

LIGHTING THE WAY

The Quality of Lighting's Impact on Functionality

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Key Presentation Take-Aways

- Light and Human Health
- Define Circadian Lighting
- Light in the Built Environment
- Why does Quality Lighting Matter?







Think like a Caveman

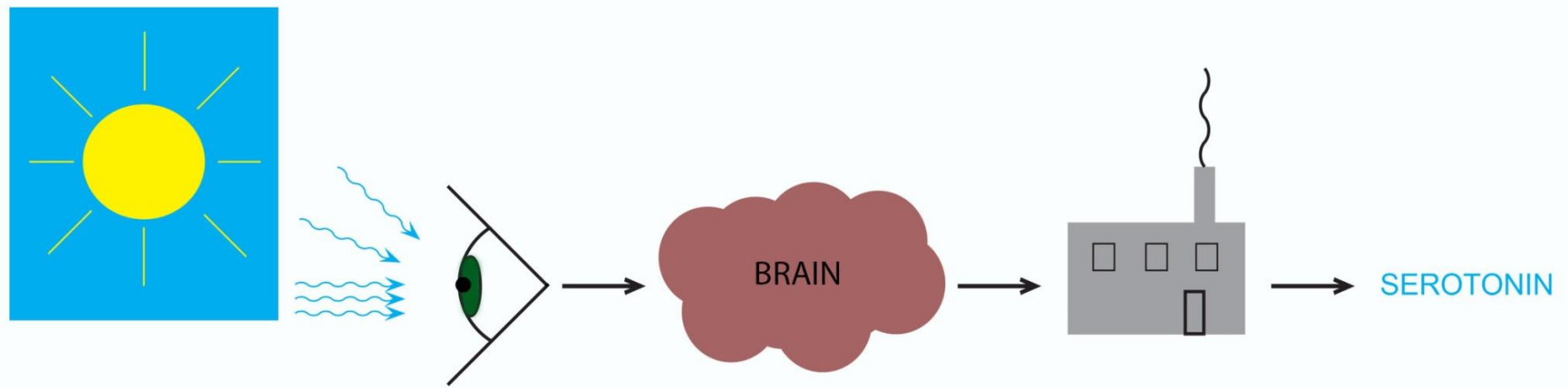


Light and Health

“If light were a drug, I’m not sure the FDA would approve it.”

Charles A. Czeisler, PhD, MD, FRCP
Professor of Sleep Medicine
Harvard Medical School



