The Future of Building Energy Rating and Disclosure Mandates: What Europe Can Learn From the United States

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Abstract

Worldwide, commercial building energy rating and disclosure mandates are becoming more common as policymakers target the building sector in energy and climate protection policies. Although the United States has no policy equivalent to the European Union's Energy Performance of Buildings Directive (EPBD), rating and disclosure policies are beginning to appear in states and local jurisdictions.

This paper will explore the details of policies related to the rating and disclosure of building energy performance enacted in the United States. In the absence of a federal mandate, states and jurisdictions are experimenting with different approaches to building energy rating and how that information is conveyed to the market. The paper will discuss specific approaches and strategies that have the potential for integration into European policies.

Although U.S. rating and disclosure policy is less expansive than in Europe, research based on the voluntary rating and disclosure of U.S. buildings suggests the U.S. marketplace is already factoring energy efficiency into its real estate decision-making. This paper will discuss findings from leading academic institutions that conclude energy-efficient properties in the United States have greater occupancy levels and higher lease rates and sale prices than less efficient properties. These trends will likely accelerate as more buildings are rated and more ratings are disclosed, while also exerting pressure on less efficient buildings to engage in energy retrofits.

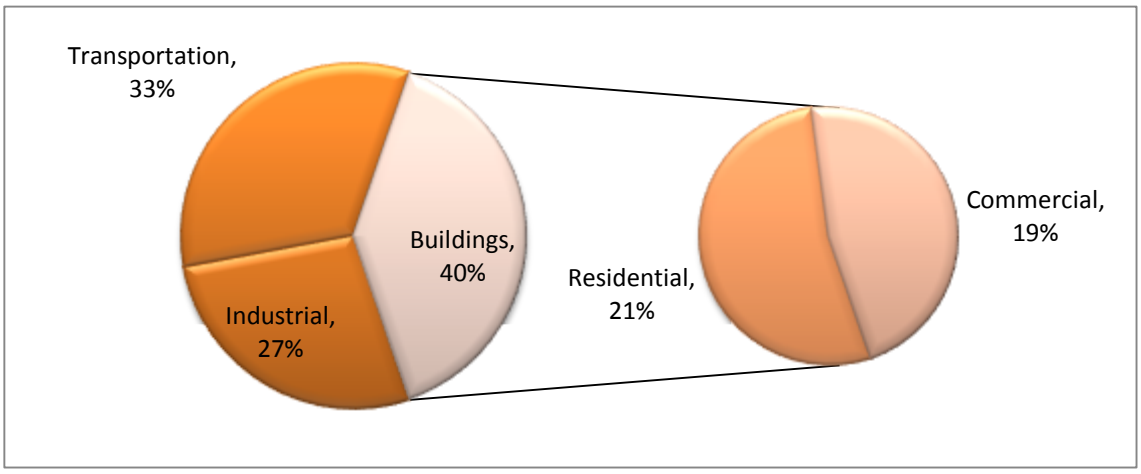
Introduction

In confronting climate change, nations around the world are searching for effective policies to reduce greenhouse gas emissions. Improving the energy efficiency of buildings, which account for nearly 40 percent of global energy demand and an almost equal share of greenhouse gas emissions, has become a chief goal of policymakers in many countries [1].

In the United States, commercial buildings account for roughly 19% of energy-related carbon dioxide emissions (See Figure 1). As such, policymakers are becoming more attuned to building energy performance rating and disclosure mandates. These mandates are primarily aimed at existing buildings, which comprise the vast majority of the building stock and present the largest opportunity for reductions in energy and greenhouse gas emissions. In New York City, 85% of existing buildings today will still be in

use in the year 2030 [2]. More than 30 countries around the world now have some form of mandatory building energy rating policy [3].

