

The Leighty Foundation: Investing in Capital Projects

The Leighty Foundation mission:

To carry on the Leighty family legacy of service and stewardship by leveraging our time and talents, as well as our financial resources, primarily in the areas of Earth Protection, education, and the promotion of philanthropy and volunteerism.

The Leighty Foundation invests in grants and contributions to a variety of organizations working diligently, to deal with today's problems and opportunities, to advance the Foundation's dedication to sustainability--- meeting our needs without compromising the ability of future generations to meet their needs.

Although not a major focus of ours, we have recently invested in the capital campaigns of a few non-profit organizations. Usually, the grantee had chosen the site and the designer(s), and had designed the project before they contacted The Leighty Foundation about funding.

We believe our investments in capital facilities should be consistent with, and supportive of, our interests in energy conservation and efficiency. We feel this can best be done with a focus on replacing fossil energy sources with renewable energy sources, on public transportation, and on community and land use planning to prevent loss of farmland and wildlife habitat to urban sprawl. When we choose to consider capital projects funding, we want our investment in the project to minimize long-term cost to its human users, and to Earth. Therefore, we wish to be involved— if at all-- in capital projects at their earliest planning stages.

We are pleased to be able to share these thoughts with other foundations, with those considering a capital project, and with building and community design professionals. We hope to help build a mutual planning and funding interest among grantors and grantees, so that capital projects are designed and built that are ever more sustainable; that build long term Community. We are not professional planners or architects, and wish to learn as much from you as you may learn from us.

One of our board, Bill Leighty, is especially interested and informed in energy conservation, community and building design, and capital projects design. He has spent time with potential grantees suggesting improvements they might make to building design. Please contact him directly, if you wish to discuss this paper or a specific project:

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Currently, we consider these features of capital projects:

Land use:

1. Will the facility be built on redeveloped land, rather than on raw land now used, or valued, for agriculture or wildlife habitat?
2. Will the facility be built well within the urban boundary, rather than on the periphery of the community, or beyond?
3. Will the facility be built close to existing public transit routes and stops? Will staff and clients easily access the facility with transit? Will it stimulate improved transit?

Siting:

1. Does the site have an unobstructed southern exposure, except for deciduous trees, to facilitate passive or active solar gain and / or photovoltaic (PV) generation?
2. Will the facility be positioned and oriented on the land so as to take advantage of:
 - a. passive or active solar energy for heating and daylighting and / or photovoltaic (PV) generation?
 - b. "GeoExchange" (geothermal: ground-source heat pump) energy for heating and cooling;
 - c. landscaping and tree planting to shade the building and provide garden space?
3. Will minimum site area be dedicated to parking, to encourage public transit use?

Building design, if the project includes a building:

(This is not an exhaustive list; it may be climate-specific.)

1. How well is the building envelope insulated? R-values of walls, roof, and windows?
2. What is calculated annual energy consumption, btu / square foot / year? How good is that?
3. Is the major fenestration (window area) oriented south-facing, and designed to capture winter solar energy and reject summer solar energy? Low-e coatings on glass? Are light shelves employed? Are deciduous trees shading the south windows?
4. Is most of the interior lighting:
 - a. fluorescent, with high-efficiency, high-frequency electronic ballasts and specular luminaires?
 - b. controlled by lighting-level sensors, to switch off or dim lights as daylight increases?
 - c. fitted with high-CRI, low-mercury-content lamps?
5. Do exterior building, grounds, and parking lighting use minimum energy consumption, HID or other plasma lamps, shielded so that all light is directed downward?
6. Does the heating, ventilating, air-conditioning (HVAC) system use a "smart" control system and heat recovery ventilators, or ventilating heat pumps, to recover energy from exhaust air?
7. Will life-cycle-costs (LCC), be included in designers' calculations? Will external costs of electric energy generation, and of other energy use, be included in the LCC analysis? These external costs include carbon dioxide (CO₂) emissions, acid rain, depletion of non-renewable resources, etc. Is the building designed to minimize LCC? Over what time period; at what discount rate?

Commissioning: Does the potential grantee have a strategy to assure the building owner that the building envelope and lighting and HVAC equipment, systems, and controls are working together as intended, transforming the building and site into an integrated whole?

