

# Efficiency Boom: How Commercial Retrofits Can Power America's Economic Recovery

BY RYAN N. HODUM

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Over the last year, as part of its economic stimulus package, the Obama administration has made the largest one-time investment in clean energy in history. The package included nearly \$70 billion for promoting energy efficiency, mainly in homes. This makes political and policy sense: Americans trying to dig out from enormous household debt naturally would like to lower their monthly energy bills. And in light of the continuing downward pressure on housing prices, families undoubtedly welcome opportunities to improve the value of their single largest asset. In late August, Vice President Biden announced the successful retrofit of 200,000 homes under the American Recovery and Reinvestment Act.

As the residential retrofit industry gains momentum, national policy makers should turn their attention to a sector with even larger job-creating potential: commercial building retrofits. Although economists say the Great Recession is over, the private

construction industry is still suffering Depression-era unemployment levels and spending has declined by over 30 percent in retail and commercial offices.<sup>1</sup> One in four construction workers are unemployed, according to the Associated General Contractors of America.<sup>2</sup>

A targeted set of short- and long-term policies to spur jobs and drive investment in retrofitting commercial buildings can help reverse these trends. A recent study by Johnson Controls, a leading provider of equipment, controls and services for heating, ventilating, air-conditioning and refrigeration for buildings, found that over 80 percent of management executives identified energy efficiency as a priority for new construction and retrofit projects planned for the coming year.<sup>3</sup> Over the next decade, the market potential for commercial building retrofits is projected to be \$18 billion annually.<sup>4</sup> Simply put, retrofitting commercial buildings can help spur economic

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recovery and therefore should be a top priority for policy makers.

Large-scale commercial retrofits are already underway in some of the country's most iconic buildings. In Chicago, the Willis (formerly Sears) Tower is implementing a \$350 million retrofit set to overhaul lighting, boilers, windows and other efficiency investments. In Manhattan, the Empire State Building has developed a whole-building retrofit to improve its windows, radiators, automated controls, cooling plant, and tenant energy use. The project costs \$13.2 million and is expected to save \$4.4 million in energy costs each year.

At a time when the country needs to create jobs and promote clean energy solutions, commercial retrofits deliver the cheapest, fastest and most readily available way to tackle our economic and environmental challenges.

Such examples, unfortunately, are not the norm. Progress on commercial retrofits is constrained by major market and capital barriers, which are discussed below. Congress and the Obama administration should make overcoming those barriers a priority. At a time when the country needs to create jobs and promote clean energy solutions, commercial retrofits deliver the cheapest, fastest and most readily available way to tackle our economic and environmental challenges.

### Three Barriers to Energy Efficiency

Three key barriers stand in the way of delivering meaningful energy efficiency upgrades to commercial buildings:

1. *Bad incentives.* Power markets are governed by rules that drive utility investments toward expensive power-plant production and away from affordable energy efficiency upgrades.

Policy makers need to flip the incentives, because investments in energy efficiency have proved to be a more cost-efficient way to meet rising demand for power.

2. *Financing costs.* Up-front capital costs pose a significant obstacle to energy efficiency retrofits. We need innovative financing mechanisms to encourage energy-saving outcomes, which ultimately are in the interest of both the property owner and the renter.
3. *Information deficits.* No less than household appliances, commercial buildings need to be rated according to their energy consumption and efficiency. Better labeling and more transparency will help owners and investors make better energy decisions.

### Power Markets: Getting the Incentives, and the Price, Right

The Senate last summer refused to vote on comprehensive energy and climate legislation, despite swift passage of a House bill and a year of exhaustive debate. It punted on efforts to put a price on carbon (through a carbon cap and trading scheme), and it largely overlooked the potential of energy efficiency to save money for taxpayers and ratepayers alike.<sup>5</sup>

The Senate's failure to act left in place electricity sector rules that pose serious obstacles to using energy more efficiently. These rules in effect reward utilities for building expensive new power plants by guaranteeing them a high rate of return. Under those rules, investments in energy efficiency are viewed as a cost to utilities, since the benefits of efficiency flow entirely to ratepayers in the form of lower bills.

