

Dark Sky Initiative and Sterling Ranch Exterior Lighting

Presented by the Enforcement Committee and CAB Staff
Tuesday, January 12, 2021 at 6:00pm

Presentation will begin shortly...

Welcome!

Dark Sky Initiative and Sterling Ranch Exterior Lighting sponsored by the Sterling Ranch Enforcement Committee

The Enforcement Committee is a committee of fellow residents that are responsible for the ministerial administration and enforcement of Sterling Ranch Governing Documents. This Committee determines whether a violation has occurred and if it has, take any enforcement action allowed by the governing documents.



Current Committee Members:

Chris Binkley, Chair
Gina Brady, Vice-Chair
Karlle Ray, Secretary
Dan Block, Member

Per request by the Enforcement Committee and approval by the Board of Directors, all exterior lighting violations and Design Review Committee exterior lighting approvals have been placed on hold during the month of December and January in efforts to educate the community on this important topic.

Beginning February 1st, staff will continue the enforcement of these important rules.

Implications of not being Dark Sky Compliant

Risk being held up on future development by Douglas County which has an effect on property values.
We want to be part of a vibrant community that reaches full build-out.



We encourage you to understand the regulations and the reasons why they are so important.

Help Sterling Ranch be successful with its exterior lighting.

Presented by Resident Services Staff



Sue Santos
Director of Customer Experience
& Resident Support



Heather Calme
Director of Architectural and
Community Standards



“As you develop the land, you use it in a way that is sustainable and will last. It’s your mark on that land, and it’s the heritage that you leave for the next generation. It’s our privilege and responsibility to preserve the land and be as intentional as possible about our impact on it.”

Harold Smethills, Chairman, Sterling Ranch Development Company



The natural night sky is our common and universal heritage, yet it's rapidly becoming unknown to the newest generations.

Light Pollution

Light pollution is the result of modern living — streetlights, outdoor home lights, illuminated windows, cars, and offices all shed artificial light into the world once the sun goes down.



Light Level 8



Light Level 7



Light Level 6



Light Level 5



Light Level 4



Light Level 3



Light Level 2



Light Level 1

Photos from "Lost in Light II - a short film on Light Pollution" <https://www.youtube.com/watch?v=TVAB1IT-sWw>

Homeowner Lighting Education 2021



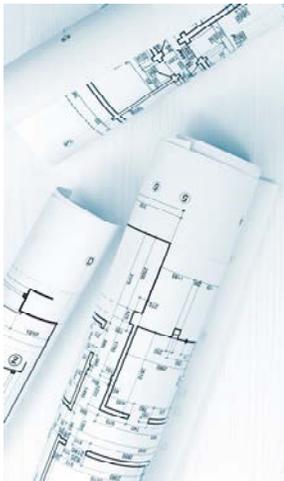
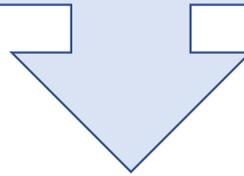
The Dark Sky Initiative

The Dark Sky Initiative is an international campaign to reduce light pollution, and with that expose the vibrantly starry skies. The Dark Sky Initiative was created by the International Dark Sky Society, whose mission is to preserve and protect the nighttime environment and our heritage of dark skies through environmentally responsible outdoor lighting. At Sterling Ranch, we couldn't agree more with the importance of protecting our night skies and have enthusiastically joined this mission.

Sterling Ranch is Proud to be a Part of the Initiative

Sterling Ranch is a Dark Sky compliant neighborhood

Committed to lighting standards for outdoor uses that serve to create a safe and comfortable nighttime environment, while protecting the public's ability to view the night sky.



Sterling Ranch Planned Development – Recorded with County

S-7.3 Lighting and Dark Skies

Development within the Property shall be subject to Section 30 of the Zoning Resolution, and the Sterling Ranch Lighting and Dark Skies Standards, which shall be incorporated into the Design Guidelines

<https://www.douglas.co.us/documents/section-30.pdf/>

Why do we care?



Wildlife



Health



Energy



Heritage



Safety

- We want to maintain a natural environment for nocturnal birds and animals - artificial light at night has negative and deadly effects on many creatures in our prairies
- Reducing the amount of artificial light resets human circadian rhythms in a more natural, less stressed pattern — we all know the importance of sleep!
- Quality lighting design reduces energy use, energy dependence, and carbon emissions
- Appropriate outdoor lighting enhances safety at night while too much lighting can have the opposite effect.



Wildlife

“We get to live in one of the most beautiful places in the world — our blessed Colorado. It is our privilege to care for our environment and natural resources in honor of our ancestors and generations to come.” — Harold and Diane Smethills



- Plants and animals depend on Earth’s daily cycle of light and dark rhythm to govern life-sustaining behaviors such as reproduction, nourishment, sleep and protection from predators.
- Nocturnal animals sleep during the day and are active at night. Light pollution radically alters their nighttime environment by turning night into day.





There's something truly magical about being outside at night. You can gaze up and look for constellations, catch a glimpse of a shooting star, or simply take a moment of solitude to contemplate and admire the beauty of the universe. The stars remind all of us to slow down, enjoy the moment, and to not stress the small stuff.

