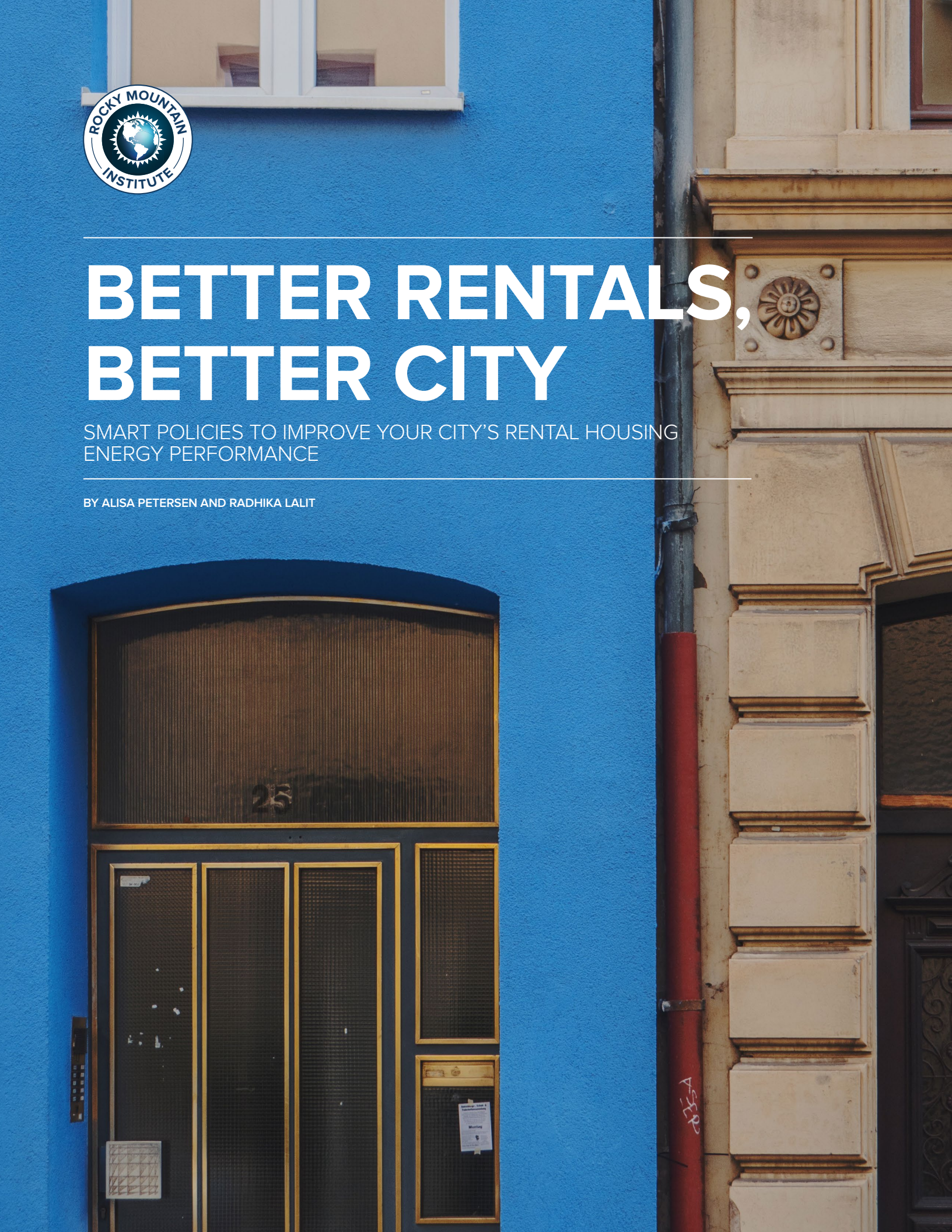

BETTER RENTALS, BETTER CITY

SMART POLICIES TO IMPROVE YOUR CITY'S RENTAL HOUSING ENERGY PERFORMANCE

BY ALISA PETERSEN AND RADHIKA LALIT

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ABOUT ROCKY MOUNTAIN INSTITUTE

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; Washington, D.C.; and Beijing.

TABLE OF CONTENTS

FOREWORD

The City of Boulder SmartRegs policy, which requires efficiency standards for housing rentals, was one of the first climate action initiatives that used an existing local government business process to require a specific level of energy efficiency outside of the building permit process. Because the city is home to the University of Colorado, it is a college town with a sizable percentage of its residential housing stock used as rental properties. For this reason, it already had a rental license program in place. The policy was identified in the City's first Climate Action Plan. The City evaluated local government controls and used an existing business process that provided a productive method to identify and track properties, allowing the program to show progress and success.

SmartRegs has been able to serve multiple community purposes. The main purpose was to measure and upgrade existing rental properties to ensure they meet a baseline energy efficiency level. Additionally, the policy was intended to breakdown the "split incentive" barrier that traditionally prevents owners from upgrading their properties, since they don't usually pay the utility bills for rental properties. Further, SmartRegs assists in spurring innovation and education that promotes proactive behavior regarding energy efficiency, reducing energy use and greenhouse gas emissions to assist the City's effort to curb the negative effects of climate change.

As the program matures, the City continues to understand additional benefits that communities could reap from this type of program. The SmartRegs program serves as an inclusionary and affordable housing program, which provides renters with low to moderate incomes a safeguard for stabilizing utility costs. It has also increased both tenant and property owner awareness of energy efficient housing opportunities.

Over time, it was evident that Boulder's climate action programs and policies influence a variety of community priorities and values, building a strong sustainability framework that strengthens many aspects of where we live. One of Boulder's goals as a community is to develop programs and policies that can assist other communities in their journey on improving the way buildings use energy, while supporting inclusivity and affordability, energy efficiency and resiliency.

Elizabeth Vasatka
Sustainability Coordinator, City of Boulder

INTRODUCTION

EXISTING RESIDENTIAL PROPERTIES ARE CRUCIAL TO MEETING CITY CLIMATE TARGETS

While building energy codes set efficiency requirements for newly constructed residential properties, most cities have no efficiency requirement in place for existing residential properties. This is concerning since almost **70 percent of residential properties** were built before an energy code was even in place, so for most residential properties, efficiency has never been required. The result is existing residential properties tend to be **30 percent less efficient**, on average, than newly constructed residential properties, and are contributing to a substantial portion of citywide emissions.

