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TO: Each Supervisor

FROM: Dr. Barbara Ferrer, Ph.D., M.P.H., M.Ed.
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SUBJECT: **INVESTIGATING SAFE MAXIMUM INDOOR TEMPERATURE THRESHOLDS TO ASSIST HEAT VULNERABLE TENANTS AND WORKERS IN HIGH-RISK WORKPLACES (ITEM NO. 20, AGENDA OF NOVEMBER 1, 2022)**

This is in response to the November 1, 2022 motion by your Board directing the Department of Public Health (Public Health) to investigate safe maximum temperature thresholds for dwelling units and high-risk workplaces and coordinate with the Chief Sustainability Office (CSO) and other relevant Departments to identify policy options for promoting cost- and energy-efficient indoor cooling and funding sources—including leveraging managed health care plans—to assist low-income households and small businesses.

The motion also directs the Chief Executive Office Legislative Affairs and Intergovernmental Relations Branch, in coordination with the Chief Sustainability Office (CSO) to send a 5-signature letter to Cal/OSHA in support of (a) establishing statewide safe maximum indoor temperature threshold standards for residential units and workplace settings; and (b) requiring covered employers to develop and implement a comprehensive workplace excessive heat prevention plan to protect covered employees from excessive heat that may lead to heat-related injuries and illnesses. Further, the Los Angeles County Development Authority (LACDA), in consultation with the Chief Executive Officer and other relevant departments, is directed to assess the amenities currently present in LACDA's residential buildings and develop a funding plan for the installation and use of home cooling strategies in LACDA's residential buildings.

INTRODUCTION

Extreme heat is a health and safety risk across Los Angeles County that is only increasing with rising overall temperatures and hotter, longer heat waves. Just last year, a Labor Day heat wave in LA County resulted in prolonged and record-breaking temperatures. Sustained high temperatures prompted excessive electricity use, which taxed California's energy grid to the point of near-failure. In 2020, a heat wave at the same time of year resulted in the highest temperature ever recorded in Los Angeles County—121 degrees Fahrenheit in Woodland Hills. During these heat waves, emergency department visits for heat-related illness spiked. However, these impacts are just those most easily measurable. Heat waves can also worsen chronic conditions, including cardiovascular, respiratory, and cerebrovascular disease, and diabetes-related conditions.

Consequently, LA County is one of many jurisdictions across California and the country that must adapt to increasing extreme heat. Protecting residents and workers from health impacts including heat-related illness and death is a critical responsibility of local governments.

PROCESS

This report was informed by (1) reviewing existing research on safe indoor maximum temperatures for health; (2) collecting information through interviews and public documents; and (3) with the Chief Sustainability Office (CSO), identifying and consulting with relevant stakeholders, such as climate and sustainability nonprofits, housing law organizations, and other government agencies, some of which were involved in sponsoring 2022's State Assembly Bill (AB) 2597 (Bloom). As proposed, AB 2597 would have updated California's habitability standards to ensure that all rental units had a means of maintaining a safe indoor air temperature regardless of the temperature outside. Input was gathered from those organizations around both policy mechanisms and funding opportunities to facilitate both passive cooling and active cooling strategies that are needed to achieve these safe maximum indoor temperature thresholds in dwellings and workplaces, while protecting small landlords from undue burden. Information from these stakeholder discussions was categorized into themes: how an ordinance should be written, how it should be implemented, how it should be enforced, and how compliance can be incentivized. They are distilled into the distinct recommendations detailed in this report. Any potential ordinance would initially cover only o unincorporated areas of LA County; while local municipalities could be encouraged to adopt them.

SAFE MAXIMUM INDOOR TEMPERATURE THRESHOLDS

Maximum Temperature Thresholds Set by Other Local Jurisdictions

To investigate safe maximum temperature thresholds for dwelling units and high-risk workplaces, Public Health reviewed existing local ordinances across the country. Maximum temperature thresholds established for residential dwellings across the country range from 80 to 90 degrees Fahrenheit. Some make distinctions between required maximum temperatures for units cooled by air conditioning versus by evaporative cooling. Below, existing ordinances are described in more detail. Exact code language is provided in Appendix 1.

Palm Springs, California
Palm Springs requires that dwelling units be provided with air conditioning capable of maintaining a room temperature of a maximum of 80 degrees Fahrenheit in all habitable rooms. Every owner and operator of any building who rents, leases, or lets one or more sleeping or dwelling units must supply air conditioning units at all times, to maintain a maximum temperature of 80 degrees Fahrenheit in all habitable rooms.

Phoenix, Arizona
Phoenix sets a maximum temperature for cooling and ventilation in rental units. Rental units need to safely cool all habitable rooms to a temperature of no greater than 86 degrees if cooled by evaporative cooling, or no greater than 82 degrees if cooled by air conditioning.

Tempe, Arizona
Tempe requires that all rental housing units have cooling units, under the tenant's control, that are capable of cooling all habitable rooms to a maximum temperature of no greater than 88 degrees Fahrenheit if cooled by evaporative cooling, or no greater than 82 degrees Fahrenheit if cooled by air conditioning.

Tucson, Arizona
Tucson mandates that all dwelling units, guest rooms, and congregate residences be provided with an air cooling device capable of cooling to a maximum temperature of no greater than 86 degrees Fahrenheit if cooled by evaporative cooling, or no greater than 82 degrees Fahrenheit if cooled by air conditioning.

Clark County, Nevada
Clark County requires that all dwelling units be equipped with active or passive cooling systems. Additionally, dwelling units, except buildings with two units or fewer, must be designed in a manner so that interior temperatures remain under 85 degrees Fahrenheit, by use of active or passive cooling systems.

El Paso, Texas
El Paso requires that interior spaces intended for human occupancy be provided with active or passive cooling systems capable of maintaining a temperature below 90 degrees Fahrenheit at a point three feet above the floor and two feet from exterior walls in all habitable spaces. The 90 degrees Fahrenheit temperature is an outlier; no other jurisdictions set maximum temperatures above 86 degrees Fahrenheit.

Minnesota
Minnesota requires that employers monitor the indoor heat conditions employees work within. Employees must not be exposed to indoor heat in excess of 77 Wet Bulb Globe Temperature index (WBGT) degrees Fahrenheit for heavy work; 80 WBGT degrees Fahrenheit for moderate work; and 86 WBGT degrees Fahrenheit for light work. Wet Bulb Globe Temperature is a measure of the heat stress in direct sunlight, which takes into account temperature, humidity, wind speed, sun angle and cloud cover (solar radiation). This differs from the heat index, which takes into consideration temperature and humidity and is calculated for shaded areas.

Research on Temperature Thresholds and Health

To establish safe maximum temperature thresholds for dwelling units and high-risk workplaces, Public Health reviewed relevant research. The World Health Organization's (WHO) Housing and Health Guidelines (2018) provided examples of *minimal-risk temperatures* - below which no adverse health outcomes would be expected – and *maximum acceptable temperature* – "above which the risk to human health increases drastically." The WHO conducted a systematic review of studies done in different parts of the world that examined the relationship between indoor temperature and mortality/morbidity and came up with these threshold temperature recommendations. The Guidelines projected that minimal-risk temperatures range from 70 to 86 degrees Fahrenheit and maximum acceptable temperatures range from 77 to nearly 90 degrees Fahrenheit depending on the city. The following table shows the results extracted from some of the research findings:

Example of estimated minimal-risk temperature of heat-related health effects and maximum acceptable temperature.		
City/Country	**Indoor minimal-risk temperature for heat-related health effects**	**Indoor maximum acceptable temperature**
Boston (US)	**69.8 – 71.6° F**	**77°F**
New York (US)	**71.6 – 75.2°F**	**80.6 – 82.4°F**
London (UK)	**71.6 – 73.4 °F**	**77°F**
Harbin (China)	**75.2°F**	**78.8°F**
Republic of Korea	**77 – 78.8°F**	**84.2 – 86°F**
Thailand	**86°F**	**89.6°F**

Reference: World Health Organization. (2018). WHO housing and health guidelines. World Health Organization. https://apps.who.int/iris/handle/10665/276001. License: CC BY-NC-SA 3.0 IGO

Recommended Temperature Thresholds

Based on the World Health Organization's research and guidelines, and the policies of the other southwestern United States jurisdictions described above, we recommend a maximum temperature threshold for dwellings units in LA County unincorporated areas of 82 degrees Fahrenheit in all habitable rooms. This threshold is based on temperature threshold policies in the United States jurisdictions closest to LA County whose thresholds fall within WHO recommendations for indoor maximum accepted temperature.

Temperature thresholds are informed by LA County's average humidity. While mandating thresholds based on heat index (which includes humidity) would be more precise, measuring a building's internal heat index is not practicable. Additionally, appropriate cooling strategies to

achieve the maximum safe indoor temperature threshold will likely reduce humidity and improve thermal comfort. Consequently, temperature in Fahrenheit is the recommended measure.

A recommendation is not included in this report on safe indoor temperature thresholds for high-risk workplaces, because enforcement power in workplaces is the jurisdiction of the California Occupational Safety and Health Administration (Cal/OSHA). Cal/OSHA issued **a draft indoor heat standard in 2019,** which would mandate that indoor workplaces maintain temperatures below 87 degrees Fahrenheit when employees are present, and maintain temperatures below 82 degrees when employees are required to wear clothing that restricts heat removal. The final standard is expected to be released later in 2023. A recommendation is also not included in this report for safe indoor temperatures for mobile homes, which are regulated by the California Department of Housing and Community Development.

TYPES OF COOLING MECHANISMS

A suite of strategies is necessary to achieve safe maximum indoor temperatures in residential dwellings and workplaces. For example, active cooling strategies include air conditioners and heat pumps. Cooling appliances are most effective and cost-efficient, however, when combined with passive cooling of buildings through cool roofs, shades, weatherization, and insulation. etc. Community cooling is another strategy, reducing external temperatures in neighborhoods, which then requires the building's cooling (passive and active) to do less. This includes cool pavements, porous surfaces, and tree canopy. This report focuses on passive and active cooling of buildings as they have the most immediate impact on tenants and indoor workers.

POLICY LEVERS FOR ACHIEVING SAFE INDOOR TEMPERATURES

Ordinance Language

To promote safe indoor temperatures, organizations working on tenant and worker advocacy recommend that maximum temperature thresholds be incorporated into municipal code requirements, including the building standard and habitability code. The Building Standards Code for unincorporated areas in LA County should be amended to require that residential buildings possess active or passive cooling strategies capable of maintaining temperatures of less than 82 degrees Fahrenheit if there is air conditioning or 86 degrees Fahrenheit if there is evaporative cooling or no cooling unit present. For maximum effectiveness, a new maximum indoor temperature threshold should apply to new and remodeled residential buildings immediately, with a phase-in for existing construction. To protect the most vulnerable of LA County's tenants, stakeholders who sponsored AB 2597 recommended that the ordinance change should explicitly forbid passing down the costs of weatherization or cooling appliance installation to tenants. An ordinance should not allow buildings to simply add a portable, window-fitted air conditioning unit, because those appliances would result in very high electric bills for tenants, which many people cannot afford. The stakeholders who sponsored AB 2597 recommended this language to protect vulnerable tenants from displacement and/or cost burdens.

As noted, this report does not include a recommendation for a local ordinance for temperatures in workplaces, as that falls under Cal/OSHA regulatory authority; a draft Cal/OSHA standard for

Heat Illness Prevention in Indoor Places of Employment was released in 2019 and the final version is expected to be issued later this year.

Implementation

Stakeholders involved in AB 2597 suggest a phased in approach to compliance with the new ordinance, in which maximum temperature thresholds apply to new construction immediately, while existing housing units are given 3-5 years to come into compliance with new housing habitability code. This would allow time for the County and interest groups to provide robust, tailored, and language-appropriate outreach, education, and technical assistance to landlords regarding funding available to building owners seeking to retrofit buildings, with a special focus on small landlords and those who are people of color. A phased-in approach to compliance will also give owners of existing buildings the opportunity to take advantage of the retrofit and weatherization funding opportunities available. Additionally, contractors can serve as a conduit for outreach and raising awareness among landlords and developers of the new code requirements, of more climate-friendly options when upgrading homes (i.e., electric heat pumps) and of the comprehensive multi-family retrofits program. Thus, the County should also target contractors with outreach and education. For example, the Southern California Regional Energy Network runs a workforce education and training program, maintains a list of contractors with the skills to implement its programs, and also provides technical assistance to building owners and agencies looking to implement energy upgrades, making the organization a resource for implementation.

Enforcement and Incentivization

The County may elect to enforce maximum temperature thresholds through its Rental Housing Habitability Program, which includes regularly scheduled inspections as well as complaint-driven inspections. Future implementation recommendations will need to be explicit about how inspectors will check if a building can maintain temperatures below the maximum safe threshold identified in the habitability code, e.g., existence of an active cooling appliance or quality of roof/windows and doors (insulation). If landlords remain non-compliant, the proposed county Rent Escrow Account Program could be used to ensure that reduced rent is applied toward weatherization repairs and/or installing a cooling appliance.

Code enforcement is not sufficient for mass uptake of a new, and potentially expensive habitability requirement. The County should incentivize voluntary adoption and compliance to benefit the greatest number of tenants in the shortest time period. For example, perhaps certain types of fees and penalties could be waived for early adopters, and rebates and tax incentives could be offered to landlords who bring their buildings into compliance before a certain date. The County can also use its contracting power to reduce the costs of heat pump installation, weatherization, and other building improvements if they meet certain criteria. Uptake of weatherization and installation of cooling appliances should also be expedited by providing technical assistance to access State funding for these retrofits for landlords, with a special attention to small landlords and people of color.

The Board's motion also directed Public Health to investigate safe maximum temperature thresholds for high-risk workplaces and to identify policy options and funding sources for

promoting cost- and energy-efficient indoor cooling to assist small businesses. While the County does not have jurisdiction to enforce maximum temperature thresholds in workplaces (this falls under Cal/OSHA's jurisdiction), in recognition that people are at risk of heat-related illness at work, the incentives listed above should be available to small business owners of high-risk workplaces, as well as tailored, language-appropriate technical assistance to access those incentives.

Example Programs Around the Country

Home weatherization programs have been implemented by government agencies in jurisdictions including the City of San Antonio, Texas and Washington State. In San Antonio, the Under 1 Roof program replaces the (deteriorated) roofs of qualifying applicants with cool roofs. Since its inception in 2016, the program has expanded from one district to five, and has installed over 500 cool roofs since 2019, alone. Washington piloted its Weatherization Plus Health program from 2016 to 2017 in eight sites around the state. It weatherized and rehabilitated 254 houses whose inhabitants had asthma (71%) or Chronic Obstructive Pulmonary Disease (29%). Clients received environmental modifications ranging from carpet replacement to air flow sealing; the program was deemed a success and as of 2019, 14 local agencies throughout the state were investing over $1.3 million on upgrading 300 homes. Also in Washington, King County (where Seattle is located) is providing free heat pumps to income qualified applicants in the wake of the 2021 heat dome that overtook the city, to both address the risk of heat illness and the need to decarbonize buildings.

FUNDING SOURCES

All stakeholders interviewed agreed that there are a variety of funding streams from the State that should be accessible to landlords for weatherization, energy efficiency, building decarbonization, and cooling of buildings rental units. These stakeholders and other entities also mentioned examples of health plans in other jurisdictions funding air conditioning and air filters for their members, that can serve as models or a basis for future research for this funding stream to pay for active and passive cooling in LA County, which will help landlords make these building improvements without passing costs to tenants.

Energy Efficiency/Appliances

Funding sources for cooling appliances could include the Low-Income Home Energy Assistance Program (LIHEAP). However, LIHEAP is currently administered through community-based organizations in LA County, which are primarily set up to help individuals paying energy bills access the funding, and currently do not pay for the installation of new cooling devices. The County should explore making LIHEAP funding for new cooling appliances explicitly allowable, as Contra Costa County already does under certain conditions.

Weatherization

Funding for passive cooling and weatherization includes the Department of Energy's Weatherization Assistance Program (WAP), and two California programs: the Low-Income

Weatherization Program (LIWP), and the Low-Income Weatherization Program for Multifamily Properties (LIWP-Multifamily), which is funded through State Cap and Trade dollars. LIWP and LIWP Multi-Family is currently part of the Home Energy Assistance Program application. Stakeholders pointed out that a significant amount of housing isn't eligible for weatherization because of mold, lead, or structural damage. This provides an opportunity for weatherization programs to partner with other remediation programs (such as for mold/asthma or lead), then provide technical assistance to layer incentives to ultimately improve the housing quality.

Building Decarbonization and Electrification

There is also a lot of public and private funding being funneled towards building decarbonization and electrification. There is approximately $835 million in the California State Budget over the next three years for equitable building decarbonization in homes. TECH Clean California is a statewide initiative that provides incentives and rebates to owners of both single and multifamily buildings to switch to heat pumps for space and water heating. The County should provide technical assistance for property owners to apply for this funding. The County should also investigate the feasibility of a program like the City of LA's Comprehensive Affordable Multifamily Retrofits Program (CAMR), which is run by LADWP and provides funding for building electrification and decarbonization. Southern California Edison (SCE) (which provides electricity to most of LA County not serviced by LADWP) has proposed dedicating $677 million to install 250,000 heat pumps and providing electrical upgrades for 65,000 homes and has programs that provide financing for energy-efficient upgrades to single and multifamily housing (GoGreen Home Energy Financing and GoGreen Affordable Multifamily Energy Financing). However, we were unable to find any programs equivalent to LADWP's CAMR and recommend the County work with SCE to establish such a program or explore developing a whole-home resilience pilot program that layers energy upgrades with other measures to improve overall home resilience to climate hazards such as extreme heat, drought, flooding, and wildfire. The County will also need to provide proactive technical assistance to property owners so they can take advantage of SCE's funding and financing opportunities. The County should work to raise awareness of and increase access to the South Coast Air Quality Management District's clean air furnace rebate, which replaces gas-fired furnaces with all electric heat pump systems. SoCal Regional Energy Network already provides technical assistance to businesses and owners of multifamily properties around incentives and financing for energy efficient building upgrades through their Multifamily Program; cooling could be explicitly added to this.

Health Plans

A number of programs across LA County have demonstrated health benefits from interventions designed to maintain habitable indoor temperatures. Health plan funding of home remediation, which has included weatherization for beneficiaries with asthma, has been piloted all over the country by the Green and Healthy Homes Initiative (GHHI). GHHI has made the business case for health plans to offer this benefit as geographically close as Contra Costa County. In addition, in a retrospective evaluation of savings to investment ratio, Oak Ridge National Laboratory found that low-income persons who received weatherization benefits from the Weatherization Assistance Program were less likely to utilize medical services or miss work than those in a comparison group.

To facilitate home environment modifications that protect the health of at-risk people from climate impacts, health plans should reimburse for preventative services and alternative supports (In Lieu of Services or ILOs) that protect members' health from climate-driven environmental threats. While a few pilot projects have been done, economic analyses completed, and preliminary reimbursement mechanisms established, more data on the cost-benefit is required for these interventions to be adopted by health plans at a broad scale.

California's Advancing and Innovating Medi-Cal (CalAIM), a feature of the State's Medicaid benefits covers ILOs described as "Community Supports," which include environmental accessibility adaptations (EAAs) and asthma remediation. Among LA County Medi-Cal plans, LA Care has started reimbursing for EAAs in January 2023 and will do so for asthma remediation in July 2023. HealthNet already reimburses for EAAs and asthma remediation. Medicare Advantage Plans are also authorized to reimburse for environmental modifications, which can cover weatherization, under a benefit called "Special Supplemental Benefits for the Chronically Ill" if beneficiaries have a documented need. While no LA County health plan explicitly covers air conditioning, Anthem's Medicare and Medicaid products in Virginia both have continuously listed air conditioners as a covered benefit since 2018. Given the threat of extreme heat in LA County, and the County's assets, which include a robust Department of Health Services, a Department of Public Health, and LA Care Health Plan, there is ample opportunity to explore mechanisms under which health plans can reimburse for active cooling and passive cooling (weatherization) strategies. DHS, Public Health, and LA Care should work together to design, implement, and evaluate the financial and health impacts of a pilot in which passive and active cooling are a covered insurance benefit for high-risk individuals.

SUMMARY OF RECOMMENDATIONS:

- The maximum indoor temperature threshold in dwellings should be 82 degrees if there is an active cooling unit; 86 degrees if there is evaporative cooling or no cooling unit, in line with other jurisdictions with similar climates.
- An ordinance pertaining to safe maximum indoor temperatures in dwellings should be developed by County Counsel for unincorporated areas using a phased approach, applying to new and substantially remodeled residential buildings immediately, with 3-5 year phase-in for existing buildings depending on age and demographics of building owners that correspond with ease of compliance, with anti-displacement provisions to prevent the passing down of costs to tenants.
- Extra funding and technical assistance should be provided to small landlords and those who are people of color to help them retrofit their buildings.
- The County should incentivize voluntary compliance and early adoption of measures that achieve safe indoor temperature thresholds.
- The County should facilitate access to funding to install electric air conditioning units and heat pumps, and for weatherization and retrofitting available through the existing Federal and State programs.

- The County should facilitate the exploration of opportunities for health plans to cover active and passive cooling as a covered benefit (in lieu of services) for high-risk beneficiaries.

NEXT STEPS

Public Health awaits your Board's consideration of these recommendations. If you have any questions or would like additional information, please let me know.

BF:lf

c: Chief Executive Office (CEO)
County Counsel
Executive Office, Board of Supervisors
CEO Legislative Affairs and Intergovernmental Relations Unit
Chief Sustainability Office
Los Angeles County Development Authority

Appendix I

SAFE MAXIMUM INDOOR TEPERATURE THRESHOLDS

Maximum Temperature Thresholds Set by Other Local Jurisdictions

To investigate safe maximum temperature thresholds for dwelling units and high-risk workplaces, Public Health reviewed existing local ordinances across the country. Exact code language is provided below.

Palm Springs, California

The International Property Maintenance Code adopted herein by reference is hereby amended and restated to read as follows:

1) Amend the title of section 602 to read as follows:

Section 602 Heating and Air Conditioning Facilities

2) Amend section 602.1 Facilities required, to read as follows:

602.1 Facilities required. Heating and air conditioning facilities shall be provided in structures as required by this section.

3) Amend section 602.2 by adding the following sentence at the end of the section:

602.2 Residential occupancies. Dwellings shall be provided with air conditioning facilities at all times, capable of maintaining a maximum temperature of 80 degrees Fahrenheit in all habitable rooms.

4) Add subsection 602.3.1 to read as follows:

602.3.1 Air conditioning supply. Every owner and operator of any building who rents, leases or lets one or more dwelling units or sleeping units shall supply air conditioning at all times, to maintain a maximum temperature of 80 degrees Fahrenheit in all habitable rooms.

Phoenix, Arizona

Heating, cooling and ventilation systems.

1. Heating, cooling and ventilation systems in any building or structure are to be maintained hazard-free, operational and in a state of good repair. Heating and cooling systems shall be free from hazards associated with ventilation, equipment status, mounting, electrical connections and other potential defects.

b. *Cooling requirements.* Every rental housing unit where such systems are installed shall have cooling capable of safely cooling all habitable rooms, bathrooms and flushing toilet rooms to a temperature no greater than 86 degrees Fahrenheit, if cooled by evaporative cooling, or 82 degrees Fahrenheit, if cooled by air conditioning. Temperature measurements shall be taken at a distance three feet above the floor in the center of the room. Required cooling shall be provided by permanently installed cooling facilities.

Tempe, Arizona

Sec. 21-34. - Thermal environment.
(a) General provision. Every rental housing unit should contain safe heating and cooling facilities which are properly installed and maintained in sound condition and capable of providing adequate heating and cooling, appropriate for the climate, to assure a comfortable and healthy living environment.

(c) Cooling requirements. Every rental housing unit shall have cooling, under the tenant's control, capable of safely cooling all habitable rooms, bathrooms and flush toilet rooms located therein to a temperature no greater than eighty-eight degrees (88º) Fahrenheit, if cooled by evaporative cooling, or eighty-two degrees (82º) Fahrenheit, if cooled by air conditioning. Temperature measurements shall be taken at a distance three (3) feet above floor level in the center of the room. Required cooling shall be provided by permanently installed cooling facilities. Except that those air conditioning facilities serving more than one (1) rental housing unit shall only be required to be designed and operating in conformance with manufacturer's specifications.

Tucson, Arizona

Sec. 16-11. Building interior.
(b) Heating, cooling and ventilation systems.
(2) Cooling. Every dwelling unit, guest room, and congregate residence shall be provided, in all habitable rooms, with either mechanical cooling or an alternate cooling method, to assure a safe living environment. Cooling facilities shall be installed and maintained in a safe condition and in accordance with the manufacturer's recommendations, and shall comply with the following:
a. Air conditioners shall be capable of producing ambient temperatures at or below eighty-two (82°) degrees. Measurements shall be taken at a distance of three (3) feet above the floor in center of the room.
b. Evaporative coolers shall be capable of producing ambient temperatures below eighty-six (86°) degrees. Measurements shall be taken at a distance of three (3) feet above the floor in center of the room.
c. Evaporative cooling shall be maintained to be free of excessive rust, corrosion or mineral deposits that limit proper operation. Any mounting apparatus for a cooling facility must be structurally sound.
d. Mechanical fans or portable evaporative cooling devices may only be used on a temporary basis as the sole source of cooling when the permanent cooling system is being repaired or replaced.

Appendix I

Clark County, Nevada

22.02.067 - Interior temperature in dwelling units.

All dwelling units, as defined in the International Building Code (IBC) and International Residential Code (IRC), with a permit issuance date for construction or alteration, after February 3, 2019, shall be equipped with active or passive heating/cooling systems.

(A)

One and two-family dwellings that are designed in accordance with the IRC shall also comply with the International Energy Conservation Guide and Air Conditioning Contractors of America, Manual J—Residential Load Calculation, including Appendix 2. The drawings submitted for permit in accordance with the provisions of this paragraph A must include a statement of compliance with this requirement by either the design professional or mechanical contractor.

(B)

Dwelling units, except one and two-family dwellings, shall be designed in a manner such that an interior temperature can be maintained between 68°F and 85°F, by the use of active or passive heating or cooling systems. A certificate of compliance certifying that the design meets the requirements of the section and applicable building codes must be sealed and signed by a Nevada Registered Design Professional and submitted to the Clark County Department of Building and Fire Prevention as a part of the permit submittal package.

1.

As used in this section, an active heating/cooling system refers to any heating or cooling system that requires a non-naturally occurring heating or cooling source in order to adjust the temperature in a space.

2.

As used in this section, a passive heating/cooling system refers to any heating or cooling system that does not introduce a non-naturally occurring heating or cooling source in order to adjust the temperature in a space.

Exemptions: Dwelling units that have active heating and cooling systems installed under a permit issued prior to February 3, 2019.

El Paso, Texas

- 18.10.060 - Section R303.9 Required **heating**, amended Added.

  International Residential Code, 2015 Edition, Section R303.8, Required heating, is hereby amended to read as follows:

R303.8 Required heating and cooling. Interior spaces intended for human occupancy shall be provided with active or passive space-heating and cooling systems capable of maintaining an indoor temperature between 68 F (20 C) and 90 F at a point 3 feet above the floor and 2 feet from exterior walls in all habitable spaces. The installation of portable space heaters shall not be used to achieve compliance with this section.

Minnesota

5205.0110 INDOOR VENTILATION AND TEMPERATURE IN PLACES OF EMPLOYMENT.

Heat conditions.

The requirements of this subpart cover employee exposure to indoor environmental heat conditions.

A. The following definitions apply when assessing and controlling health hazards associated with indoor climate.

(1) "Wet bulb globe temperature index" or "WBGT" means a measure of the combined effect of air temperature, air speed, humidity, and radiation. WBGT = 0.7 Tnwb + 0.3 Tg.

(2) "Natural wet-bulb temperature" or "Tnwb" means temperature measured by a thermometer which has its sensor covered by a wetted cotton wick, exposed to natural air movement.

(3) "Globe temperature" or "Tg" means temperature measured by a thermometer with its sensor inside a matte black globe, exposed to radiant heat, Vernon Globe or equivalent.

(4) "Heavy work" means 350 or higher kcal/hr (kilocalories per hour), for example: heavy lifting and pushing, shovel work.

(5) "Moderate work" means 200 to 350 kcal/hr, for example: walking with moderate lifting and pushing.

(6) "Light work" means up to 200 kcal/hr, for example: sitting or standing performing light hand or arm work.

B. Employees shall not be exposed to indoor environmental heat conditions in excess of the values listed in Table 1. The values in Table 1 apply to fully clothed acclimatized workers.

TABLE 1. Two-hour time-weighted average permissible heat exposure limits.

Work Activity	WBGT, °F
Heavy work	77
Moderate work	80

Light work	86

C. Employees with exposure to heat shall be provided training according to part 5206.0700, subparts 1 and 3.