Building Energy Rating and Disclosure Policies
Update and Lessons From the Field

Northeast Energy Efficiency Partnerships

February 2013

Northeast Energy Efficiency Partnerships (NEEP) was founded in 1996 as a non-profit whose mission is to serve the Northeast and Mid-Atlantic to accelerate energy efficiency in the building sector through public policy, program strategies and education. Our vision is that the region will fully embrace energy efficiency as a cornerstone of sustainable energy policy to help achieve a cleaner environment and a more reliable and affordable energy system.

The High Performance Buildings Project was developed to promote operational energy savings in new and retrofitted buildings throughout the region. NEEP's vision is that the work done today on High Performance Buildings will pave the way for the development of zero net energy buildings—buildings that consume no more energy than they produce—on a broader scale throughout the region.

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Dunsky Energy Consulting is a Montreal-based firm specialized in the design, analysis and implementation of energy efficiency and renewable energy programs and policies. Our clients include leading utilities, government agencies, private firms and non-profit organizations throughout Canada and the U.S. To learn more, please visit us at www.dunsky.ca.

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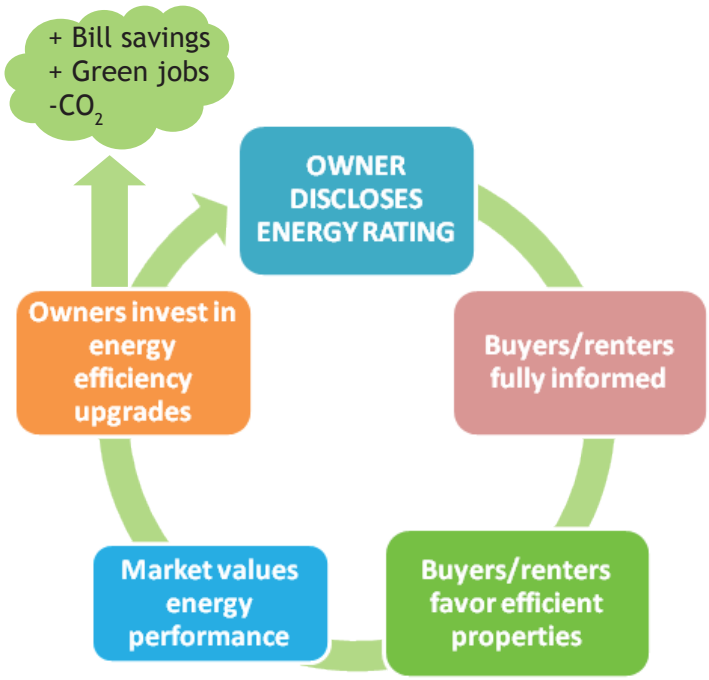
Executive Summary

As states and cities seek to meet their energy savings and carbon emissions reduction goals, new and innovative solutions are needed to improve energy efficiency in the stock of existing homes and buildings. One key tool—*building energy rating and disclosure* (BER&D)—seeks to ensure that real estate markets value energy efficiency by requiring information about building energy performance be disclosed to potential buyers, renters and the public. These policies range from simple checklists for new home efficiency features to comprehensive regulations that require new and existing homes and commercial buildings to undergo an energy audit. BER&D policies are often linked with improved building energy codes, and in some cases poor rating results can trigger mandatory efficiency upgrades for poorly performing buildings.

Though BER&D policies involve a wide array of specific policy and design choices, they are based on a few key concepts:

1. **TIME OF SALE (OR RENTAL) TRIGGERS:** When selling or renting a home or space within a building, owners must disclose a valid energy rating to potential buyers or renters before the contract is closed. The rating indicates current performance and potential improvements, providing meaningful information to consumers and empowering them to consider energy performance in their decision making. Armed with this information, some consumers will give preference to more energy efficient homes and buildings, enabling markets to value energy performance, and providing a greater return on investment to projects aimed at improving building energy performance.



Recent evidence from real estate market studies show that buildings certified as energy efficient benefit from lower vacancy rates, and increased rental and resale prices. For homeowners and buyers, energy efficiency is becoming an important part of decision-

making, and more and more agents and buyers are seeking out this information when considering purchasing a property.

2. **SCHEDULED DISCLOSURE**: Typically applied to commercial buildings, scheduled disclosures require owners to obtain a standardized energy rating based on their annual "operating" performance. Requiring owners and building managers to measure their buildings' performance annually draws their attention to energy efficiency opportunities. The information gathered enables them to institute continuous improvement practices, to benchmark against other buildings (within or outside of their own portfolio), and to establish performance targets in their annual plans and objectives. Policies can also require that ratings be displayed prominently within the building or published in a publicly-available database. These options create additional drivers to improved energy monitoring and performance: renters may ask owners to address energy performance, utility incentive programs may be marketed more effectively at owners with poorer (or higher) performance, energy service companies can more effectively identify high-value potential customers, and owners can gain market recognition and other added value from their efforts.

Whether a state or local government adopts a triggered or scheduled disclosure BER&D policy, or a combination of the two, there are many aspects of its implementation that can impact its effect on property values. Decisions considering the type of rating system selected, the administrative agency, engagement with stakeholders and non-compliance penalties all play important roles. This report seeks to gather experiences from across the U.S. that paint a picture of the range of BER&D policy options that exist, draw out lessons learned from these early examples, and provide guidance to proponents who seek to develop their own BER&D policies.

Results From Case Studies

For this report, a series of six case studies evaluated a range of BER&D policies from across the U.S. The case studies sought to capture experiences from:

- State and local government policies;
- Regulations applied to residential, commercial and public buildings;
- The range of policies available, from simple new home asset ratings to comprehensive policies including rating, disclosure, audits and mandatory upgrades, and;
- Successful and unsuccessful attempts to implement BER&D policies.

In 2009, NEEP commissioned Dunsky Energy Consulting to produce a report on best practices in BER&D policies entitled, "Valuing Building Energy Efficiency Through Disclosure and Upgrade Policies: A Roadmap for the Northeast U.S." This companion report seeks to build where the 2009 report left off, capturing the recent real-world experience across the U.S., and drawing out a few of the key lessons learned that can help states and cities in the Northeast and Mid-Atlantic region and beyond to develop and implement successful BER&D policies of their own.

This update report cites real world results and observations from the six BER&D policy examples studied:

- New York City's Greener Greater Buildings Plan;
- Austin, Texas' Energy Conservation Audit and Disclosure ordinance;
- Washington State's Efficiency Act;
- Kansas' Energy Efficiency Disclosure Form law;
- Connecticut's attempted BER&D legislation, and;
- Vermont's attempted BER&D legislation.

Results to Date

While the published data from BER&D policies and their market impacts so far are limited, the results gathered from interviewing key players involved in developing, implementing or debating the policies, as well as published reports and anecdotal evidence from these and other rating and disclosure programs reveal that:

- High compliance rates for BER&D policies are achievable when certain key policy elements are in place;
- There is plenty of maneuverability within the range of successful BER&D options to tailor policies to local circumstances;
- Rating systems are available, or can be customized, to provide fair and reliable assessments of residential and commercial buildings.

Lessons Learned

Based on the case studies and early results, 10 key lessons learned are presented below. These cover the development, enactment and implementation of BER&D policies and are designed to provide proponents with the benefit of early experience in states and cities with policies in place.

1. **Lay the Policy Groundwork**: BER&D policies often benefit from broad energy and climate change mitigation policies and are most likely to succeed when championed by the chief executive (governor or mayor).
2. **Know Your Building Stock**: Designing BER&D policies that can target a majority of energy consuming properties, but allow for reasonable exemptions for smaller or specialized-use buildings, as well as properties that have already undertaken significant improvements, is key to high compliance rates and optimizing the policy's impact.
3. **Package Policy Elements Appropriately**: BER&D policies can be passed as individual regulations targeting various real estate market segments, or can be packaged as a broad piece of legislation contained within an overall energy efficiency strategy. The choice of the appropriate packaging requires balancing administrative capacities, the political landscape, and considerations of the local building stock.

4. **If You Can't Mandate, Lead**: If BER&D policies covering private buildings cannot be legislated, local governments can lead through example, by mandating rating, disclosure and upgrades in public facilities. Another option is to create voluntary ratings attached to incentive programs for property owners. These build local experience and capacities to demonstrate the benefits of BER&D policies.
5. **Involve Local Utilities From the Start**: Utilities hold billing data that is essential to performing building energy ratings, and they have a valuable relationship with the energy end-users. Working closely with local utilities to align BER&D policies with their demand side management (DSM) goals can greatly increase the impact of BER&D policies.
6. **Train Raters in Trusted Rating Systems**: To value energy efficiency, the real estate industry must trust the accuracy and fairness of rating systems. Certifying raters through existing networks and using a recognized existing rating tool can improve the quality and impact of the rating results.
7. **Apply Clear Messaging Tools**: The information disclosed in a rating or audit report, especially the overall building rating, must be clearly and easily understood by the average consumer.
8. **Ensure Timely (Early) Disclosure**: Rating information must be available early in the sales and rental processes, ideally at the time of listing, to allow potential buyers or renters to consider the information in their decision making.
9. **Walk Carefully on Enforcement (but Carry a Stick)**: Rating and disclosure rely on high compliance rates to be effective. A combination of strong incentives, credible enforcement and dissuasive penalties are essential to ensuring success, but administrating agencies should invest in significant information resources and use fines and penalties only as a final step in a longer effort to engage with property owners.
10. **Link Rating Results to Action**: BER&D laws are an important tool in the toolbox to promote cost-effective energy savings, but are only a means to an end. To encourage action, the rating or audit report should assist consumers by recommending appropriate energy efficiency improvements, providing financial analyses, and referring to government or utility incentives.

The report considers the common criticisms and responses that arise in debates over BER&D policies, provides an assessment of policy options, and outlines a road-map for successfully implementing BER&D policies based on current experiences. Together, the report's sections provide proponents at the state or local level a range of approaches for promoting and developing BER&D policies in their community.

The Path Forward

Further results and analysis from cities and states with BER&D policies are needed to ultimately determine to what degree BER&D policies can break down market barriers for energy efficiency. Encouraging results from recent real estate industry reports and surveys are

showing a clear link between energy efficiency certifications such as ENERGY STAR® and improved building rental and resale values. Moreover, there is growing evidence that building owners, real estate agents and potential buyers see energy performance as a valuable attribute in a property and are seeking reliable ratings to help them identify this value. As the pool of experience grows, a line can be drawn from the establishment of effective BER&D policies to an increased value and uptake of energy efficiency measures in a wide range of commercial and residential buildings.

BUILDING ENERGY RATING AND DISCLOSURE POLICIES: EARLY RESULTS AND LESSONS LEARNED

Introduction

In 2009, NEEP commissioned Dunsky Energy Consulting to produce a report on best practices in BER&D policies entitled, "Valuing Building Energy Efficiency through Disclosure and Upgrade Policies: A Roadmap for the Northeast U.S."[1] This companion report seeks to build on where the 2009 report left off, capturing the recent real-world experience across the U.S., and drawing out a few of the key lessons learned that can help states and cities in the Northeast and Mid-Atlantic and beyond to develop and implement successful BER&D policies of their own.

Making the energy performance of homes, multi-family buildings and commercial properties available to potential buyers, renters, financial institutions and others encourages energy efficiency improvements by allowing the real estate market to properly account for and value it. There is a growing momentum toward establishing building energy rating and disclosure (hereafter "BER&D") policies that require property owners to measure and disclose the energy performance of their buildings. The past few years have witnessed successful implementation of BER&D policies by a range of state and local governments, establishing a pool of experiences that can point the way to other jurisdictions that are considering adopting their own BER&D regulations.

Three U.S. states and six large cities have recently adopted building energy rating and disclosure laws. These early experiences have carried BER&D policy and practice forward significantly. New simplified rating systems have emerged, tools have been created that allow owners access to billing information while protecting tenant privacy, and valuable data on entire city and state building stocks has been collected to drive future energy efficiency initiatives. These first examples play an important role to demonstrate the merits of BER&D policies and promote improved energy efficiency within existing buildings.

However, early adopters also carry the burden of proving that fair and effective rating and disclosure systems can be implemented, and that the additional costs borne by home and building owners can return value through market recognition. So far the results are promising, with cities like New York City and Austin achieving high compliance rates, and early studies reveal that property owners are reaping higher rents and resale values for energy efficient buildings.

At the same time debate continues in other states and cities where proponents have attempted to pass new BER&D requirements into law but are meeting resistance from those who are unconvinced of BER&D's ability to deliver widespread value through improved energy efficiency.

This report is based on a selection of case studies (presented in the appendix) from across the U.S. that seeks to represent the current range of BER&D experiences covering: state and city policies;

1 A full copy of the report can be found at http://neep.org/uploads/policy/NEEP_BER_Report_12.14.09.pdf

comprehensive regulations to lighter treatments that cover only newly constructed homes; and from successfully passed legislation to state bills that missed their first attempts at enactment.

The report consolidates recent experiences throughout the country and presents a set of key lessons learned, outlining what has worked, and where BER&D policy development and implementation can be improved. It also provides a summary of BER&D policy options and a road forward toward establishing similar policies in other cities and states. Finally, the six case studies are provided in the appendix, along with summaries of the available published results.

Background On Building Energy Rating and Disclosure

Building energy rating and disclosure policies[2] currently in place across the U.S. require property owners to evaluate their buildings using rating tools that measure either the building's physical characteristics and mechanical equipment, referred to as an **"asset rating"**, or evaluate the actual energy performance of the building, called an **"operational rating"**. The policies then stipulate the timing and audience for disclosing the results, requiring either **"triggered disclosure"**, such as when owners sell, rent or finance their properties, or **"scheduled disclosure"** where the building's performance is regularly disclosed (typically annually), either to owners/renters or to the public at large.

RATING TOOLS

Asset ratings assess the theoretical performance of the physical envelope and major systems of the home or building, using energy modeling software and diagnostic tests. They are generally more useful for triggered disclosure helping buyers/renters who want to compare buildings that will change occupants (and thus occupant energy consumption habits).

Asset ratings tend to be effective in identifying energy efficiency upgrade opportunities—they typically require an in-person visit to the property by a certified auditor. A range of residential property asset rating tools and auditor certifications exist, including the Home Energy Score (HES), the Energy Performance Score (EPS) and the Home Energy Rating Score (HERS).

Energy Usage Intensity (EUI)

EUI is an important measure of a building's energy consumption, calculated as the amount of energy the building consumed in a year averaged over its total interior floor space (typically expressed in kbtu per sq-ft).

It is the base metric for generating operational ratings scores. For multi-unit residential buildings and other building types that cannot be scored by the popular ENERGY STAR Portfolio Manager (ESPM) benchmarking tool, the EUI allows an apples to apples comparison of energy consumption among buildings.

Weather Normalized EUI allows for a comparison of a building's energy use relative to itself over time, accounting for year-to-year differences in weather. This is an important tool to measure the impact of energy efficiency upgrades.

2 Designing effective tools is essential to every BER&D policies. Two recommended reports that can be helpful to policy designers are: "Valuing Building Energy Efficiency Through Disclosure and Upgrade Policies: A Roadmap for the Northeast U.S.", NEEP, 2009, and "Building Energy Transparency: A Framework for Implementing U.S. Commercial Energy Rating and Disclosure Policy", IMT, 2011.

Operational ratings assess the actual performance of the building based on energy bills. They are typically more useful for scheduled disclosure, because they allow the real performance of a given commercial building's owner/operator to be measured over time, enabling continuous improvements.

Currently the Environmental Protection Agency's (EPA) free Portfolio Manager (ESPM) is the most commonly applied tool for performing operational ratings. It allows auditors to track energy and water consumption data and benchmark results to other buildings in the same functional category and climate zone. Buildings receive a score that represents their percentile ranking compared to the Commercial Building Energy Consumption Survey (CBECS) database. For example, a building receiving an ESPM score of 75 would have an average energy consumption that is better than 75 percent of buildings in its category, and be eligible for recognition as an ENERGY STAR certified property.

