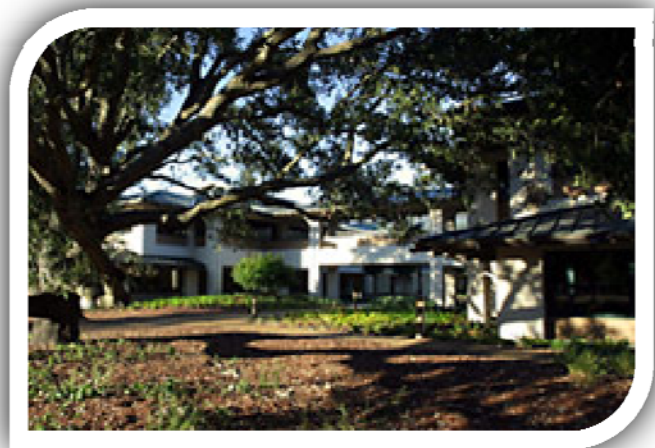


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California's First Gold Accreditation:
The Hewlett Foundation Building

Two stories high, the William and Flora Hewlett Foundation Building in Menlo Park, California became the first building to achieve gold-level certification under the LEED (Leadership in Energy and Environmental Design) version 2.0 standards (2). Gold is the second highest certification awarded by LEED (the highest is Platinum) and accreditation is based on a stringent point system. Built in 2002, the Hewlett Building was the fifth in the nation to become gold certified. Since then the LEED criteria have been updated but the mentality remains the same.

LEED standards for accreditation provide architects and designers with a framework to use for a green building project. The criteria include certain aspects such as sustainability, water efficiency, and smart energy usage among others. For the Hewlett Foundation, LEED standards echoed with the foundation's interest in the environment. Their goal was to create a building that supported the nascent green building industry while also providing their employees with a clean and healthy workplace (2). The Hewlett Foundation Building was built on top of an old property and is in the vicinity of transportation lines, Stanford University, and convenient bike and walking paths (5). About 60 percent of the site was dedicated to open space and much of the surrounding natural environment was preserved (5). LEED standards supported this environmentally positive



A facade view of the Hewlett Building boasting the natural open space and integration among native trees and plants.

attitude and the Hewlett Building was granted a gold certificate for its innovative design and superior indoor environmental quality. However, the building was not awarded the more prestigious Platinum award due to certain shortcomings that will be discussed in this paper. Overall however, the Hewlett Building was heralded for its marked green design.

The building received an adequate score (9 of 14 Total Points) for LEED's "Sustainable Sites" category. The foundation scored high because it encouraged their employees to travel by alternative transportation methods such as biking, riding the nearby buses, and carpooling. The building offered bike racks and showers so that employees who bike to work do not have to worry about bike security or personal body odor from sweating (7). Carpoolers also received special spots in the built-in underground parking garage (7).

Additionally, the building received credits for its stormwater management system and lack of disturbance of the surrounding natural environment. And although it is located near a high traffic street, it is set back enough among the trees and bushes so that noise and air quality are unperturbed (9). Site selection is extremely important by LEED standards and points are awarded if the building is constructed atop a rundown urban or brownfield site; these two points were not awarded to the Hewlett Building even though it was built on top of an old property. Also, the building did not meet light pollution standards regardless of the designers' effort to minimize exterior lighting in order to "protect night sky visibility and animals' nocturnal habitats", as well as lessen the impact on neighbors (3). The Hewlett building could have also received an extra credit if more attention was given to the roof of the building. Green roofs are generally more expensive upfront but have long-term benefits that will offset these initial costs. However, budgeting is imperative and the Hewlett Foundation could have decided that the extra expenses were not worth the lost LEED point.

