Guiding the Invisible Hand: Policies to Address Market Barriers to Energy Efficiency

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ABSTRACT

The strong anti-government feeling in Congress and in many of the states has affected not only climate policy but also energy policy—there is strong opposition to government spending and to government mandates. While influencing energy use without money or requirements may seem implausible, efficiency analysts and advocates have long claimed that large energy savings are cost-effective on their own without any government intervention. The necessary efficiency measures are not taken because of well-known market barriers such as lack of information and other transactional costs, split incentives in which the entity that controls energy use does not pay the energy bill, and specific government rules that prevent efficiency measures. Yet while efficiency advocates have long cited these barriers, their policy proposals have mostly focused on standards and incentives that have no direct tie to specific barriers. After briefly reviewing those barriers, this paper will explore a range of government policies that can directly reduce those barriers without significant new spending (or taxes) or mandates on individuals. For example, building labeling and benchmarking approaches would provide more information on energy efficiency to markets. Green leases can help align the interests of landlords and tenants. The "SAVE Act" would reform government mortgage underwriting rules that do not value energy efficiency. Such policies may have a significant impact on energy efficiency in buildings in a way that could attract bipartisan support.

Introduction

Public policy in support of energy efficiency rests on a conundrum. Advocates for strong energy efficiency policies claim that vast cost-effective energy savings are available and thus that the many public benefits of energy efficiency—environmental, economic, and security—can be obtained cheaply. But if energy efficiency is cost-effective for the consumer, why is any government intervention necessary? Consumers should take the measures on their own.

This issue has become more pressing as a resurgent conservative political movement opposes any government intervention in the economy, and specifically opposes government mandates and government subsidies, arguably the two main tools that have been used to spur energy efficiency (though usually called performance standards and incentives). Thus Congress in 2011 prevented federal enforcement of an efficiency standard for light bulbs, and let lapse the tax credits for efficient new buildings, upgrades, and appliances, both of which were supported by manufacturers and had been enacted with bipartisan support just a few years before.

The usual explanation for the need for government action is that a variety of market barriers or failures prevent economically beneficial energy efficiency from being pursued. This argument raises the question whether government policies could effectively remove those barriers, allowing market forces to promote energy efficiency without need for government requirements or funding. After brief reviews of the market barriers to efficiency and traditional efficiency policy mechanisms, this paper will consider a few innovative policies designed to address specific barriers to efficiency.

Market Barriers to Energy Efficiency

Most discussions of market barriers start from evidence that there is a large gap between actual investments in energy efficiency and the levels of efficiency that would appear to provide the greatest benefit to individual consumers and/or to society as a whole. Previous literature has identified various specific market barriers to efficiency responsible for the gap, and suggested different classifications of the barriers (see for example Jaffe & Stavins 1994, Golove & Eto 1996, IEA 2007, Granade et al. 2009).

The most commonly cited market barriers are market failures (or, more gently, imperfections), systematic reasons that real markets are less economically efficient than the theoretical perfect market described by classical economics. It is also possible to define market barriers more broadly, by referring to any force working against investment in energy efficiency (Metcalf 1994). For our purposes, we adopt a hybrid definition—any reason for economically inefficient levels of investment in energy efficiency. Most of these are the market failures recognized by conventional economics; however, we also include systematic reasons for low investment in energy efficiency that are not market failures, if they are barriers that can be avoided. Of course in the real world there often are multiple intertwined barriers.

Market Failures

Externalities occur when costs or benefits of a transaction are realized by people outside the immediate participants in the transaction. Energy efficiency reduces large negative externalities due to energy supplies: impacts on the environment, risks to energy security, and other societal costs not built into the price of energy.

An important type of externality relates to **public goods**, i.e. goods that can be consumed by more than one person without diminishing their value to others. In particular, the positive externality of information—its benefit to others who can use it but did not invest in creating it—is a barrier to creating information. This leads to substantial underinvestment in energy efficiency research; in addition, simply being an early adopter of a new technology can be a useful source of information to others, and hence underutilized (Jaffe & Stavins 1994).

