Lighting options

Green lighting

From the perspective of a building occupant, a well designed lighting plan should provide an indoor environment that promotes the health and wellness of the building occupants. A building owner benefits from the same well designed lighting plan in at least two ways. First, a healthy and happy occupant is more productive. Second, a lighting plan that incorporates day lighting, task lighting, and a range of lighting controls will save money by eliminating energy usage for wasted and unnecessary lighting.

Day lighting

Provide daylight to majority of occupied spaces.

Adding windows, skylights, light tubes or heliostats can help maximize visual comfort for occupants and reduce costs associated with energy use. Energy savings can be realized from reducing the quantity of artificial lighting or providing controls that dim or switch lighting off automatically when prescribed daylight conditions are achieved. In some cases costs for heating and cooling can be reduced by allowing solar gain with the natural lighting in the winter or by eliminating heat gain from artificial lighting in the summer.

http://en.wikipedia.org/wiki/Heliostat

Provide views to exterior for majority of occupied spaces.

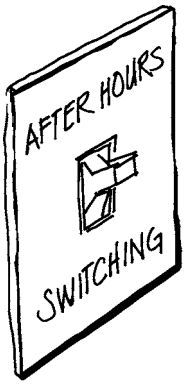
Careful design of a space can provide a layout that offers most or all occupants a direct visual connection to the surrounding environment from the occupied space contributing to their overall sense of health and wellness.

Task lighting

Task lighting is that which is provided for individual occupants to suit their specific needs while performing a specific task. Providing individual lighting devices at the occupants work station allows the occupant to control lighting levels in their work area to suit their needs contributing to their overall health and wellness.

www.puc.state.or.us/DAS/FAC/docs/Lighting_Level_Recommendati.doc

Lighting use and control



Providing manual lighting controls in conference rooms and other areas that aren't typically occupied all the time will allow the occupants to control the lighting in these areas on an as-needed basis. Similarly, providing these areas with automatic occupant sensors will allow the lighting to be off when the spaces aren't occupied. Timers can be used as well as dimmers to control and adjust lighting levels. These techniques will provide a cost savings by extinguishing unnecessary lighting.

http://www1.eere.energy.gov/femp/pdfs/light_controls.pdf

Light pollution reduction

Careful consideration should be given to the exterior lighting plan. The project should be classified according to the appropriate zone defined by the Illuminating Engineering Society of North America (IESNA), and the design should incorporate the requirements of that zone. In general only lighting necessary for safety and comfort should be used on the exterior.

http://www.iesna.org/

The Dark Sky Society provides excellent resources and recommendations describing the qualities of a good exterior lighting plan.

http://www.darkskysociety.org/handouts/LightingPlanGuidelines.pdf

For example, a proper lighting plan should reduce or eliminate light that crosses property boundaries. This light is typically a nuisance to adjacent property owners and is wasted in terms of electricity costs. It also contributes to glare and sky glow which in turn impair access to the night sky and disturb nocturnal environments.

Lamps

Compact fluorescent lamps (CFL)

Compact Fluorescent Lamps CFLs offer a service life that is approximately 8 to 15 times that of an incandescent lamp depending on the model. Further, they use approximately 20 to 30 percent of the energy of a comparable incandescent lamp.

http://en.wikipedia.org/wiki/Compact_fluorescent_lamp

LED Lamps

The technology for solid state lighting continues to advance at a rapid pace, and new lamps continue to be brought to the consumer for specific applications. Currently, LED lamps http://en.wikipedia.org/wiki/LED_lamp offer longer service life and higher energy efficiency than fluorescent lamps but are also more expensive. It is recommended to use LED lamps in appropriate fixtures as trapped heat can eliminate both the efficiency and the long life of an LED bulb.

http://www1.eere.energy.gov/buildings/ssl/

Exit signs

Light emitting capacitor exit signs are the one of the latest in a series of exit light efficiency improvements. They are anticipated to last 30 years and draw even less power than an LED lamp.

http://en.wikipedia.org/wiki/Light_emitting_capacitor

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