

poweringupdurham

Save on Energy SYMPOSIUM

ADVANCED LIGHTING & CONTROLS

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**SAVE_{ON}
ENERGY**
POWER WHAT'S NEXT

PREVIOUSLY

IN PAST PRESENTATIONS I HAVE DEALT WITH THE BASICS OF LED LIGHTING AND UNDERSTANDING THEIR INTEGRATION INTO REPLACEMENT OF OUTDATED TECHNOLOGIES AS WELL AS RETROFIT, REDESIGN, PROCEDURE, ENERGY CALCULATIONS AND A MYRIAD OF OTHER TOPICS RELATING TO RETROFITTING OFFICES, WAREHOUSING, MANUFACTURING, MULTI FAMILY DWELLINGS AND ALL OUTDOOR APPLICATIONS.

AS WE GAIN A BETTER UNDERSTANDING OF THE TECHNOLOGY AND THE PROGRESSION OF LED PARTICULARLY IN TERMS OF FACTORS SUCH AS EFFICACY, COLOUR AND LIFE EXPECTANCY, WE CAN BETTER PUT INTO PRACTICE REPLACEMENT OF ANTIQUATED TECHNOLOGY BASED ON PRODUCT SPECIFICATIONS AND PERFORMANCE RATHER THAN GUESSWORK OR WHAT MANY MANUFACTURERS OR IMPORTERS WOULD HAVE US THINK.

WHAT IS AHEAD

- BE IT RETROFIT OR REDESIGN THE APPROACH TAKEN MUST BE CALCULATED BASED ON ACCURATE AND RELIABLE INFORMATION.
- THIS PROCESS IS VITALLY IMPORTANT AS THE RESULT IS BY AND LARGE DEPENDENT ON IT!
- AS THE FIRST STEP IN THE PROJECT THE AUDIT IS CRITICAL TO THE OUTCOME SO MUST BE UNDERTAKEN BY SOMEONE WITH THE KNOWLEDGE AND EXPERIENCE TO VISUALIZE THE OUTCOME AND NOTE ALL COMPONENTS THAT AFFECT THIS.
- DUE TO THE EXPLOSION OF SSL AND THE AVAILABILITY OF INCENTIVES TO OFFSET THE COST OF UPGRADING, AS WELL AS THE FLOOD OF PRODUCTS ON THE MARKET IT IS MORE IMPORTANT THAN EVER TO ENGAGE THE RIGHT PEOPLE TO ENSURE A DESIRABLE OUTCOME.
- THE TERM “LIGHTING SPECIALIST” HAS BEEN WATERED DOWN OVER THE LAST FEW YEARS AND TODAY “LIGHTING AUDITORS“ WOULD BE A MORE APPROPRIATE TITLE AS THE VAST MAJORITY OF THESE AUDITORS HAVE NO LIGHTING BACKGROUND OR EXPERTISE YET THEY ARE “EVALUATING YOUR LIGHTING AND PROPOSING A SOLUTION”?
- BASED ON WHAT ?????????? COUNTING FIXTURES!
- CONSIDER ENGAGING EXPERIENCED LIGHTING PROFESSIONALS TO EVALUATE EXISTING LIGHTING SYSTEMS AND RECOMMEND EDUCATED SOLUTIONS.

FORWARD THINKING

- SINCE WE ARE NOW AT A POINT WHERE THE MARKET IS FLOODED WITH A MULTITUDE OF LED PRODUCTS FROM MANY SOURCES
- WHAT DO WE DO?
- HOW DO WE KNOW WHICH PRODUCT IS BEST FOR US?
- LITERALLY EVERYONE HAS LED LAMPS, FLAT PANELS, HIGHBAYS, PAR LAMPS ETC.
- WHAT PRODUCT BEST SUITS OUR RETROFIT?

- WHAT IF!

