

NGL – A Guide to the Best and the Brightest in LED Fixtures



The Grainger Show

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Outline

- The what and why of NGL
- Using NGL's approach
 - Visual performance
 - Distribution
 - Controllability
 - Performance over time
 - Energy savings
 - Serviceability and Replacement
 - Value
- Using all available resources

Next Generation Luminaires Design Competition -- the What and Why

Partnerships to link energy efficiency & lighting quality

International Association of Lighting Designers

IALA



Illuminating
ENGINEERING SOCIETY

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy
BUILDING TECHNOLOGIES OFFICE

What NGL Is All About

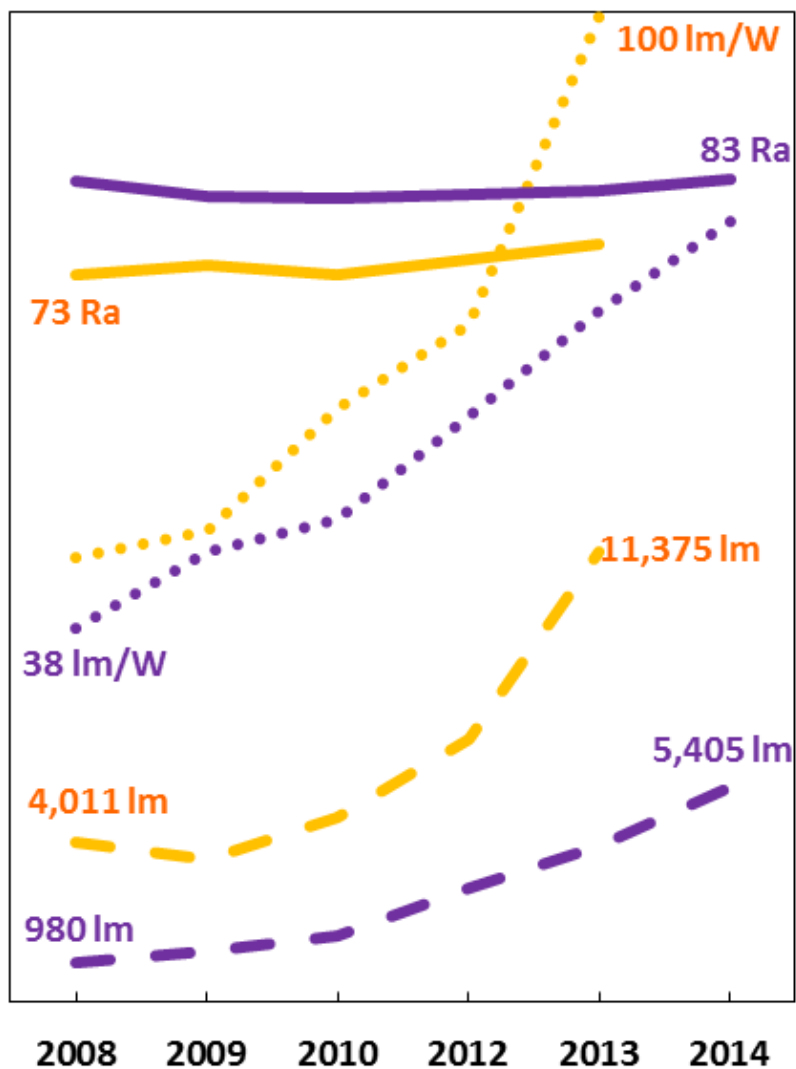
- Started in 2008
- Inclusive rather than exclusive
- Performance evaluation with extensive documentation
 - More time and resources than most designers can afford
- Judged in characteristic applications and “hands on”
- Diverse, professional judging panel



NGL has looked at LOTS of products

	2014 (Indoor)	All (2008-2014)
Intents	267	1,644
Judged	153	879
Awards	61	318
% of judged awarded	40%	36%

Things are improving



- Indoor: Average Output
- Outdoor: Average Output
- Indoor: Average Efficacy
- Outdoor: Average Efficacy
- Indoor Average CRI
- Outdoor: Average CRI

New Form Factors are Coming



Source: Acuity Brands

NGL Judging Approach

- Organized by application
- Product Evaluation
 - Installed and lighted
 - Table top (2nd fixture)
 - Documentation
- Process
 - Independent judgment
 - *Preliminary* scoring
 - Discussion and decision
 - Post judging analysis & verification



