

# Planning Commission Staff Report



**Subject:** Dark Sky Amendments  
**Application:** PL-20-04545  
**Authors:** Rebecca Ward; Elizabeth Jackson  
**Date:** September 9, 2020  
**Type of Item:** Work Session – Legislative

## Summary Recommendations

Staff requests that the Commission consider potential Land Management Code amendments to align the Lighting Code with Summit County and the International Dark-Sky Association standards.

## Acronyms

IDA	International Dark-Sky Association
LMC	Land Management Code
MCPC	Municipal Code of Park City
SBDC	Snyderville Basin Development Code

*Terms that are capitalized as proper nouns throughout this staff report are defined in LMC § [15-15-1](#).*

## Background

### **The Dark Sky Movement and the International Dark-Sky Association**

The dark sky movement began as a method of reducing light pollution and preserving the visibility of the night sky. The first Dark Sky Ordinance was enacted in 1958 in Flagstaff, Arizona. In 2001, Flagstaff became the first International Dark Sky Community, a designation given by the [International Dark-Sky Association](#) (IDA) to recognize exceptional preservation of the night sky through effective lighting regulations, public outreach and education, and citizen support. Although Flagstaff's population is more than 70,000, the Milky Way is still visible at night.

IDA is a non-profit organization that provides resources and education on the benefits of dark skies to protect the night skies for present and future generations. IDA sets light pollution-limiting standards for outdoor lighting that communities can implement. According to IDA, the concept of preserving the night sky is not only beneficial for a community's tourism and economy, but also its environmental and public health.

### **The International Dark-Sky Association recognizes many locations within Utah for exceptional night skies**

Some communities and state and national parks in Utah protect the night sky. Many are linked to the state's tourism industry. In the initial Park City Vision 2020 process, the community prioritized Sustainable Tourism. As the City continues the visioning process

and defines Sustainable Tourism, protecting the night sky may be considered an enhancement to the City's resort and tourism experience and economy.

IDA designated two Utah communities International Dark Sky Communities – [Helper](#) and [Torrey](#). IDA designated 12 Dark Sky Parks in Utah, including [Antelope Island State Park](#), [Arches National Park](#), [Bryce Canyon National Park](#), [Canyonlands National Park](#), [Capital Reef National Park](#), [Cedar Breaks National Monument](#), [Dead Horse Point State Park](#), [Dinosaur National Monument](#), [Goblin Valley State Park](#), [Natural Bridges National Monument](#), [Weber County North Fork Park](#), and [East Canyon State Park](#). Dark Sky Parks offer exceptional night sky quality and a nocturnal environment that is protected for scientific, natural, educational, and cultural heritage.



