

# SIGN LIGHTING

## **Is the Mandatory Measures note block on the plans?**

A mandatory measures note block that identifies the Sign Lighting mandatory measures shall be included on the plans. This helps the builder, Plans Examiner, and Inspector identify the minimum mandatory measures that must be met.

The Documentation Author may include the SLTG-1C Form on the plans to identify the Sign Lighting mandatory measures, or use whatever format is most appropriate for specifying the mandatory measures in the plan set. In general, this will take the form of a note block located on the Electrical/Lighting plans or next to the Sign Lighting compliance forms, possibly with cross-references to other locations in the plans where measures are specified.

The Plans Examiner will verify that the Mandatory Measures note block specifying the Sign Lighting mandatory measures is located on the plans along with the Sign Lighting compliance forms or appropriate sections of the Electrical/Lighting plans.

## **Were all applicable forms submitted?**

**SLTG-1C:** All submittals

The City of Pleasanton Building & Safety Division requires that the SLTG-1C be printed on the plans (electronically incorporated on the plans). Having all of the energy forms on the plans simplifies the Plan Review process, and helps the Inspector understand the energy components that must be verified in the field. The Plans Examiner shall verify that all applicable forms have been submitted along with the Electrical/Lighting plans.

## **Does the Energy Compliance Documentation match the plans?**

Section 10-103 of the Administrative Regulations (Title 24, Part 1) mandates that the building characteristics modeled to demonstrate compliance with the Energy Standards shall be specified on the plans. The Plans Examiner will verify that the efficiencies and sign lighting components from the Sign Lighting forms are specified in the appropriate sections of the Electrical/Lighting plans.

## **Mandatory Sign Lighting Controls**

### **1. Automatic Time Switch Controls**

Verification:

All permanently connected signs shall have automatic time switch controls that meet the requirements of §133. Under Mandatory Sign Lighting Controls on Page 1 of the SLTG-1C, the Documentation Author will identify that automatic time switch controls are required by checking the “Yes” box next to the applicable requirement. The Plans Examiner will verify that all applicable automatic time switch control requirements (listed on the next page) identified on the form match the sign controls specified on the Electrical Plans or in the Lighting Schedule of the Electrical/Lighting plans.

### Overview:

All signs, both indoor and outdoor, with permanently connected lighting shall be controlled with an automatic time switch control device or system that:

- Is capable of programming different schedules for weekdays and weekends; and
- Has program backup capabilities that prevent the loss of the device's schedules for at least 7 days, and the device's time and date setting for at least 72 hours if power is interrupted.

## **2. Photocontrol or Astronomical Time Switch Controls**

### Verification:

All permanently connected signs shall have either a photocontrol or outdoor astronomical time switch controls that meet the requirements of §133. Under Mandatory Sign Lighting Controls on Page 1 of the SLTG-1C, the Documentation Author will identify that photocontrol or outdoor astronomical time switch controls are required by checking the "Yes" box next to the applicable requirement. The Plans Examiner will verify that all photocontrol or outdoor astronomical time switch control requirements (listed below) identified on the form match the outdoor sign controls specified on the Electrical Plans or in the Lighting Schedule of the Electrical/Lighting plans.

### Overview:

All outdoor signs shall be controlled with either a photocontrol or outdoor astronomical time switch controls.

### *Outdoor Astronomical Time Switch Controls*

Outdoor astronomical time switch controls used to control outdoor sign lighting shall:

- Contain at least 2 separately programmable steps per function area; and
- Have the ability to independently offset the on and off times for each channel by 0 to 99 minutes before or after sunrise or sunset; and
- Have sunrise and sunset prediction accuracy within +/- 15 minutes and time keeping accuracy within 5 minutes per year; and
- Store astronomical time parameters (used to develop longitude, latitude, time zone) for at least 7 days if power is interrupted; and
- Display time/date, sunrise, and sunset; and
- Have an automatic daylight savings time adjustment; and
- Have automatic time switch capabilities specified in §119(c).

