



Lighting upgrades (before, left; after, right) have provided many benefits in addition to improved energy bills.

Pool: Our first lighting upgrade in the early 1990s was great for efficiency, but added little to spatial aesthetics. So we hired a lighting designer with upgrade expertise. Because of his advice, we now use more indirect light than in the previous upgrade.

The lighting upgrade in our third building took beauty into account and even won an honorable mention for the designer (David Rodstein of Rodstein Design in Philadelphia) in a regional lighting-design competition, while also reducing energy costs.

Our results clearly justified the choice of indirect versus direct lighting. The change wasn't quite as extreme as going from prison-yard to cathedral lighting, but that's the kind of difference it made.

E&EM: What benefits do you expect to accompany the lower utility bill?

Pool: A more beautiful and elegant building, visually. Better light quality, thus a more productive and happier tenant population. Less eyestrain and fatigue. More love-at-first-sight responses from prospective tenants.

E&EM: Do electricity consumption patterns still provide you with as much valuable

information in regard to energy use and savings as they did in the past?

Pool: The staggered installation of our lighting and mechanical upgrades in recent years has made it no longer possible to see their effects just by looking at electricity consumption histories — all the more so because our fourth building uses natural gas for heating. So we are content to rely on the knowledge — from the relatively pure experiment we conducted in 1992 and 1993 — that we pay about \$5/day (on average over all days in a year) per 1,000 sq.ft. for energy if we stick with 1970s technology and cut that by about 50-55% if we upgrade to modern technology.

E&EM: How much then would you be willing to spend on more energy upgrades?

Pool: Here's my view: Upgrades return their investment about two-fifths in energy savings and about three-fifths in improved comfort, beauty, productivity, flexibility, longevity, reduced maintenance expenses, and creative excitement (that's a highly intuitive allocation!). We judge real estate investments according to a prevailing capitalization