Daylighting Facts and Figures

Energy Savings

- The value of energy savings from daylighting is far overshadowed by the value of the predicted increase in sales due to daylighting. By the most conservative estimate, the profit from increased sales associated with daylight is worth at least 19 times more than the energy savings.
  ("Integrated Energy Systems: Productivity and Building Science" Report prepared for the California Energy Commission Public Interest Energy Research Program by the New Building Institute Inc., October 2003)

- Natural lighting for outdoor gear and clothing retailer REI helped the store realize a 26% reduction in energy usage.
  (Print, August 2005)

- The Federal Energy Management Program reports that 25% to 50% energy savings can be achieved with advanced lighting equipment and that number can be cut in half again when daylighting is added to the project.
  (Consulting Specifying Engineer, December 2004)

- The savings in energy from daylighting are so demonstrably significant that the revised California building code, Title 24, requires every large-space big-box retailer, warehouse or low-rise facility with an area greater than 25,000 square feet directly under a roof with ceiling heights greater than 15 feet and a lighting power density greater than 0.5 watts per square foot to light at least 50% of the area with daylight.
  (Journal of Property Management, July 2004)

- The U.S. Department of Energy's (DOE) Federal Energy Management Program reports that daylighting can significantly cut lighting energy use for lighting building interiors, sometimes by up to 75% or 80%. The DOE's Renewable Energy Laboratory's Thermal Test Facility in Golden, Colo., was designed to provide natural lighting, allowing it to use 75% less energy for lighting than a building without daylighting features. Except for the central service area, the facility is entirely daylit, which has also decreased the energy load imposed on the building's mechanical cooling system. The DOE reports that for many commercial buildings, the total energy costs can be reduced by as much as one-third through the optimal use of daylighting strategies.
  (Federal Energy Management Program Newsletter, March/April 2002)

- According to the Lighting Research Center at Rensselalaer Polytechnic Institute in Troy, N.Y., a sample calculation shows that energy costs saved per year can be approximately 25 cents per square foot of daylit floor area. This assumes that there are 260 working days per year, electricity costs 10 cents per kilowatt hour, the daylighting system turns off the lights five hours per day, and the connected lighting load is two watts per square foot.
  (Energy User News, August 2000)

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- According to the Wisconsin Daylighting Collaborative, about 86% of electricity in traditional buildings goes for light, fans and cooling. A cool daylighting project can cut these costs by more than 50% by reducing electric lighting, because daylight produces less heat per unit of illumination than most light sources. The Collaborative also notes that the demand savings are more important than the energy savings since daylighting provides energy usage reduction at the most important time – during peak hours, when energy rates are the highest and daylight availability is the greatest.
  (Energy User News, April 2001)

- The Florida Energy Conservation Assistance Program reported that 29 Florida businesses that installed daylighting systems reduced daytime electric lighting consumption by an average of 93% while still achieving an average of 160 foot candles of light with a color rendering index of 98 in work areas.
  (Environmental Design & Construction, January 2001)

- The Utah State Department of Natural Resources office building in Salt Lake City utilizes daylighting as an integral part of an energy-efficient design that reduces lighting load by 51% and saves $50,000 a year over a reference-case building.
  (Environmental Design & Construction, January 2001)

- A daylighting test at the Federal Office Building in Oakland, Calif., reported up to 86% lighting energy savings and a daily cooling load reduction of up to 24%, with higher worker satisfaction.
  (Environmental Design & Construction, January 2001)

- According to BetterBricks Daylighting Lab in Seattle, the majority of commercial space in the United States is either one-story of within 25 feet of an exterior wall. This means that nearly every commercial building is a potential daylighting project. By combining daylighting with efficient florescent lighting and dimmers, often 75% of lighting energy consumption can be saved.
  (Environmental Design & Construction, September 2002)

- Outdoor gear manufacturer Patagonia, based in Reno, Nev., built its distribution facility to include skylights and lighting controls to conserve energy. The company reports that the lighting system in its distribution center is 30% more efficient than the standard center in terms of total energy consumption. The catalog company realized a return on investment in just three years.
  (Catalog Age, November 2001)

- According to the U.S. Green Building Council's Sustainable Building Technical Manual, well-designed daylighting can reduce lighting energy use by 50% to 80%.
  (Environmental Design & Construction, January 2001)

- NASA's Ames Research Center in Moffett Field, Calif., underwent an energy savings campaign in 2001 that included turning off lights to take advantage of natural light. As a result, energy costs were reduced by $30,000 to $65,000 a month.
  (Government Executive, September 2001)

- At Solatube International's headquarters in Vista, Calif., a retrofit to include 21-inch Solatube units has resulted in an 86.1% reduction in lighting costs for the daylit portion of the office and 68.2% reduction for the warehouse area.
  (Internal study report conducted by Solatube International Inc.)

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- A Southern Californian computer company constructed a new facility adjacent to its original facility that was nearly identical to the original except that it incorporated significantly more natural light. After two years, the company recorded a 62% reduction in electricity costs in the daylit building, which allowed a four-year payback on the initial extra capital costs. Additionally, absenteeism was reduced by 45% in the daylit building (a rate which has held steady for seven years).
  (Portland Business Journal, July 19, 1999)

- Lockheed Martin reports that after daylighting its facility in Sunnyvale, Calif., the company reaped annual energy savings of $500,000 (approximately 75% of its electric bill) plus 15% higher worker productivity.
  (Journal of Property Management, September 1998)

- Florida's Energy Conservation Assistance Program (ECAP) reports that 29 Florida businesses that installed daylighting systems with the organization's help reduced daytime electric lighting consumption by an average of 93% while still achieving an average of 160 foot candles of light with a color rendering index of 98 at work surfaces.
  (Environmental Design & Construction, January/February 1998)

- According to the Sustainable Building Industries Council in Washington, D.C., the average middle school that incorporates daylighting will save $500,000 over the next 10 years.
  (Article by Dan Reicher, Assistant Secretary of the U.S. Department of Energy, as written in the School Board Journal's "Learning by Design" website: www.asbj.com/lbd, 2002)

- Researchers at the Lawrence Berkeley National Laboratory in Berkeley, Calif., reported the successful use of daylighting techniques in the retrofit of the single-story Palm Springs Chamber of Commerce resulted in reduced annual electricity consumption of 47%. Additionally, the daylighting retrofit was met with positive feedback from the building's occupants, many who were often able to work with no electrical lighting at all.
  (Environmental Design & Construction, January 2001)

- According to the California Public Utilities Commission's Energy Design Resources website, an average grocery store could save about $16,000 a year (or 32 cents per square foot) in operating costs by utilizing skylights. A typical school could save $7,500 per year (or 23 cents per square foot), and an industrial building could save about 12 cents per square foot.
  (www.energydesignresources.com, 2002)

- In the Netherlands, the ING Bank built a new headquarters designed to favor natural lighting. Since opening in 1987, the bank has used 92% less energy than an adjacent bank constructed at the same time, saving the bank $2.9 million a year.
  (Charleston Gazette, March 12, 2000)