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LIGHTING CONTROL  
**INSTITUTE**

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**Why Dim?**

# Why Dim?

## Agenda

### What Impact Does Lighting Control Have on Commercial Buildings

- Costs / Revenues
  - Energy Savings
  - Availability of Power; Demand Response; Avoiding Penalties
  - Productivity Gains
  - Government Incentives
- Prestige
  - LEED Buildings
- Increased Utilization of Space
  - Vertical Market Specifics

# Why Dim?

## Why has Energy Usage Become Such a Hot Topic?

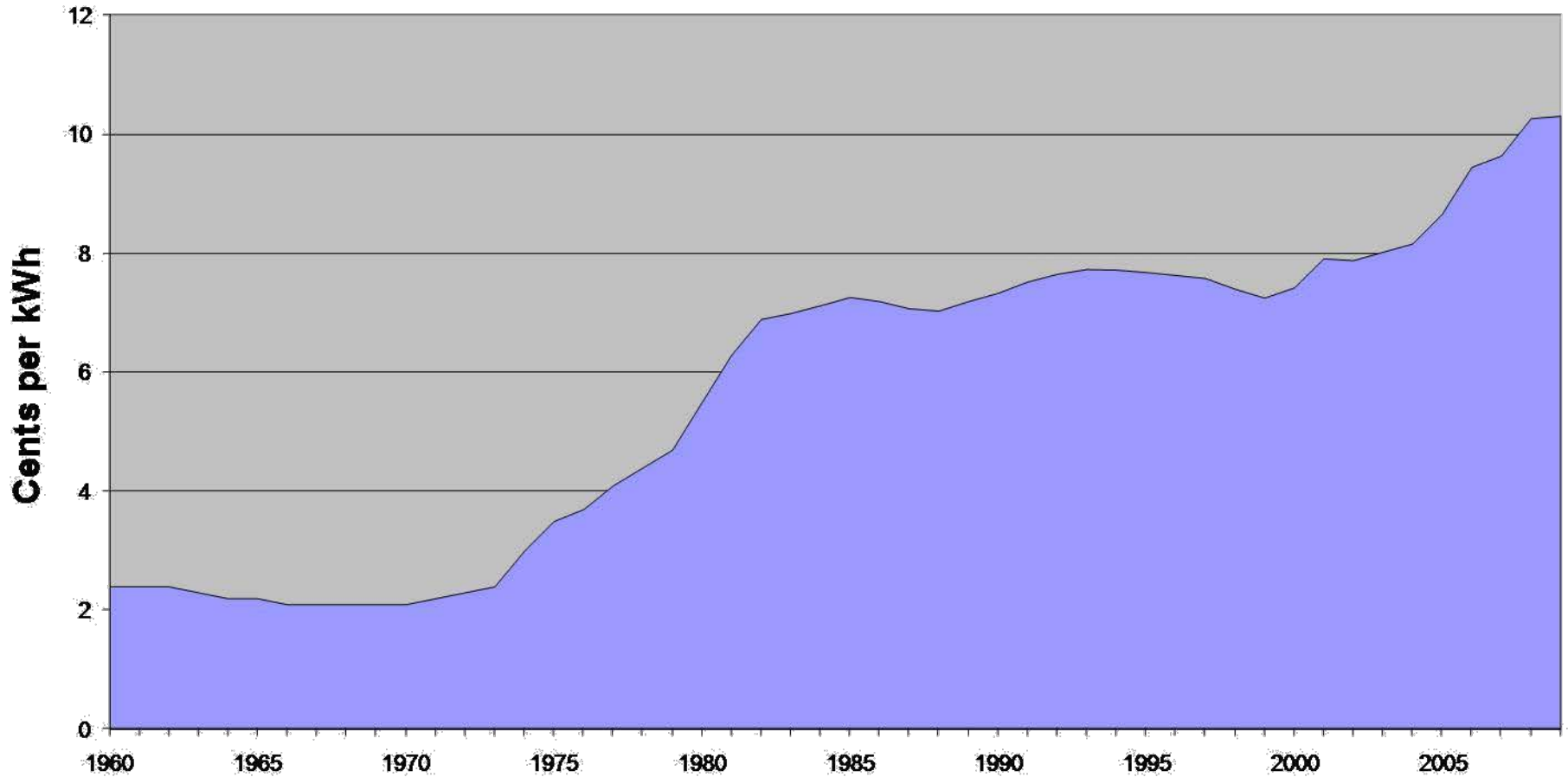
World energy consumption  
is projected to increase  
by 44% from 2006 to 2030

**Source:** U.S. Department of Energy



# Why Dim?

## Average Commercial Electricity Prices



Source: US Dept. of Energy, Energy Information Administration

# Why Dim?

## The Plan of Attack

*“The biggest gains in terms of decreasing the country’s energy bill, the amount of carbon dioxide we put into the atmosphere, and our dependency on foreign oil, will come from energy efficiency and conservation in the next 20 years.”*

Steven Chu  
Secretary of Energy



# Why Dim?

## Attack the Low Hanging Fruit

Energy saving strategies are often looked at with trepidation...