Rental properties are a powerful first intervention point for existing residential properties, since they comprise **about 50 percent** of most large cities' residential building stock. Additionally, rentals are less likely to undergo efficiency projects, since the person paying for the upgrades isn't the person benefiting from the lower utility bills and increased thermal comfort.

These concerns are more important than ever. US cities and other subnational actors—which constitute over half of the national economy—are aligning their city and state plans with the Paris Agreement and leading action to mitigate climate change. **Select cities** are pursuing even more aggressive carbon reduction plans, such as 80 percent reduction by 2050. In addition to climate action goals, many large cities also face air quality challenges that have more immediate health impacts. Energy use in the residential building sector accounts for about **20 percent** of most cities' greenhouse gas emissions, and therefore cannot be overlooked in any city-based plan to cut emissions.

In order to meet carbon goals, as well as reduce other "criteria" air pollutants that directly impair health and the environment, leading cities have an opportunity to put in place a policy for existing residential rental properties that will require property owners to meet a minimum efficiency standard before they can receive their rental licenses. This policy idea has been around for some time—**Ann Arbor, Michigan**, has had efficiency standards for rental properties since 1985. More recently, the City of Boulder, Colorado, tested and successfully implemented one of the most comprehensive minimum energy efficiency policies for residential rental properties. The benefits and successes experienced by Boulder with the implementation of these policies only scratch the surface of the potential for other city leaders nationally.

This paper describes the benefits of minimum efficiency standards for rentals (MESR), profiles the City of Boulder's pioneering implementation of this policy approach, and describes how other cities can implement such a policy. This paper presents a comprehensive step-by-step roadmap that can help cities design a framework to create minimum efficiency standards for rentals.

TARGETING RENTAL PROPERTIES FOR EFFICIENCY REQUIREMENTS IS A SMART POLICY STRATEGY FOR CITIES

Policies targeting rentals can be a powerful way to accelerate energy savings in the residential sector while protecting renters and improving housing stock.

Here are a few reasons why an MESR policy might be attractive to other cities:

- **Easy integration into existing rental licensing programs:** Many cities already have rental licensing programs in place that can effectively integrate efficiency requirements by requiring rental licensing inspectors to confirm that rental properties meet a minimum efficiency standard before issuing their rental licenses.

- **High climate impact:** There are 43.7 million rental units in the US, which consume approximately 3.9 quadrillion Btus of energy per year, equivalent to 1.1 trillion lbs CO_2.[1] If an MESR policy implemented in various cities were able to reduce this energy consumption by just 10 percent, it would result in 106 billion lbs of CO_2 reduction, equivalent to what would be achieved by building all new residential properties to a net-zero energy standard for the next six years.

- **Addresses the split incentive issue:** Rental properties typically have even worse performance than existing owner-occupied residential properties because building owners don't see any direct benefit from investing in efficiency upgrades as they aren't the ones residing in the residential property or paying the energy bills. This typically results in high energy bills and poor thermal comfort for tenants who don't have the power to perform these energy upgrades themselves. This policy would ensure that landlords upgrade the efficiency of their residential properties since noncompliance could result in lost rental licenses, lost income, or fines. Moreover, the property owners will benefit from the investments in the long-run from increases in their property valuations owing to the energy efficiency upgrades.

- **Reduce energy risks for vulnerable households:** Energy insecurity means a household has challenges paying their energy bill or sustaining adequate heating and cooling, which often results in forgoing basic necessities to pay energy bills or keeping living units at unsafe temperatures. While this is a problem for many American households, it disproportionately impacts renters, with **43 percent of renters reporting examples of energy insecurity compared to 24 percent of homeowners**. Improving the energy efficiency of the rental market should improve energy security.

- **Creates local job creation:** This policy will result in local green jobs through investment in efficiency projects and the hiring of energy inspectors required to implement such programs.[2] This will help boost the local economy as money otherwise spent on fuel coming from elsewhere could instead be kept within local communities.

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[1] Assumes 89.6 million Btu per household, (38.6 million Btu of electricity, 41.3 million Btu of other natural gas, and 9.7 million btu of other fuel). Uses national average carbon intensities of 1.53 lb/kWh, 14.15 lb/therm, 21 lb/gal.

[2] There are various terms for people who do walkthroughs of living units to determine how efficient the units are. If they're performing energy assessments using the Home Energy Score system (HES), they are called "Home Energy Score Assessors;" if they're rating homes through the Home Energy Rating System (HERS), they are called "Home Energy Raters;" and if they're using Boulder's SmartRegs checklist, they are called "Rental Energy Efficiency Inspectors." To discuss these implementation tools and implementers more collectively, this paper will refer to the people determining the efficiency of living units as "energy inspectors" and the actual assessment of living unit efficiency as "energy inspections."

BOULDER, COLORADO CASE STUDY

HOW THE CITY OF BOULDER IS PAVING THE WAY FOR OTHER CITIES

Boulder, Colorado, was one of the first cities to adopt minimum efficiency standards for housing rentals, a policy they named "**SmartRegs**." This policy was adopted in 2010 and all rentals are expected to be fully compliant by the end of 2018. This policy will impact over 20,000 residential properties, which make up more than half of Boulder's housing stock. Here is a high-level overview of Boulder's SmartRegs initiative:

- **Policy Requirement:** All long-term licensed rental properties are required to meet or exceed the minimum efficiency standards before they receive their rental licenses. If a rental property doesn't meet the requisite efficiency standards by December 31, 2018, the property owner will not receive his or her rental license or their existing rental license will expire until efficiency upgrades are performed that make the rental property SmartRegs compliant.

- **Funding:** This program is funded through the City's Climate Action Plan (CAP) tax and fees collected from noncompliant rentals as of 2016, with program assistance from the Department of Energy.