Figure 1: U.S. Energy-Related Carbon Dioxide Emissions by End Use Sector, 2008



Source: U.S. Energy Information Administration

The United States has become very interested in building energy rating and disclosure within the past five years as a tool to help the marketplace value energy efficiency, encourage building energy retrofits and reduce energy consumption and greenhouse gas emissions. Although the United States has no federal policy equivalent to the European Union's Energy Performance of Buildings Directive (2002/91/EC), which mandates building energy performance rating and disclosure to all EU Member States, U.S. states and local jurisdictions have begun to enact rating and disclosure requirements for commercial and residential buildings. The absence of a federal policy has allowed states and jurisdictions to experiment with different strategies, yielding many innovative approaches. Those approaches include:

- Requiring building performance rating and disclosure at regularly scheduled intervals
- Requiring building performance rating and disclosure prior to a real estate or financial transaction
- Reporting building performance information to government
- Posting building performance information on a public web site
- Disclosure of building performance information to current tenants and prospective lenders Requiring improvements to buildings following performance rating
- Setting minimum rating standards for government leases

Some of these strategies are built into the EPBD, although many are not. As such, there are opportunities for EU Member States to implement strategies from U.S. policies to augment the requirements of the EPBD and strengthen their building energy certification platforms. In some cases, Member States are already implementing strategies above and beyond EPBD requirements.

Although rating and disclosure mandates are a recent development in the United States, commercial real estate research strongly suggests that leasing and sales transactions are already influenced by the energy performance of buildings. According to multiple studies, energy-efficient buildings achieve higher occupancy rates, rental rates and sale prices than comparable, less-efficient buildings, increasing their property value. These findings are an important consideration in determining the effectiveness of rating and disclosure mandates as a strong market force.

U.S. Building Energy Performance Rating and Disclosure: State/Local Policy Snapshot

Two U.S. states, three major cities and the District of Columbia have enacted legislation mandating the measurement and disclosure of privately owned, commercial buildings (See Table 1). Legislation is pending or was previously proposed in several other states, including Maryland, Oregon and Illinois. Additionally, Arlington County in the Commonwealth of Virginia is voluntarily measuring and posting the energy performance of its owned and leased real estate to a public web site.

Table 1: United States Building Energy Rating and Disclosure Policies

	Building types	Disclosure	Also required
California	Nonresidential	Point of Transaction: Buyers, lessees and lenders	Utility assistance
District of Columbia	Nonresidential	Annual to public web site	Disclosure of energy use estimations for new buildings 50,000 SF+
Austin, TX	Nonresidential + multifamily	Point of Transaction: Buyers + public display for multifamily buildings	Energy audits for multifamily buildings + retrofits for inefficient multifamily buildings
Washington State	Nonresidential	Point of Transaction: Buyers, lessees and lenders	Utility assistance; mandatory audits & retrofits for inefficient public buildings + minimum ratings for state leases
New York City	Nonresidential + multifamily	Annual to public web site	Energy audits & retro commissioning; mandatory retrofits for inefficient public buildings
Seattle	Nonresidential + multifamily	Point of Transaction: Buyers, lessees and lenders + current tenants + annual to city	Utility assistance
Arlington County, VA*	Public	Annual to public web site	N/A

*** Arlington County, VA, benchmarking and disclosure is voluntary**

Source: Institute for Market Transformation (http://www.imt.org)

New York City

The New York City Council on Dec. 9, 2009 passed bill no. 476-A requiring the energy rating and disclosure of public buildings and nonresidential and residential multifamily buildings [4]. The bill was approved along with three other bills related to building energy efficiency, requiring periodic building energy audits and retrocommissioning, lighting upgrades, sub metering of large tenant spaces and the establishment of a city building energy code. Known collectively as the Greener, Greater Buildings Plan, the four bills were supported by New York City Mayor Michael Bloomberg as a key piece of his PlaNYC

initiative to reduce the city's greenhouse gas emissions by 30 percent by the year 2030. Mayor Bloomberg signed the bills into law on Dec. 28, 2009.

