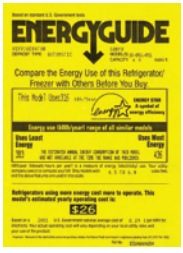
ACCEPTING CODES AND STANDARDS

By Lisa V. Wood, executive director of the Institute for Electric Efficiency.

With federal carbon emissions reduction goals likely in the near future, reducing the amount of carbon emitted into the atmosphere is a priority for electric utilities. In the United States today, electricity generation is responsible for 40 percent of all carbon emissions, so a combination of energy efficiency (EE) and renewable energy sources will be needed to meet emissions targets. But saving a kilowatt-hour via EE is a lot cheaper than generating a new one with renewable energy. Hence, the more electricity we save with EE, the more carbon we'll reduce at the lowest possible cost.

Policymakers can adopt different strategies to move the nation toward more EE. For years, electric utilities and state entities have deployed EE programs that provide rebates and incentives to encourage consumers to save energy. Equally important are energy codes and standards that mandate specific levels of EE in buildings, equipment, and appliances.

Codes and standards are certainly not a new idea. Over a decade ago, the Department of Energy (DOE) claimed that "a 30-percent improvement in U.S. building efficiency would reduce energy bills by $75 billion in 15 years and eliminate the need for 80 new nuclear power plants over the next 20 years." Twelve years later, codes and standards still have the potential to deliver impressive energy savings cost effectively. In fact, the proposed climate bill passed by the House of Representatives this past June includes code changes that support a 30-percent improvement in building efficiency immediately.



Several recent studies have pointed to the importance of improved codes and standards for moving the nation toward greater EE. For instance, a recent whitepaper, "Assessment of Energy Efficiency Achievable in the U.S. by New Codes and Standards, 2010-2020," by the Institute for Electric Efficiency (IEE), evaluated potential savings under different scenarios (including the proposed federal climate legislation) and found that the adoption of aggressive development and enforcement of new codes and standards could produce as much as 300 terawatt-hours (TWH) of savings by 2020. In July 2009, McKinsey's energy efficiency study—"Unlocking the Energy Efficiency in the U.S. Economy"—estimated the potential electricity savings in nongovernment new buildings to be 70 TWH in 2020. While it does not specifically isolate the savings from codes and standards, the report identifies building codes as central to the strategy for obtaining that target.

"Ka-BOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards," a study by the American Council for an Energy Efficient Economy (ACEEE) and the Appliance Standards Awareness Project, estimated that the impact of the new appliance standards that will become effective in the coming years is 100 TWH in 2020.

Utilities can play an important role in realizing the potential energy savings in codes and standards. To capture these potential savings effectively, coordination and collaboration between utility-sponsored EE programs and codes and standards must be actively pursued.

The Law Against Crappier

Energy codes are laws that mandate minimum technical specifications for new buildings. According to MC^2 Mathis Consulting Company president, Chris Mathis, "codes describe the least safe, least strong, and least energy-efficient building allowed by law. We're not allowed to build it any crappier." Building codes usually target new construction, rather than existing buildings, because integrating efficiency at the point of design and initial construction is more cost-effective, easier to implement through existing building permitting processes, and provides more opportunities for efficiency savings.

Energy standards comprise precise procedures for testing the energy usage of an appliance or device, mandate minimum performance levels, and usually contain provisions for labeling procedures (to display the results). By regulating the method of testing, standards serve as a means of comparison, guaranteeing an "apples-to-apples" assessment. Standards also drive market transformation toward EE—they eliminate inefficient technologies once efficient options have penetrated the market. In the efficiency world, a familiar energy standard is Energy Star, which labels efficient appliances that meet the strict limits set by the Environmental Protection Agency and DOE. For example, under Energy Star, central air conditioners have a minimum seasonal EE rating of 15.5, 14 percent higher than standard models.

So, why focus on codes and standards? In short, because the energy savings potential is huge and the cost to achieve these savings is relatively low.

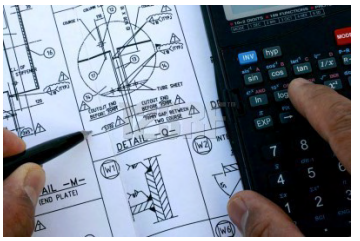
Americans are using more electricity than ever. According to the Energy Information Administration's (EIA's) "Annual Energy Outlook 2009 with Provisions of the American Recovery and Reinvestment Act, April 2009," even after accounting for the economic downturn, electricity usage in the United States is expected to grow from 3,747 TWH in 2007 to 4,117 TWH in 2020, with the growth driven largely by expanding population, increased cooling needs, and increased demand for consumer electronics. The IEE paper shows that the potential savings achievable from codes and standards represents between 2 percent and 7 percent of forecasted demand in 2020.

