-Responsibility-Report.pdf?la=en; Business Wire, "AvalonBay's Green Label Energy Program Reinforces Commitment to Building Environmentally-Friendly Apartment Communities that Customers Value," March 3, 2016, <http://www.businesswire.com/news/home/20160303006537/en/AvalonBay%E2%80%99s-Green-Label-Energy-Program-Reinforces-Commitment>.

⁷⁸ Mary Nitschke, interview by Megan Houston, January 29, 2016.

⁷⁹ Joyce Mihalik, email message to Megan Houston, August 8, 2016.

⁸⁰ Market-Rate Multifamily Energy Efficiency Value Roundtable, Institute for Market Transformation, Washington, DC, February 23, 2016.

⁸¹ The Institute of Real Estate Management, *Financial Analysis of Building Energy Efficiency: Insights from Investment Real Estate Professionals* (2016 forthcoming).

⁸² Bill Green, interview by Megan Houston, January 29, 2016.

⁸³ Donald Rederscheid, interview by Megan Houston, May 9, 2016.

⁸⁴ Ibid.

⁸⁵ Brian Croce, "Amenity Evolution," *Multifamily Executive*, March 23, 2016, http://www.multifamilyexecutive.com/property-management/apartment-trends/amenity-evolution_o.

⁸⁶ Rent Rocket, <http://www.rentrocket.org/about>.

However, a problem with RentRocket is that renters have to use a different website than what they likely currently use to search for housing.

The City of Austin has been delivering energy audit data to current and prospective residents since 2011. Austin Energy's multifamily Energy Conservation and Disclosure provisions require building owners or property managers to conduct an energy audit every 10 years. After the audit, the owner receives an audit certificate, confirming the audit was completed and summarizing its results,⁸⁷ and an energy guide that gives a more comprehensive review of the audit results and an estimated monthly electricity bill for an average-size apartment in the property.⁸⁸ Owners must make the energy guide available to prospective tenants before lease signing and to current residents at lease renewal. Most owners comply with these requirements by posting the audit certificate in a publicly accessible place on the premises such as a leasing office or mail room. The policy has had strong compliance with rates around 80 percent. Though Austin's program is admirable, it only covers a small portion of total multifamily housing.

To that end, DOE and CoStar Group, Inc. may have created a game changer for getting residents access to timely energy performance information through a communications channel that residents already use. In May 2016, the entities announced that CoStar would display building energy performance information in its online property platform, which prospective apartment owners and brokers use for real estate transactions.⁸⁹ Moreover, CoStar owns Apartments.com, "the leading online apartment listing website," and ideally CoStar will integrate energy data with its Apartments.com interface.⁹⁰ If that occurs, for the first time, prospective residents may be able to easily access an apartment building's ENERGY STAR score and energy use intensity, allowing apartment seekers to factor in a building's energy performance just as they would any other amenity. This level of integration within the conventional dataset used by apartment seekers should give energy efficiency its best chance to become engrained in consumers' evaluating process.

Assuming the information is easily accessible and free, governments and efficiency program implementers should encourage residents to use the CoStar information and help residents interpret how benchmarking data can be translated into terms they care about. Making data available to the consumer is critical, but so is making the data intelligible. While a multifamily ENERGY STAR score is immensely useful for comparing the whole-building energy performance between similar buildings, it may not be as useful for residents trying to determine how much of their paycheck they will spend on utility bills. Energy use intensity is probably even more opaque to the typical multifamily tenant.

Governments and efficiency program implementers can help residents interpret this information to understand expected energy costs per unit. For example, Northeast Energy Efficiency Partnerships developed a checklist for prospective residents to use to assess the energy characteristics of their future home.⁹¹ Austin Energy conducts community outreach and attends outdoor festivals and events to educate residents about the importance and meaning of energy efficiency metrics such as energy

⁸⁷ Austin Energy, *Multi-Family Disclosure Notice Energy Audit Results*, <http://austinenergy.com/wps/wcm/connect/64093800-2d5f-4901-8c5f-e98c70dfe3f5/ECADDisclosureCertOVERLAY0316HR.pdf.pdf?MOD=AJPERES>.

⁸⁸ Austin Energy, *Energy Guide for Prospective Tenants*, <http://austinenergy.com/wps/wcm/connect/b0b8ab2b-7beb-4961-bb09-5612f2f4b5d3/ECADMFEnergyGuideForm0716HR.pdf?MOD=AJPERES>.

⁸⁹ U.S. Department of Energy, Energy Efficiency & Renewable Energy, "Energy Department Announces Partnership with CoStar Group, Inc. to Expand Visibility of Energy-Efficient Buildings in U.S. Real Estate Marketplace," May 26, 2016, <http://energy.gov/eere/articles/energy-department-announces-partnership-costar-group-inc-expand-visibility-energy>.

⁹⁰ "About Us," *Apartments.com*, accessed August 27, 2016, <http://advertise.apartments.com/about/company>.

⁹¹ Northeast Energy Efficiency Partnerships, *A Guide for Renting and Creating Lower Cost Energy Efficient Apartments and Homes*, (2015), <http://www.neep.org/sites/default/files/resources/A%20Guide%20for%20Renting%20and%20Creating%20Lower%20Cost%20Energy%20Efficient%20Apartments%20and%20Homes.pdf>.

use intensity. The utility has found that residents are receptive to this approach, and it will continue to promote Energy Conservation and Disclosure scores directly to the public.⁹² Governments and efficiency program implementers also may want to work with residents to do pilots that display how ENERGY STAR score and energy use intensity data could potentially translate into total utility costs. Education and awareness advertisements could be created to prompt would-be renters to ask for this information of their leasing agent or broker, similar to how media prompts suggest everyone should know their FICO credit score.

Work with owners to market high-performing apartments to establish resident demand

Owners should work with governments, efficiency program implementers, and nonprofits to develop pilot programs that highlight the value proposition of high-performing buildings to residents and establish resident demand. Owners should consider testing whether and how much residents are willing to pay for efficiency by offering current and prospective residents an efficiency amenities package that owners install at the owner's cost and in turn charge residents a monthly fee for the efficiency amenities service. Owners would use building performance data to explain the potential savings to renters and track performance. Such programs could potentially quantify the market demand for efficiency among market-rate apartment residents and monitor how residents value efficiency through increased comfort, faster lease-ups, and less turnover. If owners better quantify and establish resident demand for efficiency, owners will be more likely to invest in efficiency.