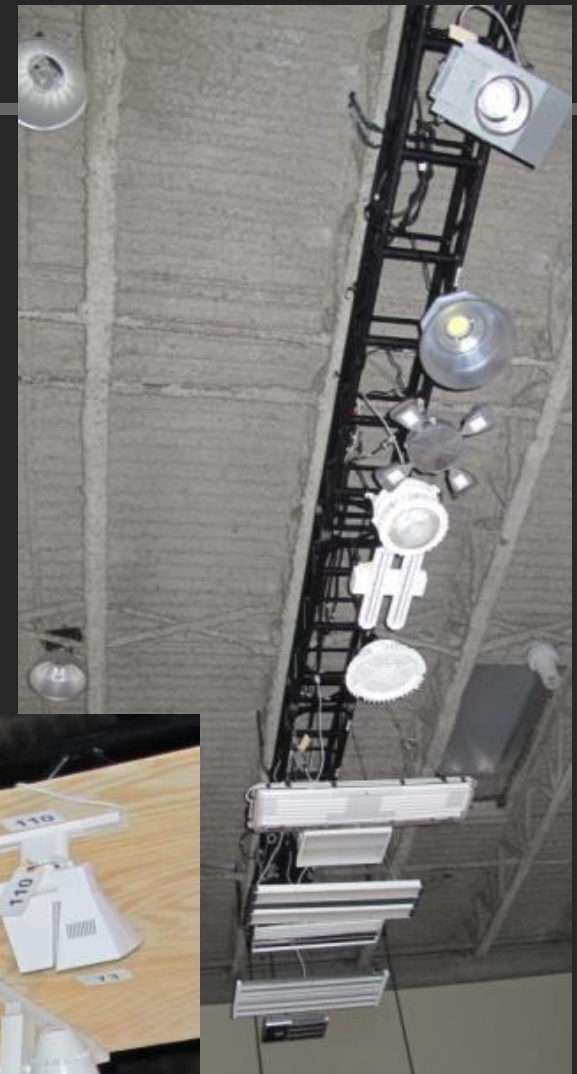
Seeing is Believing



Outdoor Judging Setup



Indoor Judging Setup



Documentation – What You Need to Know

- Will it perform as claimed?
- Will it perform as expected for its intended use?
- Will it perform as claimed/expected over time?
- Will it dim as claimed/expected?
- Will contractors have issues with installation?
- Will it have color consistency issues across products and over time?
- At end-of-life, will it be disposed of in a responsible manner?
- How does its performance compare with other products?

Using NGL's Approach to Get the LED Fixture you Need

Judging Criteria

In-person evaluation:

- Color
- Illuminance
- Light distribution
- Glare control
- Serviceability
- Controllability
- Value
- Aesthetic appearance
- Bonus

Documentation analysis:

- Luminaire Efficacy
- Lumen maintenance



Applying the Judging Criteria

- Visual performance – is it going to look like what I'm used to?
 - color – blue or yellow?
 - distribution – where does the light go, what pattern does it make?
 - glare control/ brightness – can you do what you need to do without being blinded?
 - appearance – how will it look in its intended application?
- Controllability – will it dim like my current fixtures?
- Performance over time – is it going to last as long as the manufacturer claims and still look the same?
- Energy savings – is it going to save me the energy promised?
- Serviceability and Replacement – can the electrician get into the fixture to service or replace a component when needed?
- Value – is it worth all this money? How does it compare to other fixtures that do the same thing?

Color

- Color is more critical for some applications than others
- CRI vs. CCT



Light Distribution



- Striations and shadows
- Outer beam of light
- Sharp cut-off at edge of beam

Brightness/ Glare Control



- How much light do you need?
- How will the fixture be viewed?

Controllability

Look at entire system

Range of dimming

Flicker, color shift, jumping,
short dimming range



Lumen Maintenance - Documentation is Key

- LM-79 test report
- Product specification sheet
- LM-80 test report on LED package/module/array
- LED package/module/array specification sheet
- ISTMT on submitted model
- ENERGY STAR TM-21 Calculation

Serviceability & Replacement

Is it accessible in place?

Are instructions clear?

Existing modules may need to be replaced with higher efficacy/similar output modules in the future.