- **Implementation Framework:** The City of Boulder worked with Boulder Area Rental Housing Association members, energy efficiency professionals, and various other stakeholders to define the minimum efficiency standards that would be achievable while balancing the burden for property owners. Residential properties can reach compliance through the prescriptive or performance path:

  - **Prescriptive Path:** A certified Rental Energy Efficiency Inspector uses the **SmartRegs Checklist** to analyze the efficiency of a rental property. Each rental unit must achieve a score above 100, in addition to two mandatory points in the water conservation category, to be compliant. A score of 100 is roughly approximate to complying with the IECC 1999 energy code. The City of Boulder created the SmartRegs checklist and developed trainings and certifications for the Rental Energy Efficiency Inspectors. The prescriptive path was used **98 percent of the time**, largely due to lower inspection cost and shorter inspector time commitment.

  - **Performance Path:** A certified Home Energy Rater performs an energy inspection and then runs an energy model to assess the efficiency of the rental property through the Home Energy Rating System (HERS) score. Each rental unit must receive a **HERS score of 120** or below to be compliant (a score of 0 is a net-zero energy living unit, 100 is typical for new construction, and 130 is typically for existing buildings). The HERS rating system was created by Residential Energy Services Network (RESNET) and has national recognition. RESNET has trainings and certification programs in place for raters. HERS inspections are more comprehensive, requiring about three times higher cost and time commitments than the prescriptive path. Despite the higher first-inspection costs,

the performance path may be more cost effective since personalized energy savings and upgrade cost estimates specific to the rental property will result in a more informed energy upgrade project.

- **Support and Incentives:** The City of Boulder also created the **EnergySmart program** that goes hand in hand with the SmartRegs policy. It offers technical assistance, help scheduling contractors for energy efficiency improvements, and incentives above and beyond those offered by the utility. EnergySmart also supports energy efficiency efforts for commercial buildings.

- **Assurance of Compliance:** The rental licensing office must confirm a rental property is SmartRegs compliant before the city issues their renters license. If a living unit is rented without a renters license, there are fines in place that quickly add up (first violation is $150–$500, second violation is $300–$750, third violation is $1,000).

- **Data and Public Disclosure:** The City of Boulder has compiled the compliance data into a public **database of rental units** in the form of a map that indicates whether a rental property is compliant, noncompliant, or exempt. However, this map doesn't share the actual efficiency score of the rental property.

SUCCESSES FROM BOULDER'S SMARTREGS PROGRAM

- **Powerful Savings and Climate Impact:** This policy has resulted in a significant number of rental renovations that wouldn't have occurred otherwise. This **high-level summary** compiled by the City of Boulder in December 2017 shares some powerful impact details:

  - 100 percent of rentals were inspected and 86 percent were deemed compliant. Since program inception, 4,603 energy upgrades and 27,951 quick installs have been completed through the City of Boulder's EnergySmart program.

  - Extrapolating from existing results, the City of Boulder's rental properties are expected to save 4,200,000 kWh and 940,000 therms annually, leading to $1,100,000 in energy bill savings and 8,300 metric tons of avoided carbon emissions after full compliance by the end of 2018.

  - 37 percent of rentals were noncompliant at first inspection; 62 percent of those property owners have since upgraded their properties to meet the efficiency standards. Since rentals make up 53 percent of Boulder's housing stock, this policy will ensure that 20 percent of Boulder's residential stock will have efficiency upgrades performed by the end of 2018, which will result in significantly better thermal comfort and lower utility bills for renters in Boulder and help rebuild a more efficient and resilient residential building stock.

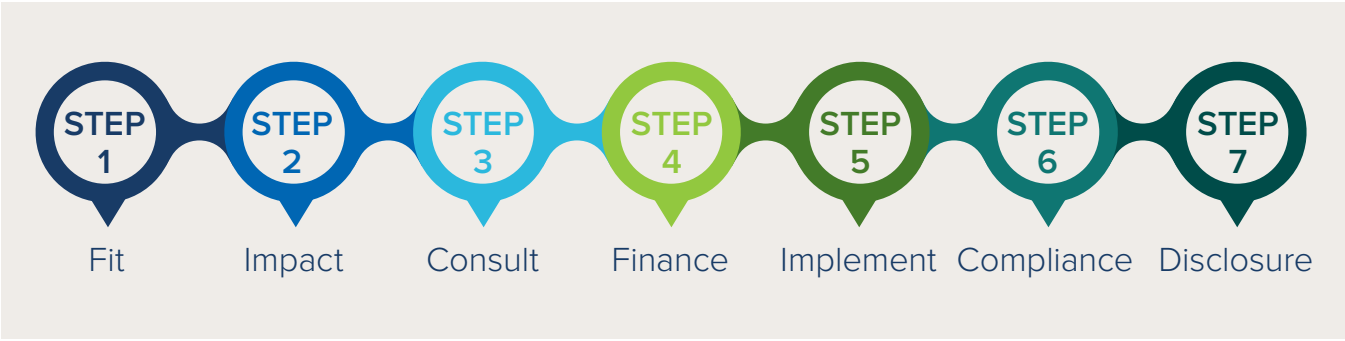
  - The average cost of upgrades to reach compliance is less than $3,000 per residential property.

- **Effective engagement with property managers and owners:** From the start, the City of Boulder worked closely with property owners to make this policy as palatable to property owners as possible. For many property owners, knowing which efficiency measures to implement and dealing with contractors are major barriers preventing efficiency projects. Boulder's program offered technical assistance, which allowed property owners to navigate through the complex process without too much difficulty or time commitment.

For additional details about Boulder's SmartRegs program, review the following resources from **National Renewable Energy Labs**, **Department of Energy**, and **transformgov.org**.

A CITY ROADMAP
TO DEVELOP MINIMUM EFFICIENCY STANDARDS FOR RENTALS (MESR)

FIGURE 1
SEVEN STEPS TO DEVELOPING MINIMUM EFFICIENCY STANDARDS FOR RENTALS



If your city is looking to make existing residential rental properties more efficient, affordable, comfortable, and resilient, we highly recommend designing a policy framework that requires minimum efficiency standards for all rental housing at the point of rental-license renewal. Building on Boulder's example, RMI took lessons learned and developed a comprehensive step-by-step roadmap which can help cities design a framework to create minimum efficiency standards for rentals.

