



Energy-Efficient Lighting Strategies

Understanding lighting technology and easy ways to save energy





Presenter

Matt Mareno

Senior Engineer

- ✓ Certified Energy Manager
- ✓ 11 years of experience working with NV Energy customers on energy incentive programs
- ✓ Member of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the Association of Energy Engineers (AEE)
- ✓ Bachelor of Science in Mechanical Engineering from the University of Nevada, Reno

Agenda

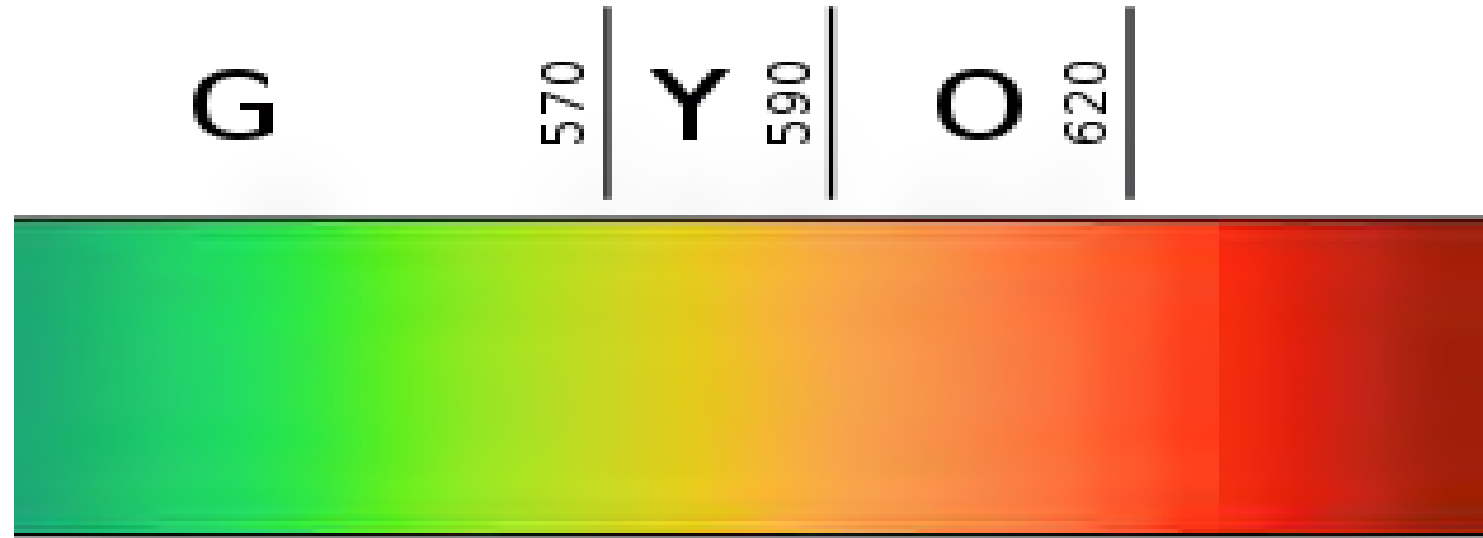
Fundamentals of lighting

Lighting technology

Industry trends

Incentives

Q & A



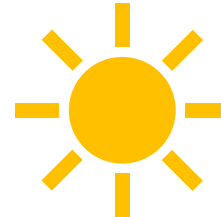
Learning Objectives



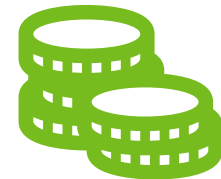
To show that lighting is an effective way to increase energy efficiency



To better understand the common terms used in the lighting industry



To learn the advantages of LED over other light sources



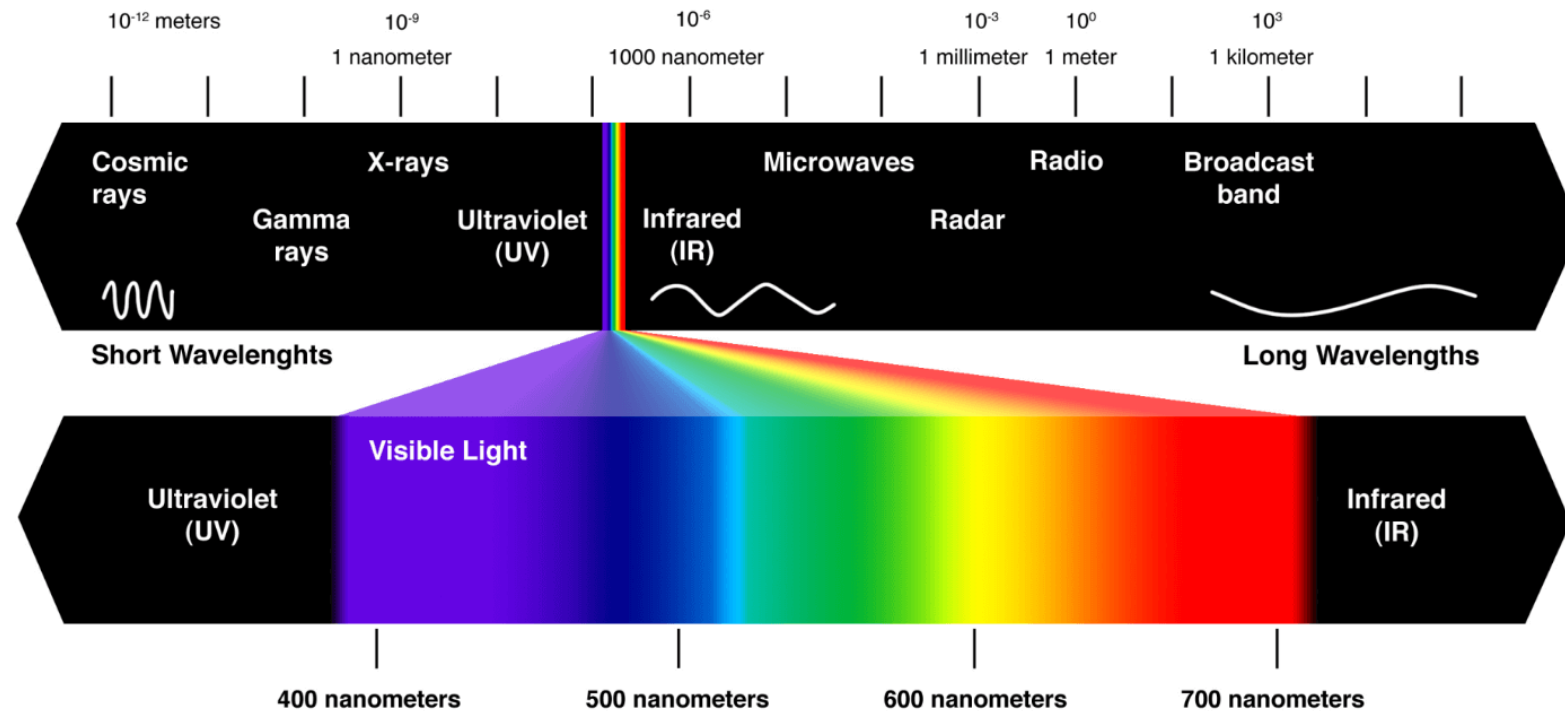
To learn the specific incentives that NV Energy offers



Fundamentals of Lighting

Light

- Electromagnetic radiation that the un-aided human eye can perceive
- Measured in nanometers - Used to express the wavelengths of light
- 1 nanometer = 1 billionth of a meter



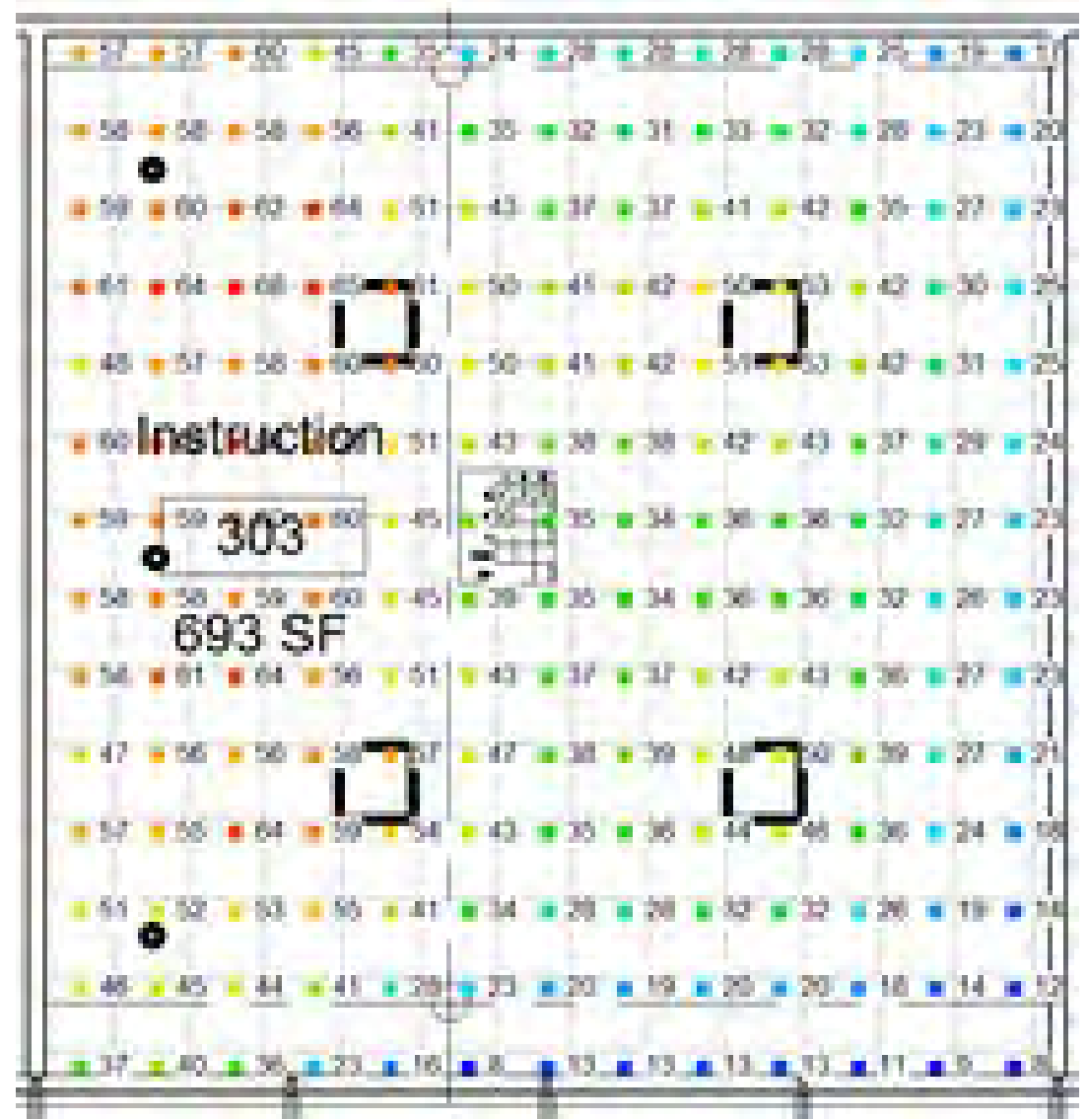
Definitions

- **Luminous Flux:** The total amount of visible light emitted from a light source
 - Measured in lumens
 - Increasing wattage increases lumen output
 - Lamps are commonly labelled with their light outputs in lumens
- **Luminous Intensity:** The luminous flux in a given direction
- **Watt (W):** A unit of power that is used to measure the power consumption of a lamp
- **Efficacy:** The amount of light output per watt of power consumed
 - Efficacy = lumens per watt (LPW)