Although the Hewlett Foundation claims that this building saves approximately 15 percent more water than other similar facilities (3), LEED only allotted the building one out of a possible five points for water efficiency. Regardless of this, the foundation boasts about its water system. They installed drainage and stormwater control systems that "employ bio-swales, detention ponds, and filtration devices to limit disruption of natural water flows, increase on-site infiltration, and eliminate contaminants" (3). The designers

also predicted a 50 percent reduction in water use due to implementing "highly efficient irrigation equipment and drought-tolerant landscaping" that used native vegetation to buffer rainwater (3). Inside the facility, the men's bathrooms are installed with waterless urinals and the staff cafes are outfitted with small, efficient dishwashers, both being design products that encourage curiosity among workers (3).

LEED also has standards for energy usage and atmosphere protection, of which, the Hewlett Building received almost half of the seventeen possible points. The most notable of the building's energy-saving implementations was using six tanks that freeze water at night in order to cool the warm summer days (4, 7). This reduces the load on electricity powered cooling agents such as typical central ventilation systems. The building also puts employees in control of their surroundings. In order to increase personal comfort, occupants can easily operate windows and regulate the amount of natural lighting. Not surprisingly, the use of sunlight is popular in green building design as it reduces the use of energy for lighting and contributes to an open and natural interior atmosphere.

In addition, the building's heating, ventilation, and air-conditioning system delivers fresh air through a raised floor system (4). In this way, air is displaced in a room, "pushing it up and out of the building via return air and exhaust devices placed in the ceilings" (4). Furthermore, the underfloor HVAC system uses no ozone-depleting chlorofluorocarbons (1, 4). Another feature lies in the window glazing which mitigates the intensity of direct sunlight. Two familiar additions to the Hewlett Building include the use of motion sensors to shut down unnecessary lights when rooms are unoccupied, and photovoltaic panels on the roof (4). The building's systems were stringently tested upon installation and are checked



The six ice tanks cool the building during warmer days.

occasionally for high performance over time. An interesting, interactive and effective addition includes a red and green light system that monitors ventilation and air conditioning: red indicates that "closed windows will provide the greatest comfort and energy efficiency" (4). Such a system encourages employee participation in the green "process" as workers feel a sense of duty and responsibility when they see an open window and a red light.

The building however did not gain any points for renewable energy (possible 3 points). This is "green criticism" of the building. It fails in this respect because the photovoltaic panels on the roof are not sufficient enough to cover even 5 percent of the building's energy costs. More could have been done in this area, whether by incorporating more solar panels or by attempting to install wind turbines (13).

A little more than a third of the possible 13 points were awarded to the Hewlett Building for their use of materials and resources. The building failed to reuse the existing property to the extent required by LEED standards. It was also not built with rapidly renewable materials. Aside from this however, recycled substances (64 percent) were readily used and construction waste was diverted by 70 percent, although 75 percent is the minimum for a point in this category (3, 12). Also, about 30 percent of the building materials were manufactured locally, within 500 miles (3). By using local products, energy was not wasted in transportation and the environmental impact of cars and trucks is minimized.

The designers also used certified materials that were evaluated on the basis of "performance, low embodied energy values, and their potential to be diverted from landfills at the end of their usable life" (3). The wall insulation is made of recycled denim, most likely coming from industry waste (7). More than 83 percent of all the wood-based products are certified which gained the building a credit towards their gold-level certification (3). This single point given to the use of "certified wood" reflects LEED's attitude towards sustainable forestry and harvesting practices (12).

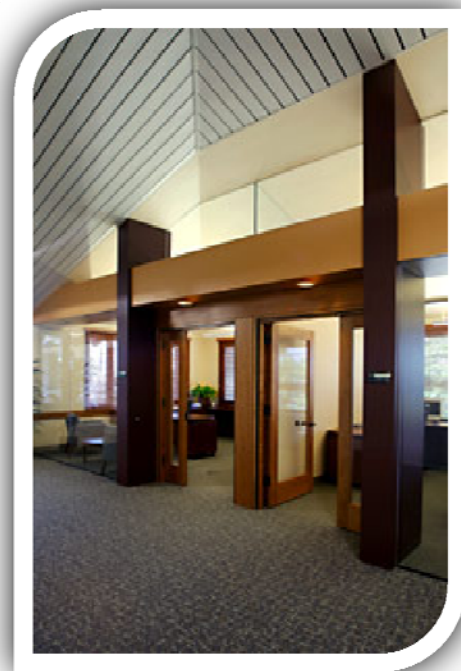
The Hewlett Foundation's strongest commitment was given to their employees. From the beginning, owners and designers wanted to max out the Indoor Environmental Quality category of the LEED scorecard, a goal that was achieved. Employee health and happiness were important design considerations so it was no surprise that every worker

