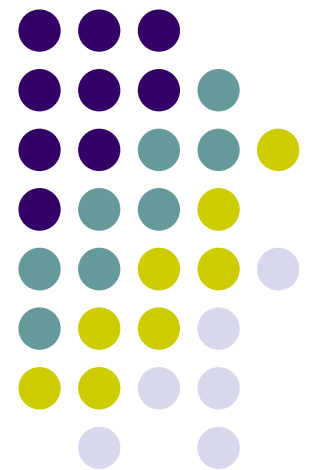
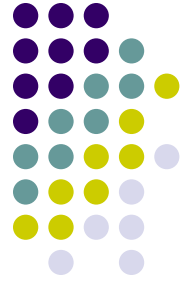


INTERIOR LED AND FLUORESCENT RETROFITS

OCTOBER 20TH 2010
SCHAEDLER YESCO
LAFACE-MCGOVERN

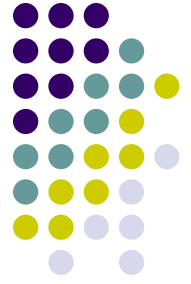


LM 79 STANDARDS



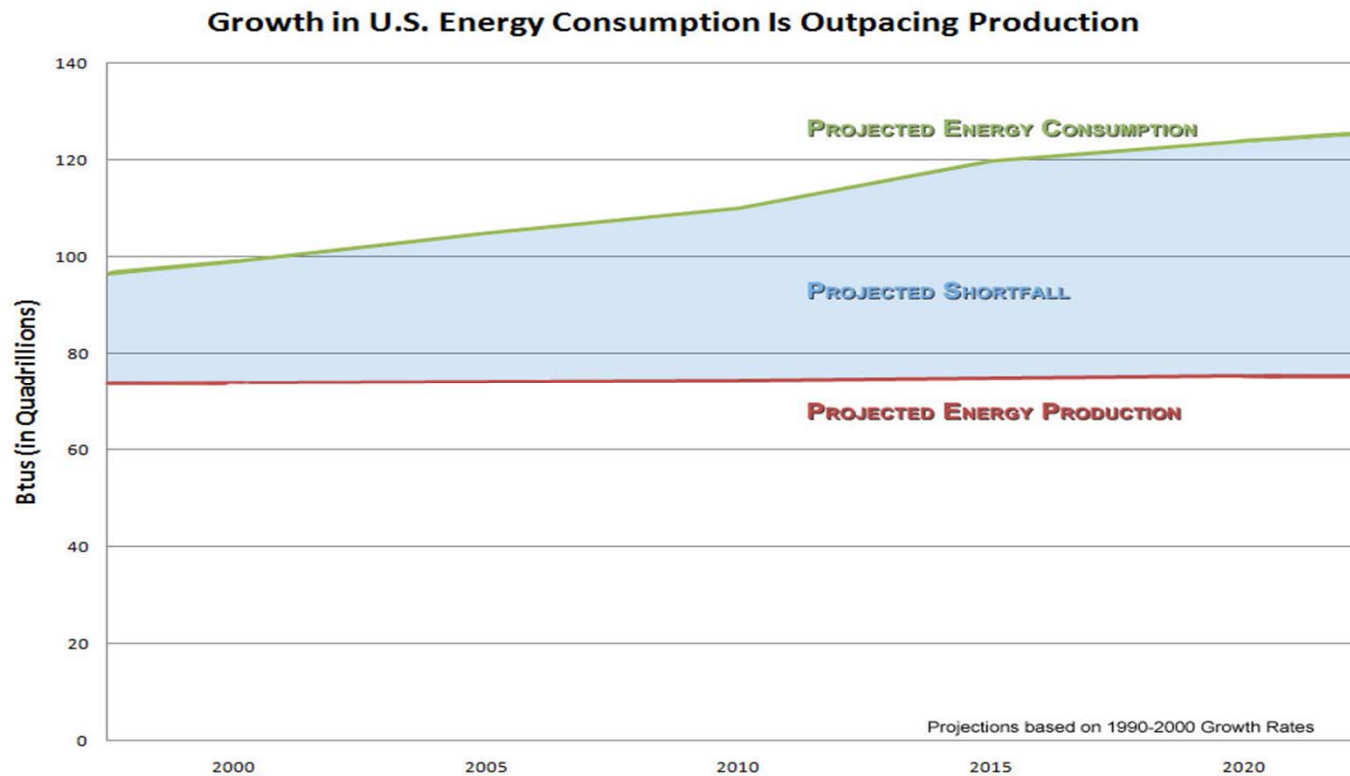
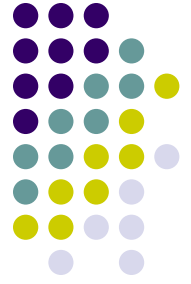
- Complete title: IES LM-79-08, *Approved Method: Electrical and Photometric Measurements of Solid-State Lighting (SSL) Products*
- Highly technical document used primarily by photometric labs to ensure accurate, repeatable measurements
- Prescribes Procedures For Measuring:
 - Total luminous flux Total amount of light delivered (lumens)
 - Electrical power Measured in watts
 - Luminous intensity distribution Amount of light delivered in a certain direction (candelas)
 - Chromaticity Color of light & color rendering index (CRI)
 - Specifies Precise Measurement Factors & Techniques Such As:
 - Ambient conditions (e.g., temperature, air movement)
 - Power supply characteristics (e.g., wave shape of AC power, voltage regulation)
 - Seasoning/stabilization of SSL products
 - Operating orientation (or burning position, e.g., up, down or horizontal)
 - Electrical settings & instrumentation.