### Exception:

Outdoor signs in tunnels and large covered areas that require illumination during daylight hours are exempt from the photocontrol and outdoor astronomical time switch control requirements.

## **3. Dimming Controls**

### Verification:

All permanently connected signs shall have a dimmer that meets the requirements of §133. Under Mandatory Sign Lighting Controls on Page 1 of the SLTG-1C, the

Documentation Author will identify that a dimmer is required by checking the “Yes” box next to the applicable requirement. The Plans Examiner will verify that all dimming requirements (listed below) identified on the form match the outdoor sign controls specified on the Electrical Plans or in the Lighting Schedule of the Electrical/Lighting plans.

Overview:

All outdoor signs shall be controlled with a dimmer that provides the ability to automatically reduce sign power by a minimum of 65% during nighttime hours.

Exceptions:

There are three exceptions to the dimming control requirements for signs:

1. Signs that are illuminated for less than 1 hour per day during daylight hours
2. Outdoor signs in tunnels and large covered areas that require illumination during daylight hours.
3. Metal halide, high pressure sodium, cold cathode, and neon lamps used to illuminate signs or parts of signs.

#### **4. Demand Responsive Electronic Message Center Control**

Verification:

Electronic Message Centers (EMC) having a connected lighting power load greater than 15 kW shall have demand response controls that meet the requirements of §133. Under Mandatory Sign Lighting Controls on Page 1 of the SLTG-1C, the Documentation Author will identify the demand response control requirements for an Electronic Message Center by checking the “Yes” box next to the applicable requirement. The Plans Examiner will verify that all demand response controls requirements for an Electronic Message Center (listed below) identified on the form match the outdoor sign controls specified on the Electrical Plans or in the Lighting Schedule of the Electrical/Lighting plans.

Overview:

An Electronic Message Center (EMC) having a new connected lighting power load greater than 15 kW shall have a control installed that is capable of reducing the lighting power by a minimum of 30% when receiving a demand response signal that is sent out by the local utility.

Exception:

EMCs required by a health or life safety statute, ordinance, or regulation, including but not limited to exit signs and traffic signs are exempt from the Electronic Message Center requirements.

#### **LPDs (watts per square foot) OR meets Alternative Lighting Sources Requirements**

Verification:

The design watts or alternative lighting sources for signs are specified on Page 2 of the SLTG-1C. On the SLTG-1C, the Documentation Author will identify the type of sign and

design wattage or alternative lighting source for each sign. The Plans Examiner will verify that either the design wattages or alternative lighting sources identified on the form match the wattages or lighting sources specified on the Electrical Plans or in the Lighting Schedule of the Electrical/Lighting plans.

#### Overview:

##### *Allowed Watts*

For internally illuminated signs, the maximum allowed lighting power (watts per square foot) shall not exceed the product of the illuminated sign area and 12 watts per square foot. For double-faced signs, only the area of a single face shall be used to determine the allowed lighting power.

For externally illuminated signs, the maximum allowed lighting power shall not exceed the product of the illuminated sign area and 2.3 watts per square foot. Only areas of an externally lighted sign that are illuminated without obstruction or interference, by one or more luminaires, shall be used to determine the illuminated sign area.

##### *Design Watts*

The design watts shall be the total connected lighting load of the sign, including power used by lamps, ballasts, transformers, power supplies, etc. On Page 2 of the SLTG-1C, the design watts (Row G) shall be equal to or less than the allowed watts (Row F) for compliance.

