

Planning and Development Services

2001 S. State Street N3-600 • Salt Lake City, UT 84190-4050 Phone: (385) 468-6700 • Fax: (385) 468-6674 https://msd.utah.gov/msd-home/pds/

Emigration Canyon Planning Commission

Public Meeting Agenda

Thursday, May 11, 2023 8:30 A.M.

Location

Join meeting in WebEx

Meeting number (access code): 961 841 420

https://slco.webex.com/meet/wgurr

Join meeting in WebEx (download available at https://www.webex.com/downloads.html for Windows, Android, and Apple devices)

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Access code: 961 841 420 Global call-in numbers

Join from a video conferencing system or application

Dial wgurr@slco.webex.com

You can also dial 173.243.2.68 and enter your meeting number.

Need help? Go to http://help.webex.com

Anchor Location Emigration Canyon Fire Station

5025 Emigration Canyon Road

UPON REQUEST, WITH 5 WORKING DAYS NOTICE, REASONABLE ACCOMMODATIONS FOR QUALIFIED INDIVIDUALS MAY BE PROVIDED. PLEASE CONTACT WENDY GURR AT 385-468-6707. TTY USERS SHOULD CALL 711.

The Planning Commission Public Meeting is a public forum where, depending on the agenda item, the Planning Commission may receive comment and recommendations from applicants, the public, applicable agencies and MSD staff regarding land use applications and other items on the Commission's agenda. In addition, it is where the Planning Commission takes action on these items, which may include: approval, approval with conditions, denial, continuance, or recommendation to other bodies as applicable.

BUSINESS MEETING

- 1) Approval of the February 16, March 16, March 24, and April 13, 2023 Planning Commission Meeting Minutes. (Motion/Voting)
- 2) Other Business Items. (As needed)

PUBLIC HEARING(S)

OAM2022-000715 – Emigration Canyon Planning Commission will be holding a public hearing to hear public comments on recommended amendments to the Emigration Canyon Municipal

Code: 19.73.110 Night Lighting. The proposed ordinance language updates will update the existing language within the Municipal Code as a subsection of the current Chapter 19.73 Foothills and Canyons Site Development and Design Standards. Addressing Night Lighting Standards was identified as an action item from the 2021 Emigration Canyon General Plan. They are intended to help maintain the rural atmosphere and community character of the Metro Township, protect ecological conditions and nocturnal wildlife within the Metro Township, maintain nighttime safety, utility, and security, and encourage lighting practices that promote energy conservation. **Planner:** Matt Starley (Motion/Voting)

ADJOURN

Rules of Conduct for Planning Commission Meetings

PROCEDURE FOR PUBLIC COMMENT

- Any person or entity may appear in person or be represented by an authorized agent at any meeting of the Commission.
- 2. Unless altered by the Chair, the order of the procedure on an application shall be:
 - a. The supporting agency staff will introduce the application, including staff's recommendations and a summary of pertinent written comments and reports concerning the application.
 - b. The applicant will be allowed up to 15 minutes to make their presentation.
 - c. The Community Council representative can present their comments as applicable.
 - d. Where applicable, persons in favor of, or not opposed to, the application will be invited to speak.
 - e. Where applicable, persons opposing the application, in whole or in part will be invited to speak.
 - f. Where applicable, the applicant will be allowed 5 minutes to provide concluding statements.
 - g. Surrebuttals may be allowed at the discretion of the Chair.

CONDUCT FOR APPLICANTS AND THE PUBLIC

- 1. Speakers will be called to the podium by the Chair.
- 2. Each speaker, before talking, shall give his or her name and address.
- 3. All comments should be directed to the Commissioners, not to the staff or to members of the audience.
- 4. For items where there are several people wishing to speak, the Chair may impose a time limit, usually 3 minutes per person, or 5 minutes for a group spokesperson. If a time limit is imposed on any member or spokesperson of the public, then the same time limit is imposed on other members or spokespersons of the public, respectively.
- 5. Unless otherwise allowed by the Chair, no questions shall be asked by the speaker or Commission Members.
- 6. Only one speaker is permitted before the Commission at a time.
- 7. The discussion must be confined to essential points stated in the application bearing on the desirability or undesirability of the application.
- 8. The Chair may cease any presentation or information that has already been presented and acknowledge that it has been noted in the public record.
- 9. No personal attacks shall be indulged in by either side, and such action shall be sufficient cause for stopping the speaker from proceeding.
- 10. No applause or public outbursts shall be permitted.
- 11. The Chair or supporting agency staff may request police support to remove offending individuals who refuse to abide by these rules.
- 12. After the public comment portion of a meeting or hearing has concluded, the discussion will be limited to the Planning Commission and Staff.

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MEETING MINUTE SUMMARY EMIGRATION PLANNING COMMISSION MEETING Thursday, April 13, 2023 8:30 a.m.

Approximate meeting length: 2 hours 27 minutes

Number of public in attendance: 0 Summary Prepared by: Wendy Gurr

Meeting Conducted by: Commissioner Wallace

*NOTE: Staff Reports referenced in this document can be found on the State website, or from Planning &

Development Services.

ATTENDANCE

Commissioners and Staff:

Commissioners	Public Mtg	Business Mtg	Absent
Andrew Wallace (Chair)		х	
Alex Pacanowsky			х
Jim Karkut		х	
Dale Berreth		х	
Tim Harpst (Vice Chair)		X	
Jodi Geroux		x	

Planning Staff / DA	Public Mtg	Business Mtg
Wendy Gurr		х
Jim Nakamura		х
Morgan Julian		
Matt Starley		х
Kayla Mauldin		
Adam Long		

BUSINESS MEETING

Meeting began at – 8:36 a.m.

1) Dark Sky Ordinance language discussed and reviewed. Discussion on the dissemination of Ordinance Language to the Metro Township Council for a recommendation to proceed with the Public Hearing. Planner: Matt Starley

Mr. Starley advised he received Mr. Long's comments back this morning. Commissioners and staff had a brief discussion regarding the following:

19.73.112 Lighting Modifications and building permits for existing non-compliant light fixtures and replacement.

19.73.118 Lighting Plan required subject to 19.73.112.D regarding an application for a building permit.

19.73.119 Appeal for Exemption regarding procedural steps and applicants demonstration of an undue hardship regarding the lighting plan and whether it would be a Variance or Appeal.

Commissioners and staff had a brief discussion regarding the staff report comments, Recreational Lighting on playing fields and court areas curfew, proposals and approval, font size, minimize and prevent light trespass in unacceptable/acceptable, copyrights on graphic figures, graphic language change from structure to building, BUG Rating, pamphlet and distribution, and adding a note to Municode advising the public.

Commissioner Berreth excused himself at 10:30am.

2) Other Business Items. (As needed) *No other business items to discuss.*

Commissioner Wallace motioned to adjourn.

MEETING ADJOURNED

Time Adjourned – 11:03 a.m.



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matstarley@msd.utah.gov



DARK SKY ORDINANCE | PROGRESS REPORT

Part of the UPDATE OF MUNICIPAL CODE: 19.73.110 NIGHT LIGHTING

Public Body: Emigration Canyon Planning Commission **MSD Planner:** Matthew Starley, Long Range Planner

MSD Planning Staff Recommendation: Recommend language to the council for adoption with required

revisions.

PROJECT DESCRIPTION

Emigration Canyon Metro Township has identified in the Community Values section of the General Plan that environmental sustainability & protection of the natural environment are important to community members, and the identity of the Metro Township. The expressed aim of the General Plan is to "maintain or enhance environmental sustainability and stewardship now and for future generations; this includes but is not limited to features such as water quality, open space, noise management, dark skies, air quality, biodiversity, and climate resilience." pg. 30-31

Utah Department of Workforce Services (UDWS) has distributed a "Guidance & Best Practices: Dark Sky Planning" manual intended to introduce Elected Officials and their communities to dark sky planning and concepts. In this document, DWS established the importance of night sky planning by describing some of the issues associated with light pollution.

Light pollution is a threat because of the negative effects on humans and the environment as well as long-term consequences, such as biodiversity, economic, and cultural loss, that cannot easily be reversed. However, in contrast to other types of pollution, the negative effects of light pollution can be mitigated easily and cost-effectively.

UDWS, Guidance & Best Practices: Dark Sky Planning, pg. 6

To mitigate these potential negative effects, Emigration Canyon planning staff have engaged with the Planning Commission to develop a more robust Night Sky Ordinance that is intended to update the existing municipal code 19.73.110, Night Lighting. Regular progress reports have been made to the Planning Commission and feedback has been integrated. The draft shared in coordination with this report, Emigration Canyon MT Dark Sky Ordinance Draft, will potentially constitute the final to be shared with the Planning Commission ("PC").

For this Draft, MSD staff have integrated the thoughtful comments made by PC members. Quick highlights to look for in this draft:

- 1) The definitions section has been bolstered.
 - a) Issues of contradictory or undefined terminology have been corrected wherever identified.
 - b) Two main resources were utilized to tailor existing and suggested definitions.
 - i) https://www.darksky.org/our-work/grassroots-advocacy/resources/glossary/
 - ii) https://www.ies.org/definitions/lamp/

- 2) We have adopted a "footcandle per square foot of hardscape" approach to measuring and regulating lighting.
 - a) Example to the right: 1-footcandle average with 0.1-footcandle minimum 6-ft. wide path of egress.
 - This presents the opportunity to regulate Light Trespass as a measure of footcandle at the property line. The example below shows recommendations from California



OUTDOOR LIGHTING

Quantity of Illumination

IES Illumination zones for Light Trespass

IES zones are based on the four environmental zones established by CIE. Maximum allowed trespass footcandles measured eye level perpendicular to line of site.

Lighting Zone	Description	Pre-Curfew Limit (Max fc)	Post-Curfew Limit (Max fc) *1
Zone E1	Intrinsic dark landscapes	0.1 fc	0.0 fc
Zone E2	Low ambient brightness areas	0.3 fc	0.1 fc
Zone E3	Medium ambient brightness	0.8 fc	0.2 fc
Zone E4	High ambient brightness areas	1.5 fc	0.6 fc

^{*1:} Exception for safety/security 0.1 fc allowed

Recommended Practice for Outdoor Lighting

- i) Note: Emigration Canyon would match the Zone 2 description in the majority of instances.
- 3) Document sections have been restructured according to comments made, as well as to reduce redundancy.

GENERAL PLAN CONSIDERATIONS

Language about protecting and promoting the health and long-term sustainability of the natural environment in the Canyon is a consistent theme throughout the General Plan document. There are also many instances in which the connection between the quality of the night sky environment and ecological and community health are identified. Updates to the dark sky ordinance existing are supported by the General Plan Work Program. The following is an excerpt from the General Plan Work Program, which outlines the creation and enactment of a Dark Sky Ordinance as an *Immediate and Ongoing* action item.

Chapter 5: Environment Work Program (Emigration Canyon General Plan 2022 pg. 144-145)

- Goal 5.3: Preserve and enhance natural areas and ensure that landscapes are functional and diverse.
 - Objective **5.3.3**: Preserve and enhance views of the night sky and protections for nocturnal wildlife.
 - Actions
 - a. Support the adoption of a Dark Sky-compliant light-pollution control ordinance.
 - Lead(s)
 - MSD Planning and Development Services, PC, EC Metro Township
 - Timeline
 - Immediate and ongoing
 - Cost
 - Staff time
 - Metric
 - Ordinance enacted

Resources

See also objective 2.3.2a

LAND USE CONSIDERATIONS

Suggested updates to the zoning ordinance would apply to all areas within the Metro Township. The intent is to control the use of night lighting between the hours of one hour after dusk until 6:00 am the following morning. It is the opinion of the planning staff that controlling nighttime lighting use through the update of the existing Night Sky Ordinance will support the current land use expressed within the canyon by reinforcing the naturalistic and rural character of the community.

Unique standards exist for properties containing:

- Residential | Single-Family Detached Housing Units
- Residential | Multi-Family Housing Units
- Commercial and Religious Institutional Uses

ISSUES OF CONCERN/PROPOSED MITIGATION

Adoption of the Dark Sky Ordinance would potentially create non-conforming properties within Emigration Canyon Metro Township. However, the ordinance, as drafted, is clear that existing development would not need to come into compliance with the new standards until five (5) years after the adoption date of the ordinance. New development would be required to meet all adopted standards.

