

- 2.2. Monitoring ambient light, both electric light and daylight, and brighten or dim artificial light to maintain desired light level.
- 2.3. For each control strategy, configuration and reconfiguration of performance parameters including; bright and dim setpoints, timeouts, dimming fade rates, sensor sensitivity adjustments, and wireless zoning configurations.
- 2.4. Reducing lighting power in a uniform manner by no less than 10 percent when signaled by a demand responsive control.

Supporting Information (Required):

All proposals must include a written explanation and justification as to how they address physical, environmental, and/or customary characteristics that are specific to the City and County of Denver. The following questions must be answered for a proposal to be considered.

Purpose: What does your proposal achieve?

This proposal would require that all interior luminaire level lighting controls (LLC) in commercial buildings be demand responsive controls capable of adjusting power consumption by no less than 10%.

Reason: Why is your proposal necessary?

Grid flexibility or demand responsiveness is one of the four foundations of “Denver’s Net Zero Energy (NZE) New Buildings & Homes Implementation Plan.” Grid flexibility is an essential element of decarbonizing the electrical grid. Carbon free energy sources like solar and wind have varying production over the course of the day and the year. Demand responsive controls that can respond to demand response signals enable buildings to shape their loads to better align with available energy production. This could come in the form of curtailing energy use when demand is high or utilizing excess production for building tasks like pre-conditioning spaces or service hot water when demand is lower.

Substantiation: Why is your proposal valid? (i.e. technical justification)

This proposal requires that (LLC) in commercial buildings have demand control functionality capable of reducing lighting power in responses to a demand control signal. The requirement applies only to buildings that choose to install LLC. These controls often either have demand responsive functionality by default or at a modest incremental cost. The requirement does not apply to other lighting controls for which demand responsiveness could present a significant technological upgrade with significant additional costs.

For buildings that utilize LLC, demand control functionality will also present a cost-saving opportunity for buildings in the future. LLC are generally only installed in larger buildings with correspondingly large lighting loads. These larger buildings/loads are an appropriate application of demand responsive lighting controls. XCEL currently offers an optional demand response program. More and more utilities are moving beyond voluntary programs and are expanding use of time-of-use rates for electricity as a tool for shaping demand. Installing demand-responsive lighting controls now will allow building tenants and owners to better control their utility costs.

Since this requirement is part of the construction code, it will not require buildings to participate in any demand response programs. But it will ensure that buildings are capable of participating, so that Denver buildings will be able to help integrate building loads with available production.

The proposal utilizes terminology for demand response that is currently in the CA energy code – which has been driving the market for these controls – and will soon be adopted in the WA state energy code. These terms are also utilized in related demand responsive control proposals for other loads.

Bibliography and Access to Materials (as needed when substantiating material is associated with the amendment proposal):

None

Other Regulations Proposed to be Affected

***For proposals to delete content from the 2019 Denver Green Code in conjunction with adding it to other mandatory Denver codes and/or regulations, only.**

Please identify which other mandatory codes or regulations are suggested to be updated (if any) to accept relocated content.

None

Referenced Standards:

List any new referenced standards that are proposed to be referenced in the code.

None

Impact:

How will this proposal impact cost and restrictiveness of code? ("X" answer for each item below)

The proposal should have no or negligible cost impact. The requirement applies only to buildings that choose to install LLLC. These controls often either have demand responsive functionality by default or at a modest incremental cost. The requirement does not apply to other lighting controls for which demand responsiveness could present a significant technological upgrade with significant additional costs.

Cost of construction: Increase ___ Decrease ___ No Impact
Cost of design: Increase ___ Decrease ___ No Impact
Restrictiveness: Increase ___ Decrease ___ No Impact

Departmental Impact (City use only):

This amendment proposal increases/decreases/is neutral to the cost of plans review.
This amendment increases/decreases/is neutral to the cost of inspections.