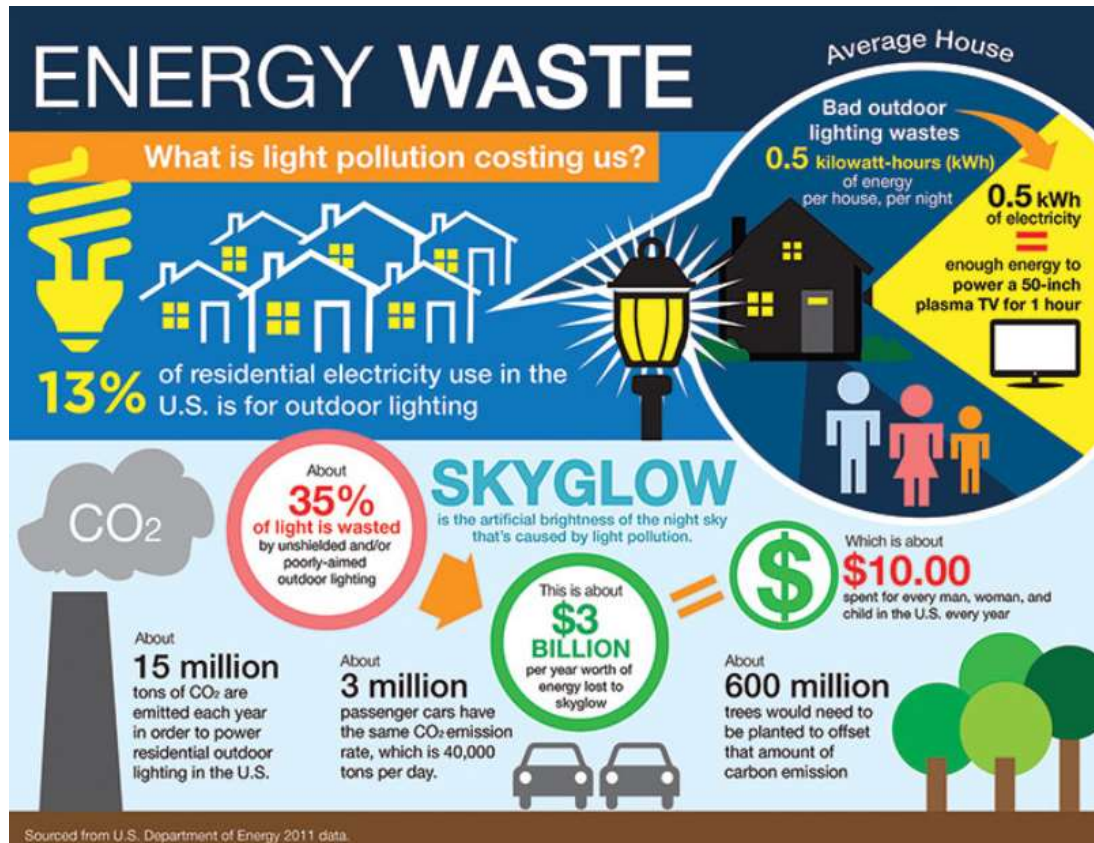
Source: IDA. Lights from cities along the Wasatch Front and the Milky Way arching overhead as seen from Ben Lomond Mountain above North Fork Park, Utah. The area draws many for cross-country skiing. Photo by Casey Grimley.

Additionally, IDA designated [Rainbow Bridge Monument](#) a Dark Sky Sanctuary. A Dark Sky Sanctuary has exceptional or distinguished visibility of the night sky and is protected for its scientific, natural, educational, or cultural heritage. A Sanctuary designation raises awareness of the need for long-term preservation of Sanctuary night skies.

## Dark Sky regulations achieve more than visibility of the night sky:

### (a) Light pollution wastes energy

IDA estimates that nearly 35% of light is wasted because it is unshielded or poorly aimed.<sup>1</sup>



Source: IDA <https://www.darksky.org/light-pollution/energy-waste/>

### (b) Light pollution disrupts the ecosystem and wildlife

Artificial light disrupts plant and animal behaviors, impacting reproduction, nourishment, sleep, and protection.<sup>2</sup>

### (c) Light pollution impacts human health

Artificial light at night disrupts circadian rhythms and melatonin, which can impact the immune system. Light pollution is believed to increase the risk of obesity, depression, sleep disorders, and diabetes.<sup>3</sup>

<sup>1</sup> <https://www.darksky.org/light-pollution/energy-waste/>

<sup>2</sup> <https://www.darksky.org/light-pollution/wildlife/>

<sup>3</sup> <https://www.darksky.org/light-pollution/human-health/>

#### (d) Light pollution may reduce public safety

More studies are needed, but some preliminary studies indicate that lights do not prevent crime. Some studies even conclude that glare from excessive lights can impact visibility and create hazards.<sup>4</sup> However, Dark Sky regulations do not prohibit lighting for safety. Rather, the regulations recommend using timer and motion-sensor devices to ensure that light is available when it is needed.

Dark Sky Regulations are based on the following principles:



#### Park City has considered protection of the night sky a priority for many years

The dark sky concept of limiting a community's outdoor lighting in order to preserve and enhance the night sky's visibility has been a topic of discussion in Park City for years. [Ordinance No. 98-7](#) (p. 237), *Amending Chapters 9 and 13 of the Land Management Code of Park City Regarding the Regulation of Lighting Standards for Commercial, Recreational, and Residential Uses in all Zoning Districts*, established the current lighting regulations. This Ordinance, enacted in 1998, was developed to minimize light trespass, glare, and light pollution.

Despite the lighting regulations implemented in the 1990s, the City recognized an opportunity to improve night sky protections. The City Council passed [Resolution No. 22-10](#), *Declaring Park City's Vision, Goals, Policies and Action Plan in Promotion of Environmental Initiatives for the City and the Community*, which outlined a goal to incorporate environmental considerations as an integral part in assessing growth

<sup>4</sup> <https://www.darksky.org/light-pollution/lighting-crime-and-safety/>



management options, land use plans, transportation plans, and development proposals. Objective 4.3 was to “[i]mprove visibility of night sky.”