Mandatory upgrades are often linked to BER&D policies to ensure that savings opportunities identified during the rating process lead to real efficiency gains. Unlike rating and disclosure that aims to encourage greater efficiency through market recognition, mandatory upgrade laws "simply" require it. These requirements are similar in many respects to health and safety, fire code and many other requirements made of existing buildings. Enforcement of upgrade policies, however, is a challenge, and will remain so as long as the market undervalues energy efficiency.

DISCLOSURE TIMING AND AUDIENCE

TRIGGERED DISCLOSURE: The most important effect of triggered disclosure policies is to allow the market to value energy efficiency. When disclosure is required at the time of listing a property for sale it allows buyers, renters and financial partners (lenders) to understand and value the energy performance of the buildings they are considering. By increasing recognition of energy efficiency as a value in the market place, BER&D policies mitigate the negative effects of split incentives and give owners a financial incentive to minimize their building's energy use, and thereby, its energy costs.

SCHEDULED DISCLOSURE: The most important effect of scheduled disclosure laws (primarily applied to commercial and multi-unit residential buildings) is to facilitate continuous improvement in building energy management by providing owners and building managers with standardized, benchmarked reporting data. An additional—and potentially market transforming—effect of scheduled disclosure policies is the use of public disclosure to enable the market to dynamically leverage energy performance metrics. By making ratings available in a public registry, as New York City and Washington D.C. now require, utilities can use this information to target their energy efficiency programs; energy service companies can use it to more efficiently and effectively market their value-added services to those who need them most; and stakeholders can support (or pressure) owners to improve performance over time.

Overview of BER&D Policy Elements

ENABLING PROGRAM OR REGULATIONS	Enabling legislation mandates the rating and disclosure of privately owned properties and public facilities, specifies trigger points and reporting requirements, and establishes administrative authority for defining regulations. Such policies can be established legislatively—which is the most common course—or administratively, such as through an order related to an existing energy regulation or requirement. A vital companion to these is the requirement for utilities to provide billing data to building owners in a common format and on a regular and timely basis.
ADMINISTERING AUTHORITY	A successful BER&D policy will require an administrative authority to put in place the necessary tools. This can include identifying a rating system, establishing data collection rules, and working with stakeholders to provide updates and technical information. The administrator also plays a key role in ensuring enforcement and compliance, sending reminders to property owners, identifying non-compliant buildings, checking data quality and reporting on the results.
RATING SYSTEM	Choice of an appropriate rating system is essential to the policy as it comprises the choice of a metric for measuring performance, a calculation methodology, a building performance rating scale that enables building comparisons, and a building label that clearly communicates performance. Rating systems generally rely on rating and/or energy modeling software to produce ratings; the policy administrator must either develop these tools or approve a third-party system. Many rating systems also include building or home energy audits that produce reports offering specific recommendations for energy efficiency improvements.
TRIGGER POINT	The trigger point defines when and how a building owner must disclose his/her building's performance. Triggers can include listing a property for sale (often referred to as "time of sale" disclosure), before the end of a prospective renter or buyer's option period, or prior to a buyer obtaining financing. Additionally, effective policies can also require "scheduled" disclosure at regular intervals.
DATA COLLECTION AND REGISTRY	Data collection is essential both for ensuring compliance and for measuring policy effectiveness (and making adjustments to the program or compliance rules as needed). A central registry or database is used to track compliance and building data. This registry should also collect all rating results, including audit reports and energy modeling data where relevant. As the database is populated, it will offer a valuable source of information on the evolution of the local building stock, enabling continuous improvements to rating system designs and a feedback mechanism on the effectiveness of the policy as a whole. The Department of Energy has been trying to address the issue of data collection by developing the SEED Platform, which is designed in part to give jurisdictions a standardized way to publish data that can easily be picked up by third parties and incorporated into their websites as well as real estate listings.

Overview of BER&D Policy Elements

ENFORCEMENT	Enforcement is vital to ensure compliance to the disclosure rules. Compliance can be enforced via incentives, fines, market mechanisms, or requiring proof of compliance at a given point within a related transaction, for example registration of a sale. Starting with soft enforcement options, such as sending non-compliance reminder letters, before issuing fines or infractions, can encourage disclosure while maintaining good-will with building owners. Providing property owners with timely and clear information on how and when to perform ratings and disclose results is a valuable compliment to enforcement.
PHASE-IN STRATEGY	Enforcement may need to be phased in over time. Indeed, in some cases, new rating systems and infrastructure may need to be tested and refined. Where that is not the case, phased implementation may be required to provide the time to train and certify sufficient number of raters, and thus avoid bottlenecks, especially where the rating system requires certain expertise and capabilities (e.g., asset ratings). Options include phasing in by geographic region, by building type, size or age, or by using a set schedule. Triggered time-of-sale disclosure provides a "natural" phase-in approach, covering only properties entering the market.
RATER INFRASTRUCTURE	Third-party raters need to be trained and certified, and must be subject to a quality-control process. Although all raters will need to understand basic building science and learn to use rating software, training needs will vary according to the type of rating used. Fortunately, a substantial infrastructure already exists for the training and certification of energy auditors and raters. Leveraging these offers access to a pool of existing trainers and experts who can greatly improve the impact of BER&D policies.
LINK INCENTIVES AND PROGRAMS	Building ratings offer a valuable opportunity to inform owners about any incentives that may be available—through their utilities, government agencies or financial institutions—to encourage adoption of energy efficiency measures and help them to improve their building's performance. Informing property owners about incentives at the time that ratings are performed, in audit reports, or with disclosure to potential buyers, builds an essential link between the BER&D policy and energy efficiency upgrades, which are the ultimate goal.

The Promise of BER&D Policies

When the best combination of rating tool and disclosure requirements are applied, effective BER&D policies offer many benefits to consumers, property owners, utilities and the general public.

1. They attack information barriers. Well-designed disclosure gives owners, buyers, renters and lenders a good sense of a building's performance relative to peers and best practices. Mandatory building audits (when required to produce the disclosed rating) provide information on opportunities for action.
2. They protect consumers. Like miles-per-gallon ratings on automobiles, or nutritional labels on food, energy performance disclosure gives consumers the tools to make informed choices and protect themselves against poor buildings and building components, higher-than-anticipated energy bills, discomfort, or unplanned renovation needs.
3. They can spur participation in voluntary energy efficiency programs. Indeed, voluntary programs, like those offered by many utilities and government agencies, can leverage established performance ratings to tie into their own initiatives, much as those already leveraging ENERGY STAR branding on appliances and other products. Financing initiatives and building codes can also leverage the information provided by disclosure policies helping to address remaining capital, transaction, project complexity and others barriers.
4. They create a sustained market for audits and retrofits. Energy auditors and retrofit contractors have historically relied on ratepayer-funded efficiency programs to drive the industry, leading to demand instability for their services. Mandatory disclosure provides the foundation—certainty and long-term predictability—to build a robust and high-quality pool of professionals offering energy auditing and retrofits.
5. They close the feedback loop with building design. The high performance building community often faces a disconnect between energy performance as anticipated at the design stage, and buildings' actual performance when operated. Paradoxically, there is a lack of information on the actual performance of many new buildings, making it difficult to adjust designs based on real world feedback. This issue becomes increasingly important as states set ambitious energy codes and goals to promote efficiency in new construction. Disclosure policies can close the loop by requiring all buildings to track the extent to which buildings are performing as planned.

Case Studies - BER&D Results to Date

Four states and two cities were studied in depth to provide a sampling of the range of BER&D policy development options, enactment processes, implementation experiences, and outcomes across the U.S. From these studies, as well as real estate industry reports, and some cross-cutting results from other BER&D experiences, a series of lessons learned were compiled to help other state and local governments seeking to develop and implement their own BER&D policies.

Many other states and cities (not listed here) have requirements for public facilities to audit and disclose their energy consumption ratings, and to either perform mandatory upgrades, or that prevent them from establishing leases in inefficient buildings. These provide valuable local experience and leadership by example that can help build support for extending BER&D policies to cover private buildings and residential properties in the future.

Jurisdiction	Year Adopted	Policy Coverage and Status
Case studies covered in this report: BER&D policies enacted		
New York City, NY	2009	Large commercial and multi-family buildings rating, energy audits and retro-commissioning under the Greater Greener Buildings Plan (GGBP)
Austin, TX	2008	Residential and commercial building rating and disclosure under the Energy Conservation Audit and Disclosure (ECAD) ordinance
Washington State	2009	Commercial and public buildings rating and disclosure to potential buyers and renters under the Efficiency First Act
Kansas	2003	Asset rating and disclosure for new homes required
Case studies covered in this report: BER&D policies not yet passed		
Vermont	Attempted in 2011 - 2012	Commercial and residential buildings rating and disclosure, originally including proposed mandatory upgrades at time of sale
Connecticut	Attempted in 2011 - 2012	Commercial and residential buildings rating and disclosure. New Governor's policy position released in 2012 to continue efforts
Other cities and states not covered in the case studies, but with BER&D policies in place		
Philadelphia, PA	2012	Commercial buildings require annual rating and disclosure
Fayetteville, AK	2012	HERS rating required for new homes under the energy code
Washington DC	2008	Commercial buildings rating and disclosure
California	2007	Commercial buildings rating and disclosure
Seattle, WA	2010	Extends the state requirements to include multi-family buildings
New York State	1981	Truth in Heating Law requires residential building owners to disclose energy bills to prospective buyers and renters if requested
San Francisco, CA	2011	Extend California's state required energy audits and ratings to commercial buildings of at least 10,000 sq-ft

The table below summarizes our six BER&D case studies, indicating the adopted and proposed policy elements. In almost every case the initially proposed regulations drifted from a more strongly mandated approach and ended with an approach that puts more emphasis on market drivers through disclosing energy performance results. In two of the cases, Vermont and Connecticut, the BER&D policies were raised before the house, but were not enacted. In the four jurisdictions with BER&D policies in place, there is a range from Kansas's un-administered new home asset rating regulation, to New York City and Austin's comprehensive audit and rating programs, (each of which include some attached mandatory upgrade requirements.

		New York City	Austin, Texas	Washington State	Kansas	Connecticut	Vermont
Rating and Disclosure	Lead by example (Public Facilities)	◆		◆			
	Limited disclosure (Time of Sale)			■	●[3]	⊙	⊙
	Publish Disclosure (Public)	■	●■			⊡	⊡
Energy Audits	Lead By Example Audit	◆					
	Private Building Audits	■	●■			⊙⊡	⊙⊡
Upgrades	Lead by Example Upgrade	◆				◈	
	Private Buildings Upgrades	■[4]	□	□			○

Legend

Commercial and Multifamily	Residential	Public Facilities
■ Adopted	● Adopted	◆ Adopted
⊡ Proposed	⊙ Proposed	◈ Proposed
□ Withdran	○ Withdrawn	

3 For new homes only.

4 By 2025, common area lighting in New York City's large buildings will be required to meet the energy code. The city originally attempted to include mandatory upgrades for all cost-effective measures identified in the energy audits, but this was later reduced to requiring retro-commissioning only.

Initial BER&D Results

The past two years have seen the first published results of BER&D legislation across the country. Some enforcement schedules are still ramping up and many jurisdictions have not yet reported publicly the results of the first few years of implementation.[5]

Overall, early compliance rates for recently enacted BER&D regulations are promising. Jurisdictions across the country are realizing compliance rates exceeding 50 percent across sectors with the exception of Washington State where compliance is not mandated.

Table: Early Reported Compliance Rates

	Compliance Rate
New York City	75%
Austin, TX (Residential and Multi-family)	50% - 65%
Washington State	< 50%
San Francisco, CA	65%
Seattle, WA	86%

New York City's high compliance rates are attributable to the city's efforts to link programs to local conditions, while reaching out to property owners to provide information about the BER&D policies and the audit process.

Austin's case demonstrates the ability of rating and disclosure laws to help homeowners identify real energy savings opportunities. The customized audits cost less than $300 to perform, and are delivered by either Residential Energy Services Network (RESNET) or Building Performance Institute (BPI) trained auditors, often including home and termite inspectors who already play a role in pre sales home evaluations. Of the home energy audits performed in Austin, 98 percent recommended at least one energy savings measure.

In Kansas, where there is no state-wide energy code, disclosing the performance of new homes through an asset rating form informs buyers of how well their home performs relative to the state guidelines which are based on the International Energy Conservation Code (IECC).

Contrasting Washington State's success in enacting BER&D policy with Vermont and Connecticut's attempts indicates the critical role a Governor can have by championing the policy to tip the balance in favor of BER&D regulations.

To date published reports of benchmarking and rating data has been limited. New York City has published two years of public facility benchmarking results and a single year of private commercial building results. In addition, Austin published two years of aggregate home energy audit results, and has compiled some preliminary data on multi-family and commercial buildings.

5 The detailed case studies and a summary of any published results are appended.

There is still insufficient published data on the impact of rating and disclosure on real estate markets to draw conclusive results. However, real estate industry reports are showing a growing link between energy efficient buildings and increased rental and sales prices. Surveys that seek to measure the effects of benchmarking and home audit programs indicate a growing role for energy performance and access to accurate rating information in both the industry and public's perception of property values. As a result there is an increasing desire to obtain accurate rating information for marketing and purchasing buildings.

These early results show promise that as more cities and states enact BER&D laws and publish their results, an important body of knowledge will grow, allowing for deeper analysis and identification of energy efficiency opportunities across the country.

Early Results with Rating Systems

Thus far, operational ratings are being applied to evaluate commercial properties while asset ratings are generally prescribed for smaller residential properties, particularly single family homes. While this was the pattern in all BER&D policies studied, it is by no means a closed discussion. Efforts continue to develop an asset rating for commercial buildings that can help identify specific efficiency upgrade opportunities. For residential properties, disclosing energy bills can offer an interim measure in states or cities not yet ready to adopt an energy rating policy (as is the case under New York State's "Truth in Heating Law", enacted in 1981).

The Department of Energy (DOE) is currently working on a program to develop a national asset rating standard for commercial buildings to allow property owners to make comparisons among similar buildings and identify cost effective energy efficiency upgrades (Nora Wang, 2012). A recent study by Deutsche Bank Living Cities covering 100 of their multi-family properties in New York City found that neither the empirical (operational), nor the physical (asset) models alone provide sufficiently precise evaluations to accurately predict returns on energy efficiency investments. However, a hybrid asset-operational rating model offered reliable savings projections that could be used for investment planning. (Steven Winter Associates, 2012).

As New York City moves to require the first energy audits in 2013, under the Local Law (LL) 87 Auditing and Retro-Commissioning Rule, there could be a growing window of opportunity to apply a commercial building asset rating tool—such as those being developed by the DOE or ASHRAE—using the audit results. Similarly, Massachusetts is currently investigating the potential to develop its own asset rating system for commercial properties that could leverage data collected from the energy audit results, based on auditing procedures defined by ASHRAE.

Residential BER&D laws have so far exclusively focused on asset ratings, largely due to an understanding that occupant behavior significantly impacts energy consumption in residential properties. Within the body of experience in the past few years, the debate has focused mostly on how to balance auditing costs with accuracy and value of the results, and on how best to disclose the information to potential buyers. However, once again, discussion continues as to whether there is a role to be played for disclosing energy bills as a compliment to the asset rating, or as an interim measure until a widely accepted national asset rating system is established.

A Snap-Shot on ENERGY STAR Portfolio Manager For Rating Commercial Properties

The early experiences with BER&D policies have almost exclusively applied the ENERGY STAR Portfolio Manager tool (ESPM).[6] ESPM provides users with a variety of metrics with which to track their building's performance, including but not limited to:

- Energy consumption - often described by the Energy Use Index (EUI)
- Water consumption
- Greenhouse gas emissions
- ENERGY STAR energy performance score (available for certain building types), which rates a building on a scale of 1-100 relative to its peers

The adoption of ESPM as the benchmarking and rating tool for commercial building BER&D policies has proven largely successful in allowing owners and managers to efficiently rate their buildings and meet disclosure rules. In return, the new BER&D policies are driving increased application of ESPM, which is broadening the tool's database of results and offering valuable feedback to the EPA for its improvement.