- NOW WE START LOOKING AT THE PROCESS A BIT DIFFERENT, MORE FOCUS ON PRODUCT SPECIFICATIONS, CONSIDER MORE CRITERIA, THINK LONGER TERM SOLUTIONS AND THEIR BENEFITS

PICK UP THE PACE

- SO NOW WE ARE THINKING IN A DIFFERENT MANNER.
- WE WANT TO APPROACH OUR RETROFIT / RELIGHT
 1. BASED ON THE APPLICATION.
 2. IMPROVE LIGHTING (BASED ON IES RECOMMENDED PRACTICE).
 3. CONSIDER THE HUMAN ELEMENT (AGE, FUNCTION, HEALTH).
 4. LOOK AT COLOUR IN THE SPACE.
 5. CONSIDER LIGHTING METRICS AND DESIGN.
 6. FUNCTIONALITY.
 7. INTEGRATION OF EVEN SIMPLE CONTROLS WHEREVER FEASIBLE.
 8. SYSTEM MONITORING AND CONTROL IF NECESSARY AND PRACTICAL.

OPPORTUNITY KNOCKS

- TO IMPROVE THE AESTHETICS
- CREATE A POSITIVE ENVIRONMENT TO IMPROVE PRODUCTIVITY AND MENTAL HEALTH
- REDUCE ERRORS
- LESS PRODUCT DEFECTS
- ENERGY SAVING
- REDUCE MAINTENANCE
- INTEGRATE CONTROLS TO MAXIMIZE ENERGY SAVINGS

DETERMINING PRODUCT MIX

CHOOSE PROVEN PRODUCTS

WHO IS THE MANUFACTURER, HOW LONG IN BUSINESS, PRODUCT SPECIFICATIONS
PROGRESSIVE

MOST UP TO DATE

ENSURES MAXIMUM ENERGY SAVINGS THROUGH EFFICIENCY AND LONGEVITY

SATISFIES EVERY APPLICATION

USUALLY REQUIRES VARIETY OF MANUFACTURERS RATHER THAN ONE FITS ALL

CONTROLS INTEGRATION

DETERMINING NEEDS! DIMMING, DAYLIGHT HARVESTING, INDIVIDUAL CONTROL

CHOOSING THE RIGHT PRODUCT

LED OFFICE FIXTURES

- MANY OFFERINGS TODAY FROM UNKNOWN SOURCES ARE SELLING OLD TECHNOLOGY BOTH IN THE DESIGN BUT ALSO THE EFFICIENCY.
- EG. 2X4 - @ 50W AND 2X2 @ 40W! THE CURRENT STANDARD IS 40W AND LESS AND 30W
- STRIPS AND WRAP STYLE FIXTURES ARE ALSO OFFERED WITH THE HIGHER WATTAGES IN ORDER TO ACHIEVE THE LUMEN OUTPUT TYPICAL FOR THE PRODUCT .
- 5000K IS VERY COMMON WITH MANY OF THE COMMODITY PRODUCTS DUE TO THE FACT THAT IT IS LESS EXPENSIVE TO PRODUCE 5K LEDS. THIS COLOR TEMPERATURE IS VERY HARSH AND PRODUCES VISUAL DISCOMFORT PARTICULARLY INDOORS .
- INDUSTRY STANDARD IS 4000K AND RECOMMENDED FOR MOST ALL APPLICATIONS DUE TO THE NEUTRAL COLOR AND IT IS VISUALLY APPEALING IN ANY ENVIRONMENT

LED REPLACEMENT LAMPS

- LED LAMPS ARE AVAILABLE FOR T8, T5 AND SOME PL LAMPS AS WELL AS A VARIETY OF SPECIALTY LAMPS.
- T8 LAMPS IN PARTICULAR COME IN SEVERAL WATTAGES AND LUMEN OUTPUT AND ITS VERY IMPORTANT TO MATCH THEIR SPECS TO THE APPLICATION TO ENSURE A DESIRABLE OUTCOME. AGAIN THE LOWEST WATTAGE MAY NOT BE THE BEST CHOICE, IF LIGHT IS SACRIFICED.
- 5000K IS PREVALENT AMONG MANY OF THE LAMPS AVAILABLE BUT UNDESIRABLE FOR MOST APPLICATIONS.
- BALLAST COMPATABILITY IS CRITICAL PARTICULARLY 347V, AS ALL BALLASTS MAY NOT SUPPORT LAMP REPLACEMENT.
- IF THE BALLASTS ARE 5 YEARS OR OLDER MOST MANUFACTURERS RECOMMEND REPLACING. THIS AVOIDS ISSUES WITH COMPATABILITY.
- T5HO LAMPS FOR THE MOST PART ARE 25W BUT AGAIN BALLAST COMPATABILITY SHOULD ALWAYS BE CHECKED. MANUFACTURERS PROVIDE CHARTS.