Communicating energy and water efficiency as an amenity to its residents is ripe for discovery. If and when owners have CoStar's Apartments.com tool to communicate the energy performance, which is a market channel that they know residents use to shop for apartments, owners may be more interested in performing energy and water conservation measures and testing whether high performing units are valued by residents more than a typical apartment unit through increased rents or faster lease-ups.

Work with Lenders and Investors to Use Benchmarking Data and Value Efficiency

Both debt and equity multifamily property investors have an interest in the performance of the buildings in which they invest. Equity investors have a high risk in the investment, as they do not run daily operations and their investment is not secured by the property. They make their returns upon sale of the property or by an improvement in its cash flow, which high-performing buildings can positively impact. If equity investors factored a building's energy and water performance into their due diligence and buying criteria, they may choose to only invest in certain high-performing properties or seek a higher rate of return for low-performing ones. This would affect the availability of capital, or rates, for an owner with a lower-performing building and encourage them to make building improvements.

Debt providers, or lenders, have a security interest in the property and make money through owners paying the lender a monthly mortgage payment with interest. Among other things, debt providers want to ensure that the owner will have enough funds to service the debt and that the size of the loan is in reasonable proportion to the apartment value. High-efficiency buildings should have reduced utility expenses, which will increase net operating income and increase the ability of the owner to pay the loan. Lenders are also focused on risk, and they should factor in energy and water price volatility risk into underwriting along with following the growing trend of viewing efficiency as an indicator of good management. Debt providers may give owners of efficient buildings preferential financing terms or underwrite projected energy and water savings, as HUD, Fannie Mae, Freddie

⁹² Jaime Gomez, interview by Zachary Hart, July 29, 2016.



Mac, NYC HPD, and CPC, among others, do. If the majority of primary lenders followed suit, including government debt sources, owners would likely pay closer attention to their energy and water performance.

Background on Innovative Lenders and Investors

Before diving into government and efficiency program implementer recommendations for engaging lenders and investors, which begins on Page 44, this section provides extensive background on what financial leaders are doing to incorporate building performance data into their business practices. These innovative financing entities are requiring and encouraging owners to submit energy and water performance data and factoring it into underwriting, which is beginning to motivate owners and managers to invest in energy and water efficiency.

The U.S. Department of Housing and Urban Development

HUD's Office of Housing supports over 1.6 multifamily units through Section 8 rental assistance and Federal Housing Administration (FHA) mortgage insurance.⁹³ HUD has launched several initiatives concerning building energy performance. First, HUD is rewarding high-performing multifamily buildings with reduced mortgage insurance premiums. HUD implements the underwriting standards for FHA-insured mortgage applicants. Effective April 1, 2016, properties that have or will achieve a green certification

⁹³ Ted Toon, "Integrating Green Building Measures into Capital Planning for HUD Assisted and Public Housing Programs: Evolution of HUD's Green Capital Needs Assessment, and the New CNA eTool," (presentation, AEA Multifamily Buildings Conference, Brooklyn, NY, October 28-30, 2015), <http://aea.us.org/wp-content/uploads/2015/12/D6-Bruce-Rieder-and-Marc-Retish.pdf>.

and an ENERGY STAR score of 75 or better will qualify for a 25 basis point annual mortgage insurance premium.⁹⁴ Before this change, rates were between 45 and 70 basis points. HUD expects the reduced mortgage insurance premiums to generate 3 to 5 percent in additional loan proceeds that owners will use to implement energy efficiency measures or achieve certification. Lender fees are capped at 5 percent of the loan amount to help ensure that rate reductions benefit the multifamily property. HUD and FHA produced a lender guide for FHA's Multifamily Accelerated Processing (MAP) mortgage insurance program. The MAP guide allows projects to underwrite up to 75 percent of projected energy savings based on an ASHRAE level 2 energy audit.⁹⁵

Second, HUD has developed a capital needs assessment (CNA) eTool to better integrate energy and water efficiency into multifamily decision making. Multifamily property owners, buyers, and mortgage lenders submit CNAs to HUD to qualify for affordable housing assistance and HUD loan guarantees. Expected to launch in 2016, owners subject to CNA reporting requirements may have to benchmark their buildings' energy and water consumption through Portfolio Manager, submit ENERGY STAR scores, and perform ASHRAE level 2 energy audits.⁹⁶ As each year about 2,000 CNAs are performed for HUD programs, HUD will soon have an extensive database from which it can inform its initiatives.⁹⁷

Lastly, on October 4, 2016, HUD gave notice that it is seeking approval from the Office of Management and Budget (OMB) to require certain HUD-assisted properties as well as public housing to benchmark their energy and water consumption and share their data with HUD.⁹⁸ Although HUD spends about \$6.4 billion annually on utility costs across its total housing portfolio, it is currently unable to effectively manage its energy and water consumption. With benchmarking data, HUD plans to monitor energy and water consumption trends and assess its energy and water efficiency needs for its multifamily portfolio. HUD may also use the data help develop policy initiatives, financial incentives, technical assistance, and voluntary programs.

HUD is proposing to require HUD-assisted covered properties to submit energy and water use intensity metrics, ENERGY STAR scores for energy, and, when launched, ENERGY STAR scores for water. Covered properties are buildings that HUD assists through its Section 202, Section 811, and Section 8 programs as well as certain mortgage insurance programs. Unlike most government benchmarking laws that require annual submissions, HUD will require benchmarking data upon when owners submit utility allowance baseline

⁹⁴ U.S. Department of Housing and Urban Development, "Changes in Certain Multifamily Mortgage Insurance Premiums," Federal Register 81, no. 18 (January 28, 2016): 4926, https://www.regulations.gov/#!documentDetail;D=HUD_FRDOC_0001-4339; Ted Toon, "Proposed Multifamily MIP Reductions," (presentation, Green Affordable Housing Coalition, Washington, DC, March 9, 2016).

⁹⁵ U.S. Department of Housing and Urban Development, Multifamily Accelerated Processing (MAP) Guide, January 29, 2016, <http://portal.hud.gov/hudportal/documents/huddoc?id=4430GtrnHSGG.pdf>.

