

Healthy Urban Environments Initiative

Melissa Guardaro,
Arizona State University
June 21, 2021
Sustainable Cities Network

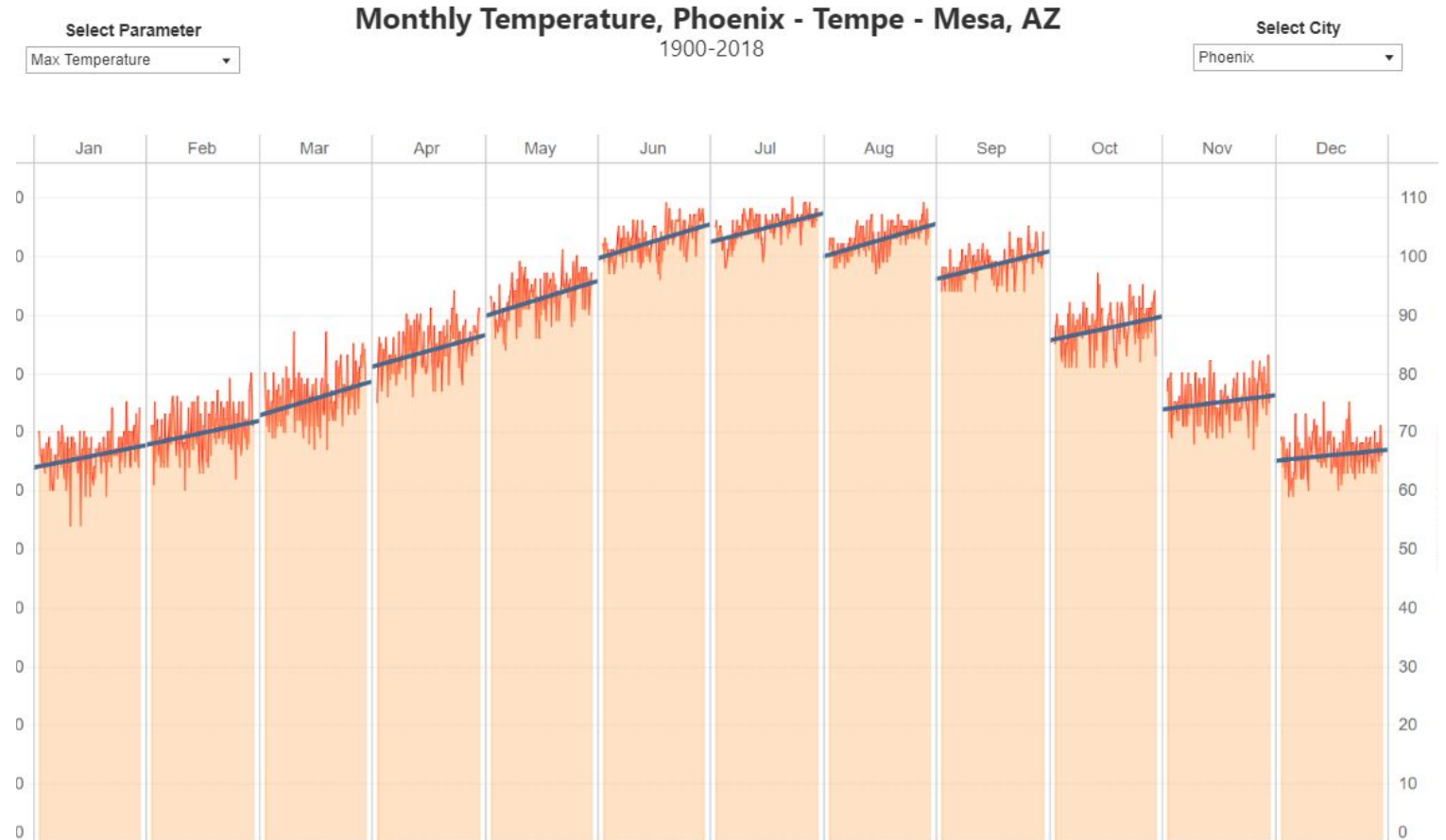
What is HUE?

- HUE seeks to develop, demonstrate and deploy solutions to urban heat and air quality through a public-private partnership for a healthier population across Maricopa County.

An aerial photograph of a city at night, likely Phoenix, Arizona, showing a dense urban landscape with numerous illuminated skyscrapers and buildings. In the background, a range of mountains is visible under a twilight sky. The text "Healthy Urban Environments" is overlaid in white, bold, sans-serif font on the left side of the image.