Nonresidential and multifamily buildings greater than 50,000 square feet in size must benchmark their energy performance annually using the ENERGY STAR Portfolio Manager tool of the U.S. Environmental Protection Agency (EPA). The initial deadline to benchmark is May 1, 2011. Benchmarking data will be posted to a public web site administered by New York City beginning Sept. 1, 2012 for nonresidential buildings and beginning Sept. 1, 2013 for multifamily buildings.

Buildings greater than 10,000 square feet owned or fully leased by the New York City government must benchmark their energy performance annually using Portfolio Manager beginning May 1, 2010. Benchmarking data will be posted to the web site.

Buildings subject to the benchmarking law are also required to conduct building energy audits and retrocommissioning once every 10 years [5]. Additionally, following the energy audit, city-owned buildings must implement capital improvements with a payback period of seven years or less. Denmark and Portugal have mandated a similar retrofit scheme for its public buildings based on the results of Energy Performance Certificates [6]

District of Columbia

The Clean and Affordable Energy Act of 2008, passed by the Council of the District of Columbia on July 15, 2008, requires the annual energy rating and disclosure of nonresidential buildings [7]. DC Mayor Adrian Fenty signed the Energy Act into law on Aug. 4, 2008.

Although the state of California previously mandated rating and disclosure, the DC mandate was the first in the nation to require commercial building energy performance rating at scheduled intervals (rather than at the time of a transaction) and disclosure to the general public (rather than to transaction counterparties only) via a public web site administered by the District of Columbia. The requirement affects nonresidential buildings greater than 50,000 square feet and is being phased-in over several years. Buildings greater than 200,000 square feet must benchmark their energy performance using Portfolio Manager beginning in 2010. The size threshold decreases by 50,000 square feet each year until 2013, when all buildings greater than 50,000 square feet must benchmark annually. The disclosure of benchmarking data will be phased-in similar to the rating implementation schedule beginning in 2012.

Buildings owned or operated by the District of Columbia greater than 10,000 square feet in size were required to begin benchmarking their energy performance using Portfolio Manager in late 2009. The benchmarking data will be posted to the web site.

Additionally, newly constructed nonresidential buildings greater than 50,000 square feet that file construction permits on or after Jan. 1, 2012 must estimate their energy performance using ENERGY STAR software and benchmark and disclose their energy performance annually after the building delivers.

California

The state of California passed Assembly Bill 1103 in 2007, requiring for the first time in the United States the rating and disclosure of nonresidential buildings [8]. California Governor Arnold Schwarzenegger signed the bill into law on Oct. 12, 2007.

The California bill is modeled after the Energy Performance of Buildings Directive, requiring building energy rating and disclosure to transaction counterparties prior to the completion of a building sale, lease or financing arrangement. It also requires energy providers to aggregate energy data for buildings and upload it directly into Portfolio Manager upon the request of a building owner, addressing energy privacy concerns by tenants and owners of multi-tenant buildings. This tactic is also being employed by the state of Washington.

Initial compliance was delayed from Jan. 1, 2010 to July 1, 2010, and compliance may be delayed further while the California Energy Commission determines rulemaking. The most recent draft rules call for a three-year, phased-in approach to implementation determined by building type and size [9].

The City of San Francisco, located in northern California, may introduce legislation that would build on AB 1103 by requiring public disclosure of energy performance data at scheduled intervals and mandatory energy audits. Those procedures were recommended to San Francisco Mayor Gavin Newsom in a report published in December 2009 by the Mayor's Task Force on Existing Commercial Buildings [10].

Austin, Texas

The Austin City Council approved the Energy Conservation Audit and Disclosure Ordinance on Nov. 6, 2008, requiring building energy rating and disclosure for nonresidential facilities and mandatory energy audits for homes and apartment complexes [11]. Notably, some apartment complexes are also required to undergo energy retrofits.