The policy of mitigating impacts of lighting on the night sky is woven throughout the General Plan and Land Management Code. The General Plan establishes a strategy to “improve visibility of night sky through enforcement of the existing light ordinance and potential enactment of a new night sky ordinance.” ([City Implementation Strategy 5.14](#), p. 11.) The LMC is “designed, enacted, restated and reorganized to implement the goals and policies of the Park City General Plan . . . [for the] preservation of night skies.” LMC [§ 15-1-2\(F\)](#).

### **The City is working to update lighting to Dark Sky standards**

In a [March 3, 2016 report](#) to the City Council (p. 98), the City Engineering provided an update on efforts to meet Dark Sky standards with lighting in the Rights-of-Way (ROW). The standard lights are now LED lights, 2700 degrees Kelvin.

As lighting is updated for City buildings, LED lamps 2700 to 3000 degrees Kelvin are installed, with higher degrees Kelvin installed as needed for public safety or for luminaires that are not compatible with 3000 degrees Kelvin lamps.

The Trails Master Plan outlines Trails lighting standards and requires that trails lighting comply with the LMC lighting regulations. Currently, many of the trails lights are down-directed.

Recreational Lighting is exempt from certain LMC lighting requirements but must be turned off within 30 minutes of the last game, practice, or event, or turned off by 11:00 PM.<sup>5</sup> Lighting for the Park City Sports Complex may eventually be replaced with LED lights to reduce glare.

### **The current Land Management Code lighting standards are outdated**

Applicants are required to comply with LMC [§ 15-5-5\(J\)](#), *Lighting*, at the building permit review stage. This Section of the LMC establishes wattage, fixture, and light source standards and regulations for certain types of lighting, including gas station canopies, building canopy and soffits, construction sites, landscapes, recreational, residential, and outdoor display lots. However, due to evolving lighting technology, some of the provisions within the LMC are outdated.

Additionally, in [March of 2019](#), the Summit County Council adopted amendments to the Snyderville Basin Development Code (SBDC) Lighting Regulations outlined in SBDC [§ 10-4-21](#). These amendments encompass many dark sky principles. The proposed LMC amendments will better align Park City lighting regulations with those of Summit County. Staff recommends implementing 14 amendments to the LMC lighting code, outlined below.

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<sup>5</sup> LMC [§ 15-5-5\(J\)\(11\)](#).

## Analysis<sup>6</sup>

### **(1) Amend the *Purpose* subsection of the lighting code to reflect night sky protections outlined elsewhere in the LMC.**

**PURPOSE.** The functional objectives in providing exterior Area lighting are to illuminate Areas necessary for safe, comfortable and energy efficient Use. The number of fixtures shall be limited to provide for safe entry and egress and for sign and Business identification. Illumination of new Building features for architectural enhancement is prohibited. Historic Structures may be illuminated under the terms prescribed in this Code.

**LMC [§ 15-5-5\(J\)\(1\)](#)**

The current *Purpose* subsection of the lighting code outlines the objective of the lighting code to provide “exterior Area lighting . . . to illuminate Areas necessary for safe, comfortable and energy efficient Use,” but the *Purpose* Section also includes information on lighting prohibitions and Historic Structure lighting. Staff recommends creating a subsection to address lighting prohibitions (discussed in detail below), as well as a subsection to address lighting in the Historic Zoning Districts (also discussed below).

Staff proposes amending the *Purpose* subsection of the lighting code to include the night sky protections outlined in LMC [§ 15-5-1](#), *Policy And Purpose*, the general statement for the Architectural Review LMC Chapter:

It is the intent of this section to encourage lighting practices and systems which will minimize light pollution, glare, and light trespass; conserve energy and resources while maintaining night time safety, utility, and security; and curtail the degradation of the night time visual environment.

It is recognized that the topography, atmospheric conditions and resort nature of Park City are unique and valuable to the community. The enjoyment of a starry night is an experience the community desires to preserve. The City of Park City, through the provisions herein contained, promotes the reduction of light pollution that interferes with the enjoyment of the night sky.

