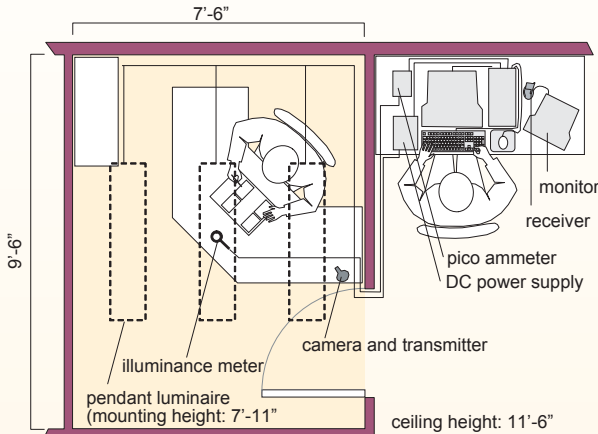


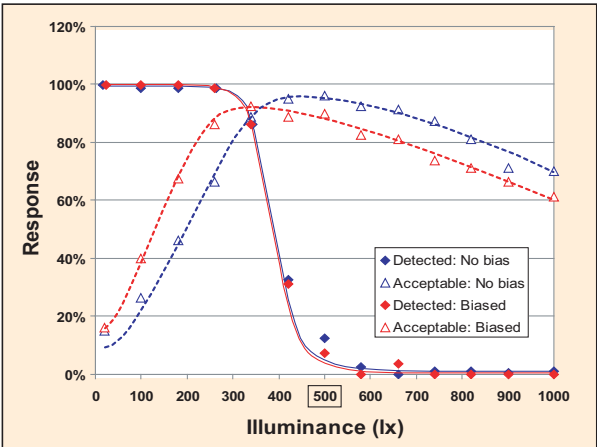
Understanding Light Levels for Load Shedding

Reducing the peak demand for lighting energy through load shedding can be an effective method of load management. It is important, however, to understand occupants' response and acceptance to dimming before such a load shed technique is applied to the real world.

The Lighting Research Center conducted a series of studies to investigate how much illuminance reduction is noticeable to occupants under various conditions. Studies also considered the level of acceptability of the illuminance reduction by the occupants.



The studies used a windowless office illuminated by three dimmable direct/indirect pendant luminaires. After adapting to the initial illuminance, subjects began a paper task or a computer task. Then, the illuminance either changed to a certain target illuminance level for a period of 10 seconds or remained the same. Subjects indicated whether the lighting level had increased, decreased, or remained unchanged and whether the illuminance change was acceptable.



Initial illuminance was 500 lx. Data points represent an average of paper and computer tasks.

Conclusions

- Fifty percent of the subjects could not *detect* illuminance reductions less than 15% for the paper task and reductions less than 20% for the computer task, regardless of the initial illuminance or dimming function. Those results are consistent with findings of previous studies.
- Eighty percent of the subjects *accepted* illuminance reductions less than 30% for the paper task and reductions less than 40% for the computer task, regardless of initial illuminance or dimming function.
- Educating users on the reasons for load shedding through lighting is an important tool in garnering acceptance for illuminance reduction. Biased subjects (educated about load shed benefits) accepted at least 10% more reduction of the initial illuminance.

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