Nonresidential buildings greater than 10 years old must rate their energy performance by June 1, 2011 using Portfolio Manager or a free, online tool from Austin Energy, the municipal utility. Buildings less than 10 years old are required to rate their energy performance within 10 years of the completion of construction. Benchmarking data must be disclosed to prospective buyers prior to a sale transaction.

For multifamily properties, a mandatory energy audit replaces the energy performance rating requirement. Audits for existing buildings are required by June 1, 2011. The results of the audit must be posted within the building and provided to prospective tenants and buyers. Additionally, "high energy-use" properties consuming more than 150% of the average multifamily energy use per square foot in Austin must make energy retrofits within 18 months to bring the property to within 110% of the average. The retrofit requirement is the first of its kind for any privately owned, nonresidential property in the United States.

Washington

The state of Washington passed building energy rating and disclosure legislation in 2009 based on the California mandate. It requires nonresidential buildings to rate their energy performance using Portfolio Manager and disclose benchmarking data to prospective buyers, lessees and lenders prior to the closing of a transaction [12]. The legislation, SB 5854, also requires major improvements to building energy codes and recommendations to the state legislature to rate the energy performance of homes. Washington Governor Chris Gregoire signed the bill into law on May 8, 2009.

Nonresidential buildings greater than 50,000 square feet must rate and disclose using Portfolio Manager beginning Jan. 1, 2011, while buildings greater than 10,000 square feet must rate and disclose beginning Jan. 1, 2012. Energy providers were required beginning Jan. 1, 2010 to aggregate energy data for buildings and upload it directly into Portfolio Manager upon the request of a building owner.

Public buildings are subject to more comprehensive energy requirements, including new performance standards and mandatory retrofits. The energy performance of public buildings must be rated by July 1,

2010 and reported to a state agency, which will make the benchmarking data public. A preliminary energy audit is required for buildings with poor energy performance (a Portfolio Manager score of less than 50). If cost-effective energy savings are identified by the audit, an investment-grade energy audit is required by July 1, 2013 and cost-effective efficiency measures must be implemented by 2016.

Washington has also begun using building energy ratings to set minimum efficiency requirements for state leases in privately owned buildings. Starting Jan. 1, 2010, state agencies may not sign a new lease or renew space in a private building with an ENERGY STAR rating less than 75. Exceptions are allowed when a building owner agrees to undertake an energy audit and implement cost-effective upgrades within the first few years of a state lease.

Seattle, WA

Less than a year after the state of Washington enacted its rating and disclosure legislation, Seattle, the state's largest city, passed a city ordinance that expands significantly upon the state law [13]. Seattle City Council Bill 116731, passed on Jan. 25, 2010, augments the state mandate in three ways:

- Benchmarking data for nonresidential buildings must be reported annually to the city;
- Multifamily buildings are subject to the new reporting requirements; and
- Benchmarking data must be disclosed to current tenants in a benchmarked building upon tenant request

Nonresidential buildings will annually report energy performance data to the city beginning April 1, 2011 for buildings 50,000 square feet and greater, and beginning April 1, 2012 for buildings 10,000 square feet and greater. Multifamily properties with five units or more will report energy performance data to the city annually beginning April 1, 2012. Multifamily buildings are not covered in the state legislation. Although the city will begin collecting energy performance data, it does not plan to post the data publicly.

Arlington County, VA

Arlington County, Virginia, a suburb of the District of Columbia began voluntarily posting energy data for county facilities to a public web site in 2009, providing an example for other jurisdictions. For each building, the web site reports annualized energy consumption, site and source energy intensity, greenhouse gas emissions, and Portfolio Manager benchmarking data and plans for energy efficiency improvements, where available [14]. Arlington County does not require privately owned buildings to measure and disclose their energy performance.