A Proven Track Record

Perhaps the best example of the effectiveness of codes and standards is the efficient refrigerator. In the four decades since the first appliance standards for refrigerators, average refrigerator size has risen steadily, from around 1,400 cubic feet in 1976 to roughly 1,800 cubic feet today; the average

real price per unit (adjusted for inflation) has decreased by a factor of three; and the average fridge now uses about half the energy of models made before 1993. And refrigerator manufacturers continue to innovate.

These results, while notably successful, are not unique to refrigerators. According to a 2003 report by Steve Nadel of ACEEE, both gas furnace and central air conditioner technologies have experienced the largest improvements in product efficiency following new standards.



Codes and Standards in California

In the United States, California was a pioneer in the introduction of minimum energy performance standards. In order to reduce the growth in electricity use, the California Energy Commission (CEC) was given unique and strong authority to regulate the efficiency of appliances sold in the state and began to adopt regulations in 1978. Since then, CEC has updated its efficiency standards regularly over time and expanded the list of appliances.

Since the 1970s, California's statewide per capita energy use has remained level, at approximately 7,000 KWH per person. Over the same period, per capita energy usage nationwide has increased 50 percent, from 8,000 KWH per person in 1973 to more than 12,000 KWH per person today. California's high levels of EE savings come from a combination of codes and standards and traditional utility-funded efficiency programs. Still, California's utilities and policymakers believe that active development of increasingly stringent codes and standards is an important component of a strategy to transform California's economy into a more efficient one.

Historically, there are two main reasons that initiatives to advance codes and standards have failed. First, manufacturer and retail groups often fear that the increased cost of producing products that comply with higher energy standards will put them at a competitive disadvantage. Such is the claim made by Californians for Smart Energy in the ongoing debate over a recently proposed CEC energy standard for televisions. The standard seeks to reduce average energy consumption of TVs by 33 percent in 2011 and 49 percent by 2013. TVs now comprise about 10 percent of residential electricity use.

The second reason that codes and standards initiatives fail is the lack of integration of such advancements with other efficiency mandates and program goals. Sometimes utilities oppose codes and standards initiatives when those initiatives threaten the utility's ability to comply with its own mandated efficiency targets in a cost-effective manner. California's model specifically focuses on integration with utility efficiency programs.

Most recently, this has been demonstrated by the California utilities' support of the proposed new TV standard. Not only did California's utilities support the new standard, they championed it. More than a year ago, the utilities helped develop the initial specifications for efficient TVs with the Consortium for Energy Efficiency; reached out to manufacturers, retailers, and other utilities to secure a market for efficient models; and piloted a labeling campaign with Energy Star to help drive customer adoption of the new technologies.

On their end, the utilities use an integrated demand-side management strategy that includes developing and supporting aggressive new codes and standards alongside prioritizing EE in the resource queue. To secure the support of utilities and avoid conflict with utility efficiency programs, the California Public Utilities Commission developed a protocol to credit utilities for a portion of energy savings that result from their work advancing codes and standards. As a result, codes and standards initiatives have proven to be a highly cost-effective contributor to the overall demand side portfolio in the state.

In California, the utilities' programs focus on market transformation and seek to integrate codes and standards initiatives with information, education, rebates, and other incentives—and the utilities stress the notion that compliance with codes and standards generates revenue for those with more efficient technologies, spurring innovation. Emerging technologies then provide opportunities for the utility to create incentive programs, thereby driving the innovation cycle towards greater efficiency. The codes and standards initiative complements other programs in the EE portfolio by broadening the reach and deepening the effects of the utilities' other conservation efforts, reaching a segment of the market unaffected by rebates, and making all prior market transformation permanent.

Become Involved in the Process

With the potential for more than 300 TWH of energy savings by 2020 and recent activity at both the federal and state levels, codes and standards—for buildings, cooling and heating systems, lighting, and consumer electronics—are likely to become an even more important part of the push toward a more energy efficient U.S. economy. With this change, utilities have the opportunity to become more involved in the codes and standards process. Utilities can be involved in the development of codes and standards appropriate for their region and can assist in their adoption and implementation. Some of the energy savings will overlap with savings from utility energy efficiency programs; to address this, appropriate regulatory frameworks can ensure that incentives are aligned. With the right combination of incentives, regulatory frameworks, and customer and retailer education, utilities will be poised to play a central role in achieving the potential savings associated with codes and standards. ◆

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