Imperfect information may be the most widespread barrier to energy efficiency. For energy efficiency, the most obvious information barrier is knowledge of the performance of different equipment, technologies, buildings and other systems; energy efficiency cannot be seen. There also is imperfect information related to energy consumption; for instance, energy savings are difficult to measure (Granade et al. 2009), future energy prices are unknown (Golove & Eto 1996), and specific energy uses cannot be quantified since most customers get all their energy use information rolled into monthly utility bills. In addition, the market for energy efficiency is highly fragmented, with many technologies and many actors, meaning both that it can be difficult to get appropriate information and that the benefits of a single action are often low.

Another commonly cited barrier is **access to capital** (Golove & Eto 1996), or, more specifically, access to financing at an interest rate that reflects the positive cash flow of energy efficiency investments. This is best understood as an information barrier for the lender, who either does not have or does not use information about energy savings potential to adjust the interest rate to a level appropriate for the energy efficiency investment. Access to capital may also be difficult not because of the project but because of the borrower, such as low-income homeowners or start-up companies, in part because of imperfect information about the borrower.

Split incentives, or **principal-agent** problems, also are common barriers to energy efficiency (in particular, see IEA 2007). In energy efficiency the usual problem is that the agent making decisions on efficiency investments or actions does not pay the energy bills, and thus has little incentive to reduce them. The landlord-tenant relationship in which the property owner purchases equipment but the tenant pays the utility bills is the most commonly cited split incentive for energy efficiency. However, many others exist: homebuilders making decisions that affect future buyers (ACEEE 2007), building owners that do not expect to stay in their buildings long enough to realize payback from an investment in energy efficiency (IEA 2007), cable companies that choose set-top boxes, and even within organizations when different departments have responsibility for purchasing and energy bills (ACEEE 2007). One analysis claimed that 35% of residential energy use is subject to split incentives (Murtishaw & Sathaye 2006).

Imperfect competition occurs when there is not a fully competitive market for a product or service, so prices are high or availability is limited. In some energy efficiency markets there are a limited number of producers or sellers, in the extreme case a monopoly, and barriers to entry such as high startup costs or patents. Lack of competition is more of a problem when products and services are not standardized or homogenous. The inseparability of features can be a barrier to energy efficiency when efficient equipment is only available with other features that a purchaser might not want. When this is a result of producer decisions, it is sometimes called '**gold-plating**' (Ruderman, Levine & McMahon 1987).

Additional Market Barriers

Government Regulations are not typically thought of as a market barrier, but rather a failed or successful market intervention. However, regulations can result in economically inefficient levels of investment in energy efficiency, such as zoning laws that prevent efficient patterns of development. Standards that specify or implicitly prefer particular materials or technologies can impede innovation and market entry. In addition to the many regulations affecting specific aspects of energy efficiency, one barrier present across almost all regulated energy utilities is energy pricing based on average rather than marginal cost (Blumstein et al. 1980) and that rewards utilities for increasing sales. This creates an economically inefficient price signal to consumers (either too low or too high) and to utilities on saving energy.

Transaction costs, beyond information costs discussed above, make efficiency investments more expensive; while some may be inherent in an energy efficiency improvement, such as installation costs, others might be reduced, such as making energy efficient products available in the stores where people are, and easing choice of contractors and scope of work.

Cognitive and behavioral factors (ACEEE 2007, Houde and Todd 2011) provide additional reasons why individuals and organizations do not always make perfectly rational decisions that optimize their energy efficiency. Bounded rationality means that actors with imperfect information use shortcuts to make "good enough" decisions. Behavioral economics shows that many of these mental shortcuts lead to bias in systematic and regular ways. For instance, studies have shown that people overvalue sunk costs; this can make throwing away functional but inefficient equipment difficult. People also tend to stick to the status quo or choose the default option, rather than making an active decision for more efficiency.