- Are they convenient?
- Is its impact worthwhile?

Energy saving strategies with lighting add convenience and have a strong impact to the bottom line:

### Annual electricity use in office buildings



Source: Energy Information Administration, 2003 Commercial Buildings Energy Consumption Survey, released September 2008

# Why Dim?

## Savings Can Be Easily Achieved

***“Most buildings don’t deliver the right amount of light where and when it is needed. Lighting is often set at a ‘worst case’ level, which is usually higher than desired.”***

– Stephen Selkowitz LBNL

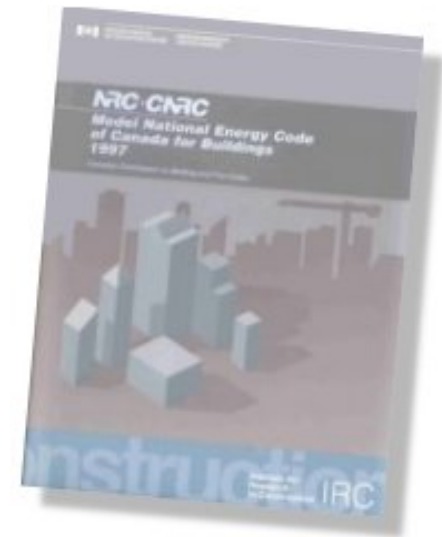
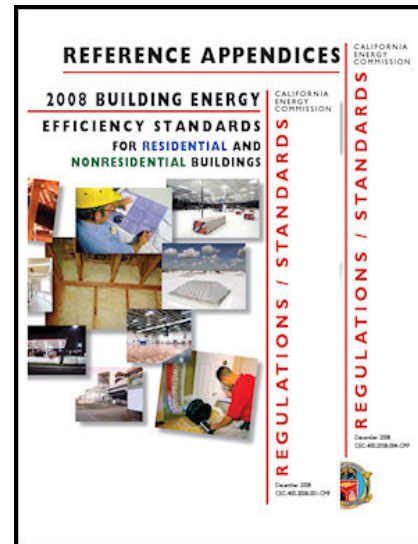
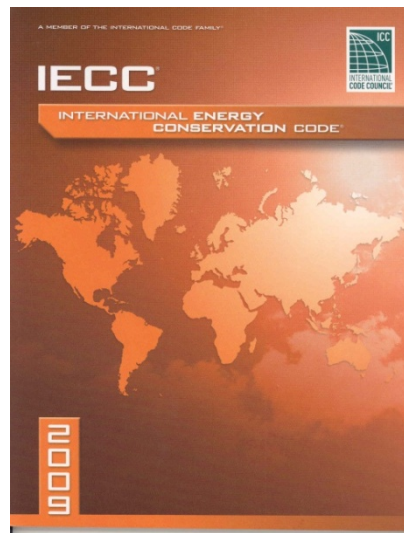
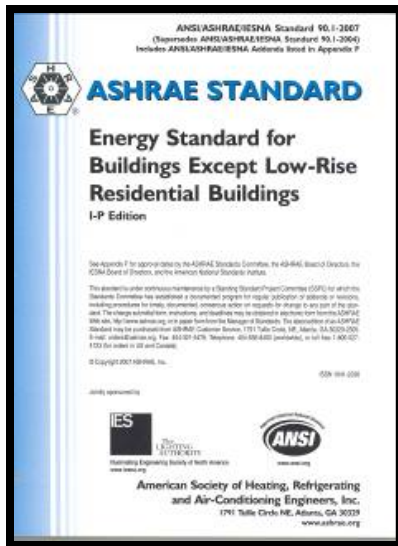


# Why Dim?

## ...You May Have to Do It Anyway...

### Upcoming Code Revisions

- Mandatory Lighting Control Requirements
- Watts / Square Foot Incentives





# Why Dim?

## Dimmers Save Energy

As the lights dim, less energy is used

- Incandescent
- Halogen
- Fluorescent
- LED

A Lutron commercial dimmer typically saves \$85.68 per year over a standard switch

Resources at [www.lutron.com/energy](http://www.lutron.com/energy)

- Energy Calculator
- White Paper: Financial Analysis



# Why Dim?

## How Does Lighting Control Help?

Dimmers save energy,  
but that's only  
a piece of the story...

