



# TOWN OF JACKSON PLANNING & BUILDING DEPARTMENT

## TRANSMITTAL MEMO

### Town of Jackson

- ☒ Public Works/Engineering
- ☐ Building
- ☐ Title Company
- ☒ Town Attorney
- ☐ Police

### Joint Town/County

- ☐ Parks and Recreation
- ☐ Pathways
- ☐ Joint Housing Dept

### Teton County

- ☐ Planning Division

- ☐ Engineer
- ☐ Surveyor- *Nelson*
- ☐ Assessor
- ☐ Clerk and Recorder
- ☐ Road and Levee

### State of Wyoming

- ☐ Teton Conservation
- ☐ WYDOT
- ☐ TC School District #1
- ☐ Game and Fish
- ☐ DEQ

### Federal Agencies

- ☐ Army Corp of Engineers

### Utility Providers

- ☐ Qwest
- ☐ Lower Valley Energy
- ☐ Bresnan Communications

### Special Districts

- ☐ START
- ☐ Jackson Hole Fire/EMS
- ☐ Irrigation Company

Date: January 25, 2022  Item #: P22-015  Planner: Tyler Valentine  Phone: 733-0440 ext. 1305  Email: tvalentine@jacksonwy.gov  <b>Applicant/Agent:</b> Wyoming Stargazing / Samuel Singer PO Box 9584 Jackson, WY 83002	<b>REQUESTS:</b>  The applicant is submitting a request for LDR Text Amendment – Sections 5.3.1 Exterior Lighting Standards & 5.6.1 Town Sign Standards to make Jackson eligible for accreditation as an International Dark Sky Community  For questions, please call Tyler Valentine at 733-0440, x1305 or email to the address shown below. Thank you.
Please respond by: <b>February 16, 2022 (with Comments)</b>	

**RESPONSE:** For Departments not using Trak-it, please send responses via email to:  
[alangley@jacksonwy.gov](mailto:alangley@jacksonwy.gov)



**PLANNING PERMIT APPLICATION**  
**Planning & Building Department**

150 E Pearl Ave. | ph: (307) 733-0440  
P.O. Box 1687 | www.townofjackson.com  
Jackson, WY 83001

**For Office Use Only**

Fees Paid \_\_\_\_\_ Date & Time Received \_\_\_\_\_  
Application #s \_\_\_\_\_

**Please note:** Applications received after 3 PM will be processed the next business day.

**PROJECT.**

Name/Description: Exterior Lighting Standard and Sign Standard Proposed Text Amendments  
Physical Address: Teton County and Town of Jackson  
Lot, Subdivision: \_\_\_\_\_ PIDN: \_\_\_\_\_

**PROPERTY OWNER.**

Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_ ZIP: \_\_\_\_\_  
E-mail: \_\_\_\_\_

**APPLICANT/AGENT.**

Name: Wyoming Stargazing / Samuel Singer Phone: 307-413-4779  
Mailing Address: PO Box 9584 Jackson, WY ZIP: 83002  
E-mail: Samuel@wyomingstargazing.org

**DESIGNATED PRIMARY CONTACT.**

\_\_\_\_\_ Property Owner ☒ Applicant/Agent

**TYPE OF APPLICATION.** Please check all that apply; review the type of application at [www.townofjackson/200/Planning](http://www.townofjackson/200/Planning)

**Use Permit**

\_\_\_\_\_ Basic Use  
\_\_\_\_\_ Conditional Use  
\_\_\_\_\_ Special Use

**Relief from the LDRs**

\_\_\_\_\_ Administrative Adjustment  
\_\_\_\_\_ Variance  
\_\_\_\_\_ Beneficial Use Determination  
\_\_\_\_\_ Appeal of an Admin. Decision

**Physical Development**

\_\_\_\_\_ Sketch Plan  
\_\_\_\_\_ Development Plan  
\_\_\_\_\_ Design Review

**Subdivision/Development Option**

\_\_\_\_\_ Subdivision Plat  
\_\_\_\_\_ Boundary Adjustment (replat)  
\_\_\_\_\_ Boundary Adjustment (no plat)  
\_\_\_\_\_ Development Option Plan

**Interpretations**

\_\_\_\_\_ Formal Interpretation  
\_\_\_\_\_ Zoning Compliance Verification

**Amendments to the LDRs**

☒ LDR Text Amendment  
\_\_\_\_\_ Map Amendment

**Miscellaneous**

\_\_\_\_\_ Other: \_\_\_\_\_  
\_\_\_\_\_ Environmental Analysis

**PRE-SUBMITTAL STEPS.** To see if pre-submittal steps apply to you, go to [www.townofjackson.com/200/Planning](http://www.townofjackson.com/200/Planning) and select the relevant application type for requirements. Please submit all required pre-submittal steps with application.

Pre-application Conference #: \_\_\_\_\_ Environmental Analysis #: \_\_\_\_\_  
Original Permit #: \_\_\_\_\_ Date of Neighborhood Meeting: \_\_\_\_\_

**SUBMITTAL REQUIREMENTS.** Please ensure all submittal requirements are included. The Planning Department will not hold or process incomplete applications. Partial or incomplete applications will be returned to the applicant. Go to [www.townofjackson.com/200/Planning](http://www.townofjackson.com/200/Planning) and select the relevant application type for submittal requirements.

Have you attached the following?

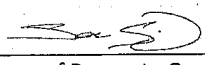
\_\_\_\_\_ **Application Fee.** Fees are cumulative. Go to [www.townofjackson.com/200/Planning](http://www.townofjackson.com/200/Planning) and select the relevant application type for the fees.

\_\_\_\_\_ **Notarized Letter of Authorization.** A notarized letter of consent from the landowner is required if the applicant is not the owner, or if an agent is applying on behalf of the landowner. Please see the Letter of Authorization template at <http://www.townofjackson.com/DocumentCenter/View/845/LetterOfAuthorization-PDF>.

\_\_\_\_\_ **Response to Submittal Requirements.** The submittal requirements can be found on the TOJ website for the specific application. If a pre-application conference is required, the submittal requirements will be provided to applicant at the conference. The submittal requirements are at [www.townofjackson.com/200/Planning](http://www.townofjackson.com/200/Planning) under the relevant application type.

**Note:** Information provided by the applicant or other review agencies during the planning process may identify other requirements that were not evident at the time of application submittal or a Pre-Application Conference, if held. Staff may request additional materials during review as needed to determine compliance with the LDRs.

Under penalty of perjury, I hereby certify that I have read this application and associated checklists and state that, to the best of my knowledge, all information submitted in this request is true and correct. I agree to comply with all county and state laws relating to the subject matter of this application, and hereby authorize representatives of Teton County to enter upon the above-mentioned property during normal business hours, after making a reasonable effort to contact the owner/applicant prior to entering.

  
\_\_\_\_\_  
Signature of Property Owner or Authorized Applicant/Agent

Samuel Singer

\_\_\_\_\_  
Name Printed

01/25/2022

\_\_\_\_\_  
Date

Executive Director

\_\_\_\_\_  
Title

Application for a  
Land Development Regulation  
Amendment

Submittal date: January 25, 2022

Applicant:

Wyoming Stargazing  
PO Box 9584  
Jackson, WY 83002  
307-413-4779  
[samuel@wyomingstargazing.org](mailto:samuel@wyomingstargazing.org)

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## Introduction

This application proposes to amend the following components of the Teton County/Town of Jackson Land Development Regulations Article 5 ('Physical Development Standards Applicable in All Zones'):

- Div. 5.3. ('Scenic Standards'), §5.3.1. ('Exterior Lighting Standards')
- Div. 5.6. ('Sign Standards'), §5.6.1. ('Town Sign Standards')

We propose a series of changes to the County/Town Exterior Lighting Standards and the Town Sign Standard in order to make Jackson eligible for accreditation as an International Dark Sky Community (IDSC) by the International Dark-Sky Association (IDA). The IDA policy standard for IDSC eligibility reflects established and internationally recognized standards for dark-sky protections. The proposed amendments would bring the Town and County into alignment with these standards, consistent with the goals of Policy 1.3.d ("Maintain dark night skies") in the Jackson/Teton County Comprehensive Plan's 'Environmental Stewardship' section.

In accordance with requirements set forth in the Land Development Regulations (LDRs) this application will outline here how the proposed amendment to the exterior lighting standard:

- Is consistent with the purposes and organization of the LDRs;
- Improves the consistency of the LDRs with other provisions of the LDRs;
- Provides flexibility for landowners within standards that clearly define desired character;
- Is necessary to address changing conditions;
- Improves implementation of the Comprehensive Plan; and
- Is consistent with other adopted Town and County Ordinances.

## Overview: Maintaining Dark Skies

Preserving Jackson's natural character is central to the 'Vision and Common Values' of the Comprehensive Plan, which emphasizes that "to achieve our desired community character, the community must protect and enhance the ecosystem in which we live." Maintaining the region's dark night skies is enumerated as a specific goal of the Plan. It specifically calls for looking "beyond daytime viewsheds" in guiding sensible development in the future:

*Lighting of individual developments cumulatively impacts the ability to see dark and starry night skies. Although lighting is required for public safety, especially along pedestrian corridors, non-essential lighting will be limited and all lighting will be designed to meet dark skies best practices. Existing development will also be encouraged to implement best practices.*

In order to fully modernize the Jackson/Teton County codes and enable the Town to be accredited as an IDSC, we propose specific changes to two sections of the LDRs.