Human Health

- Humans adhere to a circadian rhythm — our biological clock — a sleep-wake pattern governed by the day-night cycle. Artificial light at night can disrupt that cycle.
- Lighting designs should respond to human needs, while minimizing negative or harmful impacts.

ENERGY WASTE

What is light pollution costing us?



13% of residential electricity use in the U.S. is for outdoor lighting

Average House

Bad outdoor lighting wastes **0.5 kilowatt-hours (kWh)** of energy per house, per night

0.5 kWh of electricity = enough energy to power a 50-inch plasma TV for 1 hour



CO₂

About **35%** of light is wasted by unshielded and/or poorly-aimed outdoor lighting

SKYGLLOW

is the artificial brightness of the night sky that's caused by light pollution.

This is about **\$3 BILLION** per year worth of energy lost to skyglow



Which is about **\$10.00** spent for every man, woman, and child in the U.S. every year

About **15 million** tons of CO₂ are emitted each year in order to power residential outdoor lighting in the U.S.

About **3 million** passenger cars have the same CO₂ emission rate, which is 40,000 tons per day.



About **600 million** trees would need to be planted to offset that amount of carbon emission



Sourced from U.S. Department of Energy 2011 data.

Energy

- Outdoor lighting that is “overly bright, poorly targeted, (and) improperly shielded” according to darksky.org wastes electricity.
- Energy efficient lighting reduces energy use and energy dependence, which in turn helps to conserve our natural resources.



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**“Brighter” does NOT
mean “Safer”**

Real security depends on the wise use of lighting. Visibility should always be the goal.

- Glare from bright, unshielded lights decreases safety because it shines into our eyes - makes it more difficult for our eyes to adjust to low-light conditions
- Only use lights when and where needed. Install timers and dimmer switches and turn off lights when not in use.
- Use the right amount of light. Too much light is wasteful and impairs vision.



Sterling Ranch Exterior Lighting Rules and Regulations

- Lighting that promotes safety, visibility, and visual comfort while maximizing energy efficiency.
- Minimize glare and light pollution
- Reduce skyglow and ecological disruption

Sterling Ranch residents are a significant part of making this happen.

Sterling Ranch Governing Documents

01

Sterling Ranch Planned Development – Recorded with County

02

Master Declaration of Covenants, Conditions and Restrictions

<https://sterlingranchcab.com/wp-content/uploads/2017/06/Master-Declaration-of-Covenants.pdf>

03

Residential Property Owners Guidebook

<https://sterlingranchcab.com/wp-content/uploads/SR-CAB-Residential-Property-Owners-Guidebook.8.26.2020-00488210xC440A.pdf>



Design Review Committee approval is **REQUIRED**

As a part of community governance, Design Review Committee approval is required to modify or add any exterior lighting such as motion-detector spotlights, security lighting, landscape lighting, accent lighting, ballasted fixtures, or additional lighting to doors or windows.

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02

Master Declaration of Covenants, Conditions and Restrictions

Section 5.6 No Annoying Lights, Sounds or Odors.

No Owner or Occupant will permit any light to be emitted from any Lot or Unit which is unreasonably bright or causes unreasonable glare...No Owner or Occupant will permit any annoying light, sound or odor to be emitted from any Lot or Unit which may be seen, heard or smelled from another Lot.



Before and After Photos by Richard O'Brien
Homeowner Lighting Education 2021

Residential Property Owners Guidebook

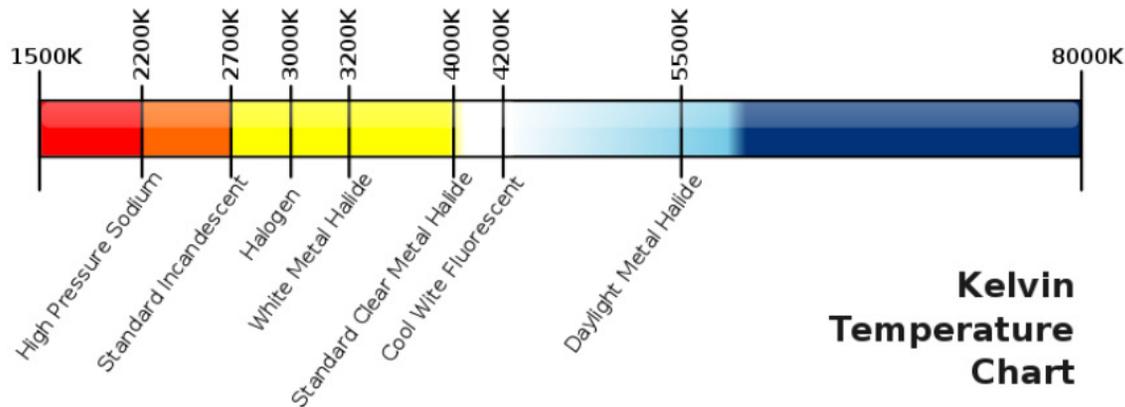
ADOPTED August 26, 2020



Section VI. GENERAL COMMUNITY STANDARDS - LIGHTING

All exterior lighting must be compliant with Douglas County's "dark skies policy."