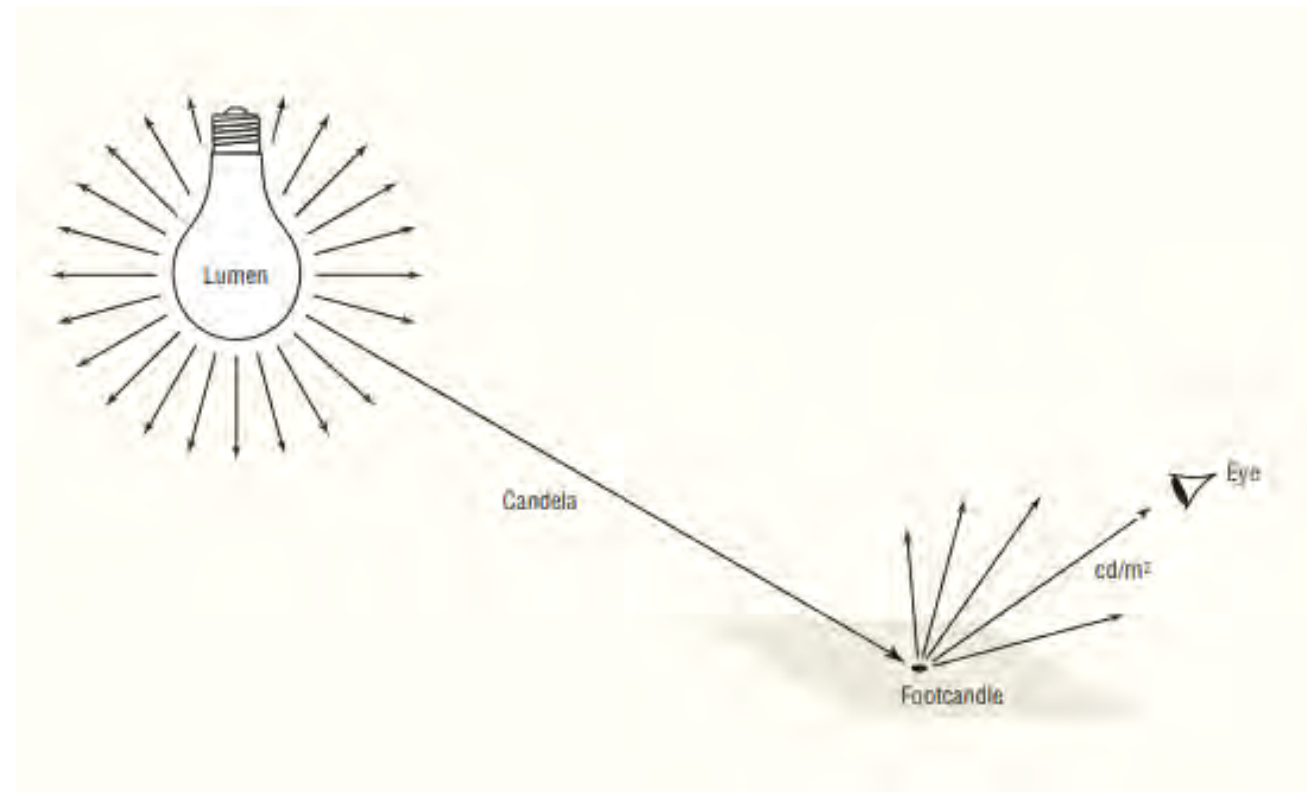
Illuminance

- The measure of total light falling onto a surface
- Measured in foot-candles at the workplane (~36" AFF)
- Measured using a light meter
- Lighting calculations are performed to ensure enough lighting for the designed task



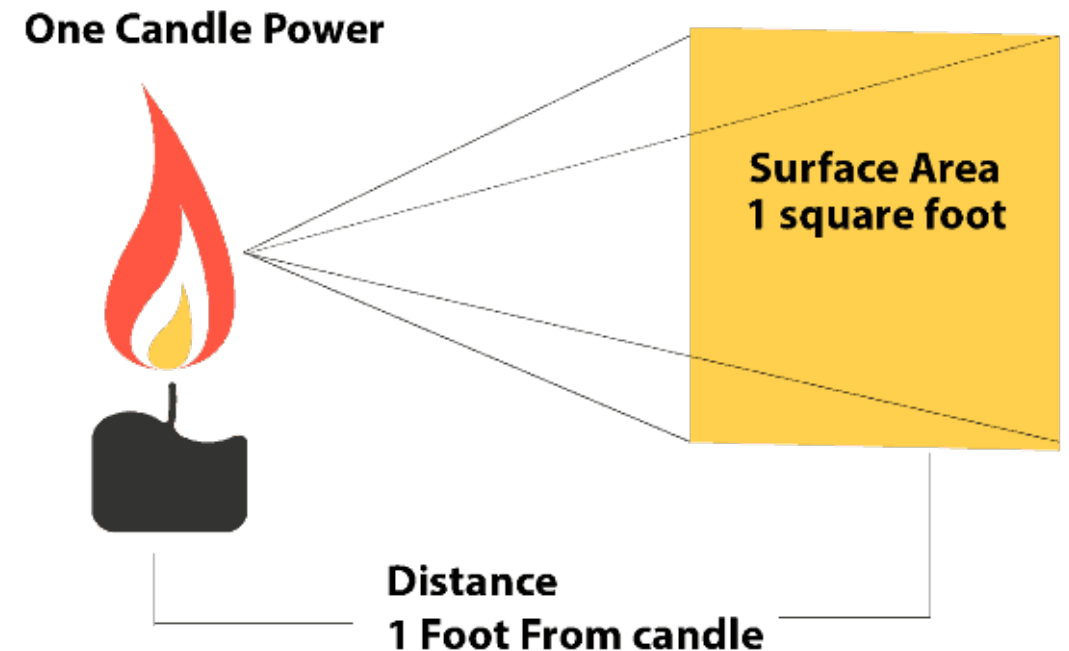
Luminance

- The amount of light reflecting from a surface at a solid angle
- A measure of brightness
- Measured in cd/m^2
- Key to controlling glare

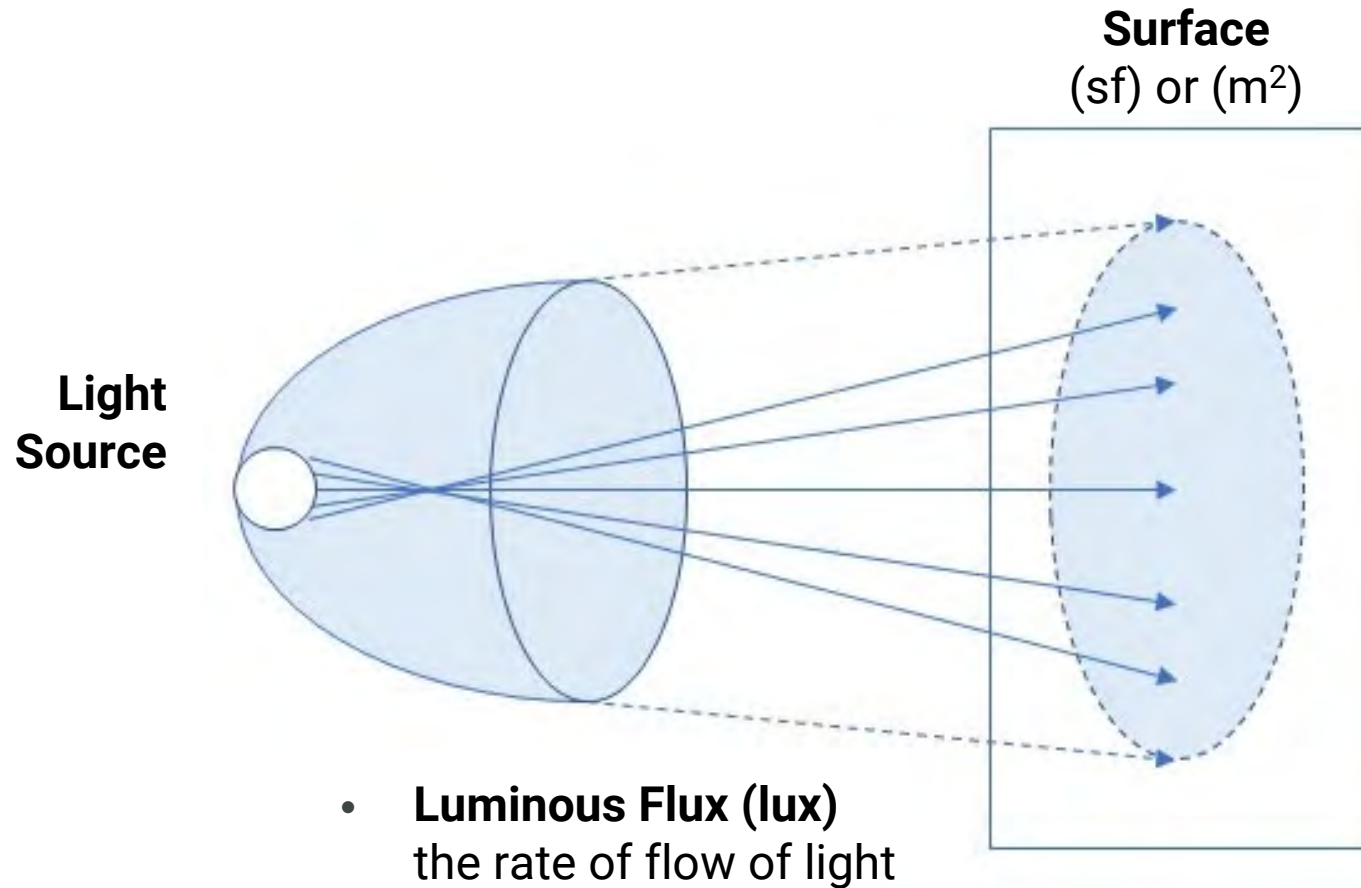


Terminology: Light Levels

- **Candela (cd):** SI unit of luminous intensity prior to 1948 equal to the luminous intensity of a standard wax candle
- **Candlepower:** The luminous intensity expressed in candelas
- **Footcandle (fc):** A unit of illuminance
 - 1 foot-candle = 1 lumen per square foot
 - Fun fact: Sunlight has an intensity of 10,000 fc
 - Indoor lighting seeks to provide
 - 5-40 fc for general spaces
 - 70-90 fc for workspaces
 - 200+ fc for visually intensive work