Evidence of Performance Rating and Disclosure as a Market Force in the United States

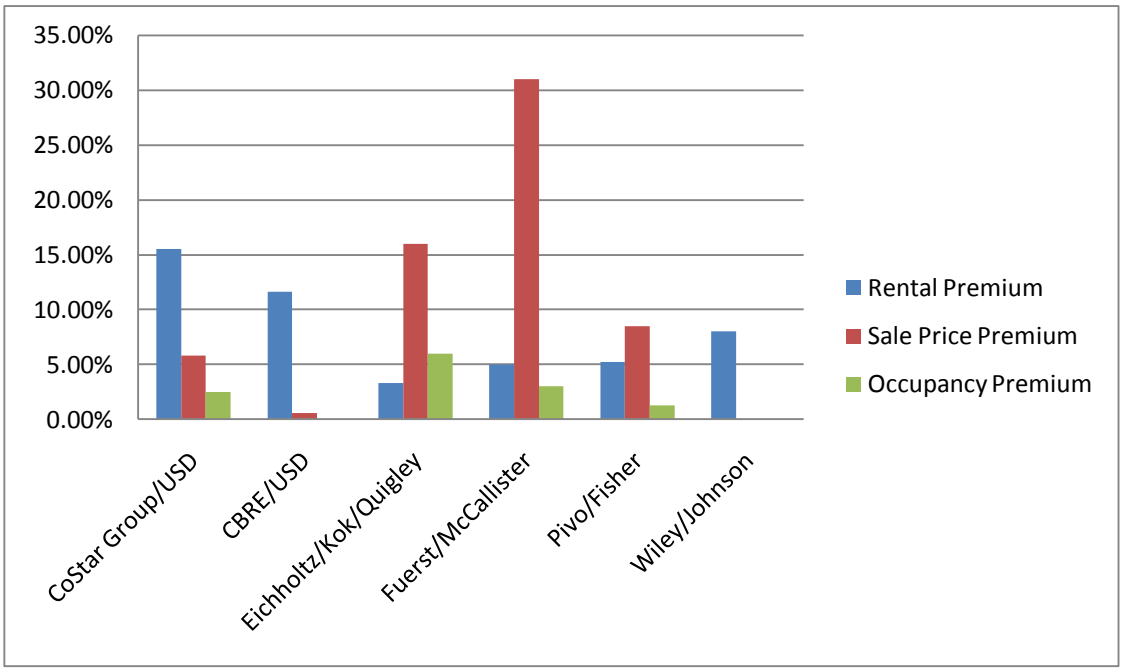
One of the key reasons for enacting for rating and disclosure mandates is to convey building energy consumption data to real estate consumers, such as tenants, investors and lenders, who may save money by buying, leasing or financing properties with lower energy costs. With more data about building energy consumption available, building consumers can begin to factor energy efficiency and energy costs more fully into their purchasing decisions. If consumers show deference to energy-efficient properties, the owners of less efficient buildings will be forced to make building energy efficiency improvements to remain viable in the market. In a best-case scenario, this would cause a significant trend toward energy efficiency in the building sector.

Evidence that rating and disclosure mandates will have this effect on real estate markets is limited because most of these policies are new. In many places in Europe and the United States they are enacted but not yet in effect.

Yet, evidence is beginning to emerge that suggests this shift is already underway in the United States, where the ENERGY STAR program for commercial and industrial buildings has achieved significant market share on a voluntary basis. As of fall 2009, more than 97,000 buildings totaling nearly 14 billion square feet of floor space had been benchmarked cumulatively over about 10 years on a voluntary basis [15]. Additionally, nearly 1,850 buildings earned the ENERGY STAR label for 2009, the program's recognition for the nation's most energy-efficient buildings based upon ENERGY STAR ratings.

Using the ENERGY STAR label as a proxy for energy efficiency, several studies compared the occupancy rates, rental prices and sale prices for ENERGY STAR-labeled buildings to comparable "peer" buildings without the ENERGY STAR label. After controlling for variables, the studies universally found rental and sale price premiums for ENERGY STAR-labeled properties, indicating tenants and investors favored those buildings and were willing to pay more to buy or these those buildings. The studies also found higher occupancy rates in ENERGY STAR-labeled buildings, suggesting those properties were more competitive in the market than non ENERGY STAR-labeled properties (See Figure 2). All current U.S. policies mandating commercial building energy rating and disclosure are leveraging the ENERGY STAR program.

