



Solid State Lighting



35th Annual State Construction Conference

LED Lighting Panel Discussion

March 2016

Energy Efficient Lighting Guidance Document for New Construction and Retrofits: The State of North Carolina



Department of Environmental Quality



The Panel

Panelists:

- Dr. Lynn Davis, Fellow, RTI International
- Robert Talley, PE, NC Dept. of Administration, State Construction Office
- Dr. Leonard White, PE, RCDD, NSF FREEDM Systems Center, NC State University
- John Anderson, PE, T.E.A.M. Lighting

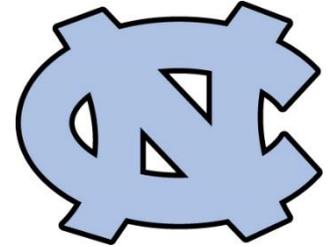
Moderator:

- Renee Hutcheson, FAIA, NC Department of Environmental

Department of Environmental Quality



The Work Group



Department of Environmental Quality



The Work Group

Dr. Lynn Davis

Renee Hutcheson, FAIA

Randy Allison, PE

Howard Beasley, PE

David Bell, PE

Eric Frazier

Thomas Hunter, PE, RA

Jonathan Jones, PE

Lalitha Krishnasami, PE

John Majernik, EI, PEM

Jeannie Smith, PE

Robert Talley, PE

Dr. Leonard White, PE



LESSONS
FROM THE
FIELD



Office Overview

- NC State Construction Office provides:
 - FCAP - Facilities Condition Assessment Program
 - *What do you need and what will it cost*
 - Contract Administration
 - *Lets find a qualified designer*
 - Design Review
 - *Design must meet codes*
 - *Design must be in budget*
 - *Consider 1st cost and maintenance*
 - Construction Administration
 - *Monitor the expenditure of the funding*



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- Build a new parking deck
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 - Colors are changing



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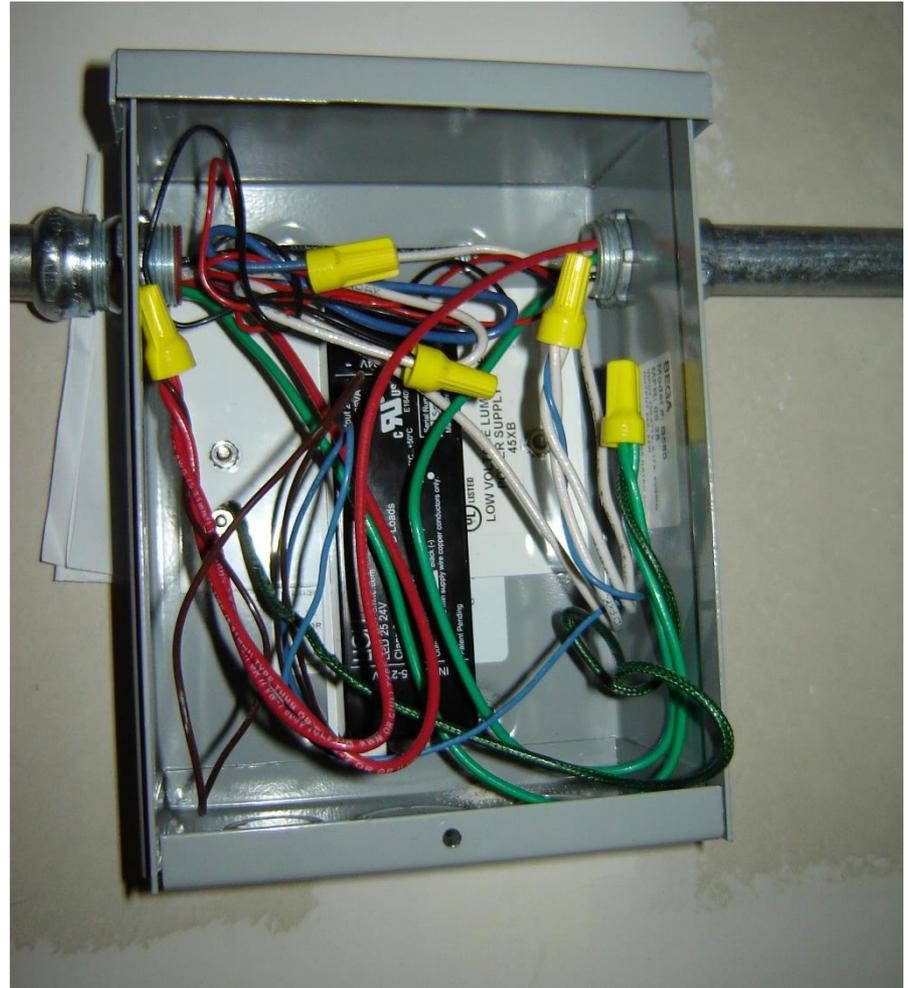
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 - Maintenance issues



Did we create the problem?



Interaction Consideration of LED lighting systems

The Problem:

- A number of facilities in the state have large LED lighting systems. The state has experienced what appears to be an abnormally high failure rate of LED luminaires in a few of these facilities.

Questions:

- Are there standards for warranty protection?
- Who should provide the deconstruction review of the failed LED drivers from the facilities?
- Are there standards for system surge protection?
- Are there specific recommendations for facilities that are looking to deploy large LED lighting loads? Is there a difference for a new building vs renovation?