How Efficiency Policies Address Market Barriers

Advocates for government policies to increase energy efficiency generally point to the above market barriers or failures as the basic rationale for government intervention. Thus McKinsey & Co. state, "Significant and persistent barriers will need to be addressed at multiple levels to stimulate demand for energy efficiency" (Granade et al. 2009). The U.S. Chamber of Commerce's Institute for 21st Century Energy affirms, "Perhaps the most daunting barriers, however, are the regulatory, institutional, and market barriers that exist at the local, state, regional, federal, and international levels" (Institute for 21st Century Energy 2010). U.S. Senator Lugar says, "Many energy efficient changes are available today and will pay for themselves in just a few years, yet well-known market failures impinge their adoption" (Office of Senator Dick Lugar 2010).

Yet most of the key policies that are used to encourage more energy efficiency are not targeted at specific barriers. Instead they overcome, or blast through, whatever barriers may be preventing efficiency either by requiring efficiency levels or by paying much or all of the up-front cost of efficiency measures. Thus federal appliance efficiency standards require the maximum efficiency that is "technologically feasible and economically justified" (42 USC 6295). Federal vehicle fuel economy standards make "economic practicality" a key consideration (49 USC 32902). The commercial model building energy code, ASHRAE Standard 90.1, seeks payback periods (referred to as scalar ratios) under specified thresholds. But these standards do not rely on any analysis of why these cost-effective efficiency measures are not being used now. They simply require them.

Utility rebates, low-interest loans, tax credits and deductions, and other incentive programs pay for energy efficiency measures that typically are supposed to be cost-effective without the added incentive. They too are intended to overcome whatever barriers may be preventing action, with amounts typically based either on experience with what is necessary to spur action, or on available funds, not on specific analysis of barriers.

However, it is possible to design policies to remove specific barriers:

- The government, or another trusted source with access to efficiency information, can help consumers obtain information on efficiency options much more cheaply.
- Careful allocation of energy costs and capital costs can reduce split incentives, and information on energy use can help align incentives.
- Tax or fee policies can incorporate externalities into energy prices or equipment prices, and can be done in a way that does not change overall taxation.
- Reform of government rules can remove regulatory barriers to efficiency measures.

There are a few existing policies that use these techniques to remove specific barriers. The ENERGY STAR® program for labeling efficient equipment and buildings, as well as the yellow Energy Guide labels for appliances, the fuel economy window stickers for cars, and similar efficiency labels all over the world are intended to overcome part of the information barrier by making it easy for consumers to identify efficient products or compare the efficiency of products. The ENERGY STAR label in particular has achieved widespread consumer recognition and hence also has become a key motivator for retailers and manufacturers to offer efficient products. The recently expired R&D tax credit is directed at the widely recognized public goods market failure, though rather than address the barrier (as a patent tries to), the tax credit directs funding at affected investments and arguably pays for some of the public benefits.

The rest of this paper will be devoted to a few more innovative policies intended to lower specific barriers.

Building Energy Benchmarking and Labeling

Today the energy performance of buildings is largely unknown. This information barrier makes it difficult for buyers and renters to compare the potential energy costs of buildings, owners to track changes in efficiency, and contractors to look for problems and opportunities. It inhibits demand for energy efficient buildings and for investments to improve efficiency.

Energy rating, benchmarking, and disclosure policies can help overcome these critical information gaps and recognize and reap the benefits of efficient buildings by giving the ability to choose lower utility costs when buying, leasing, financing, or managing buildings, especially in the commercial sector. The Institute for Market Transformation estimates a national benchmarking and disclosure policy applying to commercial buildings of at least 25,000 square feet and multifamily residential properties with 20 units or greater could lead to cumulative energy cost savings of $3.8 billion through 2015 and $18 billion through 2020 (Burr et al. 2012).

