Emerging LED Lighting Technology

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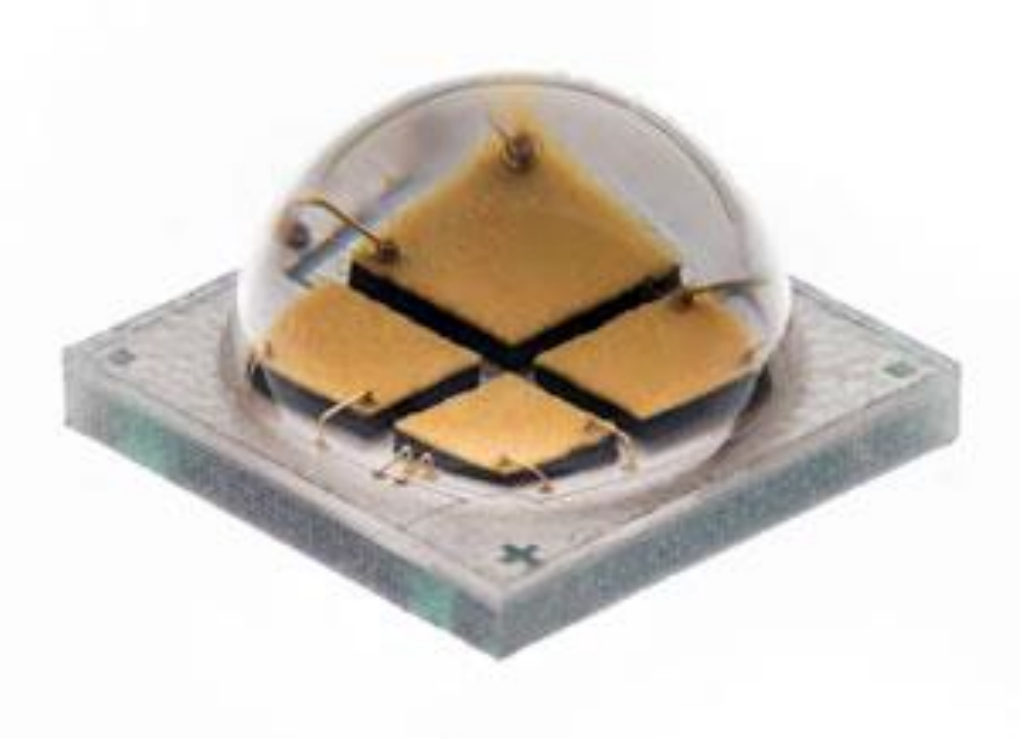
- September 3rd 2014

EnergyTrust of Oregon

What is it?

Light Emitting Diode

- Mounted in a “package”
- Many components
- White light



Technology

- Baseline
  - HID, Fluorescent, Incandescent
- LED
  - Replacement lamps
  - Luminaires (fixtures)

Benefits

- Directionality
- Size
- Extended Life
- Instant on
- Energy Efficient

Future

- Experts anticipate by 2020 there will be a 50% reduction in net electrical lighting energy consumption due to LED technology

Fun Facts

- There are 32,256 individual LED lights in the ball used for the New Years Eve Times Square ball drop!
- An LED lamp in a newborn’s room today will likely not be replaced until the child goes off to college.

History

A Little History

1995 - The first LED with **white light** from luminescence conversion is presented and is launched on the market **two years later**.

2006 - The first light-emitting diodes with **100 lumens per watt** are produced.

A Little History

2007:

2009:

Home Depot begins offering LED product

2013:

After 6 years on the market, LEDs have reached a market share of over 4%

Performance Progress

- In 2007, commercially available LEDs - 90 LPW
- In 2013, commercially available LEDs - 200 LPW
- **Today:** LED products for every application