Benefits of using ESPM as the basis of a BER&D mandate are that:

- It allows assessment of whole building energy and water consumption,
- It tracks changes in energy, water, greenhouse gas emissions, and cost over time,
- It tracks green power purchases,
- It can be used to create customized reports,
- It allows easy data sharing with other managers and across building portfolios,
- It is simple to use, and returns a simple to understand percentile score (A score greater that 50 indicates better than average energy performance),
- It is widely applied, with a growing database for comparison among buildings,
- It is supported by the EPA, who is working to update and improve it precision and range to building types covered,

With New York City achieving near full compliance of all the buildings required to benchmark under the GGBP, it could represent up to 10 percent of all buildings rated with ESPM to date. This is the largest single pool of buildings with the ESPM results database. The city is working with the EPA to improve the scope and applicability of the updated ESPM that will be released in 2013.

6 For a while Austin Energy offered commercial building owners an alternative system developed to meet the specific needs of local, smaller buildings. However, it was soon dropped, citing the complexity of developing and administering a localized tool as the reason (Kisner, 2012).

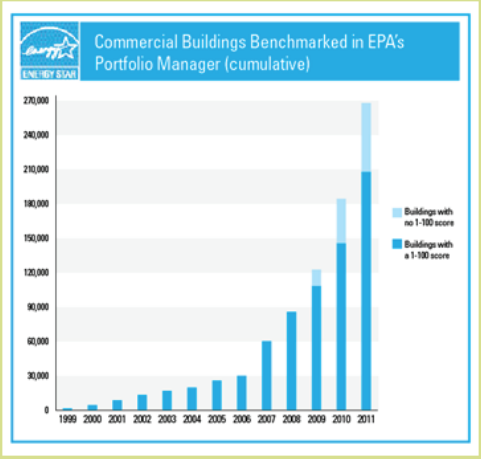
- An increasing number of third party tools are being developed that use ESPM and add functionality such as new reporting templates and prescriptive upgrade suggestions.
- DOE is developing a tool linked to ESPM that cities can to use manage the data disclosed to them year-over-year and combine it with other city data to run analysis and publish results in a standardized form.

No rating tool is perfect and use of the ESPM rating tool does come with some drawbacks, including that (Nora Wang, 2012):

- It is not applicable to all building types, in particular multi-family residential buildings cannon be rated with ESPM, (however the tool can be used to report energy consumption data and provide EUI comparisons for any building). DOE has an effort underway to address this issue by develop a multi-family rating for ESPM,
- Mixed-use buildings are treated as single structure, which can hinder comparisons among buildings,
- It is not applicable where utility data is not available for the whole building over a 12 month period,
- It is not a prescriptive tool to identify specific energy upgrade opportunities or capture and communicate the benefits of recently performed upgrades.

ESPM and ENERGY STAR Certification for buildings are recognized as valuable tools, even as a voluntary measure. As a result, there has been steady growth in the number of buildings bench marked and certified each year. Recently enacted BER&D policies are contributing to the increased acceptance of ESPM as the industry standard. In 2011 over 70,000 buildings were ESPM rated nationwide, and over 60,000[7] were covered by BER&D laws (Burr, Keicher, & Leipziger, 2011).

Chart: Growth in the Number of ENERGY STAR Certified and ESPM Benchmarked Buildings



7 Although not all of these 60,000 were rated. Compliance rates for commercial buildings range from 30 percent to 75 percent in initial results from across the U.S.

Lessons From the Field

Each of the BER&D policies described in the case studies encountered challenges along the way. These challenges reveal important lessons for state and local governments interested in adopting their own BER&D policies. Below we list 10 "Lessons From the Field". These are taken from both successful and unsuccessful BER&D efforts, highlighting strategic and technical issues that have the potential to make the difference between adoption and rejection of BER&D policies.

By understanding these lessons—the value of political leadership, the effect of bundling commercial and residential requirements together, the benefits of effective stakeholder engagement, legitimate concerns regarding rating systems (and the preparation of responses to these concerns) and the impacts on market transactions and consumer costs—proponents may increase the likelihood of realizing the promise of BER&D policies.

Lesson 1: Lay the Policy Groundwork

High-level policy reports played an important role in laying the groundwork for BER&D legislation in New York City, Austin and Washington State. In each case high-level policy and planning reports sought to promote concrete actions to bring local GHG emissions under control.[8] Energy use in buildings was identified as a central challenge and taskforces were set up to prepare BER&D regulation and mandatory upgrades to help meet the GHG reduction goals.

In each case the chief executive (governor or mayor) played a key role championing the high-level policies and ensuring the implementation of BER&D policy recommendations. These examples show the value of BER&D regulations where jurisdictions are seeking to meet ambitious GHG reduction and energy efficiency targets.

Lesson 2: Know Your Building Stock

Knowing your building stock provides vital insight that can help to define BER&D policies and implementation rules. Austin and New York City have very different characteristics, but both benefited greatly from taking the time to consider the specific nature of their existing buildings before designing BER&D laws. Austin is dominated by single-family homes with slab-on-grade construction, and medium rise multi-unit buildings. Moreover it has a 30 year history of implementing demand side management (DSM) programs with local residents and businesses. Thus they designed a customized home rating system that can be done quickly and affordably, and targets the main sources of inefficiency in their buildings. In New York City, large buildings of over 50,000 sq-ft comprise just 2 percent of the total building stock, but consume over 45 percent of energy consumed by all buildings in the city (New York City OLTPS, 2012). By recognizing this early in the GGBP development, the city was able to focus in on a major source of emissions and design rules to target them effectively.

8 PlaNYC in New York, The Climate Action Team report in Washington State and the Climate Protection Plan in Austin

Voluntary Asset Rating Approaches for Homes

The DOE is supporting pilot programs in Massachusetts, Virginia, Alabama, and Washington that provide voluntary energy evaluations, including EPS ratings, as part of an efficiency upgrade and financing initiative. Homeowners can use the DOE's web based tools to access their energy scores, and receive upgrade recommendations and even bids from qualified experts. If they decide to proceed with improvements, the web tool can help them apply for financial assistance, such as the $25,000 in interest-free loans available through Mass Save's HEAT Loan program.

In Virginia, the Local Energy Alliance Program (LEAP) has successfully increased energy performance rating and reporting by working directly with real estate agents. By helping agents recognize that they can provide their clients with valuable energy efficiency expertise, similar to their knowledge of other home attributes, LEAP is assisting real estate agents to become proponents of energy performance reporting. Ultimately LEAP aims to encourage the local real estate association to include mandatory energy efficiency fields in Multiple Listing Services (MLS) property listings (Adams, 2012).

Lesson 3: Package Laws Appropriately

Bundling laws can be a double edged sword. In some cases it can offer a framework of benchmarking laws, energy codes, funding sources and mandatory upgrades that give property owners confidence that the rating and disclosure efforts will lead to real energy savings and return value. However, in the case of Washington State, the BER&D law has been bundled with a highly ambitious energy code under the Efficiency First Act. The ambitious energy code has become a lightning rod of criticism for the whole package of energy legislation by those in the building industry who believe it to be overly aggressive and impractical.

In Vermont and Austin, the inclusion of mandatory upgrade laws within the proposed BER&D package proved particularly unpalatable to the real estate and building industries, and thus they were dropped in both cases before the policies were ultimately tabled.

Lesson 4: If You Can't Mandate, Lead

If passing BER&D policies through legislation is not possible now, there are likely other options that can prepare the terrain for future efforts. BER&D legislation has failed to pass in two consecutive sessions of the Connecticut and Vermont State Legislatures due largely to entrenched opposition- primarily from the real estate industry. Despite genuine efforts at compromise, it is not always possible to bring all opponents on board to support BER&D policies, and if they form a majority, or an influential minority, they can successfully block any attempts to pass new regulations. In these cases alternative paths may prove the best option. Lead by example laws can give government agencies valuable experience in developing and applying rating tools and designing efficiency upgrade requirements. Voluntary programs (such as Massachusetts' pilot described in the side-box on Voluntary Rating Pilot Programs), create valuable local experience with building rating systems and mitigate concerns over compliance costs.

After failing to pass BER&D legislation, Connecticut has opted to promote a voluntary home rating program, which may be attached to incentive funding for residential efficiency upgrades. On the commercial buildings side, Connecticut now requires utilities to store at least 12 months of billing data, thus ensuring that the information is available for those who voluntarily choose to benchmark their buildings with ESPM at a later date.

Lesson 5: Engage Local Utilities from Day One

The Benefits of Working with Energy Utilities from the Start

New York City and California may both be examples of learning the hard way when it comes to ensuring access to utility information early in the development of BER&D legislation. In New York's case the utilities now provide aggregate billing data for buildings containing multiple meters. However, they have been reluctant to get involved in transferring the data directly into the ESPM rating software. As a result, over 75 percent of the benchmarking reports received in 2011 were prepared by external consultants. Hiring consultants raises the costs for building owners, but also offers the advantage of involving energy efficiency experts early in the rating process, which will likely yield further benefits in real energy savings from the efficiency opportunities they identify.

In California's case, the state is grappling with privacy issues related to accessing billing data and providing energy rating information to potential buyers and leasers. As an early adopter, California's system of gathering and transferring information is much less fluid than in jurisdictions who adopted their benchmarking and disclosure rules later. Currently, the utilities are required to upload the usage data directly into the ESPM software, but it can take utilities as long as 45-60 days to comply, which may in some cases slow the property sales process (Amy Barr, 2012).

Involving utilities early in developing BER&D can help to boost compliance and effectiveness down the line. BER&D policies typically require utilities to provide the previous 12 months of billing data to building owners to facilitate their ESPM benchmarking. Moreover, utilities can further aid building owners to meet their compliance obligations by providing aggregate building energy consumption records (protecting the privacy of individual tenants), and can transfer the data in a format that is directly compatible for upload into ESPM. Encouraging local utilities to allow their clients to download data directly through services such as the Green Button[9] initiative can allow residential and commercial customers easy access to their billing information.

Beyond simply transferring billing data, utilities can benefit from benchmarking programs by having access to better energy efficiency information about their clients, which can help them to prioritize measures in their DSM programs. Coupling billing data with building characterization information available through benchmarking gives utilities a deeper understanding of their end-users and new DSM opportunities. When these mutual benefits are realized, utilities can play an important outreach role in encouraging compliance and providing information on rating and disclosure rules to their clients.

9 More information on the Green Button program is available at: www.greenbuttondata.org

It can be a challenge for local or state governments that do not have regulatory powers over the major utilities operating within their territory to develop rules covering utility bill access. For example, Con Edison (ConEd) provides all the electrical and the vast majority of natural gas to New York City, but is regulated by New York State. In contrast, Austin Energy is the eighth largest city-owned utility in the U.S., and upon passing the ECAD ordinance Austin Energy was given the role of administrating the local BER&D policy, reporting results and ensuring compliance. Austin Energy sees the ECAD ordinance as a powerful tool toward improving energy efficiency among their customers, which returns a significant economic benefit to the utility through avoided generating capacity increase costs (Kisner, 2012).

Lesson 6: Train Raters in Trusted Rating Systems

Market actors must believe that ratings accurately reflect the relative performance of homes or buildings, and trust that these ratings have been produced honestly. Experience has proven the value of a trusted rating system. ESPM has become the predominant rating tool for benchmarking in the U.S. With over 260,000 building ratings performed using ESPM to date, it has become the most trusted benchmarking tool for both mandatory and voluntary energy rating initiatives. Further work is being done by the DOE and the EPA to couple the operational ESPM ratings with an asset rating tool that is not dependent on occupant behavior.

Residential ratings have yet to settle on a single affordable standard. Many standardized tools exist, calling for a varied level of detail in the home energy audits. In some cases tools have been developed to meet local conditions. As Austin's experience shows, engaging auditors qualified in standardized audit systems (RESNET or BPI trained) to deliver a customized rating system can play an important role to increase the consumers' trust.

Lesson 7: Apply Clear Messaging Tools

The information disclosed in a rating or audit report, must be clearly and easily understood by the average consumer. It must also allow buildings to be easily compared and allow building owners and operators to measure building performance over time.

This remains a challenge in both the residential and commercial rating systems. ESPM provides a single, easy to comprehend rating score, but there are concerns, among New York City building owners for example, that poor data quality or limitations to ESPM can skew scores significantly.

In residential buildings, standardized rating systems such as HERS or EPS may provide clear messaging, but potentially at a higher cost than locally tailored systems. On the other hand, experience with Austin's customized rating system has shown that homeowners do not always fully understand the audit report results. This may be hindering homeowners' ability to apply the audit recommendations to take action on efficiency upgrades

Adding GHG reduction information and energy costs savings to audit report results may offer additional benefits both to policy makers and to property owners seeking to grasp the impact of their energy efficiency projects.

Lesson 8: Ensure Timely (Early) Disclosure

BER&D Policies Are Improving Uptake of Energy Efficiency Measures AND Helping Owners to Profit From Their Efficiency Investments

A recent study of California commercial building owners revealed that, "Among owners and customers who registered for utility benchmarking workshops and benchmarked with Portfolio Manager, benchmarking resulted in subsequent building energy management actions and energy efficiency improvements in buildings (Rohit Vaidya, 2012)."

Johnson Controls Institute for Building Efficiency found that organizations are more likely to improve building energy performance if they measure and analyze energy usage data on at least a monthly basis (Johnson Controls, 2011).

These efforts translate into value in the market place, as renters and prospective buyers increasingly seek out efficient properties. A recent study by CoStar of commercial properties revealed that ENERGY STAR Certified properties boasted (CoStar, 2010):

- A 3-4 percent increase in occupancy rates
- An 8 percent increase in rents ($2.40 per sq-ft in 2008)
- A 27 percent increase in sales price ($60 per sq-ft)

Another commercial real estate group, found similar results, citing a 4.6 percent increase in occupancy rates, and a $3.18 per sq-ft increase in average rents in ENERGY STAR certified properties in the Philadelphia market (Weko, 2012).

For triggered disclosure policies, such as time of sale, ratings should be available early in the process, and ideally in all advertising through tools such as the local MLS. If buyers only receive the information toward the end of the process they will not be able to use that information effectively, and the policy will have forfeited its opportunity to influence the marketplace.

Kansas and Austin learned from experience the impacts of untimely energy rating disclosure—energy ratings in both places were not disclosed early enough. Recognizing the missed opportunity to impact sales and rental decisions, both jurisdictions amended their legislation to ensure that the ratings are available, at the very least, before the sale closes, and ideally while the property is still being shown. For high-consuming multifamily properties in Austin (those with annual energy consumption in excess of 150 percent of the city average for multifamily buildings), owners must post a notice informing current and prospective tenants of the building's status as a high energy-use building.

It remains difficult to determine how BER&D laws are affecting markets as there is still little data available, but early results from the commercial sector are showing increases in occupancy rates, rental incomes, and resale values.

Most jurisdictions agree that BER&D laws can effectively provide information that will encourage owners and new buyers to engage in energy efficiency upgrades. In Kansas, however, it was noted that a home builder selling new homes with high energy performance ratings was experiencing faster than average sales

Real Estate Agents and Brokers Should Embrace BER&D Policies

Real estate agents are often, though not always, leading opponents of BER&D legislation, claiming that it creates a barrier to property sales. However as awareness of the benefits offered by investment in energy efficiency grows, more potential buyers are demanding information on a property's energy performance.