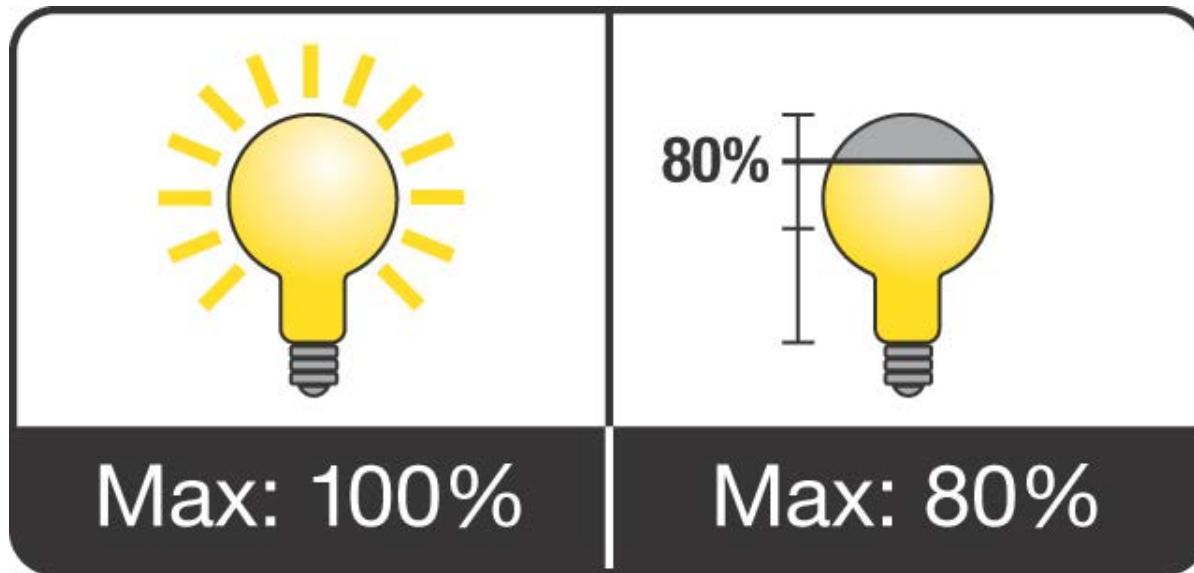
Lutron solutions incorporate  
as many as seven  
different strategies for  
saving energy...



# Why Dim?

## High-End Trim/Tuning

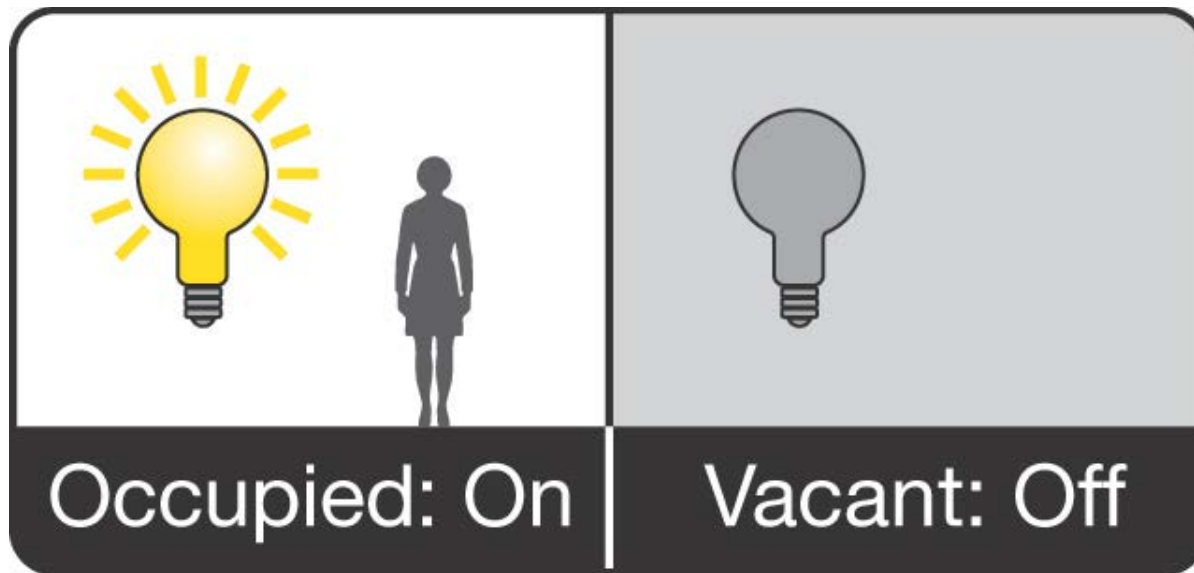
Limit the maximum light output of fixtures