Visualizing Terminology

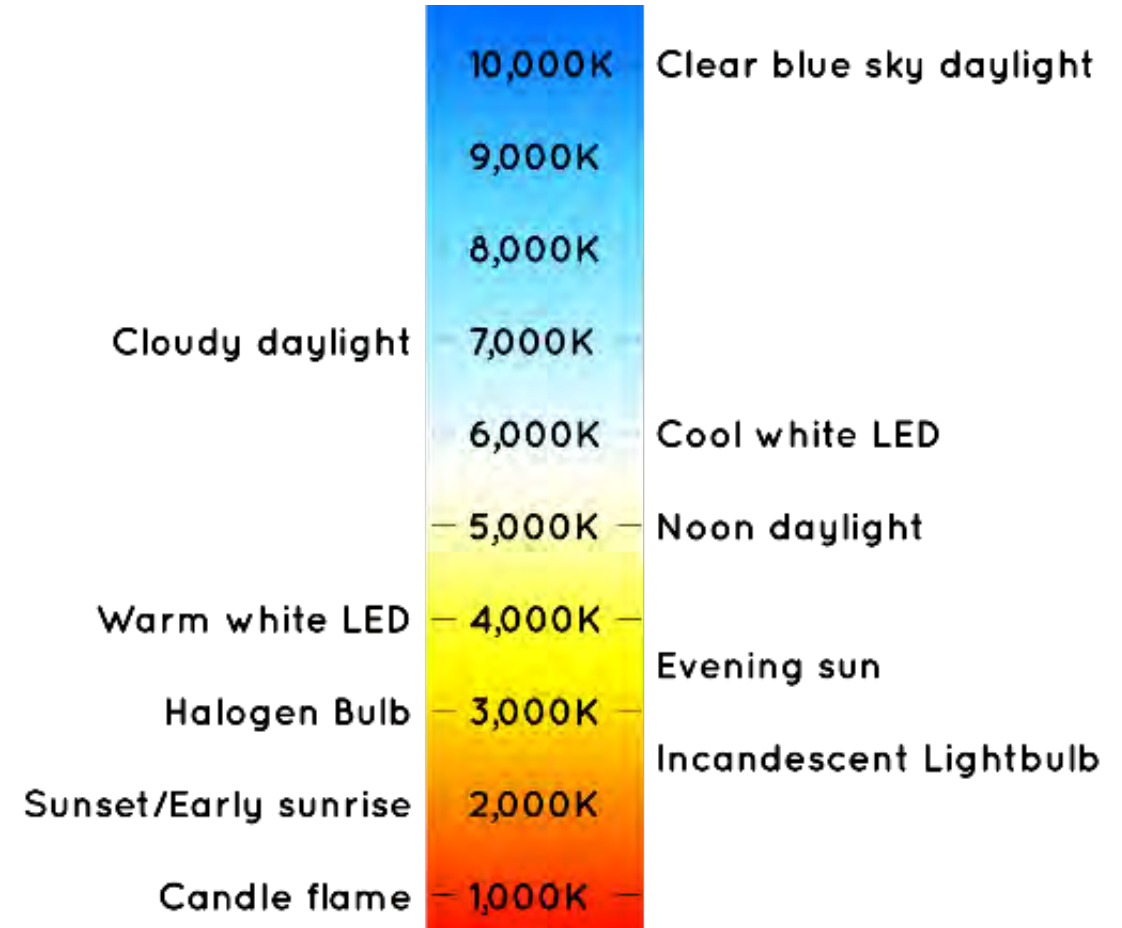


- **Luminance**
the intensity of light from the surface
- **Illuminance**
total light on a surface
- **Illumination**
the effect of light

Terminology: CCT

Correlated Color Temperature

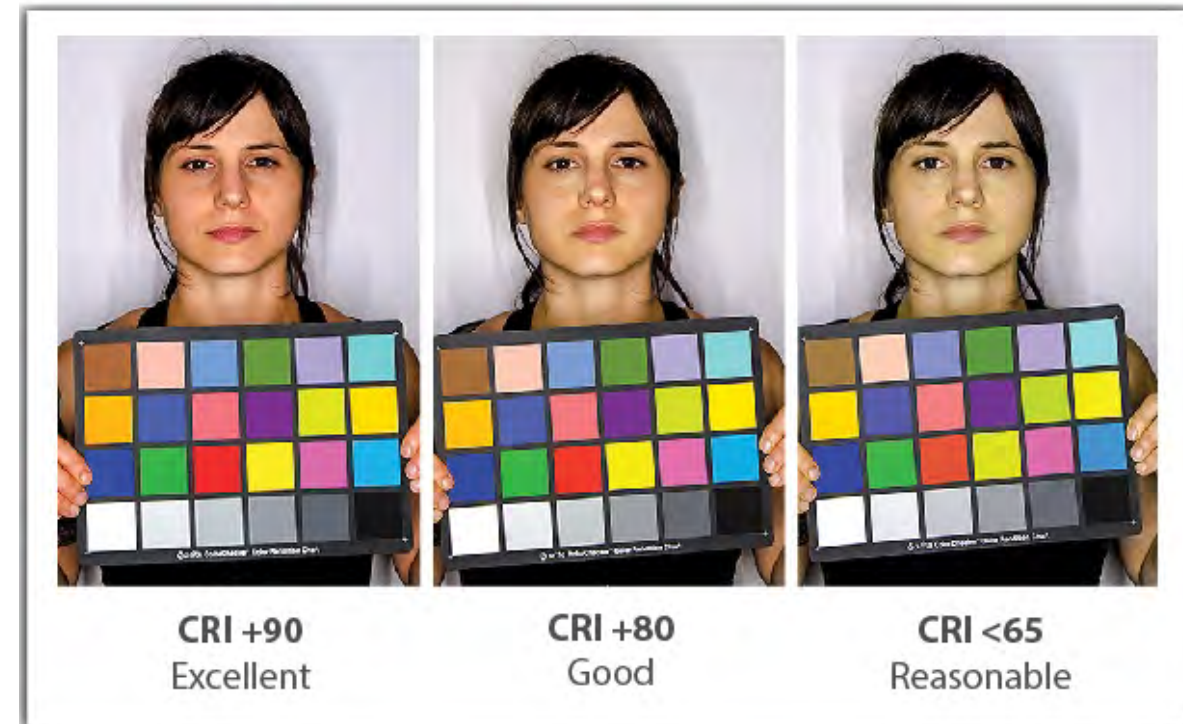
- Describes a lights' warmth or coolness
- Expressed in temperature (Kelvin)
- Applies to the source of the color, not the effect it has on the object's color



Terminology: CRI

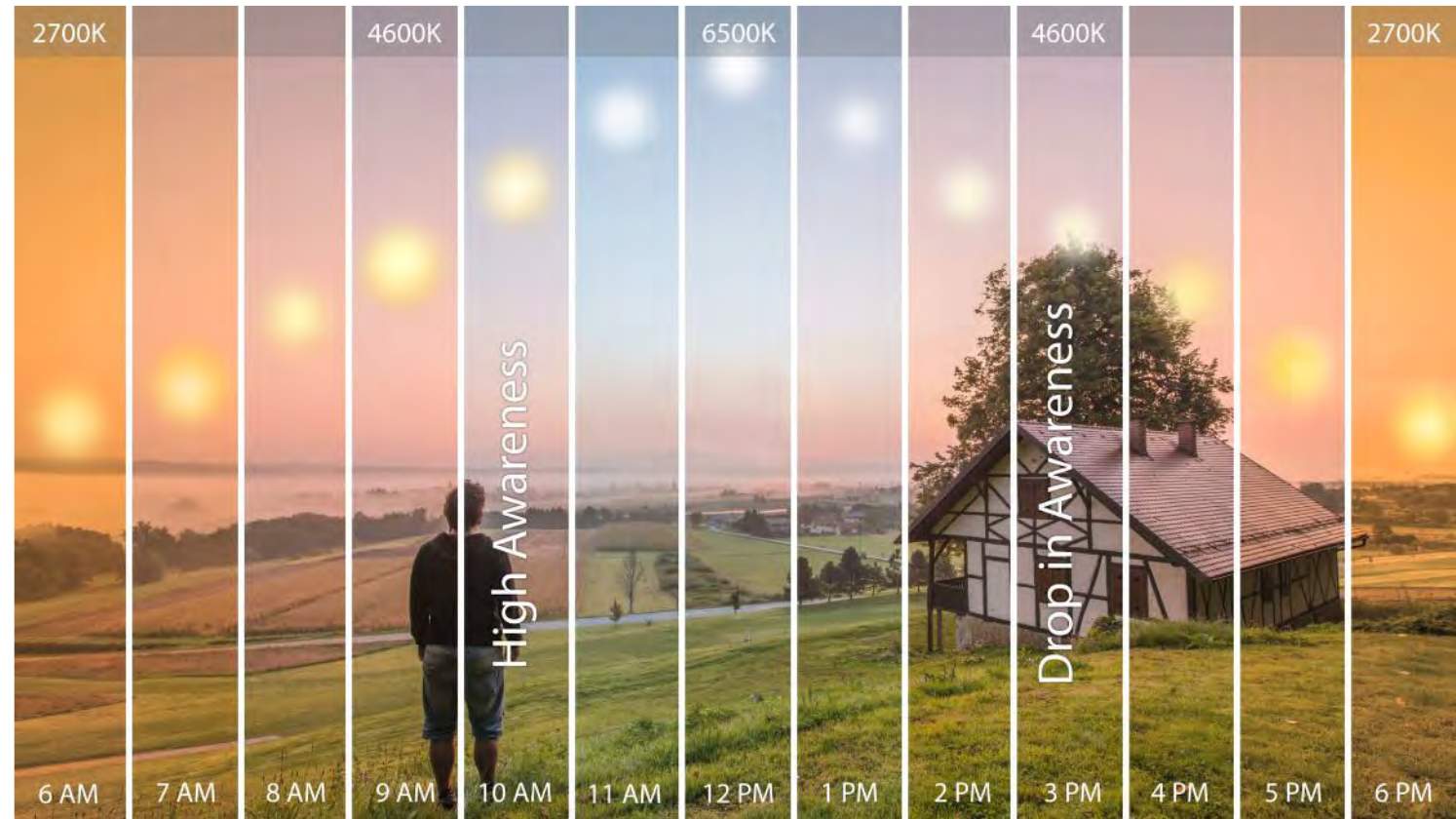
Color Rendering Index

- The ability of a light source to faithfully reproduce various object's colors
- Measured on a scale of 0-100
- The closer a light's CRI is to 100 (the CRI of incandescent light or daylight), the better the color rendition of whatever is under that light
- Particularly important in retail for food and clothing



Circadian Rhythms

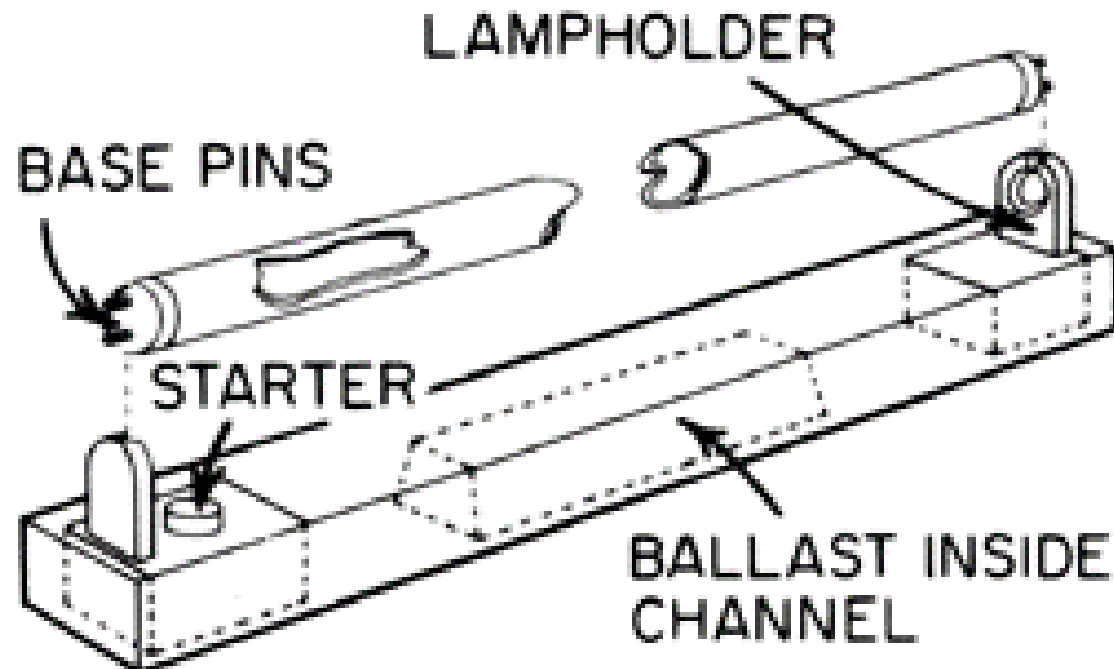
- 24-hour cycles that are part of the body's internal clock, running in the background
- **Circadian lighting** = electric light can be used to support human health by minimizing the effect of electric light on the human circadian rhythm
- Human Centric Lighting systems
 - Intensity tuning
 - Color tuning
 - Stimulus tuning