NEIGHBORHOOD RESPONSE

At this point, staff has not received any feedback from the public regarding the Night Sky Ordinance update. Following the public hearing on May 11th, 2023, the Planning Commission may discuss and recommend incorporation of feedback received from the public.

REVIEWING AGENCIES RESPONSE

A review by Emigration Canyon's attorney and the MSD's land use attorneys has been completed prior to this recommendation for adoption.

The following is a transcript of the communications that we have had during this process with lighting experts.

Vellachi Ganesan kindly reached out to her colleagues for additional information regarding your questions below. I'll pass it into this email:

Here are Rick Utting's (from Clanton&Associates) thoughts in response to the follow-up questions from Matt

Starley:

Commercial Properties – I would rather see a limit to the non-shielded contribution and a hardscape calculation that exclusive structure square footage. I typically draft a 20% limit of the total site lumens coming from non-shielded sources. Regarding structure square footage, an example of why to exclude structure square footage is an industrial application where the structure might be 100,000 sf. You don't necessarily want to offer those 100,000 lumens to the outdoor space just because it was a big factory. The MLO Hardscape method allows for 1.25 lumens/sf for Lz1 and 2.5 lumens/sf for Lz2 applications. Perhaps this would yield Emigration Canyon the

light they need if they exclude the structure's square footage.

Residential properties – Nancy and I developed the following chart and narrative for residential land use. We like it better than others we have seen. We also don't feel like it's appropriate to penalize apartment (multifamily) living with more exterior light just because of density. They need to sleep too. So, we give more light when needed for common areas and parking lots.

A) <u>Light Output:</u> The upper lumen limits listed below should not be the design goal. The design goal should be to use the minimum light levels that meet the requirements of the task. The total allowable site lumens (initial) for a residential property is limited to:

Total Site Lumens Allowed Residential						
Property Size	LZ1	LZ2				
Single Family; 1 acre+ (43,560sf+)	12,000	n/a				
Multi-Family; Per 1 acre (43,560sf)	12,000	20,000				
Single Family; 3/4 acre (32,670sf)	9,000	n/a				
Single Family; 1/2 acre (21,780sf)	6,000	n/a				
Single Family; 1/5 acre (8,812sf)	3,000	5,000				
Mobile Home; (5,500sf)	2,000	4,000				
Single Family; 1/10 acre (4,356sf)	2,000	4,000				
Single Family; 1/20 acre (2,178sf)	1,500	3,000				

- 1. An additional 3,000 lumens for each Guest House and Accessory Dwelling Unit (ADU) is allowed on properties larger than (2) acres.
- 2. An additional 300 lumens per parking lot space is allowed for Multi-Family developments.

Lux at the property line - I'm glad to hear they are considering interior spill light for their light trespass calculation. However, 10 lux is still very high. The following chart is used in RP-8 and is the basis for our Lighting Zone analysis. The main difference is that this chart is for horizontal illuminance at the property line. I would think most Emigration Canyon applications are Lz1 and Lz2, so 1 or 3lux would be more appropriate. Having a 10 lux vertical illuminance would align with a high Lz3 or low Lz4.

Property Line Light Trespass Illuminance Limits									
	LZO LZ1 LZ2 LZ3								
Footcandles (fc) 0.05 0.1 0.3 0.8									
Lux (lx)	` '								

Feel free to reach out with any questions or clarifications.

Kindly Vellachi

Vellachi Ganesan MIES, IDA

Clanton & Associates, Inc. | Lighting Design & Engineering

Senior Lighting Designer II | D: 720.403.8487

PLANNING STAFF ANALYSIS

Mountain, and Helper City, Utah, as well as several guidelines produced by the International Dark Sky Organization. Staff also received guidance and advice from Dark Sky experts within the planning community here in Northern Utah. The current version of the Ordinance has been adjusted to reflect an approach to total allowable light use calculations more like that utilized in Fort Collins and Boulder, Colorado municipal code. These cities are recommended by the expert commentators referred to previously. These changes reflect, in the opinion of the staff, an improvement to the previous "net acre" calculation method employed in the first draft.

In analyzing the ordinance as drafted, staff finds that:

- If the Metro Township has the authority to regulate lighting standards through the municipal powers granted to it in State Code;
- III Drafting of the ordinance has involved extensive input from the Planning Commission, including discussion at meetings throughout 2023;
- IV The ordinance advances the vision and goals of the adopted Emigration Canyon General Plan; and
- V The ordinance incorporates best practices in light-pollution prevention.

The following extracts regarding Lighting standards.

Footcandle Safety tolerances

PG&E Outdoor Lighting Safety requirements - Initial footcandle requirement for NFPA 101 compliance - Egress lighting – 1-foot candle average

Quantity of Illumination {IES Recommended Light levels}

Environmental Lighting	g Zones	
Zone	Lighting Situation	Description
LZ4	High Ambient	 Human vision adapted to high light levels Higher levels mandatory for safety/security High levels also provided for convenience and performance
LZ3	Moderately High Ambient	 Human vision adapted to moderately high light levels Higher levels desired for safety and security Higher levels also provided for convenience and performance
LZ2	Moderate Ambient	 Human vision adapted to moderate light levels Moderate levels desired for safety and security Moderate levels also provided for convenience and performance
LZ1	Low Ambient	 Lighting may effect the natural environment or ecological balance Human vision adapted to low light levels Lighting provided primarily for safety and security
LZ0	No Ambient	 Lighting will adversely effect the environment and ecological balance

■Human activity importance
subordinate to nature and the
environment
■Human vision adapted to
darkness, expectation is little or no
lighting

Outdoor Activity Levels		
Activity Category	Description of Activities	Space/Area Types
HIGH ACTIVITY	 High volume of pedestrians & vehicles Constant or frequent swings to very high volume Typical of large urban areas and centers 	■Entertainment/shopping districts ■Pro sports venues ■Transportation hubs ■Active university campus
MEDIUM ACTIVITY	 Moderate volume of pedestrians &vehicles Constant amount of some activity for extended periods Typical of small towns and suburban (moderate) population centers 	■Civic/cultural districts ■Collage campus ■Office complex ■Hotels/motels ■Active parks and public plazas
LOW ACTIVITY	 Low to very low volume pedestrians & vehicles Little nighttime activity over extended periods. Characteristic of some suburban & most rural population centers 	 Residential neighborhoods Small apartments and commercial establishments Outdoor open area resorts/parks

IES Illumination zones for Light Trespass. IES zones are based on the four environmental zones established by CIE.

Maximum allowed trespa	ss footcandles measured eye	e level perpendicular to line	of site.
	Description	Pre-Curfew Limit (Max fc)	Post-Curfew Limit (Max fc) *1
Zone E1	Intrinsic dark landscapes	0.1 fc	0.0 fc
Zone E2	Low ambient brightness areas	0.3 fc	0.1 fc
Zone E3	Medium ambient brightness	0.8 fc	0.2 fc
Zone E4	High ambient brightness areas	1.5 fc	0.6 fc

IES Illumination zones for Light Levels.

Quantity of Illumination [IES Recommended Light Levels] EXAMPLE OF RANGE RECOMMENDED ILLUMINANCEIESHANDBOOK 10THADDITION										
Areas, Function or Task (Visual	LZ0 F	C*2 *3	LZ1 F	C*2*3	LZ2 FO	C*2 *3	LZ3 F	C*2 *3	LZ4 F	C*2 *3
Age 25 -65)*1	Н	V	Н	V	Н	V	Н	V	Н	V
Ext. EntranceCanopied(high activity)	1.0	0.6	1.5	0.8	2.0	1.0	3.0	1.5	4.0	2.0

Ext. EntranceCanopied(medium activity)	0.6	0.2	0.8	0.4	1.0	0.6	1.5	0.8	2.0	1.0
Ext. EntranceCanopied(low activity)	0.2	0	0.4	0.1	0.6	0.2	0.8	0.4	1.0	0.6

Recreational Lighting Standards.

- Tennis Industry Lighting Standards
 - o Class I: Professional level: 125-foot candles / 1250 lux.
 - o Class II: College and medium level: 75–100-foot candles / 750-1000 lux.
 - o Class III: High school and private clubs: 50-75-foot candles / 500-750 lux.
 - Class IV: Recreational: 30-50-foot candles / 300-500 lux.

Recommended Foot Candles for Outdoors and Exterior Parking

The most common recommendation for parking lot foot candles is horizontal illuminance of minimum 0.2-foot candles, vertical illuminance of minimum 0.1-foot candles, and uniformity ratio of 20:1 maximum to minimum.

Entrances	5 fc
Parking Garage – Basic	1 fc
Parking Garage – Ramps	1-2 fc
Parking Lots	2-5 fc
Vehicle Storage	2-5 fc

https://www.ledlightingsupply.com/blog/recommended-foot-candle-chart

PLANNING STAFF RECOMMENDATION

The MSD Planning Staff recommends that the Emigration Canyon Metro Township Planning Commission recommend the Ordinance Language for adoption by the Metro Township Council with any revisions as determined necessary following the public hearing.

DOCUMENT COMMENT AND RESPONSE HISTORY

The following Comments were received from Jim Karkut

19.73.111 Definitions

Basement - Change "An area of a building" to "The area of a building."

BUG Rating - The definition ends with the phrase "at high angles." Suggestion - add a parenthesis indicating what we consider to be "high angles."

Figure 02 - Replace the word "STRENGTH" with "INTENSITY." Why - because the definition of Candela uses the word "intensity", and other places in the ordinance use "intensity" rather than "strength."

Cut-off angle, of a light fixture - Delete the hyphen in "cut-off." Delete the comma after "angle." (Note how the next definition uses "cutoff")

Full-cutoff fixture - Question: Does the definition need its ending phrase "and limited to a value not exceeding 10% of lamp lumens at or about 80 [degrees] above nadir"?

Glare - Question: Does the definition need the phrase in it of "visual performance"? I ask because I am not sure what that phrase means.

Lumen. Change the definition to read: "A measurement of light intensity. One lumen is approximately equal to the amount of light emitted by one candle at a one-foot distance. A light source with higher lumens emits brighter light."

Religious Institutions Property - Change "accessory structures" to "accessory structure(s)."

Security Lights - Delete the word "visual" from "visual security."

19.73.112.C Amortization - To make the language of the first sentence of C consistent with the language in A and B, change the first sentence to read: "All non-compliant exterior lighting fixtures shall be brought into compliance no later than 5 years from the effective date of this Chapter."

19.73.112.D.1.b - Near the end of the sentence, replace "the conditions outlined in" with "the requirements of".

19.73.112.D.2 - Insert the word "fixture" after "replacement" in the phrase "the replacement shall comply with the requirements of this Chapter."

19.73.112.E.1 - In the last phrase at the end of the second sentence, change "requirements" to "requirement." That makes the word consistent with the use of "requirement" in the first phrase of the sentence.

19.73.113.A.1.a.i - Replace the word "clear" with "specific."

19.73.113.F - In the lead-in sentence, change "All lighting identified in this Section" to "All lighting described in this Section."

19.73.113.F.4.a - Change "governing agency" to "government agency."

19.73.114.A - Note that B and C provide that lighting turned off at dusk or 10:00 p.m. shall remain off until 6:00 a.m. the following morning. It seems like it would be a good idea to state something along similar lines for Commercial and Religious Institutions Properties, One possible way would be to end the sentence in A.1 with "within one hour after closing, and until 6:00 a.m. the following morning."

19.73.115.D.1 - In the second sentence, change "standards" to requirements." (I recognize that some internal headings use "Standards", but I like the word "requirements" better when used in sentences)

19.73.115.D.1.c - Change "standards" to requirements."

19.73.118.A.1 - I recommend that the last sentence in 1 ("All applications may be subject to review and action by the Director or designee") be deleted because it is inconsistent with the preceding

sentence that requires all of the listed applications to be submitted with a Lighting Plan for the Director or designee to review.

19.73.118.A.2a. iii - Add a period after "electrical details"

19.73.119.A - Change the heading "Appeal for Exemption" to "Appeal." This is because the possible situations in A cover more possibilities than the applicant obtaining an exemption.

