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**SENATE BILL 5732**

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**State of Washington 67th Legislature 2022 Regular Session**

**By** Senators Das, Lovelett, Nguyen, and Saldaña

AN ACT Relating to green roofs on large commercial and multifamily buildings; adding new sections to chapter 19.27A RCW; and creating new sections.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec.**  (1) The legislature finds that green roofs can improve the energy performance of buildings, help manage stormwater, reduce airborne emissions, and mitigate the effects of urban heat islands.

(2) Greater weatherization and insulation offered by green roof assemblies reduces the amount of energy needed to moderate the temperature of a building, as roofs can be the source of the greatest heat loss in the winter and the hottest temperatures in the summer. Green roofs can also prolong the service life of heating, ventilation, and air conditioning systems through decreased use. The temperature moderating effects of green roofs can reduce demand for electrical power and other energy and fuel sources, and potentially decrease the amount of carbon dioxide and other polluting byproducts being released into the air.

(3) A properly designed and maintained green roof can last more than 40 years before requiring replacement, whereas the life of an unvegetated conventional roof could be 10 to 15 years. By increasing the life cycle and reducing roof replacement costs, green roofs can save taxpayer and building owners money and reduce the amount of waste that is diverted into landfills.

(4) The legislature further finds that green roofs, biosolar roofs, and blue/green roofs can reduce the amount of stormwater runoff and delay the time at which runoff occurs, resulting in decreased stress on sewer systems and streams at peak flow periods and decreased pollution in Washington's waterways.

(5) Green roof plants can capture dust, particulate matter, airborne pollutants, and atmospheric deposition, sequester carbon, and filter noxious gases throughout cities. This can play a role in reducing greenhouse gas emissions and adapting urban areas to a future climate with warmer summers.

(6) The legislature further finds the installation of green roofs can help reduce urban heat islands by cooling the air. Through natural transpiration, plants on vertical and horizontal surfaces can cool cities during hot summer months and reduce the urban heat island effect.

(7) Green roofs can provide much needed green spaces for healthy human habitation of dense urban spaces and can be used for passive and active recreation and relaxation. Green roofs improve human health and well-being through the improvement of local air quality, regulation of temperature, and filtration of harmful airborne substances, particularly among children and other vulnerable or at-risk communities. These green spaces can also facilitate healthy biosystems by creating new habitat for a wide variety of plants and animals such as migratory birds and insects.

(8) The legislature further finds that green roofs and related assemblies such as blue/green roofs, agrivoltaic roofs, and biosolar roofs can generate local and regional employment for design, installation, and maintenance personnel. Specialized green roof installations can also generate income and employment for rural communities in terms of nurseries and growing media blenders and through the establishment of urban rooftop farm operations.

(9) The legislature further finds that to reach our energy and environmental goals in response to the climate emergency, it is important to utilize clean energy generation technology. Solar panels provide carbon emission free energy and can be installed on existing buildings and infrastructure. Installing solar energy systems benefits the health, welfare, and resiliency of communities. Green roofs and solar energy are compatible systems that can be combined on the same rooftop to create a biosolar roof. The combination of the two systems can be complementary and improve the environmental and energy benefits of each.

(10) The legislature therefore determines that is it in the state's interest to maximize the full potential of its roofs by requiring green roofs and solar panel energy generation to reduce energy consumption, improve air quality, reduce greenhouse gas emissions, reduce the urban heat island effect, reduce stormwater runoff and urban flooding, improve food security, strengthen human health outcomes, and increase Washington state's climate resilience. Similar legislation requiring green roofs on new buildings has already been implemented in places such as New York, California, Illinois, Oregon, and Washington DC, and throughout Europe and Asia.

NEW SECTION. **Sec.**  The definitions in this section apply throughout this section and sections 3 and 4 of this act unless the context clearly requires otherwise.

(1) "Agrivoltaic system" means the simultaneous use of areas for both solar photo voltaic energy generation and rooftop agriculture, with edible plants often placed underneath solar arrays.

(2) "Biosolar" means a roof system where an extensive green roof assembly underlines a photovoltaic system and provides ballast to hold the solar panels in place.

(3) "Blue/green roof" means a roof system that provides stormwater management detention and retention capabilities within the green roof assembly. Detention refers to the temporary storage and controlled release of stormwater.

(4) "Covered building" means a new building whose design begins after January 1, 2025, where the sum of multifamily residential, commercial, and industrial floor areas exceed 50,000 gross square feet, excluding the parking garage area.

(5) "Eligible building owner" means the owner of a covered building.

(6) "Green roof" means a layer of vegetation planted over a waterproofing system or waterproof management practice that is installed on top of a flat or a sloped roof up to 12 degrees, a drainage layer, a root repellant layer, and engineered growing medium consisting of lightweight aggregates and organic materials designed to support plant growth, including:

(a) "Extensive green roof" means a green roof with a growing media layer that is three to six inches thick; and

(b) "Intensive green roof" means a green roof with a growing media layer that is greater than six inches thick.