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<sup>6</sup> For this report, staff looked to the International Dark-Sky Association and The Consortium for Dark Sky Studies at the University of Utah and to the following lighting codes: Flagstaff, Arizona; Page, Arizona; Sedona, Arizona; Calimesa, California; Goleta, California; Aspen, Colorado; Boulder, Colorado; Ketchum, Idaho; Kanab, Utah; Moab, Utah; Ogden Valley, Utah; Springdale, Utah; Summit County, Utah; Torrey, Utah; and Jackson, Wyoming.

**(2) Enact a subsection to establish a light trespass standard.**

IDA defines light trespass as “light falling where it is not intended or needed.”<sup>7</sup>

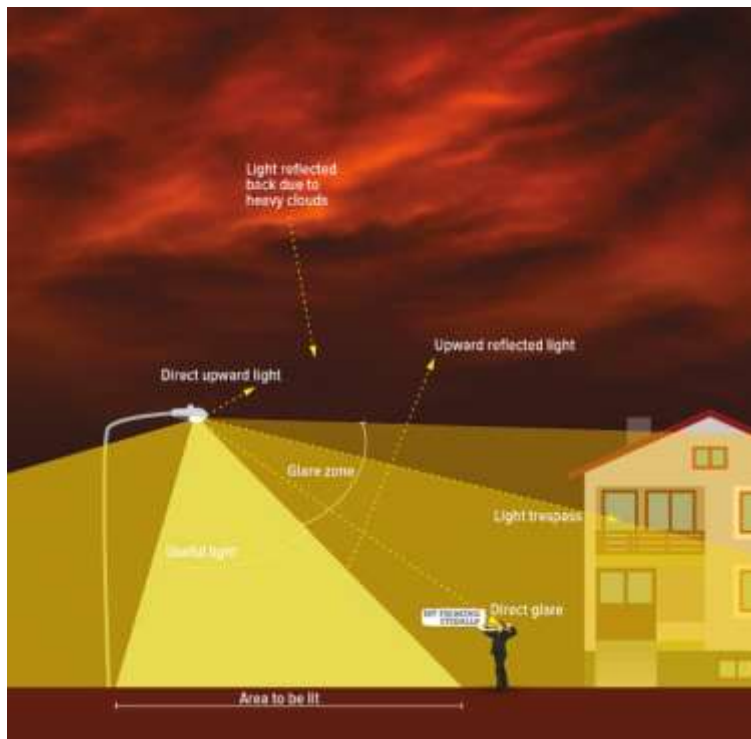


Image by Anezka Gocova, in *The Night Issue*, *Alternatives Journal* 39:5 (2013), obtained from <https://www.darksky.org/light-pollution/>

Some municipal lighting codes clearly prohibit outdoor lighting from illuminating beyond property lines. For example, the SBDC includes a provision that establishes a light trespass standard: “[a]ll light fixtures, including security lighting, shall be aimed and shielded so that the direct illumination shall be confined to the property boundaries of the source.” SBDC [§ 10-4-21\(F\)](#).

The LMC does not contain a light trespass standard and staff recommends amending the LMC to include this standard.

**(3) Remove the Foot Candle measurements from the LMC.**

LMC [§ 15-15-1](#) defines *Foot Candle* as follows:

**FOOT CANDLE.** A unit for measuring the amount of illumination on a surface. The measurement is a candle power divided by distance.

<sup>7</sup> <https://www.darksky.org/our-work/grassroots-advocacy/resources/glossary/>

Foot Candle, Average (afc). The level of light measured at an average point of illumination between the brightest and darkest Areas, at the ground surface or four to five feet (4' to 5') above the ground surface.