19.73.119.A.1.b - Insert a comma after the phrase "does not approve the proposed lighting plan"

19.73.119.B.1.a - Change "Failing to meet light curfew standards as outlined in section 19.73.114" to "Failing to comply with the night lighting limitations set forth in Section 19.73.114."

19.73.119.C.2.a - Add the phrase "and adjacent properties" to the end of the sentence.

19.73.119.C.2.a.i - 2.a grants the Director or designee the authority, in certain cases, to impose certain steps to mitigate the effects of light pollution, etc. However, the phrase in 2.a.1 states a totally different concept - that a property owner has an obligation to take certain steps to minimize unintended effects of the property owner's outdoor lighting on the night sky environment and adjacent properties. I like that idea, but it seems to be overbroad, and in the wrong place.

19.73.119.D.1 Insert "for" before "each day of violation after the expiration of the 30-day abatement period"

The Following Comments were received from Tim Harpst.

Cut-off seems to me to be the appropriate spelling in the def of cut-off angle, of a light fixture. I think the definition of full cut-off fixture is good as is because it provides more clarification.

I like "visual Performance" in the def of glare.

In 19.73.119.C.2.a - Instead of adding the phrase "and adjacent properties" to the end of the sentence, I suggest adding "in general and particularly upon adjacent properties." I think this would be more clear.

In 19.73.119.D.1 I would suggest replacing the word "and" with the word "for" before "each day of violation after the expiration of the 30-day abatement period "

Emigration Canyon Metro Township

DARK SKY ORDINANCE | MUNICIPAL CODE: 19.73.110 NIGHT LIGHTING

19.73.110 - Purpose.

A. The purposes of this Chapter are to:

- 1. Encourage lighting practices that minimize light pollution, glare, light trespass, and sky glow to preserve and enhance views of the night sky.
- 2. Maintain the rural atmosphere and community character of the Metro Township.
- 3. Protect ecological conditions and nocturnal wildlife within the Metro Township.
- 4. Maintain nighttime safety, utility, and security.
- 5. Encourage lighting practices that promote energy conservation.

19.73.111 - Definitions.

For the purpose of this Chapter, certain words, phrases, and terms used herein shall have the meanings assigned to them by this section:

Accent Lighting: Lighting of building surfaces, landscape features, statues, and similar items for the purpose of decoration or ornamentation, or lighting that does not contribute to the safety or security of residents, guests, employees, or customers on a property.

Adaptive Controls: Devices such as motion sensors, timers, and dimmers used in concert with outdoor lighting equipment to vary the intensity or duration of the operation of lighting.

Ambient light: The general overall level of lighting in an area.

Backlight: All the light emanating behind a light fixture.

Ballast: A device used with a discharge lamp to obtain the necessary voltage, current, and/or waveform for starting and operating the lamp.

Basement: An area of the building having its floor below ground level on all sides.

Brightness: Strength of the sensation that results from viewing surfaces from which the light comes to the eye.

BUG Rating: A BUG Rating stands for backlight, uplight, and glare. Backlight (B) is the light directed behind the light fixture, uplight (U) is any light directed upward above the horizontal plane of the light fixture, and glare (G) is the amount of light emitted from the light fixture at high angles.

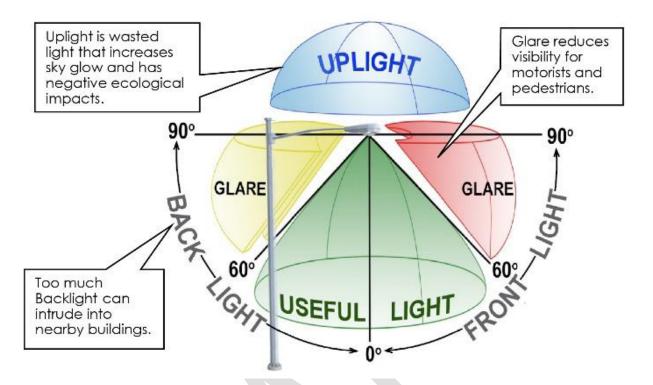


Figure 01: BUG Ratings (Adapted from City of Denver Department of Public Works 2023: https://www.denvergov.org/files/assets/public/doti/documents/standards/pwes-012.2-street_lighting_design_guidelines.pdf)

Bulb or lamp: The source of electric light. To be distinguished from the whole assembly (see light fixture).

Candela (cd): The intensity of light emitted from a fixture in a certain direction.

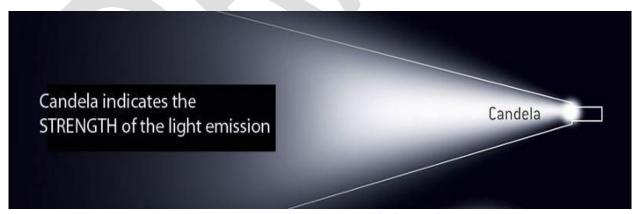


Figure 02: Candela (Adapted from Barco 2023 https://www.barco.com/en/support/knowledge-base/3736-what-is-the-difference-between-cdm2-lux-and-lumens)

Commercial Property: Any parcel zoned C-1 Commercial, C-V Commercial, or C-2 Commercial Zone.

Constant Lighting. Lighting that does not flash, blink, strobe, or otherwise emit bright bursts of light.

Correlated Color Temperature (CCT, Color Temperature): A specification of the color appearance of the light emitted by a lamp, relating its color to the color of light from a reference source when heated to a particular temperature, measured in degrees Kelvin (K).



Figure 03: Correlated Color Temperature (adapted from Tachyon Light 2023 https://tachyonlight.com/what-is-correlated-color-temperature/)

Cut-off angle, of a light fixture: The angle, measured up from the nadir (i.e. straight down), between the vertical axis and the first line of sight at which the bulb or lamp is not visible.

Diffuser: A device used to distribute light from a source.

Dimmer: A device for varying the brightness of electric light.

Direct Illumination: Illumination resulting from light emitted directly from a lamp or reflector. This does not include light reflected from other surfaces, such as the ground or building faces.

Director: The Greater Salt Lake Municipal Services District Director of Planning and Development Services or planning staff as so designated.

Dusk: The darker part of <u>twilight</u>. Timetables identifying specific hours for dusk on any given day are located at: https://www.gaisma.com/en/location/salt-lake-city-utah.html.

Efficiency: A measure of the effective or useful output of a system compared to the input to the system.

Energy (radiant energy): Unit is erg, or joule, or kWh.

Facade lighting: The illumination of the exterior of a building. (See also Accent Lighting.)

Fixture Lumens: A light fixture's total light output after passing through the optics in that fixture.

Fixture Watts: The total power consumed by a fixture. This includes the power consumed by the lamp(s) and ballast(s).

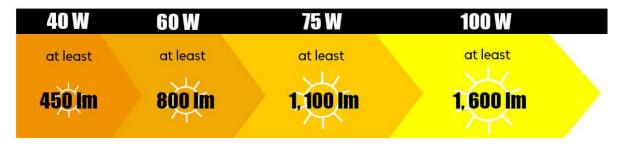


Figure 04: Watts to Lumens Relationship (adapted from Standard Products Inc 2023 https://www.standardpro.com/how-tomeasure-light/)

Floodlight: A fixture designed to "flood" a well-defined area with light.

Footcandle: A footcandle is a measurement of light intensity. One footcandle is defined as enough light to illuminate a one-foot square located one foot from the light source with one lumen of light.

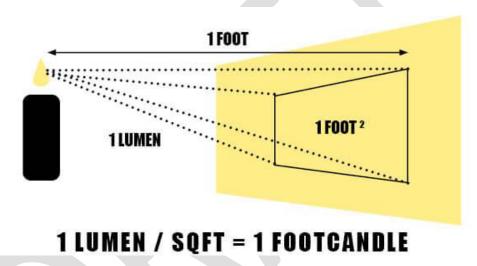


Figure 05: Footcandle (adapted from Standard Products Inc 2023 https://www.standardpro.com/how-to-measure-light/)

Full-cutoff fixture (Fully Shielded Fixture): An outdoor light fixture constructed and mounted so that the installed fixture emits no light (zero intensity) at or above horizontal (90° above nadir) and limited to a value not exceeding 10% of lamp lumens at or above 80° above nadir.



Shielded / Properly-aimed PAR Floodlights

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

Glare: The visual sensation caused by excessive brightness, and which causes annoyance, discomfort, or a loss in visual performance or visibility.

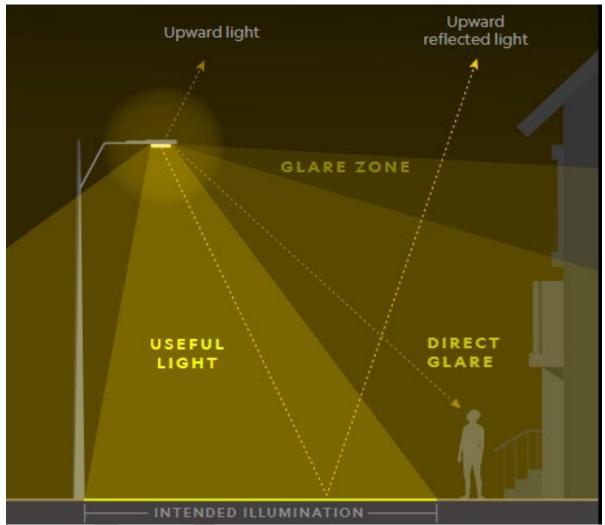


Figure 07: Glare (adapted from National Geographic 2023 https://www.nationalgeographic.com/science/article/nights-are-getting-brighter-earth-paying-the-price-light-pollution-dark-skies?)

Hardscape: Any non-living horizontal site element, including but not limited to patios, decks, walkways, sidewalks, driveways, and steps.

House-side Shield: Opaque material applied to a fixture to block the light from illuminating a residence or other structure being protected from light trespass.

Illuminance: Light level measured in footcandles, lux, or lumens.

Illuminating Engineering Society of North America (IES or IESNA): The professional society of lighting engineers, including those from manufacturing companies, and others professionally involved in lighting.

Incandescent lamp: A lamp in which light is produced by a filament heated to a high temperature by an electric current.

Indoor Lighting: Any lamp, pendant, or fixture used to illuminate the interior of any structure.

Intensity: The degree or amount of energy or light.

Internally Illuminated: As it relates to signs, any sign which has a light source entirely enclosed within the sign and not directly visible.

International Dark-Sky Association (IDA, Inc.): A non-profit organization whose goals are to build awareness of the value of dark skies, and of the need for quality outdoor lighting.

kWh (Kilowatt-hour): A measure of electrical energy equivalent to a power consumption of 1,000 watts for one hour.

Lamp: A generic term for a manufactured source created to produce optical radiation, meaning ultraviolet radiation (UV), visible light (VIS), and infrared radiation (IR).

Lamp Life: The average lifespan for a specific type of lamp.

LED: Stands for Light Emitting Diode. LED lighting products produce light up to 90% more efficiently than incandescent light bulbs.

Light Pollution: Brightening of the night sky caused by man-made sources which has a disruptive effect on natural cycles and inhibits the observation of stars and planets.

Light Fixture (Luminaire): A complete lighting unit that typically includes components such as a fixture housing, ballast, reflector, shield or diffuser, and a lamp or lamps.

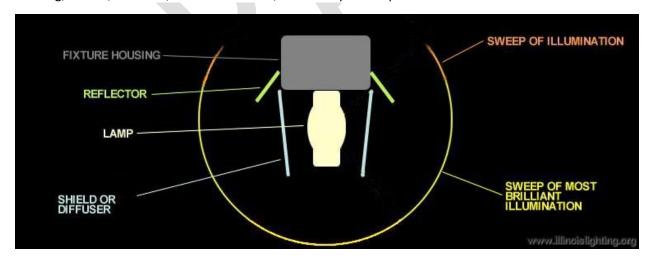


Figure 08: Components of a light fixture (adapted from Illinois Coalition for Responsible Outdoor Lighting 2023 http://www.illinoislighting.org/fixture2.html)

Light Source: The part of a light fixture that produces light, e.g., the bulb, lamp, or diode.

Light Spill: Unwanted spillage of light onto adjacent areas including residential properties and ecological sites. (See also: Light Trespass.)

Light Trespass: Light falling where it is not wanted or needed. (See also: Light Spill.)