A recent survey of building owners in California revealed that more than half of commercial property owners used or expected to use benchmarking activities to market their building, and that 35 percent of commercial property buyers reported that benchmarking had played a role in their acquisitions. (Rohit Vaidya, 2012)

For residential properties, the information may be even more important to buyers. The National Association of Realtor's 2011 Profile of Homebuyers and Sellers reports that 87 percent of homebuyers thought heating and cooling costs were important when considering purchasing a home. This was further supported by a survey of home rating program participants where 83 percent said they would want to see an energy score if they were buying a home. Many real estate agents also see the importance of providing efficiency information to potential buyers. In a Virginia survey 98 percent of agents felt that energy efficiency was an important quality of the property (Adams, 2012).

rates, even during a recessed market, and there is still is no hard evidence that BER&D reporting suppresses sales of older properties. The case studies, Austin in particular, reveal further evidence of BER&D policies increasing interactions concerning energy efficiency features during the sales and marketing of properties.

Lesson 9: Walk Carefully on Enforcement (But Carry a Stick)

Rating and disclosure rely on high compliance rates to be effective. A combination of strong incentives, credible enforcement and dissuasive penalties are essential to ensuring success. Experience from the case studies indicates that enforcement does play an important role for ensuring compliance, but fines should be the final step in a longer effort to engage and educate property owners. In New York City property owners were informed of their obligations through update letters, training sessions, and the GGBP help line. Before enforcing fines, the city extended the initial deadlines and sent non-compliance letters. As a result compliance to BER&D requirements in New York City's GGBP exceeded 75 percent in the first year, despite the fact that the fines are not likely to significantly impact larger building owners' bottom line.

Assigning an administrative agency with the resources and mandate to build support for the BER&D rules, coordinate information campaigns and track compliance data appears to have a greater impact than simply imposing fines and penalties. In Austin, the locally-owned utility, Austin Energy acts as the administrative agency, linking the BER&D database to its DSM goals. In New York City the Department of Buildings has the responsibility to enforce compliance, with assistance from the Mayor's Office of Long-Term Planning and Sustainability (OLTPS) to develop information resources and report results.

Experience in Austin and New York City also shows the essential role that real estate agents and brokers (as well as building owners associations) play to ensure compliance to the BER&D laws by informing their constituents. Engagement with these groups should not end once BER&D laws have passed, but should be ongoing. On the other end of the spectrum, Washington State's fines of $1,000 per day for non-compliance could likely invite legal challenges more than encourage compliance.

Lesson 10: Link Rating Results to Action

BER&D laws are an important tool for promoting cost-effective energy savings in buildings, but are only a means to an end. To encourage action, the rating or audit report should assist consumers by recommending appropriate energy efficiency improvements, providing financial analyses, referring to government or utility incentives, referencing financing opportunities and providing options for more detailed analysis, such as investment grade audits for commercial buildings.

Evidence in the case studies holds up the importance of linking BER&D policies to action, either by applying them as a package of laws, as in New York City and Washington State, making rating and disclosure part of a larger strategy with auditing and upgrade requirements, or by linking them to upgrade incentive programs, as in Austin. Austin Energy is heavily engaged in tailoring its incentive programs and audit process to promote upgrades both prior to and following property sales, attempting to identify key trigger points that spur owners to act.

Another tool for linking BER&D policies to action is to require mandatory upgrades of cost-effective measures identified in audits. While this is being applied in public facilities through lead-by-example legislation in Washington and New York City, governments have generally fallen short of requiring such strong action in privately owned buildings.

Debating BER&D Policies – Criticisms and Responses

Records of public debates in city council chambers, state legislative committees, public consultations and taskforce meetings provide helpful insights into some of the most common criticisms raised by opponents of BER&D policies and point to counter arguments successfully cited in response. Below are some of the most relevant responses to several of the common concerns around BER&D policies.

Does public disclosure infringe on a property owner's privacy rights?

- There is already a great deal of similar information collected and disclosed about buildings. This includes taxes, arrears, and violations, among others.
- For commercial buildings, aggregate full-building billing data can be made available from utilities. Even if energy costs in these buildings were of a competitive value, building-wide performance could hardly be a concern.

How does BER&D policy return value to property owners?

- Energy ratings and audits provide property owners with information about cost-effective energy efficiency measures. Research shows that energy efficiency in buildings can return as much as $18 in sales price and rental premiums for each dollar invested (CoStar, 2010).

How accurate is ESPM for specialized buildings? How is the information used to improve building energy performance?

- ESPM results provide a valuable year over year comparison of energy performance by comparing changes in the EUI performance, even for specialized buildings and multi-family buildings that cannot receive an ESPM score.
- Benchmarking a building's energy use, and following the effect of energy efficiency upgrades and retro-commissioning efforts provides insights that can return value by tracking the savings from efficiency measures implemented following an energy audit.
- Expanding and updating the ESPM database with improvements as planned in 2013 will improve its accuracy and broaden its application to new building use types.

What are the benefits to BER&D policies in creating real economic growth in the local economy?

- Energy efficiency investments create real jobs—jobs that are inherently local and cannot be outsourced such as installing energy efficiency measures, building rating or retro-commissioning. A recent study showed that $1 million invested in energy efficiency created 16.7 jobs, compared to 5.3 jobs for fossil fuel investment (Center for American Progress, 2009).

- Energy auditors, home inspectors and HERS raters are already present in most markets but can experience highly cyclical job markets. Energy rating can help sustain a demand for their skills while returning value to local property owners.
- Energy rating requirements leverage significant government investments already made to train these evaluators and professional auditors.

Building owners may see comprehensive BER&D policies as going too far, too fast

- Rather than having a moving target of ratings rules and obligations, a comprehensive policy allows the building and auditing industries to acquire the needed expertise to plan and implement benchmarking and reporting on schedule.
- Comprehensive policies can link BER&D regulations to upgrades, incentives, updated building energy codes and broader clean energy policy goals, which help link the results to actionable energy savings opportunities.

Aren't residential building ratings costly?

- Tailoring residential audits to local conditions can reduce their cost to just $200-$300. These audits often pinpoint larger and more cost-effective energy savings opportunities, which in turn lower consumer bills and help insulate them from disruptive swings in energy prices.

Do time-of-sale audits and disclosure of benchmarking results hinder property sales transactions?

- Efficient properties with good ratings have been seen to sell more quickly, and at higher prices in the market, which is a win-win for the seller and agent. Real estate agents who can capture and communicate this value can leverage it to their clients' benefit.

If time of sale audits only capture a portion of properties, then how can they be effective in motivating efficiency improvements across the board?

- Performing audits and disclosing the results at time of sale has two benefits: first it provides information that can help buyers compare properties and value energy performance in the sales transaction and second it gives buyers information that can help them include energy efficiency upgrades in post-purchase renovations and roll the financing into their mortgages.
- Time of sale disclosure typically captures as much as 5 percent of homes annually in a given market. Linking BER&D policies to more stringent energy codes together can capture the majority of properties within a 10-20 year period.

BER&D Policy Options

From a review of the six case studies, along with experiences in other jurisdictions which have passed BER&D laws, it is apparent that there are some elements in the laws and their development processes that are constant in all successful BER&D laws. On the other hand, there are other elements that vary, often significantly, from policy to policy. These tend to be dependent on local characteristics such as the political terrain, the range of stakeholders involved and the nature of the local building stock. Amendments and negotiations among proponents and opponents have led to concessions on a range of issues while maintaining the core elements of a successful BER&D policy. Below are some examples of flexibility exhibited among the case studies.

Options exist for commercial rating triggers and disclosure requirements

New York City and Austin both require annual rating and disclosure, as well as requiring owners to share the most recent results with prospective buyers or renters before the close of a transaction. Washington State on the other hand requires only triggered time of sale rating and disclosure, which will likely limit its benefit for DSM program development, or offering energy efficiency service providers to identify opportunities.

Laws can be highly specific and require a return to the legislation for alterations, or they can be general describing key requirements only, and leaving the rules of implementation to be defined by the administrative agency.

Opponents to BER&D policies tend to prefer narrower regulations with more specific language, as was the case in Kansas where even the content of the disclosure form was included in the law. However, BER&D policies are likely to be more effective when the administrative agency is given the flexibility to update the rules given implementation experience, as is the case in New York City and Austin.

Laws can be bundled in a program or passed individually with varying effect.

In Washington State and New York City BER&D policies were established as part of a broader set of energy efficiency regulations and linked to a call for more stringent energy codes.

In Kansas and Austin, the BER&D policies were passed as stand-alone regulations. Yet even between these two there is a demonstrated variability. Austin's regulations cover commercial and multi-family buildings, as well as single-family homes. Conversely, Kansas passed a BER&D law covering only new homes, and further legislation would be required to enact a regulation covering commercial properties.

Proposed mandatory upgrade policies while difficult to enact, may provide valuable negotiating room.

An important pattern emerges from the case studies, where even the most successful BER&D policies have failed to include significant requirements for mandatory upgrades.

Linking BER&D with Improved Energy Codes

There is an important link between energy codes and BER&D policies, as state and local governments see rating and disclosure as valuable tools toward achieving higher code standards. BER&D policies encourage compliance with energy codes, by providing a 'check' on whether buildings meet the baseline energy code, as well as by rewarding higher performance buildings, further emphasizing the importance of the energy code. They can also facilitate code enforcement, particularly where states have adopted a performance-based compliance track for energy codes.

In New York City and Washington State, BER&D laws were passed as part of a comprehensive package calling for improved energy codes, and in Kansas the disclosure forms specifically reference the recommended state standard energy codes (IECC 2006) to compare the home's rating to the code requirements. New York City will eventually require existing buildings to meet certain of the new energy code requirements by 2025. Energy codes working with attached BER&D and mandatory upgrade policies, as well as incentive programs, provide a powerful strategy to improve energy efficiency in new and existing buildings.

New York City stepped back from requiring building owners to carry out cost-effective efficiency upgrades identified during energy audits. In the end, building owners are only obliged to perform retro-commissioning based on certain energy audit results. In the future, upgrades of common area lighting to meet an updated energy code will also be required.

In Vermont, folding mandatory energy performance upgrades into mortgage financing, was negotiated out of the proposed legislation before it was raised in the House.

Austin's ECAD ordinance had originally included backstop clauses wherein mandatory upgrade requirements would kick-in after 2-3 years if the energy utility was not able to meet its energy efficiency targets through voluntary upgrades alone. However, at the concern of property owners associations, these were dropped before ECAD was passed (ACEEE, 2011).

While a number of states and cities do now require audits and cost-effective upgrades to be performed on public facilities in lead-by-example type legislation, none yet require similarly comprehensive upgrades for private buildings.

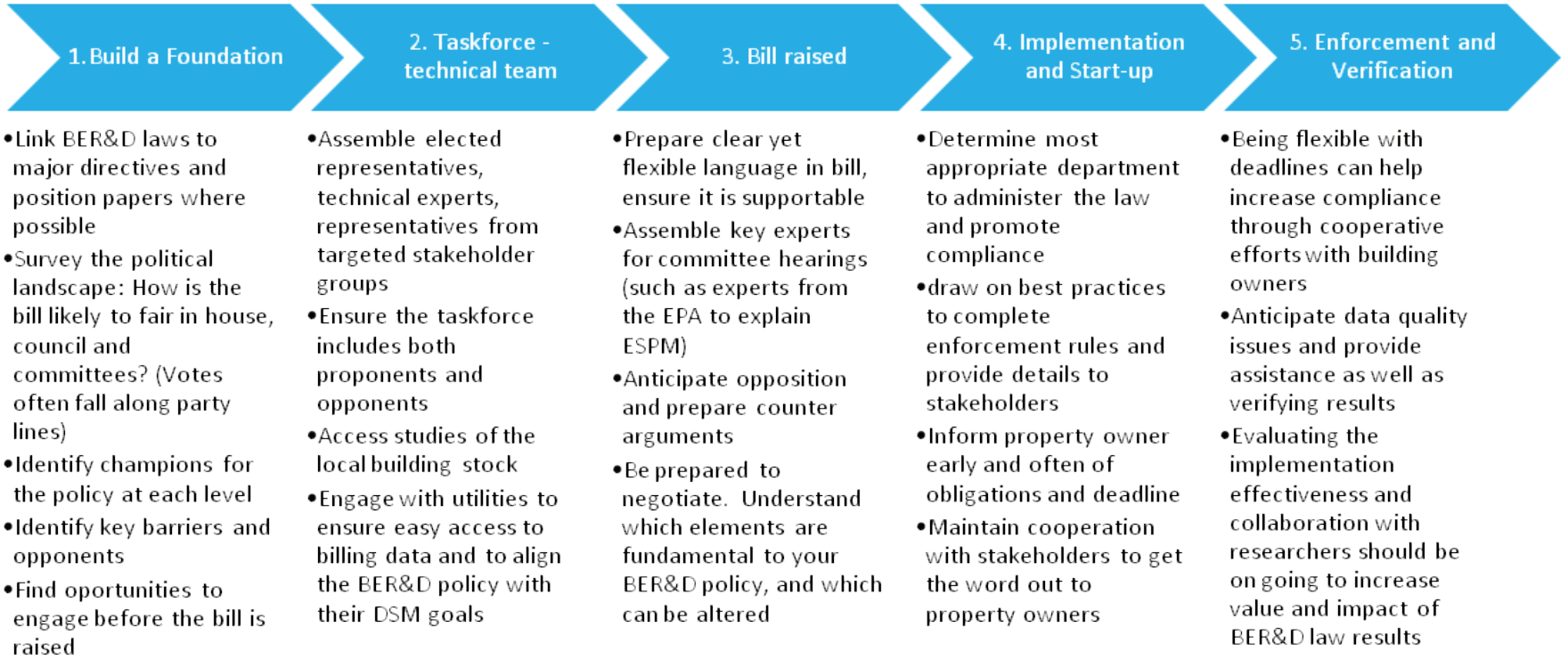
If legislation is not possible, voluntary BER&D programs that promote benchmarking, auditing and rating can play a key role in preparing the terrain for future policies.

In the wake of failed BER&D policy adoption attempts, Connecticut is considering putting in place a voluntary program for residential properties. The DOE is supporting pilot programs in Massachusetts, Virginia, Alabama, and Washington that provide voluntary energy evaluations, including EPS ratings, as part of an efficiency upgrade and financing initiatives. Finally, time of sale or rental energy bill disclosure can provide a low-cost (or free) interim policy in locations where there is a reluctance to mandate property owners to invest in energy ratings or audits.

These lighter approaches can help to build a body of BER&D experience, including a rating infrastructure. Moreover, they can provide valuable feedback on the effects of BER&D policies, and help to assuage many of the concerns raised by opponents over negative market effects.

The Road to Rating and Disclosure

Introducing complex, and potentially controversial, BER&D policies requires building a foundation of support from key players and stakeholders, developing policy options and knowing the terrain. Simply preparing effective language for a bill and understanding the mechanics of raising and passing bills in state legislatures or city councils may not be enough. Proponents need to build a foundation of knowledge about the policy and understand the potential options for action (and compromise) at each step of the way. Typically, as BER&D policies progress from the initial planning stage to full implementation and enforcement, the rules and mechanisms needed to achieve compliance are developed to an ever-increasing degree. The flow chart below seeks to provide a road map from initial planning to final enforcement.



Conclusions

The six case studies provide a valuable range of experience with BER&D policies across the U.S. encompassing:

- State and local government policies;
- Regulations applied to residential, commercial and public buildings;
- Simple new home asset ratings to comprehensive policies including rating, disclosure, audits and mandatory upgrades, and;
- Successful and unsuccessful attempts to implement BER&D policies.

While the published results so far are limited, early experiences and available data reveal important lessons about how best to design, enact and implement BER&D policies. Results gathered from the case studies, along with anecdotal evidence from other jurisdictions and rating programs reveal the following:

High compliance rates for BER&D policies are achievable when certain elements are in place:

- An effective administrative agency is selected, and given the necessary resources to engage with property owners and track compliance;
- Outreach to stakeholders has been established from the policy initiation, and stays in place to disseminate information throughout the community;
- Enforcement rules are clear and fair, and are acted on for non-compliant properties after reasonable efforts are made to inform and equip property owners with the required support.