The purpose of the Exterior Lighting Standard (§5.3.1.) is “to allow necessary and reasonable lighting of public and private property for the safety, security, and convenience of occupants and the general public, while eliminating or reducing the nuisance and hazards of light pollution, including, but not limited to: glare, light trespass, sky glow, energy waste, and negative impacts on the nocturnal environment.” It is housed in the County/Town LDRs’ ‘Scenic Standards’ Division (5.3), which finds that “dark skies are vital to the community’s natural character.”

Among other purposes, the Jackson Town Sign Standards (§5.6) is intended to “to protect and enhance the community character and visual environment; to preserve the right of the citizens to enjoy our Town’s scenic beauty; to improve pedestrian and traffic safety; [and] to minimize the possible adverse effect of signs on nearby public and private property.” It aims to achieve these goals while ensuring that Jackson businesses and residents are afforded “equal and fair opportunity to advertise and promote its products and services without discrimination” and enabling “the the fair and consistent enforcement” of sign regulations.

Due to the advent of electronic message centers (EMCs), also known as ‘digital signs’, illuminated signs are quickly becoming a significant contributor to light pollution in many communities. Unlike conventional, externally illuminated signs, their light cannot be shielded. This advance in technology brings with it new challenges involving the balance between resident and business interests and preserving community character. We aim to incorporate new EMC regulatory best practices into the LDRs in order to reset that balance in a way that benefits all of Jackson.

In addition to the overarching goal of enabling Jackson’s designation as an IDSC, the following principles of all three Common Values within the Comprehensive Plan support and are supported by the LDR revisions we propose:

- Maintain healthy populations of all native species (Principle 1.1)
- Protect and steward open space (Principle 1.4)
- Reduce consumption of non-renewable energy (Principle 2.1)
- Promote vibrant, walkable mixed use areas (Principle 4.2)
- Enhance civic spaces, social functions, and environmental amenities to make Town a more desirable Complete Neighborhood (Principle 4.4)
- Measure prosperity in natural and economic capital (Principle 6.1)
- Promote a stable and diverse economy (Principle 6.2)

## **Proposed Exterior Lighting Standard Amendments Overview**

The Exterior Lighting Standard (§5.3.1.) was last updated in 2017, which resulted in substantive improvements to its provisions. Proponents at the time identified a number of shortcomings of the existing Standard that were addressed and resolved in the amendment process. The Town Sign Standard (§5.6.1.) was also last updated in 2017, relatively early in the deployment history of EMCs. As the outdoor advertising industry increasingly looks to a future in which this type of changeable copy sign dominates the market, it behooves the Town to adapt its sign code accordingly in order to provide regulatory certainty to residents and businesses.

We now recommend a series of additional changes to update and further modernize the LDRs that will bring them into alignment with the policy standards of the International Dark-Sky Association, the recognized global authority on outdoor lighting policy for protecting the nighttime environment. These are:

1. Add the following definitions to Div. 9.5: “adaptive controls”, “backlit sign”, “foot-candle”, “fully shielded”, “Illuminating Engineering Society”, “initial lumens”, “internally illuminated”, and “light trespass.
2. Clarify that the lumens restriction in §5.3.1(B)(1) refers to initial lumens.
3. Decide whether to keep the illumination standards (lm/SF) in §5.3.1(B)(2) or the overall site limits. The existing language does not indicate whether these are either/or propositions or instead if both must be observed simultaneously. If the latter, the language inadvertently caps the size of a fully developed parcel that may be lighted.
4. If the site limits are kept in §5.3.1(B)(2), consider capping unshielded site lumens on a per-net-acre basis rather than the existing per-parcel basis. Doing so would further require defining “net acre” in Div. 9.5.
5. Decide similarly whether to keep the illumination standards (lm/SF) in §5.3.1(D)(5) for “complex uses” or the overall site limits.
6. If the site limits are kept in §5.3.1(D)(5), consider capping total light emissions on a per-net-acre basis rather than the existing per-parcel basis.
7. Reconsider maximum lumens limits given typical lot sizes in Jackson; i.e., limits may either be too high or too low now, given that allowances do not scale with lot size but rather only with land-use zones.
8. Eliminate outdoor sports lighting (OSL) as a defined “Complex Use” under §5.3.1(D) and instead treat it as a separate lighting application in its own subsection, subject to restrictions consistent with IDA requirements.
9. Add reasonable lumens limits to flagpole lighting that scales according to pole height and/or flag size. Suggestions are 75 lumens per linear foot of pole height, or 100 lumens per square foot of flag surface area when fully unfolded.

10. Add additional language to the exemptions in §5.3.1(A)(1), including: lighting used during road and infrastructure repairs; lighting required by legal jurisdictions higher than the Town; lighting required by the Building Code; and temporary lighting used during undeclared emergencies constituting an “imminent peril”.
11. Add a section detailing a process for permitting temporary installations of outdoor lighting.
12. Add a subsection to §5.3.1(A) requiring the amortization of non-conforming lighting installations within ten years of the enactment of the updated ordinance.
13. Replace the existing language on light trespass in §5.3.1(B)(4) with a definition of the term in Div. 9.5 and new language that refers to the defined term. Also, move the cartoon diagram in that section to the definitions.
14. Add 11 p.m. curfews for all illuminated signs in the subsections of §5.6.1(E).
15. Add surface area limits to all types of illuminated signs in the subsections of §5.6.1(E).
16. Add a luminance limit for internally illuminated signs in §5.6.1(E)(b).
17. Add general exemptions for lighting required by Building Code and lighting identified by the Planning Director as required to preserve public safety and eliminate their references elsewhere in the code.
18. Add a policy governing the use of publicly owned lighting (i.e., lighting in public rights-of-way) establishing installation warranting, curfews, and the use of adaptive lighting controls.

### **Consistency with LDRs**

Our proposed amendments retain the core content and structure of both the Exterior Lighting Standard and the Town Sign Standards so as to adhere to the original purposes and organization of the LDRs. These purposes include:

§1.3.1.: *“Preserve and protect the area’s ecosystem in order to ensure a healthy environment, community, and economy for current and future generations.”* Given the rapidly maturing scientific understanding of the problem of light pollution and the ecological consequences of artificial light at night, sufficient evidence exists to support the proposition that a healthy and resilient environment requires accessible nighttime darkness. In particular, given the rural nature of the predominantly public lands surrounding and adjacent to Jackson Hole, its nighttime light impact is outsized compared to more urban communities of its size.

§1.3.2.(A)(2): *“Consume less nonrenewable energy as a community in the future than we do today.”* While modern lighting technologies are highly energy efficient, a lower total cost of ownership may promote unnecessary use of light at night. This may undermine or even erase the environmental benefits of modern, energy-efficient lighting. Better outdoor lighting practices that make use of the full range of capabilities of these new



technologies naturally lead to lower light consumption and further energy savings without any obvious negative consequences.

§1.3.2.(A)(3): *“Residents and visitors will safely, efficiently, and economically move within our community and throughout the region using alternative modes of transportation.”*

One goal of this proposal is to enhance nighttime visibility in Jackson so as to improve public safety. The pursuit of dark skies in Jackson does not entail accepting compromised safety and security; ‘dark skies’ doesn’t mean ‘dark ground’. Nighttime hazards will be more visible, reducing the risk associated with transit under such conditions.

§1.3.4.(A): *“Ensure standards are consistently applied to similar applications and circumstances.”* Another goal of this proposal is to more precisely delineate the Exterior Lighting and Town Sign Standards; add detail to elicit more voluntary compliance with the LDRs; tighten technical definitions to better articulate the intended effects of the LDRs; and provide better outdoor lighting guidance to homeowners, business owners, and public officials.

### **Clear Definitions and Flexibility**

Our proposal strengthens and clarifies technical terms related to outdoor lighting so as to ensure more consistency and predictability of LDR enforcement. The nature of the new definitions is aimed at helping developers, property owners, plan reviewers and code enforcement officials better understand the technical requirements of §§5.3.1. and 5.6.1., making it easier for them to comply with the requirements of those sections. Furthermore, new or updated provisions for lighting applications such as outdoor athletic fields and flagpoles better accommodate the needs and desires of property owners.

### **Necessity of Addressing Changing Conditions**

As Jackson continues to grow in coming decades, the need to balance development pressures with the purpose and vision of the LDRs in creating consistent community character, preserving a healthy environment, and cultivating a sustainable regional economy drives an equally significant need to reduce light pollution and maintain the area’s dark night skies. Innovation in lighting design and technology enables addressing this need while ensuring public safety and respecting property rights. The ongoing conversion of existing outdoor lighting stock in Jackson to highly energy-efficient light-emitting diode (LED) technology helps reduce electricity consumption and reduce Jackson’s carbon footprint, but the tendency toward overconsumption of progressively cheaper resources threatens to wipe out these gains.<sup>1</sup> It may further create new social and environmental problems through the poor application of light at night relative to the needs of property owners and the community as a whole. Our proposal addresses these

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<sup>1</sup> Kyba, C. C. M., *et al.* (2017). Artificially lit surface of Earth at night increasing in radiance and extent. In *Science Advances* (Vol. 3, Issue 11, p. e1701528). <https://doi.org/10.1126/sciadv.1701528>

concerns and seeks a sensible solution, the goal of which is to improve nighttime visibility in Jackson by targeting and reducing wasted light at night.