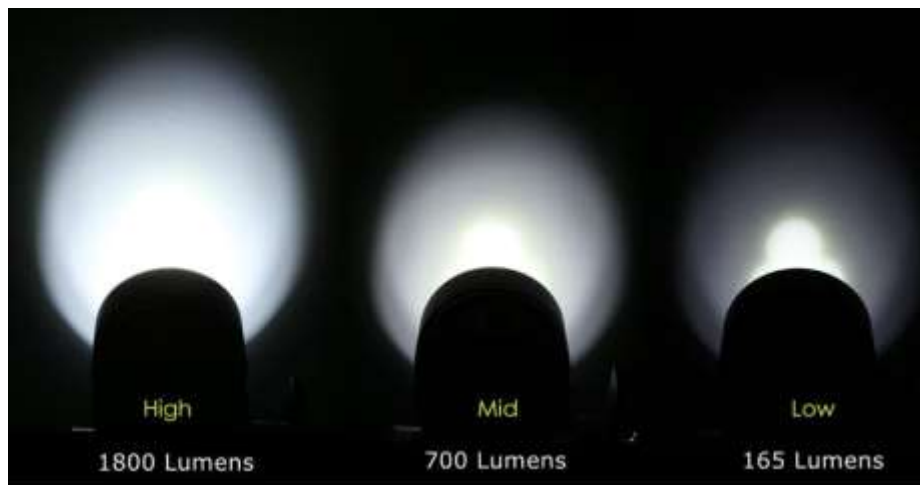
Foot Candle, Horizontal (hfc). A unit of illumination produced on a horizontal surface, all points of which are one foot (1') from a uniform point source of one (1) candle.

Foot Candle, Vertical (vfc). A unit of illumination produced on a vertical surface, all points of which are one foot (1') from a uniform point source of one (1) candle.

Foot Candles measure the amount of visible light falling on a surface. However, implementing an updated metric for lighting may better help protect the night sky. Summit County removed the term “Foot Candles” from the County lighting regulations in 2019 and bases lighting regulations on Lumens. Basing regulations on Lumens clearly establishes the standard for applicants and simplifies the review process for staff.

**(4) Establish lumens as the metric for lighting regulations and set a maximum lumen per fixture and property.**

LMC [§ 15-15-1](#) defines *Lumen* as “[a] measurement of light output or the amount of light emitting from a Luminaire.” (A Luminaire is a light fixture.) The higher the number, the brighter the light.



Source: SBDC § 10-4-21

The SBDC establishes maximum Lumens for individual fixtures, as well as for properties. Single-Family Dwellings may have 2,000 Lumens per fixture and 20,000 Lumens per residence. All other developments may have up to 2,500 Lumens per fixture and 100,000 Lumens per acre. SBDC [§ 10-4-21\(K\)](#).

Amending the LMC to transition from Foot Candles to Lumens as a metric provides a more straight-forward analysis for staff when reviewing lighting plans, and also provides



opportunities to regulate other elements of lighting like the color temperature.

**(5) Establish a maximum of 3,000 degrees Kelvin for outdoor lighting with a few exceptions.**

Color temperature is expressed in degrees Kelvin on a scale from 0 – 10,000. Over 5,000 degrees Kelvin is considered to be cool (bluish) and 2,700-3,000 degrees Kelvin is considered to be warm (yellowish).

IDA recommends establishing a maximum of 3,000 degrees Kelvin for outdoor lighting to provide warmer light on the yellow spectrum:

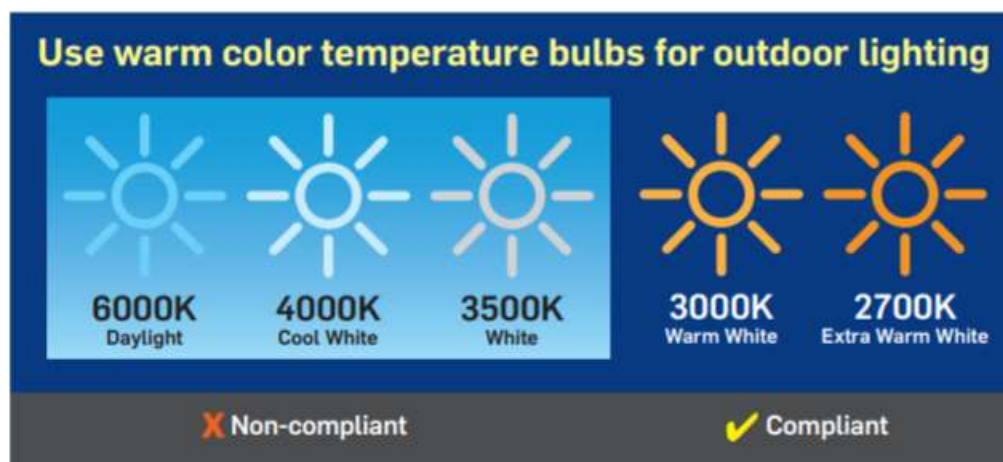


Image Courtesy of Grand County, Utah and Moab, Utah

However, there are certain lights like street lights and lights used for law enforcement activities that may not comply with this restriction. Staff recommends amending the LMC to allow Planning Director discretion to exempt certain lights from the 3,000 degrees Kelvin cap if the Planning Director determines such exemption is in the interest of public safety.

