

## ORDINANCE NO. 1084

AN ORDINANCE OF THE TOWN OF BERTHOUD, LARIMER AND WELD COUNTIES, COLORADO ADOPTING, BY REFERENCE, ADDITIONS AND AMENDMENTS TO CHAPTER 30-15 (DESIGN STANDARDS & GUIDELINES) OF THE TOWN OF BERTHOUD DEVELOPMENT CODE, PROVIDING FOR DARK SKY STANDARDS AND GUIDELINES FOR DEVELOPMENT IN THE TOWN AND REPEALING ALL ORDINANCES IN CONFLICT THEREWITH;

BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF BERTHOUD, LARIMER AND WELD COUNTIES, COLORADO:

### SECTION 1. ADOPTION

Pursuant to parts 1 and 2 of Article 16 of Title 31, C.R.S., there is hereby adopted by reference a portion of the Town of Berthoud Development Code. The purposes of this ordinance and code adopted hereby are to ensure the general health, safety and welfare of the Town of Berthoud. Three (3) copies of the proposed Town of Berthoud Development Code additions and amendments are filed in the office of the Clerk of the Town of Berthoud, Colorado, and may be inspected during regular business hours.

### SECTION 2. DEVELOPMENT CODE

The Town of Berthoud Development Code generally specifies the requirements and procedures for annexations, subdivisions, zoning, oil & gas operations, identification and preservation of historical sites and landmarks and other controls and processes relative to the urbanization, organization, operation and preservation of land within the Town of Berthoud.

### SECTION 3. CURRENT PROCEEDINGS AND INDEPENDENCE

The provisions of this ordinance shall not affect any citation, complaint, prosecution, or other proceeding pending at the time this ordinance is passed.

### SECTION 4. VALIDITY

If any part or parts of this ordinance are for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of this ordinance.

### SECTION 5. REPEAL

Existing or parts of ordinances covering the same matters as embraced in this ordinance are hereby repealed and all ordinances or parts of ordinances inconsistent with the provisions of this ordinance are hereby repealed.

SECTION 6. CERTIFICATION

The Town Clerk shall certify to the passage of this ordinance and make not less than three (3) copies of the adopted portion of The Development Code Amendments and Additions available for inspection by the public during regular business hours.

SECTION 7. PENALTY CLAUSE

If any person fails to comply with the provisions of this Code they shall be subject to one or more of the following penalties:

1. The revocation of the approval(s) of the land use rights they may have received.
2. The denial of building permits or certificates of occupancy.
3. The reimbursement to the Town for all the expenses incurred by it including its administrative and legal expenses.
4. The payment of up to \$300 for each day of each violation and/or incarceration for up to 90 days for each day of each violation.

SECTION 9. EFFECTIVE DATE


At the regular meeting of the Board of Trustees of the Town of Berthoud on March 11, 2008 this ordinance was introduced, and a public hearing was set by the Board of Trustees for its meeting on April 8, 2008 with Notice of the Public Hearing to be published twice in a newspaper of general circulation in the Town of Berthoud once at least 15 days prior, and once at least eight (8) days preceding it.

After the public hearing, the Ordinance was read, passed and ordered published by the Board of trustees at its meeting this 8<sup>th</sup> day of April 2008.

TOWN OF BERTHOUD

  
Milan Karspeck, Mayor

ATTEST:

  
Mary Cowdin, Town Clerk

Publish: April 17, 2008



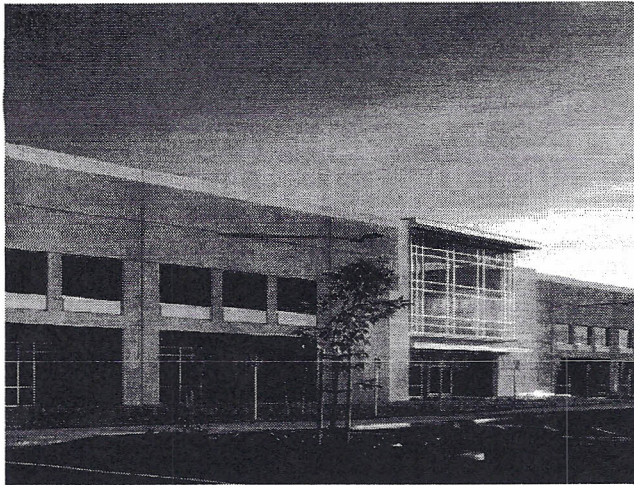


Figure 3-37 Industrial Uses

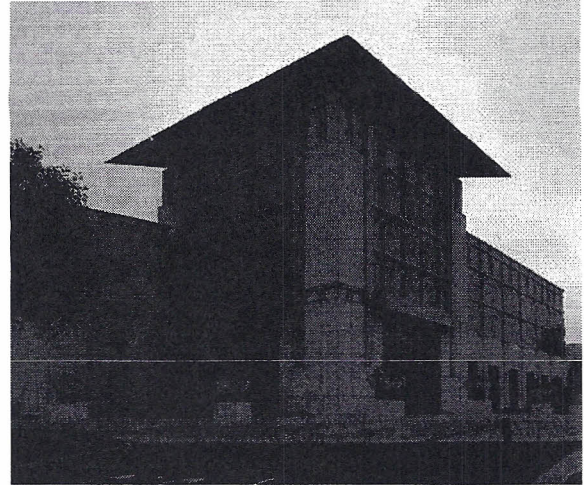


Figure 3-40 Industrial Uses

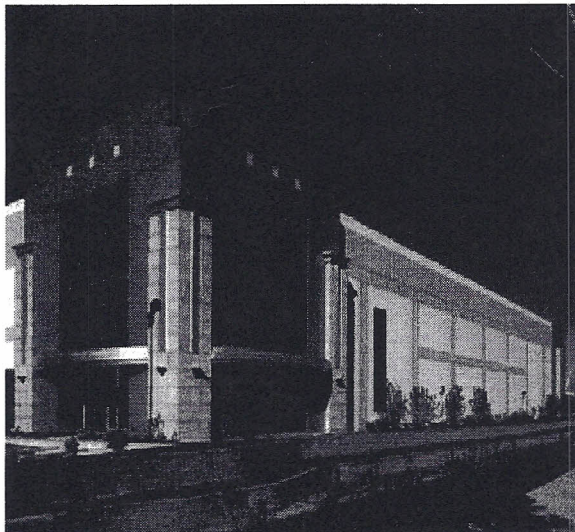


Figure 3-38 Industrial Uses



Figure 3-39 Industrial Uses

### 30-15-700 DARK SKY GUIDELINES STANDARDS

#### 30-15-701 Purpose

The purpose of the Berthoud Dark Sky Guidelines Standards is to regulate outdoor lighting in order to reduce or prevent light pollution. This means to the extent reasonably possible the reduction or prevention of glare and light trespass, the conservation of energy, and promotion of safety and security.

#### 30-15-702 Definitions

The "IES" (Illuminating Engineering Society of North America) Lighting Handbook, most recent edition, the Town of Berthoud Development Code, and Building Code, should be used for the definition of terms used in this ordinance but not defined herein. In the case where a definition of a term in this ordinance is found to be in conflict with a definition of a term of any other ordinance, "IES" handbook or regulation, the more restrictive definition will apply.

**Area Light:** Light that produces over 2050 lumens (See Table 2 for Light Output of Various Lamps). Area lights include, but are not limited to, street lights, parking lot lights and yard lights.

**Automatic timing device:** A device that automatically controls the operation of a light fixture or fixtures, circuit or circuits. Photocells and light and or motion sensors should be considered automatic-timing devices

**Average Footcandle:** The level of light measured at an average point of illumination between the brightest and darkest areas. The measurement can be made at the ground surface or at four to five feet above the ground.



**Bulb:** The source of electric light.- to be distinguished from the whole assembly (See Luminaire).

**Candela (cd):** Unit of luminous intensity.

**Eighty-five (85) Degree Full Cut-Off Type**

**Fixtures:** Fixtures that do not allow light to escape above an 85-degree angle measured from a vertical line from the center of the lamp extended to the ground.

**Exterior Lighting:** Temporary or permanent lighting that is installed, located or used in such a manner to cause light rays to shine outside. Fixtures that are installed indoors that are intended to light something outside are considered exterior lighting.

**Fixture:** The assembly that holds the lamp in a lighting system. It includes the elements designed to give light output control, such as a reflector (mirror) or refractor (lens), the ballast, housing, and the attachment parts.

**Flood Light:** Light that produces up to 1800 lumens (See Table 2 for Light Output of Various Lamps) and is designed to "flood" a well-defined area with light. Generally, floodlights produce from 1000 to 1800 lumens.

**Foot-candle:** Illuminance produced on a surface one foot from a uniform point source of one candela. ~~Measured by a light meter.~~ Foot candles will be measured by a light meter.

**Full cutoff fixture:** A fixture which, as installed, gives no emission of light above a horizontal plane.

**Glare:** Intense light that results in discomfort and/or a reduction of visual performance and visibility.

**Holiday Lighting:** Festoon type lights, limited to small individual bulbs on a string, where the output per bulb is no greater than 15 lumens.

