

Collective Comfort: A Public Program for Heat Resilience

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"I did not stop to really think; I only felt, and my only feeling was a desire to get cool and to get out of the Territory in some other way and at some cooler season. How futile a wish, and how futile a vow!"¹

—Martha Summerhayes, Vanished Arizona

BACKGROUND

American desert cities designed and built at the turn of the century, in collaboration with the advent of air-conditioning technologies, have been able to house millions of Americans by relying primarily on fossil-fuels to supply relief from extreme hot weather. The Phoenix Metro Area, or The Valley of The Sun as it is known to locals, experienced 145 days reaching temperatures over 100°F in 2020 according to the National Weather Service. In July of 2023, Phoenix set a new record with 31 days straight of over 110-degree heat. The increased probability of a longer-lasting heat-wave, combined with the over demand of electrical power supply during extreme weather events can be catastrophic, especially to the most vulnerable communities.² As climate change intensifies, desert cities like Phoenix must innovate and adapt, ensuring the safety and well-being of all residents, particularly those in high-risk areas.

Today, municipal government, local communities, and grassroots organizations, coupled with environmental researchers in the Phoenix metro area have taken note of the risks that heat poses to human livelihoods and are working to develop 'cooling centers' as strategy to deal with heat insecurity— especially in the most vulnerable communities. Yet, current efforts to develop 'cooling centers' have primarily consisted of uninspiring spaces that primarily utilize existing structures coupled with air conditioning and seating. Due to a lack of architectural precedent and design guidelines for this new building typology, municipal government and community efforts address the need for cooling human bodies in the immediate, but lack architectural visioning that goes further to address the climate crisis and heat resilience.

METHODOLOGY

Working collaboratively with students and across disciplines, the project develops the concept of 'collective comfort' as key pieces of social infrastructure that provides an architectural vision to support existing communities that are working to implement the "Heat Ready Neighborhoods: Community Action Plan."³ The project brings architecture students from the -university name redacted- and urban design students from the -university name redacted- together with experts in architecture, resilience planning, community organizing, urban heat, and mechanical engineering to develop innovative architectural and urbanistic design guidelines that opt to depict a vision for 'collective comfort' for this new building type and its programming. Furthermore, we believe this model of developing design guidelines can be used by others to develop guidelines for climate resilience community architectures and visioning that can address climate resilience of a variety of threats at the local community level.

Working with two primary case-study examples that include the (1) Palo Verde Library and Maryvale Community Center in West Phoenix and (2) Wesley United Methodist Church in South Phoenix the project develops a series of key principles in collaboration with the Heat Relief Network and their responsible community organizations: the Phoenix Public Library and the Arizona Faith Network, respectively. The project builds on the work of the "Heat Ready Neighborhoods: Community Action Plan" by reviewing their neighborhood mitigation rubric and responding to their specific needs through the lens of architecture and urban planning resilience.

WHAT IS COLLECTIVE COMFORT?

While heat resilience can be seen as an issue of power equity, its roots are based in community livelihood, well-being, and the standards of their built environment. As a result, the solutions proposed (i.e., low-cost "cooling centers" are insufficient to address heat risk if they are not well utilized by the local population. In this research, we intend to go beyond the minimal air-conditioned space to expand the idea of the cooling center towards the concept of collective comfort: an architectural and programmatic hub that not only cools bodies but expands agency to vulnerable communities while developing engaging programs



Figure 1. Wesley Resilience Center, signage in parking lot, South Phoenix, at the site of an operational church, additionally serves as a cooling and resilience center and is operated by the Arizona Faith Network. Image credit: by Authors.



Figure 2. Image caption. Image credit: by Authors.

able to develop discourse through collective pleasures. We look less to ASHRAE and more towards the Roman bathhouse.

Collective Comfort develops a public program that re-thinks the cooling center as an educational resilience hub. Furthermore, Collective Comfort aims to bring education on heat risk and weatherization efforts to the forefront, helping to destabilize the fossil-fuel reliant single-family home by providing alternative visions that foreground collectivity and community resilience in desert cities at all levels of the societal and economic spectrum.