- Decorative fully shielded exterior light fixtures with color temperatures of 3,000 Kelvin or less (2700 is preferred) where the lamp bulb or LED cluster cannot be visible from the property line.
- Exterior security lighting must be directed downward, so that the light "cone" does not cause glare to adjacent properties or onto the street.



Higher color temperatures mean bluer light, the kind that should be avoided after dusk.

ADOPTED August 26, 2020

Section VI. GENERAL COMMUNITY STANDARDS - LIGHTING

- Solar in-ground lighting, is less than 12 inches in height, each light is less than 5 lumens, and the fixtures are placed at the edges of walks, driveways, and planting beds.
- Outdoor decorative lighting (e.g., strung or rope lighting) is permitted in rear yard only without DRC approval provided it does not exceed 5 lumens and does not cause glare to adjacent properties.
- All outdoor decorative lighting must be turned off by 10 p.m.



Homeowner Lighting Education 2021

What is a lumen?

In the past, we bought lightbulbs based on how much energy, or watts, they use. Wouldn't it make more sense to buy lights based on how much light they provide?

A **lumen** is a measure of the amount of brightness of a lightbulb.

- Lumen is related to the word luminous, which means “bright” or “radiant.”
- The higher the number of **lumens**, the brighter the lightbulb.
- Replace a 40W bulb with an energy-saving bulb that gives you about 450 lumens.

Choose Your Next Light Bulb for the Brightness You Want.

Lighting Facts Per Bulb	
Brightness	800 lumens
Estimated Yearly Energy Cost	\$1.57 Based on 3 hrs/day, 11¢/kWh Cost depends on rates and use
Life	9 years Based on 3 hrs/day
Light Appearance	Warm ————— Cool 2700 K
Energy Used	13 watts

Lumens (Brightness)

~450 ~800 ~1100 ~1600

Traditional Incandescent Watts

40 60 75 100

For the greatest savings, choose ENERGY STAR® light bulbs.

U.S. DEPARTMENT OF **ENERGY**

Ask yourself this...

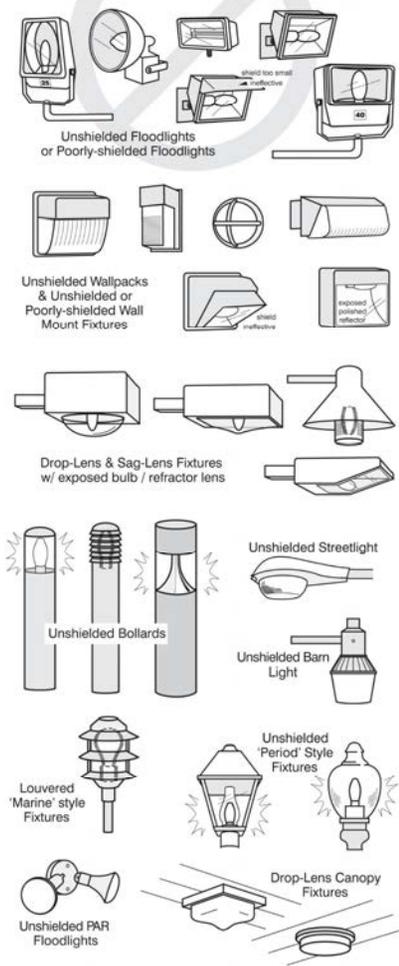
Additional questions to ask when considering exterior lighting:

- Does the area **really** need to be lit? If so, for what purpose? At what brightness?
- Do any of the fixtures emit light above 90 degrees?
- Is light trespass (light falling where it is not intended, wanted, or needed) an issue?
- Is glare (excessive brightness that causes visual discomfort or difficulty seeing) an issue?

Examples of Acceptable / Unacceptable Lighting Fixtures

Unacceptable / Discouraged

Fixtures that produce glare and light trespass



Acceptable

Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



Illustrations by Bob Crelin © 2005. Rendered for the Town of Southampton, NY. Used with permission.

Dark Sky Friendly Lighting



A great place to start is with IDA's Fixture Seal of Approval certifying fixtures as being Dark Sky Friendly, meaning that they minimize glare while reducing light trespass and skyglow. All approved products are required to be fully shielded and to minimize the amount of blue light in the nighttime environment.

January 2021

Mon	Tue	Wed	Thu	Fri	Sat	Sun
				1	2	3
	5	6	7	8	9	10
11	12	13	14	15	16	
18	19	20	21	22	23	
25	26	27	28			



Next Steps

Ideas for Illuminating the Exterior of your Home

- Tuesday, January 19, 6:00pm: Presentation of Ideas for Illuminating the Exterior of your Home. This will be a presentation of how-to ideas and example products that align with current Exterior Lighting regulations and Dark Sky initiative. Presented by a professional Lighting Consultant.

<https://global.gotomeeting.com/join/865165149>

Enforcement Committee Meeting

- Tuesday, February 2, 5:00pm:
<https://global.gotomeeting.com/join/745137413>
- Provide feedback to the Enforcement Committee about lighting during public comment