Value

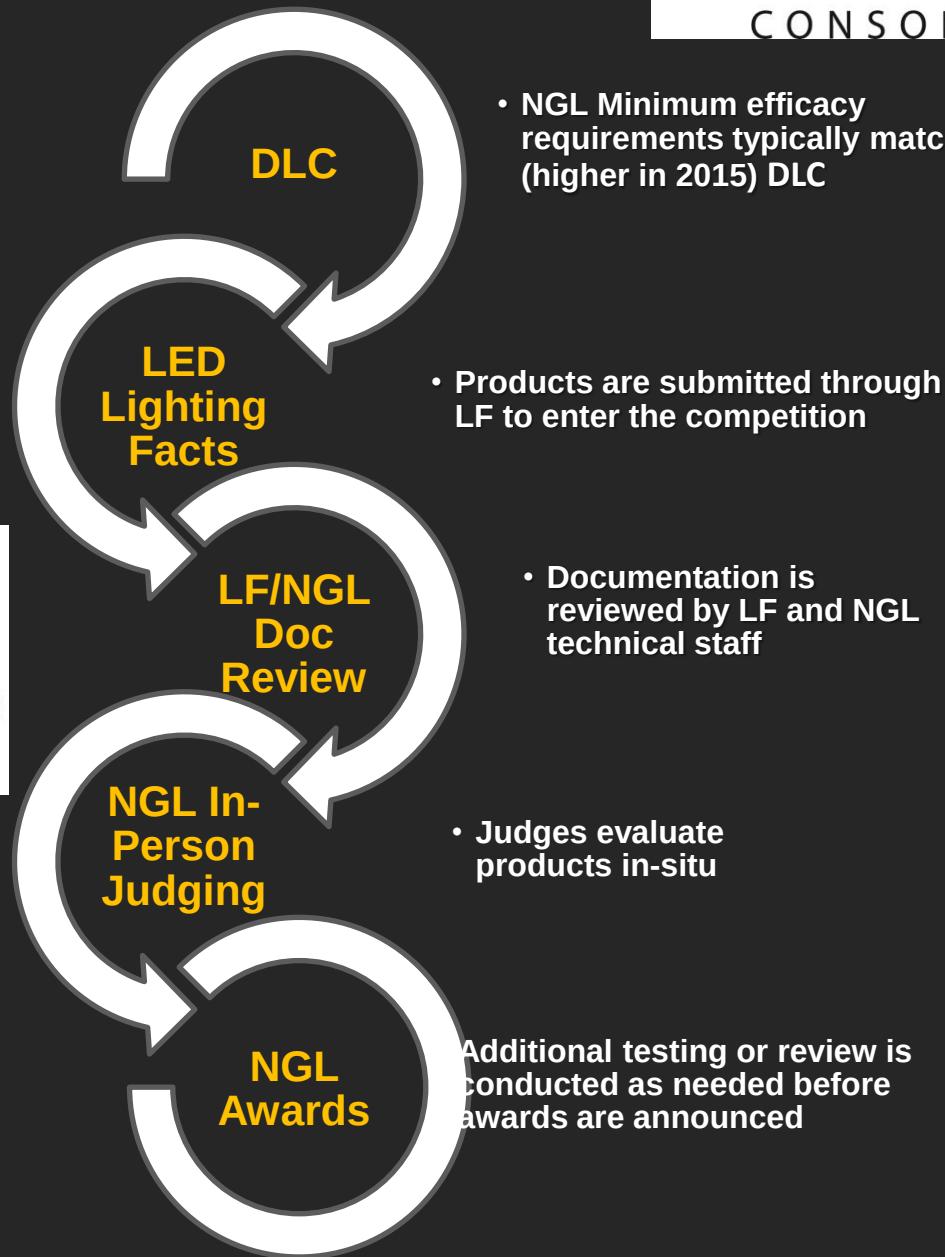
Is the move to LED worth the initial cost?

Costs can vary dramatically for very similar fixtures

Make sure options chosen match the application, each option affects cost



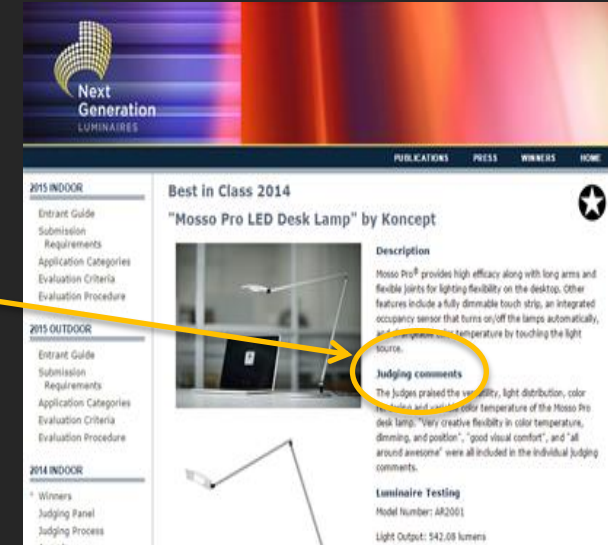
Using all Available Resources



Using NGL Materials

Notes from the judges are key.

www.ngldc.org



Thank You

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PNNL

www.ssl.energy.gov