CALIFORNIA BUILDING STANDARDS COMMISSION

August 20, 2019
GREEN BUILDING
WORKSHOP
Agenda Item 6

DRAFT EXPRESS TERMS
CALIFORNIA GREEN BUILDING STANDARDS CODE, (CALGreen), PART 11, CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS

- **Proposed code language for the 2019 Intervening Code Adoption Cycle**

LEGEND FOR EXPRESS TERMS

1. New California amendments: All such language appears <u>underlined</u>.
2. Repealed text: All such language appears in ~~strikeout~~.

A5.107 Bird-friendly building design (Voluntary Measures)

- **Statement of specific purpose, problem, rationale and benefits:**

  The California Building Standards Commission's (CBSC) is proposing to add Section A5.107 Bird-friendly building design, and adopt the following amendments that address “bird-friendly” standards for planning and design of buildings that specifically reduce the negative impact of bird deaths caused by collisions with buildings. CBSC is proposing concepts and alternative materials to vision glazing and other building features for designers and developers to use when designing buildings to reduce bird collision. By identifying and incorporating “bird friendly” strategies for designers and developers, the number of birds killed by collision with buildings will likely be reduce.

  History:

  At the conclusion of the 2007 legislative session, then-Governor Schwarzenegger vetoed three assembly bills of enrolled green building laws, writing "building standards should not be statutory" and recognizing the (CBSC) public process for the adoption of building regulations. He instructed CBSC to work with authoritative state agencies to develop and adopt green building standards for the 2010 building code cycle.

  Subsequent amendments to the Health and Safety Code established CBSC's authority for green building standards absent the authority of other state agencies, but also requiring it [CBSC] coordinate with other agencies' experts in standards' development. The administrative regulations also called for cost analysis and a recommendation for voluntary or mandatory status; and if voluntary, whether the standards should become mandatory over the next several years.

The subject petition for voluntary bird-friendly building design standards relies on this authority and is proposed for non-residential buildings across California that can be adopted by local governments. While it is not intended to become mandatory within 3 years, future mandate is not precluded if the role of buildings in birds' decline becomes more critical.

The problem and rationale

The problem the petition sets out to address is the sheer number of bird deaths, numbering in the hundreds of millions, caused by collisions with buildings across the nation. Populations at risk are generally small perching birds, or passerines, that utilize various migratory routes from summer breeding grounds to winter feeding areas, and some residents. Also at risk are shorebirds and raptors. All of these birds perform environmental services for humans in controlling insect and rodent populations and in pollinating plants and spreading seed; and they give many human observers great pleasure to the tune of a $40 billion bird-watching industry.

What creates the greatest threat to these birds is building glass, which birds and humans alike find invisible. However, birds' poor depth- and contrast perception as well as the speed at which they approach building glass puts them at high risk for collision. Most building collisions occur in morning hours, but building lighting can create reflections and disrupt birds' orientations, causing some collisions to occur at night.

Material alternatives to vision glass for the treatment of building areas posing the greatest risk for collision do not need to be prohibitively expensive and can be cost-neutral. Portland, OR, in its bird friendly guidelines, notes that vision glass is the least energy efficient of façade materials, attributing an operating cost to it that is higher than that of patterned glass. A House of Representatives proposal for bird safe design for federal building (H.R. 919) was opined by a Congressional Budget Office to generate no premium in cost. Portland cites cost studies of a local library and a health center, comparing vision glass to fritted or UV-patterned glass and found increases of .05% and .03%, respectively, in the overall building costs. Independently, this author evaluated building materials for cost, finding that opaque materials like concrete or plaster are about half the cost of glass. Some designers of bird-friendly buildings note that costs are not significant if the features are incorporated early in design; retrofitting elements to shield glass will add cost, but economical options can be found.