There is plenty of maneuverability within the range of successful BER&D options to tailor policies to local demands:

- Linking to a broad, high-level energy efficiency and climate change mitigation policy and securing the chief executive to act as champion can greatly increase the chances of success;
- Engaging stakeholders, utilities and opponents early is key to building broad support and will pay back;
- If it is not possible to find a workable solution lead-by-example or voluntary programs can pave the way for future efforts.

Rating systems are available, or can be customized, to provide fair and reliable assessments of residential and commercial buildings:

- Residential asset ratings and audits can be implemented affordably to identify energy efficiency opportunities that provide value to property owners;
- Residential tools can benefit from existing rater training and certifications provided by RESNET and BPI to deliver either locally customized or standard tools (such as EPS, HES, HERS new homes);

- ESPM provides an effective benchmarking and rating tool for commercial properties that is becoming the industry standard;
- Adding a complementary commercial building asset rating, or energy audits can improve the accuracy of the results and help identify cost-effective savings opportunities.

Further results and analysis from cities and states with BER&D policies in place will be needed to ultimately determine whether BER&D policies can effectively deliver on their promise to break down market barriers for energy efficiency. However, real estate industry reports and surveys are showing a clear link between energy efficiency certifications such as ENERGY STAR and improved building rental and resale values. Moreover, there is growing evidence in these reports that building owners, real estate agents and potential buyers see energy performance as a valuable attribute in a property and are seeking reliable ratings to help them identify this value.

Acronyms

ARRA	American Recovery and Reinvestment Act
ASHRAE	
BER&D	Building Energy Rating and Disclosure
BPI	Building Performance Institute
CBECS	Commercial Building Energy Consumption Survey
CAT	Climate Action Team
DOE	U.S. Department of Energy
ECAD	Energy Conservation and Disclosure
ESPM	ENERGY STAR Portfolio Manager
EPA	U.S. Environmental Protection Agency
EPS	Energy Performance Score
EUI	Energy Usage Intensity
GGBP	Greener, Greater Building Plan
GHG	Greenhouse gas
HB	House Bill
HERS	Home Energy Rating System
HVAC	Heating, Ventilation and Air Conditioning
KEED	Kansas Energy Efficiency Disclosure
IECC	International Energy Conservation Code
LL	Local Law
LEED EBO&M	Leadership in Energy and Environmental Design, Existing Buildings Operations & Maintenance
NYCEEC	New York City Energy Efficiency Corporation
NYSERDA	New York State Energy Research and Development Authority
OLTPS	Office of Long-Term Planning and Sustainability
RESNET	Residential Energy Services Network
REBNY	Real Estate Board of New York

New York City

As part of his reelection platform, New York City Mayor Michael Bloomberg proposed to develop and implement a strategy to address the challenges posed by the city's continued growth, while combating the city's contribution to global climate change. This strategy was outlined in PlaNYC, released in 2007, which proposed a series of new ordinances and urban planning strategies aimed at achieving a 30 percent reduction in the city's overall greenhouse gas emissions by 2030. The PlaNYC policies eventually led to the passing of the Greener Greater Buildings Plan (GGBP); a set of four ordinances designed to reduce energy use within the city's largest buildings.

Of the ordinances contained within the GGBP, Local Law (LL) 84 requires yearly benchmarking of energy and water consumption in large commercial and multi-unit residential buildings. The GGBP's other three complementary ordinances require mandatory energy audits and retro-commissioning, call for the establishment of a municipal energy code, and require that by 2025 the lighting in non-residential spaces be upgraded to meet the new energy code and large commercial tenants be provided with sub-meters.

Energy use within buildings accounts for the majority of New York City's greenhouse gas (GHG) emissions, accounting for 80 percent on a per capita basis.[10] The GGBP applies to large private commercial and multi-unit residential buildings with a gross floor space of over 50,000 sq-ft, along with city-owned and operated facilities with gross floor space greater than 10,000 sq-ft. This covers just two percent of all the buildings in the city, but together they contain over half the city's interior floor space (Joel Blaine, 2011). Thus, targeting just the city's large buildings provides an efficient and effective approach that reaches the majority of New York City's building stock.

In 2011 the benchmarking and data access rules for LL84 were released and by early 2012 over 2,700 private buildings in the city had been benchmarked (PlaNYC , 2011). City facilities themselves account for 2,730 properties, constituting 260 million sq-ft of space. The benchmarking results for city facilities were released in 2012. As a result, New York City now accounts for 61 percent of the square-footage of space covered by benchmarking and disclosure policies across the U.S. (Burr, Keicher, & Leipziger, 2011).

The Greener, Greater Buildings Plan (GGBP) Ordinances

Two ordinances capture the bulk of the benchmarking, disclosure and mandatory audit and retro-commissioning requirements under the GGBP. LL84 has been in force since 2010 and the first results are being reported. LL87, covering the mandatory auditing and retro-commissioning, came into effect in 2012, with the first result expected in early 2013. The rules for the energy code and mandatory enforcement in existing building (LL85 and LL88) are

10 This is predominantly the result the city's residents' extremely high rates of public transportation use, which reduce transportation GHG emissions to among the lowest in the nation on a per capita basis.

currently being developed by the city's Department of Buildings, and will come into force by the year 2025.[11]

LOCAL LAW 84: ANNUAL ENERGY AND WATER CONSUMPTION BENCHMARKING

Calculating Gross Floor Area

Acquiring accurate floor area data has been a challenge for New York's building owners and managers. Floor space values available in the city's Department of Finance database often leave out basement space. Owners or managers typically keep records of total rentable space, which is missing common areas such as hallways and lobbies, which can account for as much as 15 percent of the total interior space. Using incorrect gross floor space values can significantly impact ESPM scores.

LL84 mandates scheduled rating of building energy performance using the ENERGY STAR Portfolio (ESPM) tool, and disclosure of the results to the city, who publishes the data on the Department of Finance website. The ordinance covers both privately owned buildings and public facilities, stipulating the following requirements:

Obligations for Public Facilities

- Buildings of 10,000 gross sq-ft or more that are owned by the city or for which the city regularly pays all or part of the annual energy bills must be rated annually using ESPM.

Obligations in Large Commercial and Residential Buildings

- Buildings with 50,000 gross sq-ft of interior space or more are required to provide ESPM benchmarking result of water and energy consumption to the city.
    - For commercial properties ESPM result are to be submitted by January 1, 2012 and by May 1 of each year thereafter.
    - For multi-unit residential buildings ESPM results are to be submitted by January 1, 2013 and by May 1 of each year thereafter.
- Two or more buildings on the same tax lot, or condominiums on the same property that together exceed 100,000 gross sq-ft are also covered under the law.

According to the Final Benchmarking Rule, adopted in 2011, failure to meet the reporting requirements is designated as a "lesser violation" under the New York City Municipal Construction Codes and may carry a penalty of $500. Continued failure to comply with LL84 may result in additional violations on a quarterly basis along with a further penalty of $500 per violation.

11 ICLEI and IMT have produced detailed case studies on the enactment and implementation process of the Greener Greater Building Plan available at: http://www.nyc.gov/html/gbee/html/plan/plan.shtml

LOCAL LAW 87: ENERGY AUDIT AND RETRO-COMMISSIONING LAW

The provisions of the Greener Greater Building Plan's LL87 require large buildings to undergo energy audits every 10 years and to perform retro-commissioning to "retune" building systems and improve operational efficiency.

Compliance with LL87 will be required starting in 2013 and will be gradually rolled out to all large buildings over a 10 year period. Each year, the buildings whose lot number's final digit corresponds with the final digit of the calendar year will be required to carry out an ASHRAE level II audit and, based on the report recommendations, perform retro-commissioning of existing systems. While this does not obligate owners to improve the building's equipment, it does constitute a lighter form of mandatory efficiency upgrades, requiring a certain degree of investment in a measure to improve a building's energy performance.

As with LL84, LL87 applies to residential and commercial buildings with over 50,000 gross sq-ft of interior floor space. It also applies to public facilities with over 10,000 gross sq-ft of space. However, certain facilities and previously rated buildings are exempt from the law, including:

- Hospitals and some city run cultural centers,
- Smaller private residential buildings (with three units or fewer)
- Buildings under financial hardship
- Buildings achieving ENERGY STAR Certification for two of the past three years
- Buildings having achieved LEED EBO&M certification within the past four years.

Legislation Development and Enactment Process

The GGBP is one outcome of New York City's extensive sustainability planning that was initiated under the PlaNYC banner in 2007. Based on goals laid out in the initial PlaNYC sustainability plan, in 2008 Mayor Michael Bloomberg asked the Urban Green Council (the New York chapter of the U.S. Green Building Council) to form the Green Codes Task Force, made up of more than 200 experts, to recommend changes within any of the city's codes and regulations to make buildings more sustainable. The Green Codes Task Force, in cooperation with the Office of Long-Term Planning and Sustainability (OLTPS), established a team of technical experts to draft language that eventually formed the basis of the GGBP.

This taskforce included and sought input from a broad range of stakeholders from government, community and business sectors. Technical expertise from building professionals, owners and managers was combined with input from environmental experts, labor unions, elected officials and tenants' associations to arrive at the four ordinances included in the GGBP.

Along the way, engagement with the real estate industry revealed concern over provisions calling for mandatory upgrades in the GGBP. Eventually these were mostly dropped, citing audit subjectivity and the impact of split incentives as key concerns. Another important aspect in defining the GGBP was identifying the portion of New York City's GHG emissions that

Stakeholder Highlight: The Real Estate Board of New York (REBNY)

REBNY membership includes owners, builders, brokers, managers, financial institutions involved in New York realty. They have been involved since the drafting of the GGBP, recognizing the value of improved energy efficiency to their members.

"REBNY has a strong sustainability committee and we are very committed to improving energy efficiency in New York City's larger building stock"

Angela Sung Pinsky - Senior Vice President, Management Services, REBNY

While REBNY has been part of the stakeholder group assisting the city to develop the GGBP, they have also voiced concerns along the way, feeling that initially their role in the forum did not adequately represent the extent of the GGBP's effect on their members, and expressing uneasiness over the potential impact of ESPM inaccuracies and audit costs on building owners.

Nonetheless, REBNY continues to cooperate through the GGBP implementation, playing a growing role in the stakeholder forums, and helping to achieve high compliance rates by providing information to their members.

buildings accounted for, and evaluating the building stock to determine an array of enforceable laws that could reach the largest sources of emissions (ICLEI, 2011).

After over a year of development and consultations, the GGBP was raised in the city council on April 22, 2009 and was passed in December 2009. All four ordinances comprising the GGBP were then signed into city law on December 28, 2009. The GGBP did not include the specifics of how implementation would be carried out, but set deadlines, targets, non-compliance penalties and specific obligations. Each of the GGBP laws requires the Department of Buildings to specify the details for implementation and enforcement.

The Benchmarking Rule for LL84, providing specifics on the data collecting and reporting requirements, was published in February 2011 and passed after a public hearing in March 2011. The Energy Audits and Retro-Commissioning Rule, stating the schedule and requirements for the audit process, was published in February 2012 and passed in September 2012 after public hearings were concluded.

The Benchmarking and Energy Audits and Retro-Commissioning Rule provides the details for compliance and enforcement, considering issues such as access to aggregate billing data from utilities, detailed compliance requirements and exemptions for broadcast antenna, cellular towers, lighted signage and cooking gas contributions to energy consumption data. These rules provide the final level of instruction on the GGBP ordinances and can be updated by the Department of Buildings to reflect new developments in the future without requiring amending the GGBP laws in council.

Enforcement and Follow-Up

New York has established a clear set of rules and methods for building owners to access energy consumption data and calculate their buildings' aggregate usage. The local energy utilities, Con Edison (ConEd) and National Grid, now provide building owners and operators aggregate energy consumption data for buildings equipped with multiple meters. Owners can provide a list of meters in their building to the relevant utility and receive total building energy consumption data, which largely protects the privacy of individual tenants.

Data access and ESPM reporting requirements have led to some increased costs to building owners (ConEd charges a fee of $102.50[12] to provide a year's aggregate electricity data for a building). Over 75 percent of commercial buildings had their ESPM benchmarking performed by external consultants, typically costing $2,500-$5,000 per building. However, these services have also brought value to building owners and managers by connecting them to energy efficiency expertise early in the process, which may ultimately increase the uptake of efficiency improvement measures down the road (New York City OLTPS, 2012).

The city and its partners have undertaken a broad information campaign to encourage compliance, and improve data quality. For example, the Urban Green Council has developed a Benchmarking Compliance Checklist & User's Guide, with assistance from the real estate industry and the Mayor's Office, to provide property owners with step-by-step instructions on how to comply with Local Law 84 and guidance for directing staff or consultants. The City also set up a benchmarking help center hotline for building owners and energy auditors to obtain help using ESPM and fulfilling the GGBP requirements.

The city decided not to fine those properties that had not benchmarked by August 1, 2011, but send a warning instead. The Department of Buildings sent out approximately 5,200 warning letters notifying owners of non-compliant buildings that they must benchmark their properties by December 31, 2011, after which they would receive a violation and a $500 fine (over 2,000 fines were levied for failures to comply at the end of 2011). In addition to letters, the city worked with a number of stakeholder groups to provide resources to the real estate community, and engage in including general outreach to building owners and managers.

The city is currently working to address a number of challenges that impact the accuracy of benchmarking data collected including:

- Sub-metering multiple buildings in campuses that are currently being reported as a single structure;
- Devising reporting methods to make mixed use building benchmarking more precise and easier to compare;
- Working with independent heating oil suppliers to collect billing data, and;
- Ensuring that the linkages between metering locations and buildings are accurately recorded.

12 This fee was determined based on the time and effort that ConEd estimated it required to deliver aggregate billing data on their own building. (Craft, 2012)

Finally, New York City is taking a lead-by-example approach, gaining experience and insight into the benchmarking and auditing processes by releasing its own energy benchmarking data in public reports, and requiring public facilities to audit and upgrade under-performing buildings that receive a poor ESPM rating.

Links to Incentives and Financial Support

In 2011 the New York City Energy Efficiency Corporation (NYCEEC) was created to provide financing for energy efficiency projects and comprehensive information about funding and tax benefits. NYCEEC received $37 million in federal American Recovery and Reinvestment Act (ARRA) funding, creating a revolving fund to backstop loans for eligible buildings.

New York State Energy Research and Development Authority's (NYSERDA) Flex Tech program offers support for energy efficiency feasibility studies, retro-commissioning and equipment upgrades. NYSERDA will generally consider supporting only feasibility studies that go beyond the basic GGBP requirements and target intended investments in energy efficiency upgrades. (Yeskel, 2012) However, building owners who are applying to Flex Tech for support for energy efficiency improvements may be able to meet their GGBP auditing obligations in the process.

Local Law 84 Results Reports

New York City is among the first to report the BER&D results, publicly disclosing the 2010 benchmarking results for private commercial buildings on the Department of Finance website. A spreadsheet with results from over 4,000 properties is now available containing ESPM scores along with each building's lot number, address, end use intensity EUI (weather normalized and raw), water consumption per square foot, GHG emissions, reported gross sq-ft of interior space and facility type. Public buildings results for over 2,700 city run facilities were compiled over 2010 and 2011 and published in September 2012. This database includes information fields such as building lot numbers, addresses, ESPM rating, EUI and GHG emissions.

In August 2012 New York City published the first analysis report on the benchmarking results from large buildings, based on the 2010 billing and rating data. The report is the first of three planned annual reports which will, in the future, merge energy use data from benchmarking with information about building energy systems collected through the city's mandatory audit and retro-commissioning law.