### **Improved Implementation of the Comprehensive Plan**

The Comprehensive Plan is clear and direct in its intent to maintain dark night skies as part of preserving ecological aspects of Jackson's community character. Its Policy 1.3.d. directly calls for this:

*The prominence of nature over the built environment should extend beyond daytime viewsheds. The lighting of individual developments cumulatively impacts the ability to see dark and starry night skies. Although illumination is required for public safety, especially along pedestrian corridors, non-essential lighting should be limited, and all lighting will be designed to meet dark skies best practices. Existing development will also be encouraged to implement best practices.*

Previous efforts to modernize the Exterior Lighting Standards, consistent with this Policy, were aimed at improving compliance with the LDRs at the plan review stage, in particular, ensuring that the worst of outdoor lighting designs were never approved. There is evidence that the strategy worked; although the population of Jackson grew by about 10% in the decade 2010-2020, the emission of light from within city limits measured from space during the same time is almost unchanged.

The amendments in the current proposal further support and strengthen community commitment to realizing the aspirations Policy 1.3.d in particular. By reducing light waste and further lowering light consumption, the proposal also supports the broader Principles of the Comprehensive Plan, including:

- *"Maintain healthy populations of all native species"* (Principle 1.1): Reducing light waste prevents light at night from impinging on nocturnal wildlife habitat and promotes a healthy urban ecology.
- *"Maintain the scenic resources of the community"* (Principle 1.3): Dark night skies are among the signature natural resources of the Jackson Hole and Grand Teton National Park region.
- *"Reduce the consumption of non-renewable energy"* (Principle 2.1): Better and more precise application of outdoor light at night will naturally reduce the amount of light needed to get the job done, resulting in decreased electricity consumption.
- *"Increase energy efficiency in buildings"* (Principle 2.4): Similarly, more efficient use of outdoor light at night will reduce energy costs for building owners.
- *"Manage growth predictably and locally"* (Principle 3.3): The proposed amendments further articulate the responsibilities and privileges of property owners under the LDRs.

They clarify community expectations to ensure that the Town can continue to grow and develop without necessarily inflicting environmental harm as a consequence of doing so.

- *“Enhance civic spaces, social functions, and environmental amenities to make Town a more desirable Complete Neighborhood”* (Principle 4.4): Quality outdoor lighting improves nighttime visibility, enhancing public safety and promoting real security in Jackson. Coupled with the splendor of the region’s dark night skies, the result is outdoor spaces in which visitors and residents alike feel safe and secure at night, promoting community wellbeing.
- *“Measure prosperity in natural and economic capital”* (Principle 6.1): Jackson’s natural capital contributes to clean jobs and sustainable tourism that are both good for the community’s bottom line.
- *“Promote a stable and diverse economy”* (Principle 6.2): Increasingly, concern for and attention to dark skies mean rural economic development. One recent estimate put the economic impact from night-sky tourism on the Colorado Plateau alone at \$6 billion and 10,000 jobs in the decade of the 2020s.<sup>2</sup> As tourism is expected to ramp up quickly with the end of the COVID-19 pandemic in sight, the Town and County stand to benefit substantially from a robust ‘astrotourism’ sector.

### **Consistency with Town Ordinances**

There are no known inconsistencies with the current proposal and either the LDRs or any other existing Town or County Ordinances.

### **Summary**

Pursuit of the Comprehensive Plan’s Vision, Common Values, and specific policies relating to maintaining dark night skies in the region began with the 2017 update and continues with the further modernization of the Town/County code through the amendments in the current proposal. We suggest that obtaining International Dark Sky Community accreditation for Jackson is the most complete implementation of the Comprehensive Plan in this realm, and encourage the Town and County to make the suggested changes to the LDRs that enables Jackson’s recognition by the International Dark-Sky Association through this prestigious award.

In summary, approving this amendment:

- **Furtheres the objectives of the LDRs and Comprehensive Plan;**
- **Maintains the consistency among provisions of the LDRs;**
- **Provides flexibility for landowners within standards that clearly define desired character;**

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<sup>2</sup> Mitchell, D. and Gallaway, T. (2019), "Dark sky tourism: economic impacts on the Colorado Plateau Economy, USA", *Tourism Review*, Vol. 74 No. 4, pp. 930-942. <https://doi.org/10.1108/TR-10-2018-0146>

- **Is necessary to address changing conditions brought on by the rapid adoption of LED lighting technology and the emerging market for Electronic Message Centers;**
- **Improves implementation of the Comprehensive Plan by adhering more closely to lighting design best practices;**
- **Is consistent with other adopted Town and County Ordinances; and**
- **Meets core outdoor lighting policy requirements for International Dark Sky Community accreditation.**



## Town of Jackson Exterior Lighting Standard and Sign Standard Redline Versions with Explanatory Notes

This document adds further context to the accompanying “Town of Jackson Outdoor Lighting Policy Redline Version”, which proposes a series of amendments to the Town’s existing Land Development Regulations (LDRs). These are drawn from several sources, including the joint Illuminating Engineering Society (IES) and International Dark-Sky Association (IDA) [Model Lighting Ordinance](#), the 2018 IDA [International Dark Sky Community Program Guidelines](#) (IDSC), and exemplary U.S. outdoor lighting ordinances such as those of Tucson and Flagstaff, Arizona. The aim of the redline is to suggest a modernization of the Town of Jackson to align its outdoor lighting provisions with recognized best practices that reduce energy consumption and light pollution, improve nighttime visibility, enhance public safety, and contribute qualitatively to quality of life. It will also help “future-proof” the code as lighting technology evolves so as to minimize the need for future amendments.

We identify the following opportunities to improve the Town of Jackson LDRs as the centerpiece of a comprehensive Town policy strategy for improving the quality of outdoor lighting in the Jackson and making the town eligible for International Dark Sky Community designation:

1. Add the following definitions to Div. 9.5: “adaptive controls”, “backlit sign”, “foot-candle”, “fully shielded”, “Illuminating Engineering Society”, “initial lumens”, “internally illuminated”, and “light trespass.
2. Clarify that the lumens restriction in §5.3.1(B)(1) refers to initial lumens.
3. Decide whether to keep the illumination standards (lm/SF) in §5.3.1(B)(2) or the overall site limits. The existing language does not indicate whether these are either/or propositions or instead if both must be observed simultaneously. If the latter, the language inadvertently caps the size of a fully developed parcel that may be lighted.
4. If the site limits are kept in §5.3.1(B)(2), consider capping unshielded site lumens on a per-net-acre basis rather than the existing per-parcel basis. Doing so would further require defining “net acre” in Div. 9.5.
5. Decide similarly whether to keep the illumination standards (lm/SF) in §5.3.1(D)(5) for “complex uses” or the overall site limits. The existing language implies that both must be

observed simultaneously, which inadvertently caps the size of a fully developed parcel that may be lighted at 2.10 acres. A solution may require specifying maximum values for all types of common complex uses; i.e., a one-size-fits-all approach as it exists now may not work well.

6. If the site limits are kept in §5.3.1(D)(5), consider capping total light emissions on a per-net-acre basis rather than the existing per-parcel basis.
7. Reconsider maximum lumens limits given typical lot sizes in Jackson; i.e., limits may either be too high or too low now, given that allowances do not scale with lot size but rather only with land-use zones.
8. Eliminate outdoor sports lighting (OSL) as a defined “Complex Use” under §5.3.1(D) and instead treat it as a separate lighting application in its own subsection, subject to restrictions consistent with IDA requirements.
9. Add reasonable lumens limits to flagpole lighting that scales according to pole height and/or flag size. Suggestions are 75 lumens per linear foot of pole height, or 100 lumens per square foot of flag surface area when fully unfolded.
10. Add some additional language to the exemptions in §5.3.1(A)(1), including: lighting used during road and infrastructure repairs; lighting required by legal jurisdictions higher than the Town; lighting required by the Building Code; and temporary lighting used during undeclared emergencies constituting an “imminent peril”.
11. Add a section detailing a process for permitting temporary installations of outdoor lighting.
12. Add a subsection to §5.3.1(A) requiring the amortization of non-conforming lighting installations within ten years of the enactment of the updated ordinance.
13. Replace the existing language on light trespass in §5.3.1(B)(4) with a definition of the term in Div. 9.5 and new language that refers to the defined term. Also, move the cartoon diagram in that section to the definitions.
14. Add 11 p.m. curfews for all illuminated signs in the subsections of §5.6.1(E).
15. Add surface area limits to all types of illuminated signs in the subsections of §5.6.1(E).
16. Add a luminance limit for internally illuminated signs in §5.6.1(E)(b).
17. Add general exemptions for lighting required by Building Code and lighting identified by the Planning Director as required to preserve public safety and eliminate their references elsewhere in the code.
18. Add a policy governing the use of publicly owned lighting (i.e., lighting in public rights-of-way) establishing installation warranting, curfews, and the use of adaptive lighting controls.