CONTROLS

- MOST LED FIXTURES ARE AVAILABLE WITH 0-10V DIMMING CAPABILITIES WHICH MAKES INDIVIDUAL CONTROL MUCH EASIER FROM A WALLBOX.
- DIMMERS SPECIFICALLY DESIGNED FOR LED SYSTEMS MUST BE USED AS STANDARD PHASE CUT DIMMERS MAY CAUSE FLICKER OR NOT DIM PROPERLY.
- CONTROL CAN BE FURTHER ENHANCED BY PROVIDING A SYSTEM APPROACH TO INTEGRATE DAYLIGHT HARVESTING.
- SOME PRODUCTS OFFER ONBOARD SENSORS FOR INDIVIDUAL OR GROUP CONTROL. DEPENDING ON THE SYSTEM THESE CAN BE MONITORED AND ADJUSTED VIA A COMPUTER.
- AS WITH ANY LIGHTING PROJECT CONTROLS SHOULD BE BASED APPLICATION . SOME APPLICATIONS REQUIRE BASIC CONTROL WHILE OTHERS ARE MORE COMPLEX DUE TO THINGS SUCH AS BAS INTEGRATION OR ENERGY MONITORING WHICH USUALLY INDICATE A LARGER PROJECT.

INTEGRATED SENSORS

Examples Uses:

- Private Offices
- Patient/Exam Rooms
- Fitness Centers
- Small Conference Rooms
- Small Classrooms
- New Construction or Renovation
- Storage Areas



HIGHBAY LED

- Highbay LED is much the same with the efficacies ranging from 127 LM/W to 160 LM/W.
 - Efficiency is important as we want to get the best “bang for the buck” when selecting fixtures to maximize incentives and long term energy savings.
 - Most commodity products do not offer the optics to suit the many applications or situations we must do a design. Costs are all similar
- ## CONTROLS
- Highbay controls typically consist of a fixture mounted sensor which is economical and effective.
 - Systems are available to wirelessly control individual fixtures as well as monitor movement patterns and energy consumption while providing occupancy control. These can be monitored and adjusted through a computer program.

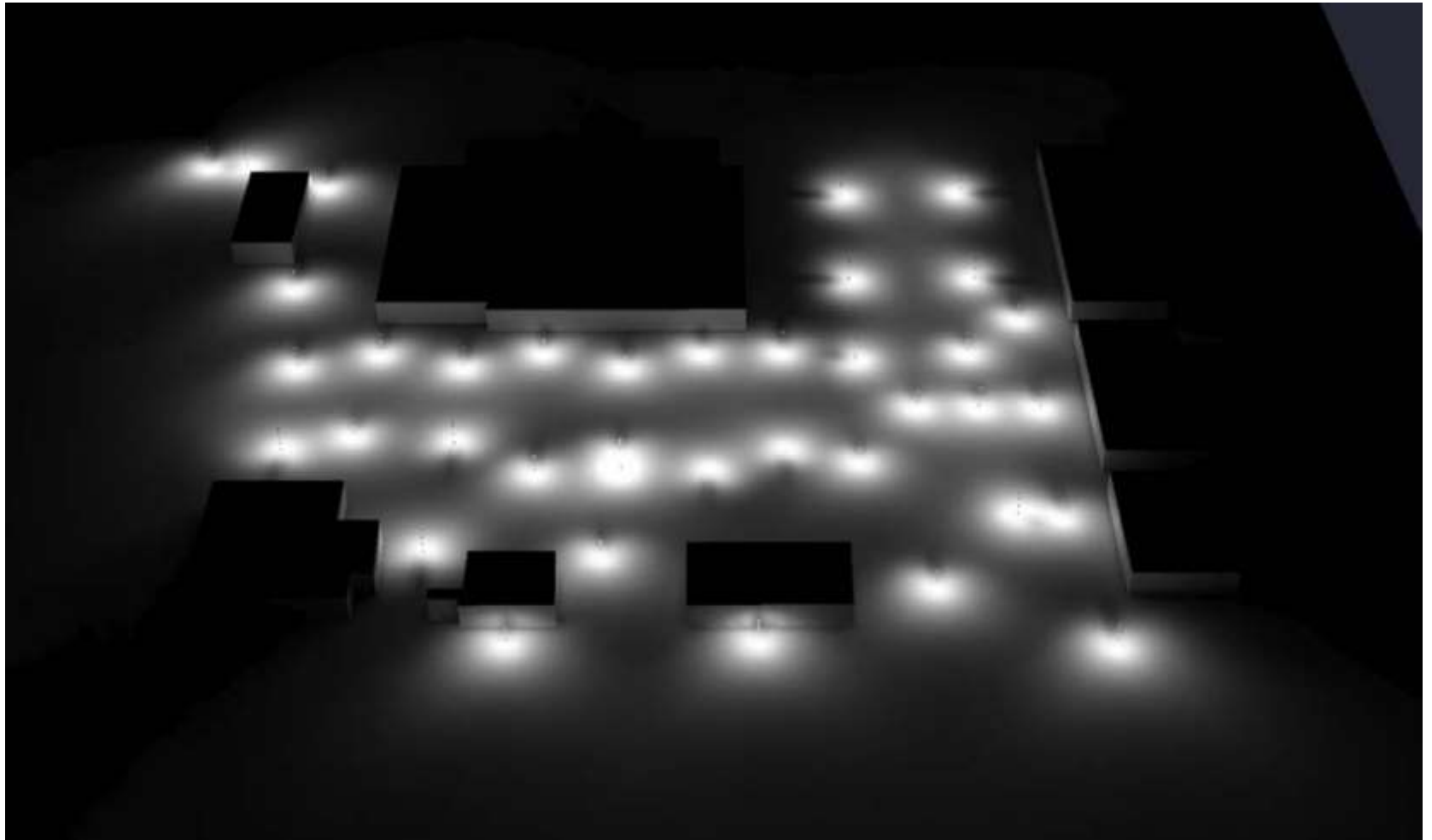
HIGHBAY WITH INTEGRATED SENSOR



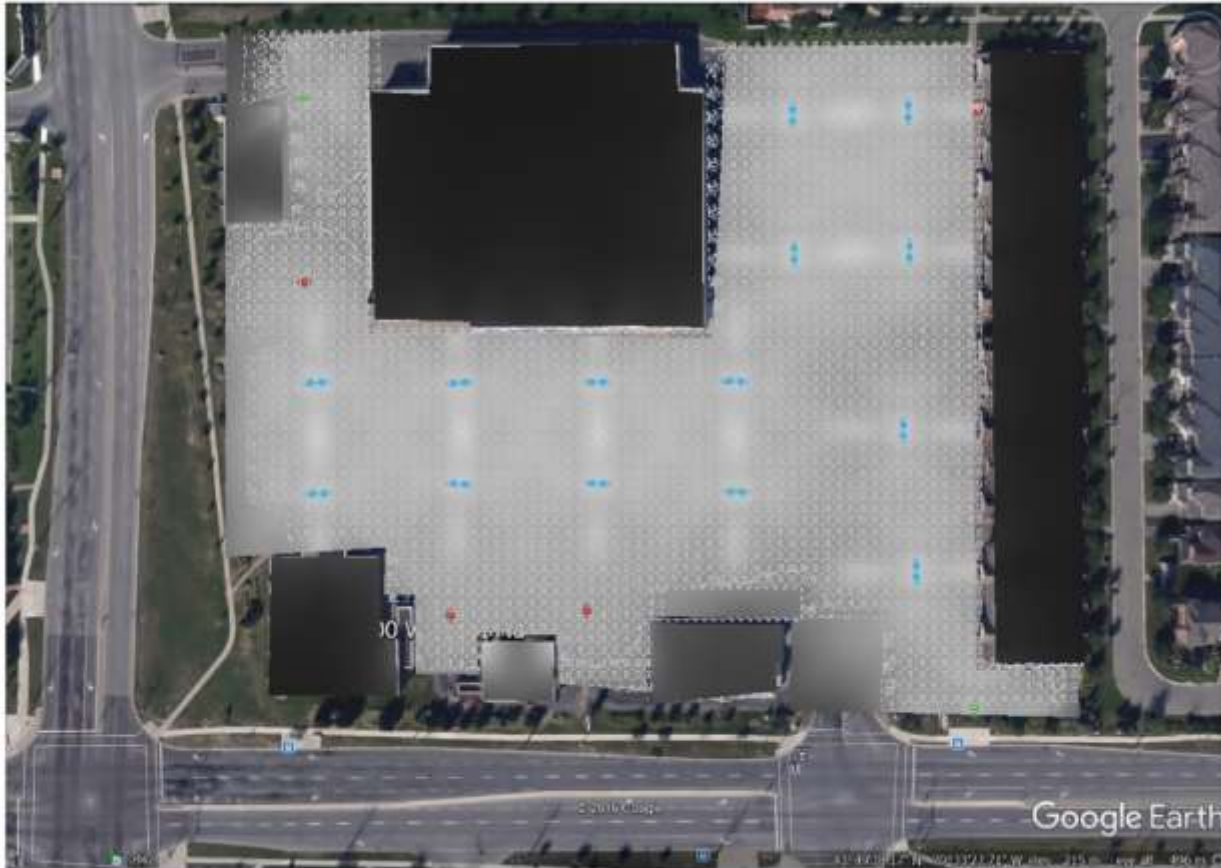
EXTERIOR

- MANY EXTERIOR PRODUCTS AVAILABLE, WITH VARYING SPECIFICATIONS WITH REGARD TO EFFICIENCY AND LIFE
- WHEN CONSIDERING FIXTURE REPLACEMENT ONLY IT IS IMPORTANT TO MATCH THE LED PRODUCT OUTPUT TO THE EXISTING TO MAINTAIN OR EXCEED THE EXISTING LIGHT LEVELS
- WE WANT TO SAVE ENERGY BUT NOT AT THE COST OF SAFETY AND SECURITY.
- TYPICALLY A PRELIMINARY DESIGN IS NECESSARY TO DEMONSTRATE THAT THE REPLACEMENT PRODUCT WILL PERFORM AS REQUIRED.
- THE EFFICIENCY, LIFE EXPECTANCY AND DESIGN OPTIONS VARY IMMENSELY FROM THE COMMODITY PRODUCTS TO NORTH AMERICAN SPEC PRODUCTS.
- DEPENDING ON THE APPLICATION THIS MUST BE CAREFULLY CONSIDERED.
- CONTROLS FOR EXTERIOR VARY FROM SIMPLE TIMERS TO PHOTOCONTROLS, TO MORE SOPHISTICATED SYSTEMS CAPABLE OF DIMMING TO LOW LEVELS WHEN NO ACTIVITY WITH OCCUPANCY SENSORS TO INCREASE TO FULL OUTPUT WHEN OCCUPIED.