But there is a reason the marketplace has not addressed this—describing and measuring a building's energy efficiency is not easy. An asset rating based on a building's characteristics requires expensive whole-building modeling and misses the impact of energy management and building use, so may not be an accurate predictor of energy use. Performance benchmarking involves measuring and rating building energy use, but it may be hard to set a good baseline comparison, and may even be hard to find out the energy use for a multi-tenant building.

One of the most popular systems employed for benchmarking commercial buildings is the ENERGY STAR Portfolio Manager, a free web-based tool maintained and operated by the U.S. Environmental Protection Agency. Over the past decade, energy use benchmarking has become an established business practice. From 2001 to 2009, more than 110,000 buildings totaling 15 billion square feet (about 19% of total commercial floorspace) were voluntarily benchmarked (EPA 2011). Australia was another early leader, launching a voluntary National Australian Built Environmental Ratings Scheme (NABERS) in 1998 as a tool to rate operational energy efficiency of office buildings.

Mandatory Disclosure Policies

With over 50 national, regional and local governments adopting commercial energy rating and mandatory disclosure policies, building energy performance disclosure has started to emerge as an energy efficiency policy tool on a global scale (Burr, Keicher & Leipziger 2011).

The European Union (EU) established energy rating and disclosure policies starting in 2003 by directing member states to adopt building energy performance certificates. EU Directive 2002/91/EC set out common calculation methodologies for rating building energy performance and systems for certification, among other building efficiency-related policies. It covers the residential, commercial, and institutional sectors and requires that building energy performance certificates, based on an asset rating, an operational rating, or both, be made available whenever a building is constructed, sold, or rented. While there is no impact study for the EU as a whole—and some experts in personal conversations are skeptical that the labels are having a large market impact—a recent study of rental transactions in the Netherlands concluded that a less efficient, "non-green" office building, on average, achieves a 6.5% lower rent compared to similar buildings with a "green" energy label (Kok and Jenne 2011).

In the United States, five major cities and two states have passed commercial policies beginning with California in 2007. As in Europe, state and local policies vary considerably.

For example, in 2009 Washington State passed SB5854, the Efficiency First bill, focused on improving energy efficiency in the built environment. This legislation, modeled after California AB 1103, requires nonresidential building owners to benchmark their buildings using ENERGY STAR software and to provide this information to prospective lenders, buyers and lessees prior to the closing of a transaction. Rating and disclosure requirements are phased in over time based on building size. Seattle passed an additional law, Ordinance 123226, that adds rating and disclosure requirements for multifamily buildings as well as the requirement that data must be disclosed to existing tenants. An analysis concluded that in Seattle nearly 9,000 buildings and almost 95,000 multifamily units will be affected, saving more than 47 million kWh annually, and creating as many as 150 jobs (Burr, Keicher & Leipziger 2011).

Also in 2009, New York City passed the Greener, Greater Buildings Plan with various energy efficiency requirements for the city's existing building stock. Part of this Plan was Local Law 84, requiring owners of public buildings over 10,000 square feet and private buildings over 50,000 square feet to benchmark their energy and water use annually. The compiled data will be released on a public website at various phases for public, commercial and residential buildings. Since 2009, the city has benchmarked almost 3,000 public buildings (NYC Administrative Services 2011). By December 2011 (after two extensions), commercial buildings over 50,000 square feet were also required to submit benchmarking reports (ICLEI, IMT & PlaNYC 2011). NYC plans to conduct an analysis of the first three years the law is in effect to measure its success in driving energy efficiency information into the marketplace.

In 2010 Australia enacted (Act No. 67 of 2010) a mandatory Commercial Building Disclosure program using the Building Energy Efficiency Certificate (BEEC) based on a NABERS rating. The BEEC is required when a commercial office space that is larger than 2,000 square meters is advertised for sale or lease. Based on Australia's history of energy rating, a recent report from the Australian Property Institute concluded that sustainable buildings attain higher rents, occupancy rates and overall value in the Australian market, delivering about a 9% premium on value (Leipziger 2011).