FIT

Determine whether efficiency standards for rentals are the right fit for improving efficiency of the city's housing stock

If a large portion of the city's housing stock (>30 percent) are rental properties and there is an established long-term rental licensing program in place, it is likely a prime candidate for implementing the minimum efficiency standards for rentals. However, if the city doesn't have long-term rental property licensing in place, here are some alternative options the city could consider to implement efficiency requirements for existing living units:

Option 1: Integrate efficiency standards into short-term rental licensing

Most major cities without long-term rental licensing have short-term rental licensing programs that these efficiency requirements could be integrated into. Recently, short-term renting platforms have become a more popular and economically attractive proposition for property owners than long-term renting. This ultimately results in fewer long-term rentals and a more expensive rental market, which impacts the city's affordability. Implementing efficiency standards for short-term rentals might help combat this issue by leveling the playing field. Ideally, efficiency standards should be integrated into both short-term and long-term rental licensing programs in a city.

While this paper is focused on cities implementing efficiency standards for long-term rentals, another potential avenue for pursuing efficiency standards for rentals is through short-term renting platforms such as AirBnB, HomeAway, or VRBO. Although these platforms likely won't require efficiency standards for their rentals, they could create some type of "green rentals" program, which could give the properties that meet the efficiency standards a competitive edge.

Option 2: Start a new rental licensing program in your city

Rental licensing programs can not only help improve accountability among property owners in a city, but also be used as an instrument to safeguard the health, safety, and welfare of city residents in general. Developing a citywide rental licensing program in conjunction with minimum efficiency requirements will result in seamless integration, but will require additional up-front and ongoing administrative time for the city to create the rental licensing program. This includes permanent staff to handle licensing, renter license inspector certification, ongoing assistance and enforcement, and data tracking.

Option 3: Consider other triggers to improve efficiency of existing residential properties

Requiring efficiency standards at rental licensing is straightforward because it plugs into a process already in place, but there are other policy- and market-based approaches available to improve the efficiency of existing living units. One trigger to consider is requiring upgrades at time of sale. This approach would address both owner-occupied and rented living units and could be beneficial in cities where rentals don't make up a large portion of their existing residential stock. There are cities in the US that currently have minimum energy efficiency requirements for residential properties that are triggered at time of sale, including (but not limited to): **San Francisco** (created in 1982); **Berkeley, California** (created in 1991); and **Burlington, Vermont** (rental specific, created in 1997). While this paper will continue to focus on upgrades triggered by rental license renewal, some lessons learned from the efficiency standards implemented in these cities are transferable and will be referenced throughout the paper. For more considerations on efficiency requirements triggered at time of sale, see RMI's forthcoming research supporting time of sale policy as an alternative and effective trigger for cities looking to drive ambitious climate goals.

Boulder had both a long-term rental licensing program and a short-term rental licensing program in place, but only implemented the efficiency standards for the long-term rental program. They currently don't implement efficiency requirements for short-term rentals because the licensing program was just established in 2016 and because since people own and live in these residential properties they are more likely to keep them comfortable and efficient.

STEP 2

IMPACT

Perform a preliminary analysis to determine the impact

Cities considering an MESR policy should evaluate and assess the impact of such a program so its effectiveness can be determined and benchmarked against alternative policy measures. This initial analysis is a quick, high-level analysis that can be done in-house, as its main purpose is to understand whether the policy is worth pursuing. Once these metrics are calculated, they should be shared with key stakeholders including property owners/managers and constituents to give them a sense of the overall impact and importance of this policy. Listed below are some of the key metrics to evaluate:

- **Energy saved:** Through efficiency upgrades, energy savings will be realized. These savings will not only directly benefit renters by lowering their cost of living, but also translate to long-term maintenance and valuation benefits for property owners/managers. More analysis and conversation will be required to fine tune the balance between the desired level of energy savings with efficiency upgrade costs, but using a broad range allows for a rough approximation of the scale of impact.
- **Carbon saved:** These savings will help inform cities on the importance of this policy in achieving their climate goal and relationships to other initiatives.

- **City's cost to implement:** This metric allows cities to determine what level of funding they require as well as to understand whether the impacts are worth the costs. Some costs to include are the cost of detailed analysis for the city to determine how best to balance energy efficiency targets with the cost of efficiency projects, full-time city employee or contractor cost to set up and run the policy, additional time for the rental licensing office to check for efficiency compliance, verification inspection costs, and energy inspector capacity building costs. If additional funding is available, the city could also help supplement energy inspection costs and incentives for property owners. This could be funded through grants, carbon taxes, or fees from noncompliant rentals.

- **Additional metrics to consider:** Private investment capital (i.e., cost to property owners), local jobs created, utility incentives available, and criteria air pollutant reductions are additional metrics the city may want to calculate. Paying for energy efficiency measures and energy inspections will result in an influx in private capital that will not only help promote local businesses and the local economy but also help rebuild a future-ready residential housing sector. Additionally, most utilities have incentives available for residential efficiency upgrades that can help offset some of the property owners' costs. This type of initiative can help tap utility and state dollars that otherwise might be spent outside the city. Finally, many cities fall within "nonattainment" areas where ambient air quality standards are not met, or "maintenance" areas where they're close to missing the standards. In these areas, calculating the reduction of criteria air pollutants from both avoided electricity use and reduced use of on-site fuels would be useful. For more details on how to account for reduction in criteria air pollutants, review **NASEO's Energy Efficiency Pathway Templates** created specifically for Boulder's SmartRegs policy.

HIGH-LEVEL IMPACT ANALYSIS FOR FIVE KEY CITIES

RMI performed a high-level analysis for five key cities to determine the estimated impact of introducing an MESR policy. The cities—Minneapolis; Philadelphia; Oakland, California; Washington, D.C.; and Boston—were shortlisted as prime candidates for this analysis because they have large rental housing markets, carbon reduction goals, and a rental license system in place that renews frequently.