LM 80 STANDARDS

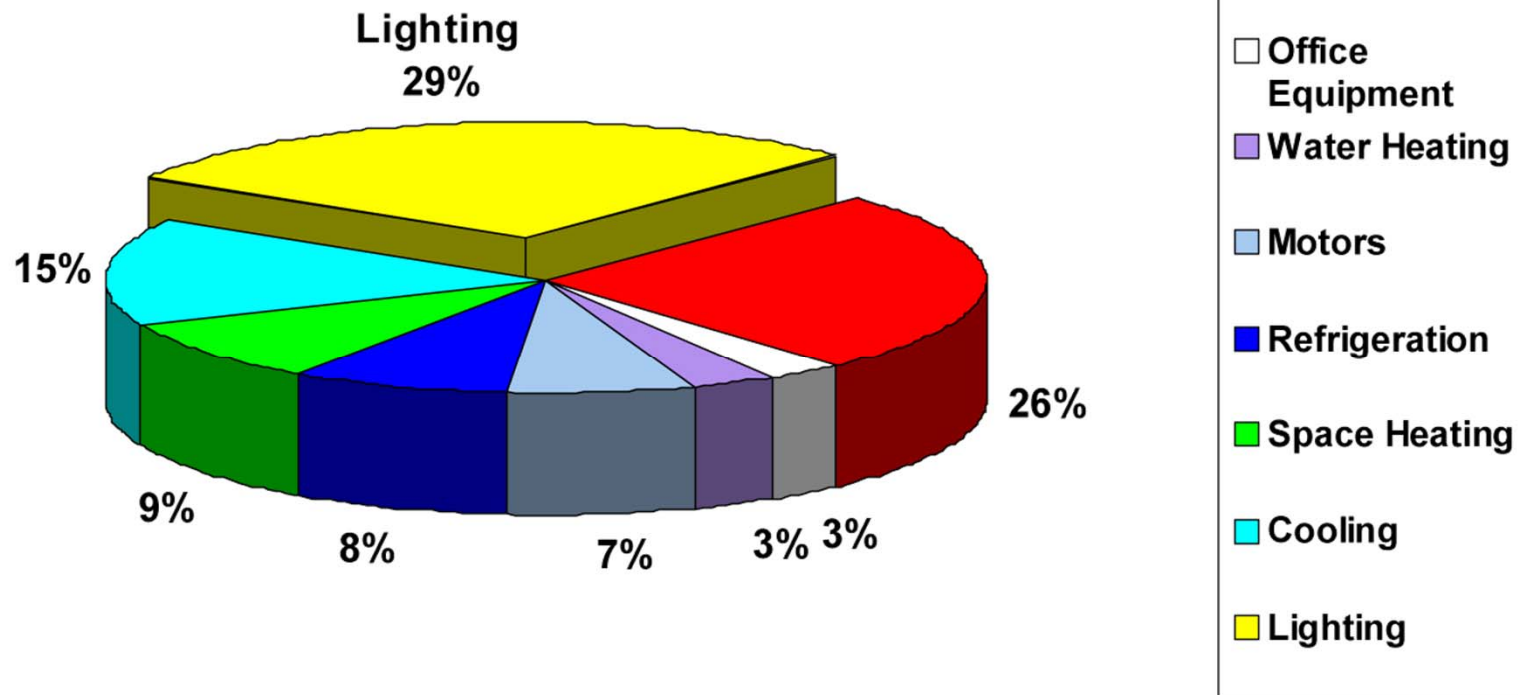


- Complete title: IES LM-80-08, *Approved Method: Measuring Lumen Maintenance of LED Light Sources*
- Highly technical document used primarily by LED manufacturers to ensure accurate, repeatable measurements
- Prescribes Procedures For Measuring “Lumen Maintenance” of inorganic LED Light sources:
- Lumen maintenance is the percent of actual lumen output divided by maximum lumen output
- Industry has standardized on 70% lumen maintenance (L70)
- Lumen depreciation is the converse of lumen maintenance