Any cost impacts of bird-friendly design are further tempered by findings that lower floors typically are those that pose the most threat to at-risk birds, and incorporating specialty features is not necessary over an entire tall building.[13]

Statewide significance

Beginning in 2010, local jurisdictions in Toronto and San Francisco proposed ordinances to address this problem. Since then, many other California jurisdictions have done so, including San Jose and Oakland, and there is a good deal of variety in the policies. The United States Green Building Council (USGBC) initiated a pilot credit in its Leadership in Energy and Environmental

Design (LEED) green building rating system, which ABC has incorporated into a model ordinance.

Many of the birds addressed by California's various policies utilize the Pacific Flyway to travel from summer breeding grounds to winter feeding areas, flying from as far away as Siberia to South America and back, almost a billion birds of over 350 species. Many of these are waterfowl, managed for hunting and conservation; these ducks, geese and swans face habitat loss and other threats but are not typically at risk by building collisions. It is the smaller species that fly at lower altitudes that are in most danger, and they occur throughout California in migration, with some stopping to breed or winter here, within our communities.

With many species already in decline due to building sprawl and loss of habitat, the direct kills of often-healthy birds from collisions with building glass exacerbates their fragile existence. To paraphrase the Portland guidelines, consistent bird-friendly building design policy is necessary for "comprehensive urban sustainability strategy" to which a green building code is a major contributor.

A5.107 Bird-friendly building design. Building design elements and features considered "bird-friendly" shall comply with Sections A5.107.1 through A5.107.3.

A5.107.1 Glazing. No more than 10% of building facades to a height of 40 feet (12 m) or to that of the average height of local tree canopy, whichever is higher; and no more than 40% of facades above that shall be see-through glazing, reflective glazing or acrylic glass unless:

A. It is glazing that meets the energy requirements of the current California Energy Code and can include, but is not limited to, the following:

1. Etched or fritted glass with patterns of elements on the exterior having minimum dimensions of 3/8" diameter for dots or 1/8" width for stripes in a density of 2 inches (5.1 cm) maximum horizontally or 4 inches (10.2 cm) maximum vertically (the 2x4 rule).

Note: If the frit is on the interior of the glass, it can be effective if visible on a non-reflective exterior surface.

2. Interior or exterior glazing films with a pattern visible from the outside conforming to the 2x4 rule;

3. Laminated glass with 2x4 patterns, patterned UV coating or use of contrasting patterned UV-absorbing and UV reflective films; or

4. Glass block or channel glass; or

B. It is protected by exterior features that may include, but not be limited to:

1. Grilles or screens with openings no more than 2 inches (5.1 cm) maximum horizontally or 4 inches (10 cm) maximum vertically (the 2x4 rule) installed on the exterior side of glass.

2. Netting with 2x2 maximum openings.

3. Sunshades or louvers with 3 dimensional elements spaced a maximum vertical or horizontal 9"; or

4. Interior blinds with 2x4 patterns visible from the exterior during the day and shielding interior lighting at night, included as part of the construction contract.

A5.107.2 Special conditions. Vegetated roofs, site structures, comers and passageways, and facades of atria and courtyards shall comply with the following:

1. Railings and facades adjacent to vegetated roofs shall meet the standards in A5.107.1 (A) or (B) treated to a height of 1 unit per 4 units of perpendicular length of green roof.

2. Auxiliary buildings such as pavilions or gazebos and facades of atria or courtyards with water features or plants shall meet the standards of A5.107.1 (A) or (B); and

3. There shall be no see-through passageways and comers exposed to sky or habitat on the other side.

A5.107.3 Nighttime conditions. Nighttime building lighting at the top of the building, interiors of all floors, lobby and atria shall be controlled as follows:

A. Lighting is extinguished between March 15 and May 31 and between August 15 and October 31 from midnight to dawn.

B. Time-switch control devices or occupancy sensors are installed complying with the current *California Energy Code*, that can be programmed to turn off lights during those time frames.

Exception: Emergency lighting and lighting required for nighttime security.

A5.107.3.1 Systems or operation and maintenance manual. Include written recommendations that lighting is extinguished pursuant to Section A5.107.3 and janitorial services to the building are scheduled between sunrise and sunset.