The MESR policy will cost the cities on average about $13 per rental unit or $3 per capita.[3] Additionally, even using conservative savings assumptions, this will reduce carbon in cities equivalent to building all new residential properties to a net-zero energy standard for the next eight years, or equivalent to 123,000 net-zero energy residential properties. This analysis assumed it would take the city three years to implement the first round of efficiency upgrades. The analysis calculated these key metrics using the following approach:

- **Energy saved:** Determined typical energy consumption of residences using state-specific **residential energy consumption survey** (RECS) data. Determined how many rental properties are in the city using the **housing census data**. Assumed 20 percent of rental properties were exempt from the requirement for various reasons (e.g., built recently, mobile home, etc.). Assumed a range of energy savings between 10 percent and 30 percent. Used **Bureau of Labor Statistics data** to determine local utility rates.

- **Carbon saved:** Determined state specific carbon produced per unit of electricity using **eGRID data**. Determined carbon produced per unit of natural gas using **ASHRAE Standard 105 national average value** of 14.15 lb/therm.

- **Energy inspectors required:** Assumed an energy inspector could perform four energy inspections per day and work 260 days per year. This calculation assumes all inspections occur over three years.

- **Cost to city:** This estimate is very roughly based on RMI's following cost assumptions:
  - **Detailed analysis:** A $50,000 cost for a detailed analysis of building stock is required to set an energy target that balances carbon savings goals with the cost of upgrades.
  - **Energy Inspectors:** To have enough energy inspectors to run the program, we estimated a capacity-building cost of $500 per energy inspector. This may include outreach, advertising, and potentially paying for their training.
  - **Implementation tool:** Assumed the city chose to use either HES or HERS, so no cost was required to create the efficiency standard or energy inspector training.
  - **Verification:** Assumed 1 percent of rentals would undergo the verification process at a cost of $100 per verification.
  - **Full-time city employees cost:** Assumed one full-time city employee would be required to run the program for every 30,000 rentals.
  - **Additional cost considerations:** Assumed city was not offsetting the cost of energy inspections or offering their own incentives.

[3] Cost is to the city alone and does not include the cost of efficiency upgrades that property owners finance.

- **Additional metrics to consider:** Although outside the scope of this analysis, if cities wanted to estimate private capital, incentives available, local jobs created, or criteria air pollutants, there are resources available for these estimates. **LBNL's research** provides a rule of thumb on the cost to property owners and utilities for every kWh saved based on results from utility programs across the nation. **PERI's research** provides a rule of thumb for how many direct and indirect jobs are created as a result of private investment into energy efficiency. Reduction in criteria air pollutants can be estimated using **EPA eGRID** or **AVERT** tools.

The results below come from the preliminary analysis using the approach outlined above:

TABLE 1
THE POTENTIAL IMPACT OF MESRS IN FIVE US CITIES

	Minneapolis	Philadelphia	Oakland, CA	Washington, D.C.	Boston
Percent rentals in residential market	52 percent	47 percent	60 percent	59 percent	66 percent
Quantity of rental units	91,000	318,000	102,000	174,000	179,000
Renter's license process in place?	Yes, renews annually	Yes, renews annually	Yes, renews annually	Yes, renews every two years	Yes, renews annually
Costs to city over three years	$1.12M	$4.24M	$1.55M	$1.63M	$2.42M
Annual energy saved (trillion Btu)	0.82 to 2.47	1.88 to 5.65	0.51 to 1.52	1.03 to 3.09	1.56 to 4.68
Annual energy cost saved	$15M to $46M	$45M to $134M	$20M to $61M	$20M to $61M	$53M to $158M
Annual carbon reduced (lbs CO_2)	192M to 577M	378M to 1,134M	78M to 233M	224M to 673M	295M to 885M
Energy inspectors required	23	82	26	45	46

CONSULT

Consult and partner with key stakeholders in the residential housing sector

For this policy to be effective, it will be important to garner property owner and property manager buy-in. Property owners might have concerns since it will require them to spend capital to undertake retrofits. Therefore, it is important to work with the key stakeholders in the residential housing sector to address their pain points as much as possible. Once the internal high-level impact analysis is performed, city policymakers should coordinate a forum with key stakeholders and propose the policy alongside the key impact analysis. These convenings should be ongoing throughout the policy development process. After each step, a convening should be held to get key stakeholders feedback and buy-in. The main goals of these convenings should be to:

- **Understand and address concerns:** During the consultation, it is important to discuss property owner's major concerns with the policy. Some key concerns could be around cost, time commitment, unfamiliarity with the process to implement energy efficiency improvements, and possible tenant disruption, among others. For each pain point identified, it is important to brainstorm solutions with property owners, and consider how these solutions could be included within the policy and the particulars of implementation.

- **Develop a cost-recovery strategy to ensure affordability:** Ultimately, it is important to ensure this policy doesn't result in landlords increasing rent significantly more than annual energy cost savings and making the rental market unaffordable. To combat this concern, policymakers should have an understanding of how, or if, landlords plan to pass costs through to tenants and how, or if, different payback periods impact cost-recovery strategy. Using this information, policymakers should create and distribute a best practice guide on cost-recovery strategy and/or design local incentives and financing tools to alleviate concerns. Additionally, for jurisdictions with rent control, policymakers should consider allowing landlords to raise their rents by less than or equal to the anticipated annual energy savings of the efficiency project. Feedback from property owners about what financing tools they currently use and what their ideal methods of financing these upgrades might be will help inform the financing tool development discussed in Step 4.

- **Identify the compelling value proposition:** To minimize pushback, a value proposition for property owners/managers should be developed and included in the proposed program vision, goals, and objectives. A successful value proposition will determine what property owners/managers value (e.g., tenant retention, higher-value assets, sustainability goals) and make sure the value proposition addresses it. For example, if tenants are more comfortable in their living units and have lower utility bills they may be more likely to renew their leases, therefore reducing administrative cost and time for the landlord.

The City of Boulder consulted heavily with the Boulder Area Rental Housing Association. This influenced their compliance timeline, helped set the efficiency goal, and allowed the city to design financing mechanisms attuned to the needs of property owners.

