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## Luminance-Based Lighting Control to Enhance Energy Savings

### Objective

To develop elements of a luminance-based lighting control system in order to accelerate the adoption of daylight-linked dimming of electric light.

### Background

Current daylight-linked dimming technology aims to maintain constant desktop **illuminance** (the amount of light falling on a particular point). Not only is this difficult to achieve, there is abundant evidence that constant illuminance is not what people prefer. Indeed, the human eye actually responds to **luminance** (the amount of light emitted or reflected by a surface in a given direction), and therefore we can expect that a luminance-based system would be better able to deliver the lighting conditions that people prefer, while also reducing energy use and electrical loads.

### Statement of Work

- Study the preferred lighting choices of occupants under a variety of conditions in NRC's daylighting laboratory
- Develop control algorithms based on this data
- Develop a concept for a luminance-based sensor system
- Build a demonstration system in a mock-up office

### Expected Outcomes

Control algorithms and designs for lighting control hardware will be documented in periodic reports and journal articles.

### Partners

Lawrence Berkeley National Laboratory and The Climate Change Plan for Canada, Technology and Innovation R&D Initiative (CCTI)

### Start/Expected Completion Dates

This project began in July 2005 and will be completed in 2008.

### Project Manager

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For more information, see [http://irc.nrc-cnrc.gc.ca/ie/lighting/daylight/luminance\\_e.html](http://irc.nrc-cnrc.gc.ca/ie/lighting/daylight/luminance_e.html)

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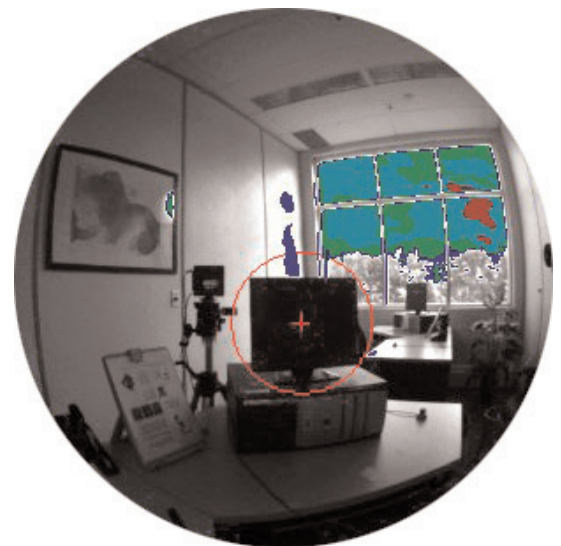


Image of an office where pixel grey value is proportional to luminance value. Pixels above a given luminance threshold are colour-coded.