⁹⁶ U.S. Department of Housing and Urban Development, *Multifamily Accelerated Processing (MAP) Guide* (January 29, 2016), <http://portal.hud.gov/hudportal/documents/huddoc?id=4430GHSGG-bm.pdf>; U.S. Department of Housing and Urban Development, *Transmittal, Multifamily Accelerated Processing (MAP) Guide* (January 29, 2016), <http://portal.hud.gov/hudportal/documents/huddoc?id=4430GtrnHSGG.pdf>.

⁹⁷ Ted Toon, "Integrating Green Building Measures into Capital Planning for HUD Assisted and Public Housing Programs: Evolution of HUD's Green Capital Needs Assessment, and the New CNA eTool," (presentation, AEA Multifamily Buildings Conference, Brooklyn, NY, October 28-30, 2015), <http://aea.us.org/wp-content/uploads/2015/12/D6-Bruce-Rieder-and-Marc-Retish.pdf>.

⁹⁸ U.S. Department of Housing and Urban Development, "60-Day Notice of Proposed Information Collection: Energy Benchmarking," Federal Register 81, no. 192 (October 4, 2016): 68446, <https://www.gpo.gov/fdsys/pkg/FR-2016-10-04/pdf/2016-23979.pdf>; U.S. Department of Housing and Urban Development, "60-Day Notice of Proposed Information Collection: Energy Benchmarking of Public Housing," Federal Register 81, no. 192 (October 4, 2016) 68450, <https://www.gpo.gov/fdsys/pkg/FR-2016-10-04/pdf/2016-23978.pdf>

calculations, financial statements, and capital needs assessments as well as prior to HUD issuing Section 223(a)(7), 223(f), and 241(a) FHA mortgage insurance. This requirement will go into effect 90 days after OMB approval, but no earlier than April 15, 2017. For public housing authorities operating 250 or more public housing units, HUD is proposing to require them to use ENERGY STAR Portfolio Manager to benchmark their properties every three years and share the automatically generated metrics with HUD beginning no later than 2018. In total, HUD will require 2.2 million units to be benchmarked.

Government-Sponsored Enterprises

In the secondary mortgage market, Fannie Mae and Freddie Mac are also looking at how benchmarking data can inform their businesses. Fannie Mae provided \$42.3 billion in multifamily financing in 2015, supporting 569,000 multifamily housing units.⁹⁹ A recent component of Fannie Mae's Green Initiative is that Fannie Mae requires borrowers covered by a government benchmarking law to annually provide their buildings' source energy use intensity and ENERGY STAR score to their lenders, who then report the data to Fannie Mae.¹⁰⁰

In addition, to help owners finance high-performance improvements Fannie Mae launched two financing products that require energy and water consumption benchmarking and a High-Performance Building report, which includes an ASHRAE level 2 energy audit.¹⁰¹ The Green Preservation Plus product is for affordable housing owners, while the Green Rewards product is available to both market-rate and affordable housing owners. Both loan products offer a lower all-in interest rate and additional proceeds to do energy and water conservation measures. In addition, Fannie Mae announced in September 2016 that it will pay for the required High Performance Building report.¹⁰² For the Green Rewards product, which requires borrowers to implement property improvements that are projected to achieve a 20 percent reduction in whole-property energy or water use, Fannie Mae allows for underwriting of 75 percent of the owner's and 25 percent of the tenants' projected energy and water cost savings in the net cash flow calculation.¹⁰³ Underwriting tenant-paid utilities begins to address the split incentive challenge. For 2016 through July, Fannie Mae provided more than \$1.2 billion for green financing.¹⁰⁴

Freddie Mac was the top multifamily lender in 2015, with \$47.3 billion in multifamily financing, supporting 650,000 units.¹⁰⁵ Freddie Mac collects ENERGY STAR scores on a voluntary basis and borrowers can provide their building's score with their loan documents.¹⁰⁶ ENERGY STAR scores are then reported in Freddie Mac's commercial

⁹⁹ "Fannie Mae and its Lenders Close 2015 with Top DUS Flow Volume of \$42.3 Billion in Multifamily Loans," Fannie Mae, Feb. 1, 2016, <http://fanniemae.com/portal/about-us/media/corporate-news/2016/6343.html>.

¹⁰⁰ "Multifamily Asset Management Portal Release 4.1—Energy Metrics," *Fannie Mae*, accessed April 4, 2016, <https://www.fanniemae.com/content/faq/multifamily-asset-management-portal-faqs.pdf>.

¹⁰¹ Fannie Mae, Green Rewards accessed September 22, 2016, https://www.fanniemae.com/content/fact_sheet/green-rewards-termsheet.pdf; Fannie Mae, *Green Preservation Plus* (September 2014), https://www.fanniemae.com/content/fact_sheet/gmrefiplus.pdf.

¹⁰² "Green Financing Loans," Fannie Mae, accessed September 22, 2016, <https://www.fanniemae.com/multifamily/green-initiative-financing>.

¹⁰³ Fannie Mae, *Green Rewards*, accessed September 22, 2016, https://www.fanniemae.com/content/fact_sheet/green-rewards-termsheet.pdf.

¹⁰⁴ Peter Bakel, "Fannie Mae Exceeds \$1.2 Billion in Green Multifamily Investments and Announces Enhancements to Its Green Rewards Product," Fannie Mae, September 8, 2016, <http://www.fanniemae.com/portal/about-us/media/corporate-news/2016/6440.html>.

¹⁰⁵ "Freddie Mac Names Top Multifamily Lenders of 2015," Freddie Mac, February 2, 2016, <http://freddiemac.mwnewsroom.com/press-releases/freddie-mac-names-top-multifamily-lenders-of-2015-otqbfmcc-1241839>.