STEP 4

FINANCE

Co-develop financing options and incentives with utilities and lenders

City officials should codevelop financing tools that help offset the up-front costs of these efficiency investments and/or spread the costs over the lifetime of the equipment, making them more palatable for property owners. Some financing mechanisms that the city could consider are:

- **PACE:** Residential PACE (applicable for one to four units) and commercial PACE (applicable for multifamily apartments) could be used as effective financing tools to offset the up-front costs of retrofits and spread them across the effective lifetime of the efficiency project.
- **Utility incentives:** City officials should review incentives offered through the local utility to see how much they can offset the up-front costs of potential improvements. Oftentimes utilities include prescriptive incentives for solar photovoltaics, HVAC equipment, water heater equipment, and appliances. If funding allows, cities could offer additional incentives to supplement the utilities incentives.
- **Utility on-bill financing:** City officials could meet with utility companies to develop financing options such as on-bill financing, which would directly pass the upgrade cost through to the tenants on their utility bills. See Fort Collins **Home Efficiency Loan Program** for an example of this type of financing approach.
- **Fannie Mae Homestyle Energy Loans:** This loan can finance up to 15 percent of appraised property value with 100 percent of the funds going toward the energy improvement cost. This requires a HERS or HES report, so could fit in well with the required energy inspection. This will allow for low to no up-front costs, and could spread out costs throughout the life of a project.
- **Home equity line of credit (HELOC):** This allows the property owner to take out a line of credit that uses the borrower's residential property as collateral. Interest is paid only on what the property owner actually borrows. The loan term is between five and 20 years and payments are tax deductible.
- **Green banks/credit unions:** The city should work with local green banks or credit unions to offer low-interest loans for efficiency projects.

The City of Boulder worked with the local utility to determine where supplemental incentives would be beneficial and even offered direct installation of free energy efficiency measures. Boulder County, which runs EnergySmart, leveraged a local credit union, Elevations Credit Union, and created an energy loan that Boulder County supports with a loan loss reserve.

IMPLEMENT

Develop an implementation framework

This is the most important piece to successfully implement this policy and therefore requires significant thought. A successful implementation framework will reduce costs to property owners and the city, while hitting impact targets. The key elements of developing an implementation framework follow.

- **Select energy efficiency measurement tool:** The city can either use an existing asset-based energy scoring system such as Home Energy Score (HES) or Home Energy Rating System (HERS) or create its own checklist. These measurement tools need to be asset based instead of operations based (i.e., energy bills) because different tenants can have very different energy use, and landlords shouldn't be required to perform upgrades based on tenant behavior. If time and cost to run this program is a concern, the city should strongly consider using an existing rating system instead of creating its own checklist. By selecting a rating system that is run by a respected third party and that has been tested, has a training program and certification process in place for inspectors, and undergoes frequent updates, less time and money can be spent on the implementation of the efficiency standards. If a custom checklist is preferred, to avoid the checklist energy efficiency measures (EEMs) falling behind available technology or becoming outdated, we recommend tying it to a frequently updated and widely recognized standard like ENERGY STAR. Top priorities will vary by city, but based on RMI's key considerations, HES appears to be the most effective energy efficiency measurement tool. Table 2 shows a high-level overview of the merits and issues associated with each tool.

- **Select energy target:** From discussions with property owners, a desired target payback period should already be determined. This payback period needs to be balanced with policymakers' desired climate goals and it needs to factor in unique financing approaches. Selecting the energy target will require a detailed analysis, as follows:
  - Step 1: Determine characteristics of prototypical living units in your city. Limit number of prototypes as much as possible
  - Step 2: Model baseline energy consumption for each prototype
  - Step 3: Work with local contractors and/or review cost databases (e.g., RSMeans) to determine typical cost of efficiency measures in city
  - Step 4: Model proposed EEMs for prototype rental units to determine typical energy savings
  - Step 5: Model packages of EEMs until desired payback period is achieved. If efficiency requirement isn't stringent enough to achieve climate goals, consider whether longer payback periods, additional financing mechanisms, or a phased approach are available

- **Understand energy data collection requirements and reporting framework:** When an energy inspection is complete, it is important to have a common database where the results are stored. Make sure data collection uses standard methods (HPXML) so that data can be easily used by other systems. This database will be referenced by the rental licensing agent before issuing the rental license, so data collection should minimally include the initial score, final score, and expected energy savings. Additional data that would be beneficial to collect are types of measures installed, cost of measures, how upgrades were financed, and whether any incentives were utilized. These could be additional fields in the energy inspector's final report.

TABLE 2

COMPARING IMPLEMENTATION TOOLS

Implementation Tool	Home Energy Score (HES) (recommended tool)	Home Energy Rating System (HERS)	Custom Checklist
Top Priorities			
Time/cost requirement for city to create tool	Tool is already created by DOE. No city time or cost required beyond familiarization with tool	Tool is already created by RESNET. No city time or cost required beyond familiarization with tool	City needs to create tool from scratch which will require significant time, analysis, building science knowledge, and outside consulting
Time/cost requirement for city to train and certify energy auditors	Training operates through DOE and is free. May require some city time to get auditors interested	Training operated through RESNET and has a cost. May require city time and help with cost of training to get enough auditors	City needs to create trainings and certification process from scratch. This will take significant time and review to ensure accuracy
Clarity on how specific efficiency improvements will impact score	Report shows how score is impacted if EEM package is performed	Report shows how score is impacted if EEM package is performed	Points associated with specific upgrades on checklist
Cost of audit	$175	$450	Should be low cost since checklist with no analysis
Diversity of building types tool addresses	HES only serves single-family homes. DOE's ASSET Score can cover multifamily	Single and multifamily	City can create checklist for any building type it desires
Important Considerations			
Nationally recognized	Yes, created by DOE	Yes, included in some energy codes and ENERGY STAR certification	No recognition outside of city. Difficult to compare across cities
Accuracy of assessment	One site assessment and energy model analysis	One site visit with diagnostic testing and model analysis	One site assessment and then add up points from checklist
Audit time commitment	One-hour site visit	Three-hour site visit and diagnostic testing and model analysis	One-hour site assessment and then add up points from checklist
Granularity of score	1–10	0–150	As granular as desired
Frequency of update to tool and time intensiveness of update to city	Updated frequently by DOE	Updated frequently by RESNET	City responsible for any updates and sets updated frequency
Clear recommendations for efficiency improvements	Suggests EEMs with anticipated energy savings	Suggests EEMs with anticipated energy savings and cost	Checklist has EEM recommendations that are generic to all rentals

- **Determine how approach differs between single-family and multifamily:** Since HES only covers single-family homes, if this implementation tool is selected, a separate implementation tool will need to be selected for multifamily properties. One option for this is **DOE's Asset Score**, which is similar to HES, but created for commercial buildings including multifamily buildings. DOE has plans to create inspector trainings for Asset Score, but they are not currently available, so this is something the city would likely have to take on if selecting this system for multifamily living units. Alternatively, the city could select HERS for multifamily living units. Although the inspection cost is higher, HERS has an approach in place to sample units in multifamily buildings instead of inspecting all units, so the cost per unit is lower than a single-family home. Additionally, **EMPRESS** is working to harmonize HES and HERS scores, so cities will be able to draw a correlation between the two scores easily.