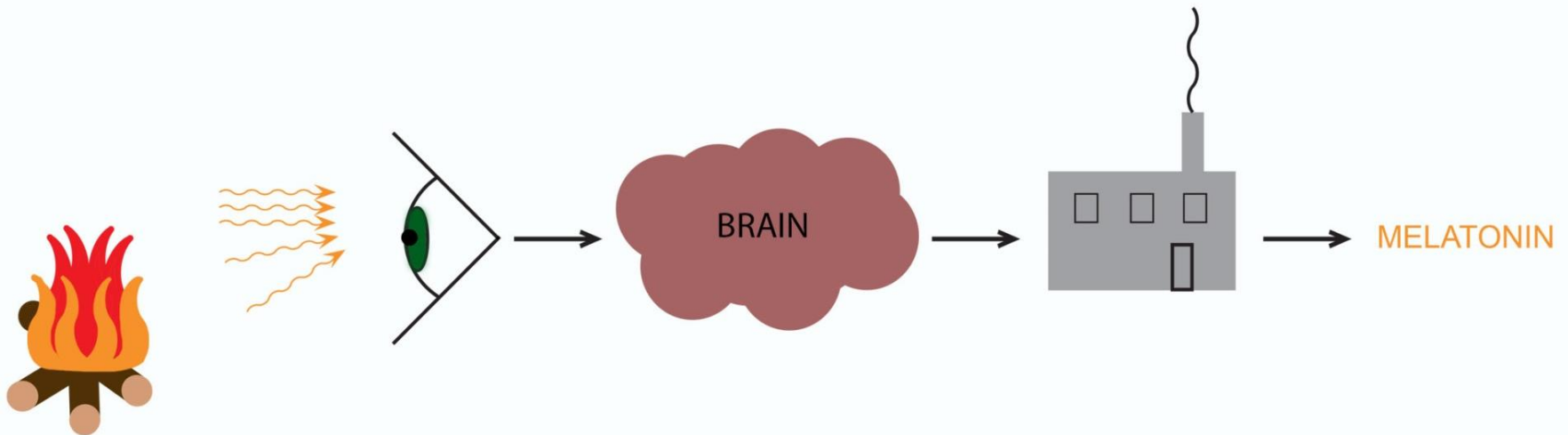


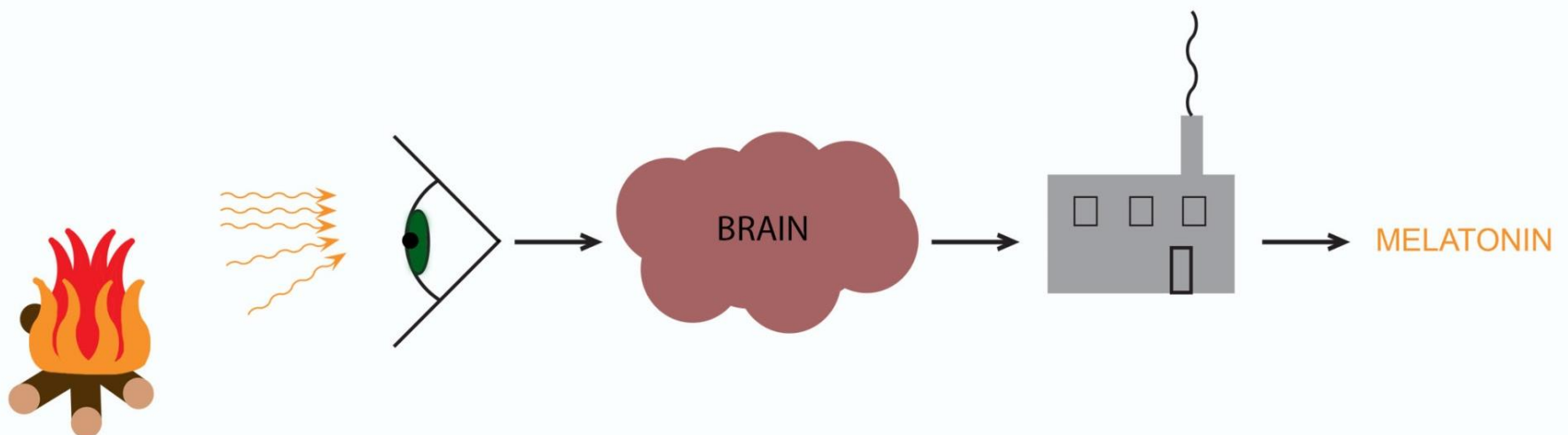
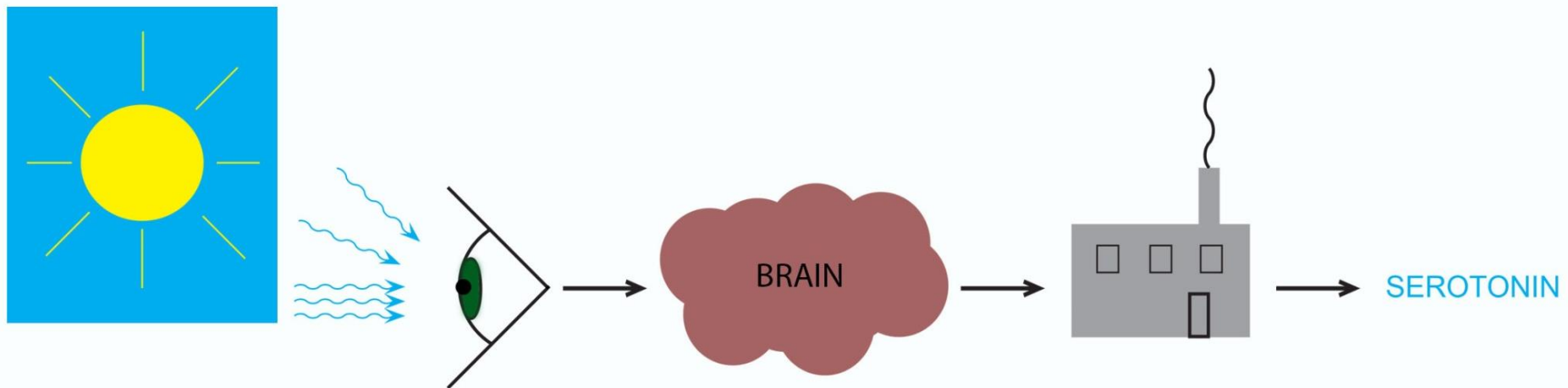
SEROTONIN:

- production stimulated by light
- regulates mood, appetite and sleep
- contributes to feelings of wellbeing and happiness

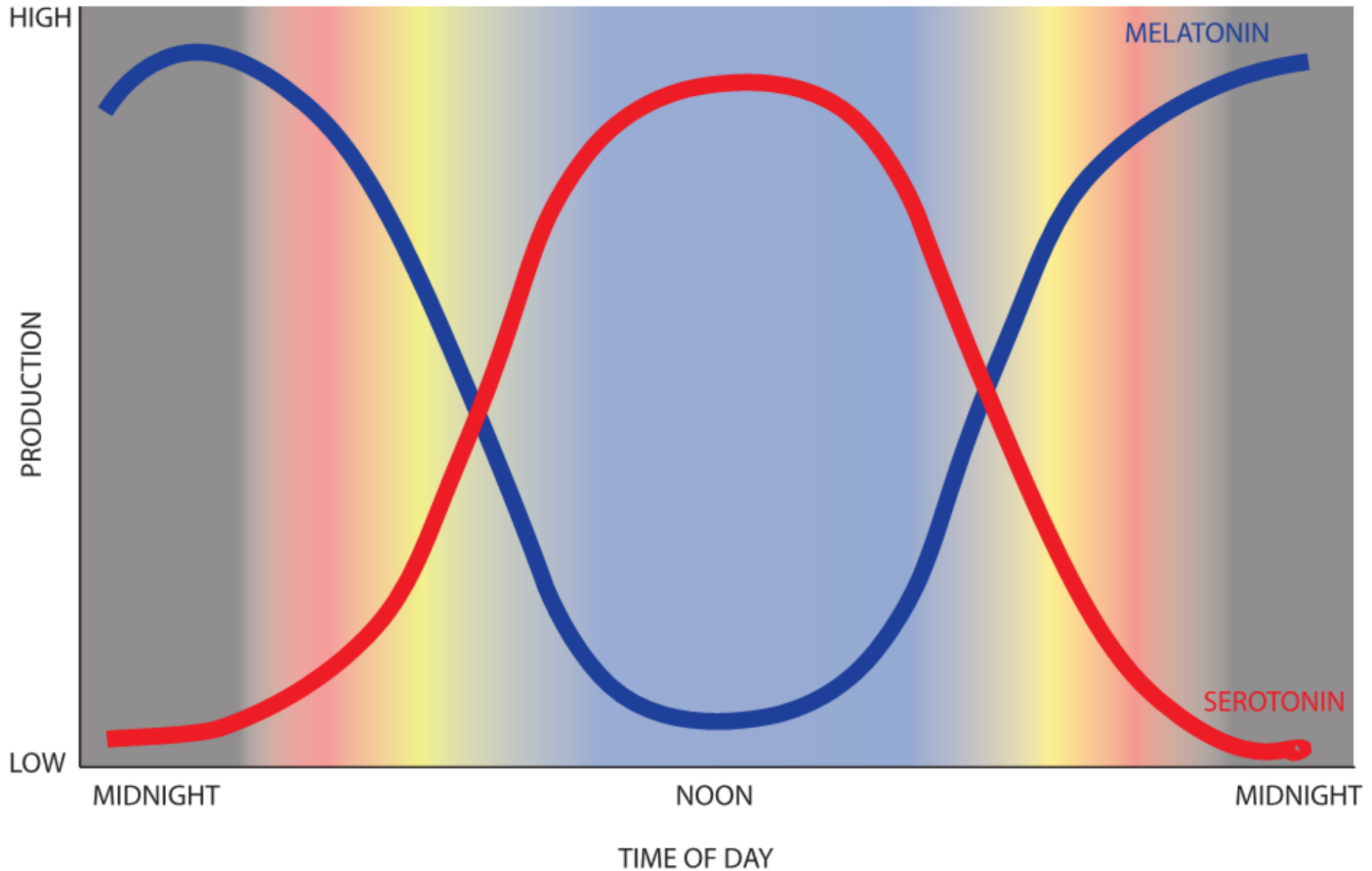
MELATONIN:

- production stimulated by darkness
- regulates sleep, blood pressure, reproduction
- contributes to sleep-wake cycle and health





Melatonin, Serotonin & Light



24 HOUR CIRCADIAN RHYTHM

MELANIN LEVEL



WAKE UP



BEST PHYSICAL PERFORMANCE



SLEEP



2 AM

4 AM

6 AM

8 AM

10 AM

12 PM

2 PM

4 PM

6 PM

8 PM

10 AM

12 AM

2 AM

4 AM



LOWEST BODY TEMPERATURE



HIGHEST BLOOD PRESSURE



POST LUNCH DIP

What is RNL's Definition of "Circadian Lighting"?