Nearly half the states, however, have sought to eliminate such perverse incentives by adopting an **Energy Efficiency Resource Standard (EERS)**. Texas, the first to do so, requires electric utilities to double the amount of energy efficiency delivered to customers, with the impressive and encouraging result of offsetting 20 percent of current load growth through end-use energy

efficiency – recently raised to 30 percent by 2013. In its first year, this led to \$80 million in total energy efficiency expenditures, achieving savings of over 27 percent with many programs “sold out” within weeks.<sup>6</sup>

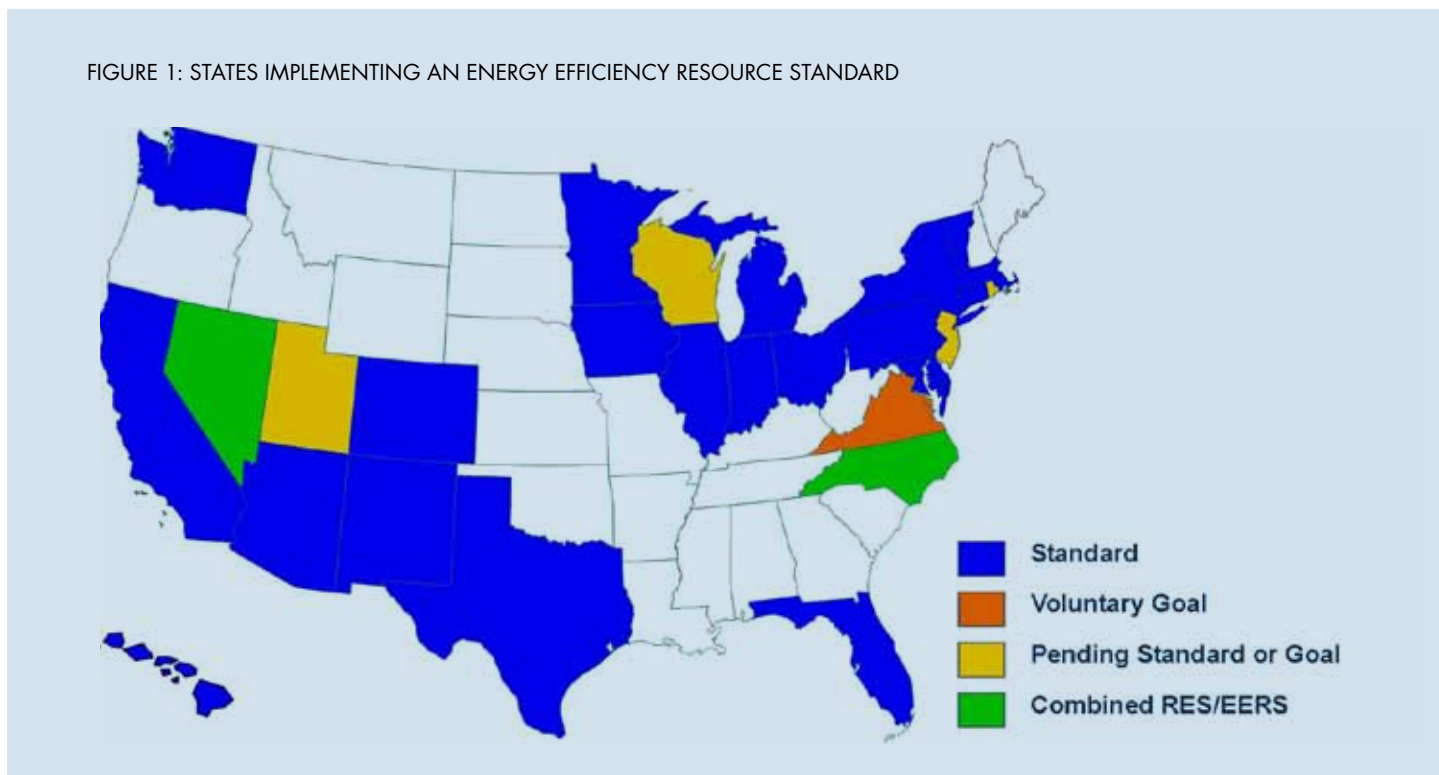
Rather than wait for other states to follow suit, the Obama administration should encourage Congress to enact a national Energy Efficiency Resource Standard (EERS). Under this approach, utilities could give commercial users energy audits to identify cost-saving investments; offer rebates to those that bought energy efficient equipment; and provide incentives for retail distributors to stock high-efficiency products from lighting to appliances. A national EERS will also have the benefit of setting a common standard across the country, so that there is no longer a patchwork of guidelines across states, which is confusing for business and a deterrent to long-term investment.

Under a national standard, utilities will have an incentive to make investments in energy efficiency

that will not only benefit their bottom line, but increase the value of ratepayer assets, most notably for major commercial building owners, managers and tenants. Energy efficiency is the right investment for a utility, especially as current baseload power (building new power plants and burning fuel) costs between 7 and 13 cents per kilowatt-hour, and energy efficiency improvements cost only 3 cents per kilowatt hour.<sup>7</sup> In a recent study by the American Council for an Energy-Efficient Economy, this figure was updated to 2.5 cents.<sup>8</sup>

For the same reasons that the natural gas industry, solar energy companies, and wind turbine manufacturers favor a national standard for low-carbon and renewable energy, commercial building owners, real estate managers, and contractor associations should be supporting a national EERS. Key supporters to date have included the Real Estate Roundtable, the Building Owners and Managers Association, USAA Real Estate Company, the National Association of Energy Service Companies,

FIGURE 1: STATES IMPLEMENTING AN ENERGY EFFICIENCY RESOURCE STANDARD



Source: American Council for an Energy-Efficient Economy, 2010

and the Federal Performance Contracting Coalition.