- **Determine human capital needs:** To implement the energy inspections of all rental properties, a large number of energy inspectors who don't currently exist in the city may be required. The number of energy inspectors will depend on the duration of the rental license and how often the efficiency of the rental property needs to be inspected. Databases of where existing HES and HERS inspectors are located are available, and the city will need to determine how many more energy inspectors are needed in order for the policy to work. While HES and HERS has its own training program, the city may still need to put some funds into promoting these new jobs and could even help offset some of the cost of the trainings when necessary. To help connect energy inspectors with property owners, the City should assemble a list of qualified inspectors.

The City of Boulder created both a prescriptive and a performance path for property owners. The performance path used HERS and the prescriptive path used a checklist created by the City of Boulder. One lesson learned was to have a plan in place to update the custom checklist more frequently. When the checklist was created in 2010, the City of Boulder didn't have electrification goals, so the checklist actually disincentivizes electric hot water and space heating, which goes against their current goals of **reducing natural gas use** in buildings.

STEP 6

COMPLIANCE

Develop compliance framework

A compliance framework needs to include the lag time before rental properties need to be in compliance, how the policy should be phased in, how to inspect rental units for accuracy, and exceptions to the policy. Key considerations in developing a compliance framework are as follows.

- **Compliance timeline and pathways:** To reduce compliance timelines as much as possible, consider whether phasing in compliance makes sense depending on key stakeholder pushback and cost analysis (see the Additional Considerations section for one example of a phased approach). Ideally, some action should be required in the first couple of years so momentum is built around the policy and it results in immediate impact. Extending the compliance timeline might result in some property managers performing upgrades at cost-optimal times (e.g., equipment end of life), but generally it is just a way to procrastinate performing the upgrade.

- **Alternative compliance path:** Cities should think through whether they want to create alternative compliance paths for property owners where it is too cost prohibitive to implement efficiency upgrades or when equipment that needs to be replaced is not near end of life. By providing options, instead of one path, property owners can follow the compliance paths that make the most sense for their properties. One suggestion is having the property owner pay all or a portion of the living unit's energy bills until upgrades are made. They could also be required to purchase renewable energy certificates to essentially offset the additional carbon produced from their properties above the efficiency standard. Another option would be for them to pay an annual fine that would feed back into funding the MESR program or other sustainability initiatives.

The City of **Ann Arbor, Michigan**, allows property owners that pay for their tenant's utility heat bills and do not charge the tenant for heat to be exempt from meeting efficiency standards for rentals.

- **Cost caps:** Consider an appropriate cost-effectiveness threshold and/or total cost cap, so no property owner is paying exorbitant amounts to comply with the policy.

The City of Burlington, Vermont, developed **cost-effectiveness limitations and a total cost cap** for their efficiency standards for rentals triggered at time of sale. Energy efficiency measures could not have greater than a seven-year payback and could not exceed the lesser of $1,300 or 3 percent of the sale price of the property listed on the property transfer tax return.

- **Exemptions:** Exemptions could include certain housing types (e.g., mobile homes), newer rental properties (e.g., rentals built in the last 10 years because the new construction efficiency standards might be more stringent than the energy target), or high-performance homes that are ENERGY STAR or LEED certified.

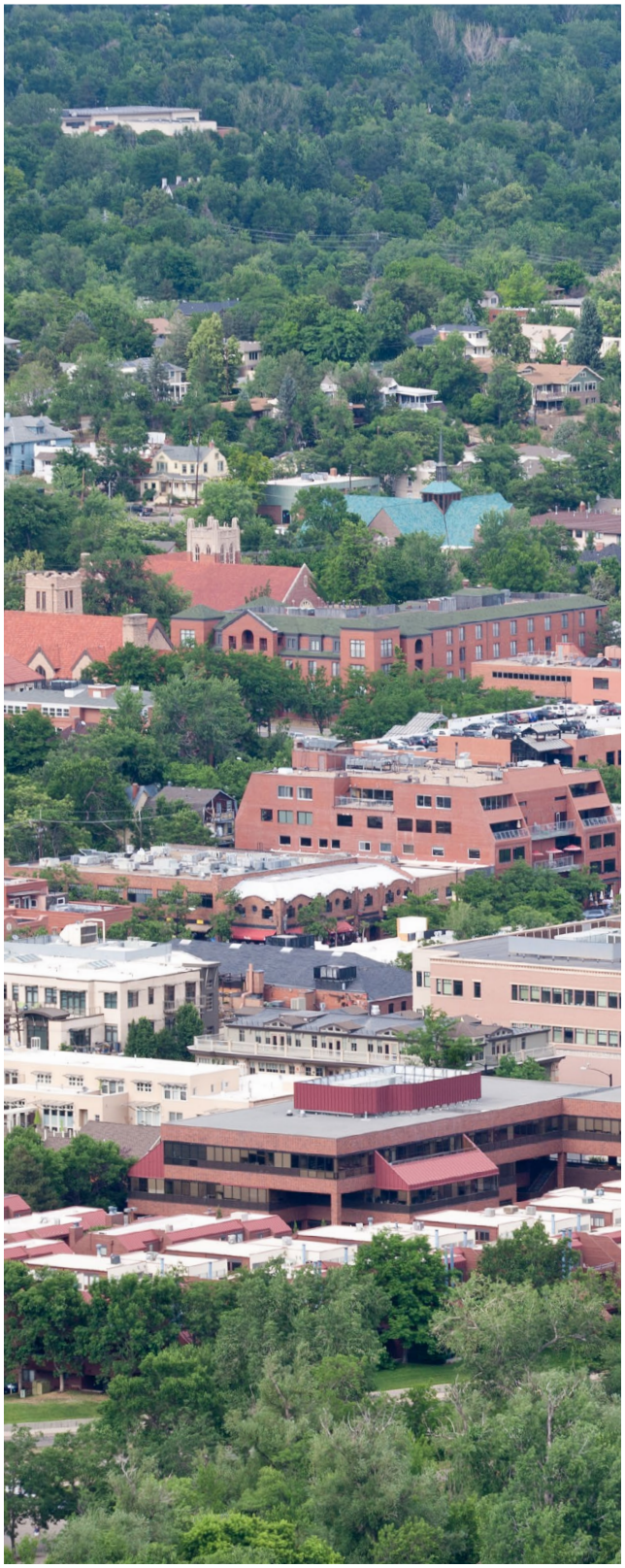
- **Noncompliance penalties:** Rental properties that don't meet efficiency standards will not receive their rental licenses and therefore cannot be rented. Consultation with legal professionals should be made to determine what happens if properties are rented without a renter's license, but will likely result in a fine. Additionally, since tenants will be familiar with the MESR policy, if they have thermal