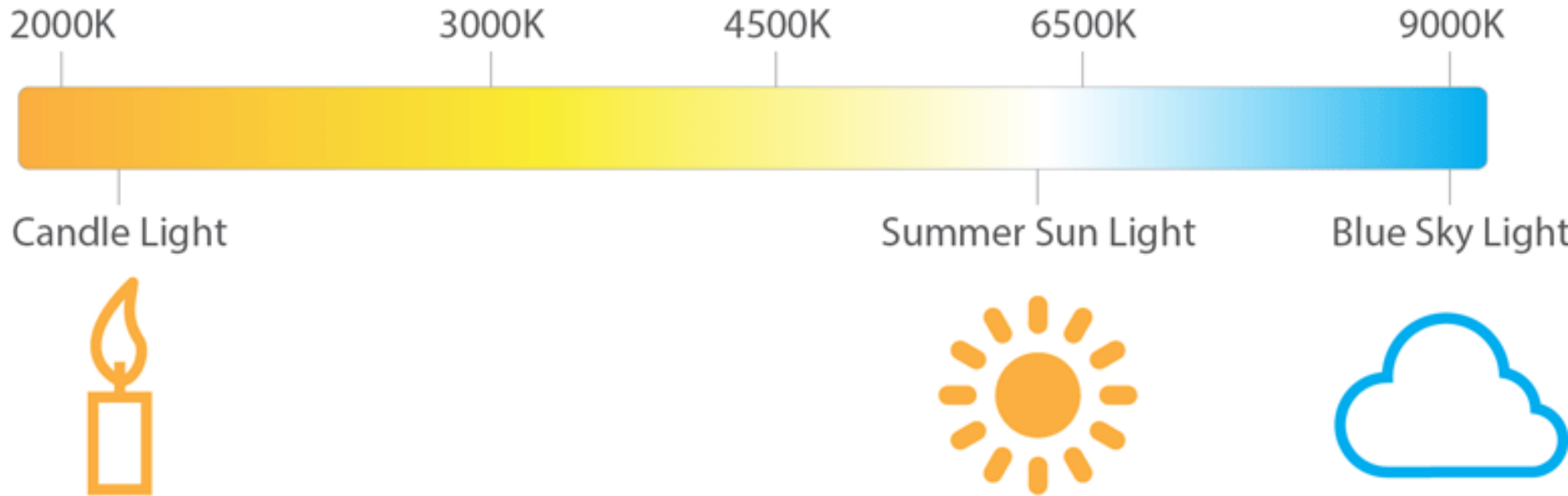
The term circadian lighting essentially refers to a system with the potential to produce lighting sequences that stimulate cortisol production (*blue light*) during peak daylight and suppress melatonin production (*elimination of blue light*) at night

Put simply, circadian lighting tries to imitate the light patterns we would have experienced before the built environment and technology came along.

Caveman lighting, if you will.



