



# Director's Rule 2-2003

<b>Applicant:</b>  City of Seattle Department of Design, Construction and Land Use	<b>Page</b>  1 of 5	<b>Supersedes:</b>  N/A
	<b>Publication:</b>  2/13/03	<b>Effective:</b>  3/12/03
<b>Subject:</b>  Automatic Switching for Lighting in Daylight Zones	<b>Code and Section Reference:</b>  Seattle Energy Code, Sections 1513.3, 1132.3	
	<b>Type of Rule:</b>  Code Interpretation	
	<b>Ordinance Authority:</b>  SMC 3.06.040	
<b>Index:</b>  Energy Code - Technical Requirements	<b>Approved</b>	<b>Date</b>
	(signature on file) Diane M. Sugimura, Acting Director, DCLU	3/8/03

## Background:

Chapter 15 of the Energy Code (Washington State Energy Code with Seattle amendments) requires that automatic controls be provided for lighting in daylight zones. Daylight zones are defined in Chapter 2 and the application to existing lighting systems is specified in Chapter 11. The purpose of this rule is to clarify the intent and specify examples of switching systems that comply with these requirements.

Section 1513.3 states:

**1513.3 Daylight Zone Control:** All daylighted zones, as defined in Chapter 2 (see Exhibits 1513.3a and 1513.3b), both under overhead glazing and adjacent to vertical glazing, shall be provided with controls, which

- a. control the lights independent of general area lighting, and
- b. automatically reduce lighting power in response to available daylight by either

- i. a combination of multi-level switching and daylight-sensing automatic controls, which are capable of reducing the light level automatically and turning the lights off (where single lamp luminaires are installed, automatically switching 50% of the luminaires off is an acceptable means of reducing the light level), or
- ii. a combination of dimming ballasts and daylight-sensing automatic controls, which are capable of dimming the lights continuously.

Contiguous daylight zones adjacent to vertical glazing are allowed to be controlled by a single controlling device provided that they do not include zones facing more than two adjacent cardinal orientations (i.e. north, east, south, west). Daylight zones under overhead glazing more than 15 feet from the perimeter shall be controlled separately from daylight zones adjacent to vertical glazing.

**EXCEPTIONS:** 1. Daylight spaces enclosed by walls or ceiling height partitions and containing 2 or fewer light fixtures are not required to have a separate switch for general area lighting.

2. HID lamps with automatic controls that are capable of reducing the light level by at least 50% in lieu of continuous dimming controls in Section 1513.3b.

3. HID lamps 150 watts or less are exempt from the dimming requirements in Section 1513.3b.

Section 1132.3 states in part:

### **1132.3 Lighting and Motors:**

...

(Paragraph 4) Where new wiring is being installed to serve added fixtures and/or fixtures are being relocated to a new circuit, controls shall comply with Sections 1513.1 through 1513.5. In addition, office areas less than 300 ft<sup>2</sup> enclosed by walls or ceiling-height partitions, and all meeting and conference rooms, and all school classrooms, shall be equipped with occupancy sensors that comply with Section 1513.6. Where a new lighting panel (or a moved lighting panel) with all new raceway and conductor wiring from the panel to the fixtures is being installed, controls shall also comply with the other requirements in Section 1513.6.

(Paragraph 5) Where new walls or ceiling height partitions are added to an existing space and create a new enclosed space, but the lighting fixtures are not being changed, other than being relocated, the new enclosed space shall have controls that comply with Sections 1513.1 through 1513.2 and 1513.4 through 1513.6.

...

Section 201.1 states in part:

...

### **DAYLIGHTED ZONE:**

a. **Under overhead glazing:** the area under overhead glazing whose horizontal dimension, in each direction, is equal to the overhead glazing dimension in that direction plus either the floor to ceiling height or the dimension to a ceiling height opaque partition, or one-half the distance to adjacent overhead or vertical glazing, whichever is least.

b. **At vertical glazing:** the area adjacent to vertical glazing which receives daylighting from the glazing. For purposes of this definition and unless more detailed daylighting analysis is provided, the daylighting zone depth is assumed to extend into the space a distance of 15 feet or to the nearest ceiling height opaque partition, whichever is less. The daylighting zone width is assumed to be the width of the window plus either two feet on each side (the distance to an opaque partition) or one-half the distance to adjacent overhead or vertical glazing, whichever is least.

...

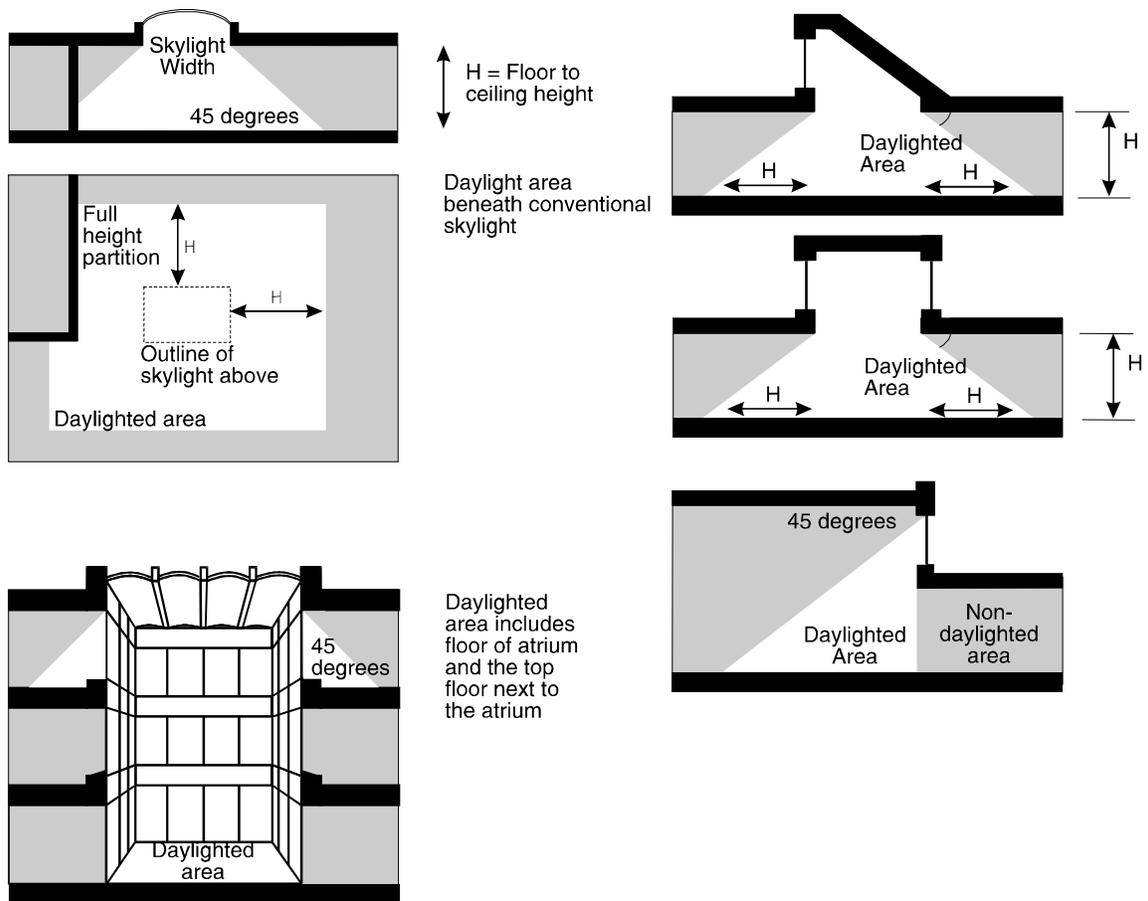


Exhibit 1513.3a



B. For Section 1513.3.b (automatic daylighting control):

Any switching devices installed to override the automatic daylighting control shall comply with the criteria in Section 1513.6.2a-e.

C. For Section 1513.3.b.i (stepped-dimming option for automatic daylighting control):

- (1) Single-lamp luminaire systems shall have three levels of automatic control: all lamps on, approximately half of the luminaires turned off in a relatively uniform pattern, and all of the luminaires off. As an alternate, where the daylight zone contains two rows of luminaires and they are parallel to a window, three levels of automatic control may also be achieved by having both rows on, the row closest to the window off and the other row on, and both rows off. For rooms, such as small offices, which contain only a single one-lamp luminaire, the daylighting control system may automatically switch off the entire luminaire.
- (2) Two-lamp luminaires shall have three levels of automatic control: both lamps on, one lamp on and one lamp off, and both lamps off. As an alternate, where the daylight zone contains two rows of luminaires and they are parallel to a window, three levels of automatic control may also be achieved by having both rows on, the row closest to the window off and the other row on, and both rows off. For rooms, such as small offices, which contain only a single two-lamp luminaire, the daylighting control system may automatically switch off the entire luminaire rather than switching off one lamp, then both lamps.
- (3) Three-lamp luminaires shall have four levels of automatic control: all three lamps on, two lamps on and one lamp off, one lamp on and two lamps off, and all three lamps off.
- (4) For other multi-lamp luminaires with four or more lamps (in cross section), the number of required incremental steps shall be equal to one plus the number of lamps in the luminaire.

D. For Section 1132.3 (existing lighting systems), paragraph 4 (“Where new wiring is being installed to serve added fixtures and/or fixtures are being relocated to a new circuit, controls shall comply with Sections 1513.1 through 1513.5...”), for compliance with the automatic control requirements for daylight zones in Section 1513.3.b.i:

For existing luminaires where the existing ballasts are not being changed, the number of required incremental steps of automatic daylighting control shall be equal to one plus the number of ballasts in the luminaire.