We have found that our early involvement in considering a project for financial support is important. We hope that considering the above questions might nudge a capital project toward more sustainable design and function within a Community.

We imagine other charitable foundations have similar experiences and interests, and have felt similar disappointments when asked, late in a project, to fund a facility which compromises some of their other funding interests.

We wish to promote, through better design, “high-performance” buildings, which:

- ❑ maximize operational energy savings
- ❑ improve comfort, health, and safety of occupants and visitors; sense of health and well-being; tangible increases in worker productivity
- ❑ limit detrimental effects on Earth-- the environment
- ❑ raise expectations for the facility’s performance among the various participants in its design; create partnerships in design and construction process for environmental and economic goals

The value of high performance buildings is easily underestimated by traditional accounting methods which fail to recognize “external” local, regional, and Earth-wide costs and benefits.

“Internalizing” these external, but very real, costs and benefits is an appropriate challenge for the philanthropic, and independent, sectors.

For further information, we recommend the resources and websites, on the following pages, for suggestions for building design for sustainability and energy efficiency. We can also e-mail you these resources as MSWord files:

- ❑ State Energy Efficiency Design.doc State of Oregon’s extensive checklist of energy efficiency improvements that might be considered and implemented via engineering changes in the design process for buildings.
- ❑ CommissioningTLF.doc How commissioning can improve sustainability: a quality-control tool to assure that equipment and systems will deliver the performance for which they are designed.

From *Lessons Learned: Four Times Square (the new Conde Nast Building, NYC)*:

“The great news is that enhanced environmental responsibility in high-rise construction does not have to significantly increase the cost of the project” ---

Dan Tishman, President, Tishman Construction, NYC

“Discovering the DOE-2 model was invaluable. I can’t imagine doing this kind of project without it ever again... we can actually prove to our clients how much money they will save” ---

Robert Fox, Principal, Fox and Fowle, architects of Four Times Square

Bibliography and Resources: an incomplete catalogue; suggested additions welcome:

- Periodical: “Energy User News”, Business News Publishing Co. II; subscription free to the trade.
www.energyusernews.com
- Book: *High Performance Building Guidelines*, City of New York, Department of Design and Construction, April 99. Encyclopedic and useful. \$25.00 + \$3.75 S+H from City Store, 212-669-8246, M-F 9-5
www.nyc.gov/citystore
- Book: *Design Smart: Energy Efficient Architectural Design Strategies*, B.C. Hydro, Customer Services Dept. The US price is \$35.00 + \$4.00 shipping = \$39.00 in US funds. Phone: (604)224-9376 or 1-800-224-9376, FAX: (604)528-2290 or 1-877-528-2290, E-mail: customer.service@bchydro.bc.ca
- Book: Townsend, Amy, *The Smart Office: Turning Your Company On Its Head*. Olney, MD: Gila Press, 1997.
- Book: Samuel R. Staley, J.G. Edgens, G.C.S. Mildner, *A Line in the Land: Urban growth Boundaries, Smart Growth, and Housing Affordability* October '99, Reason Public Policy Institute, 3415 Sepulveda Blvd., Suite 400, Los Angeles, CA 90034 310-391-2245
- *Green Building Resource Guide* contains a database of more than 600 green building materials useful to architects, builders, and other design and building professionals:
www.greenguide.com
- *Sustainable Site Design Philosophy*, by Andropogan Associates, Ltd.
www.nps.gov/dsc/dsgncnstr/gpsd/ch5.html
- *Timesaver Standards for Landscape Architecture*, Harris, Charles and N. Dines (eds), McGraw-Hill Book Co, New York, 1988
- *Sustainable Design Guide*, Hellmuth, Obata, and Kassabaum, Inc. (self-published) Washington, DC, '98
- *Caring for the Land*, American planning Association, PAS report 328, Chicago, 1977
- *Site Planning*, Lynch, Kevin, MIT Press, Cambridge 1984
- *Design With Nature (2nd Ed.)*, Ian MacHarg, Natural History Press, New York, 1979
- *Design With Climate*, Olgyay, Victor
- *Sustainable Building Technical manual: Green Building Design, Construction, and Operations*, Public Technology, Inc., US Green Building Council, USDOE www.usgbc.org
- *Guiding Principles of Sustainable Design*, US Department of Interior, National Park Service, GPO, Denver, 1993
- *GBC '98 Building Assessment Manual – Volume Two: Office Buildings*, Raymond J. Cole and Nils Larsson, 1998
- *Navy Whole Building Design*, US Navy www.psic.org/navy-wbdg/index.htm
- *Designing Low-Energy Buildings with ENERGY-10*, NREL, LBNL, Berkeley Solar Group, Passive Solar Industries Council, Washington, DC, 1997 www.PSIC.org
- *The Energy Design Handbook*, Donald Watson, editor, AIA Press, Washington, DC 1993
- *Climate Considerations in Building and Urban Design*, Govoni, Baruch, John Wiley and Sons, New York, 1997
- *Energy Efficient Design and Construction for Commercial Buildings*, Steven Winter Associates, Tuluca, Adrian (lead author), McGraw-Hill, New York, 1997 ISBN 0-07-071159-3
- *Life-Cycle Costing for Design Professionals, (2nd Ed.)*, Kirk, Stephen and Dell'Isola, Alphonse, McGraw-Hill, New York, 1995
- *Daylighting Performance and Design*, Van Nostrand and Reinhold, New York, 1995
- *Architect's Handbook of Energy Practice: Daylighting*, AIA, Washington, DC 1992
- *Illuminating Engineering Society of North America (IESNA) Lighting Handbook (8th Ed.)*, 1993, IESNA, 120 Wall St., New York 10005-4001, ISBN 0-87995-102-8
- *Photovoltaics in the Built Environment, a Design Guide for Architects and Engineers*, NREL, USDOE / GO publication # 10097-436, Sept 1997