RENDERING 1 – IMPROPER PRODUCT CHOICE



RENDERING 2 – PROPER PRODUCT CHOICE



KEY POINTS

- ENSURE YOU HAVE QUALIFIED, EXPERIENCED LIGHTING PROFESSIONALS CONSULTING ON YOUR PROJECT.
- PROVIDE ACCURATE INFORMATION FOR THE AUDIT TO ENSURE ACCURATE RESULTS.
- APPLY AND RECEIVE PRE-APPROVAL FROM THE UTILITY PRIOR TO STARTING YOUR PROJECT.
- INSIST PROPER LIGHTING PRACTICE IS FOLLOWED TO ENSURE A DESIRABLE OUTCOME.
- SEEK OUT THE MOST SUITABLE, EFFICIENT PROVEN PRODUCTS TO INSURE LONG TERM BENEFITS.
- TAKE TIME TO COMPARE THE SPECS OF THE PRODUCTS OFFERED.
- CONSIDER WHERE CONTROLS WILL MAKE SENSE AND DISCUSS THE OPTIONS AVAILABLE.
- ENSURE ONLY QUALIFIED ELECTRICAL CONTRACTORS ARE INSTALLING EQUIPMENT
- DON'T SETTLE FOR LESS !!!!

QUESTIONS

THANK YOU