Key outcomes of the report include (New York City OLTPS, 2012):

1) New York City achieved an extremely high compliance rate of 75 percent in the first year of enforcing benchmarking law with private buildings. This can be attributed to the following:
    - Outreach and enforcement efforts, including extending the deadline for reporting and communicating along a variety of channels to building owners such as warning letters, cooperating with partners in the real estate community and providing benchmarking support information such as trainings and checklist;

- The focus on large buildings that typically have city-wide management services facilitated communication and compliance;
- Technical support from the utilities to inform clients of their reporting requirements and provide them with aggregate billing data, and;
- Energy consultants who offer services to carry-out the reporting for their clients' buildings.

2) Multi-family buildings made up over 64 percent of all the total square footage benchmarked, with offices contributing 24 percent and other building types (retail, hospitality and educational facilities) accounting for the remaining 12 percent. The office spaces, retail spaces, hotels and education facilities all demonstrated a significantly higher EUI than the multi-family buildings. Trends noted within these sub-groups included:
   - Multi-family buildings have relatively consistent EUIs that do not vary significantly with the age of the building.
   - Newer offices tend to have increasingly higher EUI compared to older buildings.[13]
3) There was a high degree of variance within building sectors indicating opportunities for significant energy savings through efficiency upgrades. It was estimated from the benchmarking results that a 31 percent reduction in energy consumption would be achieved by bringing all large buildings up to an ESPM score of 75.
4) Further work is needed to improve the quality of the reporting data submitted. 15-25 percent of the respondents experienced some confusion with the benchmarking methods that led reduced accuracy in the information.
   - Verification of the results is important to ensuring accuracy of reporting. The city administration has been giving feedback to consultants who performed the 2010 reporting, outlining common errors found in their reports.
   - There was systematic under-reporting of building gross floor space due to the use of Department of Finance numbers for floor areas that typically do not include below-grade space. In other cases, raters applied floor-space-available-for-rent values provided by building owners, which also tend to under report total conditioned floor spaces by up to 15 percent.

This first benchmarking report provides some valuable information on the results of the most successful rating and benchmarking initiative in the U.S. to date, and offers a range of implementation and policy recommendations for future action including:

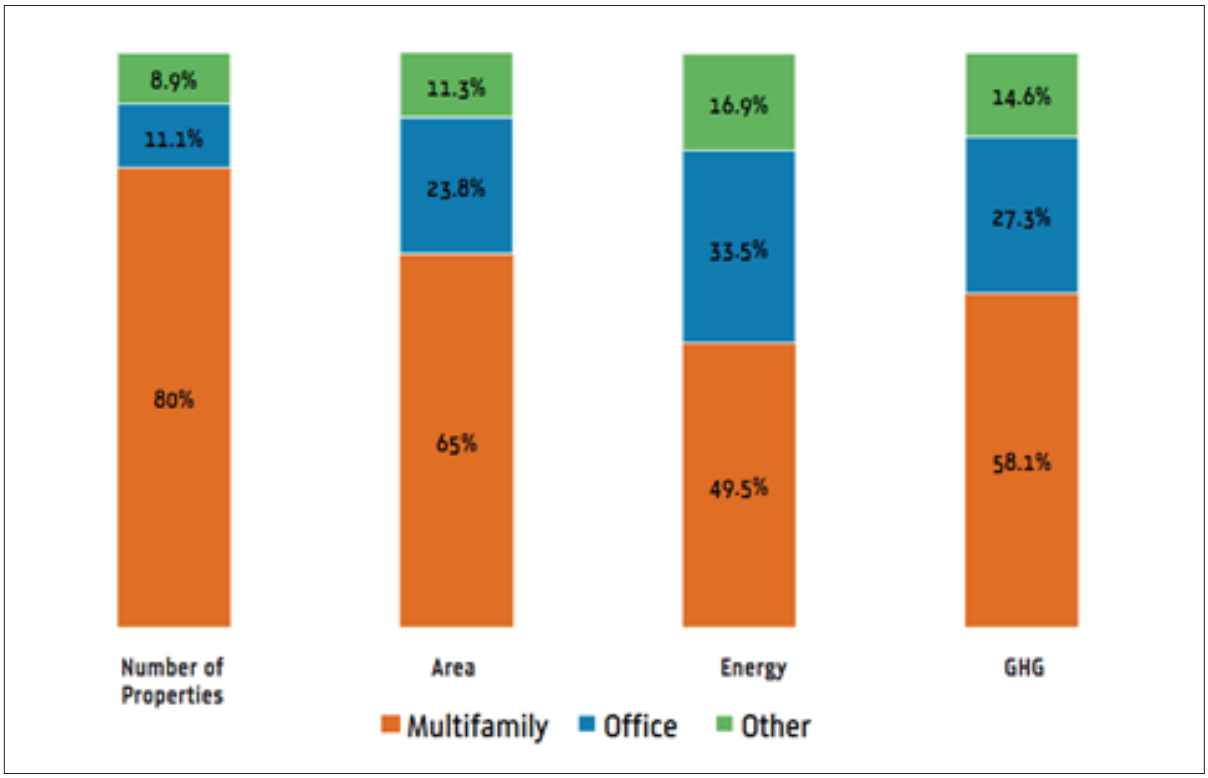
- Working with utilities to enable automatic uploading of billing data to ESPM
- Identifying incentives to help building owners install sub-meters for properties with multiple buildings

13 According to REBNY, this may be as much due to lower vacancy rates and increased usage intensities in newer office buildings as much as any building quality affects.

- Explore new means to determine above-grade floor space
- Update the benchmarking law to remove data gathering requirements that have become unnecessary
- Maintain the Benchmarking Help Center for another three years.

It is expected that rolled out compliance with the auditing and retro-commissioning laws will further reinforce the impact of New York City's energy benchmarking law, leading to significant reduction in energy use and the associated greenhouse gas emissions from the city's buildings.[14]

Figure 1: Breakdown of LL84 Reporting in 2010 (New York City OLTPS, 2012)



14 A full version of the report is available on the GGBP website at: http://www.nyc.gov/html/gbee/html/plan/ll84_scores.shtml.

Figure 2: Multifamily EUI Distributions in New York City: 2010 Data

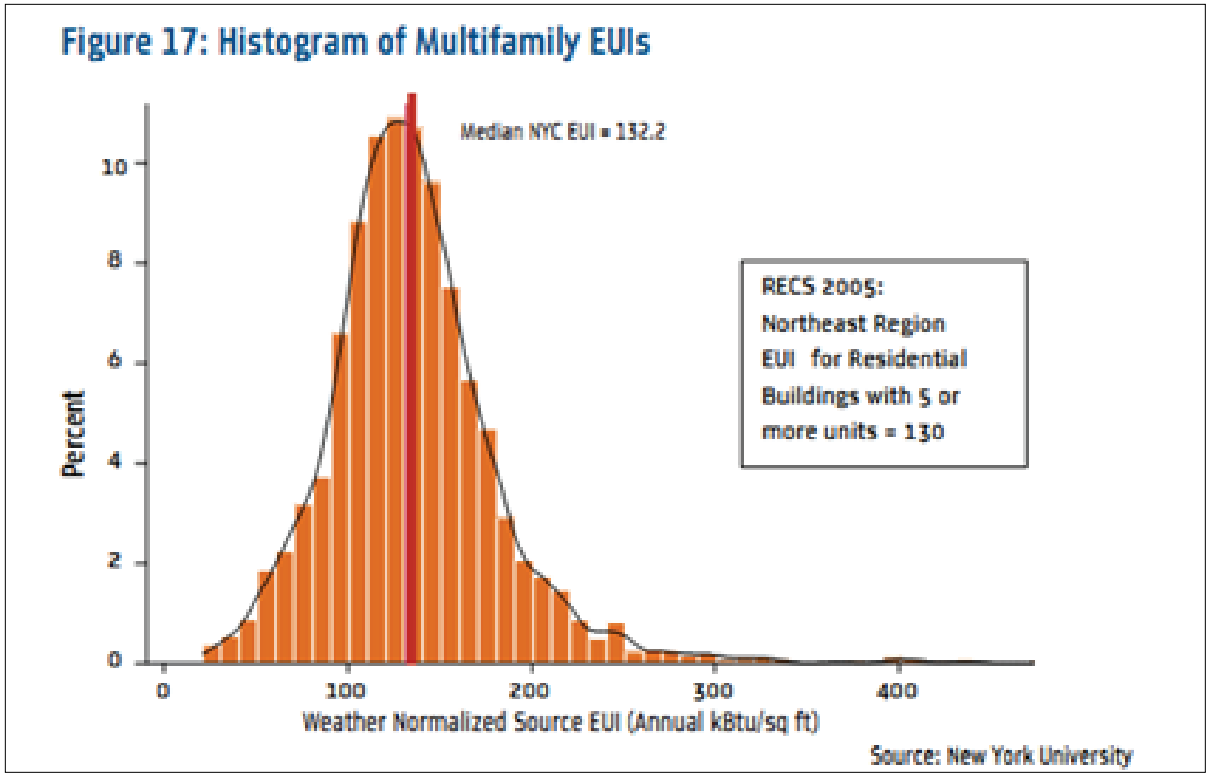
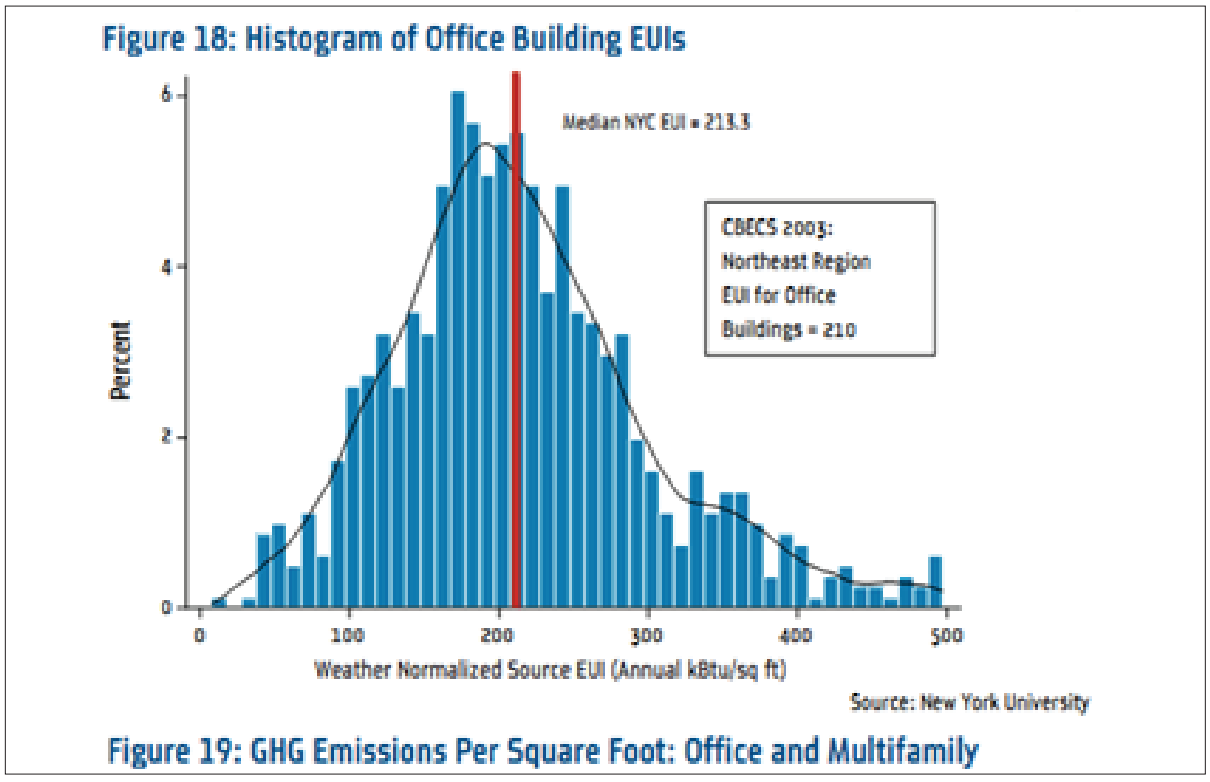


Figure 3: Office Building EUI Distributions in New York City: 2010 Data



Austin, Texas

The City of Austin, Texas passed the Energy Conservation Audit and Disclosure (ECAD) ordinance in 2008 as an effort to improve energy efficiency in the city's residential and commercial buildings. ECAD includes a comprehensive and broadly applied set of disclosure and auditing rules, covering all properties from single family homes up to large multi-family and commercial buildings. For smaller residential properties a time of sale audit is required, while larger multi-family and commercial buildings are required to carry out annual operational performance benchmarking. In some cases owners may be required to implement energy efficiency upgrades where the buildings receive a poor rating.

The ECAD ordinance was amended in April 2011 to include staggered compliance dates for larger properties and specifying the point in the sale process at which owners must disclose audit results to a prospective buyer (ACEEE, 2011). The key to the successful passage of Austin's ECAD ordinance has been the city's openness to involve stakeholders in developing, passing and promoting the law. Moreover, Austin Energy, the eighth largest municipality-owned utility in the U.S., has backed the bill's development and implementation providing administrative support and financial incentives to assist its customers to embark on energy efficiency upgrades.

ECAD Ordinance

Through the participation of key stakeholders, the ECAD ordinance is having a significant effect on building transactions. "*In the real estate marketplace, one thing we are seeing are new kinds of conversations among real estate professionals, buyers and sellers, as well as at leasing tables*," said Tim Kisner, Project Manager for Austin's Energy Efficiency Department. "*The conversations are moving beyond the paint and sheet rock to the R-values for insulation in the attic.*" (Climate Leadership Academy Network, 2010)

ECAD requires owners of single-family, multi-family, and commercial properties to perform a rating of their building's energy performances and report the results to prospective buyers at the time of sale.

For residential and multi-family buildings, audits must be performed by a BPI or RESNET certified building performance analyst. Using the energy audit forms developed by Austin Energy, the auditor provides an asset rating on the home or building, and identifies common energy efficiency upgrades that may prove cost effective.

Obligations for Residential Buildings

Single family homes and residential buildings of four units or fewer that are more than 10 years old must perform an energy audit prior to sale using the asset rating system developed by Austin Energy. The results of the energy audit must be disclosed to a prospective buyer no later than three days prior to the end of the buyer's option period and to Austin Energy within 30 days of the transaction (City of Austin, 2012).

Single-family homes participating in the Austin Energy Home Performance with ENERGY STAR Program, making at least three energy improvements, or receiving at total of $500 in Austin Energy efficiency rebates within the previous 10 years are exempt from performing an audit.

Obligations for Multi-family Buildings

- Multi-family residential buildings containing at least five units and constructed over 10 years ago must have an energy audit performed starting in June 2012. Buildings constructed within the past 10 years will require an energy audit be performed within 10 years of their construction completion date.
- Audits are performed by certified building energy analysts using Austin Energy's multi-family energy audit form. The results must be posted within the building and provided to prospective tenants and buyers.
- In all cases the audits are valid for 10 years and new audits are not required for further sales transactions during that period.
- Buildings with an EUI greater than 150 percent of the Austin average for multi-family buildings[15] are required to make efficiency upgrade retrofits reducing the building's EUI by 20 percent within 18 months of the initial audit.
- Owners of five or more units within a single condominium development must also meet the multi-family building requirements.

Obligations for Commercial Buildings

Non-residential buildings with a total interior space greater than 10,000 sq-ft must be benchmarked annually using ESPM. The ESPM score and EUI rating must be reported to Austin Energy, and disclosed to prospective buyers prior to contract signing, however the audit results will not be posted publicly.