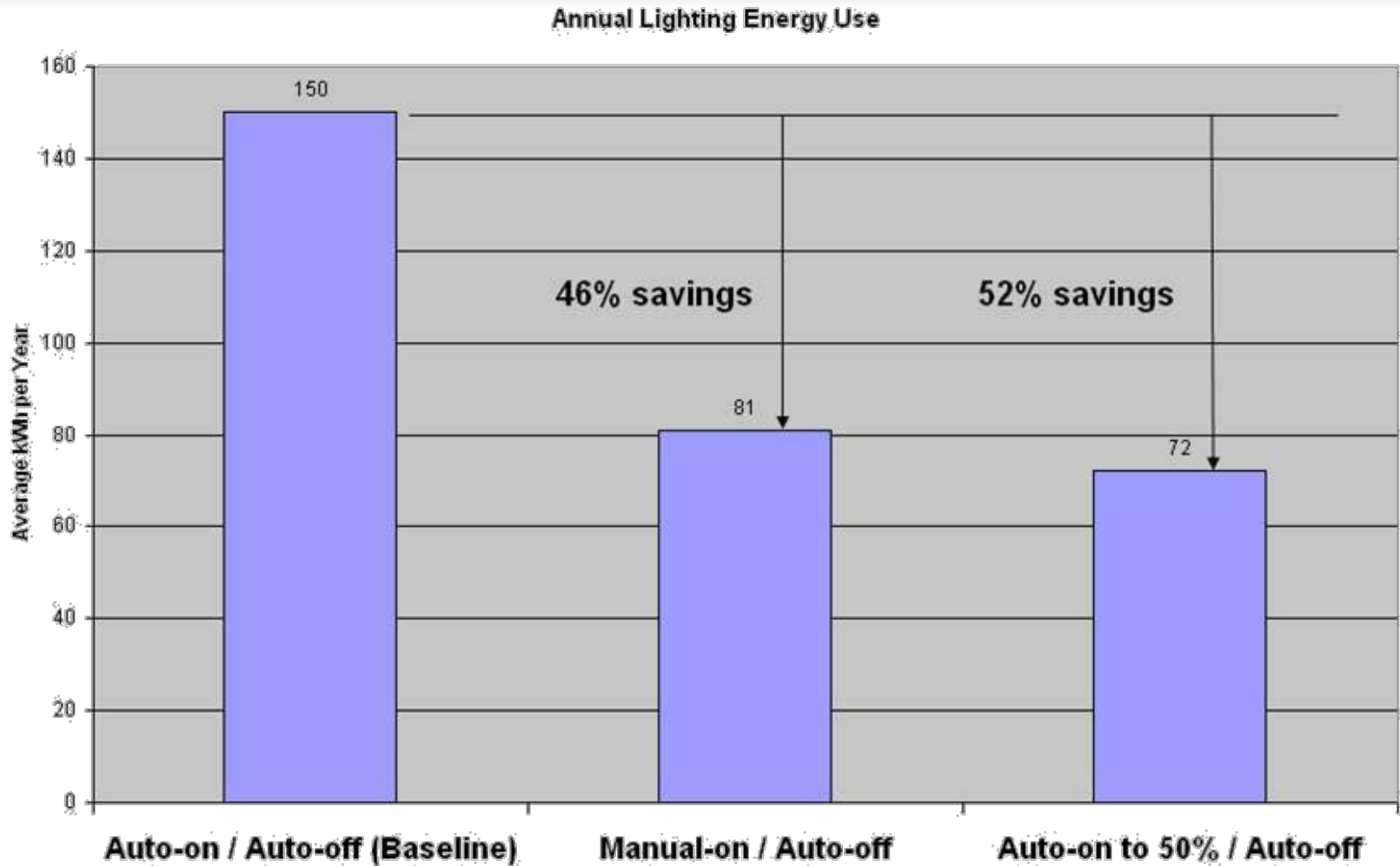
# Why Dim?

## Occupancy / Vacancy Sensing

Turns lights off when people vacate the space



# Why Dim?

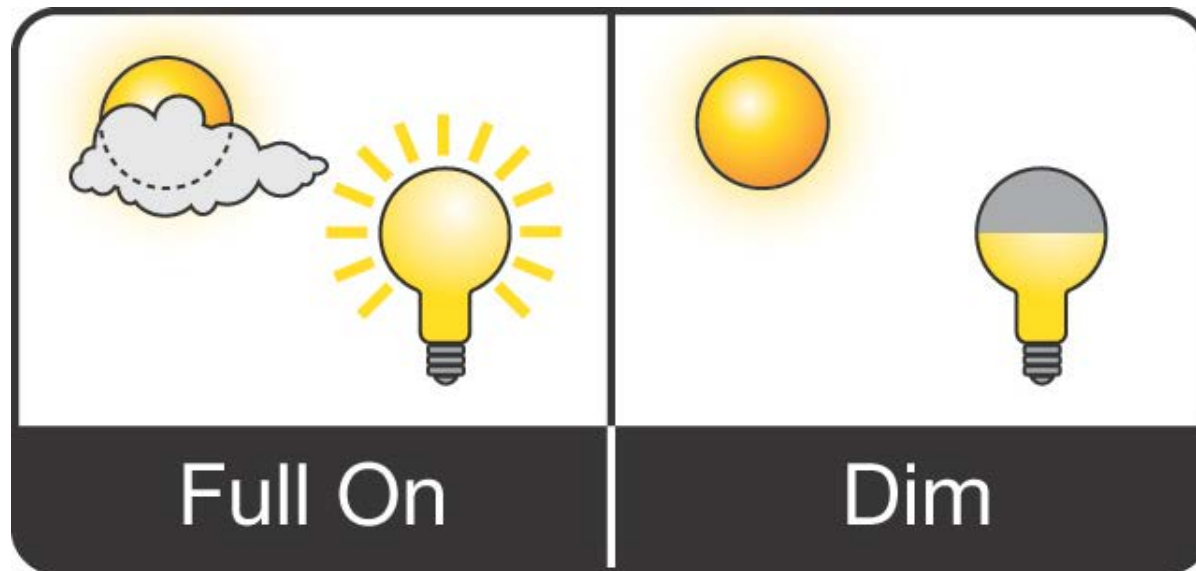


Source: California Lighting Technology Center (CLTC) study of eight private offices in 2008 [http://www.aboutlightingcontrols.org/education/papers/2009/2009\\_blevel\\_study.shtml](http://www.aboutlightingcontrols.org/education/papers/2009/2009_blevel_study.shtml)