In the remainder of this document, the existing text of the relevant LDRs and our proposed changes are shown in `black Courier New font`. Proposed changes required for IDA certification are noted in `plain red Courier New font`. Additional proposals relating to lighting best practice are in `italic red Courier New font`. Notes explaining the suggested changes are shown in `blue Arial font`.

### 5.3.1. Exterior Lighting Standards

The purpose of this Section is to allow necessary and reasonable lighting of public and private property for the safety, security, and convenience of occupants and the general public, while eliminating or reducing the nuisance and hazards of light pollution, including, but not limited to: glare, light trespass, sky glow, energy waste, and negative impacts on the nocturnal environment.

#### A. Applicability

All exterior lighting, unless exempted below, shall comply with the regulations set forth in this Section. This includes, but is not limited to: lighting attached to structures, poles, the earth, or any other location.

##### 1. Exempt Lighting

a. Lighting in the public right of way. *See Section B, Subsection 8 for requirements specific to publicly owned lighting.*

*This is suggested to make clear that public lighting is not simply exempt from all regulation, and points to an articulation of policies regarding this kind of lighting required for IDA eligibility.*

b. Open flame gas lamps.

c. Flagpole lighting that is shielded and directed downward from the top of the flagpole, *and that does not exceed 75 lumens per linear foot of pole height above grade. [Alternately: "does not exceed 100 lumens per square foot of flag surface when fully unfolded."]*

*In order to prevent over-lighting of flags, two possible prescriptions for lighting limits are suggested that yield approximately the same illumination level as seen from the ground.*

d. Underwater lighting in swimming pools and other water features

e. Lighting that is only used by emergency response ~~personnel~~ *only for as long as emergency conditions so identified by qualified personnel continue to exist.*

Slightly clarifies the existing language and connects the situations under which emergency response is appropriate to the discretion of “qualified personnel” rather than the public. See the related suggestion in item (j) below that gives some leeway for private responses to emergency/disaster situations.

f. Lighting solely for signs (lighting for signs is regulated by Div. 5.6)

g. Lighting used solely for agricultural purposes.

*h. Lighting employed during repairs of roads, utilities and similar infrastructure, including unshielded lighting, provided that such lighting is deployed, positioned and aimed such that the resulting glare is not directed toward any roadway or highway.*

This suggestion intends to explicitly permit temporary lighting associated with construction while also insisting that it avoid creating a public safety issue involving excessive glare.

*i. Any form of lighting whose use is mandated or otherwise governed by any legal jurisdiction higher than that of the Town.*

An explicit recognition that some state/federal policies will supersede those in the LDRs. Generally these will be federal agency requirements, such as those of OSHA (workplaces) and the FAA (airports).

*j. Temporary lighting required to save life, limb or property from imminent peril, provided that use persists only during the hours of the peril.*

This provision enables non-public entities to use outdoor lighting in emergency/disaster situations while limiting that use to legitimate, related purposes.

*k. Temporary lighting allowed under the permitting process described in Section X.*

A clear process for obtaining permits for temporary lighting installations should be articulated somewhere in the LDRs, whether here or elsewhere. This item is simply a placeholder for a description of that process. Suggestions for such a policy include:



- Temporary lighting installations will be approved only by the Planning Director or designee
- Limits on the duration of permits; we suggest 30 calendar days, subject to no more than two 30-day renewals
- “Temporary” installations persisting after 90 days should be declared permanent and subject to all of the LDRs
- A statement of required permit application contents
- A statement describing how applications will be reviewed and approved/denied, as well as an appeals process for denials.

Sample language constituting a robust permitting process are suggested below (“Permitting of temporary lighting installations”).

### *1. Lighting required by the Building Code*

An explicit recognition that the Building Code may involve requirements that supersede the LDRs.

### *m. Lighting determined necessary by the Planning Director to preserve public safety*

This is a catch-all provision that retains discretion of the Town to prohibit outdoor lighting installations that may constitute a hazard to public safety, or to require appropriate modifications to lighting plans.

2. Amortization of non-conforming installations. All outdoor lighting luminaires that were lawfully installed prior to the effective date of this chapter, but that do not comply with the requirements of this chapter, are declared to be legal non-conforming luminaires. All legal non-conforming luminaires may continue to be used and maintained after the adoption of this Chapter, but shall be brought into compliance within ten (10) years after the effective date of this section.

Addresses the IDA requirement that the outdoor lighting policy “*affects an amortization period, applicable to ALL publicly AND privately owned lighting, to end not more than ten (10) years from the effective date of the outdoor lighting policy, after which all non-conforming lighting*

*extant at the time of enactment must be brought into compliance with the policy.” (IDSC p. 6, item H)*

## **B. Standards**

1. Fully Shielded Light Fixtures. Any light source whose initial output exceeds 600 **initial** lumens shall be fully shielded.

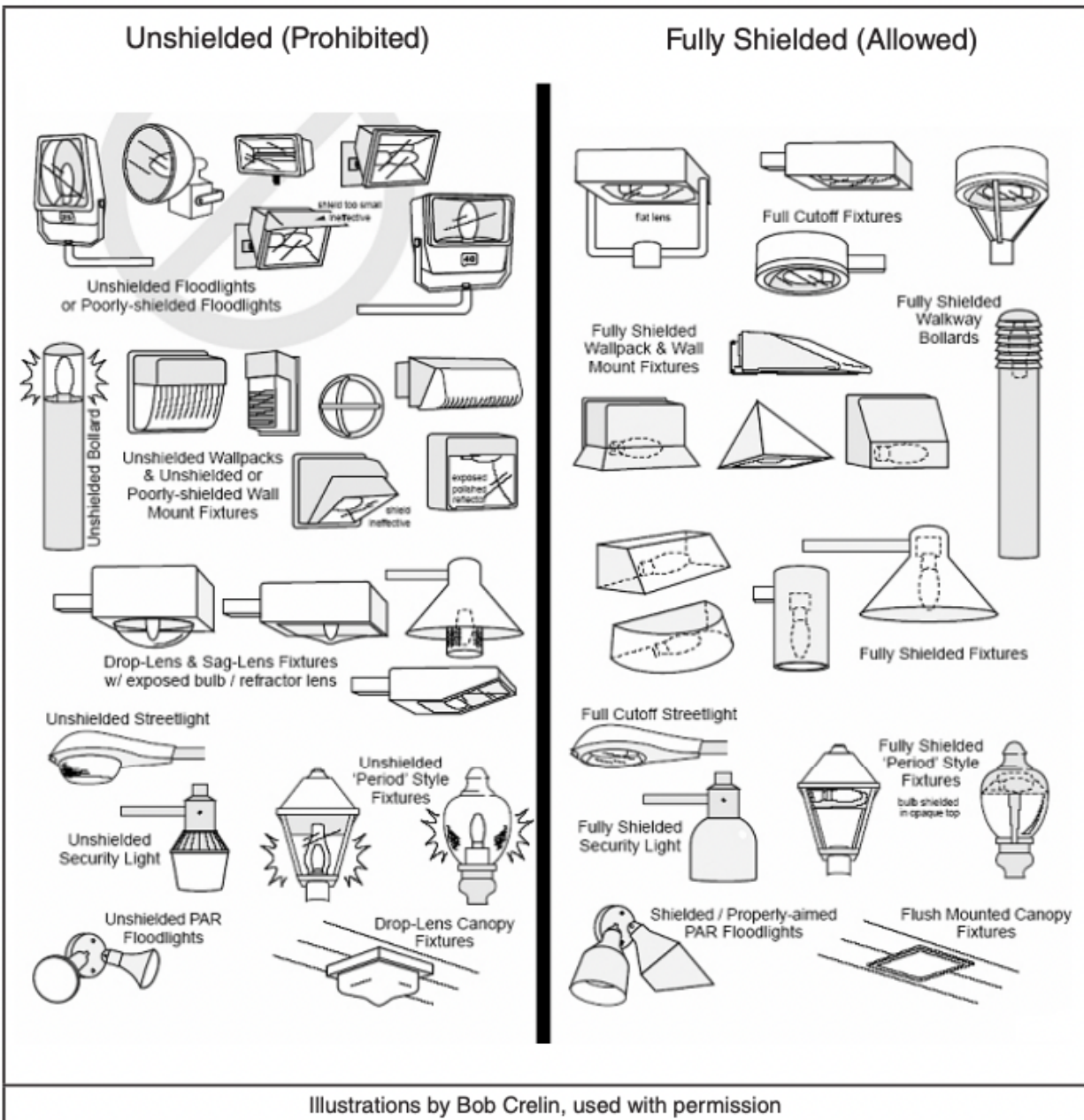
*”Initial” must be added here in order to be consistent with the definition used in the IDA requirements (p. 4, item 1A)*

Any structural part of the luminaire providing full shielding shall be attached. ~~Fixtures shall be mounted such that no light is emitted above the horizontal plane of the fixture.~~

*This sentence is redundant given a freestanding definition of “fully shielded” suggested for addition to Div. 9.5.*

Light fixtures that project light above the horizontal plane of the fixture may be used where the architecture of the building restricts light **emitted** above the horizontal plane. ~~Examples of Unshielded (Prohibited) and Fully Shielded (Allowed) lights and luminaires limiting light to the horizontal plane are shown below.~~

*Clarifies the language (“emitted”). The struck-out sentence refers to the Bob Crelin diagram, which is moved here to Div. 9.5 along with the definition of “fully shielded”. The Crelin diagram (below) would be struck at this point in the text.*



2. Total Exterior Light Output. Total exterior light output for light fixtures on a site shall not exceed the limits shown in the table below.