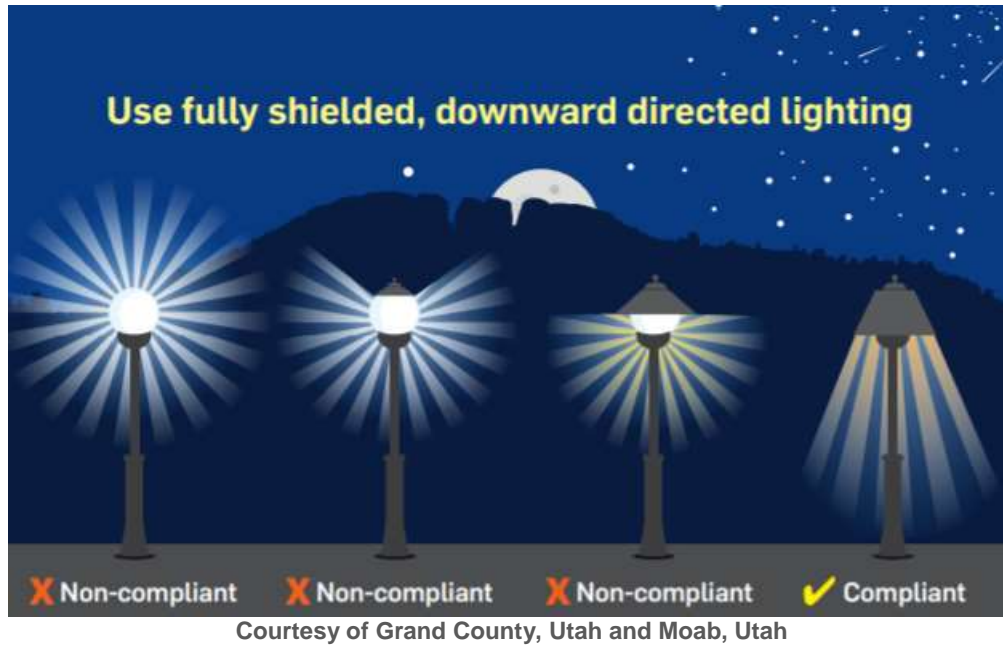
**(6) Require all outdoor lighting to be Fully Shielded.**

LMC [§15-5-5\(J\)\(6\)](#) regulates the shielding of outdoor lighting. Under the current code, Metal Halide lights (lights used for recreational fields or ski areas) are the only type of lighting that is required to be fully shielded. All other lighting types may be partially shielded.

LMC [§ 15-15-1](#) defines *Fully Shielded* as “[l]uminaires that are constructed so that no light rays are emitted at angles above the horizontal plane, as certified by a photometric test report.”

IDA recommends that all outdoor lighting be Fully Shielded to best protect the night sky.

As a result, staff recommends amending LMC [§15-5-5\(J\)\(6\)](#) to require that all outdoor lighting be Fully Shielded.



Additionally, landscape lighting and moonlighting – decorative low voltage lighting placed in trees or on a Building to give the effect of moonlight – are not required to be fully shielded. Landscape lighting can quickly culminate into a large number of fixtures, especially considering that Park City has numerous subdivisions with large outdoor Areas. As such, staff recommends that at the least, landscape lighting fixtures be required to be Fully Shielded. However, other communities, including Summit County, prohibit lights used to enhance landscaping.

#### **(7) Amend the LMC to address LEDs.**

The LMC lighting code was adopted in 1998 just as Light-Emitting Diode (LED) technology was becoming widespread. As a result, the lighting code is silent on LEDs. When the lighting code was adopted, high pressure sodium lighting was considered to be the preferred lighting due to its warm color and energy efficiency. IDA clarifies that while high pressure sodium lighting has a warm color—which aligns with the color temperature guidelines of dark sky lighting—LEDs have a longer lifespan, are dimmable, and are more energy efficient. LEDs are also available in warm temperatures and the proposed adoption of a cap of 3,000 degrees Kelvin will help ensure that LED lights installed on properties within the City cast a warmer light.