# Why Dim?

## Daylight Harvesting

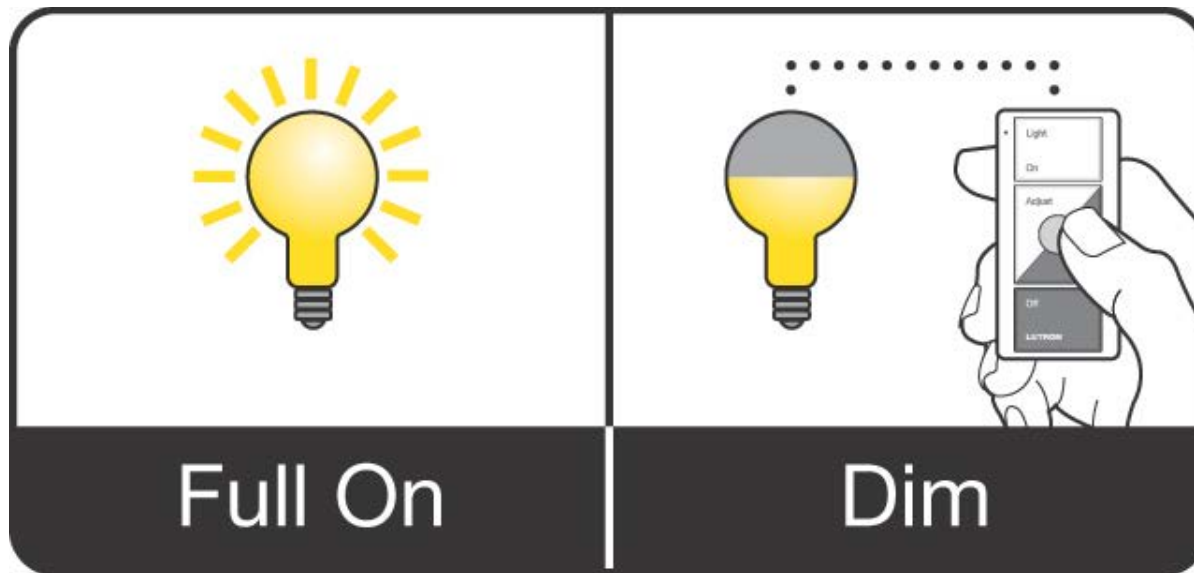
Dims fixtures to take advantage of available daylight