How much light is permitted?	All Fixtures	Unshielded Fixtures (for lights emitting fewer than
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		600 lumens)
Maximum lumens per sq ft of site development		
DC, CR-1, CR-2, CR-3, OR, TS, UC, BP-ToJ, MHP-ToJ, P/SP, P-ToJ, NL-5, NM-2, NH-1	3	Not applicable
R-ToJ, NL-1, NL-2, NL-3, NL-4, NM-1	1.5	Not applicable
Maximum lumens per <del>site</del> <i>net acre</i>		
DC, CR-1, CR-2, CR-3, OR, TS, UC, BP-ToJ, MHP-ToJ, P/SP, P-ToJ, NL-5, NM-2, NH-1	<del>100,000</del> <i>50,000</i>	<del>5,500</del> <i>2,000</i>
R-ToJ, NL-1, NL-2, NL-3, NL-4, NM-1	<del>60,000</del> <i>20,000</i>	<del>4,000</del> <i>1,000</i>

There are two types of change in the second part of the table suggested here. One is to assess site limits per net acre rather than per parcel such that only developed portions of parcels receive credit toward the site limits. A suggested definition of “net acre” is added here to Div. 9.5.

The other change is to lower the allowances per acre to numbers that are more consistent with lighting expectations for a town the size of Jackson and the kinds of land uses that the LDRs envision. IDA prescribes no specific values for these numbers, but if their values are high it may raise questions from IDA during the IDSC application review process.

a. These lumen limits are upper limits and not a design goal; the design goal should be the lowest levels of lighting possible.

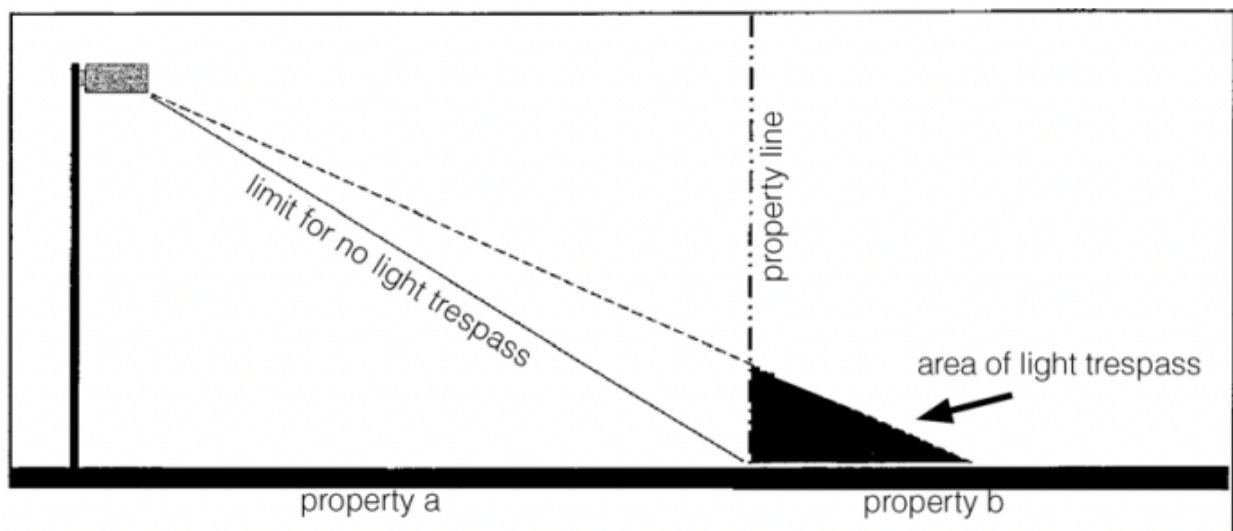
b. Individuals with visual impairments and organizations that primarily serve individuals with visual impairments (e.g. retirement communities, hospices, and hospitals) may use up to 4 times the illumination allowed by this section.

3. Light Color. Correlated color temperature of any exterior light source shall not exceed 3000 Kelvin.

EXAMPLE: Many light bulb manufacturers include correlated color temperature on packaging. Where packaging does not indicate light color in Kelvins, it is often indicated in descriptive terms. Lights with a “cool” quality typically exceed 3000 Kelvin in color temperature. Light bulbs that create a more “warm” tone are typically under 3000 K.

4. Light Trespass. ~~All lighting fixtures shall limit horizontal light levels such that no light falls onto the adjacent property as shown in the diagram below.~~ *No luminaire installed within Town limits shall create conditions of light trespass.*

The suggested replacement language here refers to the definition of “light trespass” added in Div. 9.5. The figure below would be struck and instead appear together with that definition.



5. Maximum Pole Height of Light Fixture.

Zone	Maximum Pole Height of Light Fixtures
DC, CR-1, CR-2, CR-3, OR, TS, UC, BP-ToJ, MHP-ToJ, P/SP, P-ToJ, NL-5, NM-2, NH-1	18 feet

R-ToJ, NL-1, NL-2, NL-3, NL-4, NM-1	15 feet
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6. Controls. All nonresidential lighting fixtures shall employ automatic lighting controls that extinguish exterior lighting when sufficient daylight is available. Such controls include, but are not limited to: timers, wireless remote monitoring with turn on/off capabilities, photosensitive light controls, photoelectric switches, astronomic time switches or equivalent functions from a programmable lighting controller, building automation system or lighting energy management system, all with battery or similar backup power or device.

a. Exceptions:

~~i. Lighting required by Building Code~~

~~ii. Lighting necessary for public safety~~

iii. Lighting under canopies

~~iv. Lighting for tunnels, parking garages, garage entrances, and similar conditions.~~

7. Lighting Reduction. After 12:00 AM nonresidential sites shall extinguish or reduce their total exterior lighting by at least 30%.

a. Exceptions:

i. Motion activated lighting, *provided that the equipment is set and maintained such that light is extinguished within five (5) minutes of a triggering event.*

~~ii. Lighting required by Building Code~~

~~iii. Lighting necessary for public safety~~

Struck-out sentences in these subsections have been relocated to Applicability, and are hence redundant here. The language added to 7.i intends to enforce a reasonable limit to the amount of time that lighting controlled by motion sensors can remain activated after being triggered.

iv. Lighting governed by a conditional use permit in which times of operation are specifically identified

v. When the exterior lighting consists of only one luminaire

#### 8. Publicly Owned Lighting.

This new subsection directly relates to IDA requirements that are core to IDSC eligibility.

- a. Warranting. New installations of outdoor lighting will only be installed on public properties and rights-of-way upon determination by the Town Manager that a public safety hazard exists in the area to be lit, and that the hazard can only be effectively mitigated through the use of outdoor lighting and not through some other passive means, such as reflectorized roadway paint or markers.

IDA requirement: *“A provision that clearly indicates where, when, and under what circumstances new publicly owned outdoor lighting, including street lighting, is warranted and will be permitted.”* (p. 5, item E.i)

- b. Curfew. All lighting not adaptively controlled must be fully extinguished by 11 P.M., or within one hour of the end of occupancy of the structure or area to be lit, whichever is later.
- c. Adaptive controlling. All new installations of outdoor lighting on public properties and rights of way must be regulated with adaptive controls such that the lighting of areas is restricted to times, places and amounts required for safe occupancy.

IDA requirement: *“A provision that requires that adaptive controls and/or curfews be employed in all future installations of public outdoor lighting.”* (p. 5, item E.ii) Because this is an and/or statement in the IDA guidelines, either item (b) or (c) above, alone, would suffice. We recommend enacting both provisions.

9. Outdoor sports lighting (OSL). The following provisions shall apply exclusively to facilities built to host outdoor athletic events.

This new subsection directly relates to IDA requirements that are core to IDSC eligibility.

- a. Purpose. Field lighting shall be provided exclusively for illumination of the surface of play and adjacent viewing stands, and not for any other application, such as lighting a parking lot.

IDA requirement: “*Field lighting is provided exclusively for illumination of the surface of play and viewing stands, and not for any other applications.*” (p. 6, item G.ii)

- b. Class of play. The design and installation of lighting for outdoor sports and similar activities shall follow the illuminance and uniformity guidelines of the IES according to the appropriate class of play.

IDA requirement: “*Illuminating Engineering Society (IES) lighting guidelines (RP-6) are followed according to the appropriate class of play.*” (p. 6, item G.i) A definition for “Illuminating Engineering Society” is suggested here in Div. 9.5.

