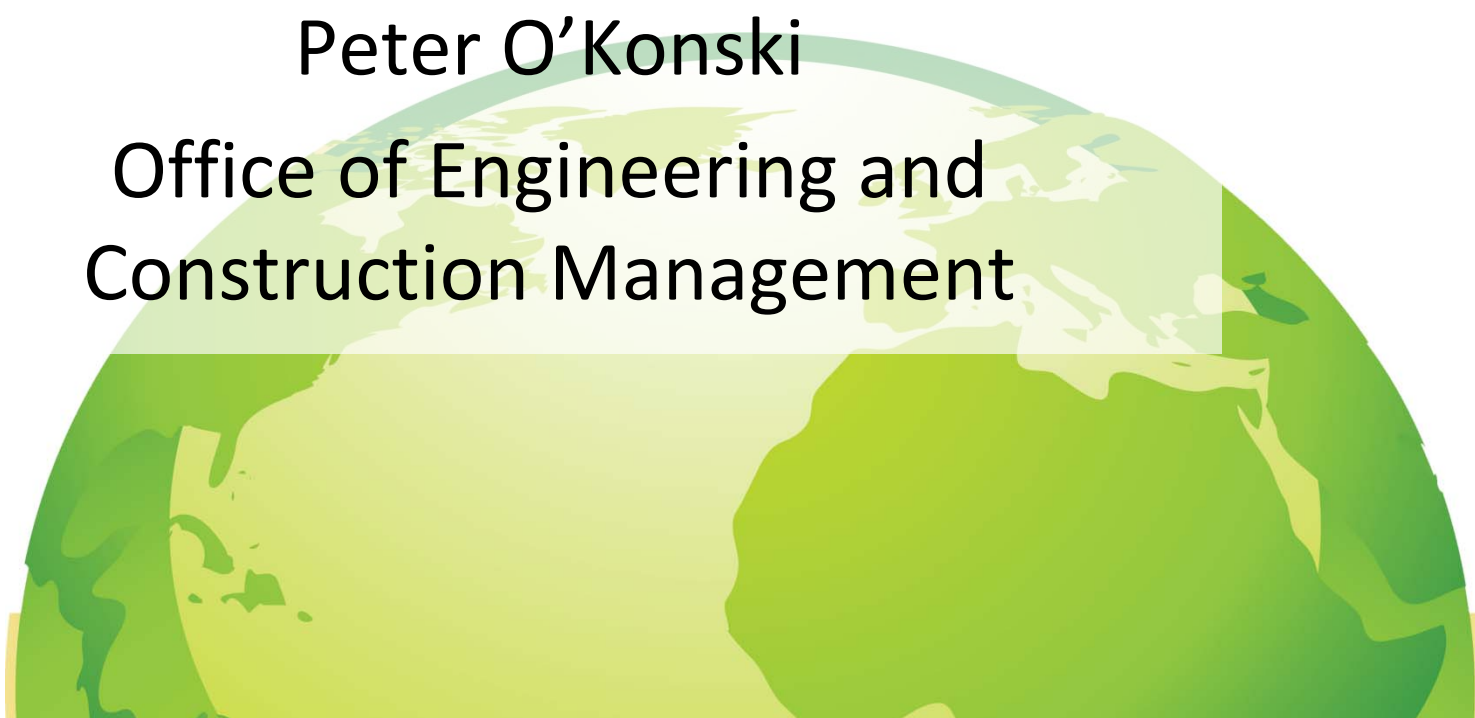