¹⁰⁶ Freddie Mac Multifamily, *Green Rebate*, March 2016, http://www.freddiemac.com/multifamily/product/pdf/green_rebate.pdf.

mortgage-backed securities offerings, known as K-Deals. To encourage owners to benchmark their properties, Freddie Mac offers a \$5,000 rebate on new property loans for properties of at least 20 units that have an ENERGY STAR score.¹⁰⁷ Moreover, in August 2016 Freddie Mac launched the Freddie Mac Multifamily Green Advantage to promote energy and water efficiency investments.¹⁰⁸ Under Green Advantage's Green Up and Green Up Plus programs, borrowers can obtain better pricing and additional proceeds to finance efficiency improvements that will save 15 percent energy or water usage. Both programs require energy and water benchmarking, and owners must provide Freddie Mac with access to the building's ENERGY STAR profile.¹⁰⁹ Green Up requires borrowers to complete a Green Assessment based on the ASHRAE Level 1 standard, while Green Up Plus requires a Green Assessment Plus that meets the ASHRAE Level 2 standard. Notably, Freddie Mac will underwrite for 50 percent and 75 percent of projected owner-paid energy and water savings for Green Up and Green Up Plus respectively and will reimburse owners for the cost of the assessments by up to \$3,500. Freddie Mac expects about 200 properties per year will use Green Up or Green Up Plus,¹¹⁰ contributing to the projected \$1 billion in Green Advantage business by end of 2016 and \$3 billion to \$3.5 billion in 2017 business.¹¹¹

Lenders

Some lenders are beginning to use building performance data in managing their portfolios. HomeStreet Bank is a bank with \$5.42 billion in assets providing lending services to multifamily borrowers in the Western United States and Hawaii through construction, bridge, and permanent loans, and nationally through the Fannie Mae Delegated Underwriting and Servicing Program.¹¹² Much of its portfolio is in the Puget Sound and greater Portland, Ore. market areas. Under Fannie Mae's new requirements, HomeStreet Bank—as well as all other Fannie Mae delegated lenders—must report ENERGY STAR scores and energy use intensity numbers to Fannie Mae for properties located in benchmarking jurisdictions or financed under Fannie Mae's Green Programs. As HomeStreet Bank recognizes that many properties could benefit from Fannie Mae's Green Preservation Plus financing, and this would increase their loan volume, HomeStreet Bank is driving uptake in the financing by assisting borrowers to find options to cover the costs of the required high-performance building module, which is typically 4 to 7 times more than a typical physical needs assessment.

In addition, HomeStreet Bank has been enacting other voluntary programs to encourage high performance. In markets that require benchmarking, HomeStreet Bank's asset managers record ENERGY STAR scores. The asset managers also inspect properties every two years. If there is a low score and the asset manager reports that the building could use some work, the bank will see if the owner is interested in doing a high-performance retrofit upon refinancing.¹¹³ This is done about two years before the maturity of the existing debt, through a combination of the asset manager and the loan originator working together to

¹⁰⁷ Ibid.

¹⁰⁸ "Green Advantage," *Freddie Mac Multifamily*, accessed August 27, 2016, <http://www.freddiemac.com/multifamily/product/green-advantage.html>; Freddie Mac Multifamily, Green Advantage, Term Sheet, accessed August 27, 2016, http://www.freddiemac.com/multifamily/product/pdf/green_advantage_term_sheet.pdf

¹⁰⁹ Freddie Mac Multifamily, *The Green Assessment Consultant's Scope of Work*, accessed August 27, 2016, http://www.freddiemac.com/multifamily/product/pdf/green_assessment_consultant_scope_of_work.pdf.

¹¹⁰ Paul Bubny, "Freddie Mac Incentivizes Green Upgrades," *Globe Street*, August 9, 2016, <http://www.globest.com/sites/paulbubny/2016/08/09/freddie-mac-green-up/?channel=markets§ion=national>.

¹¹¹ Brian Croce, "Freddie Mac Unveils New Green Loan Program," *Multifamily Executive*, August 8, 2016, http://www.multifamilyexecutive.com/design-development/green/freddie-mac-unveils-new-green-loan-program_o.

¹¹² "About Us," *HomeStreet Bank*, accessed August 27, 2016, <https://www.homestreet.com/everythingelse/about-us>.

¹¹³ Katie Plett, interview by Megan Houston, March 15, 2016.

offer the owner options and quotes for refinancing.¹¹⁴ Finally, HomeStreet Bank has an internal “green team” of managers, underwriters, and originators who advocate for energy efficiency and sustainability financing, which shortens the learning curve for customers and instills confidence.¹¹⁵

Community Preservation Corporation (CPC) is a New York State Community Development Financial Institution that provides construction and permanent financing to multifamily owners. Since 1974, CPC has invested over \$9.1 billion to help create or preserve nearly 165,000 housing units.¹¹⁶ During the Great Recession, CPC looked at energy efficiency to help stabilize properties and help owners pay their mortgages, and began to integrate energy efficiency into its standard business practices.¹¹⁷ For fiscal year 2016, CPC closed 20 construction loans and four permanent loans that incorporated large-scale sustainability measures into design and construction, totaling 1,361 units and representing about 20 percent of all loans closed.¹¹⁸ About 30 to 40 percent of projects will include basic energy and water efficiency measures, from low-flow toilets or LED lights to heat pumps and solar panels.¹¹⁹

CPC recognizes the importance of tracking an asset’s energy performance throughout its mortgage life. First, CPC benchmarks all its properties, and borrowers must give CPC access to “any and all information and data related to energy and/or natural resource consumption.”¹²⁰ Next, CPC captures the value of energy efficiency and water efficiency measures during loan underwriting, drives efficiency investments, and tracks the maintenance and operations for all properties that it services.¹²¹ For underwriting, CPC will typically apply a risk discount to projected energy savings and underwrite half of the projected energy savings into the first mortgage. By accounting for energy savings, CPC will adjust the utility expenses and increase income, which allows the owner to get a larger loan at attractive interest rates to pay for energy and water conservation measures.

When originating the loan, CPC’s originators talk with borrowers about incorporating efficiency to add value to the project, with borrowers choosing to pursue energy and water efficiency measures about 30 to 40 percent of the time.¹²² On their loan application, borrowers must disclose energy efficiency measures that the building is incorporating including green physical needs assessments and energy audits.¹²³ In addition, borrowers must list owner and tenant utility costs, metering configurations, fuel types, systems information, and whether the building will have a third-party certification such as LEED and ENERGY STAR. CPC collects income and expense information for its 3,000 buildings in its servicing portfolio (with a roughly 65 percent response rate) and compares the properties by various characteristics.¹²⁴ CPC is working with Bright Power and NYSERDA to review

¹¹⁴ Katie Plett, email message to Megan Houston, August 2, 2016.