UNC System-wide Lighting PC



15 Universities and Affiliates

East Carolina

UNC Charlotte

Western Carolina

UNC Asheville

Appalachian State

NC A&T

NCCU

The NC Arboretum

UNC Pembroke

School of the Arts

School of Science of Math

Fayetteville State

UNC General Administration

Winston-Salem State

UNC-TV

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UNC System-wide Lighting PC



\$ 25.5m	Lighting Contract Costs
96,000	New Fixtures
174,000	New Lamps
2,850	Occupancy Sensors
1,300	Exit Signs

UNC System-wide Lighting PC



\$ 4m Annual Projected Energy Savings
\$ 29.2m Energy Savings over 7 Years
 7 yr. Payback

Improved Light Quality
 Lower Maintenance Costs

Yr	Guaranteed Electric Dollar Savings*	Guaranteed Natural Gas Dollar Savings*	Guaranteed Operational Dollar Savings	Guaranteed Dollar Savings
1	\$ 3,503,129.03	\$ (74,657.48)	\$ 496,100.28	\$ 3,924,571.82
2	\$ 3,573,191.61	\$ (74,657.48)	\$ 506,022.28	\$ 4,004,556.41
3	\$ 3,644,655.44	\$ (74,657.48)	\$ 516,142.73	\$ 4,086,140.69
4	\$ 3,717,548.55	\$ (74,657.48)	\$ 526,465.58	\$ 4,169,356.65
5	\$ 3,791,899.52	\$ (74,657.48)	\$ 536,994.90	\$ 4,254,236.93
6	\$ 3,867,737.51	\$ (74,657.48)	\$ 547,734.79	\$ 4,340,814.82
7	\$ 3,945,092.26	\$ (74,657.48)	\$ 558,689.49	\$ 4,429,124.27
Total	\$ 26,043,253.90	\$ (522,602.36)	\$ 3,688,150.06	\$ 29,208,801.59

UNC Charlotte – Atkins Library



New and Old Fixtures
Side-by-Side

66% reduction in energy

50% increase in fc

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UNC Chapel Hill – Fetzner Gym B



Before: 400 watt metal halide



After: LED

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(2) 14 w LED
with ballast

(2) 32 w T8
with ballast



NCSU



Talley Student Union



Vet School Parking Deck

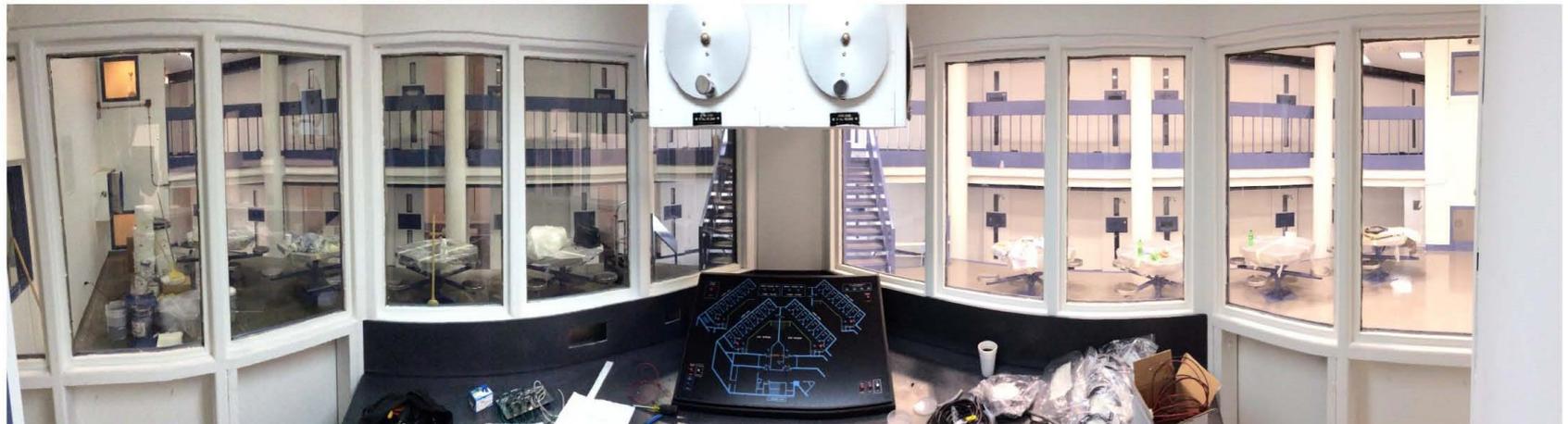




LED Specialty Lights at UNC



NC Central Prison



Before: (7) 175 w metal halides

After: (7) 99 w LED's

View of Dayrooms from Officer's Control Room



Wake County Sunnybrook Road Parking Deck





Where Can I Find The Guidance Document?

SCO Website

<http://ncadmin.nc.gov/document/ssl-guidance>

DEQ Website

<http://deq.nc.gov/conservation/utility-savings/tools-technology>

For Questions and Comments:

Howard Beasley, PE

NC Dept. of Administration, State Construction Office

howard.beasley@doa.nc.gov

Renee Hutcheson, FAIA

NC Department of Environmental Quality

renee.hutcheson@ncdenr.gov

