



October 30, 2025

SUBMITTED ELECTRONICALLY VIA REGULATIONS.GOV

Mr. David Keeling
Assistant Secretary of Labor for
Occupational Safety and Health
U.S. Department of Labor
200 Constitution Avenue N.W.
Washington, D.C. 20210

RE: *Post-hearing Comments on Proposed Rule: Docket No. OSHA-2021-0009 – Heat Injury and illness Prevention in Outdoor and Indoor Work Settings (RIN 1218-AD39)*

Dear Assistant Secretary Keeling:

On behalf of the National Association of Home Builders of the United States (NAHB), I am pleased to submit these post-hearing comments following the informal public hearings held June 12, 2025 – July 2, 2025, by the Occupational Safety and Health Administration (OSHA) on its proposed Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings standard.¹

NAHB is a Washington, D.C.-based trade association whose members are involved in home building, remodeling, multifamily construction, property management, subcontracting, design, housing finance, building product manufacturing and other aspects of residential and light commercial construction. NAHB's builder members are a large engine of economic growth nationally, and construct about 80 percent of the new housing units each year. In addition to these comments, NAHB helped develop, and incorporates by reference, post-hearing comments on this proposed rule from the Construction Industry Safety Coalition (CISC) and Coalition for Workplace Safety (CWS), respectively.

I. OSHA Must Adopt a Separate Standard for Construction

NAHB reiterates its position that any federal heat injury and illness prevention standard governing the construction industry must be construction specific. A uniform, one-size-fits-all standard governing multiple industries is not practicable for residential construction due to the unique and variable conditions on residential job sites. The proposed rule fails to account for the differences in job tasks, site conditions, or regional climates that are routinely encountered during residential construction. Effective construction safety and health standards require the thoughtful consideration and incorporation of many constantly changing factors. Employers already face significant challenges in implementing existing safety requirements, and concurrent implementation of the proposed standard would unnecessarily impede operations and would not result in improved safety outcomes.

¹ 89 Fed. Reg. 70,698 (Aug. 30, 2024).

OSHA has long recognized the necessity of industry-specific standards for construction. For example, OSHA has established separate provisions for construction activities in its rulemakings concerning Respirable Crystalline Silica, Fall Protection, Scaffolds, and Cranes and Derricks. These precedents establish that the hazards, work environments, and operational realities of construction are distinct from those of general industry, and OSHA is urged to maintain a construction-specific approach in the development of its heat illness prevention standard. If the agency does not adopt a construction-specific standard, NAHB respectfully urges OSHA to initiate a new rulemaking process that incorporates the recommendations outlined below.

II. Questions Asked to NAHB During Testimony

1. With regards to your comments on a construction specific rule, can you provide the agency with some examples of effective, performance-based and simplified standards that OSHA might use as models?

NAHB supports a performance-based, streamlined approach that effectively protects workers from heat-related illness while addressing the unique and variable conditions of residential construction job sites. For years, NAHB has championed OSHA's enduring principles of Water, Rest, and Shade, which provide essential flexibility for the residential construction industry. Any new standard should incorporate these principles into routine daily operations. The proposed rule instead places undue burdens on employers via prescriptive workplace controls requiring significant and unnecessary deviation from existing operational norms. OSHA's existing Water, Rest Shade recommendations afford employers the necessary flexibility to tailor compliance with OSHA's General Duty Clause to jobsite realities. NAHB encourages OSHA to adopt standards that reinforce proven Water, Rest, and Shade principles via preventative, performance-based heat awareness training and education programs that employers can adapt to the diverse and dynamic operations, occupations, and climactic conditions that occur on their sites.

Specifically, we recommend a standard that directs employers to:

a. Provide Drinking Water

Employers should ensure that all workers have ready access to drinking water to encourage frequent hydration throughout the workday. OSHA should not promulgate requirements governing water location, temperature, or consumption volume. Prescriptive water proximity requirements are inconsistent with the routine demands of many residential construction occupations and job site conditions, including roofing or other work at heights. Likewise, water temperature requirements are incompatible with the significant variation in ambient temperatures across the United States, impose inconsistent and excessive compliance burdens well exceeding their protective value, and invite arbitrary enforcement on subjective bases. Establishing a universal or quantitative water consumption requirement is also impractical as water needs and consumption preferences vary from person to person.² NAHB urges OSHA to allow employers the flexibility to determine the most reasonable and effective ways to provide water access given the conditions and scope of each project.