Figure 09: Light Trespass Compared to Adequate Shielding (adapted from E School Today 2023 https://eschooltoday.com/learn/types-of-light-pollution/)

Lighting Controls: Devices used for either turning lights on and off or for dimming. Photocell Sensors automatically turn lights on and off in response to natural light levels. Some advanced modes can slowly dim or increase the lighting level. See also: Adaptive Controls.

Lumen: A measurement of light intensity approximately equal to the amount of light emitted by one candle at a one-foot distance. A light source with higher lumens emits brighter light.



Figure 10: Comparison of bulb types, lumens, and watts (adapted from Efficiency Maine 2023 https://www.efficiencymaine.com/at-home/lighting-solutions/)

Lux: (symbol: lx) The unit of illuminance equal to one lumen per square meter.

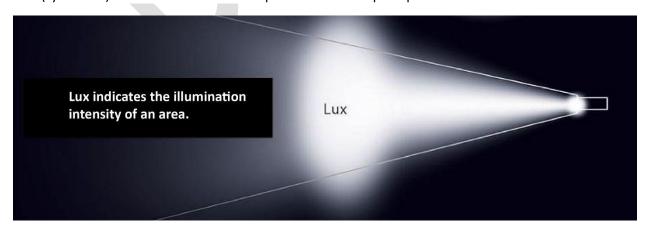


Figure 11: Lux (Adapted from Barco 2023 https://www.barco.com/en/support/knowledge-base/3736-what-is-the-difference-between-cdm2-lux-and-lumens)

Manufacturer's Catalog Cut: A publication or other printed material of a lamp or lighting manufacturer offering visual and technical information about a lighting fixture or lamp.

Mounting height: The height of the light fixture as measured from the point at which light is emitted above the ground plane (pole-mounted) or lowest finished floor elevation (structure-mounted).

Multi-Family Residential Property: Any parcel having a building containing five or more dwelling units, or any parcel zoned R-M Residential.

Nadir: The direction pointing directly downward from the light source of the light fixture that originates from a horizontal plane at the lowest point on the light fixture.

Optic: The components of a light fixture such as reflectors, refractors, and protectors which make up its light emitting section.

Outdoor Light Fixture (Outdoor Lighting, Exterior Lighting): An outdoor, electric, or solar-powered illuminating lamp, or similar device used for lighting structures, parking lots, pathways, service canopies, recreational areas, signs, or other similar outdoor uses.

Partially Shielded Light Fixture: An outdoor light fixture constructed and mounted so that the installed fixture emits most, but not all, of its light below the horizontal plane.

Pathway Lights: A light fixture, or collection of light fixtures, less than eighteen inches (18") in height, lining one or both sides of an outdoor path or walkway that provides illumination to guide persons along the outdoor path or walkway.

Photometry: The quantitative measurement of light level and distribution.

Photocell: An electronic device that changes the light output of a light fixture dynamically in response to the ambient light level around the light fixture.

Pool Lighting: Light fixtures located below the surface of the water in a swimming pool, hot tub, reflecting pool, fountain, or other water features.

Recreational Lighting: Lighting used to illuminate playing fields, courts, playgrounds, ice rinks, or similar outdoor recreational facilities.

Reflector: An optic that achieves control of light by means of reflection (using mirrors).

Refractor: An optic that achieves control of light by means of refraction (using lenses).

Religious Institutions Property: Property containing a religious or spiritually-oriented structure(s) or accessory structures, where persons regularly assemble for religious or spiritual purposes and related social events.

Security Lights: Lighting designed to illuminate a property or grounds for the purpose of visual security.

Shielding: An opaque material that blocks the transmission of light.

Single-Family Residential Property: Any parcel zoned FR-0.5, FR-1, FR-2.5, FR-5, FR-10, FR-20, FR-50, FR-100, and for Planned Unit Developments.

Skyglow: The brightening of the nighttime sky resulting from the scattering and reflection of artificial light by moisture and dust particles in the atmosphere. Skyglow is caused by light directed or reflected upwards or sideways, reducing one's ability to view the nighttime sky.



Figure 12: Skyglow Bortle Scale measuring degradation of the night sky (adapted from Skyglow Project 2023 https://skyglowproject.com/#new-page)

Spotlight: A fixture or lamp designed to light a small area very brightly. See the definition of Floodlight.

Stationary Lighting. Lights that are fixed in a non-moving position.

Task Lighting: Task lighting is used to provide direct light for specific activities without illuminating the entire area.

Tower: Any monopole, antenna or the like that exceeds eighteen feet (18') in height.

Unshielded Light Fixture: A fixture that allows light to be emitted above the horizontal plane, either directly from the lamp or indirectly from the fixture or reflector.

Visibility: The distance one can see horizontally as determined by light and weather conditions.

Wall Pack: A light fixture, typically affixed to the side of a structure, used for area lighting.

19.73.112 - Scope and Applicability.

A. Compliant Lighting.

1. Lighting installed and/or replaced after the effective date hereof in all zones in the Metro Township shall comply with the requirements established by this Chapter.

B. Non-compliant Lighting.

- 1. Lighting that does not meet the requirements of this Chapter shall be considered non-compliant lighting.
- C. <u>Amortization</u>: All exterior lighting fixtures that do not conform to the requirements of this Chapter shall be brought into conformance no later than 5 years from the effective date of this Chapter. The Metro Township encourages property owners to voluntarily bring non-compliant lighting into compliance with this Chapter as soon as possible.

D. Lighting Modifications.

- 1. When a Building Permit is required:
 - a. If the proposed structural modifications necessitate the removal of a non-compliant light fixture, the light fixture shall be replaced or modified to bring it into compliance with the requirements of this Chapter.
 - b. If the proposed structural modifications represent a value of 50% or more of the property value at the time of submittal, a lighting plan for the property shall be submitted subject to the conditions outlined in Section 19.73.118.
- 2. When a building permit is not required and a non-compliant light fixture is replaced, destroyed, damaged, or modified, the replacement shall comply with the requirements of this Chapter.

E. Conflicts.

1. In the event any federal, state, or county statute or regulation conflicts with any requirement of this Chapter, the most restrictive statute, regulation, or requirement shall govern unless otherwise required by law. In the event any requirement of the Metro Township's other ordinances conflicts with the requirements of this Chapter, the most restrictive requirements shall govern.

19.73.113 - Standards.

A. Minimum Necessary.

- 1. The intensity of outdoor (exterior) lighting shall be the minimum necessary to provide for safety and functionality. The lowest-lumen light source necessary for a lighting application shall be used.
 - a. All lighting shall be purpose-driven:
 - i. Useful: All light used shall have a clear purpose.
 - ii. Targeted: Light shall be directed only to where needed.
 - iii. Low Light Levels: Light shall be no brighter than necessary.
 - iv. Controlled: Light shall be used only when it is useful.
 - v. Color: Where possible, warmer color lights shall be used.

B. Allowable Applications.

- 1. Outdoor lighting in compliance with this Chapter shall only be allowed in the following applications:
 - a. To illuminate the entrances to buildings (including garage entrances).
 - b. To illuminate pathways and walkways.
 - c. To illuminate parking areas and parking area access lanes.
 - d. To illuminate gathering areas, such as patios, pool and hot tub areas, dining areas, and recreation areas.
 - e. For security purposes, provided all the following conditions are met:
 - i. The lighting is activated by motion sensors and shuts off, within or before, fifteen (15) minutes after each activation or when the activity involved is completed.
 - ii. The lighting is placed and directed such that no direct illumination falls outside the property boundaries where the security lighting is placed.
 - iii. Sensors are adjusted to meet site conditions to avoid repetitive activation by wildlife, wind, and/or other disturbances.
 - f. To illuminate signage.
 - g. For Accent Lighting, provided all the following conditions are met:
 - i. All accent lighting is mounted on and illuminates only building facades visible from an adjacent public right of way.
 - ii. The accent lighting is sufficiently shielded such that the light source is not visible beyond the property boundaries.
 - iii. The accent lighting is directed such that all light shines on the building facade, not on the adjacent property or the night sky.
 - iv. The accent lighting is not used to illuminate the landscape, landscape elements, statues, or other similar features.
 - h. To illuminate outdoor water features, provided all the following conditions are met:
 - i. The lighting is angled below the horizontal plane.
 - ii. The lighting is placed underneath or behind the water such that the water diffuses the light from all points where the light is visible.
 - i. Temporary exterior or decorative lighting utilized for holidays or special events shall be extinguished by 10:00 pm. When in use, the lighting shall not exceed the allowed footcandle limit for the property. This can be accomplished by reducing light usage in other areas of the property. Temporary lighting shall be limited to the following:
 - i. The period of time between December 1st and January 1st each calendar year; and,
 - ii. Periods of time outside the month of December shall not exceed 7 days per calendar month for other holidays and special events.

C. Total Light Output.

- 1. Commercial and Religious Institutions Properties: The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 2.0 footcandles per square foot of hardscape.
- 2. Multi-Family Residential Properties: The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 1.5 footcandles per square foot of hardscape.
- 3. Single-Family Residential Properties: The total amount of outdoor lighting, whether shielded or unshielded, shall not exceed 1.0 footcandle per square foot of hardscape.

- a. Single-Family Residential Properties used for overnight accommodations or commercial uses shall comply with Single-Family Residential Property standards for total light output.
- 4. For all Properties Light output from outdoor sources shall not exceed 0.1 footcandle at the property line.
- D. Maximum Color Temperature of All Outdoor Lighting Fixtures.
 - 1. The correlated color temperature of any outdoor lighting fixture shall not exceed three thousand degrees Kelvin (3000°K).
- E. Fully Shielded Fixture Requirements.
 - 1. Unless specifically exempted by this Chapter, all outdoor lighting shall use fully shielded fixtures that are designed and constructed so that:
 - a. No light is emitted and/or reflected above the horizontal plane of the fixture.
 - b. Light emitted is limited to a value not exceeding 10% of lamp lumens at or above 80° nadir and zero lumens above the horizontal plane (90° nadir).
 - c. Lighting is placed and/or directed at a location, angle, and/or height to prevent direct illumination outside the property boundaries where the light fixtures are located.
 - d. When a light manufacturer provides a BUG rating, the uplight rating (U) shall equal zero (0).

2. Characteristics:

- a. To qualify as a fully shielded fixture, the top and sides of a light fixture shall be made of completely opaque material, such that light only escapes through the bottom of the fixture. Fixtures with translucent or transparent sides, or sides with perforations or slits, do not qualify as fully shielded. Any glass or diffuser on the bottom of the fixture must be flush with the fixture (no drop lenses) and must not reflect light that breaks the horizontal plane established at the bottom of the shield. Merely placing a light fixture under an eave, canopy, patio cover or other similar cover does not qualify the fixture as being fully shielded.
- F. Exemptions To Fully Shielded Fixture Requirements. All lighting identified in this Section shall be included in calculating the total footcandle output allowed unless otherwise noted and as set forth in Section 19.73.113. C.

1. Spotlights:

- a. Spotlights controlled by motion sensors having a light output of less than one thousand (1000) lumens per lamp are exempt from the fully shielded requirement, provided:
 - i. The fixture is a spotlight or other type of directed light that shall be directed at a forty-five-degree (45°) angle or less, where the zero (0) angle is pointing straight down, and
 - (a) The fixture must not be placed in such a manner that results in light trespass, and
 - (b) The lighting elements controlled by motion sensors shall not be triggered by movement or activity located off the property on which it is located.
 - ii. The fixture is hooded or shielded to the extent necessary to prevent glare on adjacent properties or roadways.
 - iii. The lighting is activated by motion sensors and shuts off, within or before, fifteen (15) minutes after each activation or when the activity involved is completed.

