

NJSSI: THE NEW JERSEY SUSTAINABLE STATE INSTITUTE

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TRACKING THE FINANCIAL PAYOFFS TO GREEN BUILDING

I. INTRODUCTION

Green building is receiving increasing attention in New Jersey and elsewhere in the United States as an effective way to reduce energy use, greenhouse gas emissions, “sick building syndrome,” and the overall environmental impacts of our development patterns. However, the fear that green building increases construction costs makes it hard to sell to private developers or government agencies despite its advantages for the environment and public health.

The truth may be quite different. When green building principles are part of the design process from the start, the result can be a building in which high performance technologies are fully integrated with each other, and construction costs can actually be lower than for a conventional structure. Moreover green building techniques should always reduce energy use, and may reduce maintenance and repair costs as well. Beyond this, many claims are made about the potential for high performance buildings to improve worker productivity or retail sales, bringing an indirect financial return to the user. Green buildings could also have a fiscal impact; for example widespread use of green roofs may reduce needed investments in storm sewerage.

Unfortunately, at present the evidence to support these claims is anecdotal at best. Much of it is based on projections of building construction and operating costs rather than historical data about operating structures. In the case of arguments about productivity impacts, it may be hard to show a causal relation between building design and employee behavior. Clear objective data about the financial dimensions of green building will be an invaluable tool to everyone interested in its potential to help solve environmental problems. Architects, engineers, green builders, and others confronting the reluctance of their clients to venture into what appears to be uncharted waters are uniformly

agreed that solid data – rather than preaching by the converted – are essential to achieve a significant transformation of the market towards high performance buildings.

This paper describes steps through which we can develop those data. It also sets out, in a table at the end, an initial sketch of where we might expect green building to affect the costs of constructing or operating buildings and the productivity of those who work there, or have financial ramifications for other organizations such as local government.

II. LINKS BETWEEN GREEN DESIGN AND PRODUCTIVITY: WHAT DO WE ALREADY KNOW?

There is an extensive literature on the links between building design, particularly “green” building, and a range of productivity measures such as employee absenteeism, output or sales, employee turnover (or “churn,” in the jargon), children’s interest in schools, and their performance on standardized tests. The results of this research can be very valuable in understanding which aspects of green design have the most impacts on building users. However, much of it remains in the academic literature or the “gray” literature (unpublished papers, consultant reports, material on the web). It is not readily available to architects, builders, or those deciding what they want in the place they hope to buy or rent. It is essential, therefore, to synthesize the major results of this work and make it readily available to the green building community so they can make practical use of it. Such a synthesis must be accessible in a simple and easy to use form, in paper and on the web – and preferably not only in the gray literature!

III. FINANCIAL PAYOFFS TO GREEN BUILDING: WHAT DO WE ALREADY KNOW?

The experience to date operating green buildings can provide much information about the financial payoffs to high performance design. We need to assemble and synthesize that information for easy use by the green building community, much as we need to do this for productivity impacts. How this should be done depends on how organized the available data on historic (as opposed to projected)

costs of operating green buildings are. Professionals in facility management, in energy services corporations (ESCOs, companies that upgrade energy systems in return for receiving the energy savings over a period of time), and related industries have considerable knowledge about what pays off, how, and over what time period. In New Jersey, the School Construction Corporation is planning to track the effectiveness and costs of green design features to be incorporated in the Abbott schools. The pilot now underway to test the new LEED for existing buildings (LEED-EB) may also provide data on the payoffs to greener building management.

If the readily available data are insufficient, not comparable, or not well structured, it may be useful to carry out case studies specifically to identify the payoffs. These might be of a group of LEED-certified buildings, for which we could track the cost implications of specific “green” features for which LEED credit is available. Such cases would be in buildings where facility managers are already tracking operating costs in sufficient detail and are willing to share their data.

This work will serve two distinct purposes. First, it will give an initial documented understanding of where green building has paid off financially – and possibly where it has not. It will provide examples both to architects and builders and to developers considering construction of green buildings. Second, this kind of work could feed into the development of an accounting framework for structuring future data collection on the payoffs to green building. They will give us a concrete understanding of which payoffs can realistically be tracked, and which may prove too difficult to isolate in operational cost data. This will feed into the third component of this data effort, discussed below.

IV. ONGOING TRACKING OF COSTS AND PAYOFFS TO GREEN BUILDING

Until green building becomes thoroughly established in the U.S. – and perhaps beyond then, as we continue to push the bar concerning what is considered “green” – it will be useful to systematically track the financial returns to investments in green building. An effective way to do this may be to expand LEED-EB to include not only monitoring of physical performance, but also insofar as possible monitoring of financial payoffs.

This could be done either as requirements for individual credits that are likely to show payoffs, or as part of the Monitoring and Verification (M&V) credit. Including it as a requirement of individual LEED-EB credits would ensure that the data would actually be available and would be reported to USGBC, so it may be preferable to including it in the optional M&V credit.

This work would obviously have to be done in collaboration with USGBC, through the processes they have used to establish the existing LEED certification requirements. It would build on the reporting requirements of LEED-EB and on the U.S. Department of Energy’s International Performance Measurement and Verification Protocol (IPMVP), which is already used for the LEED M&V credit. The table included at the end of this note sketches out, for the LEED-EB requirements, some possible costs and payoffs that may arise, and could serve as a starting point for discussion. It will be elaborated upon and expanded based on the case studies and the literature review that are the first two components of this project.

V. INTERESTED IN BEING INVOLVED?

NJSSI is seeking funding with which to begin work in these areas. We are interested in collaborating with others interested in this challenge. If you work on green building and can join with us to identify what we already know about its financial payoffs or productivity benefits, we’d love to hear from you. We are particularly interested in working with facility managers, ESCOs, those now analyzing existing green buildings to assess what works well and what does not, and others who have a hands-on understanding of what financial information we already have, and what will be the easiest to gather if we hope to integrate this into LEED-EB.

If that sounds like you, please contact Joy Hecht, Executive Director of NJSSI, at jhecht@njssi.net or 732-932-4003.



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