- c. Shielding. OSL shall be exempt from the general shielding requirement of this section, although site plans must demonstrate that shielding is implemented to the greatest practical extent.

While not a strict IDA requirement, this language intends to make clear that partially shielded or unshielded lighting may be used when fully shielded designs are impractical, provided that every effort is made to reasonably shield luminaires.

- d. Illuminance levels. Illuminance levels provided by OSL systems shall be adjustable according to task, allowing for IES-recommended values during active play as well as for lower output during other times, such as when field maintenance is being actively performed.

IDA requirement: “*Illuminance levels must be adjustable based on the task (e.g., active play vs. field maintenance).*” (p. 6, item G.iii)



- e. Curfew. All OSL must be extinguished by 11 P.M. or within one hour of the end of active play, whichever is later. The OSL system shall be fitted with mechanical or electronic timers to prevent lights being left on accidentally overnight by enabling them to be automatically extinguished.

IDA requirement: “A strict curfew requirement (e.g., lights must be extinguished by 10pm/2200h or one hour after the end of play, whichever is later) is observed” (p. 6, item G.v) and “Timers must be installed to prevent lights being left on accidentally overnight by automatically extinguishing them.” (p. 6, item G.vi)

- f. Off-site impacts. Impacts of OSL to any other properties shall be limited to the greatest practical extent possible. The maintained vertical illuminance at the property line shall not exceed 1 foot-candle at any time.

IDA requirement: “Off-site impacts of the lighting will be limited to the greatest practical extent possible.” (p. 6, item G.iv)

### **C. Prohibited Lighting**

The following lighting systems are prohibited from being installed or used.

1. Flickering or Flashing Lights. No flickering or flashing lights shall be permitted.
2. Searchlights. No searchlights, laser lights, aerial lasers, or holograms are permitted.
3. Strings of Lights. Strings or strands of lights used to highlight a sign, perimeter of a sign, or any portion of a building are not permitted, except for holiday-type decorative lighting displayed between November 1 and April 15. ~~Lighting in which any single luminaire exceeds 20,000 initial lumens.~~
4. *Lighting in which any single luminaire exceeds 20,000 initial lumens.*

The struck-out statement appears to have been intended as a separate item. It is restored to that position here.

#### D. Complex Uses

1. Complex uses such as ~~stadiums, ball diamonds, playing fields, outdoor rinks,~~ ski areas, ~~rodeo grounds,~~ special events, ~~tennis courts,~~ construction sites, parking structures, urban parks, theme and amusement parks, ornamental and architectural lighting of bridges, public monuments, statuary and public buildings, correctional facilities, and industrial sites all have unique requirements for nighttime visibility and often have limited hours of operation. They shall be exempted from the above standards of this Section, if the below standards are met or if their lighting has been approved via issuance of a Conditional Use Permit or Special Event Permit.

Struck-out language above refers to various types of outdoor sports lighting, which is covered under the language above suggested in §5.3.1(B)(9).

2. Maximum height. Exterior luminaires shall not exceed a maximum post height of 60 feet.

3. Fully Shielded. Each luminaire shall be fully shielded in either its orientation or by landscaping to prohibit glare and light trespass to adjacent residential property and must be installed and maintained with minimum aiming angles of 25 degrees downward from the horizontal.

4. Lights Extinguished. Lights shall be extinguished by 10:00 PM or at the conclusion of the event, whichever is later. Lighting is not allowed to remain on overnight. *Such lighting shall be fitted with mechanical or electronic timers to prevent lights being left on accidentally overnight by enabling them to be automatically extinguished.*

Suggested language here mirrors that in the new OSL section above such that complex uses involving lighting related to the occupation of the area being illuminated are fitted with equipment to ensure that lighting is shut off after events.

5. Maximum lumens. Overall site illumination for a complex use shall not exceed 6 lumens per square foot of site development, nor shall it exceed a total of 550,000 lumens.

## 5.6.1. Town Sign Standards

### E. Sign Materials and Design

The following section describes the types of lighting and the criteria for lighting signs within the Town.

a. Exterior Lighting. Exterior lighting may be permitted, provided that the following criteria is satisfied:

i. Lights shall be designed, located, shielded and directed in such a manner that the light source is fixed and is not directly visible from, and does not cast glare or direct light upon any adjacent public right-of way, surrounding property, residential property or motorist's vision.

ii. At the Planning Director's discretion, any proposed external lighting application may be required to submit professional Engineering and/or Architect plans and photometric maps depicting the types of lighting to be used.

iii. All signs containing electrical wiring shall be subject to the provisions of the Electrical Code in place at that time and the electrical components shall bear the label of an approved testing agency. Said wiring components shall be submitted to the Electrical Inspector for review and approval.

iv. Light sources shall be extinguished completely after 11 P.M. or at the end of normal business hours, whichever is later, and remain off until one (1) hour before sunrise.

IDA requirement: "*Sign illumination shall be extinguished completely one (1) hour after sunset, and remain off until one (1) hour before sunrise.*" (p. 5, item F.ii). Note that IDA has interpreted this rule to take into account ordinary operating hours of businesses and allow signs to remain illuminated for wayfinding purposes up to one hour after the close of business, exempting establishments that are open to the public 24 hours a day. The proposed language here fits the current IDA interpretation.

v. The illuminated surface area of an individual sign shall not exceed 200 square feet.

IDA requirement: "*The luminous/illuminated surface area of an individual sign shall not exceed*

200 square feet (18.6 square meters)." (p. 6, item F.iii)

b. Internally Lighted. Internal lighting may be permitted, provided that the following criteria are satisfied:

i. The total surface area of the sign that emits lighting shall not exceed 15% of the overall surface of the sign. A two-sided freestanding sign shall be permitted 30% of total surface area of both sides of the sign.

ii. Plastics, polymers, acrylics, and like materials may be used for letters, with the exception of white plastics, provided that the plastic exceeds no more than 15% of the total surface area of the sign or 30% of a 2 sided sign.

iii. The proposed light source shall not be visible from the exterior of the sign, which shall include the back, edges, and sides.

iv. ~~Florescent~~ Fluorescent and/or neon lighting is not permitted as a source of internal lighting.

Corrects a spelling mistake.

v. Any proposed internally lighted sign application shall submit professional Engineering and/or Architect plans and photometric maps depicting the types of lighting to be used. The percentage of lighting, not to exceed 15%, shall be depicted on the plans.

vi. All signs containing electrical wiring shall be subject to the provisions of the Electrical Code in place at that time and the electrical components shall bear the label of an approved testing agency. Said wiring components shall be submitted to the Electrical Inspector for review and approval.

vii. Luminance levels during permitted operating hours shall not exceed 100 nits. For electronic displays, this figure is to be measured under conditions of a full white display.

IDA requirement: For internally illuminated signs, including electronic displays, “*luminance levels for operation between sunset and sunrise shall not exceed 100 nits (100 candelas per square meter) as measured under conditions of a full white display.*” (p. 5, item F.i)

viii. Light sources shall be extinguished completely after 11 P.M. or at the end of normal business hours, whichever is later, and remain off until one (1) hour before sunrise.

IDA requirement: “*Sign illumination shall be extinguished completely one (1) hour after sunset, and remain off until one (1) hour before sunrise.*” (p. 5, item F.ii). Note that IDA has interpreted this rule to take into account ordinary operating hours of businesses and allow signs to remain illuminated for wayfinding purposes up to one hour after the close of business, exempting establishments that are open to the public 24 hours a day. The proposed language here fits the current IDA interpretation.

ix. The luminous surface area of an individual sign shall not exceed 200 square feet.

IDA requirement: “*The luminous/illuminated surface area of an individual sign shall not exceed 200 square feet (18.6 square meters).*” (p. 6, item F.iii)

c. Backlit Signs. Backlit signs may be permitted, provided that the following criteria are satisfied:

i. Signs shall be lighted from a source mounted on the wall behind the proposed sign and shall not be visible through the sign. Lighting shall be visible only along the edges of the sign and light shall not extend more than 3 inches beyond the sign edges.

ii. ~~Florescent~~ **Fluorescent** and/or neon lighting is not permitted as a source for backlighting.

Corrects a spelling mistake.

iii. Plastics, polymers, acrylics, and like materials may be used for letters, with the exception of white plastics, provided that the plastic exceeds no more than 15% of the total surface area of the sign or 30% of a 2 sided sign.

iv. Any proposed backlit sign application shall submit professional Engineering and/or Architect plans and photometric maps depicting the types of lighting to be used.

v. All signs containing electrical wiring shall be subject to the provisions of the Electrical Code in place at that time and the electrical components shall bear the label of an approved testing agency. Said wiring components shall be submitted to the Electrical Inspector for review and approval.

vii. Light sources shall be extinguished completely after 11 P.M. or at the end of normal business hours, whichever is later, and remain off until one (1) hour before sunrise.

IDA requirement: *"Sign illumination shall be extinguished completely one (1) hour after sunset, and remain off until one (1) hour before sunrise."* (p. 5, item F.ii). Note that IDA has interpreted this rule to take into account ordinary operating hours of businesses and allow signs to remain illuminated for wayfinding purposes up to one hour after the close of business, exempting establishments that are open to the public 24 hours a day. The proposed language here fits the current IDA interpretation.

viii. The luminous surface area of an individual sign shall not exceed 200 square feet.