- Describes “the procedures by which LED light sources can be operated under controlled conditions to obtain optimally comparable data on changes in light output during the life of the lamp.”
- LM-80-08 “does not provide guidance or make any recommendation regarding predictive estimations or extrapolation for lumen maintenance beyond the limits of the lumen maintenance determined from actual measurements

FUTURE OF ENERGY CONSUMPTION



DOE ENERGY USE IN COMMERCIAL BUILDINGS



Source: DOE EIA

BUILDING AUTOMATION



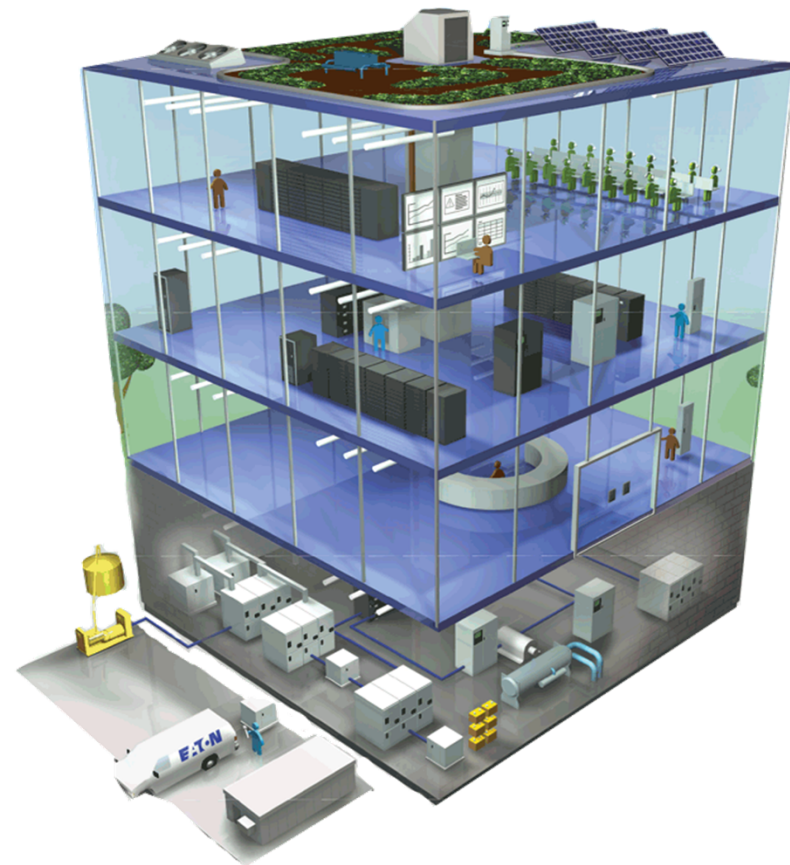
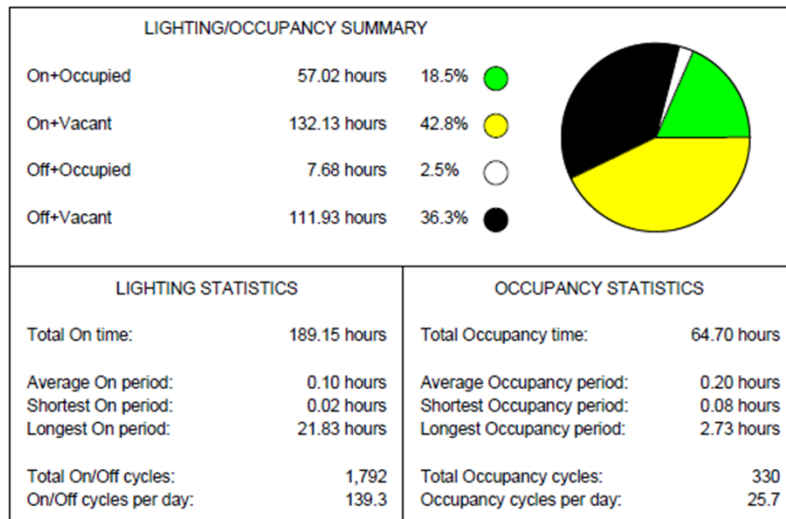
ENERGY EFFICIENT FIXTURES