##### *Light Source*

The sign does not have to meet the allowed lighting power (watts per square foot) requirements if the sign is equipped with one or more of the following light sources:

1. High pressure sodium lamps; or
2. Pulse start or ceramic metal halide lamps served by a ballast that has a minimum efficiency of 88% or greater:
3. Pulse start metal halide lamps that are 320 watts or smaller, are not 250 watt or 175 watt lamps, and are served by a ballast that has a minimum efficiency of 80%. *NOTE:* For pulse start ceramic metal lamps, the Standards define the ballast efficiency as the measured output wattage to the lamp divided by the measured operating input wattage when tested according to ANSI C82.6-2005.
4. Neon or cold cathode lamps with transformer or power supply efficiency greater than or equal to following:
  - A minimum efficiency of 75% when the transformer or power supply rated output current is less than 50mA; or
  - A minimum efficiency of 68% when the transformer or power supply rated output current is 50mA or greater.

*NOTE:* For neon and cold cathode lamps, the Standards define the power supply efficiency as the ratio of the output wattage to the input wattage is at 100% tubing load.

5. Fluorescent lamps with a minimum color rendering index (CRI) of 80.
6. Light emitting diodes (LEDs) with a power supply having an efficiency of 80% or greater.

There is one exception to this requirement [Exception to §148(b)5]:

Single voltage external power supplies that are designed to convert 120 volt AC input into lower voltage DC or AC output, and have a nameplate output power less than or equal to 250 watts, shall comply with the applicable requirements of the Appliance Efficiency Regulations (Title 20).

7. Compact fluorescent lamps that do not contain a medium screw base sockets (E24/E26).
8. Electronic ballasts with a fundamental output frequency not less than 20 kHz;

Exceptions:

There are three exceptions to the above maximum allowed lighting power and alternative lighting source requirements for signs:

1. Unfiltered incandescent lamps that are not part of an Electronic Message Center (EMC), an internally illuminated sign, or an externally illuminated sign.
2. Exit signs. Exit signs shall meet the requirements of the Appliance Efficiency Regulations (Title 20).
3. Traffic Signs. Traffic signs shall meet the requirements of the Appliance Efficiency Regulations (Title 20).



# Certificate of Compliance (Sign Lighting)

Project Name:	Phase of Construction Function Type	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Outdoor Signs <input type="checkbox"/> Indoor Signs
Project Address:	Date:	Compliance Method Used <input type="checkbox"/> Maximum Allowed Lighting Power <input type="checkbox"/> Alternate Lighting Sources

## Documentation Author's Declaration Statement

- I certify that this Certificate of Compliance documentation is accurate and complete.

Name	Signature	
Company	Date	
Address	If applicable: CEA # CEPE #	
City/State/Zip	Phone:	

## Principal Lighting Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name:	Signature	
Company:	Phone	
Address:	License #	
City/State/Zip:	Date	

## Sign Mandatory Measures

Indicate location on building plans of Mandatory Sign Measures Note Block: \_\_\_\_\_

Mandatory Sign Lighting Controls		Yes	No
1	§133(a)1. All signs with permanently connected lighting are controlled with an automatic time switch control that complies with the applicable requirements of §119.	<input type="checkbox"/>	<input type="checkbox"/>
2	§133(a)2. All outdoor signs are controlled with a photo control or outdoor astronomical time switch control.	<input type="checkbox"/>	<input type="checkbox"/>
	Exception to §133(a)2. Outdoor signs are in tunnels or large covered areas that require illumination during daylight hours.	<input type="checkbox"/>	<input type="checkbox"/>
3	§133(a)3. All outdoor signs are controlled with a dimmer that provides the ability to automatically reduce sign power by a minimum of 65 percent during nighttime hours.	<input type="checkbox"/>	<input type="checkbox"/>
	Exception 1 to §133(a)3. Signs are illuminated for less than one hour per day during daylight hours.	<input type="checkbox"/>	<input type="checkbox"/>
	Exception 2 to §133(a)3. Outdoor signs are in tunnels or large covered areas that require illumination during daylight hours.	<input type="checkbox"/>	<input type="checkbox"/>
	Exception 3 to §133(a)3. Only metal halide, high pressure sodium, cold cathode, or neon lamps are used to illuminated signs or parts of signs.	<input type="checkbox"/>	<input type="checkbox"/>
4	§133(a)4. An Electronic Message Center (EMC) having a new connected lighting power load greater than 15 kW has a control installed is capable of reducing the lighting power by a minimum of 30 percent when receiving a demand response signal that is sent out by the local utility.	Y <input type="checkbox"/>	N <input type="checkbox"/>
	Exception to §133(a)4. The EMC is required by a health or life safety statute, ordinance, or regulation, including but not limited to exit signs and traffic signs.	Y <input type="checkbox"/>	N <input type="checkbox"/>