¹¹⁵ Katie Plett, interview by Megan Houston, March 15, 2016.

¹¹⁶ “About Us,” Community Preservation Corporation, accessed August 27, 2016, <http://communitycp.com/about-us/>.

¹¹⁷ Elizabeth Derry and Sadie McKeown, interview by Megan Houston, February 8, 2016.

¹¹⁸ Elizabeth Derry, email message to Megan Houston, August 22, 2016.

¹¹⁹ Ibid.

¹²⁰ Community Preservation Corporation, *Energy Benchmarking Program Agreement*, accessed April 7, 2016, <http://communitycp.com/wp-content/uploads/2016/02/Energy-Benchmarking-Agreement-Utility-Authorization-Form.pdf>.

¹²¹ Elizabeth Derry and Sadie McKeown, interview by Megan Houston, February 8, 2016; Community Preservation Corporation, *Financing Energy-Efficient Buildings*, accessed April 7, 2016, http://communitycp.com/wp-content/uploads/2016/03/CPC_Sustainability-Underwriting.pdf.

¹²² Elizabeth Derry, email message to Megan Houston, August 22, 2016.

¹²³ Community Preservation Corporation, *Loan Application*, accessed April 7, 2016, <http://communitycp.com/wp-content/uploads/2016/02/2-2-16-CPC-Loan-Application-Final-Version.pdf>.

¹²⁴ Elizabeth Derry and Sadie McKeown, interview by Megan Houston, February 8, 2016.



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actual energy and water performance datasets to verify the effects of efficiency measures, which will help CPC continuously improve its underwriting standards.

Housing Finance Agencies

The Low-Income Housing Tax Credit (LIHTC) is a federal tax credit that encourages investors to invest in affordable rental housing and “accounts for the vast majority of the country’s new rental housing affordable to low-income people.”¹²⁵ Each year the LIHTC funds 100,000 low-income apartment units for both new and existing properties. The process begins when the federal government allocates tax credits to states based on state population. The state housing finance agencies (HFAs) then allocate housing credits to developers based on each state’s qualified allocation plan (QAP). Developers in turn sell the tax credits to investors, who help finance the developer’s multifamily development.

HFAs recognize that their QAPs are important levers to incentivize energy improvements.¹²⁶ Each year, states must develop a QAP that details the criteria they will use when awarding housing tax credits; energy improvements are often included in the criteria. In 2013, 35 states assigned points for various energy efficiency components

¹²⁵ “2016 Housing Credit FAQ,” *National Council of State Housing Agencies*, February 25, 2016, <https://www.ncsha.org/resource/2016-housing-credit-faq>.

¹²⁶ Tracy Kaufman, “Low Income Housing Tax Credits & Energy Efficiency Policies,” National Housing Trust, accessed April 1, 2016, <http://energyefficiencyforall.org/sites/default/files/HFA%20Efficiency%20Policies.pdf>; Dana Bartolomei and Cai Steger, “Researching HFA Best Practices for Energy Efficiency,” *Energy Efficiency For All*, May 13, 2015, <http://energyefficiencyforall.org/sites/default/files/HFA%20Efficiency%20Policies.pdf>.

in their QAPs.¹²⁷ For example, the Maryland Department of Housing and Community Development (DHCD) requires applicants to complete an energy audit, and proposed projects must achieve a 15 percent energy savings over pre-existing conditions or include all the energy improvements identified in the energy audit having a Savings to Investment Ratio (SIR) of 2.0 or greater for rehabilitation projects.¹²⁸ Applicants can also earn points for designing increased energy efficiency and alternative energy sources into the project. The Arizona Department of Housing awards points to developers that will pursue the performance-based path for energy efficiency based on the Home Energy Rating System (HERS) index.¹²⁹

Separate from their QAPs, HFAs including Maryland DHCD, Minnesota HFA, Florida Housing Finance Corporation, New Jersey Housing and Mortgage Finance Authority, and the Washington State Housing Finance are beginning to collect building performance data to evaluate energy efficiency investment opportunities and investment success. The New Jersey Housing and Mortgage Finance Authority awards points to those who will participate in its benchmarking initiative.¹³⁰ The Minnesota HFA participated in a Bright Power pilot program, through which 500 multifamily properties participated within Xcel Energy's service territory, and 127 of these buildings were part of the Minnesota HFA's portfolio.¹³¹ These are relatively recent practices, but ideally these HFAs will use benchmarking data to make investment decisions.

Investors

Many large institutional investors are showing interest in benchmarking data. One expression of investor interest in sustainability is GRESB, a portfolio-level sustainability reporting system to which institutional investors, listed property companies, and fund managers subscribe to the data. GRESB awards points to those who track their energy consumption data.¹³² Twelve of the top 50 largest multifamily apartment owners in the United States participated in the 2015 GRESB reporting.¹³³ As Mark Delisi with AvalonBay has found, institutional investors are becoming very interested in benchmarking and energy efficiency and are increasingly encouraging owners to participate in GRESB.¹³⁴

Ensure financial stakeholders have the tools and resources needed to collect, analyze, and act upon energy and water performance data

Although HUD, Fannie Mae, and Freddie Mac are working to get minimum benchmarking requirements in the market, primary commercial lenders and investors need to be more involved with building performance data. Most commercial lenders have yet to integrate building performance data into their standard business practices. In recent interviews with 30 national, regional, and local commercial lenders, IMT found that two of the lenders were actively using benchmarking data, with the majority of survey participants unfamiliar with

¹²⁷ Ibid.

¹²⁸ Maryland Department of Housing and Community Development, *Multifamily Rental Financing Program Guide* (May 15, 2015), <http://dhcd.maryland.gov/HousingDevelopment/Documents/rhf/MD%20Rental%20Financing%20Program%20Guide%20Final%205.8.15.pdf>.

¹²⁹ Arizona Department of Housing, *2016 Qualified Allocation Plan* (2016), https://housing.az.gov/sites/default/files/documents/files/2016_QAP_Final_1-5-16.pdf.

¹³⁰ "Green Points," *New Jersey Housing and Mortgage Finance Agency*, accessed August 29, 2016, <http://www.nj.gov/dca/hmfa/developers/credits/green/>.