Understanding Current and New Technology

Terminology: Parts



- **Lamp:** any of various devices for producing light or heat
- **Bulb:** The glass housing of an incandescent lamp filled with an inert gas mixture to slow the evaporation of the filament
- **Lens:** A piece of transparent materials used in luminaires to focus, disperse, the light
- **Ballast/Driver:** Used to regulate the current to lamps and provide voltage needed to start the lamp

Types of Lighting

Lighting is classified by intended use:

- **Task lighting:**
functional purposes
light reading,
inspection, surgery
- **Accent lighting:**
mainly decorative to
highlight elements like
pictures, plants,
architectural elements,
etc.
- **General lighting** aka
ambient lighting:
fills in the two



Image source: www.ilepower.com

Incandescent

- Uses a wire filament that is heated until it glows
- Being phased out around the world
- Mostly residential, not prevalent in industrial/ commercial

Pros	Cons
Wide range of sizes, outputs, and voltages	Not efficient; converts less than 5% of the energy they use into visible light
Less expensive than fluorescents b/c no external regulating equipment	Short Lifespan ~1000 hrs
Warm color	Poor CRI



Halogen

- Uses halogen gas in order to increase light output and rated life
- Being phased out due to inefficiency
- Used in indoor/outdoor flood lighting and architectural lighting effects



Pros	Cons
Good efficiency	More expensive than traditional bulbs
Good quality light	Life expectancy is not much more than standard incandescent bulbs
Fully dimmable	Generate more heat

Compact Fluorescent

- Uses fluorescence to produce visible light
- Being phased out but not formally by policy
- Residential: Kitchens, basements, garages

Pros	Cons
Long lifetimes: 10-20 times as equivalent incandescent lamp	More expensive than incandescent
High efficacy typical CFL is 50– 70 lumens per watt (lm/W)	Toxic! Mercury is contained in the phosphor especially in old lamps
More efficient than incandescent	Medium Lifespan = ~6-10k hrs



Tubular Fluorescent

- Uses fluorescence to produce visible light
- Commercial: Offices, labs, hallways

Pros	Cons
Long lifetimes: 10-20x incandescent	Higher initial costs
High efficacy	Toxic! Mercury is contained in the phosphor especially in old lamps
	Medium Lifespan = 10k-15k hrs
	Can generate a radio frequency noise conducted through the power wiring



Metal Halide

- A type of high-intensity discharge (HID) lamp
- Overhead lighting: commercial, industrial, public spaces, parking lots, sports arenas, factories
- Stage lighting
- Indoor agriculture & hydroponics

Pros	Cons
High lumen output	Less efficient than LED bulbs
Super high CRI value	Slow warm up time, slow cool-down
	Color shift overtime



LED (Light Emitting Diode)

- A semiconductor light source that emits light when current flows through it
- Used in residential and commercial applications

Pros	Cons
Lower energy consumption	More expensive than fluorescent but costs have decreased significantly in the last 5 years
Long lifetime 50K-100K hours	Color temperature is typically “cool”
High-light output	Do not have a spherical light distribution
Low heat output reducing cooling loads	

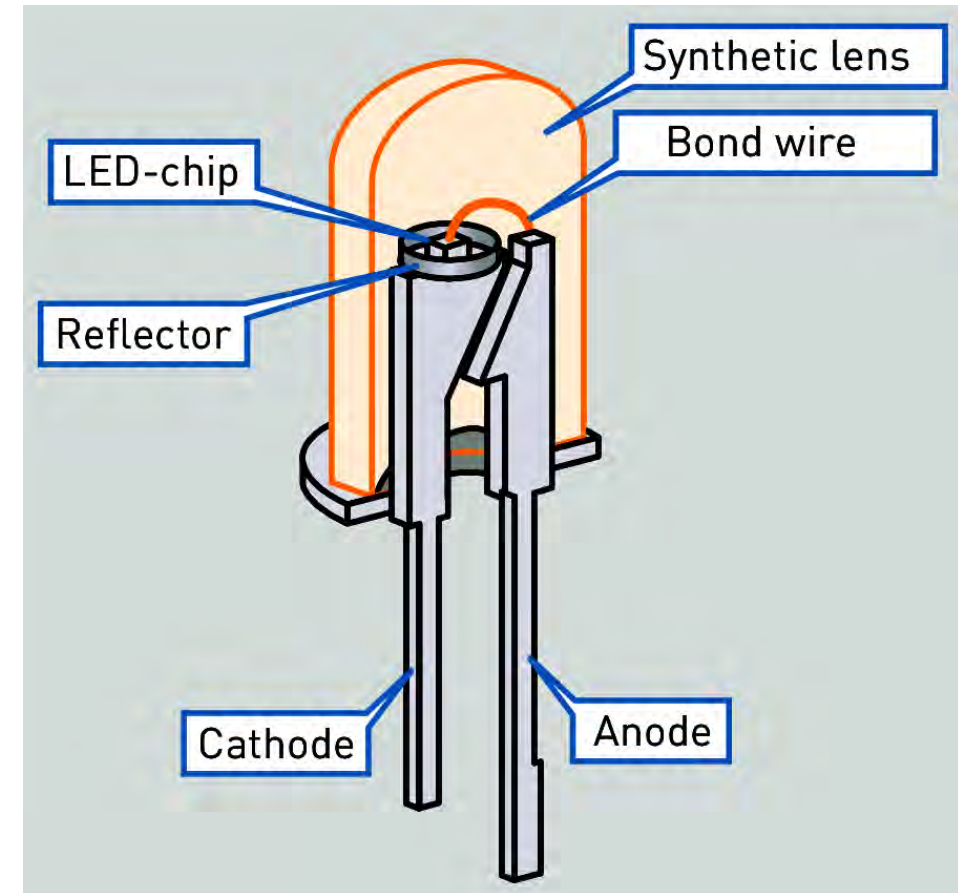


Image Source: www.trilux.com

LEDs Are Better!

- LEDs convert close to 100% of the energy they consume
- Consume significantly less energy than incandescent or fluorescent bulbs
- Long lifetime
- Lower maintenance
- Better for the environment
- High controllability
- High rate of efficacy – produce more lumens per square foot



LED T8 Tubes

Environmentally Friendly

- LEDs do not contain mercury or other toxic chemicals
- Each CFL has about 4mg of mercury = huge environmental impact
- Each year consumers buy ~2 billion light bulbs



Image Source: www.outdoorlights.com



Energy Consumption

- 80% energy savings vs. incandescent
- 50% energy savings vs. fluorescent & HID



Controllable



Dimming out of the box



Extends life of fixture / lamp



Saves energy



More personal control over private spaces

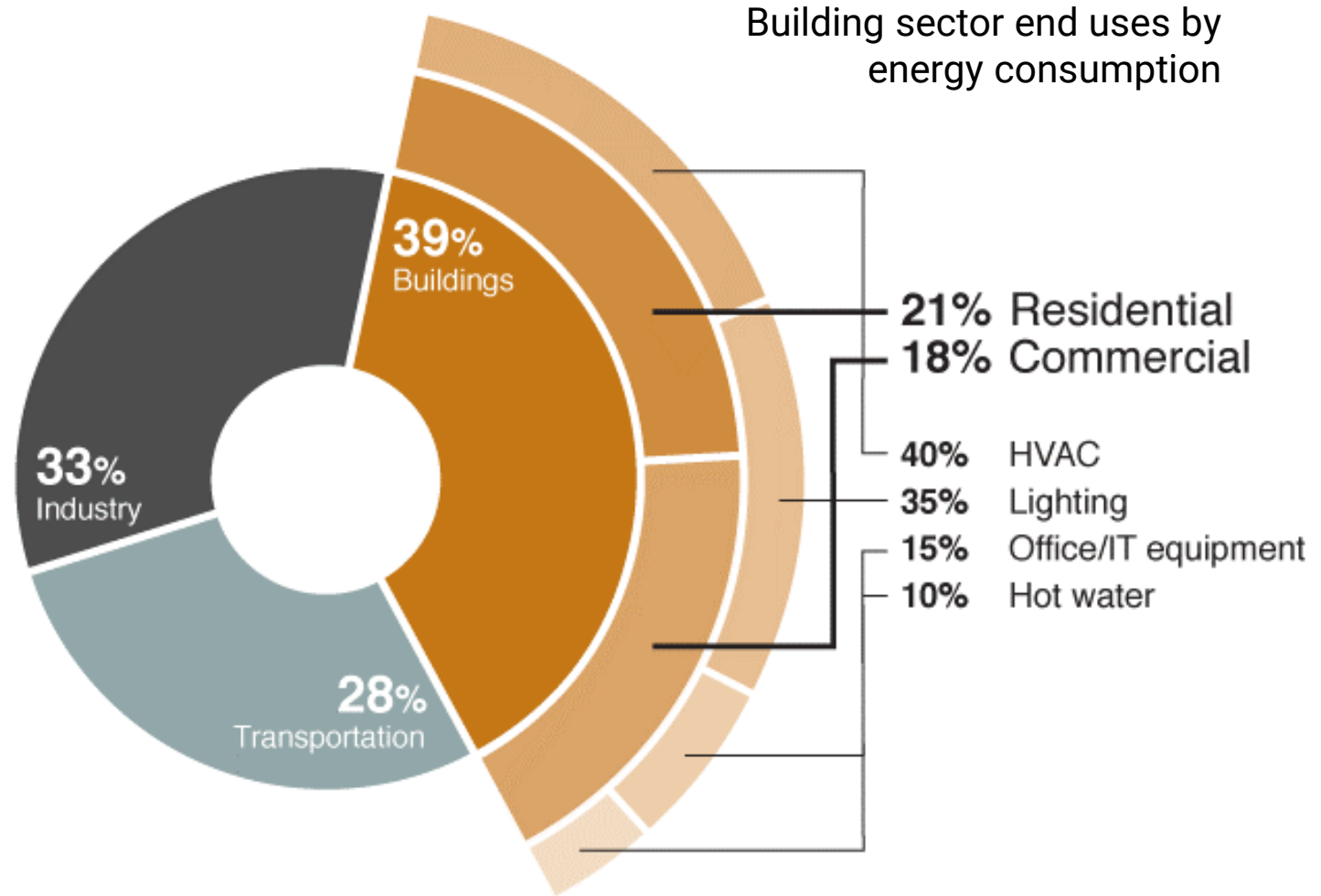


Automation of shared spaces

Why Does This Matter?