**IESNA - 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.

**Illuminance:** Density of luminous flux incident on a surface. Unit is foot-candle or lux. Illuminating devices:

1. Light fixture types

a. Full cutoff fixture types - A fixture which, as installed, gives no emission of light above a

horizontal plane.

b. Floodlights and Spotlights - Fixtures defined as having a full beam width or beam spread of less than 110 degrees.

2. Lamp types

a. Incandescent lamps - Lamps which produce light via an electrically heated metallic filament.

b. Fluorescent lamps - Lamps that use fluorescence of a phosphor to produce visible light.

c. High Intensity Discharge Lamps - Lamps, which produce visible light directly by the electrical heating or excitation of a gas. Examples of such lighting include, but are not limited to, Metal Halide, High Pressure Sodium, Low Pressure Sodium and Mercury Vapor. For purposes of this Ordinance, fluorescent lights are not considered HID lighting.

**Lamp or Bulb:** The light-producing source installed in the socket portion of a luminaire.

**Light Pollution:** Any adverse effect of manmade light including, but not limited to, light trespass, uplighting, the uncomfortable distraction to the eye, or any manmade light that diminishes the ability to view the night sky. Often used to denote urban sky glow.

**Light trespass:** Light emitted by a luminaire falls where it is not wanted or needed or shines beyond the property on which the luminaire is installed.

**Lighting:** Any or all parts of a luminaire that function to produce light.

**Lumen:** Unit of luminous flux; the flux emitted within a unit solid angle by a point source with a uniform luminous intensity of one candela. One foot-candle is one lumen per square foot. One lux is one lumen per square meter.

**Luminaire:** The complete lighting unit, including the lamp, the fixture, and other parts.

**Luminance:** At a point and in a given direction, the luminous intensity in the given direction produced by an element of the surface surrounding the point divided by the area of the projection of the element on a plane perpendicular to the given direction. Units: candelas per unit area. The luminance is the perceived brightness that we see, the visual effect of the illuminance, reflected, emitted or transmitted from a surface.

## Measurement of Luminance:

### Lamp output

a. Total output: Measurement of total output is in lumens. This should be understood to be the initial lumen value for the lamp.

b. Illuminance: Measurements of illuminance are expressed in initial lumens per square foot. (A desktop illuminance of twenty (20) initial lumens per square foot is adequate for most purposes.)

c. In measuring illuminance, the light detector should be pointed directly at the light source or sources. The intervening light path should be free of obstruction.

**Outdoor light fixture:** An outdoor illuminating device, outdoor lighting or reflective surface, luminous tube, lamp or similar device, permanently installed or portable, used for illumination, decoration, or advertisement. Such devices should include, but are not limited to, lights used for:

- A. parking lot lighting;
- B. roadway lighting;
- C. buildings and structures;
- D. recreational areas;
- E. landscape lighting;
- F. billboards and other signs (advertising or other);
- G. product display area lighting;
- H. building or structure decoration;
- I. building overhangs and open canopies.

**Recessed:** When a light is built into a structure or portion of a structure such that the light is fully cut-off and no part of the light extends or protrudes beyond the underside of a structure or portion of a structure.

**Partially Shielded:** The bulb of the fixture is shielded by a translucent siding and the bulb is not visible at all. Light may be emitted at the horizontal level of the bulb.

**Shielded:** When the light emitted from the fixture is projected below a horizontal plane running through the lowest point of the fixture where light is emitted. The bulb is not visible with a shielded light fixture, and no light is

emitted from the sides of the fixture. Also considered a full cut-off fixture.

**Spotlight or Floodlight:** Any lamp that incorporates a reflector or a refractor to concentrate the light output into a directed beam in a particular direction (see definition for floodlight).

**Temporary Lighting:** Lighting that is intended to be used for a special event for seven (7) days or less.

**Uplighting:** Lighting that is directed in such a manner as to shine light rays above the horizontal plane.

## 30-15-703 Scope & Applicability

**New Lighting.** All exterior outdoor lighting installed after the effective date of this Chapter in any and all zones in the Town should shall conform with the requirements established by this Chapter and other applicable ordinances unless otherwise exempted. This ordinance does not apply to indoor lighting.

**Existing Lighting.** All existing lighting located on a subject property that is part of a land use application or building permit is recommended to shall be brought into conformance with this Ordinance. (Options within 1) "5 years from the adoption of this ordinance or 2) "as fixture become obsolete and are replaced.") All lighting on the property is recommended to will be brought into full compliance before reoccupation or reuse.