# Why Dim?

## Personal Dimming Control

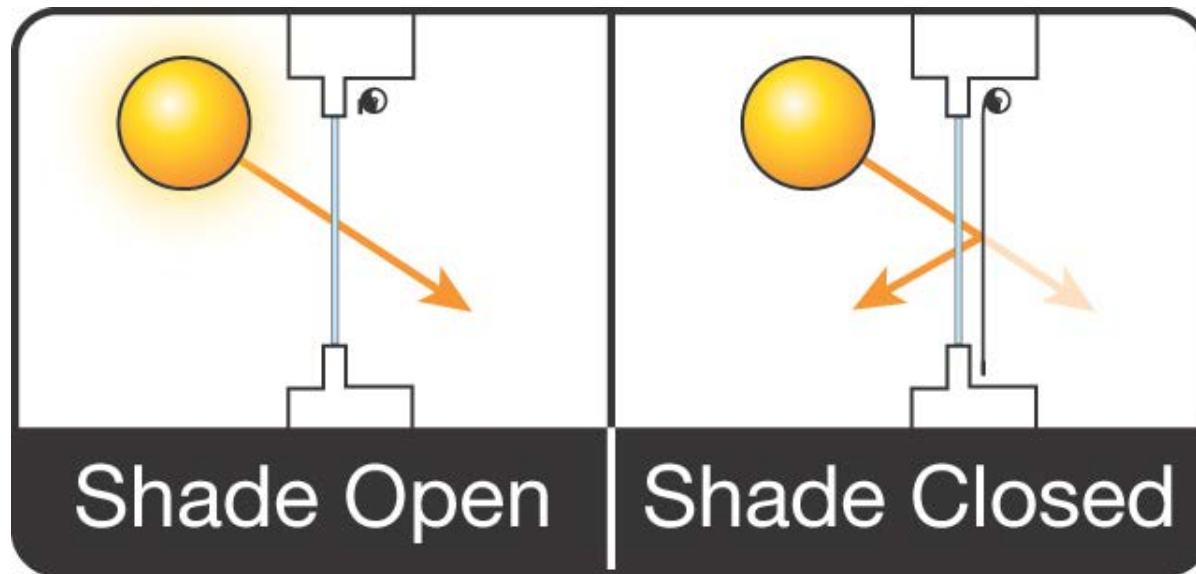
Gives occupants control of the lighting



# Why Dim?

## Controllable Window Shading

Reduces glare and solar heat gain

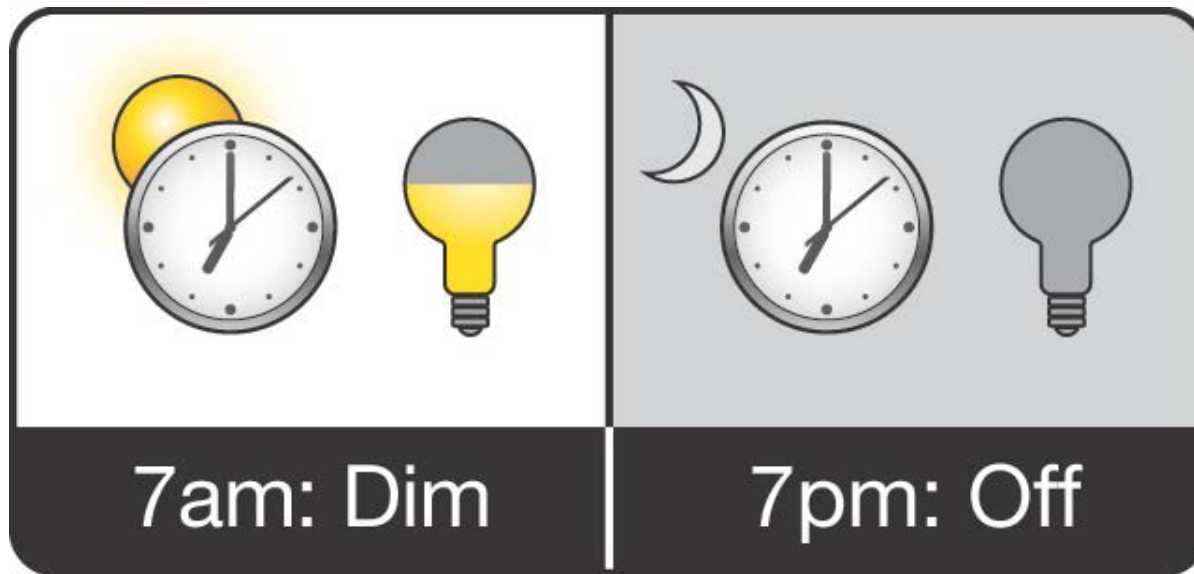




# Why Dim?

## Scheduling

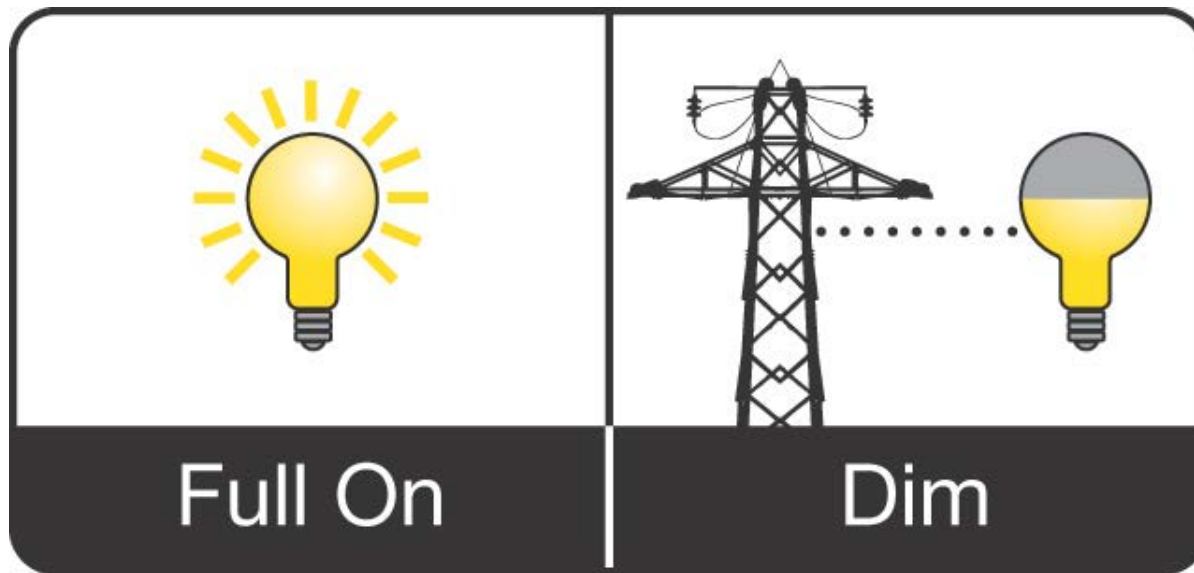
Controls light levels based on time of day or astronomical events




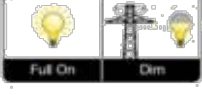
# Why Dim?