Per the 2018 Commercial Buildings Energy Consumption Survey (CBECS):

- 18% of all electricity consumed in U.S. commercial buildings is for lighting
- 11% in residential

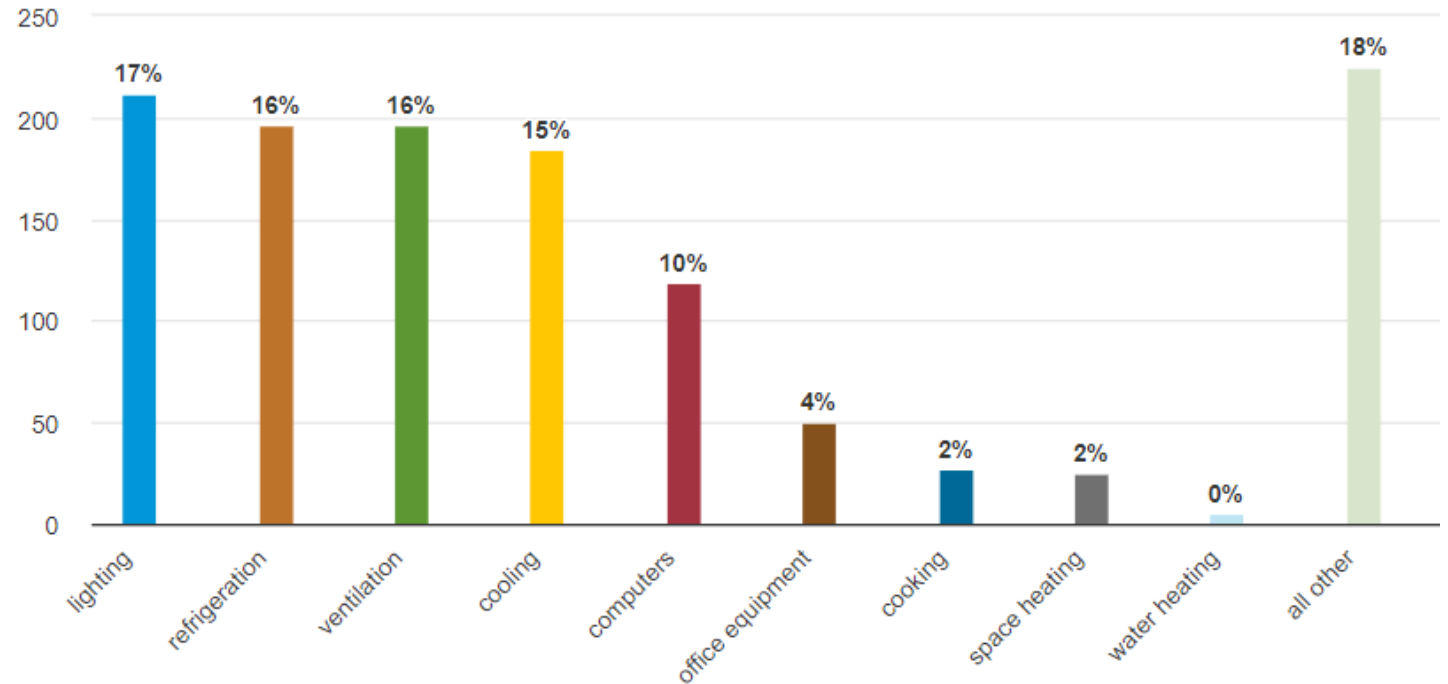


Source: www.eia.gov

Electricity Use by End Use

Electricity use in U.S. commercial buildings by major end uses, 2012

total = 1,243 billion kilowatthours (kWh)



Note: All other includes motors, pumps, air compressors, process equipment, backup electricity generation, and miscellaneous appliances and plug-loads.

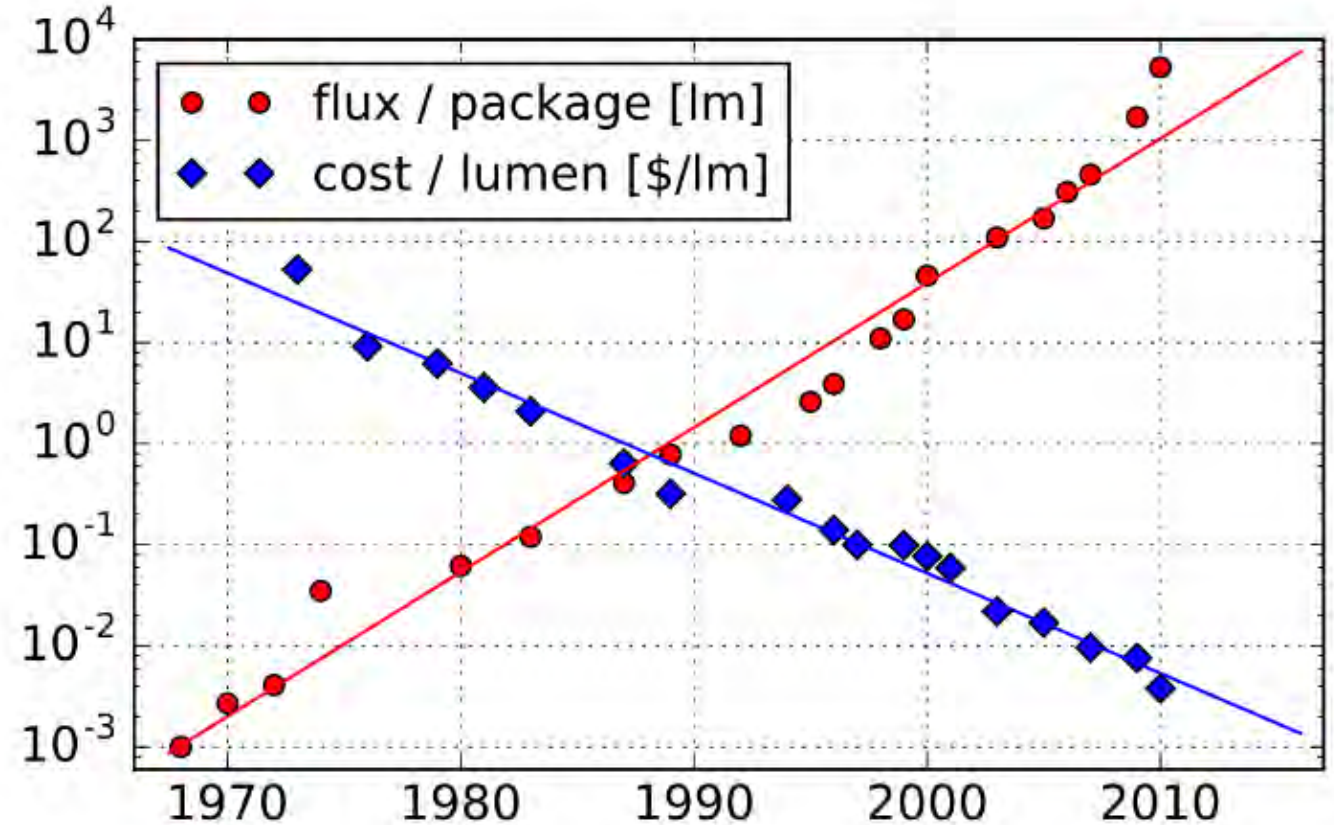


Source: U.S. Energy Information Administration, 2012 Commercial Buildings Energy Consumption Survey, Consumption and Expenditures, Table E5, May 2016

LEDs and Cost

Haitz Law

- Forecasting the variation of light output and cost per lumen for every decade
- Every 10 years:
 - The cost per lumen decreases by 10x
 - The amount of light generated per LED package increases by 20x

