

Tuning the Spectrum:

Light, Health, and the Pursuit of Happiness

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New Chapter Begins

- 1st All LED MLB Stadium Project in Action...with Many Teams Watching
- 1st Lighting Playbook for Professional Sports Teams & Universities
- 33 School Projects Implementing Tunable Systems
- 1st NBA Team to Adopt Tunable System for All Applicable Areas in Practice Facility, Main Arena & Portable Systems
- Multiple Healthcare Projects in Progress with Tunable Systems
- Full Length Documentary on Lighting Revolution in Production

Perfect Wave Rising

Enhanced
Human
Experience

Job Creation
from SSL
Projects

Research Applied
Solutions with
Education Programs

Government
Guided
Technology
Transition

Efficiency & Rebate
Finance Model

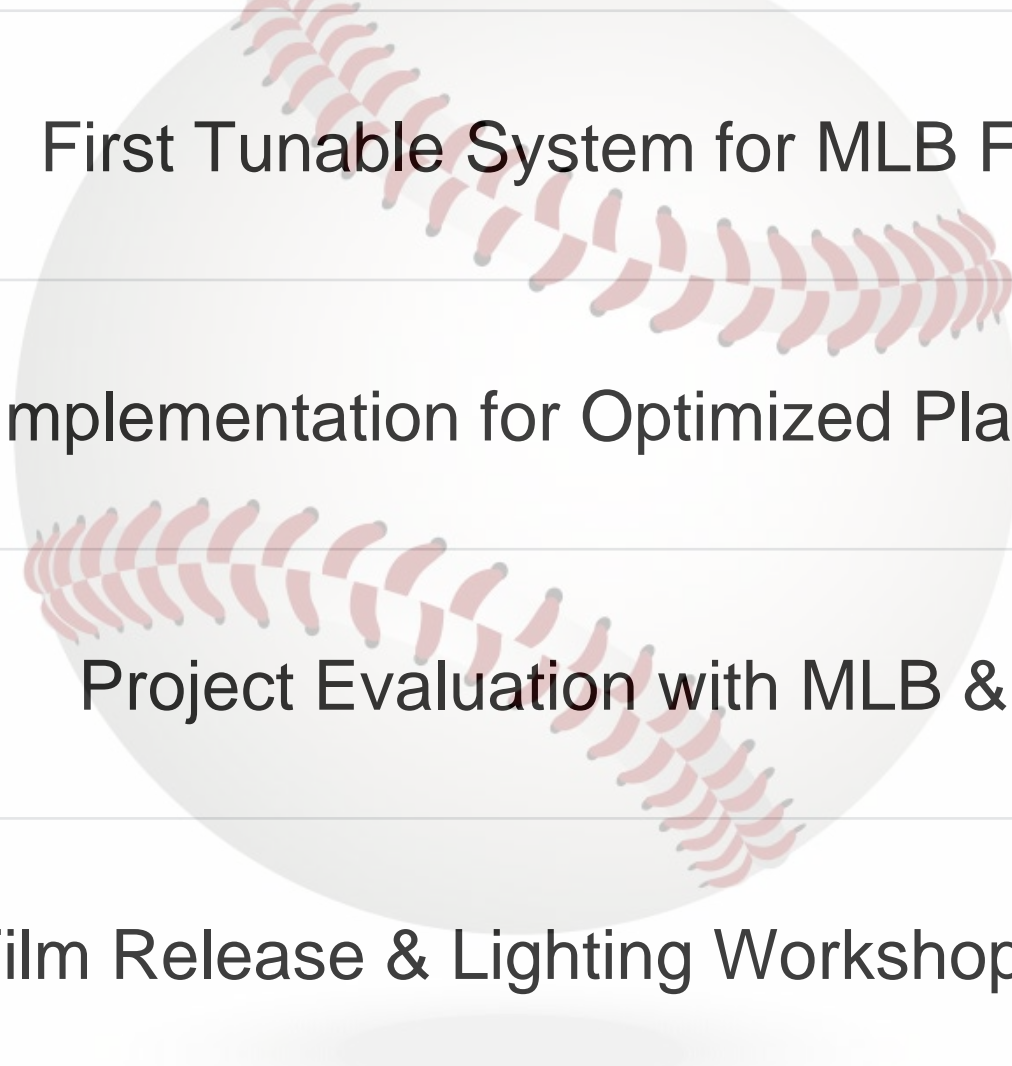
Seattle



Seoul



108 Red Stitches

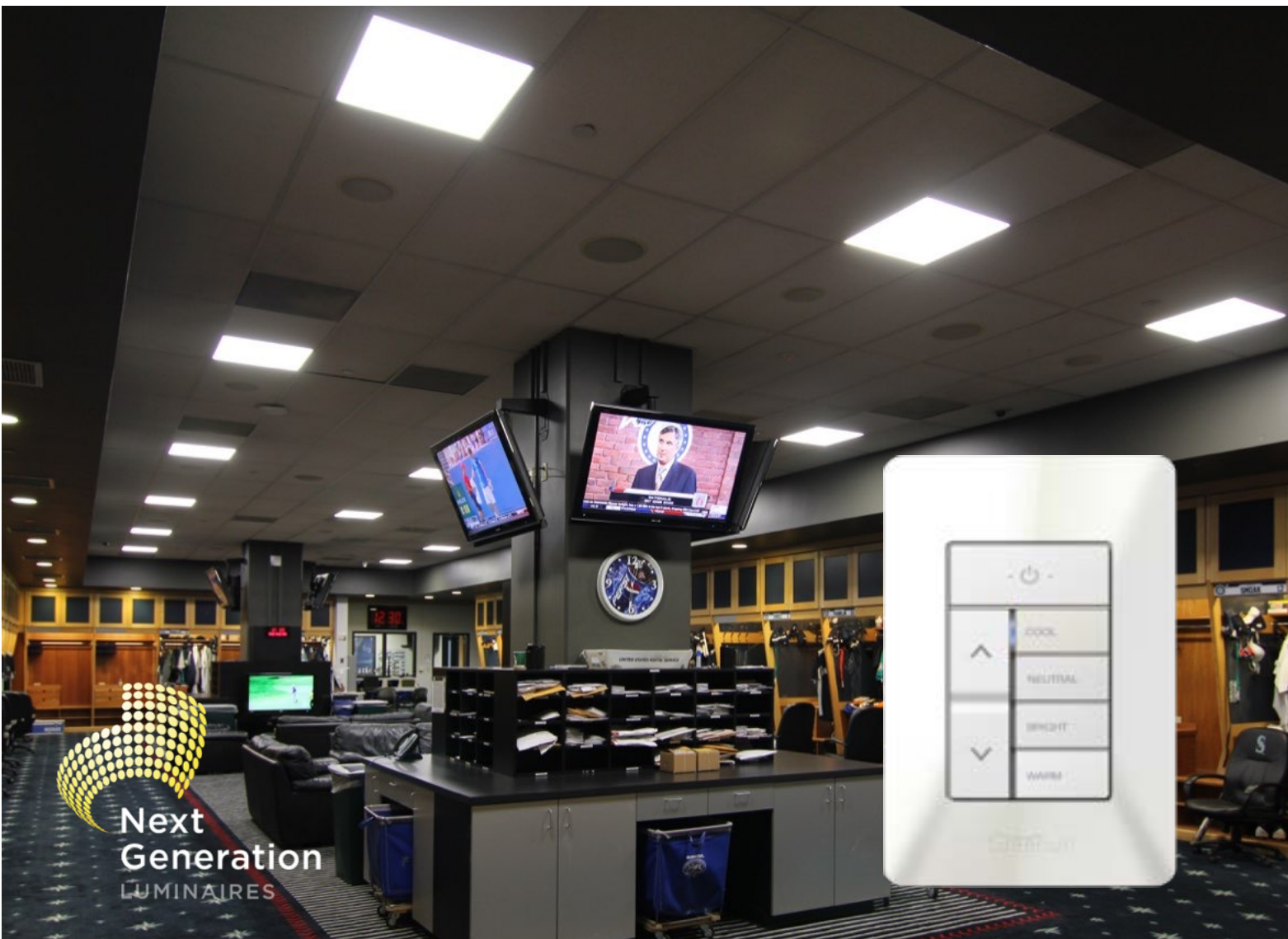


2013	First Tunable System for MLB Facility
2014	Design & Implementation for Optimized Playing Environment
2015 January	Project Evaluation with MLB & LDL
2015 TBD	Project Film Release & Lighting Workshop at Safeco Field