**Certificate of Compliance and Field Inspection Energy Checklist (Sign Lighting)**

Project Name:	Date:
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A		B		Compliance Method							I		J		K			
				Maximum Allowed Lighting Power														
				C	D	E	F	G	H	I							J	K
Sign symbol or code	Description or location and plan location	Allowed Watts				Design Watts <sup>1</sup>	Complies? Y/N	Light Source	Special Features	Pass	Fail	Field Inspector <sup>2</sup>						
		Sign Area (ft <sup>2</sup> )	Internally (I) or Externally (E) Illuminated	Allowed LPD (I = 12 W/ft2) (E = 2.3 W/ft2)	Allowed Watts = C x E	Total Installed watts for sign	Complies If G ≤ F	From List Below				Inspector	Inspector					
Total Sign Area:																		

1. Design Watts = total connected lighting load installed in the sign, including power used by lamps, ballasts, transformers, power supplies, etc.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary. Use additional sheets if necessary.

**The sign(s) identified above; use only one or more of the following technologies: (list all applicable numbers that apply in column I above)**

- |    |   |
|----|---|
| 1  | High pressure sodium lamps  |
| 2  | Pulse start or ceramic metal halide lamps served by a ballast with ≥ 88% efficiency   |
| 3  | Pulse start metal halide lamps that are ≤ 320 watts, are not 250 watt or 175 watt lamps, and are served by a ballast with ≥ 80% efficiency  |
| 4  | Neon or cold cathode lamps with transformer or power supply efficiency ≥ 75% with rated output current < 50 mA  |
| 5  | Neon or cold cathode lamps with transformer or power supply efficiency ≥ 68% with rated output current ≥ 50 mA  |
| 6  | Fluorescent lamps with a minimum color rendering index (CRI) of 80  |
| 7  | Light emitting diodes (LEDs) with a power supply with ≥ 80% efficiency  |
| 8  | Single voltage LED external power supplies designed to convert 120 volt AC input into lower voltage DC or AC output, having a nameplate output power less than or equal to 250 watts, and certified to the Energy Commission as complying with the applicable requirements of the Appliance Efficiency Regulations (Title 20) |
| 9  | Compact fluorescent lamps that do not contain a medium screw base sockets (E24/E26)   |
| 10 | Electronic ballasts with a fundamental output frequency ≥ 20 kHz  |

**Field Inspector Notes or Discrepancies**

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<b>INSTALLATION CERTIFICATE</b>	(Part 1 of 2)	<b>SLTG-INST</b>
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PROJECT NAME:	DATE:	_____ Building Permit  _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

<b>GENERAL INFORMATION</b>
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DATE OF BUILDING PERMIT	PERMIT #
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BUILDING TYPE	<input type="checkbox"/> Outdoor Sign	<input type="checkbox"/> Indoor Sign
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PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration
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*If more than one person has responsibility for building construction, each person shall prepare and sign an Installation Certificate document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Installation Certificate document(s) for the entire construction.*

**DECLARATION STATEMENT**

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
- I reviewed a copy of the Certificate of Compliance approved by the enforcement agency that identifies the specific requirements for the installation. I certify that the requirements detailed on the Certificate of Compliance that apply to the installation have been met.
- I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy.

Company Name:		
Responsible Person's Name:	Responsible Person's Signature:	
Lic.#	Date Signed:	Position With Company:

<b>SCOPE OF RESPONSIBILITY</b>
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<i>Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:</i>	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.

Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