LMC [§ 15-5-5\(J\)\(12\)](#), *Residential Lighting*, states that compact fluorescent lights (CFLs) are the recommended lights for residential lighting. While CFLs are more energy efficient than incandescent bulbs, CFLs contain mercury, produce light in 360 degrees,

and can produce a greenish hue. While the hue of CFLs has improved over time, CFLs still contain toxic mercury. As a result, staff recommends amending this provision to recommend LEDs for residential lighting rather than CFLs.

**(8) Amend LMC § 15-3-3(C), *Parking Area Lighting*, to align with the lighting code and establish additional setback and sensor requirements for lighting in large parking lots.**

Parking Area Lighting is regulated outside of the lighting code, under LMC [§ 15-3-3\(C\)](#), *General Parking Area And Driveway Standards – Parking Area Lighting*. Staff recommends updating this Section of the LMC to include the proposed dark sky regulations with additional setback and sensor requirements to protect neighboring properties from Parking Area Lighting, which is allowed to be installed with fixtures as high as 20 feet.

For example, Summit County requires additional setback requirements for lighting in parking lots: “[a]ll pole top mounted parking lot lights shall be set back from property lines a distance equal to two and one-half (2 ½) times the height of the pole.” SBDC [§ 10-4-21\(L\)\(2\)](#). Additionally, the County requires that parking lots greater than one acre in size install fixtures that are dimmable and have motion sensors. *Id.*

**(9) Establish heightened outdoor lighting standards for Ridgeline Development lighting within the Sensitive Lands Ordinance.**

Summit County’s Code heightens the shielding of lights to mitigate glare or trespass for development in the County’s Ridgeline Overlay Zone, established in SBDC [§ 10-4-3\(C\)](#). SBDC [§ 10-4-21\(G\)](#), *Ridgeline Development*, states that in certain cases, additional shielding of lights may be required for development located within the Ridgeline Overlay Zone and that lighting considerations must be taken into account as part of the review process outlined in the County’s Ridgeline Overlay Zone regulations.

Staff recommends that the Commission consider including additional criteria within the lighting code to address developments on ridge lines and steep slopes, reviewed pursuant to LMC [Chapter 15-2.21](#), *Sensitive Land Overlay Zone Regulations*. Additional considerations for developments in highly visible areas of the City may help to reduce light pollution in sensitive viewshed Areas.

**(10) Consolidate lighting regulations for Historic Structures and the Historic Districts into one subsection and clarify the definition of Historic Lighting.**

Lighting regulations for Historic Structures and Historic Districts are sprinkled throughout the lighting code. Staff recommends consolidating these lighting regulations in one subsection titled “LIGHTING FOR HISTORIC STRUCTURES AND THE HISTORIC ZONING DISTRICTS.”

Additionally, staff recommends clarifying the definition of historic fixtures. Currently, the lighting code states that historic fixtures are fixtures that are fifty years or older and contribute to the architectural and cultural character of the Historic District. However, Applicants could argue that any lighting installed prior to 1970 meets this definition. Staff recommends citing LMC [§ 15-11-10](#) in regards to lighting fixtures to outline the criteria considered to evaluate the historical significance of a lighting fixture.

**(11) Consolidate all prohibited lighting in one subsection.**

LMC [§ 15-5-5\(J\)\(15\)](#), *Prohibitions*, state that mercury vapor lamps, laser Light Sources, unshielded floodlights or spotlights, metal halide (except for recreational uses), and searchlights are prohibited. However, the lighting code contains prohibitions throughout, including the following:

- Illumination of Building features for architectural enhancement is prohibited.  
LMC [§ 15-5-5\(J\)\(1\)](#)
- Uplighting for landscaping and moonlighting is prohibited.  
LMC [§ 15-5-5\(J\)\(10\)](#)
- Lighting exterior Building features for architectural interest is prohibited.  
LMC [§ 15-5-5\(J\)\(12\)](#)
- Spelling out the name of a Business with seasonal lights is prohibited.  
LMC [§ 15-5-5\(J\)\(13\)](#)

Staff recommends consolidating these prohibitions into one subsection.