EERS is complementary to, not a substitute for, a price on carbon. Pricing carbon is essential both to lower U.S. greenhouse gas emissions and to create a powerful market signal that will drive investment into low-carbon technologies, including energy efficiency.

Although a cap on carbon will not drive maximum energy efficiency, just as a national efficiency standard will not drive maximum carbon savings – both policies combined will yield maximum energy and carbon reductions across the country. The combination of both policies will create dramatic benefits and drive utilities to invest in energy efficiency and enable large-scale commercial retrofits.

**Recommendation: Congress should pass a national EERS and set a price on carbon.**

### **Overcoming Finance Barriers: PACE Bonds**

Many real estate owners, tenants, utilities, and construction companies across the country recognize the long-term benefit of commercial building retrofits. However, up-front capital costs present a very real challenge, especially in light of restricted capital markets.

To overcome this obstacle, over 25 states have adopted laws that enable local municipalities to issue Property Assessed Clean Energy (PACE) bonds.<sup>9</sup> PACE programs enable property owners to make energy efficiency upgrades at no up-front cost through long-term loans repaid via an annual property tax assessment.<sup>10</sup> The PACE program empowers localities to create special taxing districts that issue a PACE master bond, which are then repaid as an annual property tax surcharge over time (usually up to 20 years) and treated by law as a senior lien that remains with the property. In practice, the energy savings to the property owner outweigh the increase in property tax.

PACE bonds are meant to create a new asset class to drive commercial and residential retrofits across the country. These bonds improve a borrower's credit,

enhance operating cash flows, and appreciate property values.

While PACE financing is not yet common practice for commercial building retrofits, numerous success stories across the country demonstrate the program's potential to generate funds and reduce operating costs. For example, Simon Property

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Group in Sonoma County, California was one of the first companies to take advantage of PACE-enabling legislation to complete a commercial building retrofit project at the Santa Rosa Mall. The company estimates a typical mall could save up to \$3 million worth of retrofits with a positive return on investment through this type of program.

More recently, certain states have begun to limit the scope of PACE legislation to benefit only commercial properties. This was the case in Michigan where the state Senate voted in favor of PACE legislation for commercial property owners. If implemented by Governor Granholm, it is expected that Ann Arbor will be the first city to take advantage of this innovative financing proposal.

The finance and real estate communities are eager for a secondary market for securitized energy efficiency loans, as evidenced by support for PACE bonds from the National Association of Real Estate Investment Trusts, the International Council of Shopping Centers, and the Real Estate Roundtable. The main resistance to PACE programs has come from the Federal Housing Finance Agency (FHFA), the federal regulator of both Fannie Mae and Freddie Mac.

On July 6, the FHFA called for a halt of PACE energy-efficiency retrofit programs across the country, prohibiting Fannie and Freddie from accepting loans which allow a priority lien on a

property to take precedence over the first mortgage. While the FHFA decided to honor PACE loans that had already been issued, the decision effectively suspends the energy-lending program across the country. In some cases, state funding under the American Recovery and Reinvestment Act was intended to support PACE program implementation, most notably as part of the Energy Efficiency and Conservation Block Grants (\$2.7 billion) and State Energy Plan (\$3.1 billion) funding.

State and federal officials from across the country have written to FHFA to express their concern, including Governors Arnold Schwarzenegger (R-CA), Bill Ritter (D-CO) and Bill Richardson (D-NM), and Mayor Michael Bloomberg of New York.<sup>11</sup> In July the California Attorney General filed a lawsuit against Fannie Mae and Freddie Mac for blocking the PACE program, followed by a similar lawsuit from the Natural Resources Defense Council in October.

**Recommendation:**  
DOE should provide  
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Whereas a national EERS will result in new utility-rebate programs for energy efficiency, low-cost loans will provide a valuable complement to cover the up-front capital needed for energy efficiency investments. PACE bonds deliver a promising financial tool to drive commercial building retrofits across the country, but greater policy certainty is needed to accelerate this proposal at scale.

