Date of Hearing: January 10, 2022

ASSEMBLY COMMITTEE ON NATURAL RESOURCES
Luz Rivas, Chair
AB 1227 (Levine) – As Amended January 3, 2022

SUBJECT: Building energy efficiency standards: solar reflectance of roofs.

SUMMARY: Requires the California Energy Commission (CEC) to consider amendments to the California Building Standards Code roof replacement building standards for alterations to existing low-rise residential buildings to increase the value of minimum aged solar reflectance (SR) for roofs from 0.20 to 0.40 statewide and expand the range of climate zones where the minimum aged SR values are prescribed for roof replacements. Requires the CEC to determine that there is an adequate supply of compliant product for the amended standards and that proposed changes will be cost effective of the life-cycle of the roof replacement.

EXISTING LAW:

1) Establishes the Building Standards Commission (BSC) within the Department of General Services under the Government Operations Agency, to administer the processes related to the adoption, approval, publication and implementation of the California Building Standards Code, California Code of Regulations (CCR) Title 24. These building codes serve as the basis for the design and construction of buildings in California.

2) Allows specified state agencies, including the CEC, to propose changes to building standards or regulations related to the implementation or enforcement of building standards. Requires the agencies to submit building standards to the BSC for adoption and approval prior to codification.

3) Requires the CEC to carry out studies, technical assessments, research projects, and data collection directed to reducing wasteful, inefficient, unnecessary, or uneconomic uses of energy, including, but not limited to, improved building design and insulation.

4) Requires the CEC, in order to reduce wasteful, uneconomic, inefficient, or unnecessary consumption of energy and water in buildings, after one or more public hearings, to perform specified actions, including, but not limited to:

    a) Prescribe, by regulation, lighting, insulation climate control system, and other building design and construction standards that increase the efficiency in the use of energy and water for new residential and new nonresidential buildings;

    b) Prescribe, by regulation, energy and water conservation design standards for new residential and new nonresidential buildings. The standards shall be performance standards and shall be promulgated in terms of energy consumption per gross square foot of floor space, but may also include devices, systems, and techniques required to conserve energy and water; and,

    c) Periodically update the above-mentioned standards and adopt any revision that, in its judgment, it deems necessary.

5) Requires a building standard adopted by the CEC to be in the form of an "energy budget" in terms of energy consumption per square foot of floor space. Requires a standard to allow both a prescriptive option, allowing builders to comply by using methods known to be efficient, and a performance option, allowing builders to utilize their own designs provided the building achieves the same overall efficiency as an equivalent building using the prescriptive option.

6) Requires a building standard adopted by the CEC to be cost-effective when taken in their entirety and when amortized over the economic life of the structure compared with historic practice. Requires the CEC to determine the life-cycle-cost of complying with a building standard.

THIS BILL:

1) Requires the CEC to consider amendments to the CCR Title 24 roof replacement building standards for alterations to existing low-rise residential buildings, during one or more of the next four triennial code adoption cycles after January 1, 2023, to increase the value of the minimum aged SR to 0.40 and expand the range of climate zones in which the minimum aged SR values are prescribed.

2) Requires the CEC, in determining if the amendments shall be made, to assess whether there is an adequate supply of available compliant product statewide and whether the amendments will be cost effective over the life of the roof replacement.

FISCAL EFFECT: Unknown

COMMENTS:

1) **Author's statement**:

> Solar-reflective cool roofing is now a standard energy conservation method for buildings in warm and hot climates. Furthermore, it also has additional environmental advantages. The cooler roof radiates and convects less heat to the outside air, so the neighborhood is cooler. With widespread use, the urban heat island (city warmer than surroundings) can be reduced. And, some of the reflected solar radiation passes through the atmosphere, helping mitigate climate change.
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> This bill directs the CEC to, by 2033, increase the minimum aged (long-term) SR requirement for steep roofs on residential buildings across California (building climate zones 1 – 16) to 0.40. Current prescription is 0.20 for nonresidential buildings in all climate zones and 0.20 for low-rise residential buildings in zones. The bill provides the commission an "off ramp" if the supply of such shingles wouldn't be adequate or cost effective.