According to the ECAD ordinance update approved in April 2011, commercial properties must begin annual benchmarking and reporting along a staggered schedule meeting the following deadlines:

- Buildings with interior spaces of 75,000 gross sq-ft and over by June 2012
- Buildings with interior spaces of 30,000-75,000 gross sq-ft by June 2013
- Buildings with interior spaces of 10,000-30,000 gross sq-ft by June 2014

ECAD Development and Enactment

In 2007 the City of Austin's Mayor, Will Wynn, released the Climate Protection Plan that presented a strategy, based on a set of ambitious goals aimed at making Austin America's leader in combating climate change. The plan included the following targets: (City of Austin, 2012)

1. Make all City facilities and fleets operationally carbon neutral by 2020

15 Austin Energy will determine which buildings are high energy-use properties and inform the owners directly.

2. Make Austin Energy the leading utility for GHG reductions
3. Implement the most energy efficient building codes in the U.S. and pursue energy efficient upgrades
4. Establish a City Climate Action Team to implement the strategy and track its progress
5. Assist citizens, businesses and organizations to achieve carbon neutrality

Energy Efficiency Retrofit Taskforce

> *"We worked to convert the conversation from mandating upgrades toward providing information so that the market would motivate upgrades."*
>
> **Emily Chenevert, ABOR**
>
> *"Now we are educating the realtors on the who, how and when so that they can help their clients comply and benefit from ECAD."*

To meet the plan's targets, the City of Austin established the Energy Efficiency Retrofit Taskforce in 2007 and called on it to return to the city council with a proposal for mandatory energy efficiency upgrades ordinance by August 2008. The 27 member taskforce brought together a group of key experts and stakeholders representing the real estate industry, energy contractors and affordable housing advocates. These include the Austin Resource Management Commission, the Austin Electric Utility Commission, the Austin Board of Realtors (ABOR), the Austin Apartment Association (AAA), the Building Owners and Managers Association, building inspectors, home performance contractors, and energy auditors.

Various building and real estate industry groups pressured the taskforce to reduce the upgrade requirements in the initially proposed ordinance. Instead a compromise was reached that instead focused the proposed ordinance on energy auditing and disclosure as a tool to value energy efficiency by providing information to the market place.

In keeping with the city's initial objective of obligating property owners to improve the efficiency of their buildings, the proposed audit bill included a series of "Mandatory Backstop" clauses that would kick in if the voluntary participation targets for uptake of energy efficiency measures were not met. However, these were dropped from the ECAD bill prior to it being raised in council.

Passage and Amendment of ECAD Ordinance

The ECAD ordinance was passed in September 2009 and Austin Energy was given the role of administrating the law, defining the audit processes, ensuring compliance and developing outreach and information tools.

In 2011 the City of Austin amended the ECAD ordinance creating a staggered compliance schedule for commercial buildings, and removing the option of using the customized en-

ergy rating tool developed by Austin Energy.16 Furthermore, the obligations for mandatory efficiency upgrades in poorly performing multi-family buildings were reduced. A further exemption was added for high energy-use properties where all reasonable energy efficiency upgrades had already been carried out. Finally, language was added to the ordinance requiring owners of five or more condominium units within a single building to adhere to the requirements of a multi-family building.

Austin was able to garner broad support for ECAD through the city's willingness to develop the regulations in partnership with building and real estate industry advocates through the taskforce. As a result, ABOR and AAA continue to partner with Austin Energy to host outreach and educational workshops for their members, thus broadening support for, and understanding of, the new reporting requirements.

Austin Energy's Customized Residential Audits

Pecan Street Inc. Research Group

Pecan Street Inc. is a research group established in partnership among the City of Austin, Austin Energy, the University of Texas (UT) and a range of private companies and foundations. Its goal is to explore and research energy efficiency and renewable energy opportunities for the Texas community.

Through its partnership with Austin Energy, Pecan Street Inc. has access to information from the ECAD database and is helping to evaluate the ECAD residential audit process and determine opportunities to improve energy efficiency in Austin's existing homes. In a 2011 paper, UT researchers released a study of over 4900 ECAD home audits results, that demonstrates the potential for improving air conditioning system efficiency to reduce peak loads by 205MW, 8 percent of Austin Energy's current peak load. Moreover, right-sizing equipment after home weatherisation could result in a further 81MW of reduction. This collaborative research shows the potential for audit information to act as a foundation for cost-effective and well designed energy efficiency incentive programs.

Austin's single family residential audit provides an example of a tailored system designed to keep residential audits affordable and provide information that can spur homeowners to take action and carry out energy efficiency upgrades.

Austin Energy recognized the need to access existing capacities to make the ECAD audits a success, however, with customer costs limited to $300 under the ECAD ordinance, it was difficult to engage energy evaluation professionals who were used to performing more comprehensive and therefore more expensive audits. In the end, Austin Energy developed its own ECAD audit template that responds to the specifics of housing constructed in a cooling dominated climate, most of which do not have basements. The single family audit form focuses on:

- Windows and shading
- Attic insulation
- Heating, Ventilation and Air Conditioning (HVAC)
- Air infiltration (tightness)

16 Largely because ESPM was considered an effective rating tool and because administering a locally developed rating for commercial properties proved overly complicated. (Kisner, 2012)

> *"Auditors often vary in their ability to communicate the rating results. Homeowners need to have clear takeaways from the audit results to respond to and implement upgrades."*
> **Cate Smithson, Pecan Street Inc.**

They then turned to RESNET and BPI to provide certification ECAD auditors, and focused on people currently involved within the residential property industry to deliver the audits, including home inspectors, HVAC system installers and termite inspectors. The experience so far demonstrated the benefits of working with home inspectors who already have a role in evaluating homes at the time of sale.

Austin Energy also worked with real estate agents, through groups such as ABOR, to integrate ECAD audits and energy performance information into the MLS system and to increase the agents' understanding of energy efficiency to encourage them to engage with potential home-buyers.

Finally, Austin Energy is continuing to evolve and improve the audit process. Results from research carried out by the Pecan Street Inc. research team at UT Austin indicated that challenges exist in ensuring audit process reliability. Moreover, audit reports were not always clear to home owners and buyers, thus reducing the likelihood that they would use the results to carry out efficiency improvements. In response, Austin Energy is updating the audit form, working closely with ABOR to improve the accuracy and clarity of the reports.

Enforcement and Follow-Up

Upon the passage of the ECAD ordinance, Austin Energy worked with its legal and interpretation teams to determine what the language of the ordinance intended and what was enforceable (Kisner, 2012).

The $300 limit placed on residential audit costs created a challenge to develop an accurate and reliable audit process. Many professional auditors who had been involved in past programs attached to funding incentives were charged significantly higher rates to perform comprehensive home energy audits. Rather than attempting to adhere to an existing audit or rating score such as HERS or EPS, Austin Energy developed an audit form tailored to homes in the local cooling-dominated climate.

Austin Energy cooperates with BPI and RESNET to ensure the availability of training courses, and sponsors ECAD orientation sessions for property-owners. Auditors are required to submit the audit findings to Austin Energy, which then reviews all of the audits and verifies some portion of them through field visits.

With the removal of most of the mandatory upgrade language from the law, Austin Energy sought market driven and incentive based demand side management tools to encourage energy efficiency upgrades.

Austin Energy increased its budget for building energy improvement rebates and low-cost loans by $1 million. These offer assistance that cover:

- Up to 60 percent of energy efficiency upgrade in single family homes, and;
- Up to 80 percent of certain energy efficiency upgrades in multi-family buildings.

Incentives for solar screens, ceiling insulation and air duct improvements in multi-family buildings were increased over the period from 2009-2013 to support the implementation of the energy audit recommendations.

While mandatory upgrades were largely removed from the ECAD ordinance, Austin Energy encourages commercial property owners to upgrade their buildings' performance based on meeting improved ESPM rating targets:

Building ESPM Score	Recommended Action
75 or higher	(No action necessary)
63-74	Raise the score to 75
42-62	Raise the score by 20%
Below 42	Raise the score to 50

Failure to comply with the ECAD ordinance carries a fine of $500 and could be increased to up to $2,000 if it is determined that the owner acted with criminal negligence. To date, the City has not yet pursued any property owner with a failure to comply fine. Through information and outreach activities carried out in cooperation with the real estate industry, Austin Energy has achieved a compliance rate of over 60 percent for homes and over 50 percent for multi-family buildings.

Rating and Disclosure Results

Austin Energy has compiled detailed statistics on the compliance rates and impact of ECAD, and releases regular, publicly available reports to the cities. The utility, as the administrative authority for ECAD, has placed a strong focus on linking their analysis of energy rating data to improving uptake rates for energy efficiency upgrades. Along with performed analysis internally, Austin Energy has given access to the ECAD database to researchers at the Pecan Street Inc. research group to perform analysis of energy efficiency opportunities and the auditing process.

ECAD results compiled up to 2011 indicate reasonably high compliance rates of 66 percent in single-family homes and 56 percent in multi-family buildings. Commercial buildings were not yet required to report their ESPM ratings in 2011.

Exemption rates are considerable at over 30 percent in single-family homes and over 20 percent in multi-unit residential properties (ACEEE, 2011). This poses a particular challenge to Austin Energy, partially driven by the wide range of exemption cases in the ECAD rules, and by the city's 30 year history of energy efficiency programs that have already captured many of the "lowest hanging fruit".

Encouraging results were noted from the home energy audits that were highly successful at identifying energy upgrades. While the current rate of ECAD driven efficiency upgrade currently sits at only six percent of compliant homes in a given year, Austin Energy is working to identify the ideal communication points to improve uptake rates both before and after home sales.

- 96 percent of audited homes received at least one energy efficiency recommendation:
  - 78 percent need in-home weatherization
  - 58 percent need solar shading
  - 68 percent need HVAC air duct system renovation and sealing
  - 79 percent need additional attic insulation

Only 52 of 1400 multi-family buildings consumed more than 150 percent of the city average, thus easing requirements for energy efficiency upgrades on these high consuming properties is not expected to have an overly negative impact on overall energy use reduction targets in Austin.

Figures: 2011 ECAD Reporting Results (Austin Energy, 2012)

Single-Family Audits

Dates	Home Sales	Exempt from Ordinance	Not Exempt from Ordinance	All Homes Audited	% Non Exempt Homes Audited	Ordinance Driven Participation: Houses performing retrofits within 1 year prior to sale or 1 year after sale	Ordinance Driven Participation: % of Total Home Sales
FY 2011	6,634	1,887	4,747	3,259	69%	373	6%
FY 2010	9,584	3,492	6,092	3,927	65%	566	6%
Jun 1st, 2009 to Sep 30th, 2009	4,383	1,729	2,654	1,685	64%	247	6%
Total	**20,601**	**7,108**	**13,493**	**8,871**	**66%**	**1,186**	**6%**

Multi-Family Audits

Number of Audits Completed	
FY 2011	561
FY 2010	13
Total number of Apartment Communities Audited	**574**

Total Number of Buildings or Campuses Required to Report a Benchmark Rating Prior to June 1, 2012	677 buildings
Total square footage of all required buildings	114 million square feet

Washington State

Under Washington State's Efficiency First Act, energy benchmarking is required for large non-residential buildings, along with disclosure of the results to a prospective buyer or renter at the time of sale or establishment of a new lease. This broad piece of legislation covers a range of new requirements that aim to address carbon emissions from the state's buildings, including (NW Energy Coalition, 2009):

- The establishment of a strategic plan for building energy and carbon emissions reduction, (to be updated every three years);
- The adoption of more stringent energy codes up to 2030 (calling for a 70 percent improvement in energy efficiency over today's code);
- Improved energy efficiency in existing public facilities;
- Local bonding authority for energy efficiency, and;
- Energy rating and disclosure for all non-residential buildings.

Seattle's Energy Benchmarking and Reporting Ordinance

In 2009 Seattle embarked on the Green Building Capital Initiative, a strategy to reduce the climate impact of Seattle's homes and buildings. (Seattle DPD, 2011)

The ordinance includes new rules on building energy rating and disclosure that go beyond the requirements of Washington State's Efficiency First Act. It expands the state requirements in three areas:

- Multi-unit residential properties with 20 or more are also subject to the same rating and disclosure requirements as commercial properties;
- Rating data must be disclosed upon request to current tenants; and
- Energy performance data is reported to the City of Seattle every three years, but is not posted publicly.

The energy use performance scores and disclosure for buildings requirements include maintaining energy performance records for non-residential buildings, and disclosure of these results to prospective buyers, leasers or lenders. It also requires all public agency buildings to be rated, and to perform energy audits if their performance is below average. Moreover, starting in 2010 public agencies may only lease buildings with an ESPM score of 75 or higher.

The act has come into force gradually from 2009 to 2012. It also included a clause requiring the state to recommend a methodology to determine residential energy performance by 2009, but instead these efforts shifted toward an upgraded residential building energy code. As a complementary measure, Seattle now also requires multi-family buildings to disclose their energy performance to the city, prospective buyers and current tenants, similar to the state requirements for commercial buildings.

Washington's Efficiency First Act

The Efficiency First Act (Washington State Bill no. 5854 of 2009) was modeled after similar legislation in California that requires owners of non-residential buildings larger than 10,000 sq-ft to rate their buildings using ESPM and disclose that information to prospective buyers, leasers and lenders prior to the closing of a financial transaction (Senate Committee on the Environment, Water and Energy, 2009).

Obligations for Energy Utilities

- Starting January 1, 2010 energy utilities are required to maintain at least 12 months of consumption data for all non-residential buildings and public agencies in a format compatible with ESPM.
- At the request of the building owner or operator, the utility must upload energy consumption data to ESPM in a form that does not disclose personally identifying information.

Obligations for Non-Residential Buildings

- Commercial buildings are required to provide the most recent 12 month period ESPM benchmarking data and ratings to a prospective buyer, leaser or lender.
- This requirement has come into force in two steps:
  - By January 1, 2011 for non-residential buildings of 50,000 sq-ft and larger
  - By January 1, 2012 for non-residential buildings of 10,000 to 49,999 sq-ft

Obligations for Public Buildings

- Public facilities must provide ESPM benchmarking data and ratings to the State General Administration (GA).
- The GA is required to publish the information and produce a report on energy consumption in public facilities by December 2012.
- Any public facility receiving an ESPM rating of less than 50 must carry out a preliminary energy audit.
- If the preliminary audit identifies any cost-effective energy savings, an investment grade audit is required by July 1, 2013 and cost-effective measures must be implemented by 2016.
- A public agency may not sign or renew a lease in a private facility with a rating lower than 75, unless an audit has been performed and the owner agrees to implement any cost effective energy efficiency measures identified therein.
- Schools are exempt from the Act, but are encouraged to follow the same guidelines.

In September 2012, Governor Christine O. Gregoire issued an executive order speeding the benchmarking and auditing of public facilities. The executive order requires preliminary audits to be completed by December 2012 and for cost-effective energy efficiency measures identified through the audits to be implemented by 2015.

Enactment Process

In 2008 the Governor's office established the Washington State Climate Action Team (CAT). The CAT included representatives from state agencies, major corporations, municipalities and energy utilities operating locally (Jay Manning, 2008) who were mandated to report on and develop draft legislation to reduce the State's contribution to global climate change. In its report, "Leading the Way: Implementing Practical Solutions to the Climate Change Challenge", the CAT identified energy use in the state's buildings as an important contributor to GHG emissions, accounting for an estimated 30 percent of the state's overall energy use (Gregg, 2009). The report targeted reducing energy within the state's buildings, along with improving transportation efficiency, reducing waste production and establishing environmental planning practices, as key areas of intervention to reduce carbon emissions.

Draft rating and disclosure legislation based on recommendations in the CAT report was introduced to the Washington State House of Representatives as the Efficiency First Act (SB 5854) in February 2009. Prior to introducing the bill to the house, opposition from the local Building Owners and Managers' Association (BOMA) led to the removal of broader public disclosure requirements for private buildings from the bill, limiting disclosure to those directly involved in a financial transaction around the sale or lease of a property (Kauffman, 2012). BOMA members felt that public disclosure of an ESPM score does not tell the whole story, and could be affected by data quality issues, whereas disclosure at the time of sale or renting offers a chance for the owner to engage in a dialogue over the audit results.