Product Evolution Case Study

2007: 42 LEDs, 650 lm, 12 Watt

2011: 8 LEDs, 650 lm, 10.5 Watt

2012: 5 LEDs, 650 lm, 10 Watt

2013: 3 LEDs, 650 lm, 9.5 Watt

Product Qualification

January 1st 2014

22,055 listed products

August 20th 2014

54,486 listed products

DESIGNLIGHTS CONSORTIUM

The DLC QPL

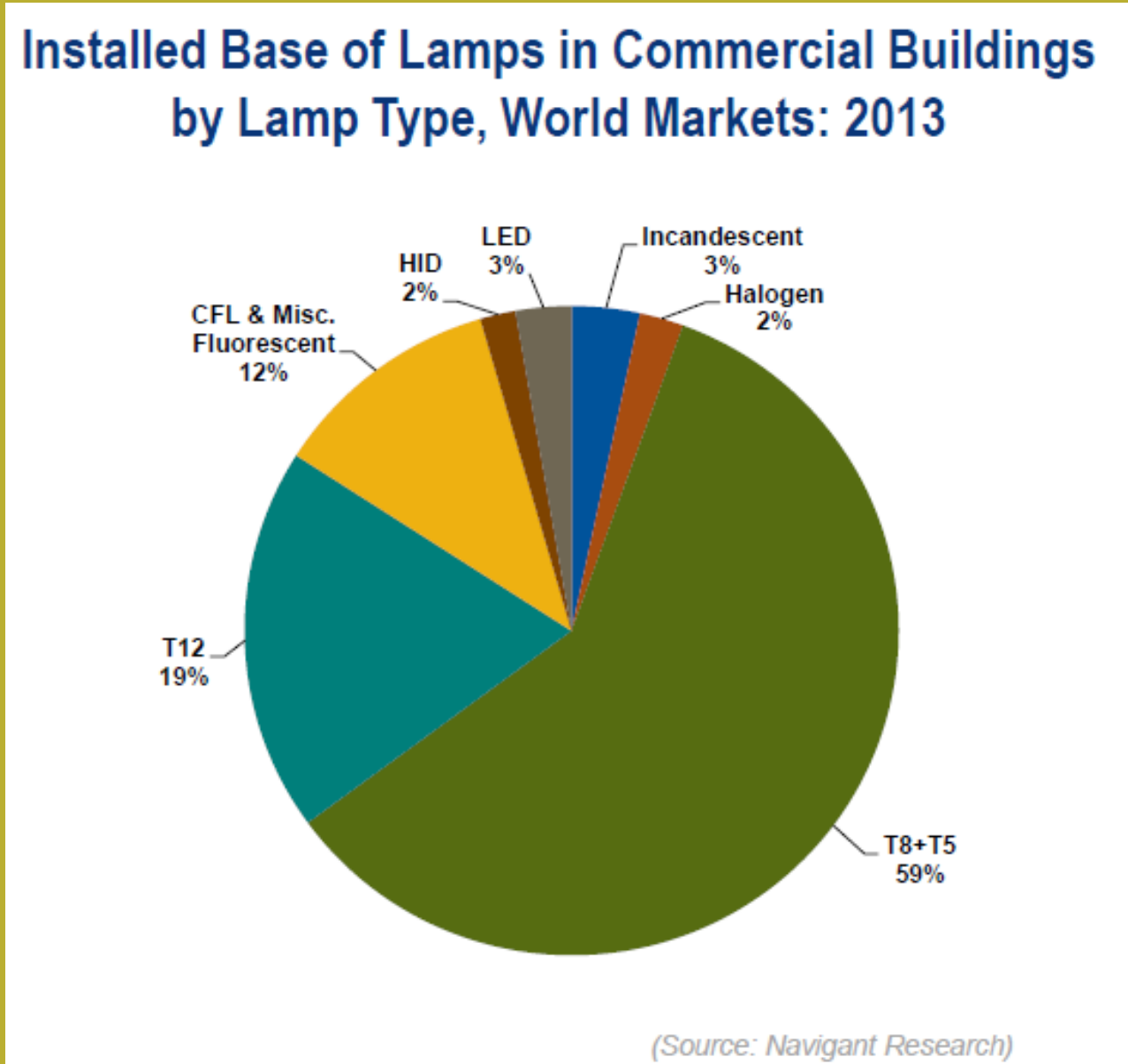
Qualified Products List

View Category Specifications

Data

Installed Base: Commercial Buildings

- 2013 global installed base: 10.6 billion lamps
- Linear fluorescent makes up over three-fourths of installed lighting



