

Frequently Asked Questions

Q I have 82 exterior lights: 78 are 13-watt compact fluorescent fixtures and four are 500-watt incandescents. Does this number exceed the 5 percent exemption for incandescents?

A No. The exemption allows 5 percent of the fixtures to be incandescents over 10 watts. Up to four of your 82 fixtures can be incandescents over 10 watts.

Q I'm installing 50 feet of track lighting with four 150-watt lamps. Do I include just 600 watts in my lighting power budget?

A No. Track lighting is calculated at 50 watts per linear foot of track. Power usage for 50 feet of track lighting is 2,500 watts whether four or 40 lamps are installed.

Q Do I get a control credit for cleaning my fixtures on a regular basis?

A No. The "Lumen Maintenance" control credit specified on Worksheet 5c does not apply to cleaning fixtures on a regular basis. It's a credit for a special control that increases lighting levels as fixtures get dirty. Increased lighting levels compensate for reduced output from dirty fixtures. This type of control is expensive and rarely used.

Find Out More

This brochure is not intended to replace the code. Additional information is available at your local library, technical bookstore or from the following organizations:

Copies of code:

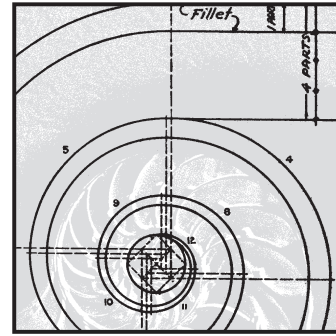
Oregon Building Officials Association
phone: (503) 873-1157 • fax: (503) 373-9389

Technical support:

Oregon Office of Energy
625 Marion St. NE, Salem, OR 97301
phone: (503) 378-4040 • toll-free: 1-800-221-8035
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Oregon Non-Residential Energy Code

LIGHTING SYSTEMS



Introduction

This brochure will help you become familiar with **lighting system requirements** for non-residential buildings and may help you speed up the permit process.

Oregon law requires that all applicants for non-residential buildings complete the forms provided in the Code Compliance Forms Manual. It's available at your local building department and on the Oregon Office of Energy Web site (www.cbs.state.or.us/external/ooe/cons/ecode1.htm). The manual provides all the information you need to design your building to meet energy code and to demonstrate compliance with code requirements.

What Is the Energy Code?

The Non-Residential Energy Code is part of Chapter 13 of the Oregon Structural Specialty Code. It applies to all construction, additions and alterations, **except the following**: one- and two-family dwellings, hotels, motels, apartment houses and boarding houses three stories or less.

The Oregon Non-Residential Energy Code was last revised in 1996. Code requirements are simple, easy to enforce and allow flexibility in design.

The code requires all new buildings, including speculative buildings, to meet a minimum level of energy efficiency. It helps ensure that future occupants don't get stuck paying high energy bills because the building wasn't designed to be energy-efficient.

The cost of conservation measures required by code generally pays for itself quickly through energy savings.

Know the Code

Oregon's energy code consists of three primary areas:

- Envelope Requirements
- Mechanical System Requirements
- Lighting Requirements

You will need to demonstrate compliance or a permitted exception with these requirements to obtain a building permit. The Code Compliance Manual describes requirements for each of these areas in detail and includes forms to guide you.

Construction

If an examiner rejects a set of plans or forms, make sure you understand why so you can make required corrections. Clear communication between the owner, the builder, the subcontractors and the building department is essential to meeting specifications of *approved plans* during construction.

Keep in mind that a plans examiner cannot tell you how to build your building, only how it fails to meet the code. Don't expect the plans examiner to act as a design consultant.

If inspectors find details that do not meet code, they may require compliance with the code before they issue a certificate of occupancy.

To avoid unnecessary expense and stress, **do not make any changes in the field to the approved plans without prior approval from the building department.**

Lighting Requirements

You can meet lighting requirements using one of two prescriptive methods:

The **Occupancy Method** is used to demonstrate compliance for new construction. First, you calculate a Lighting Power Budget, determined by the type and area of spaces in your building. Then you compare the Lighting Power Budget to the Total Adjusted Lighting Power of your system design. If it is less than your Lighting Power Budget, your design meets code.