## Demand Response

Sheds lighting load during peak energy usage times



# Why Dim?

Strategy	Maestro Wireless®	GRAFIK Eye® QS	Energy Savr Node™	Quantum®
 <b>High-end trim</b>			X <sup>1</sup>	X
 <b>Occupancy/vacancy sensing</b>	X	X	X	X
 <b>Daylight harvesting</b>	X	X	X	X
 <b>Personal dimming control</b>	X	X	X	X
 <b>Controllable window shading</b>		X		X
 <b>Scheduling</b>		X	X <sup>2</sup>	X
 <b>Demand response</b>			X <sup>1</sup>	X

<sup>1</sup> Available with Ecosystem (ESN) only

<sup>2</sup> Available by connecting to GRAFIK Eye QS integral timeclock

# Why Dim?

## Lighting Controls Save Energy

Lighting contributes to heat,  
which contributes to  
air-conditioning costs

Though it varies by region,  
by saving energy on the lighting,  
you are also saving  
an additional percentage  
in HVAC costs

*Typical Lighting Impacts on HVAC Use by Climate  
HVAC interaction with lighting savings*

Location	Cooling loads
Phoenix, AZ	-30%
Los Angeles, CA	-23%
San Francisco, CA	-16%
Denver, CO	-16%
Tampa, FL	-33%
New Orleans, LA	-29%
Detroit, MI	-14%
Philadelphia, PA	-17%
Providence, RI	-13%
Knoxville, TN	-21%
Seattle, WA	-7%

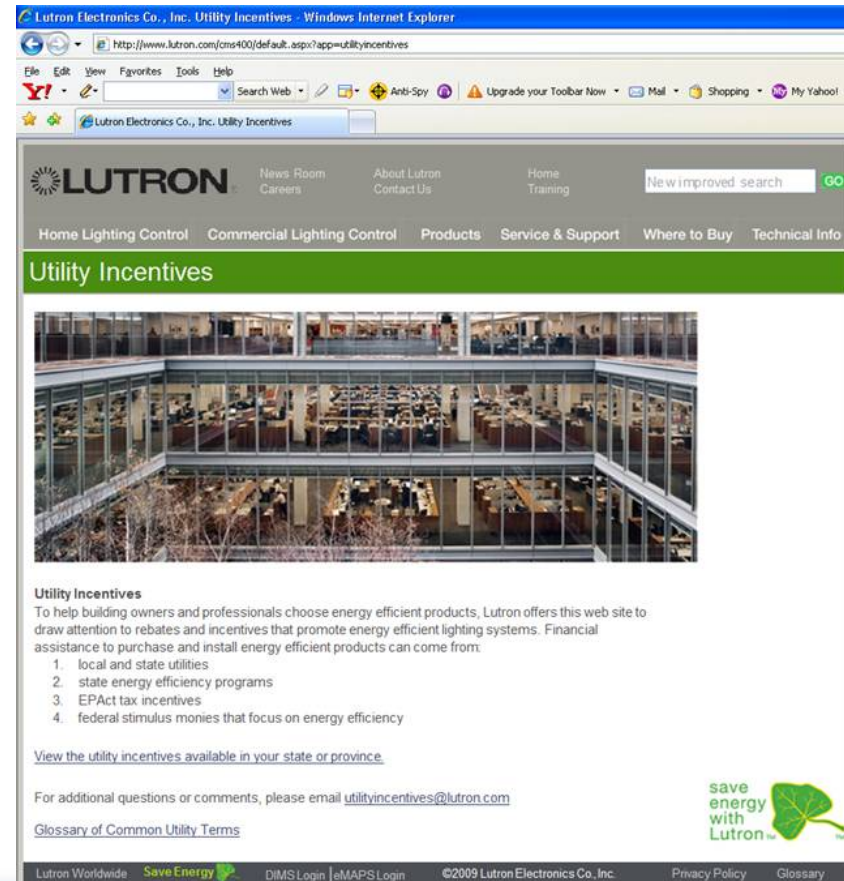
Advanced Lighting Guideline, New Buildings Institute, Inc., 2003

# Why Dim?

## Lighting Controls Provide Incentives

In addition to conserving energy, Lutron lighting controls can further reduce costs by qualifying the facility for government sponsored financial incentives

- <http://www.lutron.com/incentives>



The screenshot shows a web browser window displaying the Lutron website's 'Utility Incentives' page. The page features the Lutron logo, navigation links for News Room, About Lutron, Home, and Training, and a search bar. Below the navigation is a green header for 'Utility Incentives' and a large photograph of a modern office building with a glass facade. The main content area includes a section titled 'Utility Incentives' with a brief description and a numbered list of four sources of incentives: local and state utilities, state energy efficiency programs, EPAct tax incentives, and federal stimulus monies. A link is provided to view utility incentives by state or province, and an email address is listed for further questions. The footer contains the Lutron Worldwide logo, 'Save Energy' icon, DIMS Login, eMAPS Login, copyright information for 2009, and links for Privacy Policy and Glossary.