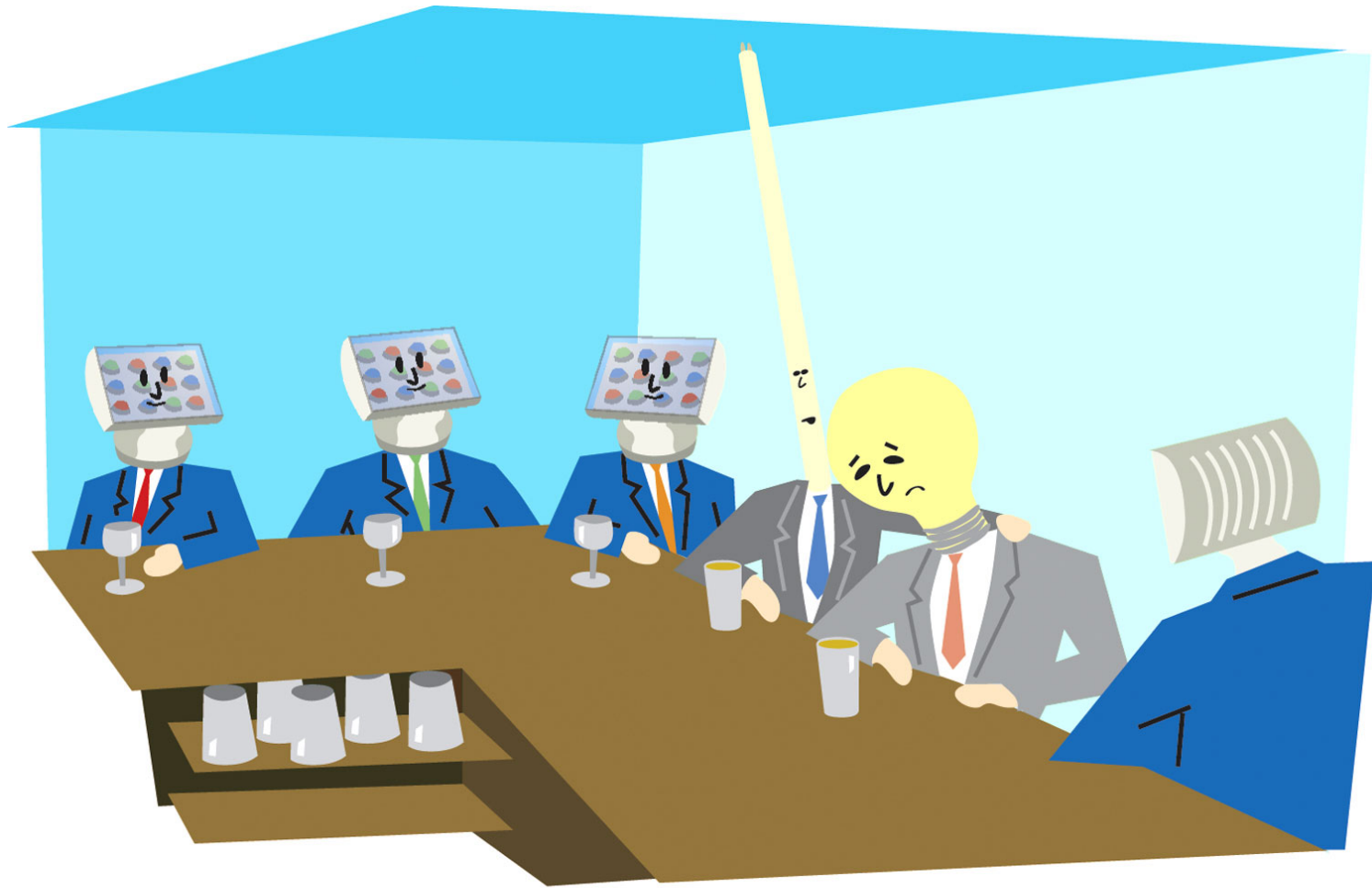


LED Lighting – The “Next Big Thing”

Peter O’Konski

Office of Engineering and
Construction Management





"We had a good run while it lasted..."

A Brief LED History

- 1962 First visible LED
 - 0.001 lumens
- 1960's Red LEDs (HP & Monsanto)
- 1970's Green LEDs
 - 0.01 lumens
- 1980's Watches, Calculators
 - 0.1 lumens
- 1990's Blue LEDs (
 - 1 lumen
- 2000+
 - 10-100 lumens
- 2005
 - 1000 lumens)



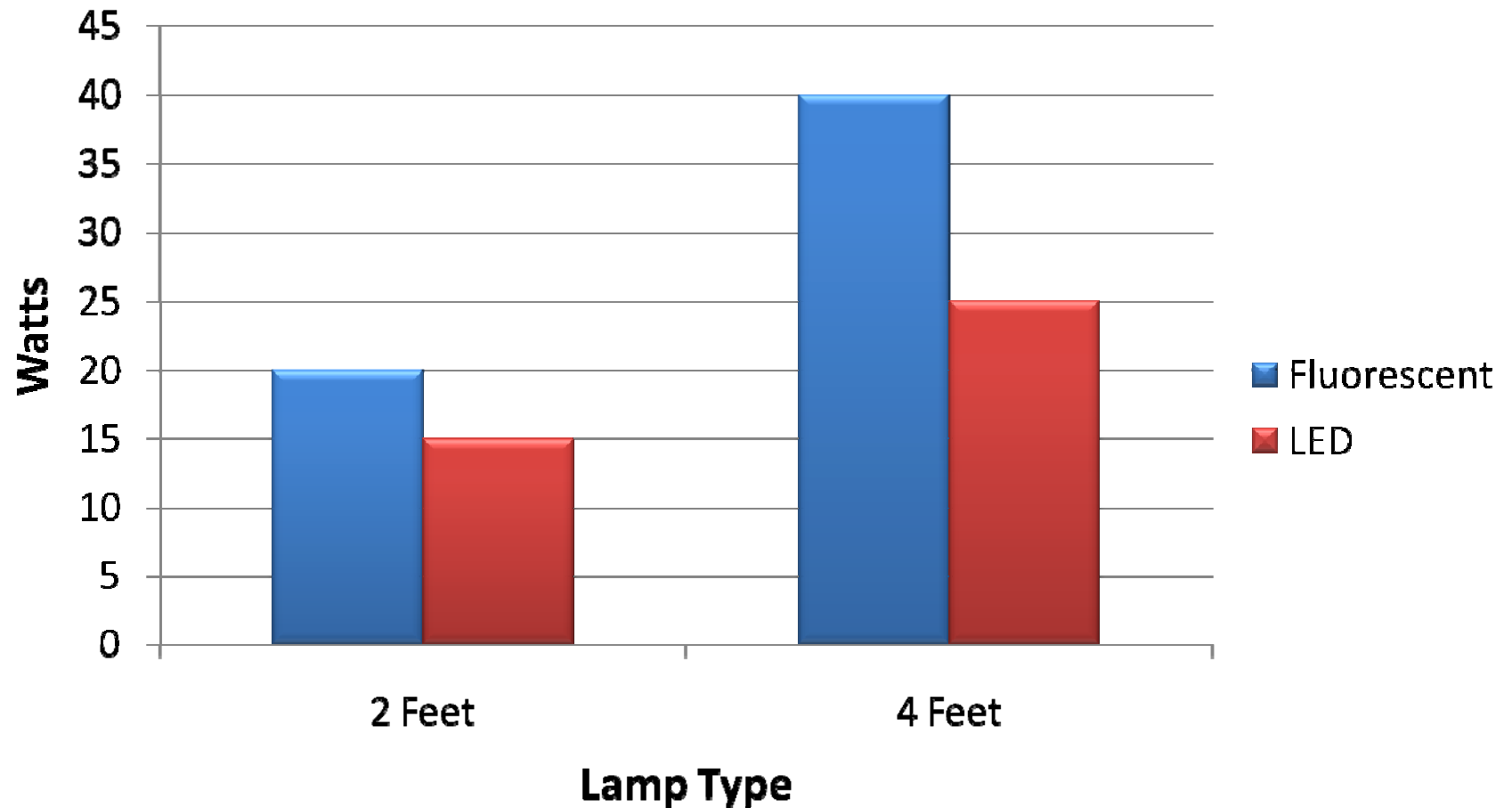
Ponca City Memorial Fountain Ponca City, OK
LEDs Reduce Lighting from 8,000 to 600 W