² Riebl SK, Davy BM. The Hydration Equation: Update on Water Balance and Cognitive Performance. ACSMs Health Fit J. (available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC4207053/#S7>) (accessed Aug. 14, 2025).

b. Encourage Flexible Rest Breaks

Employers should be granted the discretion to provide rest breaks that are responsive to environmental conditions, task intensity, and worker acclimatization. The ability to adjust rest schedules in real time is critical for protecting workers from heat stress without disrupting construction operations (See Question 2 for further detail on this recommendation).

c. Provide Shaded Rest Areas

OSHA must recognize the need for flexibility regarding if, when, or how shade is provided on residential job sites. Large-scale projects involve constant movement and evolving work conditions and areas, making the frequent relocation or setup of shade structures burdensome, costly, and logistically challenging, especially for small businesses. Early construction phases often rely on natural shade or personal vehicles, which may be the only practical and safe options for many jobsites, including where artificial shade structures may impede operations, occupy infeasibly large portions of the site area, or require assembly and disassembly at heights. NAHB urges OSHA to keep shade requirements simple, realistic, and sufficiently adaptable to changing site conditions.

d. Implement Comprehensive Employee Training

Employee training should form the basis of a construction-specific heat standard. Because construction sites vary widely by type, location, weather patterns, and microclimates, this training should be adaptable to specific project, site, and regional parameters and conditions. While manufacturing and other general industry operations may be conducive to standardized training and related reporting, the transient nature of construction, diversity of trade work, and complexity of extensively subcontracted construction projects is better served by training that is tailored to task- and site-specific risk factors.

NAHB urges OSHA to ensure that all construction industry employees, regardless of job title, receive appropriate training. Importantly, this does not mean they all must receive the same training, but that the training is tailored to the specific tasks and risks that each employee may face. It is also important to note that as training becomes more complex, employees can experience information overload, which can reduce employees' ability to retain key safety messages and increase the risk of mistakes on the job site. Finally, the proposed rule should not displace NAHB members' continued implementation of existing, successful heat hazard awareness and training programs that have proven to be effective.

- 2. The NAHB stated that their members have provided examples of workers performing their duties for three to six hours with little or no rest breaks, then resting in a shaded or air-conditioned area during the time when it's the warmest outside or the hottest, when the sun is at its peak. Is this time resting paid? What are the challenges and benefits associated with this type of schedule structure?**

a. Payment for Flexible Rest Periods

NAHB's members rely on their workers to be healthy and available to perform their work, so regularly take steps to keep them safe and well, including allowing for extended heat-related rest periods when it makes sense to do so. Current federal law requires payment for short breaks, but whether multi-hour pauses

during peak heat times, which more closely resemble lunch or split shifts when workers are relieved of all duties³ are paid or unpaid is currently at the employer's discretion and should remain so. Because residential construction projects vary greatly in size, schedule, and resources, any single mandate regarding breaks and pay would be impractical and burdensome, especially for smaller contractors. The current practice of paying workers for short rest breaks and allowing employers to determine how to address longer pauses works well and should not be revised.

Furthermore, employee pay is governed by the Fair Labor Standards Act, not OSHA. Therefore, any requirements or guidance suggesting or mandating that extended breaks be compensable would exceed OSHA's statutory authority.

b. Challenges and Benefits of Flexible Rest Breaks

There are both challenges and benefits associated with flexible rest breaks. Longer breaks can help reduce the risk of heat-related illness, improve morale, and decrease the likelihood of workplace incidents or claims. However, they can also create operational difficulties when they interfere with scheduling, inspections, delays, or deliveries and may increase labor costs if workers are required to be paid during extended breaks. In some cases, workers may prefer to maintain productivity and finish their workday sooner rather than take additional breaks, particularly if unpaid breaks affect their income. *See infra*. Section 6.b. Workers may also face delays and inconveniences arising from transportation to cooling areas, and possible fatigue due to unexpected schedule adjustments.

Given this complex balance, NAHB maintains that establishing a universal, enforceable standard regarding mandatory breaks is difficult. This challenge is further compounded by the numerous offsite factors that can contribute to an individual's risk of heat-related illnesses such as underlying health conditions, prescription medications, or off-duty activities like alcohol or caffeine consumption and are beyond an employer's control. A standard requiring mandatory rest breaks will not address the complex worker-, site-, and region-specific variables underlying heat hazard risks, which are best known and therefore best managed by the employer in accordance with existing state and federal rest break and compensation policies. Decisions about extended rest breaks are best left to employers.