The Department of Energy should establish a loan guarantee for all PACE bonds in order to minimize the risk to investors, especially in light of the recent decision by FHFA. Raising money to finance commercial energy-efficiency retrofits can be difficult, especially when a landlord pays for improvements but a tenant reaps the benefit of lower electric bills. Rep. Steve Israel (D-NY) has introduced legislation that authorizes the Department to provide 100 percent loan

guarantees for PACE bonds, which offers a useful policy template for delivering retrofits at scale.

**Recommendation: DOE should provide full loan guarantees for PACE bonds.**

### **Information Barriers: Commercial Building Ratings and Energy Management Systems**

Building owners often lack real-time information about their energy consumption patterns to drive both short- and long-term investments in commercial building retrofits. The federal government therefore should collaborate with industry to develop an energy-rating program for commercial buildings. For example, in 2008 the Council of the District of Columbia passed the Clean and Affordable Energy Act, requiring building owners to measure energy use of commercial properties beginning before January 1, 2010. As a result, owners are now required to publicly disclose energy ratings starting in 2013 and all commercial buildings must measure their energy use with the U.S. Environmental Protection Agency's (EPA's) Energy Star Portfolio Manager tool.

The measure is a promising model for potential federal legislation aimed at information and transparency across the commercial building sector. Working with building owner associations and energy service companies, the Department of Energy should propose that, starting in 2011, all commercial buildings greater than 50,000 square feet provide and disclose their Energy Star ratings within the next five years.

Information is a powerful motivator for action. Companies like Virginia-based OPOWER are pioneering a model that triggers utility customers to respond to data about their energy use. By revealing how a household's energy use is performing in comparison to their neighbors, it sparks a competitive desire to reduce energy waste. On average, the company is helping achieve savings of over \$15 million in household energy bills, and with two million households participating in the program, OPOWER is delivering energy savings nearly a third the size of the entire U.S. solar

industry. The company is pursuing a similar model for the commercial retrofit industry.

Surmounting the information barrier shouldn't stop at labeling and ratings. It is now possible for buildings to have a more accurate reading and better control of their daily energy use. Many commercial buildings contain complex and interlinking systems — including heating, cooling, ventilation, lighting and computer use — that all consume energy. Many buildings have poor energy use systems in place, leading to wasteful behavior: lights left on all night, computers running unnecessarily.

Congress should mandate public efficiency ratings for all commercial buildings by 2016

Sophisticated IT installations and operating systems, called energy management systems (EMS), provide the optimal solution for helping the commercial building sector drive down its energy use while realizing savings. To date, EMS consists of a computerized electronic intelligence network that monitors and controls electricity use in commercial buildings and manages building lighting and HVAC usage. An opportunity exists to expand these systems — one industry group estimates that the total potential EMS market will grow almost \$8 billion between 2010 and 2020.<sup>12</sup>

Energy management systems require significant up-front costs that many property owners and businesses cannot afford in today's economic climate, despite the high return on investment. According to a recent study, an investment of \$160,000 in an energy management system was recovered in three years and led to \$447,619 in savings over 10 years.<sup>13</sup> However, many companies and small businesses cannot afford the initial investment and continue to be left in the dark, facing increasingly expensive, inefficient, and unsustainable energy costs. Congress could

implement a new tax deduction of 25 percent of the cost of installing an energy management system and authorize the Department of Energy to implement national standards for energy management systems phased in by building type.

National standards are needed to ensure reliable, transparent and accessible information to empower users to save on their energy costs. These standards protect consumers and businesses and enable smart government spending.

**Recommendation: Congress should mandate public efficiency ratings for all commercial buildings by 2016 and pass a tax deduction of 25 percent of the cost of an energy management system (EMS).**

### Conclusion

Energy efficiency continues to be politically relevant, garnering support from influential Republicans and Democrats alike, including Senators Scott Brown (R-MA), Lindsey Graham (R-SC), and Olympia Snowe (R-ME) recently co-sponsoring HOME STAR, a residential retrofit initiative, and Senator Dick Lugar (R-IN) who proposed a national building retrofit program as part of his "Practical Energy and Climate Plan." Both Senators from Arkansas, Blanche Lincoln and Mark Pryor, have co-sponsored Building STAR, a commercial retrofit rebate program.

As policy makers continue to identify proposals to stimulate economic recovery, a renewed focus on commercial building retrofits will be paramount to ensure long-term job creation, energy savings, and competitiveness. The federal government would be well advised to follow the example of states across the country, instituting innovative plans to drive energy efficiency upgrades. Proposals such as a national Energy Efficiency Resource Standard (EERS), a price on carbon, innovative PACE bond financing, a building efficiency labeling program, and support for energy management systems will drive energy efficiency in the commercial sector and overcome major barriers of energy, finance, and information. To that end, commercial building retrofits need to be a central part of any plan to power America's economic recovery.

**Endnotes**

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