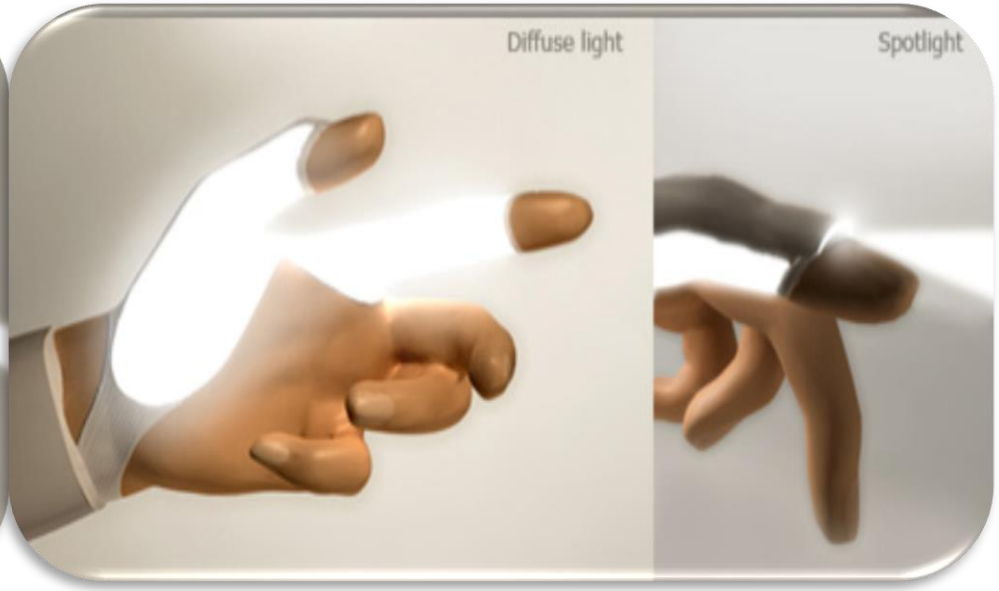
Percentage of Projects with LED

	Commercial Building	Manufacturing Facilities	Multifamily
2014	59%	61%	91%
2013	58%	34%	73%
2012	33%	13%	44%

Program Savings – LED measures

	Commercial Building	Manufacturing Facilities	Multifamily
2014	50%	63%	75%
2013	43%	19%	46%