2. Pathway Lights:

- a. Pathway lights less than eighteen inches (18") in height are exempt from the fully shielded fixture requirement if:
 - The total light emitted by all pathway light fixtures as measured along the centerline of the pathway lighted does not exceed 1.0 footcandle; and

- ii. The lights have opaque caps that direct light below the horizontal plane.
- 3. Temporary Exterior or Decorative Lighting:
 - a. Temporary exterior or decorative lighting, provided that individual lamps do not exceed 70 lumens, the total output of temporary lighting does not cause the property to exceed total footcandle levels allowed in this Chapter, and the lighting does not cause light trespass or interfere with the reasonable use and enjoyment of surrounding properties.
- 4. Law Enforcement Lighting, Traffic Control Signals, and Traffic Safety Devices:
 - a. Traffic control signals, traffic safety devices, and law enforcement lighting used by a governing agency, is exempt from and not governed by the requirements of this Chapter.
- 5. Temporary Emergency Lighting:
 - a. Temporary emergency lighting in use by law enforcement or government agencies, or at their direction, is exempt from and not governed by the requirements of this Chapter.
- 6. Pool Lighting
 - a. Underwater lighting fixtures providing illumination to all underwater areas of a swimming pool, hot tub, reflecting pool, fountain, or other such water feature provided they are shielded to the greatest extent feasible to prevent light trespass beyond the surface of the water.
- G. Restrictions On Total Amount of Unshielded Lighting.
 - 1. Outdoor lighting that is exempt from the shielding requirement in this Chapter shall not contribute more than the equivalent of:
 - a. 0.2 footcandle per square foot of hardscape for Commercial or Religious Institutions Properties.
 - b. 0.15 footcandle per total square foot of hardscape for Multi-Family Residential Properties.
 - c. 0.1 footcandle per square foot of hardscape for Single-Family Residential Properties.
 - 2. All lighting fixtures shall be fully shielded when installed within twenty-five (25) feet of adjacent residential property lines.

19.73.114 - Night Lighting Limitations.

- A. Commercial and Religious Institutions Properties.
 - 1. Shall turn off all outdoor lighting, except those listed below, within one hour after closing.
 - a. Lighting to illuminate the entrance(s).
 - b. Parking lot and pathway lighting required for the safety of customers, employees, and guests.
- B. <u>Multi-Family and Single-Family Residential Properties.</u>
 - 1. Shall be turned off one hour after dusk through 6:00 am the following morning, except those listed below:
 - a. Lighting to illuminate entrances.
 - b. Parking lot and pathway lighting required for the safety of residents or guests.
 - c. Outdoor gathering spaces when in use.

C. <u>Recreational Lighting</u>

1. Shall be turned off when not in use, and from 10:00 pm until 6:00 am the following morning, except to conclude a community-approved event that is underway.

19.73.115 - Specialized Outdoor Lighting.

A. Roadway/Streetlights.

1. Roadways and streetlights are prohibited unless recommended by the County Engineer or required by the Utah Department of Transportation (UDOT). When deemed necessary, streetlights shall utilize lamp types that are fully shielded light fixtures that minimize sky glow, light trespass, and other unintended impacts of artificial lighting. All street lights shall utilize the lowest light levels accepted by the County Engineer and/or UDOT.

B. Parking Lots.

- 1. Spot or flood lighting of parking lots from a building or other structure is prohibited.
- 2. The mounting height of any pole-mounted light fixture used to illuminate parking lots in commercial or religious institution properties shall not exceed fourteen feet (14').
- 3. The mounting height of any pole-mounted light fixture used to illuminate parking lots in all residential properties shall not exceed six feet (6').
- 4. All pole-mounted parking lot lights shall be set back from property lines at a distance equal to two and one-half (2.5) times the height of the pole unless an internal or external shield prevents the fixture from being visible from outside the property boundaries.
- 5. All parking lot lighting shall use fully shielded fixtures.
- 6. Internal or external shields shall prevent the light source from being visible from outside the relevant parking lot.

C. Recreational Lighting.

- 1. All proposals for recreational lighting for playing fields or court areas shall be submitted to the Director or designee, who may approve such requests only after finding:
 - a. The recreational lighting has met the requirements for minimizing glare, light spill, light trespass, and uplight using louvers, hoods, or shielding.
 - b. The recreational lighting only illuminates the playing field or court area and is shielded to prevent illumination from falling outside of those areas.
 - c. Lighting on the playing field or court area shall not exceed 20 footcandles per square foot.
 - d. The light source for recreational lighting is not visible from adjacent properties.
 - e. Pole-mounted recreational lighting is limited to eighteen feet (18') in mounting height. Pole-mounted recreational lighting must be set at a distance equal to two and one-half (2.5) times the height of the pole installed from any adjacent property line unless an internal or external shield prevents the fixture from being visible from outside the property boundaries.

D. Amphitheater Lighting.

- 1. Outdoor amphitheaters may use illumination to light the performance area of the amphitheater and provide public safety. The following standards apply to all amphitheater lighting:
 - a. Lighting used to illuminate the performance area must be either directed spotlighting or fully shielded lighting. If directed spotlighting, the light source must be located and designed such that it is not visible beyond the property boundaries.
 - b. Lighting used to illuminate the performance area may only be turned on during performances or rehearsals.
 - c. Lighting used to illuminate the seating areas, pathways, and other areas of the amphitheater must meet all standards of this Chapter.

E. Signs.

- 1. Where other municipal ordinances are in conflict with the requirements of this Chapter, the more restrictive requirements shall apply.
- 2. Signs may be unlighted, lighted externally, lighted internally, or backlit. All sign lighting must be designed, directed, and shielded in such a manner that the light source is not visible beyond the property boundaries where the sign is located. Lighting for signs must be directed such that only the sign's copy area is illuminated.
- 3. Lighting for signs must be stationary and constant.
- 4. All signage elements must be stationary.
- 5. Standards for Externally Illuminated Signs:
 - a. Lighting for externally illuminated signs must be aimed and shielded so that light is directed only onto the sign face and does not intrude onto adjacent streets, roads, or properties or into the night sky.
 - b. Lighting for externally illuminated signs must be mounted at the top of the sign (or within two (2) feet of the top of a building-mounted sign).
- 6. Standards for Internally Illuminated Signs
 - a. Lighting Is Visible on Both Sides of the Sign:
 - i. Only sign copy areas and logos may be illuminated on an internally illuminated sign.
 - ii. Internally illuminated signs shall use semi-opaque materials for sign copy such that the light emanating from the sign is diffused. Transparent or clear materials are not allowed for sign copy. Non-copy portions of the sign (e.g., background and graphics) shall be made of completely opaque material.
- 7. Standards for Backlit Signs
 - a. Only One Side of Sign Is Lit:
 - i. Backlit signs shall be designed such that the light source is not visible.
 - ii. Backlit signs shall be designed such that direct illumination does not emanate out of the sign. Rather, the backlighting shall only allow indirect illumination to emanate from the sign. For example, signs that create a "halo" effect around sign copy are allowed.
 - iii. Backlit signs shall use low-lumen light sources (450 lumens maximum).
- 8. Illuminated Window Signage:
 - a. Illuminated window signs positioned to be primarily visible outside all structures are allowed only if there are no more than two (2) signs. Each sign shall measure less than three and one-half $(3^{1}/_{2})$ square feet in area.

19.73.116 - Prohibited Lighting.

- A. Accent Lighting that is directed upward above the horizontal plane to illuminate building structures, landscape, landscape features, statues or similar features, vegetation, or for any other use.
- B. Flashing, blinking, intermittent, or other lights that move or give the impression of movement.
- C. Unshielded Floodlights or Spotlights affixed to buildings for the purpose of lighting parking lots.
- D. Searchlights and laser source lights.
- E. Building-mounted light fixtures in residential properties at a mounting height of more than 14 ft. above the finished grade at the primary entrance to the corresponding side of the building (i.e. front, sides, rear.)

- For buildings having sides without an entrance, the mounting height limitation established by the finished grade at the lowest primary entrance elevation on any side of the structure shall control.
- 2. Wall-mounted lighting may be utilized for patios and decks located above the primary entrance elevation, provided that the lighting is directed so that all light falls only on the deck or patio surface intended to be lit and the light source is shielded and/or diffused such that the light source is not visible outside the property boundary.

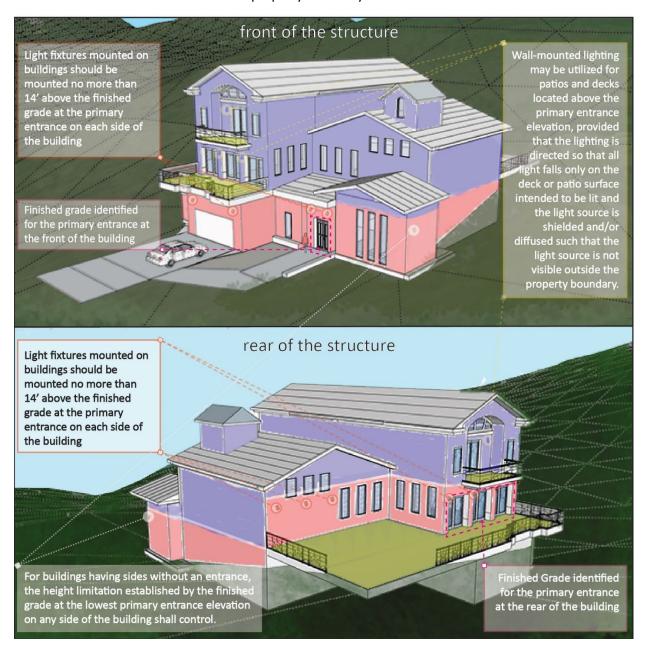


Figure 13: Light Fixture mounting height limitations on buildings

19.73.117 - Towers.

- A. All monopole, antenna, tower, or support facility lighting not required by the Federal Aviation Administration (FAA), the Federal Communications Commission (FCC), or Municipal Fire and Police is prohibited.
- B. When lighting is required by the FAA, FCC, or Municipal Fire and Police, such lighting shall not exceed the minimum requirements of those agencies.
- C. All other lighting used on the property not regulated by the FAA, FCC, or Municipal Fire and Police shall conform to the requirements of this Chapter.

19.73.118 - Application and Review Procedures.

A. Lighting Plan Required.

- 1. In any application for a sign permit, building permit for new development and renovation subject to 19.73.112.D of this Chapter, conditional use permit, subdivision, design/development review, and any other development application within any zoning district, including all municipal projects, the applicant shall, as part of the application process, submit a Lighting Plan including sufficient information to enable the Director or designee to determine whether the proposed lighting complies with the requirements of this Chapter. All applications may be subject to review and action by the Director or designee.
- 2. Lighting Plans shall include the following:
 - a. Site plans or drawings indicating the proposed location of all outdoor lighting fixtures, both proposed and any already existing on-site, including:
 - i. mounting height of all light fixtures on the premises, and
 - ii. type of light fixture, lamps, supports, shielding, and reflectors used and,
 - iii. installation and electrical details
 - b. A description of each light fixture, lamp, support, and shield, both proposed and existing. The description shall include but is not limited to, the Manufacturer's Catalog Cuts and illustrations (including sections where required); lamp types, wattages, initial lumen outputs, diffusers, shielding mechanisms, and other accessories. A BUG rating must be included if supplied for each light fixture.
 - c. A table showing the total number of proposed exterior lights, by fixture type, lumens, and lamp type, including a Manufacturer's Catalog Cuts whenever possible.
 - d. The Lighting Plan must demonstrate that no more than the allotted footcandle of light shall be utilized on the property or properties, as specified in section 19.73.113.C.
 - e. Such other information that the Director or designee may determine is necessary to ensure compliance with the requirements of this Chapter.

B. Approval Procedure.

1. If the Director or designee determines that any proposed lighting described in a lighting plan does not comply with the requirements of this Chapter, the lighting plan shall not be approved, and the specific permit applied for shall not be issued.

19.73.119 - Appeals, Violations, Enforcement, and Penalties.

A. Appeal for Exemption.

1. In the event the Director or designee denies the Lighting Plan, the applicant may appeal the decision with the Director or designee.

- a. The Director or designee may approve a lighting plan that does not comply with this Chapter if the applicant demonstrates that compliance with the Chapter constitutes an undue hardship.
 - In the event the Director or designee approves the lighting plan, they may attach other conditions to such approval that will make the proposed lighting comply with the spirit of this Chapter.
- b. In the event the Director or designee does not approve the proposed lighting plan the applicant may appeal that decision pursuant to the requirements of Chapter 19.92.050 Appeals of the Emigration Canyon Municipal Code.

B. Violations.

- 1. The following constitute violations of this Chapter:
 - a. Failing to meet light curfew standards as outlined in section 19.73.114.
 - b. The installation, maintenance, or operation of any outdoor lighting fixture not in compliance with the requirements of this Chapter if such fixture is installed after the effective date of this Chapter.
 - c. The alteration of any outdoor lighting fixtures after the approval of a lighting plan by the Director or designee, when such alteration does not conform to the requirements of this Chapter.
 - d. Failure to shield, correct or remove lighting that is installed, operated, maintained, or altered in violation of the requirements of this Chapter.

C. Enforcement.

- 1. If, after investigation, the Director or designee finds that any requirement of this Chapter is being violated, the Director or designee shall give notice by hand delivery or by certified mail, return receipt requested, of such violation to the owner and/or occupant of such premises, demanding that the violation be abated within 30-days of the date of hand-delivery or of the date of mailing of the notice. Planning and Development Services staff shall be available to assist in working with the violator to correct the violation. If the violation is not abated within the 30-day period, the Director or designee may institute actions and proceedings, either legal or equitable, to enjoin, restrain or abate any such violations and to collect penalties for such violations.
- 2. Hillsides, Ridgelines, and Special Cases
 - a. In certain cases (such as, but not limited to, properties on or near ridgelines or hillsides), the Director or designee may require that certain steps be implemented to mitigate the effects of light pollution, glare, light trespass, sky glow, and to curtail the degradation of the night sky environment.
 - i. For any light source that is directly visible from outside the property boundaries on which the light source is located, the property owner shall redirect, shield, and/or diffuse the light source to minimize the impact and/or address any unintended effect on the night sky environment and adjacent properties. This provision does not apply to existing lighting during which time it is subject to the amortization period set forth in 19.73.112.C.

D. Penalties.

1. Penalties: A violation of this the requirements of this Chapter shall be punishable by a civil penalty of \$50.00 per day, and each day of violation after the expiration of the 30-day abatement period set forth in Section 19.73.119.C.1.















8/9. City/Inner City Sky 7. City/Suburbia Transition 6. Bright Suburban Sky 5. Suburban Sky 4. Suburban/Rural Transition 3. Rural Sky 2. Dark-Sky Site 1. Excellent Dark-Sky S

Presentation Outline

1. Why a Night Sky Ordinance?

General Plan Guidance

General Plan Guidance Health Safety & Wellness

2. Night Sky Overview

What are Dark Skies? Dark Sky Don'ts Dark Sky Dos

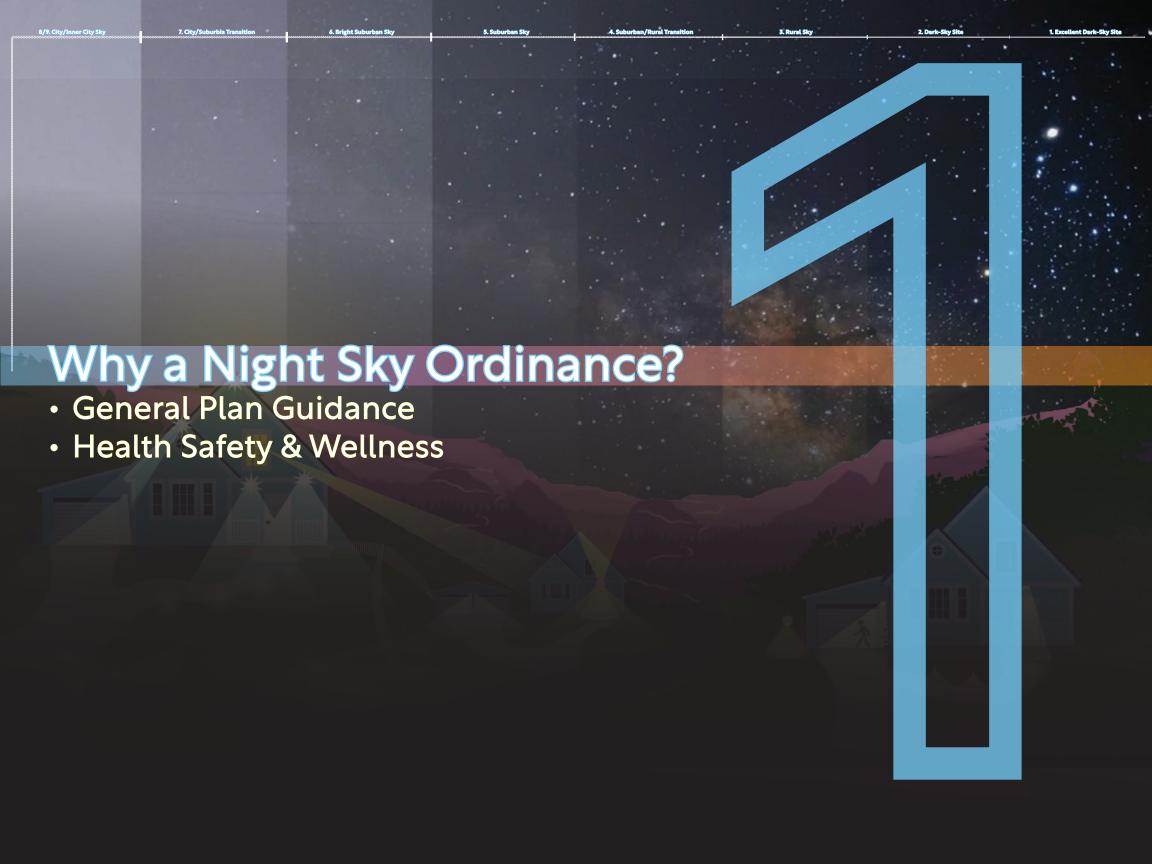
3. Developing Ordinance Language
Resources Utilized

Resources Utilized
Ordinances Studied
Partners Consulted

4. Key Takeaways
Existing Property Owners & Residents

Existing Property Owners & Residents
New Development & Significant Structural Updates

5. Develop a Lighting Plan in 5 Basic Steps



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Why a Night Sky Ordinance?

General Plan Guidance

Emigration Canyon Metro Township has identified in the **Community Values** section of the **General Plan** that environmental sustainability & protection of the natural environment is important to community members, and the identity of the Metro Township. The expressed aim of the General Plan is to:

"Maintain or enhance environmental sustainability and stewardship now and for future generations; this includes but is not limited to features such as water quality, open space, noise management, dark skies, air quality, biodiversity, and climate resilience." pg. 30–31

General Plan Link: https://ec-lrp-hub-gslmsd.hub.arcgis.com/

 Goal 2.3: Preserve and enhance ecological features, viewsheds, wildlife corridors, and open space.

Objective 2.3.2: Preserve and enhance views of the night sky and protections for nocturnal wildlife. **a. Support the adoption of a Dark Sky compliant light-pollution control ordinance.**

 Goal 5.3: Preserve and enhance natural areas and ensure that landscapes are functional and diverse.

Objective 5.3.3: Preserve and enhance views of the night sky and protections for nocturnal wildlife.

a. Support the adoption of a Dark Sky compliant light-pollution control ordinance.

Why a Night Sky Ordinance?

Health, Safety, & Wellness

Human Health

Humans Need The Natural Day/Night Cycle

Our biological clocks help keep us healthy. When our master clock is out of sync with the day/night cycle, it's called circadian disruption. Altering or interrupting our normal circadian rhythm can put us at risk for physiological and behavioral impacts.

Ecological Health Artificial Light Disrupts

Ecosystems

Plants and animals depend on Earth's daily cycle of light and dark to govern lifesustaining behaviors such as reproduction, nourishment, sleep and protection from predators. Scientific evidence suggests that artificial light at night has negative and detrimental affects on many living things, including amphibians, birds, mammals, invertebrates, and plants.





Light Pollution Can Harm Wildlife

Waste

Light Pollution Costs Money And Wastes Resources

Unnecessary and/or excessive outdoor lighting wastes energy by emitting more light than necessary or shining when and where it is not needed. Wasting energy in this way has economic and environmental consequences.

Safety

Brighter Does NOT Mean Safer

Research shows that consistently lighting the nighttime environment does not necessarily improve safety or security.





Light Pollution Can Put Your Health at Risk





Light Pollution Costs Money and Wastes Resources
International Dark Sky Association





Outdoor Lighting, Crime, and Safety

Health, Safety, & Wellness

Human Health Humans Need The Natural

Humans Need The Natural Day/Night Cycle

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Light Pollution Can Put Your Health at Risk
International Dark Sky Association

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Health, Safety, & Wellness

Ecological Health Artificial Light Disrupts

Artificial Light Disrupts
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Light Pollution Can Harm Wildlife International Dark Sky Association

Health, Safety, & Wellness

Waste Light Pollution Costs Money And Wastes Resources

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Light Pollution Costs Money and Wastes Resources International Dark Sky Association

Health, Safety, & Wellness

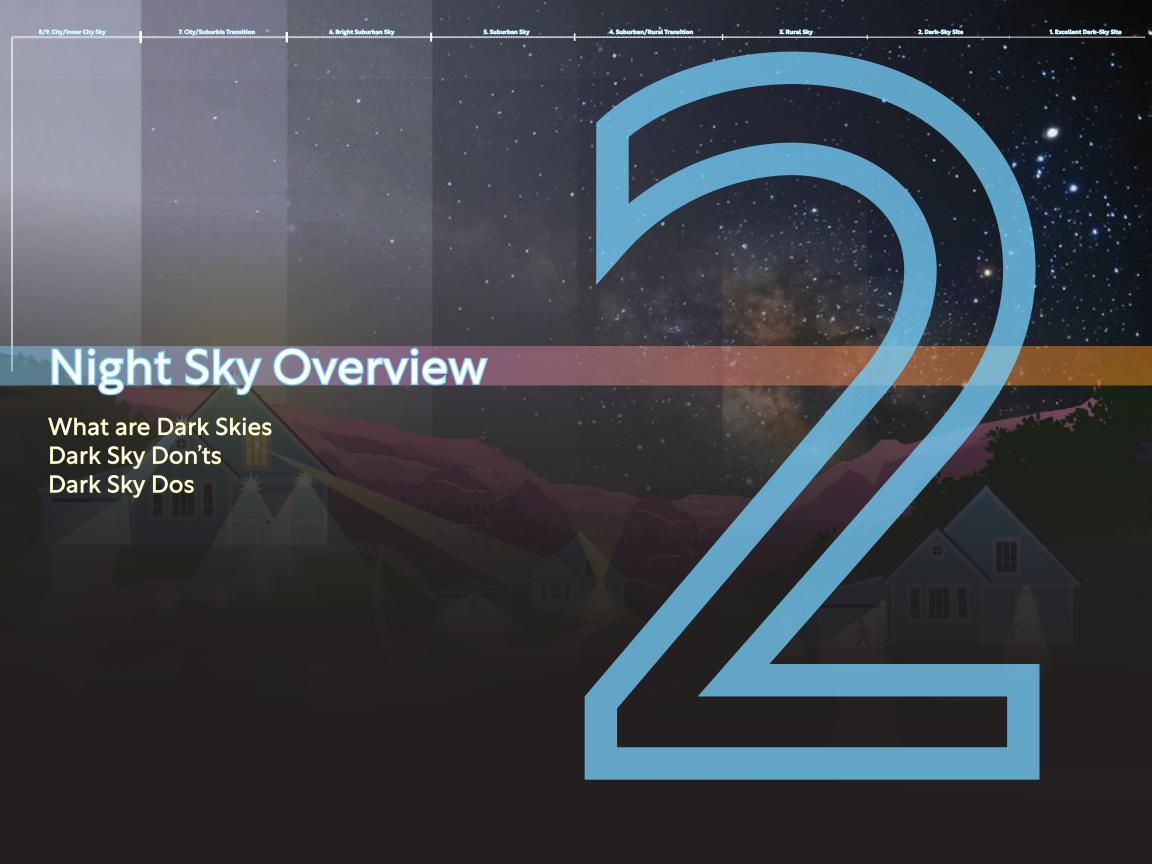
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Outdoor Lighting, Crime, and Safety International Dark Sky Association



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What are Dark Skies?

Night Sky Environment

The cycles of light and dark, created by celestial bodies outside of the earth's atmosphere, directed cycles of activity and growth for all living things on earth until the proliferation of lighting technologies. Today a view from space of earth's surface at night reveals a matrix of lights, stretching from metropolis to metropolis illuminating those areas most influenced by humanity. Understanding your role in the Night Sky Environment can help you make choices that reduce the impact lighting is having on you and your community.