(7) "Gross roof area" means the total number of square feet measured between the exterior edge of the roof of a building, including all mechanical equipment, fire escape pathways, vents, skylights, decks, patios, and other recreational space.

(8) "Multifamily residential building" means a building containing sleeping units or more than two dwelling units where occupants are primarily permanent in nature.

(9) "Resilience" means the ability to prepare, mitigate, plan for, withstand, recover from, and more successfully adapt to adverse events and changing conditions, and reorganize in an equitable manner that results in a new and better condition.

NEW SECTION. **Sec.**  (1) The state building code council shall adopt rules for the green roof and solar requirements required by this section by December 31, 2024. Rules adopted by the state building code council must consider applicable national and international standards.

(2)(a) All covered buildings must include a combination of solar energy panels and green roof covering 70 percent of the gross roof area in accordance with one of the following:

(i) One-half of the dedicated gross roof area consists of solar energy panels and one-half of the dedicated gross roof area consists of an intensive green roof;

(ii) One-half of the dedicated gross roof area consists of a combination of solar energy panels above an extensive green roof and one-half of the dedicated gross roof area consists of an extensive green roof;

(iii) One-quarter of the dedicated gross roof area consists of solar energy panels and three-quarters of the dedicated gross roof area consists of an extensive green roof; or

(iv) One-quarter of the dedicated gross roof area consists of solar energy panels, one-half of the dedicated gross roof area consists of an extensive green roof, and one-quarter of the dedicated gross roof area consists of an intensive green roof producing food.

(b) The various compliance options are as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Option | Solar panel | Extensive | Intensive |
| (i) | 50 percent |  | 50 percent |
| (ii) | 50 percent | 100 percent |  |
| (iii) | 25 percent | 75 percent |  |
| (iv) | 25 percent | 50 percent | 25 percent (food production) |

(3) Green roof projects must be designed and constructed by qualified teams of contractors that include engineers, landscape architects, architects, and at least one green roof professional.

(4) Green roof projects must provide a five-year maintenance plan that includes a minimum of two maintenance visits per year to ensure that the system is functioning properly.

(5) All green roof projects that meet the requirements of this section must be part of performance rating systems including the United States green building council leadership in energy and environment design program, sustainable sites, and the living architecture performance tool, which is specific to the design, installation, and maintenance of green roofs.

(6) Green roof projects must be designed to facilitate inspection by local authorities to ensure ongoing energy and environmental performance.

(7) If an eligible building owner is unable to provide the green roof coverage as required in this section, the eligible building owner may submit an application to their local building permit office as a part of the permitting process for either a complete exemption to the requirement to construct a green roof or to provide a smaller green roof area than would otherwise be required in this section, if a cash-in-lieu payment is made in accordance with this section. Where the approved exemption or variance and the cash-in-lieu payment is made, the local permit office may issue a permit for the related building.

(8) Where there is less green roof coverage than otherwise required by this section, because of an exemption approved during the permitting process, the eligible building owner shall make a payment of cash-in-lieu of constructing a green roof for the reduced or exempted area based on the average actual cost of constructing a green roof, which is $50 per square foot.

(9) Covered buildings granted a partial exemption by their local building permit office under this section must construct the remaining portion of green roof space in accordance with the ratios in subsection (2) of this section.

(10) The receipts collected from cash-in-lieu of construction payments must be collected by the local jurisdiction. Expenditures of these receipts may be used only to fund the implementation of climate resiliency programs within the local jurisdiction.

NEW SECTION. **Sec.**  (1) Subject to availability of amounts appropriated for this specific purpose, the Washington state institute for public policy shall conduct a cost-benefit analysis on the use of biosolar, agrivoltaic, and blue/green roof systems on buildings with a floor area of 10,000 to 50,000 square feet in consultation with the department of ecology, department of commerce, and an organization that has experience conducting cost-benefit analyses on green roofing. The cost-benefit analysis must include:

(a) The impact on stormwater runoff and water treatment facilities in communities with a population of greater than 50,000;

(b) Public health impacts;

(c) Air quality impacts;

(d) Reductions in fossil fuel use for buildings with agrivoltaic systems;

(e) Energy efficiency of buildings with agrivoltaic systems;

(f) Job creation; and

(g) Agrivoltaic installation and maintenance costs.

(2) The Washington state institute for public policy shall also provide a report to the legislature by January 1, 2025, on the cost of constructing a green roof. The Washington state institute for public policy shall recommend changes to the base sum in section 3(8) of this act to ensure that it reflects the average actual cost of constructing a green roof and section 3(2) of this act to ensure that the costs of the various assemblies are roughly equivalent.

NEW SECTION. **Sec.**  This act may be known and cited as the rooftops for climate survival act.

NEW SECTION. **Sec.**  Sections 2 through 4 of this act are each added to chapter 19.27A RCW.

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