**LUTRON** News Room About Lutron Home  
Careers Contact Us Training

Home Lighting Control Commercial Lighting Control Products Service & Support Where to Buy Technical Info

### Utility Incentives

**Utility Incentives**  
To help building owners and professionals choose energy efficient products, Lutron offers this web site to draw attention to rebates and incentives that promote energy efficient lighting systems. Financial assistance to purchase and install energy efficient products can come from:

1. local and state utilities
2. state energy efficiency programs
3. EPAct tax incentives
4. federal stimulus monies that focus on energy efficiency

[View the utility incentives available in your state or province.](#)

For additional questions or comments, please email [utilityincentives@lutron.com](mailto:utilityincentives@lutron.com)

[Glossary of Common Utility Terms](#)

save energy with Lutron™

Lutron Worldwide Save Energy DIMS Login eMAPS Login ©2009 Lutron Electronics Co., Inc. Privacy Policy Glossary

# Why Dim?

## Lighting Controls Improve Productivity

Productivity can easily be increased by giving building occupants control over their visual environment

- Provide optimal lighting for each task
- Reduce eye strain, worker fatigue, and absenteeism

Resource: [www.lutron.com/energy](http://www.lutron.com/energy)

- White Paper: Improving Productivity

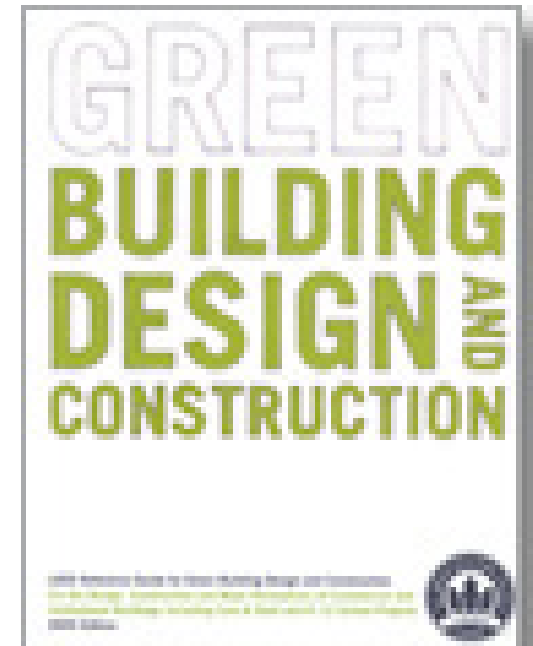


# Why Dim?

## Lighting Control Provide Prestige

### LEED 2009

- Light control can contribute to 40 or more out of the 110 possible points in LEED NC 2009



# Why Dim?

## Opportunities are Everywhere

The challenge is identifying the proper lighting control strategy that best suits each particular environment



This is where Lutron can help!



# Why Dim?

## Opportunities in Office Buildings

### Lighting Control Saves Energy & Increases Productivity

- Between conference rooms, bathrooms, private offices, & utility areas, there are many opportunities for reducing energy consumption on floor space that is over-lit, yet underutilized
- Open offices are key candidates for intelligent daylight harvesting strategies
- Studies show strong correlation between quality of light & worker fatigue / absenteeism



# Why Dim?

## Opportunities in Healthcare

### Lighting Control Enhances the Healthcare Experience

- Patient control can contribute to the quality of stay & rate of healing
- Patient control reduces demand on hospital staff
- Better lighting provides increased productivity & reduces errors
  - Reading charts
  - Dispensing medications
  - Working on computers



# Why Dim?

## Opportunities in Hospitality

### Lighting Control Enhances Guest Experiences & Manages Costs

- Guests encounter a subtle approach for utilizing energy saving strategies while being exposed to a simplified, yet luxurious, experience
- Guestroom conveniences and forward appearances differentiate one hotel from the next
- Conference Rooms & Ballrooms are made more versatile for multiple functions
- Basic controls & sensors minimize energy usage in the 'Back of House' areas



# Why Dim?

## Opportunities in Education

### Lighting Control Saves Energy & Improves the Learning Environment

- Studies indicate a direct correlation between good lighting and student progress
- Specific programs use lighting controls as learning tools through energy metering & curriculum based resources
- Control strategies allow gymnasiums & multi-purpose rooms to significantly reduce energy costs and improve versatility



# Why Dim?

## Opportunities in Entertainment

### Lighting Control Seamlessly Provides Ambiance

- Lighting scenes & extended fade-rates allow subtle, drawn-out transitions throughout the day that allow customers to appreciate the experience without distraction
- Automated control reduces the staff workload and minimizes the opportunities for confusion & error



# Why Dim?

## Opportunities are Everywhere

Lighting controls enhance any commercial facility's triple bottom line:

- The People
- The Planet
- The Profits





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