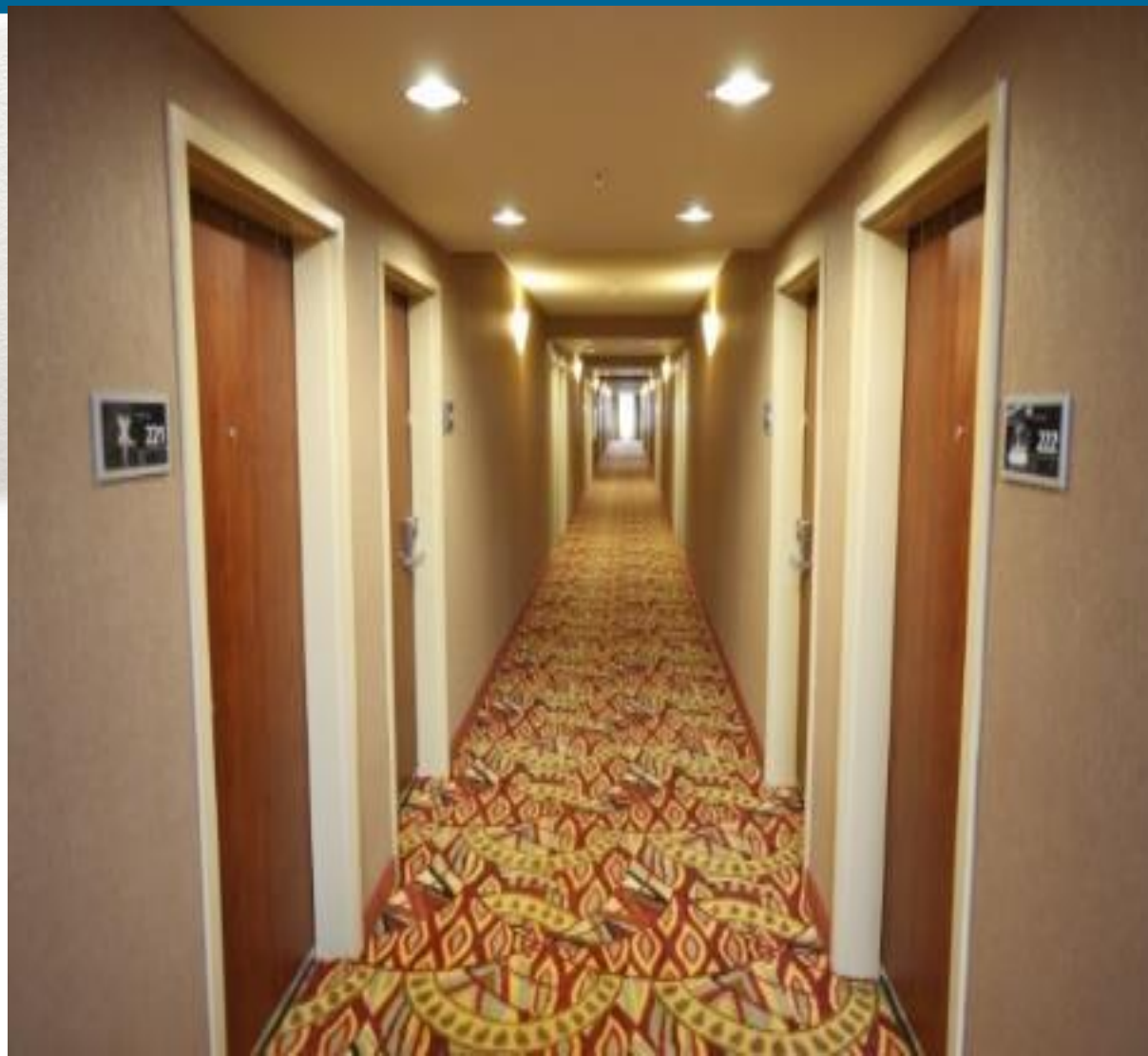
Product Applications


Diffuse light
Spotlight

Product Cost Comparison

	Fixture type	Incumbent Fluorescent	LED Equivalent	Wattage Savings
	Surface mount wrap	$95	$132	8-15 watts
	Recessed troffer	$80	$135	8-15 watts
	Fluorescent T5HO Hibay	$125	$395	35-40 watts

Recessed Downlighting



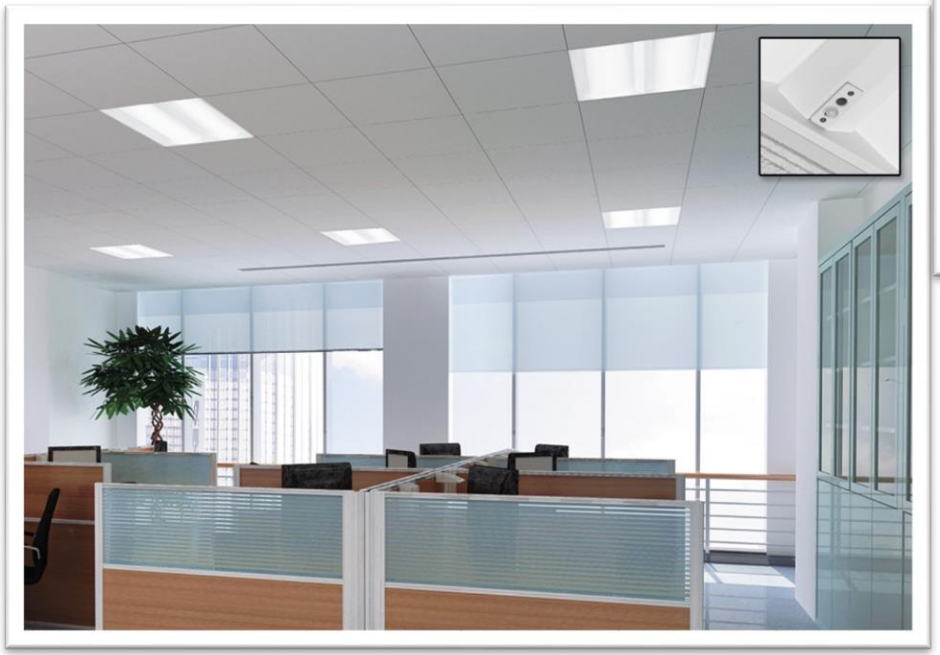
Track Lighting

Existing:
Incandescent

Replacement:
LED screw-in lamp

Hibays and Lowbays

Office Lighting



Outdoor

Thank you!

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