Figure 2: Market Premiums of Energy-Efficient U.S. Commercial Property



Source: Studies on Market Premiums [16] [17] [18] [19] [20] [21]

Energy Performance of Buildings Directive Snapshot

The European Union's Energy Performance of Buildings Directive (2002/91/EC) was approved by the European Parliament in 2002 and enacted in 2003. Article 7 of the EPBD requires Member States of the European Union to develop building energy performance measurement protocols and establish building

energy certification schemes for residential and commercial buildings [22]. Specifically, building owners must make energy performance certificates available to prospective buyers and tenants during a sale or lease transaction, or at the time of building construction. Additionally, large buildings occupied by public authorities or institutions providing public services to a large number of people must display an energy certificate in a prominent location within the building. The certificates include building energy performance information and benchmarks as determined by each Member State and recommendations for energy efficiency improvement. The certificates are carried out by qualified energy assessors.

Recent, pending revisions to the EPBD would lower the size threshold for buildings requiring the display of energy certificates and would require the numeric energy performance indicator of the energy performance certificate be stated in sale and rental advertisements for buildings [23].

Strategies for Broad European Adoption

Quite a few U.S. rating and disclosure policy mechanisms overlap with the requirements of the EPBD. Indeed, quite a few of these policy provisions can be traced back to Europe. However, other U.S. strategies are not covered by the EPBD and are being implemented in only a few EU Member States, or none at all. Many of these policy provisions have the potential for greater adoption in Member States. They include:

- Requiring building performance rating and disclosure at scheduled intervals
- Posting building performance information on a public web site
- Reporting building performance information to government
- Disclosure of building performance information to current tenants and prospective lenders
- Requiring improvements to buildings following performance rating
- Setting minimum rating standards for government leases

Requiring building performance rating at scheduled intervals

Building performance rating at scheduled intervals has emerged as the most popular alternative to point-of-transaction rating and disclosure in the United States. The strategy was pioneered in the District of Columbia and is also being used in New York City and Seattle. All three jurisdictions require *annual* rating and disclosure, however governments can define the scheduled interval however is most appropriate. In Europe, due to higher costs associated with asset rating, annual intervals may not be practicable. There are a few Member States with scheduled rating requirements, including Denmark, which requires ratings every five years.

Rating and disclosing at scheduled intervals has benefits over the point-of-transaction approach:

- *It captures more of the market*: Rating and disclosure is triggered under the EPBD by a real estate transaction or construction and thus only affects existing buildings immediately preceding a lease or sale. Yet many buildings may sustain prolonged periods without a pending transaction, essentially exempting them from rating and disclosure. The scheduled approach affects buildings regardless of transaction activity and gives building owners a predictable timetable.

- *Energy ratings are more comparable*: If the time frame for scheduled disclosure is set so the period reflected in the ratings is the same for all buildings, governments can establish baselines for its building stock over a given period. This can be useful in setting future policy goals.

Reporting building performance information to government

Quite a few EU Member States are requiring building owners to report building performance information to government, however the requirement is not part of the EPBD. The District of Columbia, New York City and Seattle require reporting to government in conjunction with rating, while Austin requires the reporting of information to a municipal utility.

Collecting data on building performance can help governments:

- Establish an energy efficiency baseline for local building stocks
- Track progress and identify trends in energy efficiency over a number of years
- Establish aggregate building performance goals
- Set standards for incentives and programs related to building energy efficiency
- Construct future building policy based on performance data

If building performance data is only reported to counterparties in private real estate transactions, governments may lose the ability to do many or all of the items listed above. The Concerted Action EPBD, in its Executive Summary Report on the Interim Conclusions of the CA EPBD (2007 – 2010), recommended that "every MS (or region) should collect EPC data in a central register" for many of the reasons stated above.