- 3. In your SBREFA comments, you discussed microclimate variation within warm regions. Can you expand on what the issue is there and how employers are currently dealing with issues of microclimate with regards to designing their plans, monitoring the temperature, and keeping their workers safe?**

a. Issues of Microclimate in Warm Regions

In warmer regions of the United States, microclimate variations pose significant challenges for the residential construction industry, particularly if a one-size-fits-all heat standard were to be implemented. Weather conditions can vary dramatically within the same region. For instance, two areas might report the same heat index of 80 degrees, yet workers could experience vastly different conditions due to local environmental factors that are not reflected in the index.

³ Fair Labor Standards Act of 1938, as amended 29 U.S.C. §§ 201, *et seq.*; 29 CFR 785.18 (available at <https://www.ecfr.gov/current/title-29/section-785.18>) (accessed Aug. 13, 2025).

Natural microclimates often develop near bodies of water, areas with sharp elevation changes, or a combination of both. Notable examples include the “lake effect” near the Great Lakes, where cool lake air moves over land and creates intense snowfall, and the I-70 corridor in Colorado, a 100-mile stretch between Denver and Vail that features at least a dozen distinct microclimates.⁴

Artificial microclimates, also known as man-made microclimates, typically develop in densely urbanized areas where natural vegetation has been replaced by buildings and pavement, leading to the formation of urban heat islands. Urban heat islands occur because paved surfaces absorb and retain heat more quickly than grass or vegetated areas. Even within urban settings, temperatures can vary considerably by neighborhood. Differences in tree cover, surface materials, and building density can lead to detectable disparities in heat exposure, as confirmed in studies that tracked heat index variability across neighborhood-scale grids.⁵

Given these complexities, implementing a flexible, performance-based heat standard, rather than rigid, prescriptive rules, is the most practical course. Such an approach would grant employers needed flexibility to apply appropriate workplace heat controls tailored to actual site conditions. A performance-based standard is especially vital for small residential construction firms that oftentimes work across multiple microclimates within the same urban area. Strict requirements based on uniform temperature thresholds would impose burdensome, mismatched, and inconsistent obligations without enhancing worker safety.

b. The Challenges with Designing a Heat Injury and Illness Prevention Plan

The geographic transience of residential construction work creates added complexity for smaller builders, who would be required to develop and implement a Heat Injury and Illness Prevention Plan (HIIPP) under the proposed rulemaking. For example, a home builder operating primarily in a region with microclimatic variability would be required to maintain separate, tailored plans for each jobsite, a major logistical hurdle. In such cases, a blanket, one-size-fits-all approach simply wouldn’t work.

Residential construction employers typically rely on daily temperature readings from weather apps to help guide their heat safety practices. In all instances, but particularly when operating in areas with unique conditions, such as urban heat islands, employers need to be flexible and ready to adjust work practices if employees report experiencing more heat than indicated by the daily index. As a result, NAHB cautions against mandating strict heat triggers. Microclimatic variations compromise the reliability of daily weather indexes, which reflect broad atmospheric conditions rather than localized work environments.

The alternative, placing thermometers across job sites, presents its own set of challenges. Residential construction sites are dynamic, with crews, equipment, and work zones shifting frequently, making placement and accurate monitoring difficult and burdensome. Moreover, the presence of an always changing cadre of numerous specialty trade subcontractors and their employees further complicates

⁴ Frost Solutions “What Are Microclimates?” (available at <https://frostsolutions.io/microclimates/>) (accessed Aug. 27, 2025).

⁵ Hass AL, Ellis KN, Reyes Mason L, Hathaway JM, Howe DA. Heat and Humidity in the City: Neighborhood Heat Index Variability in a Mid-Sized City in the Southeastern United States. *Int J Environ Res Public Health*. 2016;13(1):117. Published 2016 Jan 11. doi:10.3390/ijerph13010117 (available at <https://pmc.ncbi.nlm.nih.gov/articles/PMC4730508/>) (accessed Aug. 27, 2025).

coordinated temperature monitoring and related compliance efforts. For these reasons, NAHB opposes prescriptive heat trigger requirements, as they do not account for the complex realities and variability of residential construction job sites.

4. What are your member companies currently doing to prevent exposure to heat and how do they determine when to start using these protective measures?

a. Current Practices to Prevent Heat Exposure

NAHB members implement a range of practical workplace controls designed to prevent heat-related injuries and illnesses. These controls are tailored to the unique conditions of residential construction job sites and may include any or all of the following, depending on conditions and project details:

- **Potable Water:** Water coolers are provided for each crew and placed in accessible locations for drinking and sanitation.
- **Fans:** Provided for both indoor and outdoor work environments to help circulate air and provide cooling. Establishing cooling spaces can be challenging due to constantly changing job site logistics as the project is built.
- **Shade:** Shade tents are made available for each work crew and positioned for optimal accessibility.
- **Rest Breaks:** Scheduled according to workers' acclimatization and specific job site needs and logistics.
- **Work Scheduling:** Heavy tasks are planned for cooler times of the day, guided by daily heat index monitoring. If possible and not prevented by local ordinances, employers may move work to the night shift when it is coolest.
- **Buddy System:** Ensure that nobody works alone under hazardous heat conditions. Workers remind each other to drink water regularly, take scheduled rest breaks, and check to make sure their buddy isn't experiencing signs of heat-related illness.
- **Training:** Employees receive training on recognizing and responding to heat-related illness symptoms. The training is conducted on an as-needed-basis when employers feel the need to train or retrain their workers. This is usually done before temperatures increase.
- **Clothing:** Employers encourage employees to wear light-colored, bright clothing on hot days to help stay cool. They also recommend clothing and headgear that provide protection from direct sun exposure, such as wide-brimmed helmets, neck coverings, long-sleeve shirts, and garments made from breathable or moisture-wicking fabrics.

b. Determining When to Implement Heat Controls

NAHB members use multiple approaches to determine when protective measures should be implemented. Monitoring the National Weather Service daily heat index and reviewing official heat alerts

are the most widely used practices.⁶ Supervisors pre-plan by checking forecasts, ensuring supplies are available, and scheduling training in advance of anticipated heat waves.

Job site conditions also play a critical role in decision-making. For instance, an early-phase residential construction site cleared of vegetation and shade may require more artificial cooling measures than a later-phase site with partially completed structures where workers can rest indoors.

In addition, NAHB members encourage their employees to provide feedback if conditions feel excessively hot, recognizing that the heat index does not always account for microclimatic variations common in residential construction. Ultimately, employers consider environmental conditions, job site logistics, and employee feedback when deciding when and how to apply protective measures.

5. Can you provide OSHA with information about cooling spaces that are provided to employees, including if they include fans or air-conditioning? What have been the difficulties you've encountered when providing shade and cooling spaces to employees?

a. Providing Cooling Spaces

NAHB members take a practical and flexible approach to providing cooling spaces on residential construction sites. The type of cooling available often depends on the project's stage of completion, size, and resources. Temporary artificial shade, such as pop-up tents, tarps, or canopies, is frequently used to create rest areas, while natural shade from trees, nearby buildings, or partially completed structures is used when available. Some sites also provide job site trailers, though not all are equipped with air-conditioning and many smaller projects lack the space or resources to support them. Fans may be used indoors to improve airflow, but consistent access to power is limited in the early stages of construction. In practice, workers often rely on air-conditioned vehicles as a cooling option when other methods are unavailable.

b. Challenges in Providing Cooling Spaces

Despite these efforts, providing consistent cooling spaces presents significant challenges. Early construction phases generally lack infrastructure, leaving workers with limited options beyond trailers or vehicles. Many sites cannot accommodate trailers, and small business contractors face financial and logistical burdens when attempting to provide them. Access to power is also a recurring obstacle, as electrical lines and transformers may not yet be installed and/or operational and generators require fuel, setup, and favorable weather conditions to operate effectively. In addition, using building HVAC systems during construction is not practical or advisable, as air conditioning can contaminate finished ductwork, and activating the HVAC system too early can result in dust and debris circulating through the interior. Finally, because residential crews are highly mobile and move frequently across job sites, maintaining fixed cooling areas or equipment is often impractical and burdensome.

⁶ NOAA US Department of Commerce, "Heat Index Chart," National Weather Service (available at <https://www.weather.gov/ffc/hichart>) (accessed Sept. 5, 2025).

Overall, while NAHB members employ a range of practical measures to reduce heat exposure, prescriptive requirements for fixed or powered cooling stations would be extremely difficult to implement consistently across residential construction job sites.

6. Please elaborate on the hybrid or the variable nature of the construction work environment, particularly given that OSHA has proposed a rule that only covers indoor and outdoor workplaces?

a. The Hybrid Nature of the Construction Work Environment

The construction work environment is inherently fast paced, and constantly changing. Job sites evolve quickly, and workers may transition between outdoor and indoor conditions many times over the course of a project. In residential construction, where the average completion time in 2023 was approximately 10.1 months, crews begin outdoors with foundation work such as framing, installing floor joists, and applying sheathing, which gradually encloses the space and creates an unfinished indoor environment. Such partially enclosed or in-progress workspaces are not clearly addressed in the proposed rulemaking and are not clearly definable as indoor or outdoor workplaces.

Unlike typical indoor environments in other industries that can largely be controlled, early-stage enclosed spaces in residential construction lack proper air circulation, have no available power sources for cooling equipment, and often trap high radiant heat. The proposed rule's failure to contemplate or address how employers are to handle work occurring in partially completed structures poses significant difficulties. For example, are they required to conduct temperature monitoring, provide ventilation, install engineering controls, or follow other protocols separately applicable to indoor or outdoor work settings?

OSHA is urged to promulgate a single performance-based standard that allows employers to address the variation in heat-related exposures within a structure as the structure changes throughout the construction process. Should OSHA proceed with a standard that includes separate compliance obligations for indoor vs. outdoor workplaces, OSHA should clearly exclude partially completed structures from categorizations that would trigger impracticable requirements for construction employers.

b. Provisions that Would Create a Greater Hazard or Infeasibility

If finalized as written, compliance with the proposed rule would be infeasible and create greater hazards for many residential construction tasks. The new prescriptive requirements would create confusion and burdens that could take years for the industry to fully sort through. For example, current OSHA rules require residential construction employers to demonstrate that conventional fall protection is infeasible before they are able to rely on alternative practices.⁷ Requiring roofers and framing crews to simultaneously manage compliance with both the current fall protection and proposed heat hazard standards would create overlapping and inconsistent obligations. That is because roofers working on steeply pitched roofs could be forced to exit and re-enter their work areas more frequently to comply with the mandatory rest breaks within the heat standard. Each additional transition requires the use of ladders or other fall protection measures, increasing worker exposure to elevated fall risks.

⁷ Occupational Safety and Health Administration, Construction, 1926.502(k) (available at <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.502>) (accessed Sept. 5, 2025).

Concrete pouring provides another clear example. Requiring prescriptive workplace controls at a specific heat trigger could severely disrupt pours, which must be completed without interruption to maintain structural integrity and prevent defects. Mandatory rest breaks during these operations would be unworkable, as crews cannot simply pause in the middle of a pour. Doing so would not only compromise the quality of the work but also create hazards for workers tasked with removing or repairing unstable concrete. Concrete placement also produces high radiant heat, raising localized temperatures above ambient conditions. Employers already manage these risks effectively by adjusting schedules, starting pours early in the morning, rotating crews, and ensuring access to water, rest, and shade.

The proposed standard is also infeasible to the extent that it holds employers accountable for individual employee health conditions that directly affect heat tolerance. Factors such as alcohol consumption, caffeine intake, medication side effects, or an employee's daily water consumption vary greatly from person to person and are outside of an employer's control. Expecting employers to account for or manage these individualized health risks is impractical, ill-advised, and would create additional liability without improving worker safety.

Mandating rigid triggers or prescriptive measures via a federal heat standard will have unintended consequences, including project delays, reduced work quality, and increased safety risks, yet will not improve worker protections. A flexible, performance-based approach would avoid these concerns while safeguarding employees.

III. Conclusion

NAHB appreciates the opportunity to participate in this rulemaking process, provide testimony during the June 18, 2025, public hearing, and submit these post-hearing comments. NAHB urges OSHA to adopt a construction-specific heat illness prevention standard that is grounded in the longstanding principles of "Water, Rest, and Shade." Such a standard must be performance-based, flexible, and practical to implement across the diverse sectors of the construction industry. Absent this approach, the rule will create compliance burdens that hinder operations without advancing worker safety.

NAHB strongly encourages the agency to proceed purposefully and ensure that any final rule is both feasible and appropriately tailored to the realities of residential construction. A rushed or overly prescriptive standard will not achieve the desired safety outcomes and may instead create greater hazards for employers and employees. NAHB remains committed to engaging with OSHA throughout this process and stands ready to provide further input as the agency considers next steps.

Please contact Jared Culligan at (202) 266-8590 or via email at jculligan@nahb.org if you have any questions or require any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Jared Culligan", written in a cursive style.

Jared Culligan