2) **Title 24**. CCR Title 24, also known as California Building Standards Code, is reserved for state regulations that govern the design and construction of buildings and associated facilities and equipment. Title 24 establishes requirements for structural, mechanical, electrical, and plumbing systems and establishes standards for energy conservation, green design, construction and maintenance, fire and life safety, and accessibility. Cities and counties are

required by state law to enforce the standards. Cities, counties, and fire protection districts may adopt more restrictive requirements due to local climatic, geological, or topographical conditions.

Because energy use depends partly on climate conditions, which vary throughout the state, the CEC has established 16 climate zones that are used with both the low-rise residential and the non-residential Title 24 energy standards. The climate zones are based on energy use, temperature, weather, and other factors.

Specified state agencies have the authority to develop and propose building standards to the BSC, which conducts the public comment period and adopts the proposed building standard at the end of its code adoption cycle.

3) **The California Energy Code**. Existing law requires the CEC to develop building standards for energy efficiency and conservation. The California Energy Code is part of Title 24 and is also known as Building Energy Efficiency Standards for Residential and Nonresidential Buildings. The code contains energy conservation standards applicable to most residential and nonresidential buildings throughout California, including schools. The standards are updated by the CEC through the triennial code adoption cycle.

   The standards contain energy and water efficiency requirements for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The standards are designed to reduce wasteful, uneconomic, inefficient, or unnecessary consumption of energy and enhance outdoor and indoor environmental quality. Standards ensure that builders use the most energy efficient and energy conserving technologies and construction practices, while being cost effective for homeowners over the 30-year lifespan of a building.

   The 2022 Energy Code improves upon the 2019 Energy Code for new construction and additions and alterations to residential and nonresidential buildings; it will take effect January 1, 2023.

4) **Cool Roofs**. The term cool roof refers to a roofing product with high SR and thermal emittance (TE) properties. These properties help reduce electricity used for air conditioning by lowering roof temperatures on hot, sunny days. SR refers to a material's ability to reflect the sun's solar energy back into the atmosphere. TE provides a means of quantifying how much of the absorbed heat is rejected for a given material. Both properties are measured from 0 to 1, with higher values indicating cooler roofing. Energy savings from cool roofs can be as high as 20%, depending on materials, climate zone, and electricity rates.

   The Cool Roof Rating Council (CRRC), a non-profit educational organization created in 1998, is the sole entity recognized by the CEC to certify SR and TE values of roofing products. Only reflectance and emittance values listed within the CRRC's Rated Products Directory are used to meet cool roof requirements.

   The 2019 California Energy Code specified requirements of minimum SR values after three years (known as aged SR) for residential buildings, based on their climate zone. A residential project is required to comply with the cool roof standard when the project is in an affected climate zone as determined by the standard, or when greater than 50% of the roof is replaced. Low-sloped roofs in climate zones 13 and 15 are required to achieve either 0.63 aged SR or

0.75 TE, and steep-sloped roofs in climate zones 10 through 15 are required to achieve either 0.20 aged SR or 0.75 TE.

The 2022 Energy Code makes a number of changes to the cool roofing requirements. For alterations to low-sloped residential buildings, the CEC increased the number of climate zones from 13 and 15 to climate zone 4 and climate zones 6 through 15, and increased the aged SR to 0.63 and TE to 0.75. For steep-sloped new and altered nonresidential buildings, the CEC raised both the aged SR and TE to 0.25 and 0.80, respectively, in climate zones 2 and climate zones 4 through 16.

This bill requires the CEC to consider increasing the value of minimum aged SR to 0.40 and expanding the range of climate zones where the standard applies by 2033 triennial code adoption cycle. The CEC would be required to assess that any prescribed change to the cool roof requirements are cost effective to homeowners over the 15-20 year service life of the roof and that an adequate supply of compliant product is available to meet the updated requirements.

5) **Previous legislation**:

AB 660 (Levine) of 2019 was substantially similar to this bill. AB 660 was subsequently amended to restrict the use of data collected for contact tracing and limit who may conduct contact tracing.

REGISTERED SUPPORT / OPPOSITION:

Support

None on file

Opposition

Asphalt Roofing Manufacturers Association
Tile Roofing Industry Alliance

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