IDA requirement: *"The luminous/illuminated surface area of an individual sign shall not exceed 200 square feet (18.6 square meters)."* (p. 6, item F.iii)

## **Div. 9.5. ("Defined Terms")**

Adaptive controls. Adaptive controls means mechanical or electronic devices, when used in the context of outdoor lighting systems, intended to actively regulate the switching, duration, and/or intensity of light emitted by such systems. Examples of adaptive controls include timers, dimmers and motion-sensing switches.

This definition is consistent with IDA's understanding of the language.

Backlit sign. A backlit sign is any sign or display, whether on- or off-premise, whose message or design is indicated by the use of

opaque materials situated in front of a luminous background as viewed by an observer. Sometimes referred to as a “reverse pan channel” sign.

Suggested to clearly differentiate between these signs and front-illuminated signs.

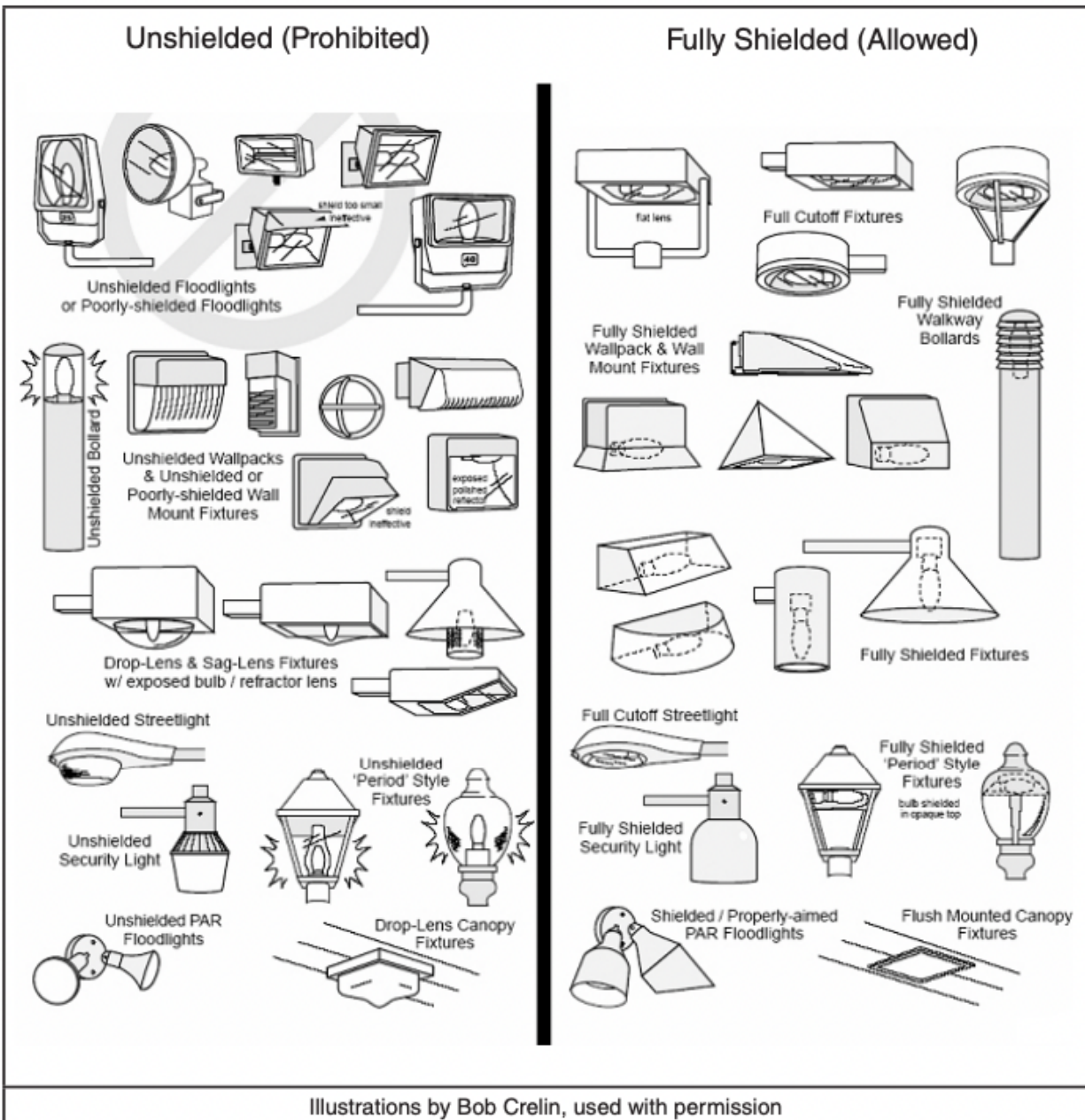
Correlated color temperature. Correlated color temperature indicates the ‘warmth’ or the ‘coolness’ of a light’s appearance (see image below). Color temperature is generally indicated on light bulb packaging. Specifically, correlated color temperature is defined as the absolute temperature of a blackbody radiator whose chromaticity most nearly resembles that of the light source.

Foot-candle. A foot-candle is a non-SI unit of illuminance or light intensity. The foot-candle is defined as the intensity of one lumen of light falling with uniform distribution on a surface with an area of one square foot.

This term appears in the existing definition of “Maximum Permitted Illumination” and in some text suggested in this redline, but it otherwise is not defined.

Fully Shielded. Fully shielded means an outdoor luminaire constructed so that in its installed position all of the light emitted by the luminaire is projected below the horizontal plane passing through the lowest light-emitting part of the luminaire. Examples of Unshielded (Prohibited) and Fully Shielded (Allowed) lights and luminaires limiting light to the horizontal plane are shown below.

Replaces the existing language in §5.3.1(B)(1) with a more precise definition, and moves the Crelin shielding diagram here, below.



Illuminating Engineering Society (IES). Illuminating Engineering Society or IES means an industry-supported, nonprofit learned society headquartered at 120 Wall Street, New York City, New York, recognized as an authoritative body on the science and application of lighting that publishes and promotes recommended practices for a variety of specific lighting applications.



Defines “Illuminating Engineering Society”, which is referenced in suggested new text in §5.3.1(B)(9)(b).

Initial lumens. The number of lumens of light emitted by a luminaire when the lamp is new, not accounting for any depreciation due to the age of the lamp or environmental conditions that may be detrimental to its performance.

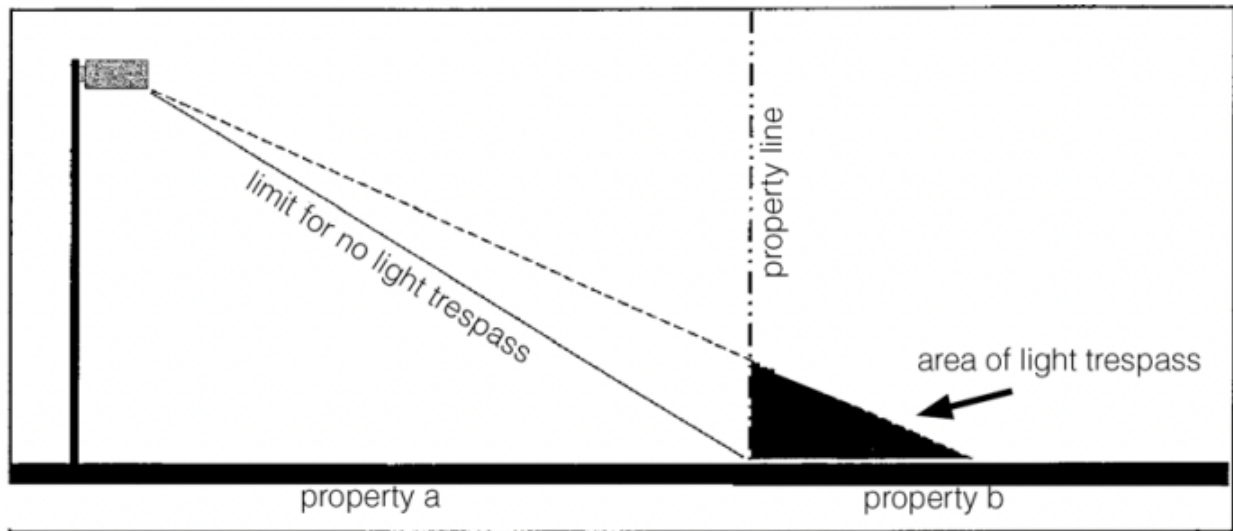
Added to match a change to the text in §5.3.1(B)(1), consistent with IDA requirements, and to refer to the number of lumens a lamp emits as referenced to conditions in which the lamp is new and not accounting for field losses due to aging equipment.

Internally illuminated. Internally illuminated refers to any sign or display, whether on- or off-premise, consisting of (1) translucent surfaces whose message is designed to be made visible by means of lamps or other light sources concealed with such surfaces; or (2) a sign whose content is made visible by means of luminous elements under active electronic control and therefore subject to alteration in order to vary the color, content and/or brightness of the message displayed.

Suggested to clarify the term and to account for the two main types of such signs: “cabinet”-type signs and electronic displays.