8/9. City/Inner City Sky 7. City/Suburbia Transition 6. Bright Suburban Sky 5. Suburban Sky 4. Suburban/Rural Transition 3. Rural Sky 2. Dark-Sky Site 1. Excellent Dark-Sky Site

What are Dark Skies?

Our Impact

Many of us have experienced this scenario: a neighbor installs a new light on their property. It's an unshielded fixture that casts a bright light that spills onto your property and perhaps even inside your home. Frustrating right?

Have you considered that you might be that neighbor in someone else's scenario? Topography in Emigration Canyon can create scenarios in which light sources can directly affect homes at great distances. The four topics below; **Skyglow**, **Light Pollution**, **Light Trespass**, and **Glare**, can help you better understand the potential impacts of uncontrolled light.

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What are Dark Skies?

Skyglow

Skyglow occurs when ambient manmade light floods the sky creating a glow that can be almost as bright as dawn or dusk. The accumulated light washes the night sky of its luminosity and brilliance, forcing urban and suburban dwellers who wish to enjoy a view of the Milky Way Galaxy or constellations to travel to areas where light pollution does not exist or is better controlled.

Communities and areas can be rated as to the quality of their Night Sky Environment from 9 to 1 based on the levels of Skyglow effecting their night sky environment.

Where would you rate your community on the scale below?





Dark Skies Don'ts

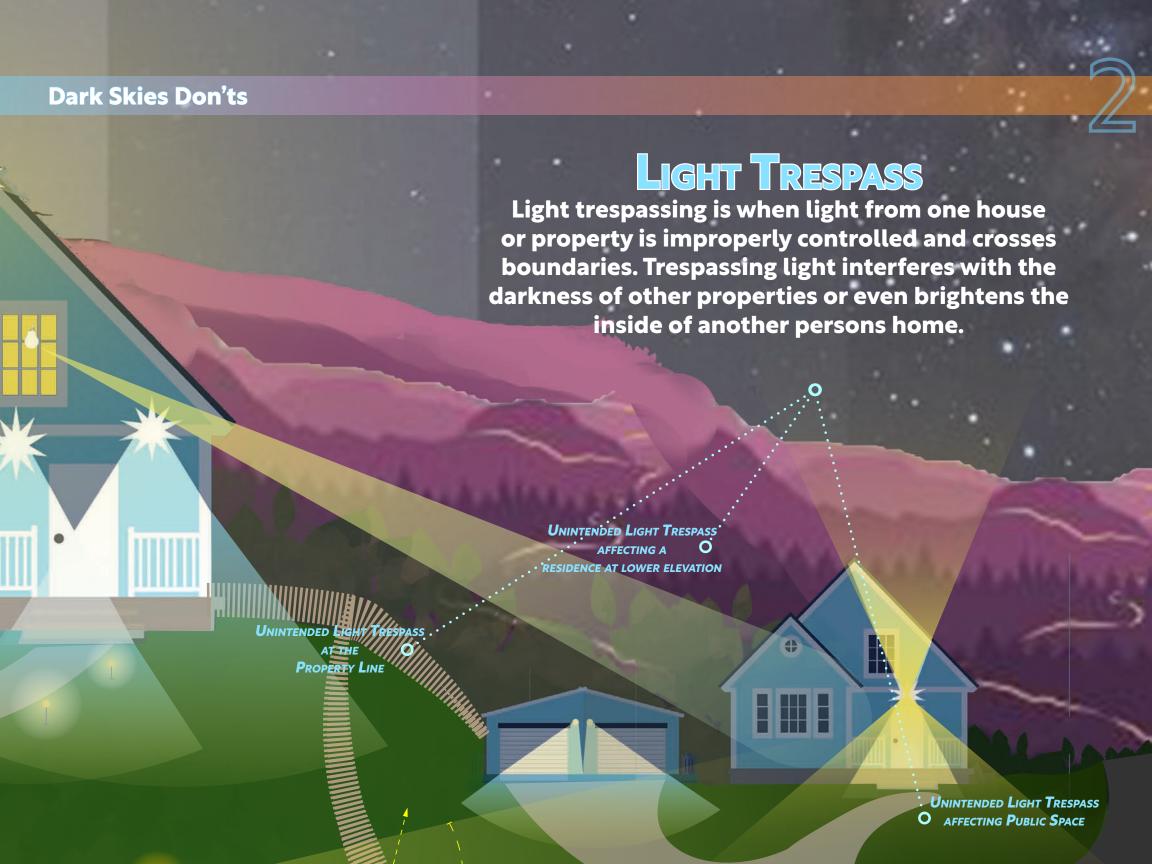
Light pollution is a side effect of industrial civilization. Its sources include building exterior and interior lighting, advertising, commercial properties, offices, factories, streetlights, and illuminated sporting venues.

The fact is that much outdoor lighting used at night is inefficient, overly bright, poorly targeted, improperly shielded, and, in many cases, completely unnecessary. This light, and the electricity used to create it, is being wasted by spilling it into the sky, rather than focusing it on to the actual objects and areas that people want illuminated.

LIGHTING SOURCE VISIBLE OUTSIDE
THE PROPERTY

Consistentily Illuminated
Spotught Zones

OVER-UIT AREAS PRODUCING
LIGHT POULUTION



Dark Skies Don'ts GLARE Glare caused by light pollutions is a lot like the glare that is created by the sun. A common cause of glare are street lights and car headlights, which can impact of a person's ability to see clearly in the dark after the car has passed. This can lessen a persons nighttime depth perception and their ability to discern between different shadows in the dark. UPWARD REFLECTED LIGHT GLARE ZONES DIRECT GLARE USEFUL LIGHT GLARE ZONES AREA TO BE LIT





Dark Skies Dos



Useful

All light should have a clear purpose. Consider how the use of light will impact the area, including wildlife and their habitats..

Targeted falls only where it is needed

Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.





Low Level

Light should be no brighter than necessary Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than intended.



Color

Use warmer color lights where possible

Limit the amount of shorter wavelength (blue-violet) light to the least amount needed.



Controlled

Use light only when it is needed

Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.





Timeline

Resources Utilized

Model Ordinances Studied

Partners Consulted

Developing Ordinance Language Timeline



Developing Ordinance Language

Developing the the Night Lighting Ordinance Update and accompanying graphical content has engaged MSD Planning Staff, the Emigration Canyon Planing Commission, and partners. Ordinance language has been thoroughly review for compliance with health and safety standards, and night lighting best practices.

	Review of Available Resources	Review of Model Ordinances	Ordinance Drafting and Graphical Content Development	Ordinance Review and Content Revision	Public Review and Recommendation to the Community Council
•	Auna Politica	ALLEN CONTROL OF THE PARTY OF T	CHARLES TO THE STATE OF THE STA		

Developing Ordinance Language



Resources Utilized

Dark Sky Lighting Ordinance Walkthrough

Colorado Platea Dark Sky Cooperative - https://utah.maps.arcgis.com/apps/MapSeries/index.html?appid=1cb7caaa1aa543dea3c813ec9f1f7f93#

International Dark-Sky Association

Model Lighting Ordinance - https://www.darksky.org/our-work/lighting/public-policy/mlo/

Five Principles for Responsible Outdoor Lighting - https://www.darksky.org/our-work/lighting/lighting-principles/

Board Policy on the Application of the Lighting Principles - https://www.darksky.org/wp-content/uploads/bsk-pdf-manager/2021/08/ BOARD-policy-application-of-light-FINAL-June-24-2021.docx.pdf

USU Extension - Gateway & Natural Amenity Region (GNAR) Initiative

Planners & Decision Makers Toolkit - https://www.usu.edu/gnar/tools/dark_sky_tools/planners_and_decisionmakers

Utah Workforce Services – Housing and Community Development Office

Guidance and Best Practices – Dark Sky Planning - https://cpdarkskies.files.wordpress.com/2020/02/dark-sky-web-_2-7-2020-2.pdf

Town of Alta Dark Sky Presentation https://townofalta.com/wp-content/uploads/2018/08/Welcome-Dark-Sky.pdf

Developing Ordinance Language



Model Ordinances Studied

Model Lighting Ordinance User's Guide

U.S. Green Building Council https://www.usgbc.org/resources/model-lighting-ordinance-users-guide

Torrey, Utah Outdoor Lighting Ordinance 2016

Outdoor Lighting Ordinance 2016 https://codelibrary.amlegal.com/codes/torreyut/latest/torrey_ut/0-0-0-1035

Moab City

Outdoor Lighting Ordinance 2019 https://moabcity.org/DocumentCenter/View/2836/City-of-Moab-Outdoor-Lighting-Ordinance-2019-03

Grand County

Outdoor Lighting Ordinance 2019 https://moabcity.org/DocumentCenter/View/2840/Grand-County-Lighting-Ordinance

Eagle Canyon

Outdoor Lighting Standards 2014 https://www.codepublishing.com/UT/EagleMountain/#!/EagleMountain17/EagleMountain1756.html%2317.56

Sedona

Outdoor Light Ordinace https://www.darksky.org/wp-content/uploads/2018/03/Sedona_Lighting_Ordinance.pdf

Developing Ordinance Language



Partners Consulted

- IDA Utah Chapter's Lighting Ordinance Committee
- Colorado Plateau Dark Sky Cooperative Dark Sky Cooperative Network Institute of Outdoor Recreation & Tourism
- Clayton & Associates Lighting Design and Engineering



8/9. City/Inner City Sky 7. City/Suburbia Transition 6. Bright Suburban Sky 5. Suburban Sky 4. Suburban/Rural Transition 3. Rural Sky 2. Dark-Sky Ste 1. Excellent Dark-Sky 5

Key Takeaways for

Property Owners & Residents

Effective upon adoption:

Night Lighting Curfew

- Turn off all outdoor lighting not in use one hour after sundown.
 This includes: decks, patios, gathering spaces, and recreational & parking areas.
- Pathway & entrance lighting may remain on as required to provide safe entrance to any structure.

Light Trespass

• Lighting from your property may not illuminate areas outside your property boundary.

This may require you to turn off, redirect, shield, or defuse some lighting on your property

Holiday, Special Event, & Temporary Lighting

• Do not: Use spotlights, lasers, or high intensity lighting.

Do: Direct all lighting below the horizontal plane (down), insure that all lighting remains within the property boundary, limit display times to a 14 day period, and between Thanksgiving Day & New Years Day.

MSD Citizen Problem Reporter

• The above issuse are appropriate to report using the MSD Citizen Problem Reproter Under the Code Enforcement Problems option.

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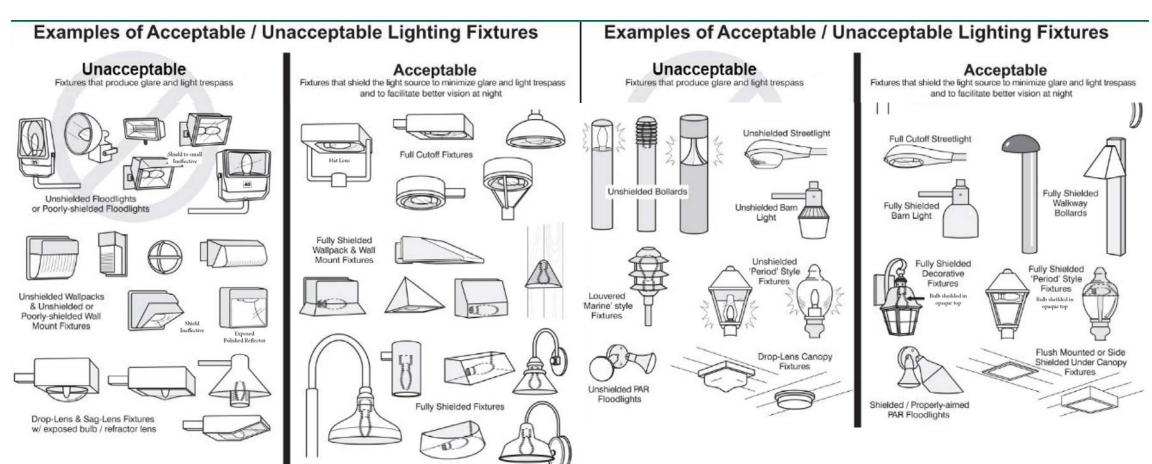
Key Takeaways for

Property Owners & Residents

Effective upon adoption:

Any Light Fixture being Updated or Replaced

 Any light fixture that is replaced, destroyed, damaged, or modified, must be replaced by a light fixture that is Fully Shielded / Full Cutoff Fixture.