¹³¹ Bright Power, *EnergyScoreCards Minnesota: Results from Energy and Water Benchmarking in 500+ Minnesota Multifamily Buildings* (June 30, 2015), <http://mn.gov/commerce-stat/pdfs/bright2016-mfbenchmark-final.pdf>.

¹³² GRESB, *2015 GRESB Guidance v 1.1* (May 15, 2015), <https://gresb-public.s3.amazonaws.com/content/2015%20GRESB%20Guidance%20v1.1.pdf>.

¹³³ GRESB, *2015 GRESB Report* (2015), <https://gresb-public.s3.amazonaws.com/content/2015-GRESB-Report.pdf>.

¹³⁴ Mark Delisi, interview by Megan Houston, December 21, 2015.

benchmarking policies.¹³⁵ Moreover, apartment owners report that while some banks ask for benchmarking scores, the owners believe that the banks do not care about the actual scores.¹³⁶

As for investors, the investor industry is still very nascent in using building performance data.¹³⁷ For example, investors and appraisers have limited access to performance data for comparable buildings, and without the valuation context, they often under-value and under-invest in efficient buildings. Easy availability of data resulting from benchmarking and transparency laws would address this problem. Governments and efficiency program implementers should consider engaging with the lender and investor communities to ensure they have the tools and resources needed to collect, analyze, and act upon energy and water performance data. Ways for governments and efficiency program implementers to do so are outlined below.

Help lenders and investors use benchmarking data

Governments and efficiency program implementers should consider engaging local lenders and investors to encourage them to integrate building performance data into their standard business practices and underwriting. They should recruit lenders and investors to review and test-drive current visualization tools and determine if and how the sector can use the information in its business operations. Metrics such as ENERGY STAR scores are effective tools for communicating a simple performance indicator for lenders and investors.

Several lenders told IMT that having whole-building energy data would be especially valuable for evaluating a property's operating expenses during underwriting.¹³⁸ As Robin Halsband with City First Enterprises pointed out, lenders often lack the in-house expertise to comprehensively evaluate a complicated energy analysis, and an uncomplicated and objective metric would be helpful.¹³⁹ For buildings in jurisdictions with benchmarking data, this information is readily available for lenders to use. Likewise, investors would also benefit from using benchmarking data. As Drew Ades with Housing Partnership Equity Trust explained, "investors tend to like simple metrics that are consistent from property to property. Investors can look at an ENERGY STAR score of 83 and compare this to other scores of 83 and understand what they are getting."

Encourage private lenders to use benchmarking data

Governments, including housing agencies, and efficiency program implementers should consider establishing partnerships with lenders to use building performance data to underwrite for energy and water efficiency improvements and finance retrofits for owners. In Chicago, the multifamily Energy Savers program is a private-public partnership created in 2008 in collaboration with Elevate Energy and the Chicago Department of Planning and Development, among other organizations.¹⁴⁰ Community Investment Corporation (CIC) is a non-profit mortgage lender and Community Development Financial Institution that collaborates with Elevate Energy to run Chicago's Energy Savers program. CIC raised

¹³⁵ Leonard Kolstad, *Energy Efficiency Finance for Commercial Buildings: Insights from Lenders* (Washington, DC: Institute for Market Transformation, March 2016), http://www.imt.org/uploads/resources/files/Energy_Efficiency_Finance_for_Commercial_Buildings_Insights_From_Lenders.pdf.

¹³⁶ Market-Rate Multifamily Energy Efficiency Value Roundtable, Institute for Market Transformation, Washington, DC, February 23, 2016.

¹³⁷ Drew Ades, interview by Megan Houston, February 1, 2016.

¹³⁸ Leonard Kolstad, *Energy Efficiency Finance for Commercial Buildings: Insights from Lenders* (Washington, DC: Institute for Market Transformation, March 2016), http://www.imt.org/uploads/resources/files/Energy_Efficiency_Finance_for_Commercial_Buildings_Insights_From_Lenders.pdf.

¹³⁹ Robin Halsband, interview by Leonard Kolstad, December 23, 2015.

¹⁴⁰ Jim Wheaton, interview by Megan Houston and Leonard Kolstad, February 16, 2016.

“Investors tend to like simple metrics that are consistent from property to property. Investors can look at an ENERGY STAR score of 83 and compare this to other scores of 83 and understand what they are getting.”

private capital to provide retrofit loans to affordable apartment owners, distributing about \$27.5 million in various loans with loan losses less than 0.3 percent since 2008.¹⁴¹ Chicago Department of Planning and Development and the Chicago Metropolitan Agency for Planning provided funding for a loan loss reserve.¹⁴² Notably, CIC underwrites all of the projected energy savings from proposed building retrofits that Elevate Energy calculates as part of Elevate Energy’s free energy assessments for the owners. Through 2015, 1,370 buildings received an energy assessment and 629 (with 26,654 units) completed energy upgrades. CIC provided financing for 345 of these buildings (12,355 units).¹⁴³

Similarly, New York City’s HPD and Housing Development Corporation (HDC) are working with lenders to underwrite for energy efficiency. HPD and HDC will use data from the recently developed Green Physical Needs Assessment to help lenders evaluate energy efficiency opportunities. Additionally, HPD created a retrofit financing program for small and medium multifamily buildings and required its lending partners—Community Preservation Corporation, Enterprise Community Partners, Low Income Investment Fund,

¹⁴¹ James Wheaton, “Energy Savers, Multifamily On-Bill Success Stories” (presentation, ACEEE Energy Efficiency Finance Forum, Newport, RI, May 22-24, 2016), http://aceee.org/sites/default/files/pdf/conferences/eff/2016/Wheaton_Session3C_FF16_5.23.16.pdf.

¹⁴² <http://www.cicchicago.com/energy-savers-can-save-you-money/>

¹⁴³ Jim Wheaton, interview by Megan Houston and Leonard Kolstad, February 16, 2016.

Local Initiatives Support Corporation, and New York City Energy Efficiency Corporation—to commit to underwriting at least some of the projected energy savings.¹⁴⁴

Update Qualified Allocation Plans to reward developers and owners who are actively managing their energy use

As stated earlier, some HFAs are becoming more interested in benchmarking energy performance, beginning to require or encourage owners to benchmark properties in exchange for LIHTC funding. Most states are using this data for the purposes of informing the state HFA about how to improve its programs. They should continue to encourage—or better yet require—energy benchmarking and energy audits for appropriate properties over a size threshold, perhaps for medium and large buildings.