Green Leasing

As noted earlier, one of the major forms of the "split incentives" problem is between a landlord and tenant. The incentives vary depending on the kind of commercial lease.

Under "net leases" tenants are responsible for paying operating expenses, including utility bills (BetterBricks 2007). Landlords (owners) have little direct incentive to enhance energy efficiency when tenants pay the bills. Tenants have little incentive to make capital improvements to a building they do not own. Further, often there is no sub-metering to assess energy costs to tenants based on their usage, so energy costs are allocated by square footage, giving no incentive for operational energy efficiency. It is the tragedy of the commons: the benefits of one tenant's good efficiency practices are shared with less motivated tenants, and a tenant's waste of energy penalizes careful and careless tenants alike.

The “gross lease” assigns all operating expenses to the owner. Owners directly benefit from energy efficiency upgrades as reduced energy costs will increase owner net income and hence raise property values as well. However, there is no direct incentive for the tenant to save energy. Changes in total building energy costs may be reflected in the next lease term rental rate, but, unless one is the sole tenant at the property, a tenant’s efficiency and conservation practices will be diluted by the practices of others, and a future lease is uncertain anyway.

In reality, there can be more complicated arrangements. For example, “fixed-base leases” are gross leases that cap the owner’s responsibility for operating expenses. Expenses exceeding the cap (which may be a cost per square foot) are shared with tenants. Leases may be neither fully net nor gross if some operating expenses (which include housekeeping, security, grounds keeping, routine maintenance, and other expenses, as well as utilities) are assigned to tenants while others are to owners. In many buildings tenants control plug loads and some or all lighting, but may have little or no control over heating and cooling. Also, leases may allow owners to pass through capital costs to tenants.

How costs and benefits of efficiency investments and practices are allocated between the owner and tenant is important to determining incentives for energy efficiency in leased space. Innovative lease language that realigns the allocation of costs, benefits, and financial risks of energy efficiency investments between tenants and owners offers a highly promising approach.

New York City’s Green Lease

This approach is being pioneered in New York City. The Mayor’s Office of Long Term Planning and Sustainability created a working group of commercial real estate stakeholders (owners, tenants, building operators, lawyers, engineers, non-governmental organizations, and others) to develop energy-aligned lease language. New model language allows tenants and owners to share both upfront capital investment costs and energy savings benefits while reducing financial risks if retrofits underperform (PlaNYC 2011).

The modified gross leases typical in the New York City commercial market allow owners to pass through capital costs to tenants for investments that reduce operating costs. However, the cost recovery occurs over the life of the retrofit, a rate deemed unattractively slow by owners.

Owners prefer a cost recovery rate determined by projected savings. However, tenants prefer use of measured savings to assure that they do not bear additional costs if actual savings do not meet projections. The working group found that energy efficiency retrofits generally perform within about 20% of projected savings. Based on this and modeled scenarios (savings underperformance, investments made late in a tenant’s lease term, and long payback retrofits), the working group developed language to reduce risks to tenants and owners. The energy-aligned language allows owners to pass through capital expenses for up to 80% of projected savings in any given year.[1] This protects tenants from the most likely occurrences of savings underperformance while allowing owners quicker capital recovery than under current leases (about 25% longer than the simple payback period). Language developed could be added into typical adjusted gross leases to align owners’ and tenants’ interests in energy efficiency without actually changing energy billing practices.

New York City’s new energy-aligned lease model is just starting to be implemented (Office of Mayor Bloomberg 2011). It will be interesting to observe impacts that energy-aligned leasing may bring to New York and how the approach can be adapted to other localities.

[1] Savings projections would be made by experts agreed upon by both owners and tenants.