Light Trespass. Light trespass means a condition in which artificial light emitted from a luminaire on one property, not inclusive of light incidentally scattered or reflected from adjacent surfaces, is directed in such a manner that it is visible from any other property as indicated in the diagram below. For the purposes of this chapter, light trespass is declared to be a form of public nuisance.

Replaces and clarifies language in §5.3.1(B)(4). The accompanying diagram from that section is moved below.



**Lumen.** Lumen is a measure of light emission. Lumen measurements are commonly indicated on light bulb packaging. Specifically, a lumen is the amount of light emitted per second in a unit solid angle of one steradian from a uniform source of one candela.

**Luminaire.** Luminaire means a complete lighting unit consisting of a light source and all necessary mechanical, electrical, and decorative parts.

**Luminance.** Luminance is the amount of light that passes through, is emitted, or reflected, from a particular area, and that falls within a given solid angle. Luminance is a measure of light emitted by or from a surface. The SI unit of luminance is candela per square meter ( $\text{cd}/\text{m}^2$ ), also known as a "nit."

Defined here in order to properly explain added language in §5.6.1(E) that prescribes limits for the surface brightness of certain illuminated signs, and defines the unit of measurement (the "nit") used there.

**Maximum Permitted Illumination.** Maximum permitted illumination means the maximum illumination measured in footcandles at the street, side, and rear setbacks at ground level.

Net acre. A net acre is an acre of any land parcel that is developed, consisting of structures and/or hardscape. The net acreage of a parcel is the gross acreage of that parcel less any acres that are considered undeveloped.

Supports the suggested change in §5.3.1(B)(2) that ensures that undeveloped portions of land parcels do not receive credit toward site lighting limits and therefore prevents inappropriate over-lighting of parcels at night.

## **Suggested additional provisions**

### Elaborate on purposes of the ordinance

More specific findings of fact and statements of purpose in the preamble to §5.3.1 can help guide future interpretations of the statutory language. Suggestions include:

*Findings of fact. The Jackson Town Council hereby finds and determines that:*

- 1. The welfare and enjoyment of the Town is associated with its character, including its nighttime ambience;*
- 2. Preserving and protecting the night sky enhances the use and enjoyment of property through the use of appropriate lighting practices;*
- 3. The Town values the practice of energy conservation, and because of the Town's devotion to energy conservation, emphasis on responsible lighting practices is desired to decrease the human impact on the environment; and*
- 4. Lighting systems should be designed, constructed, and installed to:*
  - a. preserve the Town's existing character;*
  - b. minimize impacts on adjacent property owners;*
  - c. control glare and light trespass;*
  - d. conserve energy;*
  - e. maintain safety and security of people and wildlife; and*
  - f. maintain the view of the stars in the night sky.*

*Purpose. The purposes of this Section are to:*

- 1. Minimize light pollution and glare resulting from the use of outdoor lighting;*

2. *Protect residents from unwanted light that would enter homes and businesses at night;*
3. *Provide adequate light for the safe performance of outdoor tasks at night;*
4. *Enable planning for lighting at the design stage with appropriate design guidelines before lighting becomes a statutory nuisance;*
5. *Promote efficient and cost-effective lighting and to conserve energy;*
6. *Encourage preservation, to the greatest practical extent, of natural nighttime darkness;*
7. *Create environmentally sensitive nighttime conditions that include the ability to view the stars against a dark sky;*
8. *Prevent inappropriate, poorly designed or installed outdoor lighting; and*
9. *Encourage quality outdoor lighting design.*

#### **Establishment of Lighting Zones (LZs)**

(N.B.: if the Town elects to use Lighting Zones, other changes to existing provisions would be required to enable progressive lighting allowances by LZ.)

The use of Lighting Zones in municipal land use ordinances is becoming increasingly common as many users of such codes inherently understand the notion of zone-based allowances and prohibitions. Lighting Zones could be easily mapped to existing Town land-use zones, with final determinations left to the Planning Director or designee.

#### *Establishment of Lighting Zones.*

##### *A. The Lighting Zones (LZs) shall be as follows:*

1. *LZ0: No ambient lighting. Areas where the natural environment will be seriously and adversely affected by lighting. Impacts include disturbing the biological cycles of flora and fauna and/or detracting from human enjoyment and appreciation of the natural environment. Human activity is subordinate in importance to nature. The vision of human residents and users is adapted to the darkness, and they expect to see little or no lighting.*
2. *LZ1: Low ambient lighting. Areas where lighting might adversely affect flora and fauna or disturb the character of the area. The vision of human residents and users is adapted to low light levels. Lighting may be used for safety and*

*convenience but it is not necessarily uniform or continuous. After curfew, most lighting should be extinguished or reduced as activity levels decline.*

- 3. LZ2: Moderate ambient lighting. Areas of human activity where the vision of human residents and users is adapted to moderate light levels. Lighting may typically be used for safety and convenience but it is not necessarily uniform or continuous. After curfew, lighting may be extinguished or reduced as activity levels decline.*

*B. A parcel located in more than one of the described zones shall be subject to the requirements of the most restrictive zone.*

#### **Permitting of temporary lighting installations**

Language is suggested here that, if enacted, would establish a clear process by which the Town would permit installations of lighting for temporary uses that (1) avoids a tendency for “temporary” installations to become permanent over time; and (2) ensures reasonable compliance with the LDRs to the greatest practical extent possible.

*A. Lighting allowed by temporary exemption. Temporary lighting that does not conform to the provisions of this Section may be approved at the discretion of the Planning Director subject to submission of an acceptable Outdoor Lighting Permit.*

*B. Permit term and renewal. Permits issued shall be valid for no more than thirty (30) calendar days and subject to no more than one renewal, at the discretion of the Planning Director, for an additional thirty (30) calendar days.*

*C. Conversion to permanent status. Any lighting allowed through by permit that remains installed after sixty (60) calendar days from the issue date of the permit is declared permanent, and is immediately subject to all of the provisions of this Chapter.*

*D. Permit contents. A request for temporary exemption to any provision of this Chapter shall contain minimally the following listed information:*

- 1. Specific exemptions requested;*
- 2. Previous temporary exemptions, if any;*

3. Duration of time requested exemption;
4. Type and use of exterior light involved;
5. Type and initial lumens of proposed lamps;
6. A plan with proposed luminaire locations; and
7. Manufacturer data sheets for proposed luminaires.

*E. In addition to the above data, the Planning Director may request any additional information which would enable a reasonable evaluation of the request for temporary exemption.*

#### **Additional conditions triggering the replacement of existing non-conforming outdoor lighting**

In addition to the language required by IDA that amortizes non-conforming lighting installations within ten years of the enactment date of the statute, it is now considered best practice to include other situations and circumstances that automatically trigger compliance while otherwise extending indefinite grandfather protection. These include items like changes of use, destruction of property, new construction or renovation of existing facilities, and more.

*All legal non-conforming luminaires may continue to be used and maintained after the adoption of this Chapter, but shall be brought into compliance with its requirements upon the first to occur of any of the following:*

- a. An application for a Town Planning Department design review, conditional use, subdivision permit, or building permit;*
- b. A change of use of the property;*
- c. Any renovation to the property equal to or exceeding twenty (20) percent of its assessed value;*
- d. More than fifty (50) percent of the total appraised value of a structure, as determined from the records of the county's appraisal district, is destroyed;*
- e. A determination by the Planning Director that the legal non-conforming luminaire constitutes a public hazard or nuisance;*

- f. A certificate of occupancy is issued for a property previously determined by the Planning Director to be abandoned for at least six (6) months;*
- g. The replacement of any legal non-conforming luminaire with new lighting equipment, not inclusive of lamps or similar consumable parts; or*
- h. Ten (10) years after the effective date of this section.*

It's my understanding that fee waivers are granted for proposed land development regulation text amendments are in the general public interest. Such is the case with our proposed amendments to the current exterior lighting standard and sign standard. The proposed amendments will result in benefits to our entire community in the following ways:

1. They will make our community a safer place for wildlife, pedestrians, and for commuters. By reducing and eliminating glare from lights along roadways, it will be easier for commuters to see pedestrians and wildlife crossing roadways. That reduced glare will also make it easier for wildlife to safely cross roadways.
2. The proposed amendments will make our ecological community healthier by reducing skyward facing lights at night. Artificial light at night has been shown to have detrimental effects on the populations of migratory bird species, several species of bats, large and small terrestrial mammals, as well as for insects and even plants. Less light pollution means a healthier ecosystem.
3. The proposed amendments will provide better protection to one piece of our community character, namely dark night skies, which are highlighted in the comprehensive plan and the scenic standards of the town and County LDRs. In the past, across the country, dark night skies have been one of the most commonly overlooked natural resources, but those days are over. Today, they are more commonly seen as the National Parks above our heads.
4. The proposed amendments will create a stronger appeal to visit Jackson, particularly in the shoulder seasons, by creating the opportunity for Teton County to be recognized as a Dark Sky Community.
5. The proposed amendments will over time save our community money and will reduce energy consumption. Properly shielded lights with adaptive controls consume fewer watts to illuminate the ground beneath them at the required times.