8/9 City/Inner City/Sky 7 City/Suburbia Transition 4 Bright Suburban Sky 5 Suburban Sky 4 Suburban Plural Transition 3 Bural Sky 2 Dark Sky Site 1 Evcellent Dark Sky 5

Key Takeaways for

Property Owners & Residents

Effective Post Amortization Period

Updating Lighting

As you replace luminairs and lighting fixtures, choose Full Cutoff Replacements.
 All lighting should be Fully Shielded or Full Cutoff Fixtures in the canyon within 5 years of the of the adoption of this ordinance.

Lighting Limitations

 Each residence will be limited in the amount of lighting that can be utilized on the property.

This limit is established by the total sq ft of hardscape (non-organic horizontal surfaces intended for walking or gathering) on the property. No more than one candle foot should be utilized per sq. ft. of hardscape. Candle feet and lumens bare a close relationship. Aim for a lumen output that matches the sqft. of space you are intending to light.

Dark Sky Don'ts Effective Post Amortization Period

Do Not!

Leave lights on

- Only use the light you need, when you need it!
- Constantly lit lights waste time, money, are less secure and interrupts human and ecological health!

Uplight

Lighting, Landscape Lighting, Signage, Floodlights,
Security Lighting, Holidays and Special Events. Keep all lights shining only below the horizontal plane.

Do not use Blue Color Temperature lighting on your plan

Do Not!

Control your light source

The light source may be visible far beyond the area it is affectively. Illuminating! If you live on a hillside or ridgeline your deck lights bulb may be visible to every neighbor living below you in elevation. Consider using dimmers, diffusers, and shields to ensure that you are not creating a line-of-site glare issues for those adjacent or across the canyon.

Do Not!

Trespass

Make sure that all of the light you are generating on your property, stays on your property! This may require you to do some extra shielding or defusing.

Hillsides, Ridgelines, & Special Cases Uplit Architectural Accent Lighting To illuminate

Dark Sky Dos Effective Post Amortization Period

To Illuminate

Signage

- Signs can be unlighted, lighted externally, lighted internally, or backlit. As long as the source light is not visible.
- Lighting for signs should be directed so that only the signs face is illuminated.
- Lighting for signs should utilize stationary and constant lighting.
- · All sign elements should be stationary.

For

Accent Lighting

- Accent lighting should never be directed upward.
- Accent lighting for structures should illuminating only building facades visible from an adjacent public right of way such as a street or sidewalk.
- The accent lighting light source should not be visible beyond the property boundaries.
- The accent lighting should not used to illuminate landscape, landscape elements, statues, or other similar features.

To Illuminate

Parking Areas

- Any light post used to illuminate parking lots in commercial zones shall not exceed fourteen feet (14').
- The overall height of any light post used to illuminate residential parking zones should not exceed six feet (6').
- All post-mounted parking lot lights should set back from property lines a distance equal to two and one-half (2.5) times the height of the pole.

Lighting

Regreational Areas

- Minimizing glare, spill light, and uplight using louvers, hoods, or shielding.
- · Illuminates only the playing field or court area.
- · Ensure the light sources for the recreational light are not visible from adjacent properties.

To Illuminate

Gathering Areas (patios, pool and hot tub areas, dining areas, ext...)

- Keep these lights off when the area is not in use!
- Consider lighting that is activated by motion sensors and shuts off, within or before, fifteen (15) minutes after each activation.
- Minimizing glare, spill light, and uplight using louvers, hoods, or shielding.
- Illuminates only the area that will be utilized.
- Ensure the light source for the gathering area lights are not visible from adjacent properties.

Regulating To Illuminate Parking Areas - Keep these - Consider lig or before, fi - Minimizing - Illuminates - Ensure the ladjacent pro Regulating To Illuminate Gathering Temporary Lighting To Illuminate Parking Areas To Illuminate Parking Areas

To Illuminate

Pathways

Pathway lights less than eighteen inches (18") in height are exempt from the fully shielded fixture requirement if the lights have opaque caps that direct light below the horizontal plane.

To Illuminate

Pools & Water

Features

The lighting should be placed underneath or behind the water such that the water diffuses the light from all points where the light is visible.

For

Pool & Water Featu

8/0 City/Inner City Stry 7. City/Suburble Transition 6. Bright Suburban Stry 5. Suburban Stry 4. Suburban / Stry 2. Dark Stry 2. Dark Stry 1. Evvellant Dark Stry 4. Suburban / Stry 4. Suburban / Stry 5. Suburban / Stry 5.

Key Takeaways for

New Development & Significant Structural Modifications

Effective upon adoption:

Lighting Plan to be submitted along with building permit process.

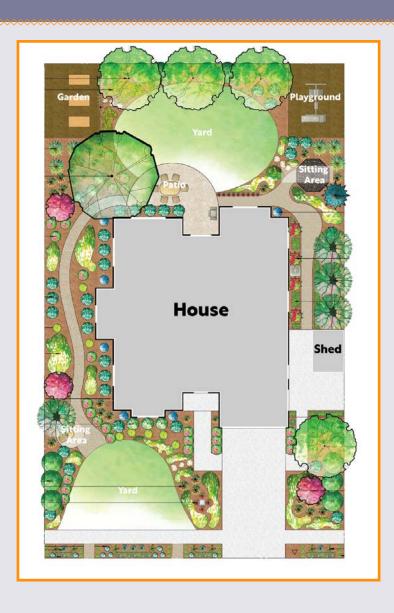
- If the proposed structural modifications represent a value of 50% or more of the property value at the time of submittal, a lighting plan for the property shall be submitted
- All new development.



1. Sketch your Property's Landscape Plan



Measure distances and areas in Google Earth
Google Earth Help



Use what you have!

Do you already have a landscape plan?

What you are looking for is a calculation of the square footage (sq. ft.) of the areas you would like to light.

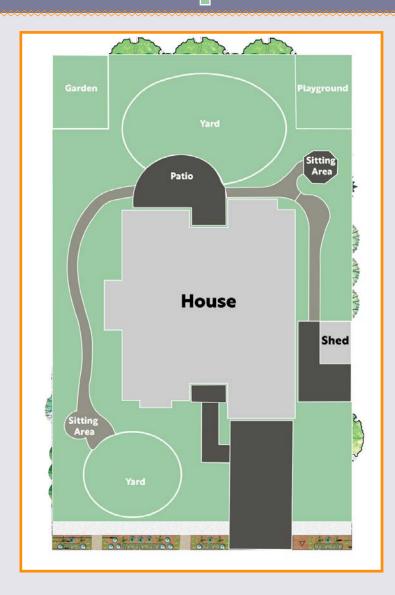
If not, a pen and paper will do.

Go analog. Pace off your areas for a rough estimate, draw them on a piece of paper to use as a reference.

Use Google Earth

There are a number of applications online that can help you measure the square footage of an area. You may find the tools available in Google Earth quite useful for this. Use the scan code above for useful tips on using the tools available.

2. Differentiate the Hardscape Areas From the Softscape Areas



Why differentiate?

We typically have very different expectations about how we light hard and softscape areas.

By prioritizing lighting hardscape first, you will ensure you are being purposeful and useful with your lighting choices.

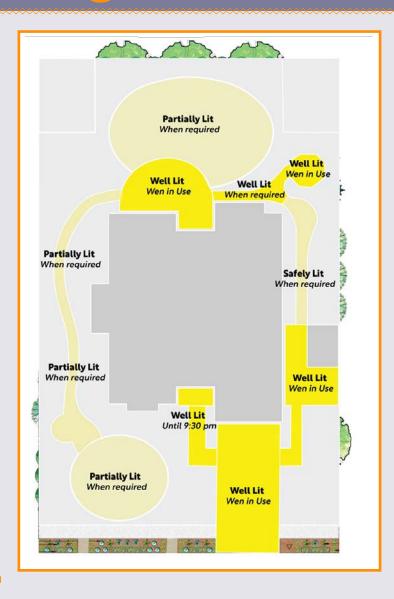
Hardscape Any non-living horizontal site element, including but not limited to patios, decks, walkways, sidewalks, driveways, and steps.

Any surface that you intentionally installed to move around on or park a car.

Softscape Any area within the site plan where hardscape is not present.

These areas are your turf grass, your planter beds, your garden and your natural landscape.

3. Identify places you would like to light, and when you might need them lit



Think Safety. Think Fun.

Remember the 5 guiding principles: **Useful**, **Targeted**, **Low Levels**, **Controlled**, & **Color**

Prioritize areas that will be most heavily traveled. Plan for activities that you would like to take place on your property.

Calculate the sq. ft. of each individual hardscape area you wish to light.

This will help you calculate how much lighting you will need to light each individual area.

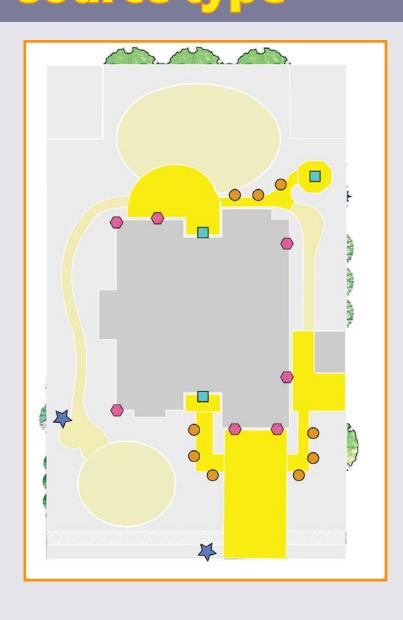
Combine the total sq. ft. of all the hardscape areas you wish to light.

By calculating the total of all the hardscape areas, you can obtain a general sense of how much lighting to install on your property.

4. Mark on your plan where you will place each light source type



Find Dark Sky Friendly Lighting
International Dark Sky Association



Lighting Choice

Footcandles Allowed / Sq. Ft. Hardscape = Total Lumen

Use this simple formula to create a lighting plan that meets the standards adopted by your community.

Use only **Full Shielded Fixtures**!

Do not shine or reflect light upwards! Choose light fixtures and fixtures that emit no light above the horizontal plane. Need help? Use the QR Code above for advice.

Use bulbs with **color temperature** of less than three thousand degrees kelvin (3000°K).

Don't use lights that are blue or white in color temperature.

Take advantage of exemptions.

Using motion sensors and certain types of pathway lighting may allow you to install lighting that is excluded from your total lumen count.

5. Create a list of the products used for each light source.

Demonstrate compliant lighting. Identify exceptions.

Follow your lighting plan.

The easiest and most cost effective way to be **Dark Sky Friendly** is to turn off lights when they are not in use!

Things to Consider

Spend nothing and come into full compliance

Turn off all outdoor lighting not in use one hour after sundown.

This includes: decks, patios, gathering spaces, and recreational & parking areas.

The installation of motion detectors

Lighting controlled by a properly installed motion detector is not including in your Lighting Limitation Count.

To qualify, you must: Ensure that all lighting falls within your property boundary. Ensure that the detector is only identifying motion on your property and is not consistently illuminated by environmental disturbance such as wind or wildlife. Direct all lighting below the horizontal plane (down).

Pathway lights lower than 18 inches

The use of pathway lights that are lower than 18" are not including in your Lighting Limitation Count.

To quality, you must: Ensure the total light fixture height is less than 18". Ensure that the total lighting emitted by the collection of luminairs does not exceed 1 candle foot at the centerline of the pathway illuminated.

9. City/Inner City Sky 7. City/Suburbia Transition 6. Bright Suburban Sky 5. Suburban Sky 4. Suburban/Rural Transition 3. Rural Sky 2. Dark-Sky Site 1. Excellent Dark-Sky Site

At the Conclusion of the this Public Hearing the Planning Commission will consider 3 options

- 1. Recommend the Ordinance Language as notified to the EC Township Council for adoption.
- 2. Recommend the Ordinance Language with any revisions suggested today to the EC Township Council for adoption.
- 3. Table the ordinance language for future review.

Thank you for your Time!

Good Luck Developing a

Night Lighting Plan! for your Property









