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Welcome to the RFF Weekly Policy Commentary, which is meant to provide an easy way to learn about important policy issues related to environmental, natural resource, energy, urban, and public health problems.

This week we are delighted to introduce George Tolley and Sabina Shaikh of the University of Chicago. They discuss the quiet, grassroots revolution taking place in the design of new buildings, which has important implications for the environment. In particular, they examine why so many designers seek to obtain green building certification without any prodding from the government, and how the current rating system for green buildings might be improved.

Next week's commentary, by Sandy Hoffmann, will discuss policy issues related to food safety.

The Greening of Buildings

George S. Tolley and Sabina L. Shaikh

Spontaneous actions below the federal level are emerging as a burgeoning source of efforts to improve the environment. One such trend is the growing green building movement, which encompasses many cities, educational institutions, other nonprofit organizations, and private developers.

The central idea is to focus more holistically on buildings as a source of multiple environmental effects. Design features determining how an entire building affects environmental goals are considered. A strong case can be made for this approach: according to the U.S. Green Building Council (USGBC), buildings account for 39 percent of primary energy use, 71 percent of electricity consumption, and nearly 40 percent of carbon dioxide emissions in the United States.

Buildings offer impressive opportunities for pollution abatement. A 2007 report by McKinsey singles out buildings as a cluster with particularly great abatement potential. Promoting green buildings conserves energy and water, reduces greenhouse gas emissions, and provides state of the art modern facilities for office and residential use.

A major catalyst to the growth of the green building movement has been the green building rating system known as Leadership in Energy and Environmental Design (LEED), promulgated by the USGBC. Earning LEED certification announces to the world that a building has met strict "green" standards. LEED for new construction (LEED-NC) began through pilot programs in the 1990s and was established as a rating system in 2000 for new commercial buildings. Since 2000, LEED has been expanded to existing commercial buildings and more recently, residential homes, and is now being used cooperatively in evaluating the greenness of entire communities. USGBC expects that by 2010 approximately 10 percent of new commercial construction will be LEED certified.

The green building movement offers a significant and novel advantage over traditional environmental protection efforts, in that it is, essentially free. Emanating from grass roots support, it comes at no cost to the federal government, either in tax dollars or in the burden of federally mandated regulations. The green building movement has come so far and so quickly for several reasons.

A first, perhaps primary reason for growth is that green buildings can reduce overall building costs and therefore contribute to a builder's bottom line. In the normal course of events, architects change a variety of things over time, ranging from building layout to details of heating choices and the like, in response to changing material prices and technological developments. Organizations such as USGBC are, in part, vehicles for helping building designers keep up with the times. Claims of cost reductions that are made by green building proponents are consistent with the fact that these practices are being adopted voluntarily.

A second reason for going green is that it will appeal to potential tenants. Going green can be a good marketing strategy; a green building may command higher rents or sell out more quickly than a traditional one.

A third reason for the spread of green buildings is the influential role played by architects in shaping building aesthetics. Building styles are inevitably influenced to a greater or lesser extent by incentives to keep down costs, but final design choices are still made by architects in conjunction with their clients.

A fourth reason helping to explain why developers provide green buildings is local and governmental impetus. Some cities put LEED-certified buildings first in line in issuing permits and other regulatory matters that a builder faces. Policies such as Chicago's green permits, or Los Angeles' new ordinance that requires all privately built projects over 50,000 square feet to meet a "standard of sustainability," rely on LEED ratings for implementation. U.S. government policy now states that new federally owned buildings will be LEED certified.

But the LEED system is experiencing growing pains: while now being treated as a standard for new construction, it was originally designed as a reward system and not a set of building codes with such widespread implications. LEED-NC also lacks operating or maintenance requirements, which raise concerns about the long-term effectiveness of using the current version for reaching policy objectives. USGBC is aware of these and other issues and is actively working on more systematic rating systems for the next version of LEED.

Green building certification in its present state is not perfect, but, after all, no practical environmental tool ever is. Nevertheless, we have some recommendations.

Sort out the goals toward which green building measures are aimed. Points toward green building certification can be earned for approximately 70 different individual measures, which are categorized under six objectives: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design. A challenge is to recognize differences in the importance of the individual measures—first, to the related objective and, second, to a balancing among objectives. For instance, reduction of greenhouse gas emissions and reduction of dependence on foreign oil might well be given explicit recognition as important objectives, in view of the fact that they are externalities from the point of view of individual behavior that need special encouragement.

Estimate the typical effect of each recommended measure in quantitative terms, and rank the measures that contribute to a given common goal by their effectiveness in contributing to the goal. As an example, among the eight measures that can earn points toward certification under the "Sustainable Sites" objective, "Brownfield Redevelopment" and "Light Pollution Reduction" can both earn 1 point each, suggesting that they are of equal importance. It should be possible to choose a metric for measuring sustainability and to quantify the effects more precisely than giving each equal weight.

Re-think the weights given to different goals. The points given to each of the 70 possible measures that can earn qualification depend in part on the weights given to the overarching goals. For example, the maximum possible number of points for measures contributing to Indoor Environmental Quality is 15, while for Energy and Atmosphere the number is 17. At first glance, these two goals appear equally important, though the number of possible measures under each is similar. Underlying a point system, either implicitly or explicitly, is a choice of the relative importance of different goals. While all the measures are commendable, how commendable are they in relative terms? More thought needs to be given to this dilemma.

Choose the total point requirement for certification so as to maximize program effectiveness. If the total number of points required for certification is too low, qualifying will be too easy and the certification will lose its meaning. If too high, it will be viewed as impossible to achieve and lose effectiveness as an incentive.

Estimate the contribution of the green building movement to achieving national and world environmental improvement. Suppose the United States were to make a commitment to reducing greenhouse gas emissions by 10 percent. In order carry this out, how could green buildings contribute to this goal? The answer would influence the emissions reductions to be sought from other sources.

This list is by no means exhaustive. Green buildings offer a promising approach to improving the environment. This approach deserves more attention from environmental policy analysts than it has yet received.

Views expressed are those of the author. RFF does not take institutional positions on legislative or policy questions.

To receive the Weekly Policy Commentary by email, or to submit comments and feedback, contact comments@rff.org.

Further Readings:

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