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**SENATE BILL 5732**

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**State of Washington**

**67th Legislature**

**2022 Regular Session**

**By** Senators Das and Lovelett

Prefiled 01/07/22.

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

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

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

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

19 (3) A properly designed and maintained green roof can last more  
20 than 40 years before requiring replacement, whereas the life of an  
21 unvegetated conventional roof could be 10 to 15 years. By increasing

1 the life cycle and reducing roof replacement costs, green roofs can  
2 save taxpayer and building owners money and reduce the amount of  
3 waste that is diverted into landfills.

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

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

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

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

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

35 (9) The legislature further finds that to reach our energy and  
36 environmental goals in response to the climate emergency, it is  
37 important to utilize clean energy generation technology. Solar panels  
38 provide carbon emission free energy and can be installed on existing  
39 buildings and infrastructure. Installing solar energy systems  
40 benefits the health, welfare, and resiliency of communities. Green

1 roofs and solar energy are compatible systems that can be combined on  
2 the same rooftop to create a biosolar roof. The combination of the  
3 two systems can be complementary and improve the environmental and  
4 energy benefits of each.

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

15 NEW SECTION. **Sec. 2.** The definitions in this section apply  
16 throughout this section and sections 3 and 4 of this act unless the  
17 context clearly requires otherwise.

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

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

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

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

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

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

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

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

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

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

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

16 NEW SECTION. **Sec. 3.** (1) The state building code council shall  
17 adopt rules for the green roof and solar requirements required by  
18 this section by December 31, 2024. Rules adopted by the state  
19 building code council must consider applicable national and  
20 international standards.

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

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

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

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

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

38 (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.

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

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

9 NEW SECTION. **Sec. 4.** (1) Subject to availability of amounts  
10 appropriated for this specific purpose, the Washington state  
11 institute for public policy shall conduct a cost-benefit analysis on  
12 the use of biosolar, agrivoltaic, and blue/green roof systems on  
13 buildings with a floor area of 10,000 to 50,000 square feet in  
14 consultation with the department of ecology, department of commerce,  
15 and an organization that has experience conducting cost-benefit  
16 analyses on green roofing. The cost-benefit analysis must include:

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

19 (b) Public health impacts;

20 (c) Air quality impacts;

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

23 (e) Energy efficiency of buildings with agrivoltaic systems;

24 (f) Job creation; and

25 (g) Agrivoltaic installation and maintenance costs.

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

33 NEW SECTION. **Sec. 5.** This act may be known and cited as the  
34 rooftops for climate survival act.

1        NEW SECTION.    **Sec. 6.**    Sections 2 through 4 of this act are each  
2    added to chapter 19.27A RCW.

--- **END** ---