

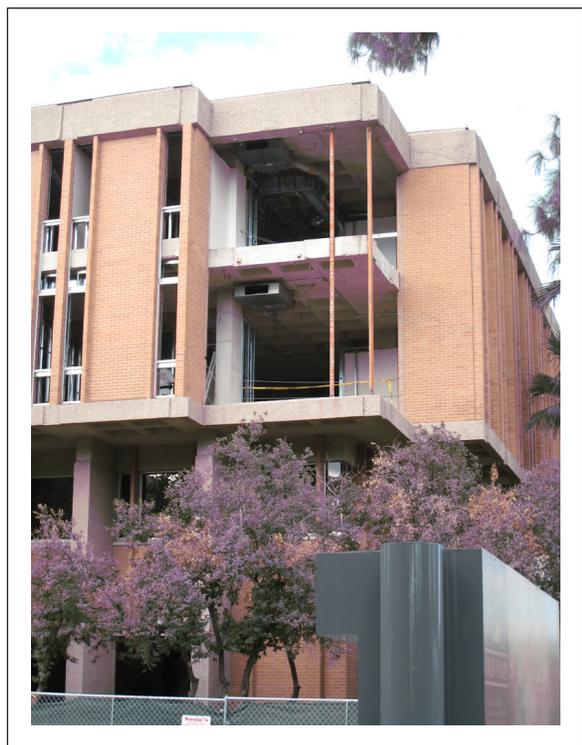
Visualizing and Realizing Sustainable Opportunities to Transform Existing Spaces

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Green What You Touch

When Arizona State University's (ASU) Global Institute of Sustainability (GIOS) sought a home for its newly formed School of Sustainability, the initial plan was to undertake an extremely limited renovation (with ADA upgrades) of an existing building to house the new school on an interim basis until a new "green" facility could be constructed. As ASU's LEED requirement only applied to new construction, LEED certification was not part of the plan. The design team adopted a "green what you touch" approach, reflecting both institutional energy and environmental goals and the program to be housed in the renovated facility—the nation's first comprehensive degree-granting program with a transdisciplinary focus on finding realworld solutions to environmental, economic, and social challenges facing our global community.

The "green what you touch" approach put the standard solutions on the table: selecting ultra high-efficiency plumbing fixtures for those that were upgraded to meet ADA codes; using materials with high recycled content; reducing the extent of demolition; and using LEED as a design guide.



Reduce, Reuse, Recycle

However, when faculty and students from the School of Sustainability and the School of Architecture were invited to early integrated-design strategy meetings to plan the interim facility, the project took on a new life. Collectively and persuasively they argued that the most responsible permanent home for the School of Sustainability would be a building that fully embodied the philosophy of reduce, reuse, and recycle. Part of their argument was based on data from the U.S. Energy Information Administration's 2003 Commercial Building Energy Consumption Survey, which documented that the building poised for modest renovation was of the generation of buildings (built from the 1960s through the 1990s) that had the highest average energy use of all existing buildings; thus no significant energy savings for the university would result from an interim, modestly-renovated facility.

As the faculty, students, and design team examined the potential embodied energy (energy used to create the existing building components) savings and active energy reductions possible in a major renovation, they were able to convince ASU administrators to undertake a full transformation of the existing building into a permanent home for the new School of Sustainability.

Most often, stakeholders— be they faculty, students, or donors— find it more difficult to envision transformed outdated spaces than to imagine new, state-of-the-art spaces. But the "green what you touch" approach, which served as guide in the earlier phase, set the stage for exploring and making decisions in the context of considering a renovation dealing with reducing, reusing, and recycling. The design team developed an image database in which various elements of the facility were registered and then compared to images of proposed design changes; this was a significant factor in enabling people to visualize the difference between before and after (literally knocking down walls— internally and externally).



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For example, “before” images of dark and dreary hallways and offices led to major recycling on the top two floors, all demonstrating the potential of daylighting to transform space with energy efficiency:

- ◆ Existing faculty offices were left around the perimeter, but offices in the center were removed, providing an open floor plan.
- ◆ Balconies for outdoor interaction were created by removing a section of exterior brick, replacing it with vine-clad metal trellises that provide shade while allowing views and filtered natural light.
- ◆ Windowed conference rooms (replacing single glazed windows) were added on the east side of the top two floors, also allowing light to permeate.
- ◆ Windows were added on the northeast and southeast corners of these floors to provide daylight “teaming” areas, replacing previously dark corner offices.



While these visual and functional improvements were being refined, the project team developed further energy conservation and occupant comfort strategies. These included a new energy-efficient, sensor-controlled lighting system; upgrading of exterior brick wall and roofing insulation; removal of existing louvers and replacement of single glazed windows on the east side; installation of sunscreens along the east, west, and south windows to reduce solar gain and control glare; and cleaning/modifying the mechanical systems. While replacing the existing mechanical system was not in the project scope, the other upgrades were still sufficient to reduce energy use by a projected 20 percent. Water-saving strategies were also a key regional focus for everyone in this desert environment.

Create Buildings that Teach

In addition to opening up walls and lightening up spaces, the design team, faculty, and students agreed that making its sustainable features visible and understandable would make the building a teaching and learning resource for occupants and visitors alike. As part of ASU’s campus-wide solar energy project, the building is scheduled to receive a rooftop photovoltaic array which will be invisible from the ground. To show the benefits of the many energy-saving features, there is a real-time “building dashboard” display in the lobby that tracks building performance and energy use via the ASU “Campus Metabolism” tool (<http://cm.asu.edu/>).

But the most dynamic and visible symbol that this is the home of the School of Sustainability are the six parapet-mounted wind turbines. These unusual turbines provide a modest amount of renewal energy to the campus grid while generating considerable interest in and discussion about sustainability.

The GIOS’s School of Sustainability building now serves as the hub of the university’s sustainability research efforts. Charged with catalyzing and advancing interdisciplinary research and education on the environmental, economic, and social sustainability, the building brings together life scientists, social scientists, engineers, and humanists from programs across the campus, with government and industry leaders in a facility that demonstrates real-world examples of sustainable design. ■