KEY PRINCIPLES

Social Infrastructure⁴ for Climate Resilience: Collective Comfort must operate as a piece of social infrastructure, that (1) plays a key role in the daily lifecycle of local inhabitants, and (2) in times of emergency. The structure may need to operate differently during these times, and this level of flexibility should be taken into account. In Winter the program must operate as a social infrastructure that provides education on hot climate preparedness and weatherization. Importantly, throughout the year, the program serves as a meeting point for community organization. In Summer the program must operate as a social infrastructure that welcomes all members of the community, especially the most vulnerable, while providing cooling. In an emergency, for example in the case of heatwave and /or loss of power, such a social infrastructure must enable the members of the community to fulfill their heat preparedness plan. The structure should provide cooling, both interior (to the most vulnerable such as young children and the elderly, or sick) and exterior cooling.



Figure 3. Image caption. Image credit: by Authors.

Additionally, the program should serve as a central meeting point and host the ability to provide back-up power generation and water to community members.

The 'collective comfort' program is structured on three building typologies based on the existing organizational and leadership structures that are already beneficial to communities in Phoenix. These types include: adaptive reuse, for example in the case of the Wesley Church, Plug-in, for example in the case of the Palo Verde Library, and lastly ground-up structures. Within these types the goal for all structures would be to mitigate emergency preparedness programming with those programs that are already in place. Secondly, when a new building takes place, the design guidelines require that visioning on how the building can operate to stay cool, both with and without an electrified power source be taken into account. Due to their unique requirement to stay cool, during a heat-wave and with a limited power source, these centers have the ambition and responsibility to operate as innovative experiments in cooling and collectively redefining comfort for desert communities. Hybridity is imperative to this goal. Cooling strategies merge active systems with backup power as well as active low-tech systems with new innovative possibilities. These programs must define precise idiosyncratic thermal boundaries within a limited energy regime that further aim to draw on ideas of pleasure and comfort.⁵

Further than immediate community meeting space, exploring new thermal possibilities for comfort and emergency preparedness an important program for 'collective comfort' is that of



Figure 4. Wesley Resilience Center, Hydration Station showing cooler with frozen water bottles inside. Image credit: by Authors.

education. The programs must include a help-desk that connects communities with financial resources and education on heat preparedness, private residence weatherization efforts, and funding resources. The structure must further accommodate learning and working spaces that can help communities both learn and actively weatherize their homes in advance of invisible heat risks.



Figure 5. Wesley Resilience Center Hydration Station showing cooler with frozen water bottles inside. Image credit: by Authors.

ENDNOTES

1. Martha Summerhayes, *Vanished Arizona: Recollections of the Army Life of a New England Woman*, Second edition, (Lincoln: University of Nebraska Press, 2014), 44-45.
2. Brian Stone Jr., et al., "How Blackouts during Heat Waves Amplify Mortality and Morbidity Risk," *Environmental Science & Technology* 2023 57 (22), 8245-8255, DOI: 10.1021/acs.est.2c09588.
3. Melissa Guardaro, et al. "Heat Ready Neighborhoods: Community Action Plan," Office of Heat Response and Mitigation, City of Phoenix.
4. Eric Klinenberg, *Palaces for the People: How Social Infrastructure Can Help Fight Inequality, Polarization, and the Decline of Civic Life*, (New York: Crown, 2018).
5. Lisa Heschong, *Thermal Delight in Architecture* (MIT Press 1979).

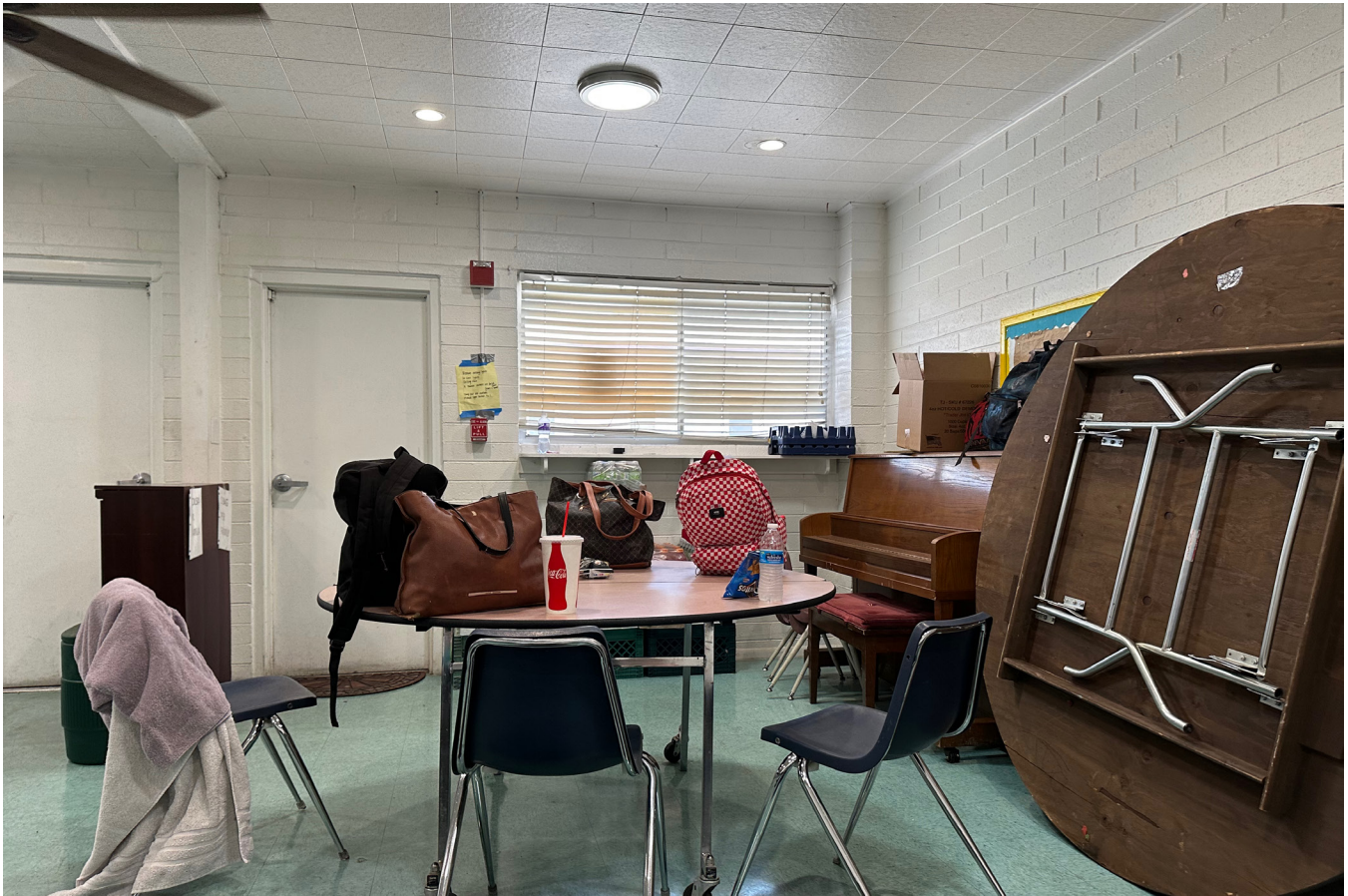


Figure 6. Wesley Resilience Center interior collective areas. Image credit: by Authors.



Figure 7. Wesley Resilience Center interior collective areas. Image credit: by Authors.



Figure 8. Wesley Resilience Center interior food storage areas. Image credit: by Authors.



Figure 9. Heat Ready Neighborhoods: Community action Plan.



Figure 10. Palo Verde Library and Maryvale Community Center in the Maryvale community is located in the West side of Phoenix and serves as a cooling center as a secondary program to a library (operated by the Phoenix Public Library System) and community center. Image credit: Bill Timmerman.