States could also begin to motivate owners to act on the data by awarding qualified allocation plan (QAP) bonuses to owners who benchmark their properties and have good scores. QAPs are important in driving what is built and have a significant impact on multifamily housing. Nevertheless, QAPs focus on building design and not building operations or management. States should consider revising QAPs to require those applying for Housing Credits to submit benchmarking data for their building portfolios, and states should reward those owners and managers who are operating their buildings efficiently. To the extent that the QAP is valuable, developers and owners will have an incentive to do a good job managing their portfolios. This is a cost-effective way to capture affordable housing owners' and managers' attention. Initially, this initiative should begin in states with data access laws and where tenant data is easily available, such as in California once the data access elements of its AB 802 law have gone into effect.¹⁴⁵ Each state would set its own score thresholds and definitions of high-performance, which could be relative to all of the state's multifamily buildings or to other bidders in the QAP and so would likely rise over time as owners succeed in better managing their buildings and working with their tenants.

Phase in multifamily building performance policies to small and medium sized owners through agency financing requirements

Governments, typically through their housing agencies, often provide debt, credit enhancements, and grants to multifamily housing owners. Where jurisdictions have benchmarking and transparency policies that apply to multifamily owners of a certain threshold, governments should consider working with their financing entities to require a broader section of multifamily buildings receiving financing to benchmark their properties.

For example, the New York City HPD is responsible for preserving and developing affordable housing. Although the benchmarking and transparency laws apply to multifamily buildings at least 50,000 square feet, as of Feb. 2016, all projects getting HPD financing must benchmark their energy and water consumption.¹⁴⁶ NYC HPD will use the benchmarking data to better understand the relationship between the money it invests

¹⁴⁴ New York City Department of Housing Preservation and Development, *Green Housing Preservation Program Term Sheet*, last modified January 2016, https://www1.nyc.gov/assets/hpd/downloads/pdf/developers/term-sheets/green-housing-preservation-program-term-sheet_january-2016.pdf; New York City Department of Housing Preservation and Development, *Green Housing Preservation Program (GHPP) Technical Assistance Services Frequently Asked Questions for Firms and Borrowers*, last modified March 1, 2016, <http://www1.nyc.gov/assets/hpd/downloads/pdf/GHPP-TA-FAQ.pdf>.

¹⁴⁵ Assem. Bill 802, 2015-2016, ch. 590, 2015 Cal. Stat., https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB802.

¹⁴⁶ NYC HPD, *HPD Building Benchmarking and Performance Tracking Protocol* (February 8, 2016), <http://www1.nyc.gov/assets/hpd/downloads/pdf/HPD-Benchmarking-Protocol--V1.pdf>.

In a market that values efficiency, multifamily stakeholders would have the tools, resources, and knowledge to collect, analyze, and make decisions based on energy and water performance data.

in multifamily properties and the properties' long-term improvements.¹⁴⁷ NYC HPD and HDC also developed a Green Physical Needs Assessment (GPNA) protocol, which adds an energy audit to a typical physical needs assessment.¹⁴⁸ Since 2015, HPD and HDC have required GPNAs for all projects for which they require capital needs assessments. Part of the GPNA requirement is to provide at least 24 months of utility data and benchmark the whole building. For the HPD Green Housing Preservation Program (GHPP) mentioned earlier in this report, borrowers can finance all or part of the cost of the GPNA as well as technical assistance to complete the energy and water efficiency analyses.

¹⁴⁷ Laura Slutsky, "When the Market Drives Neighborhood Change," (presentation, Greenbuild Communities & Affordable Homes Summit, Washington, DC, November 17, 2015).

¹⁴⁸ NYC HPD, HDC / HPD *Green Physical Needs Assessment (GPNA) FAQ for Borrowers and Firms Version 3*, last modified November 25, 2015, <http://www1.nyc.gov/assets/hpd/downloads/pdf/developers/GPNA-FAQ.pdf>; NYC HPD, *Green Housing Preservation Program (GHPP) Technical Assistance Services Frequently Asked Questions for Firms and Borrowers*, last modified March 1, 2016, <http://www1.nyc.gov/assets/hpd/downloads/pdf/GHPP-TA-FAQ.pdf>.

Conclusion

In a market that values efficiency, multifamily stakeholders would have the tools, resources, and knowledge to collect, analyze, and make decisions based on energy and water performance data. These stakeholders would factor building performance into their standard business practices so that efficiency is prioritized and high-performing apartment buildings would be valued at a premium when compared with less-efficient peers. The market would recognize these efforts, further inspiring more investment.

Building owners and managers would comply with benchmarking and transparency laws or voluntary programs, collecting monthly energy and water consumption data at a minimum. In addition to basic monthly utility information, the most sophisticated owners would use more granular data (hourly or sub-hourly utility information) or advanced energy and water monitoring systems that combine data and sensor technology to better understand building operational performance. Uploading data would be streamlined and easy.