had access to fresh air and views. "We got every credit there is in indoor environmental quality, to make sure we never had to deal with mold or other sick-building issues," Ms. Conover says. (7) As touched upon earlier, the workers were given complete control over their microenvironments; this did not only allow for personal tweaks in temperature and lighting but also encouraged employee interactivity with the building. For example, in-floor air diffusers let workers control the volume and angle of air in their own space (8). All workstations also have task lighting and access to an operable window which gives them access to a view (10). In addition, skylights outfit the ceiling and glazed office partitions and doors promote a sense of openness among workers.

As for employee health, low-emitting materials were utilized in the building process. All adhesives, sealants, paints, carpets and composite wood emit low or no volatile organic compounds (VOCs, 10). VOCs are harmful in the long-term, the most notorious example being the negative effects of prolonged mercury exposure, and contribute to the phenomenon of "off-gassing". Designers diminished this by aiming to get rid of the "new building smell", an indicator of off-gassing. The use of toxic and hazardous chemical was also prohibited, even for maintenance (10).

A portion of the LEED scoreboard is dedicated to innovation and design. This is LEED's attempt at "extra credit" as some of the LEED points are virtually impossible for certain buildings to achieve (such as urban redevelopment for the Hewlett Building). However, in this category, the designers and architects can flex their imaginative muscles and earn up to five points towards accreditation. The Hewlett Building maxed out in this sector.

Novel features included a non-petroleum alternative to asphalt paving which used over 50 percent pine-pitch and rosin based paving materials (1,



A lot of attention was paid to the interior design so as to provide a healthy and open environment for workers.

6). This asphalt alternative is 20 degrees cooler than typical asphalt and more importantly, does not contaminate the surrounding earth with hydrocarbons (1). It was mentioned earlier that toxic materials were forbidden for use even by maintenance workers. In fact, the building was able to avoid problems in this region by implementing a sustainable cleaning and purchases practice which led to another point in innovation.

Another LEED credit arrived post production. The building was used as a teaching tool; it was one of the first superbly green buildings in the United States. Therefore, proactive programs to host community and professional groups including building tours, LEED presentations, and materials sample boards were highly applauded by LEED specialists (6).

The LEED standards used to build the Hewlett Building proved to be a successful framework for the building's design team even though the framework could be limiting at times. For example, there are no credits awarded for good team work and careful planning. Many a times, projects fail due to lack of communication between designers. For the Hewlett Building, the entire team of eleven firms remained in constant contact using a program called AutoDESK, a plan that lead to few flaws in the final production (8). Nonetheless, by using LEED's scorecard, the Hewlett Foundation was able to benefit from its positive (or minimally negative) environmental impact, increased employee health and fervor, and also from the indirect and direct economic benefits whether these be because workers are using less "sick days" or the water bill is 15 percent lower than normal. Admittedly the building did cost about 15 to 20 percent more to build with the LEED standards but owners and designers both agree that the costs were easily worth it (7). For example, a study by the David & Lucile Packard Foundation showed that the energy consumed by a "market" building is typically three times that of a gold-certified building. In this case, these upfront costs were negligible due to the long term benefits. As Mr. Lorey, a worker with the foundation points out, the biggest impact he noticed was that people were staying later (7).

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Note:

This paper's organization is based on the actual LEED v2.0 scorecard used for the Hewlett Foundation's building (ref. 12).