DIMMING SYSTEMS

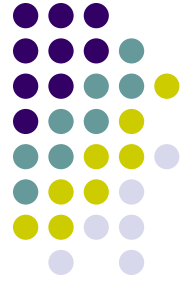
OCCUPANCY SENSORS

VFD MOTOR CONTROL

HIGH EFFICIENCY MOTORS



BUILDING CONDITION



Facilities 20 years old

60 lumens per watt (T12 fluorescent with magnetic ballast)

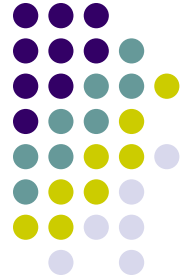
Facilities 10 years old

80 lumens per watt (T-8 fluorescent with electronic ballast)

Today's Facilities

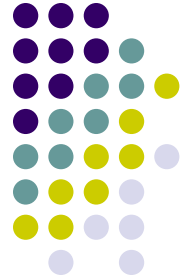
100 lumens per watt (High Efficient T-8, T-5, Pulse Start MH, and LED)

LITHONIA 2RTLED 2x2



- <http://lithonia.acuitybrands.com/RTLED/AnimationVideo.aspx>

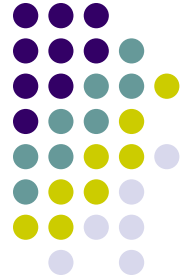
LITHONIA 2RTLED WITH N LIGHT



- MAINTAINED LUMEN OUTPUT THROUGHOUT LIFE OF LED'S
3300 LUMENS 45W 2x2 LED
- DIMMABLE OUT OF THE BOX
- PLUG N PLAY TECHNOLOGY USING CAT 5 CABLE
- SMART SYSTEM



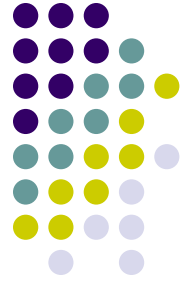
RTLED DIGITAL CAPABILITY



CAT 5 cable allows total control of the space regardless of circuitry

CAT 5 plug n play connects fixtures, occupancy sensors, and digital controls panels offering total control of a space using LED for a similar price of fluorescent

LITHONIA RELIGHT



RELIGHT PRODUCTS

2L RT5R

2L RT5RT

2L RT8R

2L RT8RT

2L ES8R

2L ES8RT

**ALL PRODUCT AVAILABLE IN
2x2,2x4, and 1x4
CONFIGURATIONS**

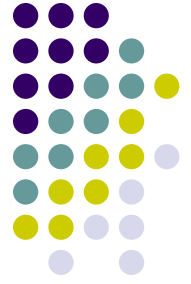
**ALL PRODUCTS AVAILABLE
WITH A STEP DIM OPTION**



HOW DOES RELIGHT WORK?



