Ergonomic lighting considerations

**Lighting**

Many modern offices are overlit, causing tremendous energy waste, as well as glare and human discomfort.

68% of employees complain about lighting, 79% want to control their light, and 75% say they would be more productive.

People with controllable lighting rated tasks less difficult, felt more comfortable, and experienced a 35% to 42% decrease in energy use.

**Contrast**

- An aging workforce needs more lighting (contrast), especially task lighting.
- To correct contrast problems: Use ink instead of pencil for hard copy work; use white paper instead of colored; adjust photocopier exposure, monitor brightness and contrast; and decrease reflected glare.
- Data entry speed increases with an increase in illumination and/or contrast.

Contrast is the relationship between the brightness of an object and its background.

Contrast in text is important too

![Contrast requirements increase exponentially after age 40.](Image)

Contrast requirements increase exponentially after age 40.

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80% of workers experience glare.

Correct glare
- Use several low-intensity fixtures vs. one high-intensity.
- Use diffusers.
- Cover bare bulbs with louvers/lens.
- Use adjustable local lighting.
- Reposition light fixtures or work areas.

Monitors generate light; paper and surroundings reflect light.

Direct glare: natural light, overhead, and under cabinet lighting

Indirect glare: work surface, monitor, shiny surfaces, paper, and walls

**Overhead glare**
**Direct glare**
**Screen glare**

**Correct glare**
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Dual-lighting components
- Dual-component lighting schemes can positively impact comfort and performance while lowering energy consumption 30 percent to 40 percent.
- Conflict exists between lighting requirements for computer work and paper-based tasks.
- Proper light levels vary significantly with worker age and tasks.

- Cool color temperature lighting for paper-based documents. Warm color temperature for computer work.
- Ideal compromise: warm ambient lighting combined with cool task lighting.
- Position task light opposite the worker’s writing hand.

Single component:
- Too much light above eyes
- High energy waste

Dual component:
- Light level determined by user
- 30 percent to 40 percent less energy required

Multiple shadows create vision issues
Single shadow creates visual comfort