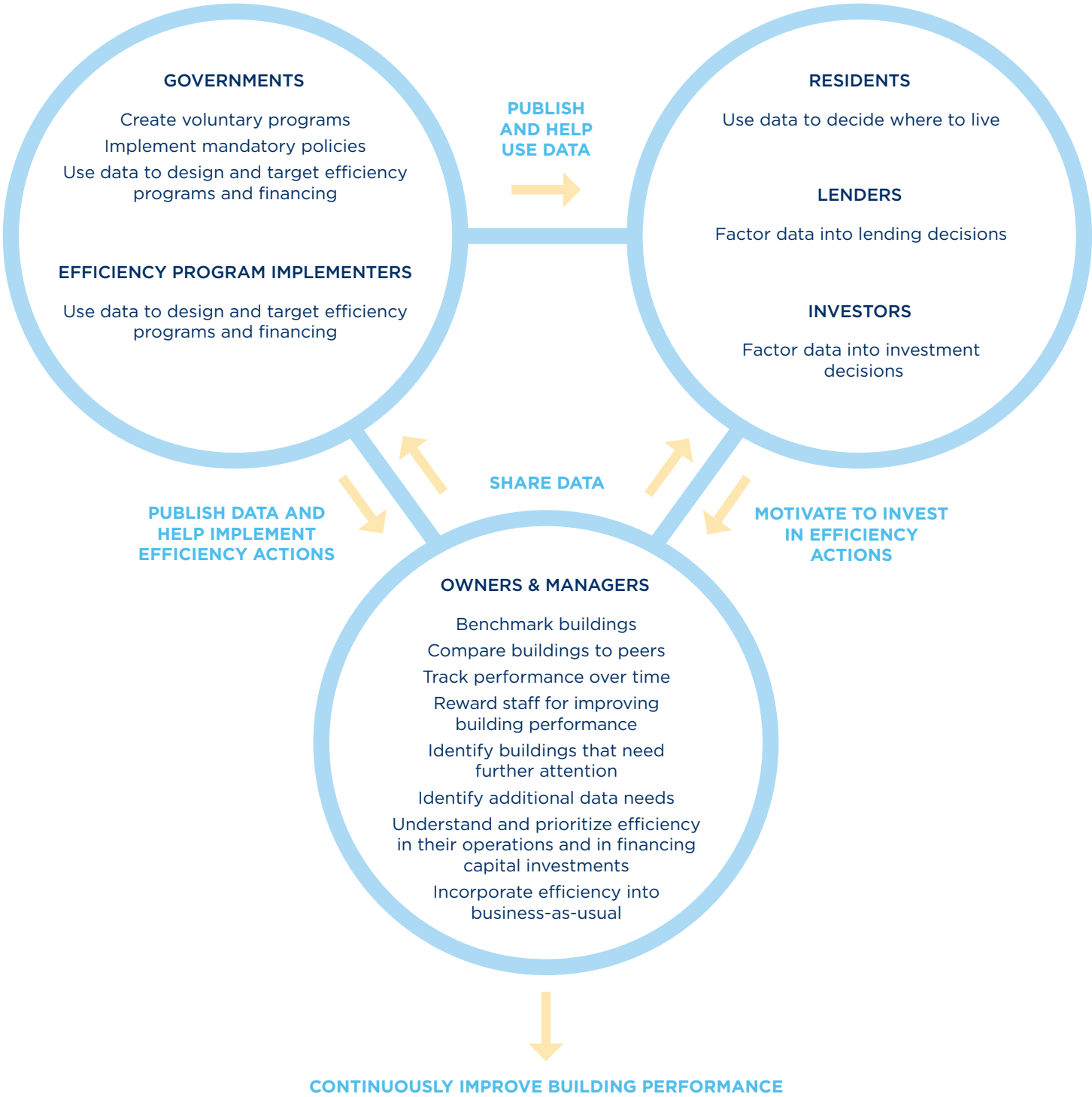
Owners and managers would consider how their buildings perform in relation to similar buildings to gauge whether their building may be a high or low performer. They would use building performance data to identify the properties that deserve further attention, through actions including energy and water management, audits, and retro-commissioning, and identify actions that should be taken to reduce energy and water consumption.

Owners and managers would create efficiency management plans, retrofit packages, and other projects. During capital improvement cycles, owners would find opportunities for investment in efficient equipment, using the monthly information collected for benchmarking as a basis for cost-benefit and other financial calculations. Owners and managers would devote staff resources and financing to recommend and implement efficiency improvements. Finally, to improve building performance, owners and managers would implement energy and water efficiency best practices and repeatable actions as part of their lifecycle management protocol.

Meanwhile, owners and managers of high performing buildings would find a marketing and financial advantage in touting energy and water efficiency metrics, as potential residents, lenders, and investors would recognize the value of energy and water efficiency and demand efficient apartments.

Lenders and investors would factor energy and water performance data into due diligence, investment, and asset management decisions. They would offer financial products that underwrite for projected energy and water efficiency savings, thereby encouraging these projects. The capital markets would recognize the increased value and reduced risk of more efficient buildings, reflected in lower capital costs. Organizations who self-identify as green investors would seek out these companies with publicly disclosed programs.

FIGURE 5: Snapshot of a Transformed Market: Integrating Data from Benchmarking into Decision-Making



Residents would have access to energy and water performance data during the time of transaction and understand how energy and water performance could affect the total cost of occupancy. Residents would factor performance data into their decisions about where to live. For market-rate housing, residents would be willing to pay higher rents for apartments in higher performing buildings in expectation of lower utility costs and superior comfort.

Governments would continue to implement benchmarking and transparency laws, facilitating the closing of the information gap in energy and water performance data in multifamily housing and using the information to inform and shape their program design and outreach strategy for efficiency programs. As part of these programs, governments would provide resources to inform stakeholders of the local market for energy and water efficiency, providing connection to utility and efficiency program administrators, and directing stakeholders to approved vendors.

Utilities and efficiency program implementers would work closely with local government agencies to align datasets, using the information to inform and shape their program design and outreach strategy for efficiency programs. At a minimum, utilities would make whole-building aggregated data readily available and accessible in useful formats at little or no cost to owners. Utilities, as the main drivers of demand-side management programs, would create programs and allocate resources specifically for the multifamily sector.

Functioning relationships between all stakeholders are a critical component to deploying benchmarking data as a stepping stone to transforming the market into an efficient building stock. Owners and managers are the only ones who can execute efficiency actions; governments, efficiency program implementers, residents, lenders, and investors use data to help and motivate owners and managers to continuously improve building performance.

In the last few years, the multifamily sector has made great strides in using energy and water performance data in every-day decisions. Each year, more jurisdictions pass benchmarking and transparency laws, more governments and efficiency program implementers are working with owners and managers to move from data to action, and more owners and managers are creating voluntary programs and policies to improve their multifamily building performance and engage their residents. **However, to fully capitalize on the multi-billion dollar annual efficiency opportunity in the multifamily sector, stakeholders must now focus on moving from data to action.** Governments and efficiency program implementers should better engage with owners and managers to help them understand and use benchmarking data. Meanwhile, they should also work with residents, lenders, and investors to help ensure that they have the tools and resources to incorporate efficiency data in their decision-making. In doing so, the multifamily sector will be on its way towards unlocking multifamily apartment building performance data and its full value.

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