It's About More Than Just Color Temperature



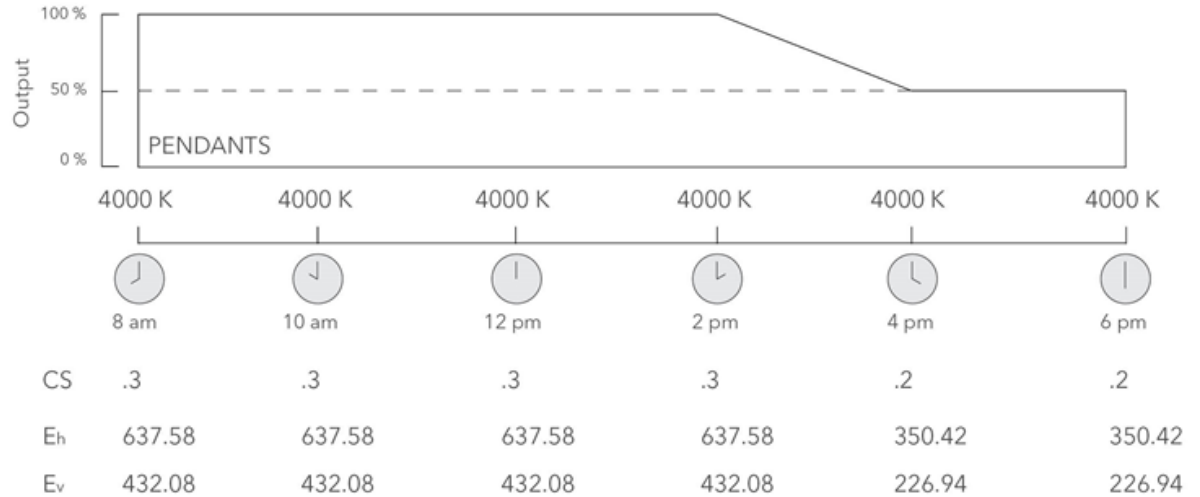




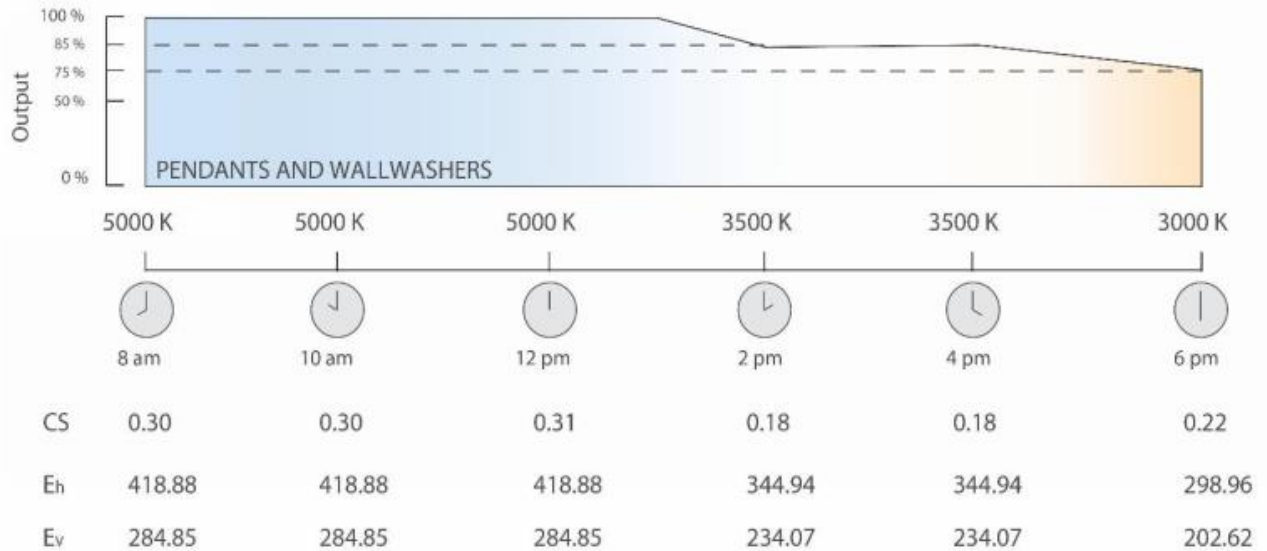


Biophilic Design Offices by Sky Factory

Static White Lighting



Dynamic White Lighting





9963

Pup On In!
Puppies at
LEASER SALES Shipshewana
260-768-7511









Metro





DISCHARGE
OVERFLOW
29

18
BREW-HARD



Lighting Quality

- It's about more than just the basics
 - Levels of Illumination
 - Uniformity
 - Aesthetics
- Think like a Caveman
 - Time of Day
 - Color
 - Intensity
 - Connections to the Natural Environment



Why Does this Matter to our Clients?



Resources



- Illuminating Engineering Society (IES)
- Lighting Research Center (LRC) at Rensselaer Polytechnic Institute
- Publications:



- Measuring And Using Light in the Melanopsin Age; Lucas et al, January 2014
- Biological Implications of Artificial Illumination; Wurtman, October 1968
- Blue-Light Hazard and LEDs: Fact or Fiction?; Liao, August 2016
- Bad Rap of Blue Light; RNL's Bannon-Godfrey et al, February 2016
- Circadian Distruption and Phychiatric Disorders: The Importance of Entrainment; Wirz-Justice et al, June 2009

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Thank you!



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