comfort issues or high energy bills, they will likely confirm their rental properties are compliant, and if the properties don't have renter's licenses and therefore don't have minimum efficiency standards, tenants will be more likely to report it since it directly benefits them.

- **Verification:** To ensure this policy is actually performing as intended, a randomly selected portion of the rental properties should undergo a verification process to ensure their scores are accurate and accurately reported. To keep costs low, only a small portion of rental units should be audited (i.e., one percent) unless that first round of audits results in significant variation, in which case another, larger round of audits should be performed.

- **Multifamily considerations:** For multifamily projects with similar units, it is unnecessary for each unit to undergo an energy inspection. The city should work with multifamily property managers to determine the appropriate sampling of units to inspect to keep cost down. Improvements made to a unit that underwent the energy inspection should be made to all similar units. When multifamily units are verified for compliance, a different sampling of units should be selected to confirm upgrades were implemented throughout the project.

The City of Boulder has fines in place for rentals that operate without a rental license. Boulder has exemptions for mobile homes, new units built after 2001, and units that already went through their weatherization program.



STEP 7

DISCLOSURE

Develop disclosure framework

Ideally, rental units' energy scores would be shared on rental websites so renters can factor in energy costs when determining which property to rent. They should also be included in the local multiple listing service (MLS) system, so someone purchasing a rental property knows how efficient the residential property they're purchasing is. Especially if efficiency standards ramp up with time, a rental property may be more desirable to purchase if the property is significantly more efficient than the efficiency standard requirement, so the new property owners know they won't need to make any upgrades to the property in the near term.

If detailed public disclosure results in privacy concerns from property owners, the next best approach is to require disclosure of the energy score to the renter before they sign their lease. That way the person residing in the living unit knows what to expect from their energy bills. The Home Energy Labeling Information eXchange (**HELIX**) is currently working on an approach to automatically populate the residential properties with Home Energy Scores, HERS ratings, Home Performance with ENERGY STAR, solar, and more into an MLS or portals like Trulia and Zillow when it is approved by the seller. Finally, cities should require rentals to be included in a public database that states whether they are compliant, noncompliant, or exempt from the MESR program. This way, if a renter is located in a building that is noncompliant, they can reach out to their landlord or city to take corrective action.

Energy disclosure requirements are a good stand-alone policy and some cities already require energy disclosure for residential properties. Cities that require disclosure of energy use for single-family homes include: **Austin, TX** (enacted in 2013), **Berkeley, CA** (enacted in 2015), and **Portland, OR** (enacted in 2018). These policies all require an energy inspection before selling a home and disclosure of the results to potential buyers. **Research from Elevate Energy indicates** that transparent energy consumption in living units results in a higher sale value and less time spent on the market. Additionally, 18 cities currently require benchmarking and disclosure of multifamily buildings' energy consumption including (but not limited to): **Boston** (enacted in 2013), **Chicago** (enacted in 2013), **Kansas City, Missouri** (enacted in 2015), **Atlanta** (enacted in 2015), and **Orlando, Florida** (enacted in 2016). **The US Environmental Protection Agency's research** into energy transparency shows that, even without efficiency requirements, benchmarking energy consumption results in an average of 2.4 percent annual savings. For additional considerations into developing residential energy disclosure policy, review this **policy toolkit report** from ACEEE.

The City of Boulder created a public facing **database of licensed rentals** that indicates whether a rental property is compliant, noncompliant, or exempt from SmartRegs.

ADDITIONAL CONSIDERATIONS

While the above steps are best practice, each city is unique and may require different variations in steps depending on the time and cost constraints of the city, political will, typical ownership structure of rentals in the city, and feedback from key stakeholders. For some cities, a more phased approach might help with pushback and could help better inform the policy. The goal of these types of policies is to gradually improve existing building efficiency using the path of least resistance. Here is one possible approach:

- **Phase 1:** Require energy inspection and disclosure for all residential properties and let market forces improve efficiency in rental units.

- **Phase 2:** Require efficiency standards for all rental units that are achievable with minimal cost burden. While this first efficiency standard may not result in significant energy savings, it will improve the lowest-performing rental units in the city.

- **Phase 3:** Gradually increase the rental efficiency requirement over time to meet the city's climate goals. By gradually ramping up efficiency standards (with the ramping up disclosed early in the process), property owners should be able to align retrofit requirements with replacement of equipment at end of life and therefore benefit from incremental costs instead of the full costs of new equipment.

Regardless of how cities choose to approach improving efficiency of existing residential properties, this is a key issue for all cities hoping to achieve their aggressive climate goals, and an MESR policy is worth considering.

CALL FOR COLLABORATORS

Implementing an MESR program will raise the floor of the residential housing stock in cities and will result in significant tenant benefits. Rocky Mountain Institute will work with cohorts of select cities to create working groups and provide technical support around implementing residential efficiency improvements. Cities are leading in the US fight against climate change and RMI will help first movers achieve their goals with free technical assistance. **Please contact us** if you wish to be involved or learn more.

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