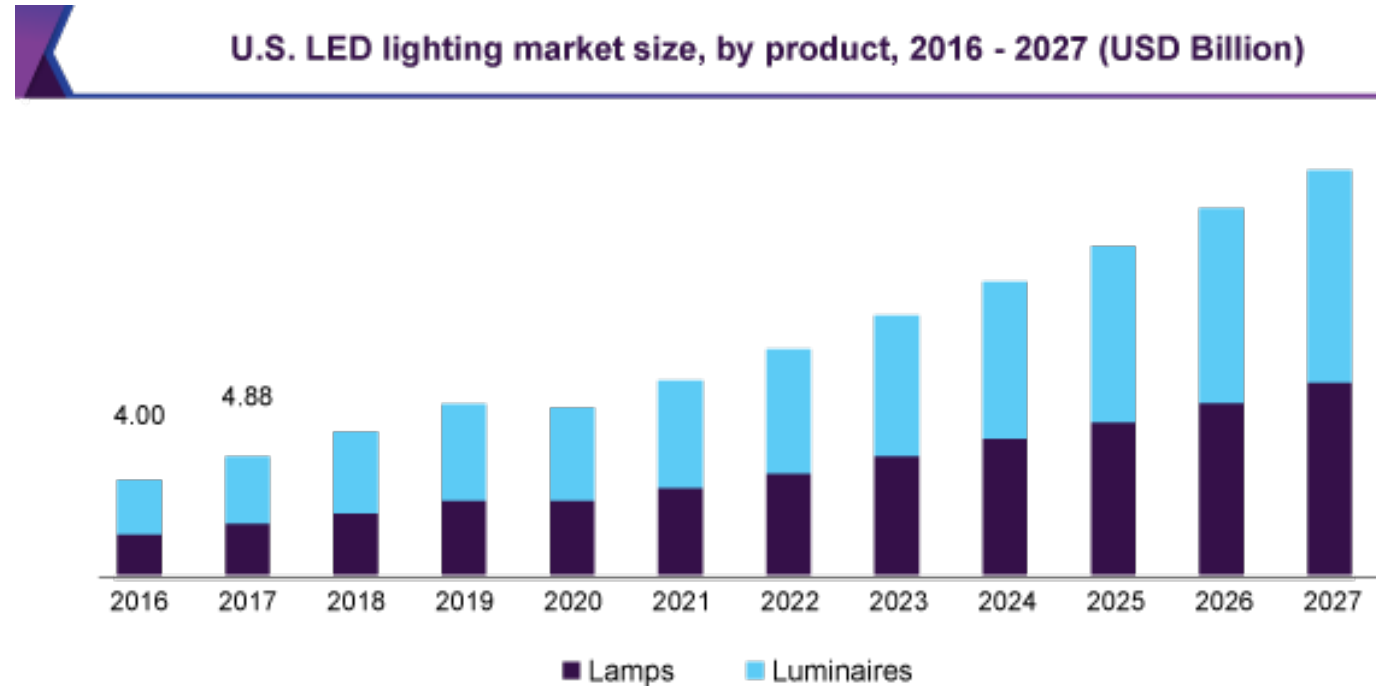




Industry Trends and the Future of Lighting

LED Trends

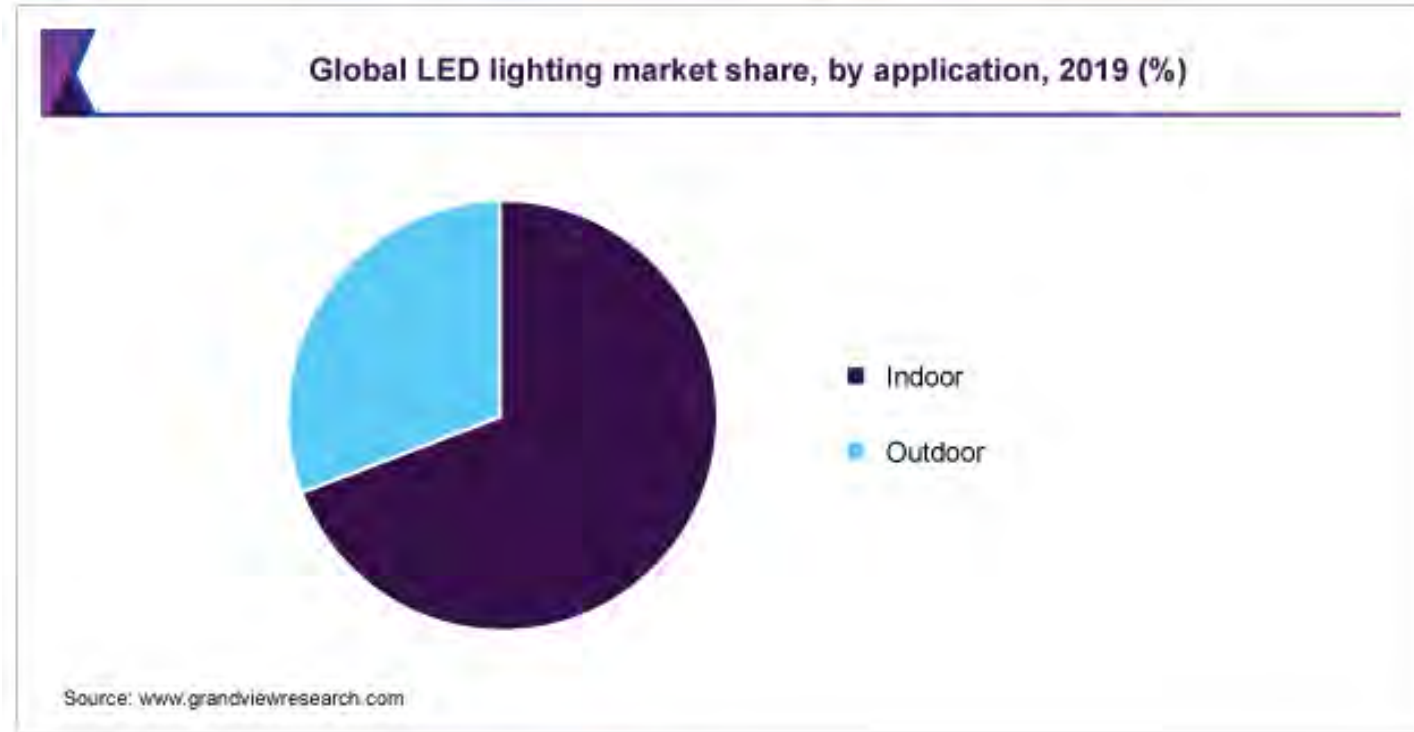
- Aggressive price reductions in the cost to manufacturer LED bulbs
- Transformation in energy policies around the world
- Incentives and rebates for the use of LEDs
- In US, all new LED lighting products must align with ENERGY STAR lamp specifications



Source: www.grandviewresearch.com

Use of LEDs

- Indoor lighting makes up 69% of market
- Significant growth in offices, retail stores and malls, education buildings
- Outdoor applications include airports, corporate campuses, industrial, government, and healthcare infrastructure, highways and roadways, and public places such as signage and traffic signals



Commercial LED Lamp Types



Tube Light



Household LED Light Bulb



High Bay Fixture



High Bay Retrofit Bulb



Hanging Troffer



Recessed Troffer



Retrofit Kit



Corn Bulb



Cutoff Wall Pack



Canopy Light



Flood Light



Shoebox Fixture



Paddle Bulb



Post Top Light



Drop Light



Wall Light



Wall Pack



Rotatable Wall Pack



Security Light

LED Flat Panels

- Substitution for traditional linear fluorescents in offices, commercial and industrial buildings, educational institutions and retail
- Typically, 2x2 or 2x4
- Fit in traditional T-Bar or ACT ceiling systems
- Even light distribution



LED Spot Lighting

- Directional spotlights, track lighting, wall-washing, and suspended luminaires
- Presenting food, clothing, or products in true color
- Perform well in cold conditions
- LED lights in the blue spectrum have been shown to kill off bacteria



LED Outdoor Lighting

- Industrial, commercial, public spaces, parking lots and street lighting
- Flood lights, “Shoebox”, snake heads
- Easy integration with Solar



LED Trends: Offices

- Human health impacts are becoming more well known
 - Reduce glare
 - No buzzing or flickering which reduces eye strain, migraines, headaches
 - Improves health of employees
- Increases productivity
- Lighting people instead of spaces
- Smart, advanced lighting tech with integrated controls



LED Trends: Restaurants

- Persuading people to dine in, sit and stay
- Heavy focus on ambiance, warmth, and natural lighting
- LED reduce energy bills and provide high ambiance
- Dining areas: LED pendants, wall sconces, LED filaments
- Cooking areas: Utility lighting with vapor tight fixtures



Image Source: www.superbrightleds.com



LED Trends: Retail

- Accurate CRI values are more attractive to buyers
- More even, natural light to showcase products
- Bulbs for spotlights or can lights
- LED panel lights to replace entire fluorescent fixtures
- LED strips or puck lights for display case and shelf lighting

LED Trends: Hospitality

- Industry shift toward eco-friendly customer experience
- Lower maintenance and opex costs
- Integrated lighting design
- Motion sensors & automatic controls
- Wall sconces, hallways, and corridors
- LED lighting across the entire guestroom





High bay LED lighting

LED Trends: Warehouses

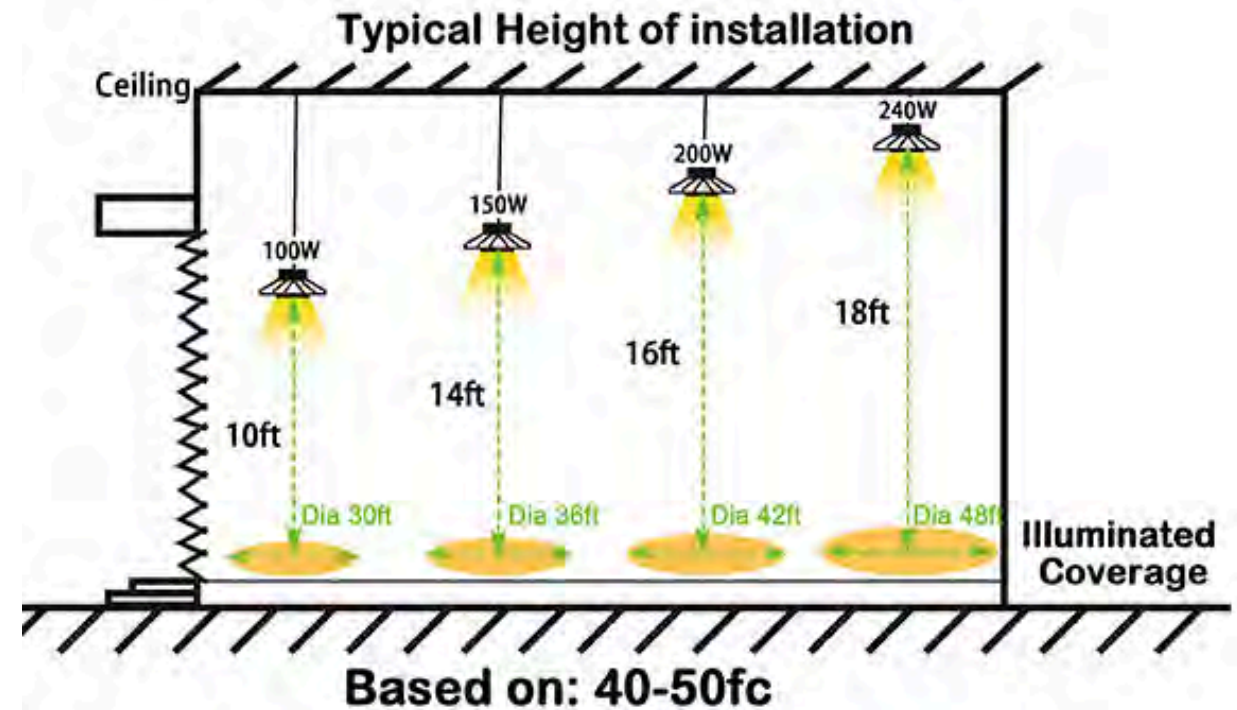
- Shifting to tech and automation
- Automating lighting has priority: Timed lighting, motion sensors and automatic controls
- Higher CRI enhances worker's productivity
- During COVID, warehousing sector has seen low vacancy and long-term transactions

Mounting Height Considerations

- Inverse Square Law:

$$Illuminance = \frac{Luminous\ Intensity}{Distance^2}$$

- A lower fixture mounting height could yield a significantly lower wattage fixture required
- Light may not be required all the way to the ceiling in all areas of a given warehouse
- Lowering fixtures could introduce a risk of damage due to moving equipment



LED Trends: Healthcare

- Moving toward eco-friendly lighting
- Bright lighting for accuracy
- LED lighting works with natural circadian rhythms
- Cool lighting keeps workers alert and accurate
- Improved CRI increases accuracy
- Lights must always on, therefore large savings opportunities



Image Source: facilitymanagement.com

Trends in LED Lighting

Smart lighting is the future

- Smart lights use wireless transmissions to send and receive their signals
- Zigbee = local wireless network for your smart home gadgets
- Philips Hue, recently started putting secondary Bluetooth radios into its products
 - Lights + Hue Bridge + Smart Controls





Upcoming Training

Advanced Energy-Efficient Lighting Systems (201)

Tuesday, March 22nd
10:00 AM – 11:30 AM

Ready to Start a Project?

Learn about Business Energy Services Incentives



Business Energy Services Incentives

Business Energy Services

What We Offer

- **Application Support**
- **Technical Services**
- Free Classroom Education & Training
- Non-Profit Agency Grants
- Small Business Project Incentives
- Instant Discounts
- Retrofit Project Incentives
- New Construction Incentives

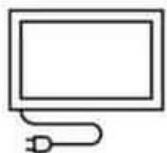
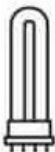


Customer Benefits

- **Reduced Energy Expenses**
- Reduced Carbon Footprint
- Annual Cash Savings
- Improved Comfort

Instant Discounts

No application Needed



Eligible Products

Lighting	Incentive/unit
T8 4' Linear LED*	\$4
T8 2' U-Bend LED*	\$4
1'x4' LED Illuminated Panel & Troffers Containing LED Strip Lights	\$10
2'x2' LED Illuminated Panel & Troffers Containing LED Strip Lights	\$10
2'x4' LED Illuminated Panel & Troffers Containing LED Strip Lights	\$10

Kitchen	Incentive/unit
High Efficiency (HE) Fryer	\$200
Large Vat Fryer	\$200
HE Griddle	\$300
Convection Oven	\$350
Combination Oven	\$1,000
Steam Cooker	\$750
HE Holding Cabinets, Full Size	\$300
HE Holding Cabinets, 3/4 Size	\$250
HE Holding Cabinets, 1/2 Size	\$200

ES = Energy Star, CEE = Consortium for Energy Efficiency, SD = Solid Door, GD = Glass Door, cf = Cubic Feet

Refrigeration	Incentive/unit
Ice Machine ES/CEE I <300	\$50
Ice Machine ES/CEE I 300-500	\$75
Ice Machine ES/CEE I 500-1000	\$125
Ice Machine ES/CEE I 1000-1500	\$200
Ice Machine ES/CEE I >1500	\$250
Ice Machine ES/CEE II <300	\$100
Ice Machine ES/CEE II 300-500	\$150
Ice Machine ES/CEE II 500-1000	\$250
Ice Machine ES/CEE II 1000-1500	\$400
Ice Machine ES/CEE II >1500	\$500
Refrigerator SD ES < 15 cf	\$50
Refrigerator SD ES ≤ 15 cf V < 30 cf	\$75
Refrigerator SD ES ≤ 30 cf V < 50 cf	\$90
Refrigerator SD ES ≥ 50 cf	\$125
Freezer SD ES < 15 cf	\$60
Freezer SD ES ≤ 15 cf V < 30 cf	\$75
Freezer SD ES ≤ 30 cf V < 50 cf	\$80
Freezer SD ES ≥ 50 cf	\$200