**Nonconforming Uses or Structures.** If a nonconforming use or structure has been abandoned for more than twelve months all lighting on the property should shall be brought into full compliance before reoccupation or reuse.

Conformity should shall occur prior to issuance of Certificate of Occupancy, Final Inspection, or Final Plat Recordation, when applicable. For other permits, the applicant should shall have a maximum of thirty days from date of permit issuance to bring the lighting into conformance.

Preferred Source - Low-pressure Sodium (LPS) lamps are the preferred illumination source throughout the town and their use is encouraged.

When an existing fixture is replaced, the replacement fixture should shall meet the requirements of this chapter.



Architectural design, site planning, landscaping and lighting may be further restricted elsewhere in the Berthoud Municipal Code.

All governmental agencies, federal, state or county, which operate within the town limits of Berthoud – ~~are encouraged to~~ will meet the requirements of this ordinance and ~~are encouraged by the town to~~ comply with its provisions. In the event of a conflict with any other chapter of the Berthoud Municipal Code, the more stringent requirement should apply.

### **30-15-704 Exemptions and Exceptions**

**A.** Residential fixtures consisting of lamp types of 2050 lumens and below (the acceptability of a particular light is decided by its lumen output, not wattage. Check manufacturer's specifications).

Examples include:

100 Watt Standard Incandescent and less

100 Watt Midbreak Tungsten-Halogen (quartz) and less

25 Watt T-12 Cool White Fluorescent and less

18 Watt Low Pressure Sodium and less

**B.** Federally funded and state funded roadway construction projects, are exempted from the requirements of this division only to the extent it is necessary to comply with federal and state requirements.

**C.** Fossil Fuel Light. Fossil fuel light produced directly or indirectly by the combustion of natural gas or other utility-type fossil fuels is exempt from the provisions of this article.

**D.** Full cutoff street lighting, which is part of a federal, state, or municipal installation.

**E.** ~~Holiday lighting.~~ Holiday lighting within \_\_\_\_ days before and after the holiday.

**F.** Lighting of sports facilities or stadiums prior to 11:00 p.m. Illumination after 11:00 p.m. is also permitted if it is necessary in order to conclude a recreational, sporting or other scheduled activity, which is in progress prior to that time.

**G.** Specialized lighting necessary for safety, such as navigated or runway lighting of airports, or temporary lighting associated with emergency operations, road hazard warnings, etc.

**H.** Traffic control signals and devices.

### **30-15-705 Approved Materials and Methods of Installation**

The provisions of this chapter are not intended to prevent the use of any design, material or method of installation or operation not specifically prohibited by this chapter, provided such alternative design, material or method conforms with the intent of this division and has been approved by the Town Staff.

The Town Staff may approve an alternative design provided they find that:

**A.** It complies with the applicable specific requirements of this Ordinance; or

**B.** It has been designed or approved by a registered professional engineer and complies with the purpose and intent of this Ordinance.

### **30-15-706 Submittals**

All applications for building permits or land use planning review which include installation of outdoor lighting fixtures ~~should~~ shall include lighting plans conforming to the provisions of this Ordinance. The Town Staff has the authority to request additional information in order to achieve the purposes and intent of this Ordinance.

**A.** The submittal ~~should~~ shall contain the following information and be submitted as part of the site plan to the Planning and Building departments for approval.

1. Plans indicating the location, type, intensity, and height of luminaries including both building and ground-mounted fixtures;

2. A description of the luminaries, including lamps, poles or other supports and shielding devices, which may be provided as catalogue illustrations from the manufacturer;

3. Photometric data, such as that furnished by the manufacturer, showing the angle of light emission and the foot-candles on the ground; and

4. Additional information as may be required by the town in order to determine compliance with this Ordinance.

**B.** Applications for single/multi-family residential or other projects where any single outdoor light fixture exceeds (2050 lumens output) ~~should~~ shall be required to comply with paragraph A above.

### **30-15-707 General Standards**

The following general standards should shall apply to all outdoor lighting installed after the effective date of this ordinance, which is not exempted above:

**A. Area Lights:** All area lights, including street lights and parking area lighting, should shall be full cut-off fixtures and are encouraged to be eighty-five (85) degree full cut-off type fixtures. Street lights should shall be high-pressure sodium, low-pressure sodium, or metal halide, unless otherwise determined by the town that another type is more efficient. Street lights along residential streets should shall be limited to a 70-watt high-pressure sodium (hps) light. Street lights along nonresidential streets or at intersections should shall be limited to 100 watts hps, except that lights at major intersections on state highways should shall be limited to 200 watts hps. If the town permits a light type other than high-pressure sodium, then the equivalent output should shall be the limit for the other light type.