Lighting Industry Facts

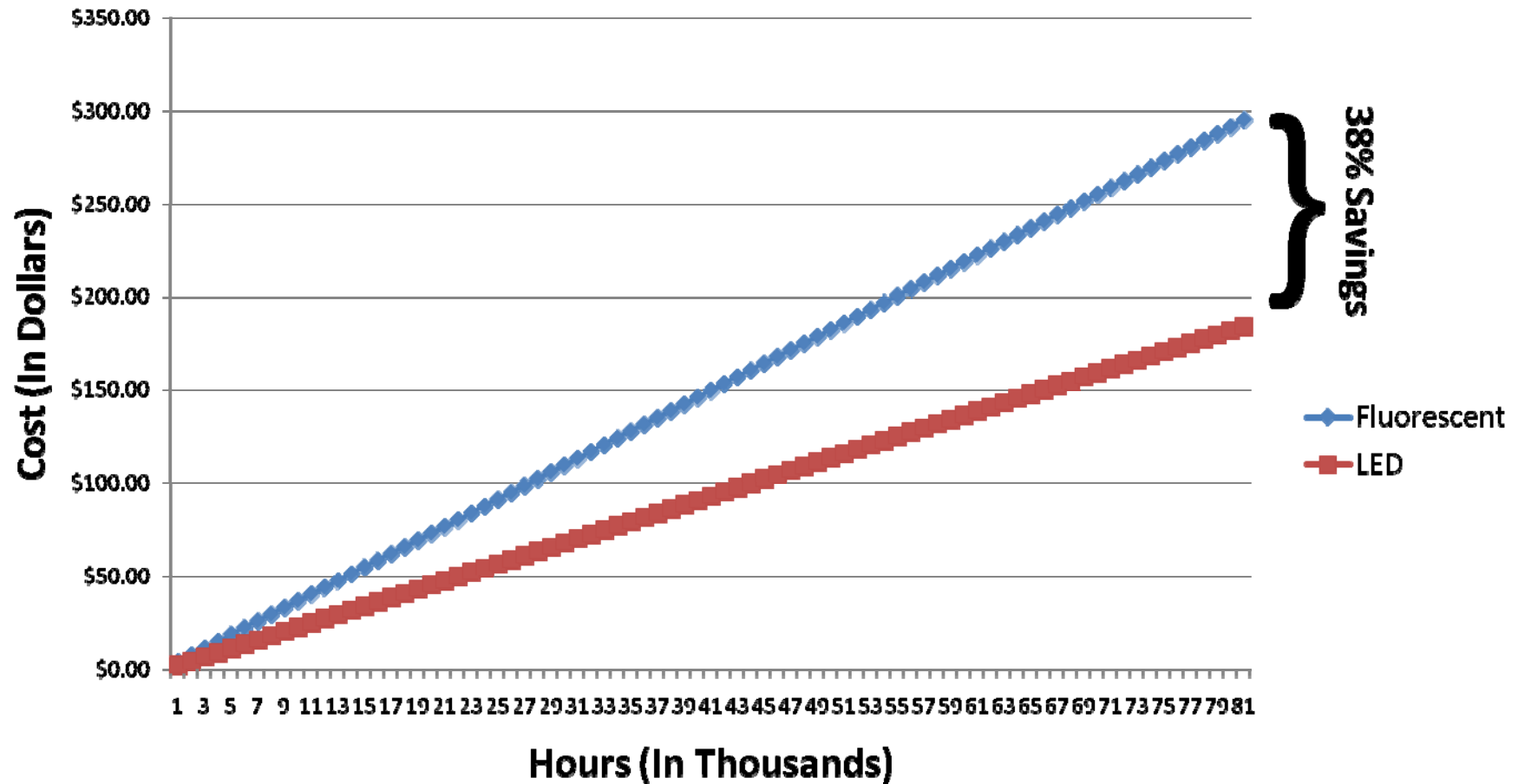
- Lighting - a \$70 Billion global industry
 - North America one-third of total
- Lighting in the U.S. uses about 25% of the nation's electricity
- North Americans spend over \$40 billion/year on energy to light homes, offices, factories, and places of business
- Solid State Lighting could reduce lighting energy 50% by 2025
- The savings potential in the US thru 2020 could:
 - Save 760 GW of electrical energy 2000 to
 - Eliminate 258 metric tons of carbon emission



Hourly Energy Consumption



4 Foot Cost of Use



Courtesy: Enervation Lighting

10/26/2009

Example

Illinois- Greater Chicago YMCA Group: 60 Lights

LAMP	T8	LED RETRO	INVESTMENT/ SAVINGS
Wattage	32	20	
Run Time	18/7	18/7	
# Running Years	8	8	
KW Cost/ Hour	0.0918	0.0918	
Initial Investment			\$6,000.00
Yearly Energy Cost	\$1154.88	\$721.88	\$433.00
Yearly Costs (Bulbs, Maint, Ballasts)	\$3,085.55		\$3,089.55
ROI BREAKEVEN POINT IN YEARS			1.7

Example

New York State- Beth Israel Hospital: 60 Lights

LAMP	T8	LED RETRO	INVESTMENT/ SAVINGS
Wattage	32	20	
Run Time	12/6	12/6	
# Running Years	8	8	
KW Cost/ Hour	0.149	0.149	
Initial Investment			\$6,000.00
Yearly Energy Cost	\$1,071.00	\$669.39	\$401.61
Yearly Costs (Bulbs, Maint, Ballasts)	\$1,968.35		\$1,968.35
ROI BREAKEVEN POINT IN YEARS			2.53

Example

New Mexico- Energy Conservation and Management
Division: 60 Lights

LAMP	T8	LED RETRO	INVESTMENT/ SAVINGS
Wattage	32	20	
Run Time	18/7	18/7	
# Running Years	8	8	
KW Cost/ Hour	0.0751	0.0751	
Initial Investment			\$6,000.00
Yearly Energy Cost	\$944.75	\$590.50	\$354.25
Yearly Costs (Bulbs, Maint, Ballasts)	\$2,106.00		\$2,106.00
ROI BREAKEVEN POINT IN YEARS			2.44

LEDs are Showing Up In Fixture Retrofits

INDOOR



Residential



Hospitality



Commercial / Industrial

OUTDOOR



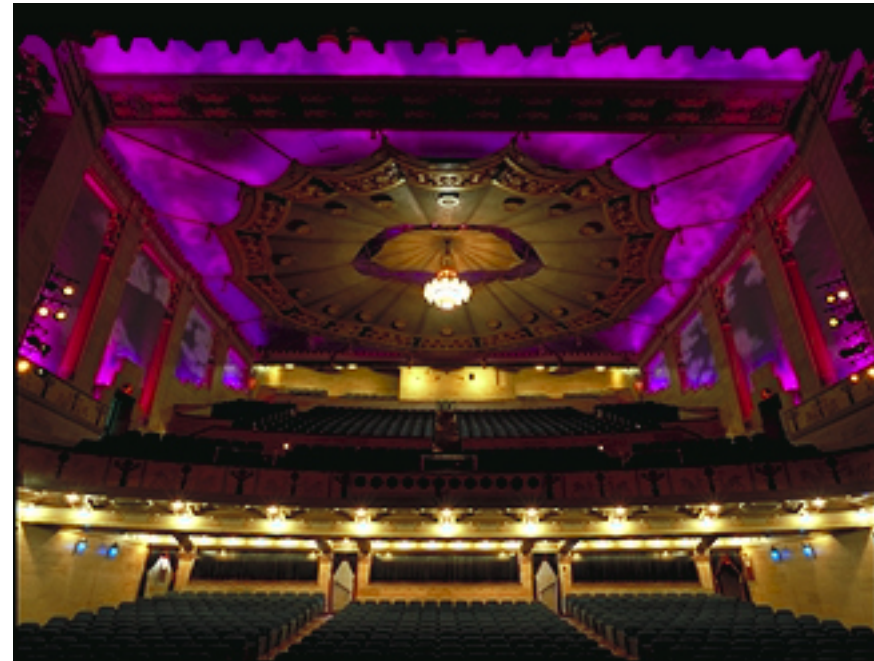
Residential



Commercial / Industrial

Conclusion

- Be aware that the technology is here
- LEDs not just for traffic lights and signs
- Major lighting manufacturers are offering LED lighting solutions
- Opportunity to encourage Sites to adopt as part of normal O&M as well as energy savings contract activities.



Missouri Theater – St. Joseph Missouri