Refrigeration	Incentive/unit
Refrigerator GD ES < 15 cf	\$50
Refrigerator GD ES ≤ 15 cf V < 30 cf	\$75
Refrigerator GD ES ≤ 30 cf V < 50 cf	\$90
Refrigerator GD ES ≥ 50 cf	\$125
Freezer GD ES < 15 cf	\$60
Freezer GD ES ≤ 15 cf V < 30 cf	\$75
Freezer GD ES ≤ 30 cf V < 50 cf	\$80
Freezer GD ES ≥ 50 cf	\$200

Lighting

- Bulb and Driver
- City Electric Supply
- Facility Solutions Group
- Main Electric Supply Company
- Grainger
- Wedco
- Crescent Electric Supply Company
- Bulbman, Inc.
- Regency Lighting
- Vegas Electric Supply
- MCOR Lighting
- Key Power Solutions
- Green Planet Corporation
- Platt Electric Supply
- Have Lights Will Travel
- Discount Lighting
- Gexpro
- GoGreenLighting.com, Inc.
- Nedco Supply
- Sierra Nevada Lighting, LLC
- Codale Electric Supply
- HD Supply Facilities Maintenance
- mySupplier
- USA LED
- Bulbtronics
- Commercial Lighting Specialties
- Las Vegas Lighting
- Capitol Light

Commercial Kitchen & Refrigeration

- Open to apply for all commercial kitchen & refrigeration distributors



Instant Discount Website

BUSINESS ENERGY SERVICES INSTANT DISCOUNT

No applications. No waiting. Big savings.

Our Business Energy Services offers a PowerShift **instant discount** to NV Energy eligible business customer accounts and contractors on the purchase of qualifying lighting and commercial kitchen equipment.

Visit a participating distributor to make your purchase and receive your PowerShift instant discount. Your discount is automatically deducted from the purchase price, so there's no paperwork for you to complete. It's that easy.

Get details on all the incentives and participating distributors below.



nvenergy.com/BES > Incentives & No Cost Offers > Instant Discounts

Instant Discount Website

Website includes:

- Eligible product types
- Participating distributor listing
- FAQs
- Operations Manual

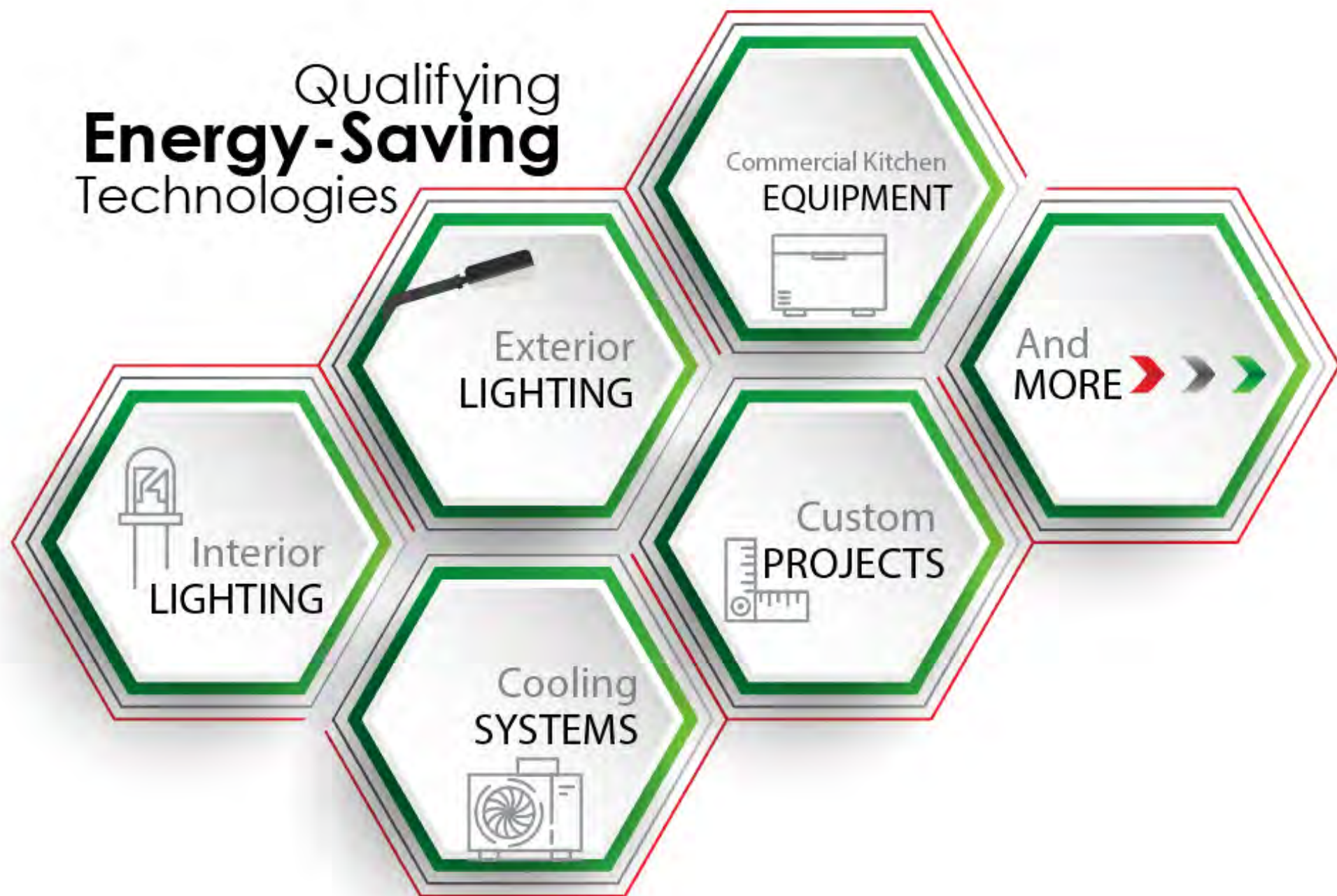
+ Participating Distributors

+ Frequently Asked Questions

FULL PROGRAM DETAILS



Qualifying **Energy-Saving** Technologies





Applying for Incentives

Retrofit and New Construction

Talk with a Business Energy Advisor 1-800-342-6335

Three Easy Steps to Saving



Save
Energy & Money,
Year After Year



► THE APPLICATION PROCESS

More Ways to Save

Business Energy Services 2022 Southern Retrofit Incentive Summary

Retrofit - Interior Lighting			
Measure	Size/Type	Unit	Incentive
Interior Lighting Lamp/Fixture	Interior	Watt Reduced	\$0.25
Interior LED Lamp, Hotel Guestroom	Interior	Watt Reduced	\$0.10
Delamping T8 Lamps	4-foot lamp	Lamp	\$3.00
Standard T8 to RW T8	4-foot lamp	Lamp	\$1.00
LED Exit Sign		Sign	\$15.00
LED Refrigerated Case Lighting		Lamp	\$25.00
LED Channel Sign	≤ 2 Feet	Letter	\$10.00
LED Channel Sign	> 2 Feet	Letter	\$25.00
Occ. Sensor on Refrigerated Case	Enclosed	Door	\$12.00
Occ. Sensor on Refrigerated Case	Open	LF of Case	\$4.00
Occupancy Sensors	Wall Box	Sensor	\$12.00
Occupancy Sensors	Ceiling Mount	Sensor	\$30.00
Occupancy Sensors	HB T5/T8 Sensor	Sensor	\$20.00
Occupancy Sensors	HB LED Sensor	Sensor	\$14.00
Daylighting Controls		Watt Controlled	\$0.10
Bi-Level Stairwell/Hall/Garage LED Fixtures with Sensors		Watt Controlled	\$0.40
Retrofit-Exterior and Garage Lighting			
Garage LED Replacing HID 24/7	24/7 Operation	Watt Reduced	\$0.25
Exterior Replacing HID 12 Hr	12 Hour Operation	Watt Reduced	\$0.20
Garage High Wattage Screw-In CFL	24/7 Operation	Watt Reduced	\$0.20
Exterior High Wattage Screw-In CFL	12 Hour Operation	Watt Reduced	\$0.15
LED Channel Sign	≤ 2 Feet	Letter	\$10.00
LED Channel Sign	> 2 Feet	Letter	\$25.00
Garage Hard-Wired CFL < 29W		Fixture	\$25.00
Garage Hard-Wired CFL > 30W		Fixture	\$40.00
Exterior Hard-Wired CFL < 29W		Fixture	\$15.00
Exterior Hard-Wired CFL > 30W		Fixture	\$30.00

Please refer to 2022 Business Energy Services Retrofit Specifications document for complete specifications

¹ Incentive varies by transformer size, see application.

² Incentive varies by UPS size and input dependency characteristics, see application.



Retrofit - Commercial Kitchen		
Measure	Unit	Incentive
Ventilation Control - Retrofit	HP	\$350.00
Ventilation Control - New Hood	HP	\$300.00
Anti-Sweat Heater Controls	Door	\$40.00
EC Motors: Walk-in Boxes	Motor	\$40.00
EC Motors: Refrigerated Cases	Motor	\$30.00
Evaporator Fan Controller	Controller	\$35.00
ENERGY STAR® Tier II Vending Machine Refurbishment Kit	Kit	\$75.00
Vending Machine Controls	Controller	\$90.00
Snack Machine Controls	Controller	\$15.00
Floating Head Pressure Controls	HP	\$35.00
Reach-in Cooler Controls	Controller	\$30.00

Please note that 4' T8 LED and 1'x4', 2'x2' & 2'x4' LED TROFFERS Illuminated Panels and some kitchen equipment are no longer eligible for incentives through this program. Please see Business Energy Services Instant Discount Program at www.nvenergy.com/bes for details.

