

Building energy efficiency programs in Europe and Australia

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The United States can become more energy efficient and create more "green" jobs by adopting some of the strategies used by the European Union and Australia to rate and disclose the performance of commercial and government-owned buildings, according to a new RAND Corporation study issued today.

The study finds that wealthier countries use more than a third of their energy to heat, cool and illuminate buildings, but not always efficiently. Recent steps taken by the European Union and Australia to inspect, rate and publicly disclose the energy efficiency of buildings indicate the buildings use less energy and are worth more when sold or leased.

The buildings sector has unique characteristics that make design of energy efficiency policies particularly challenging: transactions are infrequent, capital costs are high, and the variability of design and siting makes energy efficiency comparisons difficult. Often, owners must bear the costs of efficiency improvements while costs savings are obtained by tenants.

"Nevertheless, investments in renovation and energy-aware construction should be part of a green jobs strategy," said Charles Ries, the report's lead author and senior fellow at RAND, a nonprofit research organization. "If the United States wants to be a global competitor in green [building](#) technology, it can learn from the ways in which information disclosure, building codes, financial incentives and benchmarking have been used in Europe and Australia."

In examining the recent efforts in the EU and the Australian Commonwealth to promote energy efficiency, researchers focused on five key policy tools: building codes, energy efficiency ratings, the role of public buildings, the training and certification of experts, and the issuance of tradable "white certificates."

Building codes have been effective in improving energy efficiency in new buildings and in buildings undergoing major refurbishments because they are mandatory and have specific requirements. However, codes are slow to have a significant effect on energy use because at most three percent of a nation's building stock is newly constructed or renovated, the study finds. The EU now requires all member nations to have energy efficiency elements in building codes, and the EU codes must be reviewed every five years.

Since a building's good energy performance can be attractive to potential buyer or tenant, the EU has made presenting a standardized rating of a building's energy efficiency before or at the time of sale or lease an integral part of its approach. In 2002, the EU began requiring energy performance certificates be presented for all building sales or rentals. Some Australian states also require energy efficiency certificates. The ratings may be based on a building's design characteristics, energy performance, or both. Many highly rated building designs fail to perform up to potential, however, often because of the way they are managed or because of tenant behavior.

"Incentives may be needed to improve the energy efficiency of older, poorly performing buildings where the biggest aggregate gains are to be made," Ries said. "Ratings systems should be designed to allow for achievable improvements for older buildings, so the perfect is not the enemy of the good."

For public buildings, the EU requires that energy efficiency ratings be

posted in a prominent place, typically at the entrance. In Australia, several jurisdictions have policies that set a minimum "Green Star" voluntary rating for any building that is leased or purchased for government use. The RAND study recommends that public building ratings be based on measured energy performance rather than design characteristics alone.

Researchers find that implementing the program throughout Europe has taken time as governments create benchmarks for efficiency ratings, and inspectors have had to be trained to assess buildings and given credentials. The EU is considering amending the system, notably to require a building's energy grade be included in all property advertisements.

In Australia, the states of New South Wales and Victoria issued "white certificates" that could be sold to utilities and big energy users who are required to reduce energy use under the states' cap-and-trade programs. Ries said the effort shows promise, but in some cases third party aggregators distributed low-cost energy saving equipment (compact fluorescent bulbs or low-flow showerheads, for example) to homeowners in order to claim the white certificates. Subsequent studies have shown not all the equipment was actually used and the program had to be changed.

New proposals being considered include a buildings-only cap-and-trade system in which owners of large buildings are given energy savings obligations that can be met either directly, or by buying certificates from better-performing buildings. Such a system would provide more incentives for owners and users to operate buildings more efficiently, the authors find.

Among the report's key considerations for U.S. policymakers:

- Building-materials manufacturers will be able to better standardize their products if there is regional consistency in the energy efficiency requirements for building codes. This will provide relatively quick benefits. For the long term, performance codes should also be considered, with expanded use of building codes accompanied by aggressive training and quality-assurance programs for inspectors.
- Energy Performance Certificates should be understandable and meaningful enough to affect marketplace behavior. Moreover, they should be required to be used in property advertisements and listings.
- Widespread energy efficiency gains are possible only through retrofitting and making operational improvements to existing buildings. Energy use monitoring, as well as incentives, inspection and improvement recommendation systems are essential.
- Public buildings should continue to be a test bed for new energy-saving ideas and should promote awareness of building energy-performance levels.
- • Building [energy-efficiency](#) programs can play an important part of a cap-and-trade program for reducing emissions of carbon dioxide. A ratings system, along with a cadre of trained and licensed experts to conduct the ratings, is crucial to any roll-out of a broad-based "white certificate" program.

More information: The study, "Improving the Energy Performance of Buildings: Learning from the European Union and Australia," can be found at www.rand.org .

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