ENERGY SAVINGS



- REPLACE:
- T-12 3L and 4L Lens Troffer/Parabolic
- RELIGHT 2L T-5 59W
- 3L T-12 Troffer 112W
- 4L T-12 Troffer 144W
- VOLUMETRIC LIGHTING ALLOWS A ONE FOR ONE REPLACEMENT!!!!

Lithonia RT5Reliaht



REUSE REDUCE RECYCLE.

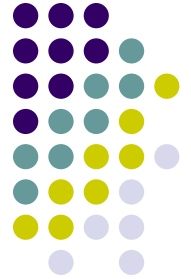
- Leave the fixture housing and wiring in place to reuse with the new assembly.
- Keep the space clean by not removing the ceiling tiles.
- Upgrade internal fixture components with relight assembly containing fewer, longer-life lamps – and reduce your energy use by as much as 60%.
- Recycle aluminum louver, channel cover, lamps and ballasts in an environmentally friendly way.



LITHONIA REALITY

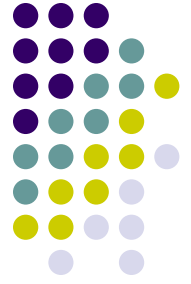


LITHONIA REALITY



- **PERFORMANCE**
 - 600 LUMENS AT ONLY 12W
 - REPLACES INCANDESCENT/CFL
EXISTING DOWNLIGHT
-
- **AFFORDABLE**
 - COST \$65-70

LIGHTING SCIENCE LED PAR LAMPS



A-19/A60



G-25/G80



MR-16



PAR 20/R63

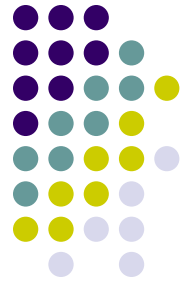


PAR 30/R95



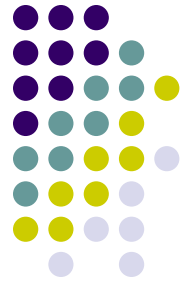
PAR 38

LED LAMP COMPARISON



- 8W A-19 replaces 40W INCANDESCENT
- 8W G-25 replaces 40W INCANDESCENT
- 6W MR-16 replaces 20W HALOGEN
- 15W PAR 20 replaces 60W HALOGEN
- 15W PAR 30 replaces 60W HALOGEN
- 18W PAR 38 replaces 75W HALOGEN

75% ENERGY SAVINGS



LUTRON POWER SAVR

- **WIRELESS CONTROL**

- **Lutron Radio Powr Savr sensors require no wiring, so installation is a snap**
- **Nuetral not required**
- **Great for plaster, finished walls and ceiling**
- **The easily accessible buttons make setup easy and the lens illuminates during test mode, helping the installer to identify optimal mounting locations**



LUTRON POWER SAVR

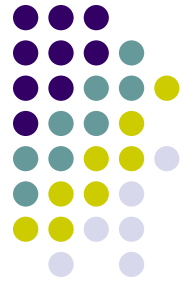


- Lighting is your greatest opportunity for energy savings in an office building.
- Radio Powr Savr daylight sensor can help cut wasted energy usage, decrease installation time and costs, and provide retrofit solutions to help buildings become more sustainable and energy efficient.
- Depending on the overall system configuration, Radio Powr Savr daylight sensor can reduce lighting electricity usage by 15% in a given space.



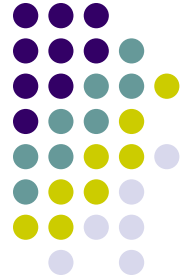
**USE THE SUN
TO HELP
HARNESS FREE
POWER!!!!**





- Phase I – Discussion of Your **Green** Objectives
- Phase II– Facility Walk-thru
- Phase III – Energy Audit/Discuss ACT 129
- Phase IV – Project Implementation
- Phase V – Project Finalization/Install/Receive Utility ACT 129 Rebate Money **\$\$\$\$\$**
 - Project Review
 - Deliverables

THANK YOU



Tim Stasik-Energy Specialist

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Scott Bailey-Lighting Professional

www.sbailey@lface-mcgovern.com

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(412) 854-3200