The **Space-by-Space Method** is used only for additions or alterations, and only for a number of common room types. This method requires each room to meet lighting power limits in code. Unlike the Occupancy Method, you cannot trade-off lighting power budget between rooms. Form 5c provides two ways to document compliance with the Space-by-Space Method.

Keep the following in mind when designing your lighting system:

- T-8 fluorescent lights with electronic ballasts provide 20 to 30 percent more light than conventional fluorescent lights with the same power requirements.
- Incandescent lights can be used in interior spaces, but they consume three to four times as much power as fluorescent lights with the same lumen output. Code restricts incandescent lights on the building exterior to 1 in 20 fixtures.
- Code assigns 50 watts per linear foot of track lighting, regardless of how many or how few lights are actually installed.

Forms and Worksheets

Forms are a guide for you and a review tool for building jurisdictions. Code requirements are clearly displayed on code forms. The instructions included with the forms cover exceptions and other important information.

Worksheets give the plans examiner additional information about each lighting component in your building.

Getting a Permit

1 Make sure your building design complies with the energy code. Reading the Code Compliance Forms Manual is the easiest way to learn code requirements. Code compliance forms specify lighting requirements for each room type. Take time to understand the basic requirements of the code before you finalize the design.

2 Make sure your plans show compliance with the energy code. Your plans should indicate what lighting equipment and controls are going to be used, and where they will be used. Include with the building specifications copies of manufacturer “cut sheets” which display energy performance numbers for the equipment you have chosen.

3 Make sure you submit complete and accurate code compliance forms and worksheets.

You must submit Form 5a to show compliance with the energy code. You also must complete worksheets for all of the lighting equipment your building will use. Use Worksheet 5a to list each of the fixture types. Use Worksheet 5b to describe lighting in each of the rooms and to calculate total lighting load. Use Worksheet 5c to list and get credit for each of the control strategies you use.



You'll get through the permit process faster if your plans and specifications clearly show component performance.

Form 5a
LIGHTING – GENERAL

1. Interior Exceptions (Section 1316.1)
 No Interior Lighting. The building plans do not call for new or altered interior lighting items. 4. Exterior Building Lighting – General, below.

Exceptions
 Except require building
 Local area and the bulk
 Except except
 Not an
 Compil the light drawing
 Except
 Compil controls drawing
 Except
 Compil building
 Except
 Does del

Form 5b
INTERIOR LIGHTING POWER –

2. Retail or Merchandise Lighting Power (Group M)

Group	(a) Area	(b) Floor Area (ft ²)
M	If area is less than 2,000 ft ² enter area in (c), this row	

Worksheet 5b
INTERIOR LIGHTING

Room or Sheet No.	(a) Room or Plans Designation	(c) Luminaire ID	(d) Quantity of Luminaires ¹	(e) Luminaire Power (d) x (e)	(f) Lighting Power (d) x (e)
	Dining Room	A	9	62	558
	"	B	3	23	69
	Kitchen	A	5	62	310
	"	B	16	23	368
	"	C	1	32	32
	Bath	B	2	23	46
	"	C	2	32	64
	Storage	A	1	62	62
	Cooler	C	1	32	32
1. Total Inte					
2. Sum the					
3. Total line					
4. Multiply li					
5. Total Inte					
6. Total Cor					
7. Total Adj					
8. Does del					
1. Page Total. Total the amounts in column (f).					1,541

MEX-2-GO Restaurant Lighting System

LIGHTING SCHEDULE

A	2 Lamp 4ft Parabolic Troffer, T-8 Lamp, Electronic Ballast (62 watts each)
B	2 Lamp 13W Compact Fluorescent Lamp Downlight (28 watts each)
C	1 Lamp 3ft Surface Mount, T-8 Lamp, Electronic Ballast (25 watts each)
D	Occupancy Sensor Light Control

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Forms & Worksheets

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