<http://youtu.be/r5C7cuip5GQ>



Pilot Projects



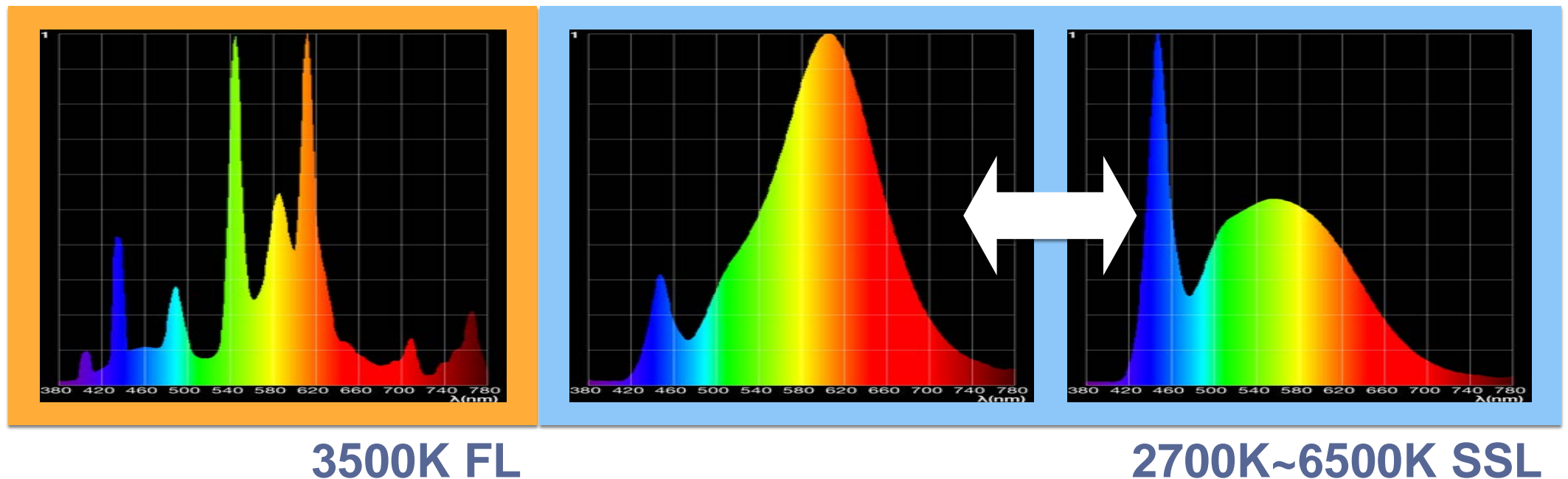
1st Generation Tunable System

2nd Generation Tunable System

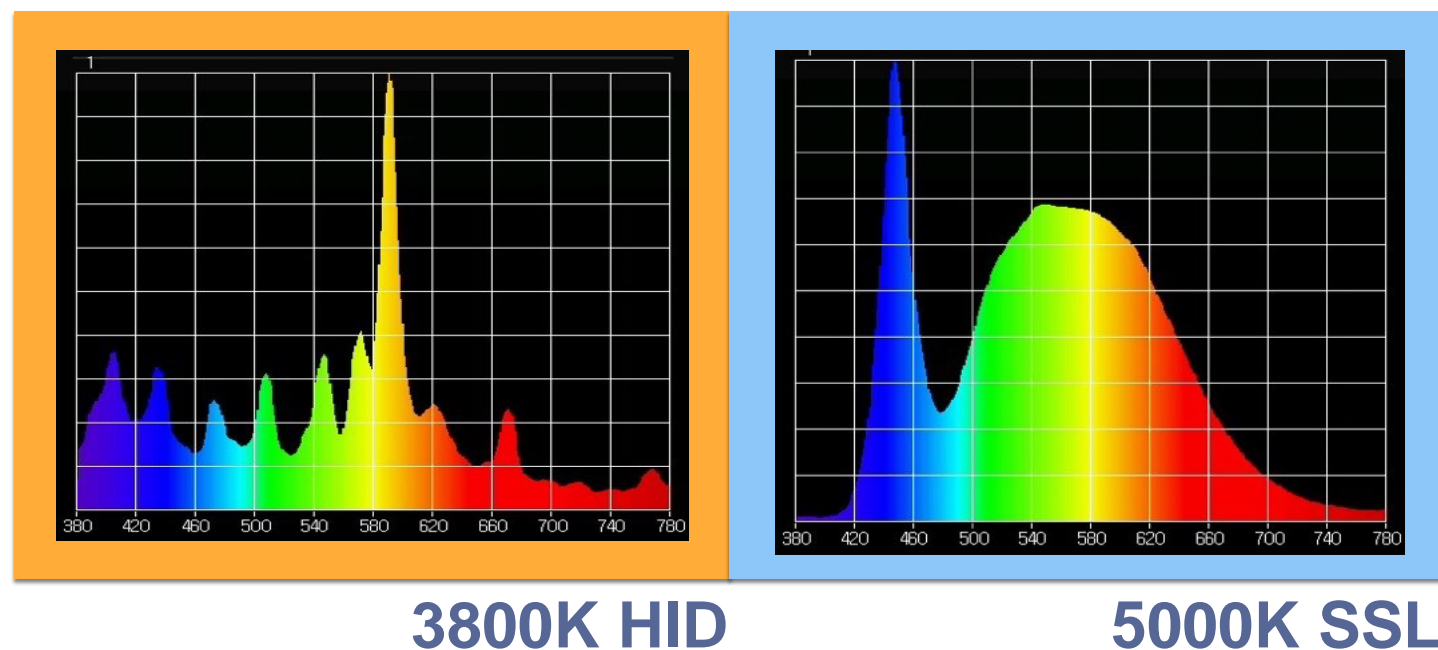


Spectrally Targeted System

Interior



Exterior



MNF Circadian Advantage

- WC teams won 63.5% of MNF and EC teams 36.5%
- West Coast teams won 59.3% of all their home games and 71.0% of their MNF home games
- EC teams won 56.5% of their home games, but only 43.8% of their MNF home games
- When EC teams play a non WC team on MNF, their home winning percentage increases by 23.7 percentage points, to 67.5%.
- When WC teams play a non EC team on MNF, their home winning percentage decreases by 12.9 percentage points to 58.1 %.

Roger S. Smith, Christian Guilleminault and Bradley Efron, Sleep, 20(5):362-365
© 1997 American Sleep Disorders Association and Sleep Research Society



Human Factors

Avg Annual Salary for Pro Athlete

2~4 M

Annual Payroll for Pro Teams

60~240 M

Chance of Getting Injured %

20%

Value of Drug Free Conditioning

Priceless



The Sports Industry is a \$450
Billion/year Industry

13% of People say they pay attention to
Science, 71% say they pay
attention to Sports

All Industries meet on a Sports Field

Lighting Playbook, V.1

- First Comprehensive Guidebook on SSL Sports Lighting Applications
- Marriage of Science & Technology for Enhanced Human Experience
- Broadcasting Partners and League Representations
- Recent SSL Sports Project Evaluation



Healthcare Perspectives

- In 2010, the United States spent \$40 billion on healthcare construction
- 0.5 Day Reduction of Avg Hospital Stay Can Save Annually \$113M
- Human Centric Lighting Can Achieve Greater Survival Rate, Faster Recovery, Longer Independent Living for Seniors and Less Pain and Stress After Major Surgery
- Implication for Professional Athletes

Providence Medical Center

- Postpartum Patients and Recovery Time Improvement
- Medical Malpractice Reduction for Night Shift
- Research Applied Configuration to Evaluate the Value of Tunable System for Hospitals



Senior Lighting Environment

- Larger Uniform Light Source to Minimize Glare
- Individually Addressable Wireless Controls Integration for Ease of Installation
- Central Control Platform Available with Localized Wall Control Option



World's Largest Building

- 30,000 People Work in the Building
- Disneyland or All NFL Stadiums Can Fit
- HID Highbays Provide Flickering, Buzzing Light
- Crane Operators Demand Glare Free Lighting
- Over the Winter Most of People Never See the Natural Light
- Night Shift Workers Have Greater Health Liabilities

