



Memorandum

TO: Vail Town Council

FROM: Community Development Department

DATE: February 7, 2017

SUBJECT: Town of Vail Outdoor Lighting and *Dark Sky Community* designation

I. PURPOSE

The purpose of this memorandum is to provide further clarification and follow up to questions posed by the Vail Town Council on the International Dark-Sky Association's (IDA) International Dark Sky Communities program and required steps to pursue official designation.

II. BACKGROUND

At the November 1, 2016 meeting of the Vail Town Council, interest was expressed in current codified dark sky protections and options to strengthen the code. These questions were addressed in an information update to council on November 15th. In that meeting, the following questions were presented to staff:

- If the town were to pursue designation as a *Dark Sky Community* by the International Dark-Sky Association, what are the associated costs?
- What enforcement mechanisms would be required under a designation program?
- What gaps exist with current conditions vs. designation requirements?

Town of Vail lighting requirements were amended by Ordinance No. 9, Series of 1993, which required submittal of an outdoor lighting plan with standards for luminous area, height and cutoff standards, and a requirement for non-conforming lights to come into compliance on any changes to lighting or property. Lighting regulations were updated in 2008 when the Vail Town Council adopted Ordinance 21, Series of 2008, amending the town's prescribed standards for exterior lighting contained in Section 14-10-7, Vail Town Code. This amendment was approved with the goal of updating the town's regulations to clarify standards while simplifying implementation and enforcement. Another goal of this amendment was to further dark sky policies and encourage use of environmentally-friendly lighting (energy efficient and environmentally sensitive fixtures and techniques).

III. INTERNATIONAL DARK SKY PLACES DESIGNATION

1. What are the costs to a community interested in pursuing designation?

There are no costs to a community in terms of fees charged by the IDA to apply for or maintain a designation. However, there are costs to the community associated with the process to achieve and maintain designation. These costs may include the following:

- Staff time (Research, legal, consultants, compliance, etc.)
- Identify and retrofit any non-conforming municipal lights
- Production of education and marketing materials
- Community incentives to transition to dark-sky compliant lighting

What compliance mechanisms are required for certification?

Current Town of Vail code standards are close to meeting IDA requirements for dark sky communities. To address non-conformities, lighting codes need to have a provision that ensures non-conforming properties are brought into conformance. This can be achieved through one of two options:

1. A code provision that triggers compliance when any change is made to a non-conforming light fixture and/or a substantial change is made to a property.
 - Current Town of Vail code states that sites not conforming to design guidelines come into conformance when allowable Gross Residential Floor Area (GRFA), commercial floor area, or garage area is added to any structure or site (limited exemptions apply). This appears to satisfy basic requirements for the IDA.
2. An amortization requirement that would require compliance with code within 5-10 years of the effective date of the new lighting requirements.

It is important to understand the difference between legal non-conforming and illegal lighting. In this instance, non-conforming lighting that was installed prior to the 2008 code amendment updating lighting standards. Non-conforming lighting is required to come into compliance per code standards described above. Illegal lighting is lighting that did not receive design review approval. Currently, the town is not properly staffed to undertake a significant compliance effort.

What gaps exist between current conditions and certification requirements?

The Town of Vail currently has a good initial basis for IDA Dark Sky community designation. The design standards pertaining to outdoor lighting serve as an excellent foundation to build towards Dark Sky Certification. The IDA Dark Sky Community designation process is detailed in **Figure 1**. Currently, about 60% of properties within the Town of Vail would be compliant with the IDA model ordinance. Staff reviewed town-wide lighting conditions during the period of December 12th-23rd to provide a baseline with model IDA standards. One observation that helps explain the increased brightness experienced in neighborhoods could be the use of new LED lights in old fixtures. If the town is interested in official designation, the first step towards designation would require an update to the Vail Town Code design standards pertaining to outdoor lighting.

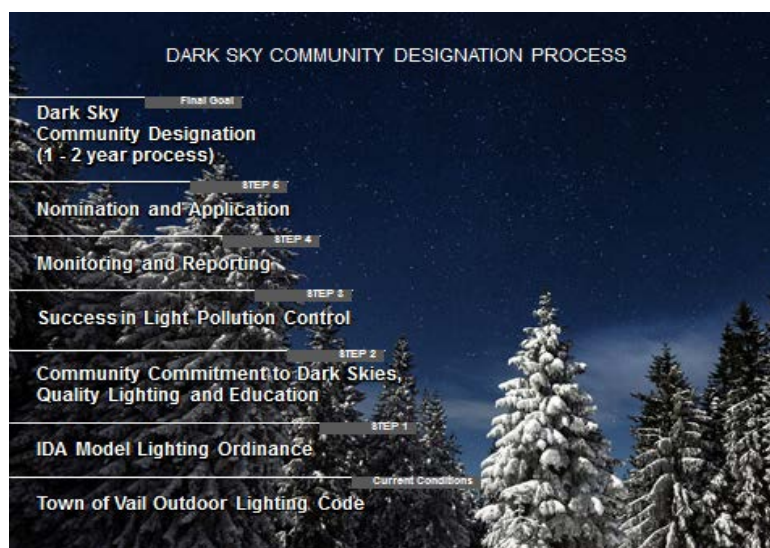


Figure 1- Dark Sky Community Designation Process

1. IDA Model lighting Code

To meet minimum lighting code standards, The Town of Vail code pertaining to outdoor lighting would need to be updated to include the following provisions:

- A threshold for allowable color temperature of all lighting fixtures (maximum of 3000 Kelvins).
- More stringent restrictions on total amount of unshielded lighting allowed per site. This needs to be focused on total lumens rather than number of fixtures.
- A provision to regulate total brightness per site (lumens per acre caps, etc.), brightness levels are allowed to vary based on zoning.
- A provision that clearly indicates where, when, and under what circumstances new public outdoor lighting is warranted and permitted.
- A provision that requires adapted controls and curfews be employed in future installations of outdoor public lighting.

2. Community commitment to dark skies, quality lighting, and dark sky education

Once code requirements are met, a community must demonstrate a commitment to dark skies. This requirement includes the following standards:

- Municipal owned lighting conforming to lighting code or a plan to come into compliance within 5 years.
- Municipal support of dark sky as demonstrated through PSAs, publications, information flyers, funding of lighting upgrades.
- Broad community support from organizations such as the Vail Chamber, Holy Cross Energy, Vail Homeowners Association, etc.
- Commitment to dark sky education through annual awareness events, inclusion of dark sky information in community brochures, and dark sky education programming in community schools.

3. Success in light pollution control

To meet this standard, a municipality must meet one of the following conditions during the reporting process per IDA guidelines:

- *Provide examples of a minimum of 10 projects that meet IDA model code standards.*
- *An alternative method proposed by the Town of Vail and agreed upon by the IDA.*

4. Monitoring and Reporting

This standard requires a sky brightness measurement program that is maintained by the community or a 3rd party. This program should track and monitor light pollution within the community. Annual reports must be submitted that document progress on existing light pollution issues within the community. The report is a 1-2 page synopsis of community activities and initiatives throughout the year.

5. Nomination and Designation

Nomination to be an International Dark Sky Community is initiated by an IDA qualified nominator who will review the applicant (community). If a community does not meet the standards required for an outright designation, it may receive provisional status. Provisional status provides a 3 year period to achieve the standards and re-apply for designation. **Table 1** shows all current designated dark sky communities in the United States.

• Beverly Shores, Indiana	• Homer Glen, Illinois
• Big Park/Village of Oak Creek Arizona	• Horseshoe Bay, Texas
• Borrego Springs, California	• Sedona, Arizona
• Dripping Springs, Texas	• Kaibab Paiute Indian Reservation
• Flagstaff, Arizona	• Westcliffe and Silver Cliff, Colorado

Table 1- US Designated Dark Sky Communities

IV. NEXT STEPS

Moving forward, the Vail Town Council may consider the following actions:

1. Maintain current outdoor lighting standards, addressed through the design review process.
2. Strengthen current outdoor lighting standards to address current concerns (e.g. brightness, color temperature).
3. Update current outdoor lighting standards to model IDA code requirements and pursue IDA Dark Sky Community designation.

Depending on which action, if any, is selected for implementation, staff will return to the Vail Town Council at a later date with more detailed action steps and timelines.

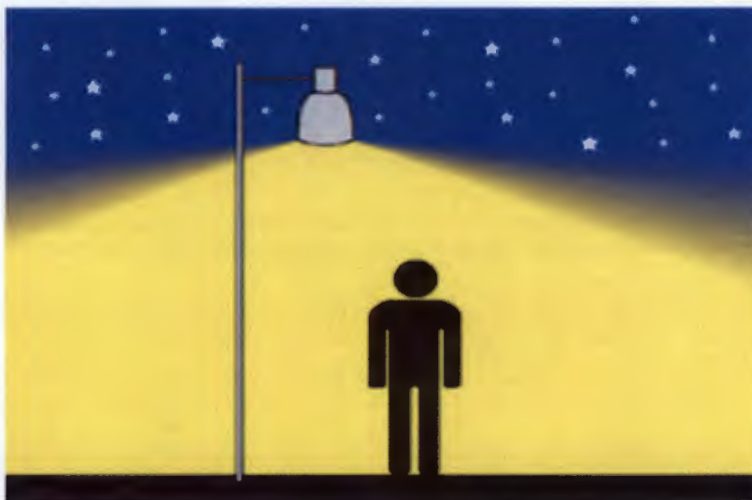
Appendix:

Non Dark Sky Compliant lighting examples:



Dark Sky Friendly Lighting Examples:

Full cut-off lighting



University of Texas, Austin

- Full cut-off lighting directs light down and to the sides as needed and provides more control of light.
- Reduces glare and provides more even illumination.
- Reduces light trespass onto neighboring

Dark Sky Friendly Lighting Examples:

