SENATE COMMITTEE ON NATURAL RESOURCES AND WATER
Senator Henry Stern, Chair
2021 - 2022 Regular

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Author:	Stern		
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Urgency:	No	**Fiscal:**	Yes
Consultant:	Catherine Baxter		

Subject: Energy assistance: residential building extreme heat zone mitigation grant program

BACKGROUND AND EXISTING LAW
Existing law:

1) Requires the State Energy Resources Conservation and Development Commission (CEC), via the Energy Conservation Act of 2001, to establish a grant program to provide financial assistance to eligible low-income individuals for constructing and retrofitting buildings to be more energy efficient by using design elements, including, among other things, the use of products certified by the CEC as energy-efficient zone heating products.

2) Establishes the Integrated Climate Adaptation and Resiliency Program (ICARP) at the Governor's Office of Planning and Research (OPR) to coordinate regional and local efforts with state climate adaptation strategies in order to facilitate the development of holistic, complimentary strategies for adapting to climate change impacts.

3) Directs the California Natural Resources Agency (CNRA) to update the Safeguarding California Plan, the state's climate adaptation strategy, every three years. The Safeguarding California Plan must include vulnerabilities to climate change by sector and priority actions needed to reduce risks in those sectors.

4) Directs state agencies to address the vulnerabilities identified in the Safeguarding California Plan by working to maximize specified objectives, including:

    a) Educating the public about the consequences of climate change, like the urban heat island effect.
    b) Building resilient communities by developing urban greening projects.

5) Establishes an urban greening financial assistance program at CNRA for green infrastructure projects that reduce greenhouse gas emissions and provide multiple benefits. The program can fund projects that acquire, create, enhance, or expand community parks and green spaces or that use natural systems or systems that mimic natural systems to achieve multiple benefits.

6) Establishes an urban forestry financial and technical assistance program at the Department of Forestry and Fire Protection (CalFire). Eligible activities and projects

include tree planting, development of urban tree plans, and development of training and educational materials, among others.

7) Establishes the Legislature's intent that the California Environmental Protection Agency (CalEPA) develop heat reduction strategies that include urban forestry, cool roofs, and sustainable or cool pavements.

Background. Average global temperatures have increased with climate change, with the fastest relative increase beginning in the 1980s. According to the National Oceanic and Atmospheric administration, the ten hottest years on record are 2016, 2020, 2019, 2015, 2017, 2021, 2018, 2014, 2010, and 2013. The Centers for Disease Control and Prevention define extreme heat conditions as weather that is much hotter – and sometimes more humid – for a particular time and place. California informally defines extreme heat days as those above the 98th percentile of maximum temperatures based on 1961-1990 data for a given location's warmest months. For example, in San Francisco the extreme heat day threshold is 85 °F, whereas in Los Angeles, it is 91 °F.

Despite California's ambitious climate change policies, our state is already warming as a consequence of climate change. Average temperatures in California have been increasing over the past century and heatwaves are becoming more common. While temperatures and the frequency of extreme heat events are increasing across the state, data collected by NASA between 1950 and 2000 shows that the biggest increases are being observed in southern California, where average temperatures rose by greater than 2°F. Ventura County is warming faster than any other county in the continental United States. The county has warmed 4.75°F since 1895, which is about a half degree warmer than either Los Angeles or Santa Barbara counties, and one degree hotter than the global average of warming that will be catastrophic around the world, according to climate scientists. Further, an Office of Environmental Health and Hazard Assessment report shows that nighttime increases in extreme heat trends are at least two times greater than daytime trends, especially along the central coast as humidity, in part due to ocean warming, increases.

In California, the statewide average temperature is predicted to increase 1.9°F by 2025 and 4.6°F by 2050. Historically, California experienced an average of four extreme heat days per year; by 2050, extreme heat days are projected to increase to 40-53 annually. Further, Heat-Health Events (HHEs), which better predict risk to populations vulnerable to heat, will worsen drastically throughout the state: by midcentury, the Central Valley is projected to experience average HHEs that are two weeks longer, and HHEs could occur four to ten times more often in the Northern Sierra region.

Dense urban cores, especially in areas with limited tree vegetation, are hotter than coastal and rural areas. This is due to the urban heat island effect. Structures such as roads, pavement, and buildings absorb and re-emit more of the sun's heat than natural landscapes such as forests, parks, or bodies of water. Plants help to reduce temperatures through evaporative cooling and by providing shade. Average daytime temperatures in urban areas are 1-6°F warmer than surrounding areas, but at night that can increase by as much as 22°F as the heat is gradually released from buildings and paved surfaces.

The harmful effects of extreme heat on human health are well known. Extreme heat can exacerbate chronic illnesses and lead to strokes, heat exhaustion, and death. Indeed, heat causes the most weather-related deaths in the United States. Following a record-breaking 2006 California heat wave, over 16,000 emergency room visits, more than 1,100 hospitalizations, and at least 140 deaths were reported. The future increased temperatures are expected to translate to up to 4,300 excess deaths in 2025 and up to 11,300 in 2050 with associated economic costs of up to $84.8 billion per year by 2050. Even small increases in average temperature can have dramatic impacts on fertility, learning outcomes, job performance, accident rates, quality of sleep, and overall health. Higher nighttime temperatures are particularly concerning because they inhibit people's ability to recover from daytime exposure to heat.

The urban heat island effect increases the health risks associated with extreme heat for populations living in those areas. At the community level, disadvantaged communities in California are not only hotter because they have less access to green spaces, but are at greater risk of negative outcomes from extreme heat because they have less access to technologies such as air conditioning that can provide relief when temperatures are high.

Many other impacts arise from extreme heat events. Increased demand for air conditioning can strain the power supply. Blackouts and power outages may result. Water demand also increases. Agricultural impacts include crop loss, reduced milk and egg production, and livestock illnesses and deaths. Fire risk increases as vegetation dries out. Damage to roadways, bridges and other transportation infrastructure may also occur.

In 2013, the state released *Preparing California for Extreme Heat: Guidance and Recommendations*. The document summarized climate projections for increased temperature and extreme heat conditions for California and presented state agency recommendations. That document included a recommendation to promote and expand urban greening and the use of green infrastructure as part of cooling strategies in public and private spaces. Specifically, it recommended planting trees to increase tree canopy cover; expanding vegetation where trees are not possible, like green walls; using trees to shade places where people recreate, like open space; restoring urban streams, and educating the public on best practices to green urban residential areas.

In January 2022, the administration released a draft *Extreme Heat Action Plan*, which builds on the 2013 document and outlines a set of state actions to adapt and build resilience to extreme heat. The draft is organized under four action tracks, including increasing the resilience of the built environment and utilizing nature-based solutions, which can increase resilience to the impacts of extreme heat by cooling communities and providing strategic shade. Areas of near-term focus in the draft include accelerating heat readiness and protection of low-income households and expanding tree canopy in communities most impacted by extreme heat.

PROPOSED LAW

This bill would direct CEC to develop a residential building extreme heat zone mitigation grant program for weatherization, energy and water efficiency, and net-zero retrofits for heating and cooling. Specifically, this bill would:

1) Direct CEC, in consultation with CNRA, to develop a residential building extreme heat zone mitigation grant program.
   a) The program would provide grants to residents to mitigate extreme heat-related impacts on health or economics and to mitigate extreme heat-related impacts of climate risk.
   b) This would include grants for weatherization, energy and water efficiency, and net-zero retrofits for heating and cooling, including electric heat pumps.

2) Require CEC, in developing the grant guidelines and application process, to:
   a) Provide applications for low-income residents that are vulnerable to the effects of extreme heat.
   b) Conduct no less than two public meetings to receive and consider public comment before approving the guidelines and application process.
   c) Ensure that the grant program complements and, where possible, maximizes the reach of existing related programs.

3) Beginning February 1 the first year after grants are awarded, direct CEC to annually report to the appropriate policy committees of the Legislature a summary of the grants awarded, including populations and geographic communities served, funds awarded, and challenges and opportunities of the program, as specified.

ARGUMENTS IN SUPPORT
According to the author, "The worsening effects of climate change have resulted in a global climate emergency. Our best science and data inform us that California will continue to feel the impacts of extreme heat events for decades to come. The warning signs have been posted for years, but recent extreme heat events lasting days at a time, in regions not accustomed to such events have left many communities off guard on how to mitigate the worsening effects of climate change. Extreme heat disproportionately effects our most vulnerable communities, including the elderly, the young and those with pre-existing health conditions. Rising temperatures will only exacerbate the problem of heat-heath events. Currently, the average annual temperature in California has already exceeded 1°F, with some areas exceeding 2°F. By 2050, the daily maximum average temperature in California is expected to rise 4.4°F – 5.8°F with heat-health events projected to last two weeks longer in the Central Valley and four to ten times more often in the Northern Sierra region.

We have little time to spare in ensuring the state includes extreme heat zone mitigation programs in its arsenal of climate mitigation strategies."

According to a coalition of supporters, "As climate change fuels deadly heat waves across the state, SB 1261 will ensure that households have access to efficient and clean air conditioners and other heat mitigation strategies. SB 1261 will support market transformation and scalable and cost-effective retrofits to preserve affordable housing. In order to maximize the benefits of this bill, we recommend it offers inclusive household eligibility by prioritizing those most vulnerable, engages in community partnerships and effective state and local coordination, and includes strong affordability and tenant protections and anti-displacement measures. SB 1261 has the opportunity to help protect households from the deadly impacts of extreme heat."

ARGUMENTS IN OPPOSITION: None received.

COMMENTS

Referral. This bill was first heard in the Senate Energy, Utilities and Communications Committee on March 28, 2022, where it passed 10-0-4, with amendments, to this Committee.

***This bill is consistent with recommendations from the draft* Heat Action Plan.** In particular, Goal 3, R1 under the "Increase Resilience of our Built Environment" action track of the draft plan recommends the development and implementation of a program to accelerate protection of low-income households in disadvantaged communities across the state that are impacted by extreme heat. According to the draft plan, the program would provide for the direct installation of new heat pump HVAC equipment and retrofits of existing air-conditioning systems, and complementary efficiency measures where needed, in existing residential single family or multifamily buildings. Further, Goal 3, R3 of this same action track recommends providing funding for additional heat pump HVAC equipment to low-income Californians as part of the TECH Initiative. This equipment provides air conditioning in summer and space heating in winter without relying on natural gas.

Nature-based solutions have an important role to play in mitigating the impacts of extreme heat. One of the more effective strategies to mitigate the negative impacts of extreme heat is to increase canopy cover by planting trees. This can provide shade for buildings (including residential buildings, the target of this bill), asphalt, and other dark surfaces. Direct shading of buildings also reduces heat in buildings in the event of power outages during heat waves. Trees and other vegetation can also lower temperatures through evaporative cooling. It should be noted that careful planning and consideration should go into expanding urban forests and green space as tree planting requires adequate space, water, and maintenance, and the appropriate selection of trees.

As a bonus, planting trees and other vegetation in urban areas can provide other benefits, including carbon sequestration, air pollution removal, rainfall interception, improved water quality, reduced energy use, and jobs, and economic value to the state economy. Some of these values have been estimated monetarily in California. For example, reduced energy use from canopy shading and cooling saves an estimated $568 million annually. Annual benefits to water infrastructure, including rainfall interception, reduced water pollution, and reduced flood risk, are estimated at $324.6 million. The economic activity associated with urban forestry in 2009 in California was $3.6 billion, and urban forestry related jobs in California totaled over 60,000 that year.

The Administration's draft *Heat Action Plan* includes nature-based solutions as one of four action tracks for responding to extreme heat. In particular, Goal 1, E2 under this track recommends utilizing these solutions as part of cooling strategies in public and private spaces, including through planting trees, expanding greenspace, restoring urban streams, and increasing public awareness of best practices to green urban residential areas. Further, Goal 1, R3 under this track recommends identifying and implementing opportunities to advance nature-based solutions, particularly in communities most vulnerable to extreme heat and other climate impacts.

The author may wish to consider an amendment to allow CEC to fund certain nature-based solutions, where appropriate and feasible, that are consistent with the Heat Action Plan. Given the bill's primary focus on more traditional building retrofits and installations, these solutions would be included as a secondary component of a grant that CEC could fund, when it makes sense for the specific project. *See Amendment 1.*

Similar legislation. The Legislature has introduced multiple bills this year to address extreme heat. In addition to SB 1261, these include:

AB 2076 (Luz Rivas, 2022) would establish the Extreme Heat and Community Resilience Program within OPR to coordinate state efforts and support local and regional efforts to prevent or mitigate the public health risks of extreme heat. *This bill is pending in the Assembly Health Committee.*

AB 2238 (Luz Rivas, 2022) would require the CalEPA, in coordination with ICARP and the California Department of Insurance, to develop a statewide extreme heat ranking system (system). *This bill is pending in the Assembly Appropriations Committee.*

AB 2243 (Eduardo Garcia, 2022) would require the Division of Occupational Safety and Health to prepare a proposal to revise the heat illness standard to include an ultrahigh heat standard. *This bill is pending in the Assembly Appropriations Committee.*

AB 2420 (Arambula, 2022) would require the Department of Public Health, in consultation with subject matter experts, to review available literature on adverse effects of extreme heat on perinatal health and develop guidance for safe outdoor conditions for pregnant individuals. *This bill is pending in Assembly Appropriations Committee.*

AB 2597 (Bloom, 2022) would require that any building with a dwelling unit also maintain adequate cooling, as specified, and that lack of cooling is a substandard condition and a crime. *This bill is pending in the Assembly Housing and Community Development Committee.*

Legislation last year included:

AB 585 (Luz Rivas, 2021) would have established the Extreme Heat and Community Resilience Program through ICARP to coordinate the state's efforts to address extreme heat and the urban heat island effect and to provide financial and technical assistance to local or regional entities for improving resilience to extreme heat and the urban heat island effect. *This bill was held on the Suspense File in the Senate Appropriations Committee.*

SUGGESTED AMENDMENTS

AMENDMENT 1

25402.16. (a) The commission, in consultation with the Natural Resources Agency, shall develop a residential building extreme heat zone mitigation grant program to provide grants to residents to mitigate extreme heat-related impacts on health or economics and to mitigate extreme heat-related impacts of climate risk. *Where appropriate and feasible, the commission may fund nature-based solutions that will help to cool residential buildings or mitigate the extreme heat impacts to residential buildings, including by planting trees, increasing vegetation coverage, and increasing*

awareness of best practices to green urban residential areas. Any nature-based solutions funded by the commission shall be consistent with the Heat Action Plan.

SUPPORT
California Environmental Voters
Natural Resources Defense Council
RMI
Sierra Club California

OPPOSITION: None received.

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