Bibliography and Resources (continued):

- *Daylighting Goes Mainstream: How to Daylight Every Office Building*, Daylighting Collaborative, 595 Science Dr., Madison, WI 53711, 608-283-4601, www.daylightingcollaborative.org
- *Solar Electric Buildings: An Overview of Today's Applications*, NREL, USDOE / GO publication # 10097-357, Feb 1997
- *Guideline for Commissioning of HVAC Systems*, ASHRAE Guideline 1-1996, ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers), Atlanta, GA
- *An Office Building Occupant's Guide to Indoor Air Quality (IAQ)*, USEPA pub # 402-K-97-003 Also see pub # 402-K-98-001. www.epa.gov/iaq/base/baqtoc.html
- *Noise Control in Buildings: A Guide for Architects and Engineers*, Harris, C.M., McGraw-Hill, New York, 1994
- *Green & Clean: The Designer's Impact on Housekeeping and Maintenance*, Ashkin, Stephen, Rochester Midland Corp., presented at 21st Century Outlook Conference, AIA Green Building Council and USDOE, Nov 6-9, 1997, Miami, FL
- *Choosing Clean Power: Bringing the Promise of Fuel Cells to New York*, Mar 1997
 - NRDC (Natural Resources Defense Council) web site contains many helpful references about their own eco-office: www.nrdc.org/sitings/indexsch.html
 - Rocky Mountain Institute www.rmi.org
 - EPA Energy Star www.epa.gov/energystar/
 - American Solar Energy Society www.ases.org
 - Daylighting Collaborative www.daylightingcollaborative.org
 - UCS (Union of Concerned Scientists) www.ucsusa.org
 - Worldwatch Institute www.worldwatch.org
 - Environmental Law and Policy Center, Chicago www.elpc.org
 - The Oikos Green Building site has an online searchable database of green building material: www.oikos.com
 - U.S. Green Building Council: www.usgbc.org

The LEED (Leadership in Energy and Environmental Design) Green Building Rating System[®] is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Members of the U.S. Green Building Council representing all segments of the building industry developed LEED and continue to contribute to its evolution. LEED standards are currently available or under development for: New commercial construction and major renovation projects (LEED-NC), Existing building operations (LEED-EB), commercial interiors projects (LEED-CI), Core and shell projects (LEED-CS), Homes (LEED-H), and Neighborhood Development (LEED-ND)

- Environmental Building News www.ebuild.com
- American Institute of Architects (AIA) Committee on the Environment homepage: www.e-architect.com/pia/cote