Retrofit - Transformer and UPS		
Measure	Unit	Incentive
Single & Three Phase High Eff. Transformer	Per Unit	Varies ¹
Single & Three Phase High Eff. Transformer - incremental	Per 0.01% Above Qual.	Varies ¹
High Eff. UPS - Single & Multi-Normal	Output kW	Varies ²
Retrofit - Miscellaneous		
Escalator Motor Controllers (EMC)	HP	\$20.00
VSD Pool Pump & Scheduling Control	HP	\$150.00
VSD Air Compressor Replacement < 50hp	HP	\$45.00
Compressed Air Engineered Nozzles	Nozzle	\$10.00
High Efficiency Battery Chargers	Charger	\$225.00
Demand Control Ventilation - Parking Garage	HP	\$90.00
Demand Control Ventilation - Interior Spaces	Per 1,000 sq ft	\$50 per 1,000 sq ft
Irrigation Nozzles	Nozzle	\$3.00
Irrigation Sprinklers	Sprinkler	\$2.50
Irrigation Regulators	Regulator	\$3.50
Irrigation Gaskets	Gasket	\$2.00
Retrofit - Cooling		
Air-Cooled Units:		
(<65 kBtu/h), Qual SEER	Ton	\$12.00
(<65 kBtu/h), 1 Additional SEER	Ton	\$8.00
(≥65 & <135 kBtu/h), Qual EER	Ton	\$12.00
(≥65 & <135 kBtu/h), 1 Additional EER	Ton	\$10.00
(≥135 & <240 kBtu/h), Qual EER	Ton	\$18.00
(≥135 & <240 kBtu/h), 1 Additional EER	Ton	\$10.00
(≥240 kBtu/h) Qual IEER	Ton	\$18.00
(≥240 kBtu/h) 1 Additional IEER	Ton	\$10.00
Water-Cooled Units, Qual EER	Ton	\$25.00
Water-Cooled Units, 1 Additional EER	Ton	\$10.00
PTAC/PTHP, Qual EER	Ton	\$50.00
PTAC/PTHP, 1 Additional EER	Ton	\$20.00
Programmable Thermostat	Each	\$25.00
Window Film	Sq. Foot	\$0.70
VSD on HVAC Fans and Pumps	HP	\$50.00
Air Side Economizers	Ton	\$25.00
Retrofit - Custom		
	Annual Energy Savings (kWh)	
Custom Incentive	\$0.05 /kWh	
Retro-Commissioning	\$0.05 /kWh	

LEARN MORE

CALL | 800.342.6335
EMAIL | bes@nvenergy.com
WEB | www.nvenergy.com/bes

AB54 Impacts on Retrofit Incentives

Interior Guest Room LED Lamp/Fixture (Can be used for guest room incandescent, CFL, fluorescent T5, LED lamps or fixture retrofits)								
INCENTIVE: \$0.10/Watt Reduced								
Pre			Post					
Pre Fixture Description Example: 13W CFL	Post Fixture Description Example: 5W LED Lamp	Location Example: Bathroom, floor lamp or entry	# of Lamps or Fixtures	Watts / Lamp or Fixture	# of Lamps or Fixtures	Watts / Lamp or Fixture	Total Watts Reduced	Calculated Incentive
Due to AB54, the retrofit of A-19, general service, screw-in incandescent lamps are available only for this measure AND the baseline for all such lamps is as follows: <u>40W Inc = 10W</u> <u>60W Inc = 18W</u> <u>75W Inc = 24W</u> <u>100W Inc = 36W</u>								

- A-19 incandescent lamp baselines are only eligible under guest room measures on the retrofit application.
- In guestroom measure group, adjusted baselines are to be used for A-19 lighting.

More Ways to Save

Business Energy Services 2022 Southern New Construction Incentive Summary

New Construction - Lighting Power Density		
Measure	Unit	Incentive
Interior Lighting Power Density, 10% Better Than IECC 2009	kW	\$350.00
Interior Lighting Power Density, 5% Better Than IECC 2012	kW	\$250.00
Interior Lighting Power Density, 5% Better Than IECC 2018	kW	\$250.00

New Construction - Performance Based / Whole Building	
Approach	Annual Energy Savings (kWh)
Performance Based - 10% Better Than IECC 2009	\$0.05 per kWh
Whole Building - 10% Better Than IECC 2009	\$0.05 per kWh
Performance Based - 5% Better Than IECC 2012	\$0.05 per kWh
Whole Building - 5% Better Than IECC 2012	\$0.05 per kWh
Performance Based - 5% Better Than IECC 2018	\$0.05 per kWh
Whole Building - 5% Better Than IECC 2018	\$0.05 per kWh

Please refer to 2022 Business Energy Services
New Construction Specifications document for complete
specifications

New Construction - Cooling / Misc			
Measure	Unit	IECC 2009, 2012 & 2018 Incentive	IECC 2012 & 2018 - C406 Incentive
Air-Cooled Units			
(<65 kBtuh), Qual SEER	Ton	\$12.00	\$14.00
(<65 kBtuh), 1 Additional SEER	Ton	\$8.00	\$10.00
(≥65 & <135 kBtuh), Qual EER	Ton	\$12.00	\$14.00
(≥65 & <135 kBtuh), 1 Additional EER	Ton	\$10.00	\$12.00
(≥135 & <240 kBtuh), Qual EER	Ton	\$18.00	\$22.00
(≥135 & <240 kBtuh), 1 Additional EER	Ton	\$10.00	\$12.00
(≥240 kBtuh) Qual IEER	Ton	\$18.00	\$22.00
(≥240 kBtuh) 1 Additional IEER	Ton	\$10.00	\$12.00
Water-Cooled Units, Qual EER	Ton	\$25.00	\$30.00
Water-Cooled Units, 1 Additional EER	Ton	\$10.00	\$12.00
PTAC/PTHP, Qual EER	Ton	\$60.00	\$60.00
PTAC/PTHP, 1 Additional EER	Ton	\$24.00	\$24.00
Flat Plate Heat Exchanger ²	HX Tons	\$15.00	N/A
Variable Speed Drive	per HP	\$60.00	N/A

¹Incentives for projects subject to Section C406 of IECC 2012 & IECC 2018.

²Flat Plate Heat Exchangers are required by IECC 2012 & IECC 2018 and thus not eligible for incentive.

New Construction - Commercial Kitchen		
Measure	Unit	Incentive
HE Fryer	Vat	\$200.00
Large Vat Fryer	Vat	\$200.00
HE Griddle	Griddle	\$300.00
Convection Oven	Oven	\$350.00
Combination Oven	Oven	\$1,000.00
Steam Cooker	Steamer	\$750.00
HE Holding Cabinets, Full Size	Cabinet	\$300.00
HE Holding Cabinets, 3/4 Size	Cabinet	\$250.00
HE Holding Cabinets, 1/2 Size	Cabinet	\$200.00
Ventilation Control - New Hood	HP	\$300.00
Evaporator Fan Controller	Controller	\$35.00
Ice Machine ES/CEE I <300	Machine	\$50.00
Ice Machine ES/CEE I 300-500	Machine	\$75.00
Ice Machine ES/CEE I 500-1000	Machine	\$125.00
Ice Machine ES/CEE I 1000-1500	Machine	\$200.00
Ice Machine ES/CEE I >1500	Machine	\$250.00
Ice Machine CEE II <300	Machine	\$100.00
Ice Machine CEE II 300-500	Machine	\$150.00
Ice Machine CEE II 500-1000	Machine	\$250.00
Ice Machine CEE II 1000-1500	Machine	\$400.00
Ice Machine CEE II >1500	Machine	\$500.00
Refrigerator SD ES < 15 cf	Refrigerator	\$50.00
Refrigerator SD ES 15 ≤ V < 30 cf	Refrigerator	\$75.00
Refrigerator SD 30 ≤ V < 50 cf	Refrigerator	\$90.00
Refrigerator SD ES ≥ 50 cf	Refrigerator	\$125.00
Freezer SD ES < 15 cf	Freezer	\$60.00
Freezer SD ES 15 ≤ V < 30 cf	Freezer	\$75.00
Freezer SD ES 30 ≤ V < 50 cf	Freezer	\$80.00
Freezer SD ES ≥ 50 cf	Freezer	\$200.00
Refrigerator GD ES <15 cf	Refrigerator	\$50.00
Refrigerator GD ES 15 ≤ V < 30 cf	Refrigerator	\$75.00
Refrigerator GD 30 ≤ V < 50 cf	Refrigerator	\$90.00
Refrigerator GD ≥ 50 cf	Refrigerator	\$125.00
Freezer GD ES < 15 cf	Freezer	\$60.00
Freezer GD ES 15 ≤ V < 30 cf	Freezer	\$75.00
Freezer GD ES 30 ≤ V < 50 cf	Freezer	\$80.00
Freezer GD ES ≥ 50 cf	Freezer	\$200.00

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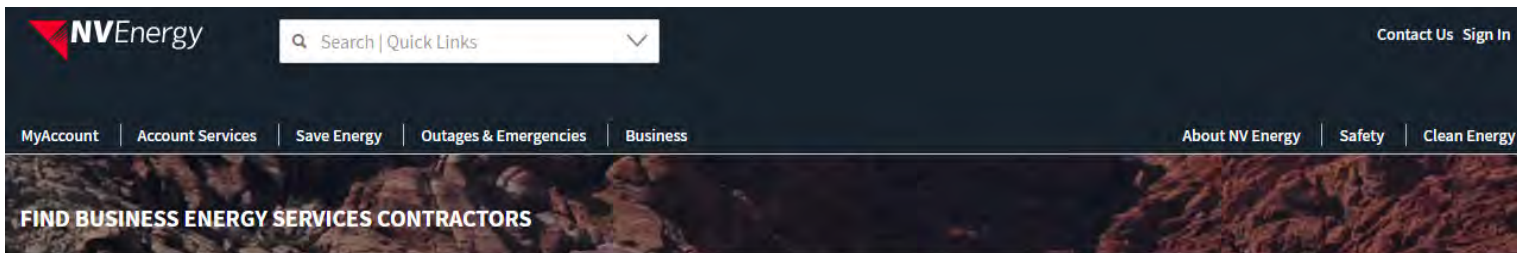
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Search here for contractors in your area experienced in NV Energy's Business Energy Services Incentive Program (except Small Business Savings program). Search by the LOCATION of your project, and the SERVICES you are seeking. For Small Business Savings contractors, [click here](#).

Search here for contractors in your area experienced in NV Energy's Business Energy Services Incentive Program. Search by the LOCATION of your project, and the SERVICES you are seeking.

NVE TA List

Location: Services:



NVE TA List

Location: Services:

Northern Nevada
Southern Nevada



NVE TA List

Location: Services:

Architectural/Design Services
Boilers
Engineering Services
Equipment Vendor
HVAC Consulting
HVAC Installation
IT Solutions
Lighting Consulting
Lighting Installation
Pump Services
Refrigeration Consulting
Refrigeration Installation
EE/DR



Early Involvement Bonus

Earn a 20% bonus on retrofit applications

North

Applied to first **20M** kWh

South

Applied to first **50M** kWh

Projects must be completed and final documents received by August 1st 2022 to qualify. Bonus is first come, first served, applied to retrofit projects submitted for NV Energy business customers.

Small business, non-profit, instant discount and new construction projects do not qualify.



Ready to Start a Project?

Access Contractors Online



Search here for contractors in your area experienced in NV Energy's Business Energy Services Incentive Program (except Small Business Savings program). Search by the LOCATION of your project, and the SERVICES you are seeking. For Small Business Savings contractors, [click here](#).

Search here for contractors in your area experienced in NV Energy's Business Energy Services Incentive Program. Search by the LOCATION of your project, and the SERVICES you are seeking.

NVE TA List

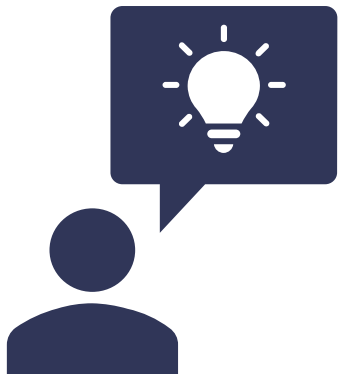
Location: Services:

Contractor	Location	Services
ADAMIK ELECTRIC Las Vegas Cheryl Adami 702-750-1811 Service@adamikelectric.com http://adamikelectric.com/	Southern	HVAC Consulting HVAC Installation Lighting Consulting Lighting Installation
BIDENERGY INC Philadelphia Tim Mayo 215-732-4480 tim.mayo@bidenergy.com www.bidenergy.com	Northern Southern	HVAC Consulting Lighting Consulting Refrigeration Consulting
ECOGREEN SOLUTIONS, INC. Laguna Niguel Covey Bostory (949) 364-6800 Covey.B@Ecogreen-Solutions.net www.ecogreen-solutions.net	Northern Southern	Equipment Vendor HVAC Consulting HVAC Installation Lighting Consulting Lighting Installation Pump Services Refrigeration Consulting

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To get a printable list



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Talk with an Energy Advisor

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Email bes@nvenergy.com

Thank You! We look forward to working with you.