**(12) Replace the term “Fossil Fuel Light” with “Gas Lamp.”**

LMC [§ 15-5-5\(J\)\(16\)](#) states that all outdoor light fixtures producing light directly by the combustion of natural gas or other fossil fuels are exempt from the requirements of the code. Staff recommends updating this subsection to refer to a gas lamp rather than to lights produced by fossil fuels.

**(13) Update and add definitions to the LMC to establish consistent use and application of the terms *Floodlight*, *Fully Shielded Fixture*, *Light Trespass*, and *Spotlight*. Remove outdated terms like *up-light*, *spill light*, and *Master Festival License*.**

The following definitions are based on the IDA [Glossary](#):

***Floodlight*** – a fixture designed to flood an Area with light.

***Fully Shielded Fixture*** – an outdoor light fixture constructed and mounted so that the installed fixture emits no light above the horizontal plane. Fully shielded fixtures must be appropriately mounted so that the shielding prevents light from escaping above the horizontal and all light is directed downward.

**Light Trespass** – artificial light that falls beyond the legal boundaries of the property it is intended to illuminate.

**Spotlight** – a fixture designed to light only a small, well-defined Area.

**(14) Existing lawful, nonconforming lights may continue consistent with LMC § 15-5-5(J)(16)(a) and LMC Title 15, Chapter 9 unless otherwise specified in the adopting ordinance. Consistent with state law, the City may establish a timeline or create incentives for property owners to bring lighting into compliance with the LMC.**

LMC [§ 15-5-5\(J\)\(16\)](#) exempts outdoor lighting installed prior to heightened regulations enacted in 1998. Some communities with similar exemptions for older installations establish a timeline of two to five years to allow residents and business owners to bring their lighting into compliance with heightened standards. Other communities have established a grant program wherein the City covers a percentage of the cost for a property owner to update their outdoor lighting to come into compliance with night sky lighting.

For example, Grand County and Moab require all property owners to come into compliance with their Dark Skies Ordinance within 5 years of its enactment. To help property owners meet the heightened lighting standards, Grand County and Moab created an Outdoor Lighting Retrofit Assistance Program to provide financial help and resources to full-time residents (Exhibit A).

Summit County enacted the SBDC lighting regulation updates in 2019 and established the following requirements for compliance:

- All new applications for projects including more than 1,500 square feet must comply
- All lighting that replaces damaged or inoperative lighting must comply
- All other non-complying lighting must comply within five years

SBDC [§ 10-4-21\(C\)](#)

### **Public Outreach**

**Staff recommends the initiation of an outreach process to educate the public on the importance of protecting the night sky prior to requiring the retrofitting of non-compliant lighting.**

When IDA designates a Dark Sky Community, IDA considers not only the effectiveness of the lighting regulations, but also the effort to educate the public on the importance of protecting the night sky and the overall community support for dark skies.

Staff recommends that prior to enacting any LMC amendments:



- Staff begins the process of reaching out to the community. Staff is compiling a list of organizations to contact, including the resorts, homeowner associations, the Historic Park City Alliance, the Park City Homebuilders Association, and the Park City Lodging Association.
- Staff creates a webpage on the Planning Department site that provides information on dark sky regulations, the community benefits of these regulations, and links to resources.
- Staff works with the Communications Department to reach the public through social media.
- Staff creates a [mailer](#), similar to what Grand County and Moab, Utah developed.

### **Additional Considerations**

Based on the Commission's recommendation to the City Council, the Council will conduct a work session on Nightly Rental regulations outlined in MCPC [§ 4-5-3](#), *Regulation Of Nightly Rentals*. There may be an opportunity to amend the code to require that outdoor lighting be turned off when Nightly Rentals are vacant.

Additionally, staff will work with the Engineering and Transportation Departments to establish land use lighting limitations for street lights proposed for new roads as part of a subdivision approval, as well as lighting standards for bus stops that are constructed as part of a Master Planned Development.

### **Department Review**

Staff reached out to the Public Works, Recreation, and Sustainability Departments to develop this report. The Planning, Engineering, and Legal Departments reviewed this report.

### **Notice**

Staff published notice on the City's website and the Utah Public Notice website on August 26, 2020. The *Park Record* published notice on August 26, 2020. LMC [§ 15-1-21](#).

### **Exhibit**

Exhibit A      Grand County and Moab Outdoor Lighting Retrofit Assistance