While the CAT process had been open to the public and opportunities were given to review the draft bill language, and make written input, opposition to the rating and disclosure laws strengthened as the bill passed through state committee hearings. However, in May 2009 the bill was passed into law, following straight party-line votes in the House and Senate (Lovato, 2012).

Much of the opposition to the bill has focused on the adoption of ambitious energy codes that would require new homes to reduce their energy use by 70 percent by 2031 (Allsup, 2012). Many within the building industry continue to raise concerns that the energy code targets went too far and may not be achievable. Further criticism has been voiced by building owner associations and the real estate industry that the responsibility to write and approve the new code was passed from the legislature to the unelected State Building Code Council (Gregg, 2009).

While the legislation did not stipulate rating or disclosure rules for residential buildings, it did call on the state's Department of Community, Trade and Economic Development to recommend an energy performance score for residential buildings by the end of 2009 (Senate Committee on the Environment, Water and Energy, 2009). This was later passed to the Department of Commerce, who released the "Home Energy Audit and Retrofit Including Home Energy Scoring" report in 2011 which recommended the use of the Energy Performance Score (EPS) and the DOE Home Energy Score (HES). Rather than introducing a state law requiring rating of residential properties, the report recommended waiting for the federal government to enact mandatory home energy ratings legislation (Rogers Weed, 2011).

Enforcement and Follow-Up

The Washington State Department of General Administration has partnered with Washington State University to offer technical benchmarking assistance to state agencies and institutions. Of the roughly 40 utilities required to offer enhanced data access to building owners, currently only a handful are believed to have the capability to do so (Burr, Keicher, & Leipziger, 2011).

Washington discloses energy consumption data and ESPM ratings for public facilities through a publicly accessible website. However, no further indications of compliance rates, or aggregated results from the benchmarking of private commercial buildings in Washington State have yet been released (Department of Enterprise Services Energy Program, 2012).

Kansas

In 2003 Kansas established mandatory disclosure of energy performance in new homes through an asset rating system. The state developed a standard reporting format for builders and sellers of new homes to provide asset ratings to prospective buyers. The Kansas Energy Efficiency Disclosure (KEED) form includes information on a home's insulation values, HVAC equipment and water heater. It also allows builders to indicate the home's HERS rating or status as an ENERGY STAR Qualified Home (DOE, 2004).

Kansas does not have a state-wide building code, but instead it adopted the IECC 2006 energy code as a guideline for the state, with a significant number of larger municipalities and counties then adopting it as their building code. The KEED form presents the insulation values specified by the code for a home's walls, roof, foundation and windows according to which climate zone the home is located in (Kansas covers climate zones 4 and 5) along with the actual insulation value of the construction to ensure that buyers are aware to what degree their home meets or exceeds the IECC 2006 and federal manufacturing standards.

While the mandatory disclosure law has been in place since 2003, there is little information on the impact of the mandatory disclosure laws on construction practices for new homes. The law does not name an administrative agency or department. As a result there is no government body ensuring enforcement of the law or compiling data on the compliance rates.

KSA 66-1228 Rating and Disclosure Law for New Homes

Kansas' new home energy rating law was passed in 2003, and in 2007 it was updated to move the time of disclosure from the time of closing the sale to the time the house is being shown. Moreover, the 2007 updated KEED form includes a comparison between the home's specifications and the IECC 2006 standards.

Obligations for Sellers of New Homes

A person building or selling a previously unoccupied new single-family home or multi-family building of four units or less (following the federal government's definition of a residential building) are required to disclose to a prospective buyer information regarding the energy efficiency of the structure. The law requires the use of the KEED form that includes:

- Wall insulation R values
- Attic insulation R values
- Foundation walls R values
- Window U values
- Water heater fuel type and energy factor
- Heating and Cooling equipment types and performance ratings

The completed disclosure form must be made available to the prospective buyer by the builder or seller when the residence is shown and at any other time upon request.

Enactment Process

New-Home Disclosure Law Timeline:

The house passed HB 2131 by 108-15 margin in February 2003.

The Senate Utilities Committee hearing reported the bill favorably.

The Senate passes HB 2131 by 39-0 margin on with minor amendments.

The law was updated within Statute 66-1228, 2007, chapter 100, Section 2, passed on July 1, 2007.

Based on the Kansas Energy Plan released in 2007, a number of amendments were proposed to the existing new home energy rating disclosure law (KSA 66-1228). These focused on requiring real estate agents and brokers to provide the energy rating information with the new home listing, allowing future revisions of the disclosure form to be carried out by the Kansas Energy Office (rather than being enclosed within the law), and to allow them to propose new local residential energy efficiency guidelines.

The Kansas Energy Office worked with representatives from the real estate, building and manufactured home industries to develop a set of rules for the disclosure law update. A key concession offered to help achieve buy-in was to make the law very specific and require returning to the legislature to update it or the disclosure forms. This along with the minimal reporting obligations that do not require additional auditing cost to builders or sellers, led to the amended law being widely accepted.

Enforcement and Follow-Up

While Kansas has taken steps to encourage energy efficiency at the state level, its track record typically favors putting responsibility at the municipal and county level. The energy rating and disclosure law does not give the state the responsibility to administer the new home disclosure law or to enforce compliance. As a result the state does not play a direct role in training code officials and builders about codes or efficiency standards, or tracking compliance to the law. Some local jurisdictions, such as the Johnson County Contractor Licensing Program, offer a variety of classes, including training on the 2006 IECC. The industry generally accepts the KEED form as developed, and in some cases home builders have observed that the energy efficiency standards can help to speed the sale of new homes, at a minimal cost to the builder (Brosius, 2012).

Kansas does not have a state building or energy code, however, in April 2007 it made the 2006 IECC the applicable standard for new commercial and industrial structures, though the state leaves it up to the counties and municipalities to determine the building codes applicable within their jurisdictions. IECC code adoption by several large cities and counties, (including Overland Park, Manhattan, Lawrence, Topeka, the cities of Johnson County and Kansas City)

have brought the percentage of Kansas residential construction covered by energy codes to over 50 percent (ACEEE, 2012).

Kansas has developed a range of energy efficiency upgrade programs made possible through ARRA funding, including the Efficiency Kansas program that promotes energy efficiency loans for homes and small business. The program requires detailed energy audits and supports efficiency upgrades that offer a 15 year payback period or less.

Connecticut

In March 2012 House Bill (HB) 5385 was introduced in The State of Connecticut House of Representatives, requiring disclosure of energy benchmarking and ratings data of residential and commercial properties. The bill was crafted after similar laws in Washington State and California, requiring time of sale reporting for residential properties, and annual reporting and public disclosure for non-residential buildings. It also called on the state to lead by example and to ramp up its reporting and benchmarking for all public facilities early in the process.

The bill was included as part of a five pronged effort to reduce energy consumption in the state's buildings, which collectively account for 58 percent of total statewide energy consumption. The energy rating and disclosure policy was intended to be a powerful complement to enhancing building energy codes and compliance by encouraging markets to value energy efficiency. Despite including an instruction to consult with pertinent private sector interests to develop the disclosure rules, the bill met stiff resistance from property owners and builders associations and as a result the bill failed after passing house committees.

Connecticut's Attempted BER&D Policy- HB 5385

BER&D legislation was initially raised before the Connecticut House of Representatives as HB 6544 in 2011. It was sent to the Committees on Energy and Technology, Appropriations, Government Administration and Elections, and General Law where it received favorable reports. However in the end the bill was not raised for a second reading in the 2011 sitting. The BER&D proposed legislation was reintroduced as HB 5385 in February 2012 and was again sent to committee for debate but was not acted on by the house.

Both bills called on the government to adopt a federal rating and disclosure system to apply to residential and non-residential buildings in the state and to consult with residential energy efficiency auditors, providers of residential energy efficiency services and members of the residential real estate and mortgage banking industries. Specifically, HB 5385 outlined the following obligations:

Obligations for Utilities

- Effective January 1, 2013, utilities must maintain data in a format compatible with ESPM, and upload that data upon written request of the owner.

Obligations for Residential Buildings

- Starting July 1, 2014, owners must disclose their property's energy rating score before the sale of the building.
- Sales or exchange between co-owners, spouses or relatives is exempted.
- Audits carried out for past sales remain valid for five years.
- Building owners must provide potential leasers at least two prior years of energy consumption information (effective October 1, 2012).

Obligations for Non-residential Buildings

- Non-residential buildings will be required to enter their energy consumption profile and data into ESPM and to report annually their scores to the state according to the following deadlines:
  - By January 1, 2013 for buildings 50,000 sq-ft and larger
  - By January 1, 2014 for buildings 20,000-50,000 sq-ft
  - By January 1, 2015,for buildings 10,000-20,000 sq-ft
- Annual benchmarking reports would be publicly available through a database maintained by the Commissioner of Energy and Environmental Protection.
- The building owner must provide most recent 12 month period energy consumption data to a prospective buyer, lessee or lender.

Obligations for State Facilities

- By January 1, 2013 the state must benchmark all buildings, and provide an EUI rating for buildings greater than 10,000 sq-ft.
- The state would have the right to demand an energy audit of any residential building that is being constructed or rehabilitation with the aid of a state funded loan.

Attempted Enactment and Debate

Attempts to raise a BER&D bill in Connecticut sought the support of key players, such as Governor Daniel Malloy, who had included a commitment to energy efficiency in his 2010 election platform. Furthermore, the Commissioner of the Department of Energy and Environmental Protection (DEEP) had set a target of performing energy efficiency retrofits in 80 percent of residential properties by 2030, and had established a lead by example benchmarking program for state facilities as part of the 2005 state Climate Change Action Plan. Interpreting these actions as signals that Connecticut was ready to adopt a statewide BER&D policy, a coalition of environmental organizations and energy industry groups formed to lead the initiative.

The coalition invited in small businesses such as home performance contractors, commercial energy audit providers and financial professionals to connect the policy to the state's economic development. Coalition members also reached out to the real estate industry through the Connecticut Association of Realtors, the Connecticut Property Owner Association and the Home Builders Association of Connecticut. Despite ongoing engagement with these groups to promote energy efficiency and enhance rental values, in the end they were unwilling to join the coalition and cooperate to develop a workable energy rating and disclosure framework.

The proposed BER&D bills met with opposition from the real estate industry groups. Those opposed to the bills cited potential effects such as a negative effect on the property values of older buildings in an already depressed housing market, increased building owner costs to monitor and report energy consumption values (which are largely impacted by tenant behavior) and a failure on behalf of the state to provide financial assistance for owners to perform

energy audits and upgrade their buildings' energy performance.

Counter arguments in support of the bills included their ability to leverage investments made to train energy efficiency experts in the market, drive home performance industry growth, improved consumer protection, and cost savings for building owners and tenants.

While significant progress was made, the coalition decided not to press the 2012 bill through. Because support for bill HB385 was not considered broad enough, the coalition partners were concerned that even if the bill passed there would be significant hurdles to implementation that could undermine the overall effort, and thus elected to continue to work through voluntary programs and cooperation with the real estate industry to promote market driven energy efficiency improvements (Rothenberger, 2012).

On October 5, 2012, Governor Malloy and DEEP Commissioner Daniel Esty released a draft Comprehensive Energy Strategy for the state. It includes a range of BER&D clauses that draw on elements contained with the failed bills, including promoting a voluntary program for residential time of sale asset rating disclosure and a time of lease disclosure of energy performance for commercial and multi-family residential properties.

Vermont

Vermont has long been among the leaders in promoting energy efficiency, most notably through the efforts of the state's efficiency utility, Efficiency Vermont. In 2011-2012 attempts were made to pass BER&D legislation, which included clauses calling for mandatory upgrades at the time of sale. The proposed law targeted buildings at the time of listing requiring them to provide an asset rating to prospective buyers, and then to follow up with an energy audit at the time of sale that would allow home owners to roll energy efficiency upgrades into their mortgage financing. Unfortunately, efforts to build consensus around the new legislation fell short, and despite the majority support for improved energy efficiency standards, there was a lack of political will among key state politicians to mandate energy rating and upgrades through legislation.

Vermont's Energy Disclosure Bills 2011-2012

The first attempt to pass a BER&D law was introduced to the legislature as The Energy Disclosure Bill H.57 in 2011. It outlined the following requirements:

- An energy audit to be performed prior to listing any building for sale;
- Disclosure of the audit results at the time of offer from a potential buyer;
- Audits must be performed by a certified energy auditor;
- Auditor will gain access to billing data to include in the audit report; and,
- A $2,000 fine would be levied for failure to comply.

It was passed to committee but eventually suspended pending the report from the Working Group on Building Energy Disclosure, established under the omnibus energy bill H.56. In 2012 following the Working Group's report to the house, bill S.143 was raised containing similar language to bill H.57. The bill passed first reading and was sent to the Natural Resources, Finances and Appropriations Committees, where it received favorable reviews after a series of amendments. However, in the end it was not possible to achieve consensus around the bill and it was dropped.

Attempted Enactment and Debate

Attempts to establish a BER&D law in Vermont followed from Vermont's Comprehensive Energy Plan, and the connected omnibus energy bill (H.56) in 2011 that called for 90 percent of Vermont's energy to be generated from renewable energy sources by 2050. Energy labeling and mandatory upgrades were seen as an important tool to reduce energy consumption in the state, thus lowering the absolute bar for renewable energy purchases under the renewable energy portfolio target.

> *"The process was a good first step, we had full consensus of the working group, which was really positive. Getting there meant that each of the interest groups had to give up some what they wanted along the way."*
>
> **Kelly Launder,**
> **Vermont Department of Public Service**
> **Department of Public Service**

Following an initial attempt to raise bill H.57 in 2011, a working group was established to explore the issue as part of the 2011 omnibus energy bill. From August to December 2011 the working group on Building Energy Disclosure sat to develop a report and sample language for an energy rating and disclosure law.

The 16 member working group included elected representatives, employees of various government departments, and stakeholder representatives from the real estate, energy services and financial industries. They met five times between August and December 2011, before returning a report and recommended legislation to the state senate in late 2011, which led to the raising of Bill S.143 in 2012.

The working group considered a range of policy alternatives, covering issues such as when and to whom disclosure should be made, building energy rating and audit methodologies, experiences in other jurisdictions, and the costs to building owners and the state to enforce the laws.

A good deal of discussion focused around the nature of the audits and information to be disclosed. It was generally agreed that the audits for residential properties posed the biggest challenge. They would need to be reasonably priced (less than $300), clearly presented, accurate repeatable and offering a prediction of future energy consumption) and provide clear recommendations for action. As a potential solution the working group also considered a "hybrid" disclosure model that would require an initial disclosure by the seller, potentially including the operational performance, followed by a more detailed inspection by the buyer as part of the buyer's property inspections.

Earlier proposals included provisions for mandatory energy efficiency upgrades that would be based on the results of a comprehensive energy audit, including envelope testing and mechanical equipment assessment. These would provide a work schedule of cost-effective energy efficiency upgrades to the prospective buyer prior to the closing of financing on a property sale. Based on this the new owner would be required to implement any cost-effective measures identified during the audit, and to roll these costs into the mortgage financing.

The proposed law as introduced in S.143 was narrowed in order to make it more palatable to members of the state's Senate's Finance Committee. After several rounds of negotiations, a consensus was reached in the committee to pass just the energy rating requirements, but to drop the full audit and upgrade requirements. At the time it appeared that this compromise would allow the bill to pass. However, one of the co-chairs who was a real estate broker and had generally not engaged in the debates around the law blocked consensus at the final vote and the bill was suspended.

Opposition to the bill fell along three key lines. First was the claim that the energy rating and audit process during the sale of a building property, which opponents argued would add significantly to real estate transaction costs, could further slow an already depressed market. Second, there was further resistance from the realty community, who felt that the law would diminish the demand, and therefore the market value, of the older and less efficient homes and buildings in a state where this represents a majority of the properties. Finally, while the governor is a strong supporter of environmental protections, he, along with other key politicians in the legislature and senate, had a general discomfort with new legislation that mandated specific action (Fasey, 2012).

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