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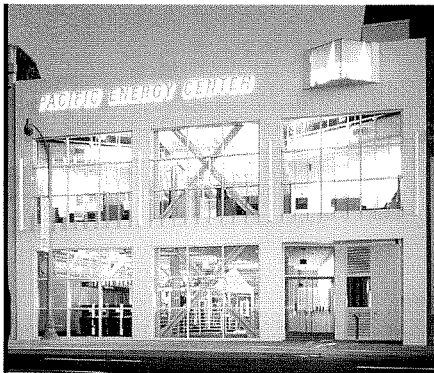


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On the Energy Conservation Front

Charles C. Benton, Robert A. Marcial



(Above) Energy center facade. (PG&E Energy Center)

(Below) Designer exploring daylighting issues with a scale model during an educational seminar. (PG&E Energy Center)



For a decade the country's domestic power utilities have been active promoters of energy conservation. From their perspective, encouraging the wise use of energy is more palatable than facing the rigors of building new generating plants.

The utilities encourage conservation through "demand-side management" programs, efforts to shape behavior on the consumer side of the meter. Pacific Gas and Electric, the nation's largest utility, offers programs ranging from energy information labels to rebates on high-performance windows. Among its most interesting and speculative efforts is the PG&E

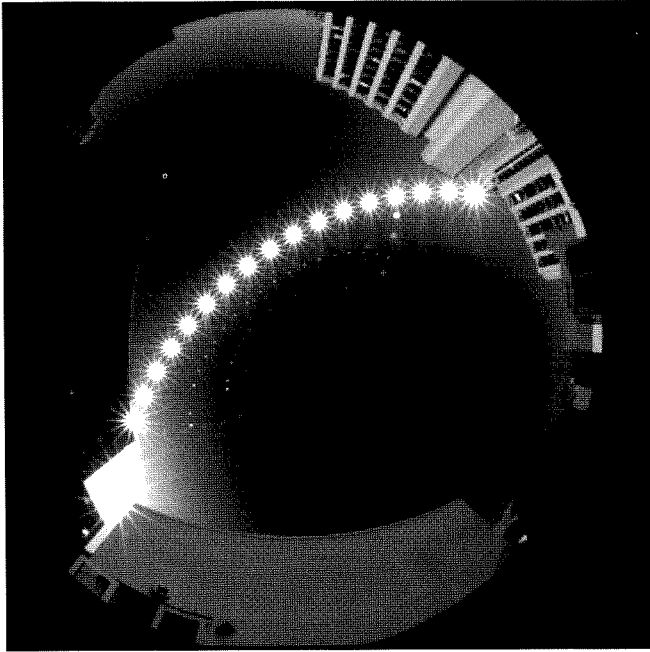
Energy Center, a workshop that assists building professionals in matters of energy efficiency. Given that buildings consume 60 percent of California's electricity, this service seems well targeted.

The center emerged from collaborative discussions involving the California utilities, regulatory agencies and environmental

advocacy groups. Its program — guided by an advisory committee of design practitioners, academics, building scientists, utility managers and environmental advocates — coalesced around the roles of academy, toolbox and advisor. The planners decided the center's services would be free of charge and specified an approach that addressed architectural space making and the well being of occupants as important corollaries of energy efficiency.

Since opening in December, 1991, the center has hosted more than 30,000 visits by building professionals and their clients. In the role of the academy, the center has presented more than 200 seminars and lectures, ranging from brown-bag lunch presentations by building scientists from nearby Lawrence Berkeley Laboratory to multi-day courses on electric lighting fundamentals staged by the Illuminating Engineering Society. Classes are supported by permanent and rotating exhibits that demonstrate topics from first-order principles of lighting and thermal dynamics to the latest energy-efficient hardware. Perhaps the greatest endorsement for this continuing education program comes in the consistently high demand for the center's offerings — workshops fill within days of their announcement.

As a toolbox the center provides a "back office" previously unavailable to



(Left) Multi-exposure, 180-degree fish-eye photo showing the path of the sun every 30 minutes during the summer solstice. Photo taken from energy center rooftop.
(Robert A. Marcial)

(Below) Detail of heliodon axes: latitude, time of day, month of year.
(Robert A. Marcial)

most practitioners. For example, there are two mock-up spaces with ceiling heights, interior finishes, fenestration and electric lighting that adjust to allow full-scale, experimental comparison of design alternatives. Architects use the center's custom-built heliodon, a machine that accurately simulates sunlight patterns on three-dimensional models, to examine shading performance and solar access. Professionals interested in evaluating physical building performance can borrow from the fine collection of data acquisition equipment in the center's tool lending library (light meters, amp meters, temperature/relative humidity sensors). Patrons also have access to the resource center, a collection of technical literature and computer software staffed by two research librarians.

As advisor, the center offers a technical staff for guidance on project-specific questions. In particular, the center encourages a multidisciplinary review

of building plans during the schematic design stage and a follow-up review on issues related to the initial tuning of building systems.

The PG&E Energy Center offers lessons for those contemplating similar efforts. The center has been well received by building professionals, its liveliness confirming a need. Also valued is the provision of a central setting for the Bay Area's energy conservation activities and the center's role as a symbol for the cause. In retrospect, a key strength of the center is the breadth of collaboration that guided its formation.

It is perhaps unfair, and potentially unwise, to expect utilities alone to fund such efforts in a changing regulatory environment. The National Energy Policy Act suggests an alternative model, federally-funded regional energy centers managed by collaborative groups, and while this program remains unfunded, it offers much promise.

