

Daylighting designs and strategies for better lighting.

By reducing the need for electric light, daylighting can lead to significant energy savings. Daylighting can also lower costs by reducing cooling load, as electric lighting produces plenty of heat.

In addition to cost savings, natural lighting generally improves occupant satisfaction and comfort and retail sales. A number of studies have suggested that daylighting boosts productivity and health in schools, office buildings and other commercial establishments.

Designing windows for daylighting

A standard window can produce useful illumination to a depth of about 1.5 times the height of the window. This can be increased with light shelves or other reflector systems. In general, higher windows provide deeper light penetration. Punched window openings (a series of small, square windows) result in uneven illumination and harsh contrast between the window and adjacent wall surfaces. Horizontal strip windows provide a more even light distribution.

Top-lighting strategies

Large, single-level floor areas and the top floors of multistory buildings can benefit from both of these common top-lighting methods.

Skylights are the most efficient way to provide direct sunlight to a space. Even a completely overcast sky provides 5,000 to 6,000 foot-candles of illumination—100 times more light than needed for daylighting. High-performance skylight designs incorporate reflectors or prismatic lenses, which reduce peak daytime heat gain while increasing early and late afternoon daylight contributions. Only 3 to 4 percent of roof area is optimal for skylights.

Clerestory windows are located high on an interior wall. South-facing clerestories can be effectively shaded from direct sunlight by a properly designed horizontal overhang. In this design, the interior north wall can be sloped to reflect the light down into the room. Light-colored overhangs and adjacent roof surfaces can be used to enhance reflection.

Find the right lighting controls for your facility and start saving.

Contact your account manager, call 1-800-787-1706, or email efficiency@nationalgrid.com.