Posting building performance information to a public web site

Rather than disclose building performance on a physical "label", as is required for some types of buildings under the EPBD, U.S. policies have sought disclosure beyond the point-of-transaction approach via public web sites. The District of Columbia and New York City will both administer public web sites containing building performance data, although neither web site is operational yet. Arlington County, VA, is currently posting performance data for government owned buildings to a public web site.

Public web sites may have advantages over physical building energy labels, however more research must be conducted. It is likely that the public would have greater access to information posted on a web site than within a building, bringing more positive recognition to very efficient buildings and more of a "shaming" effect on very inefficient buildings. Specifically, investors and other types of stakeholders in buildings or building ownership groups would also presumably have greater access to building performance information, which may help exert pressure on the owners and operators of inefficient buildings. Denmark and Lithuania are requiring the posting of building performance information to public web sites.

Disclosure of building performance information to current tenants and prospective lenders

Disclosing building performance information to prospective lenders and tenants already within buildings are logical extensions of the EPBD point-of-transaction disclosure requirements at the time of sale and lease. California, Washington and Seattle require disclosure to prospective lenders. The goal is to allow lenders to understand and more accurately value energy efficiency, which could lead to more favorable financing terms for efficient properties. The full range of issues associated with energy efficiency finance and appraisal is beyond the scope of this paper.

The city of Seattle also requires disclosure to current tenants within buildings that must be benchmarked, rather than prospective tenants only. Upon receiving a full-building energy-efficiency rating, tenants may choose to evaluate their operational habits related to energy consumption in its leased space, or pressure the building owner into improving the building's energy performance (in the case of a low rating).

Requiring improvements to buildings following performance rating

Mandatory energy performance improvement is gaining traction as a policy mechanism in EU Member States and U.S. states and jurisdictions. In the EU, Denmark and Portugal require some form of mandatory improvement to public buildings per recommendations on Energy Performance Certificates. In the United States, New York City and Washington are requiring mandatory improvement of low-performing public buildings following a building energy audit.

The mandatory improvement policy in Austin is interesting, although more research is needed to determine its effectiveness. It is the only such mandatory improvement policy in the nation that affects privately owned buildings (multifamily buildings, in this case.)

Setting minimum rating standards for government leases

Setting minimum rating standards for government leases can be an effective market tool to encourage more efficiency and better ratings in private buildings. The state of Washington is requiring a minimum ENERGY STAR Portfolio Manager score of 75 in buildings for state agencies to sign leases. The provision is based on a new requirement on federal agencies, enacted in the Energy Independence and Security Act of 2007, to only sign leases in buildings with ENERGY STAR Portfolio Manager scores of 75 or higher [24].

In Australia, this strategy has worked well to influence the private market. The state governments of Victoria and New South Wales, which require minimum energy ratings for leased and purchased real estate, have established de facto minimums among some building types based entirely on efficiency requirements for government space [25].

Conclusions

In the Energy Performance of Buildings Directive, European policymakers have created and enacted far-reaching requirements on commercial buildings to measure and disclose their energy performance. Although no equivalent policy exists in the United States, states and local jurisdictions are becoming creative in crafting rating and disclosure requirements. In some cases, those requirements may benefit government and real estate stakeholders in ways which the EPBD does not. Both Europe and the United States stand to benefit by sharing best practices and new ideas on rating and disclosure mandates.

As shown by real estate data on energy-efficient property in the United States, rating and disclosing building performance does impact the leasing and purchasing decisions of tenants and real estate investors. It is likely this impact will grow as more buildings are rated and more ratings are disclosed per legislative requirements now being enacted, which may result in larger competitive advantages for energy-efficient properties and more market pressure on less efficient properties to improve their energy performance. The task of policymakers in Europe, the United States and elsewhere is to determine the most effective methods of measuring building performance and disclosing that information to the marketplace.

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