

ARCHITECTURE AT ZERO

2021-22

A design competition for Decarbonization, Equity and Resilience in California



The *Architecture at Zero* competition challenge is to create housing for farmworker families in California's Central Valley with low carbon emissions. Key aspects of this project include responding to the challenges of equity and resilience as part of the design solution.

EQUITY

Equitable design takes into account social vulnerabilities, acknowledges experiences, opportunities, and barriers among different groups of people, and helps strengthen communities by engaging local social and cultural contexts. Designing for equity means maximizing positive impacts across multiple scales by creating productive spaces and systems for the individual, the community, the environment, and global sustainability. Marginalized groups often face higher risks of climate vulnerability as well. Access to resilient spaces and resources is essential to mitigate those risks. By dismantling barriers to elevate individuals to an even playing field, equitable design can create inclusive and empowering environments.

When considering equity in the design process, entrants should consider how the project contributes to the health and happiness of the occupants, what impacts the choice of energy source could impose, and how including access to various resources could benefit the community. Consider the lifespan of the building and the longer term impacts of design choices on the residents, such as system durability and maintainability. Designs should attempt to capture and engage the local culture and specific community that they serve.

Design considerations should elevate the levels of equity and inclusion, and there are different degrees to which these aspects can be incorporated. For example, in the context of neighborhood and access, a more equitable design approach would create human-scaled spaces, promote community interaction, and acknowledge the cultural, social, and physical context of the neighborhood. To build upon this and engage ideas of equity even further, the design might also respond to public need and accessibility, and create communal spaces that support the local functional needs and interests of the immediate community. Equity can be integrated into other aspects of the design as well, such as access to green space, resilience strategies, energy, and community services.

Twenty First Century Development¹ provides a detailed framework to gauge how influential and in-depth design interventions are in terms of equitable benefits to the community. This framework is based on guidelines and principles developed by The Living Building Challenge.² These resources can be used as references to understand the role that equity can play in architectural design.

Entries for this competition should comprehensively address issues of equity. A brief descriptive narrative that reflects on your research into equity and the local context, and how your findings were integrated into the design should be included as part of the submission. Key moments where equity comes into the design and programming should also be noted within the site plan and section drawings.

REQUIRED DOCUMENTATION

1. Entrants should indicate on the site plan and section drawings how and where the submission has considered equitable design.
2. Entrants must submit a brief essay (no more than 500 words) about how the submission addresses equitable design considerations, such as those listed above. Specific questions that you might address include:
 - What strategies did you use to promote an environment that is culturally and linguistically responsive?
 - What challenges did you face in designing for families from different cultural and linguistic backgrounds?
 - What challenges did you face in designing housing for farmworkers, and what questions did you ask yourself throughout the design process?
 - If you or your team is from outside California, how might these challenges be the same or different for farmworkers in your community?

¹ [Development Matrix](#) - Twenty First Century Development

² [The Living Building Challenge 4.0 Basics](#)

RESILIENCE

Fundamentally, buildings are designed to keep people safe from the elements and to enable them to comfortably live their lives. In terms of resilience, this goes beyond designing for typical or current climates and incorporates “the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events” (USGBC).³ Many different types, such as social, environmental, economic, climate, and architectural, fall within the larger scope of resiliency, each with their own nuances. All of these are important factors to consider when developing a robust and sustainable design. That being said, while not discouraging the inclusion of other types of resiliency, the scope of this competition focuses on incorporating resilient building strategies and electrical systems that allow the design to mitigate and adapt to a changing climate.

Adverse, intense events related to climate change are already occurring in California. In the last year, California experienced record-setting wildfires,⁴ weeks of wildfire smoke,⁵ critical heat events,⁶ and public safety power shutoffs⁷ to prevent further wildfires. Over the past decade, California has experienced long periods of drought, with the longest duration lasting from 2011 to 2019. For a week in 2014, 58% of California experienced exceptional levels of drought.⁸ While California is a leader in climate change mitigation, there is still a sense of urgency in adapting and preparing the built environment for climate hazards as they continue to increase in frequency and intensity.

When developing a resilient design, a crucial first step is recognizing and understanding the potential natural and climatic hazards that could affect the location of the project. Identify and implement various mitigation strategies that would protect the building and its occupants from these potential hazards. It is also important to consider how the building would continue to function in the case of extended periods without power through strategies that would enable passive survivability.⁹ As building vulnerability will continue to increase due to climate change, it is important to ensure that critical functions and safe thermal conditions are maintained during extreme events. Consider ways to provide the building and occupants with back-up power or incorporate passive design strategies.

LEED offers credits that provide a framework for how to approach resilient design, which can act as a guide for designers. These credits,¹⁰ along with other resources from LEED¹¹ and RELi,¹² can be used as references while considering resiliency and passive survivability within your project.

Resilient strategies should be thoroughly investigated and integrated into both the design and the design process. Adaptive measures should be recorded and described using the provided Climate Adaptation Assessment Matrix. Based on the matrix used by the California Strategic Growth

³ [The Center for Resilience](#) - LEED

⁴ <https://www.fire.ca.gov/incidents/2020/>

⁵ <https://earthobservatory.nasa.gov/images/147151/wildfire-smoke-shrouds-the-us-west>

⁶ <https://www.latimes.com/california/story/2020-09-07/sunday-hottest-days-record-southern-california-los-angeles>

⁷ <https://www.cpuc.ca.gov/psps/>

⁸ <https://www.drought.gov/states/california>

⁹ [“Passive Survivability and Back-up Power During Disruptions”](#) - LEED

¹⁰ [“Assessment and Planning for Resilience”](#) - LEED

¹¹ [“LEED Resilient Design Pilot Credits”](#) and [“Design for Enhanced Resilience”](#) - LEED

¹² [“Rating Guidelines for Resilient Design + Construction”](#) - RELi

Council¹³, this table provides prompts for resiliency considerations directly related to the aspects of climate change that are impacting the area of California where the project site is located, including heat, precipitation change, and wildfire. For example, to help mitigate high temperatures, consider:

- Can the project enhance insulation of homes?
- Can the project install cool roofs?
- Can the project provide a community cooling center?

When thinking of drought or extreme precipitation events, consider:

- Can the project set up an ongoing mechanism to conserve water?
- Can the project plant native, drought-tolerant vegetation?

When thinking of wildfires, consider:

- Can the project involve fire hazard prevention work to mitigate wildfire threats to communities?
- Can the project include a backup power source to operate in case of emergency power shutoff?

The Climate Adaptation Assessment Matrix includes more questions like these and can be found by following this [link](#). It requires that you note whether or not your design includes the prompted strategy, and, if so, describe its technical specifications. Aspects of resilient design and programming should also be noted within the site plan and section drawings.

As an optional addition to the completed table, a brief descriptive narrative may be included with the submission. The narrative could reflect on your research into climate hazards, and how the associated strategies were integrated into the design.

REQUIRED DOCUMENTATION

1. Entrants should indicate on the site plan and section drawings how and where the submission has considered resilience.
2. Entrants must submit a completed Climate Adaptation Assessment Matrix that accurately addresses and describes the resilient design strategies utilized within the project.

OPTIONAL DOCUMENTATION

1. Entrants also have the option to submit an essay of 500 words or less about how the submission takes resilient design into consideration. Possible topics to address include:
 - Reflecting on the research conducted into climate hazards
 - Addressing thoughts and interests concerning the resilient strategies chosen
 - Discussing how these strategies influenced the design process

¹³ California Strategic Growth Council – [Affordable Housing and Sustainable Communities Program Guidelines](#)