**B. Canopy Lights:** All lighting should shall be recessed sufficiently so as to ensure that no light source is visible from or causes glare on public rights-of-way or adjacent property.

**C. Illumination Levels:** Illumination levels and uniformity should shall be in accordance with current recommended practices of the Illuminating Engineering Society. Recommended standards of the illuminating engineering society should shall not be exceeded.

**D. All outdoor lighting systems** should shall be designed and operated so that the area 10 feet beyond the property line of the premises receives no more than .25 (one quarter) of a foot-candle of light from the premises lighting system.

**E. Temporary Lighting:** Temporary lighting that conforms to the requirements of this Ordinance should shall be allowed. Nonconforming temporary exterior lighting may will be permitted by the Town Staff only after considering 1) the public and/or private benefits which will result from the temporary lighting; 2) any annoyance or safety problems that may result from the use of the temporary lighting; and, 3) the duration of the temporary nonconforming lighting. The applicant should shall submit a detailed description of the proposed temporary nonconforming lighting to the Town Staff.

**F. Towers:** All radio, communication, and navigation towers that require lights should shall have dual lighting capabilities. For daytime, the

white strobe light may will be used, and for nighttime, only red lights should shall be used.

### **30-15-708 Non-Permitted Lighting**

**A.** Newly installed fixtures, which are not full-cut-off fixtures.

**B.** Lighting which presents a clear hazard to motorists, cyclists, or pedestrians.

**C.** Laser Source Light. The use of laser source light or any similar high intensity light for outdoor advertising or entertainment is prohibited.

### **30-15-709 Appeals**

If an application is denied, an individual should shall have the right of appeal to the Town Board.

### **30-15-710 Violations**

This section may will be enforced on the basis of a formal complaint filed in writing with the town.

### **30-15-711 Penalties**

~~See the Berthoud Municipal Code for the schedule of fees and penalties.~~

If any person fails to comply with the provisions of this Code they shall be subject to one or more of the following penalties:

1. The revocation of the approval(s) of the land use rights they may have received.

2. The denial of building permits or certificates of occupancy.

3. The reimbursement to the Town for all the expenses incurred by it including its administrative and legal expenses.

4. The payment of up to \$300 for each day of each violation and/or incarceration for up to 90 days for each day of each violation.

### **30-15-712 Severability**

The provisions of this ordinance are severable and if any paragraph, section, subsection, or part of this ordinance is held to be invalid, unenforceable, unconstitutional, or inapplicable to any person or circumstance, such illegality, invalidity, unconstitutionality, or inapplicability should not affect or impair the remainder.



**Table 1 TYPICAL LAMP TYPES, WATTAGES, SHIELD**

Lamp Type	25	30	35	40	50	60	75	100	100 or more
Low Pressure Sodium	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield
High Pressure Sodium	Un-shielded	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Metal Halide	Un-shielded	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Fluorescent	Un-shielded	Un-shielded	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Quartz	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Tungsten Halogen	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Mercury Vapor	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Directed Shield	Directed Shield	Directed Shield	Directed Shield
Incandescent	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded	Un-shielded

1. For the purpose of this section wattage ratings for lamp types will be for either a single lamp source or multiple lamp sources when installed in a cluster.
2. Lamp types not listed in the table may be approved for use by the Town Staff providing installation of these lamps conforms to the lumen limits established in this section.
3. Glass tubes filled with argon, neon or krypton do not require shielding.

**Table 2: TYPICAL LUMEN VALUES FOR VARIOUS LAMP WATTAGE**

Wattage	Low Pressure Sodium	High Pressure Sodium	Metal Halide	Fluorescent	Quartz	Mercury Vapor	Incandescent
9	-	-	-	600	-	-	-
18	1,800	-	-	-	-	-	-
35	4,725	2,250	-	-	-	-	-
40	-	4,000	-	2,250	-	-	480
50	-	-	-	-	1,400	1,140	480
55	7,925	-	-	-	-	-	-
60	-	-	-	-	-	-	870
70	-	5,800	5,500	-	-	-	-
75	-	-	-	-	-	2,800	1,190
90	14,400	-	-	-	-	-	-
100	-	9,500	8,000	-	-	4,300	1,750
110	-	-	-	6,600	-	-	-
150	-	16,000	-	-	-	-	2,2850
175	-	-	14,000	-	-	8,600	-
200	-	22,000	-	-	-	-	4,4010
250	-	27,500	20,500	-	-	12,100	-
300	-	-	-	-	-	-	6,360
400	-	50,000	36,000	-	-	22,500	-
500	-	-	-	-	-	-	10,850

Source: Portland General Electric Energy Resource Center