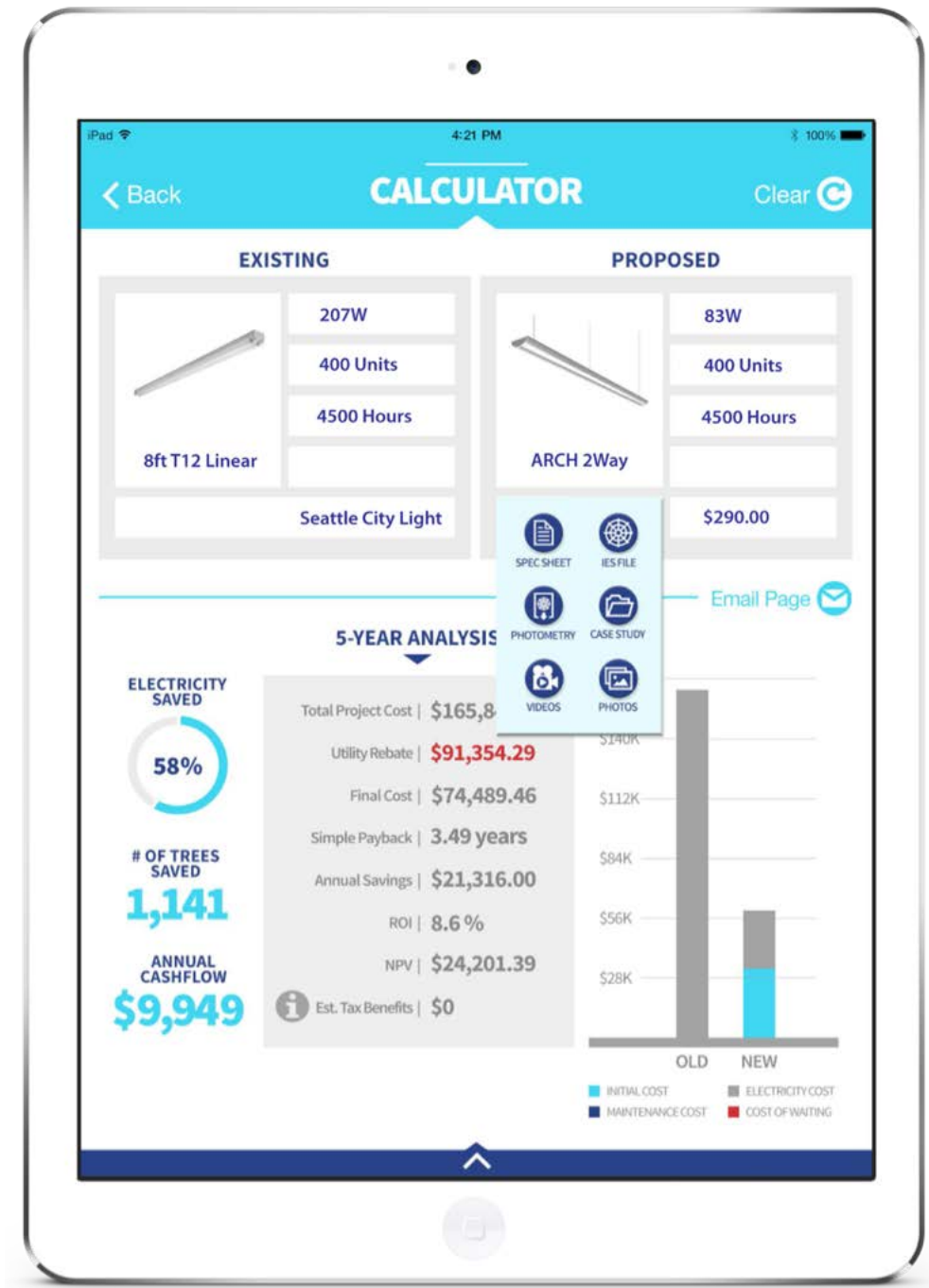
Financial Perspectives

- Mostly 2-3 Year Payback Just on Energy Savings
- Potential Annual Energy Savings = \$5 M per Year
- 30,000 Employees with Avg of \$82,000 Annual Salary
- Improved Productivity 2% of 30,000 Employees \$49.2 M per Year
- Research Applied Design Potentially Has 10x Greater Benefit than Energy Savings



iOS App for Lighting

- Logical Calculation Method for Intangible Benefits
- Education & Presentation Tool for Lighting Professionals
- Instant Proposal Creation Tool for Simpler Projects



Tunable Task Lighting



Let's Change the World



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