Complementary Approaches to Split Incentives

It is worth noting there are other complementary approaches to help overcome the landlord-tenant split incentive. Addressing the information market barrier through building energy auditing, benchmarking, and disclosure policies also helps address split incentives. An informed market allows lessees to better consider energy costs in leasing decisions and should result in high valuation of lower operating cost buildings, helping align tenant and owner financial interests. As previously noted, New York City's green lease is complemented by benchmarking and disclosure requirements. Also, a requirement that large commercial tenant space be sub-metered by 2025 can help address split incentives that arise when lack of metering does not allow proper allocation of costs by individual tenants' usage (Local Law 88 2009).

More traditional regulations mandating energy efficiency features, performance or actions, also are particularly apt when there is a split incentive. Building energy codes in particular establish minimum standards for new and substantially renovated buildings. Such requirements have rarely been applied to existing buildings, but some jurisdictions are beginning to do so. For instance, owners of high energy-use multifamily residential properties were required in 2009 to implement efficiency improvements under the Austin (Tex.) Energy Conservation Audit and Disclosure Ordinance (City Code Chapter 6-7). Large building owners in New York City will be required periodically to retro-commission buildings, except LEED-certified Existing Buildings that earned points for commissioning (Local Law 87 2009).

In addition, large lessees, such as federal and state governments, can use their market power to shape commercial rental markets, in effect acting on behalf of other "principals," by demanding energy efficiency features and performance, such as Energy Star or LEED certifications or equivalent criteria (GSA 2011). New York City plans to use the green lease.

Energy Efficiency in Mortgage Underwriting

Current federal mortgage underwriting and appraisal rules do not recognize the value of energy efficiency, and thus mortgages often cannot cover the cost of efficiency measures. Besides making underwriting less accurate, these federal rules, combined with limited information as discussed above, prevent buyers from being able to pay more for efficient homes, and thus prevent builders from building them.

Energy Efficient Mortgages (EEMs) were intended to address this problem, but were a niche product that never gained market share. The Sensible Accounting to Value Energy Act (SAVE Act, S. 1737) is a bill, recently proposed by Senators Bennet (D-Co.) and Isakson (R-Ga.), to consider efficiency in all mortgages. The act would direct the Department of Housing and Urban Development (HUD) to update its underwriting and appraisal guidelines to ensure that any home loan backed by Fannie Mae, Freddie Mac, the Federal Housing Administration, or other federal agencies and entities would account for the home's energy costs. As Fannie Mae and Freddie Mac guarantee around 90% of home mortgages in the United States, any such regulatory change would likely be adopted as standard practice by most domestic residential mortgage lenders.

Key to the concept of the SAVE Act is that it would spur investment in energy efficiency simply by seeking to fix current banking rules that create an artificial barrier by undervaluing energy efficiency in home sale, purchase, and refinancing. In doing so, it is intended to ensure that home builders and sellers (and potentially those refinancing) see the benefit of energy efficiency upgrades made to their homes by helping those seeking to purchase an energy-efficient home. One study projects that the SAVE Act would spur increased energy efficiency retrofits and construction that would have major benefits for the economy and job creation; it would generate an estimated 83,000 jobs in 2020 (ACEEE & IMT 2011). This economic benefit is on top of a projected $1.1 billion in energy costs savings in the same year.

The home's efficiency could be established by a Home Energy Rating System (HERS) rating or other approved, independent efficiency rating. If no such rating is available, the energy use would be estimated from home size and average regional costs, benefitting smaller but not more efficient homes. The efficiency factors into mortgage caps in two ways.

Home Value Cap (Loan-to-Value Adjustment)

Conventional home appraisals do not normally account for the energy efficiency of a home or the added value of energy efficiency improvements. Although better insulation or a high-efficiency heating and air conditioning system is likely to reduce the energy costs for a home buyer, and studies show buyers recognize this value, under the current system independent appraisers generally have no way of fairly valuing efficiency and every incentive to make a quick appraisal rather than an in-depth examination (Nevin & Watson 1998; Pfleger et al. 2011).

Mortgage amounts are capped at a set percentage of the appraised home value ("loan-to-value ratio"), often 80%. The SAVE Act would adjust the home value used to cap the mortgage (or, in theory, any property-lien-based loan). As long as the appraiser did not already consider energy efficiency, it would add to the appraised value the present value of projected energy savings compared to a typical home (that is, the value of future savings would be discounted based on the mortgage interest rate). As it is not clear that this fairly represents the value attributed to energy savings by home buyers, when there is sufficient energy information and transparency to establish a market value, HUD could adopt another method. For a home that uses 30% less energy than an average American home, the added value could be as much as $10,000.

Affordability Cap (PITI Adjustment)

A home buyer moving into an efficient home with low energy bills will have a greater ability to make mortgage payments than one moving into an inefficient home. Yet mortgage underwriting also fails to account for the reduced utility costs in an energy-efficient home. While estimated property tax and insurance costs are factored into lenders' determination of what home buyers can afford in a mortgage, utility costs are not.

When calculating limits on how much a home buyer may borrow based on income, lenders add together principal of the mortgage, interest on the mortgage, property taxes, and insurance costs (PITI, or Principal, Interest, Taxes, and Insurance); they also include condominium fees, homeowners' association fees, and the like in some calculations. These housing costs are compared to the homeowner's income in the "debt-to-income" ratio. The formula does not, however, account for home energy costs, which on average are the second largest expense of owning a home, larger than either property taxes or homeowners' insurance. The SAVE Act would add energy costs to this calculation (adjusting the allowable ratio accordingly). For a home that uses 30% less energy than average, costs would be reduced by more than $700 per year, allowing more than $10,000 extra in a 30-year mortgage at current interest rates.

Besides more accurately valuing, and thus enabling, energy efficiency upgrades, directly including energy costs may reduce foreclosures and thus reduce the risk to lenders as borrowers' ability to make repayments would appropriately reflect the energy costs of the homes they wished to buy or refinance.

Conclusion

The examples above illustrate that there are a variety of policies that can be designed to lessen specific barriers to energy efficiency, without large government spending and without mandates on individuals.[2] There are many other policies that could also be considered under this framework. Here are a few more examples:

- As mentioned above, **submetering** energy use controlled by tenants can help address landlord-tenant split incentives and lack of information.
- **Certifications** can lower information barriers by providing assurance of worker or contractor quality, just as labels do for products.
- Changing **zoning laws** can help remove barriers to dense construction that may lower both building and transportation energy use.
- **Energy Savings Performance Contracts** (ESPCs) can address financing barriers for government buildings, for governments that do not distinguish between spending and capital investments.
- In some states changing insurance rules is needed to allow **pay-as-you-drive insurance**, which better reflects the real cost of driving by tying insurance premiums to the measured number of miles driven.
- A "**feebate**" that combines a fee for inefficient products and a rebate for efficient ones can incorporate externalities with no net subsidy or tax.

Policies such as these should be added to the policy tool box as a different approach that can harness market forces to promote the adoption of economically beneficial energy efficiency. Often multiple policies or programs may be required to shrink multiple barriers; removing just one barrier of several that are blocking action may do little good. As it may be difficult to predict or measure the market impacts of these policies, and there is little experience doing so, it is important that they be accompanied by careful evaluation and, if necessary, subsequent modification.

To be clear, these market-supporting policies should supplement, not be a substitute for, more traditional measures. While blunt instruments, standards and incentives also can be bluntly effective, cutting through a Gordian knot of barriers that may not be fully mapped out. Some of these blunt instruments have a track record of major savings that the newer policy proposals cannot match. On the other hand, market forces may reach sectors that are difficult to influence through standards or incentives. And market-oriented policies may help build public and policy-maker interest in and support for energy efficiency. These new market-supporting policies present opportunities for real progress, even at a time of deep suspicion of government.

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[2] Some of the policies do add requirements on companies. While such mandates face their own political challenges, modest corporate requirements such as information disclosure are less likely to incite strong public opposition than policies seen as imposing on individuals.

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