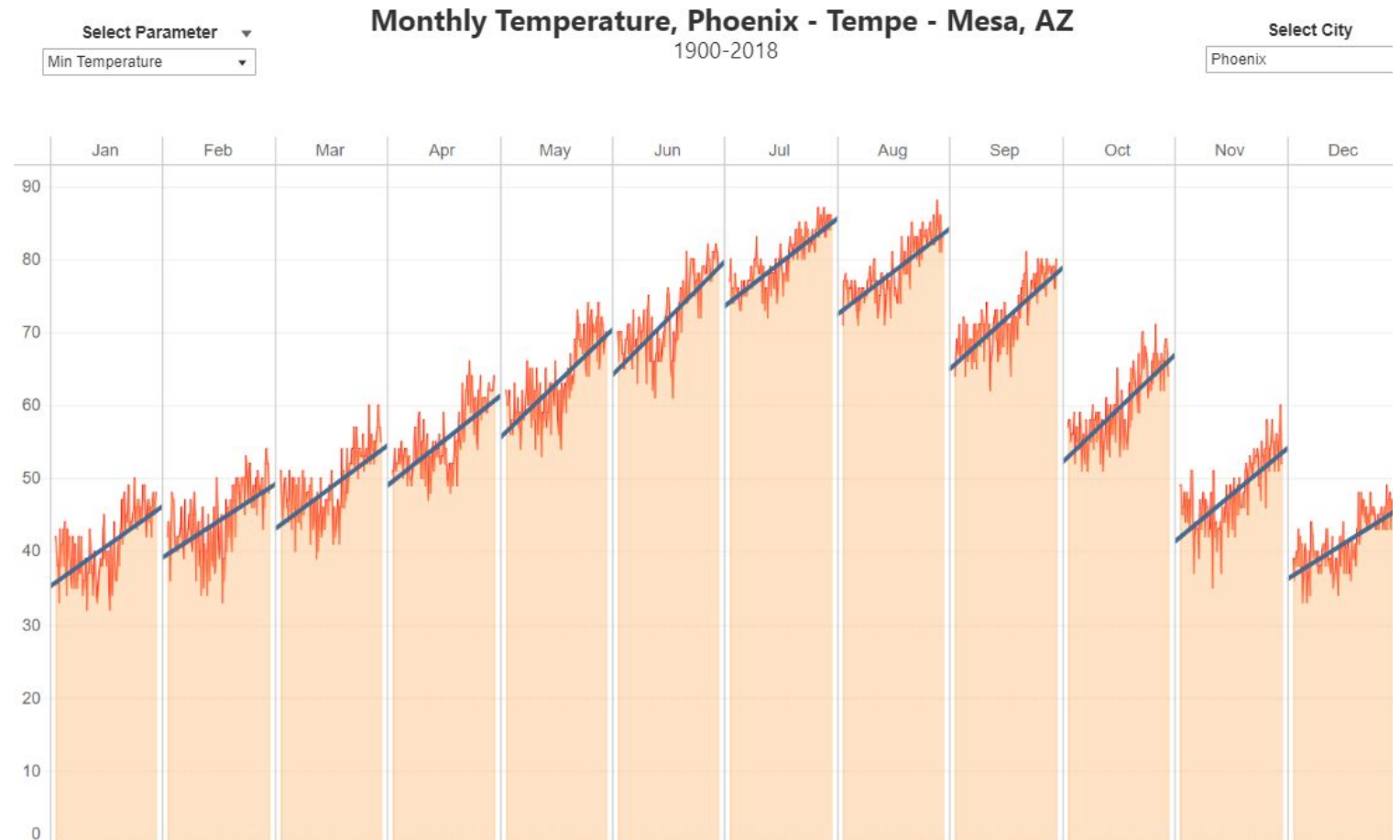
Healthy Urban Environments

Urban Heat – Climate Change

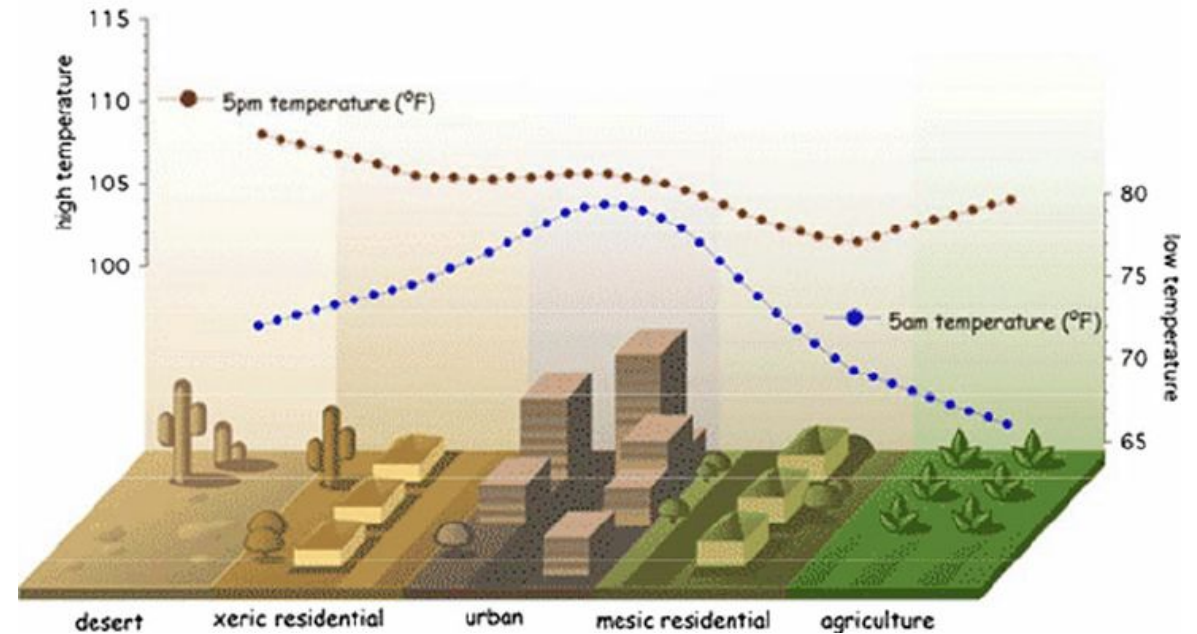


<https://resilience.asu.edu/temperature->

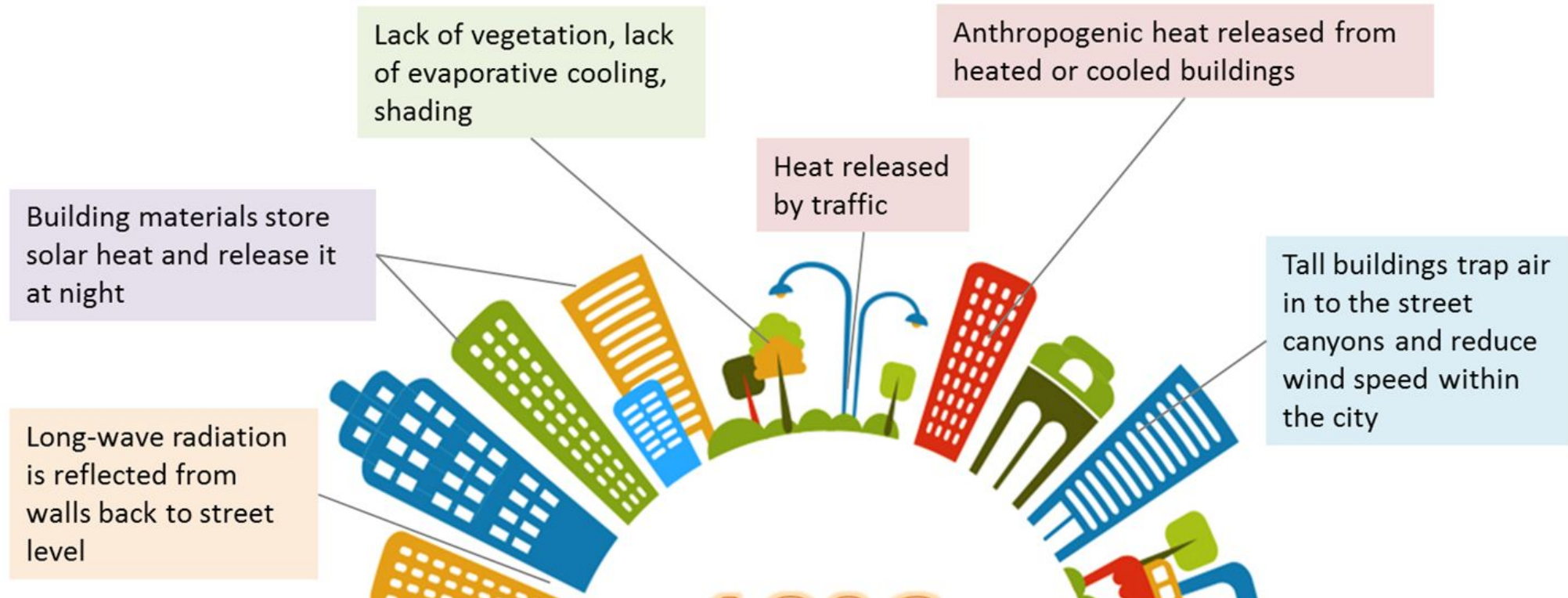
Urban Heat – Urban Heat Island



Urban Heat – Urban Heat Island



Ruddell, D. M., & Dixon, P. G. (2014). The energy–water nexus: are there tradeoffs between residential energy and water consumption in arid cities?. *International journal of biometeorology*, 58(7), 1421-1431.



Urban Heat – Urban Heat Island

Air Quality

- Highly regulated to protect human health
- National Ambient Air Quality Standards ensure pollutants known to impact human health do not exceed certain concentration levels.



Source: Eagar et al., Aeolian Research, 24, 81-91, 2017

Air Quality

- Phoenix was recently designated as non-attaining the **ozone standard**- an oxidant gas that is formed by chemical reactions in the atmosphere
- The other main pollutant of concern in Phoenix is **particulate matter**—liquid droplets and solid material suspended in air.



source: The Telegraph (UK)

Air Quality – Non-Attainment Areas – Why?

- **PM 10 Sources of Pollutant:**

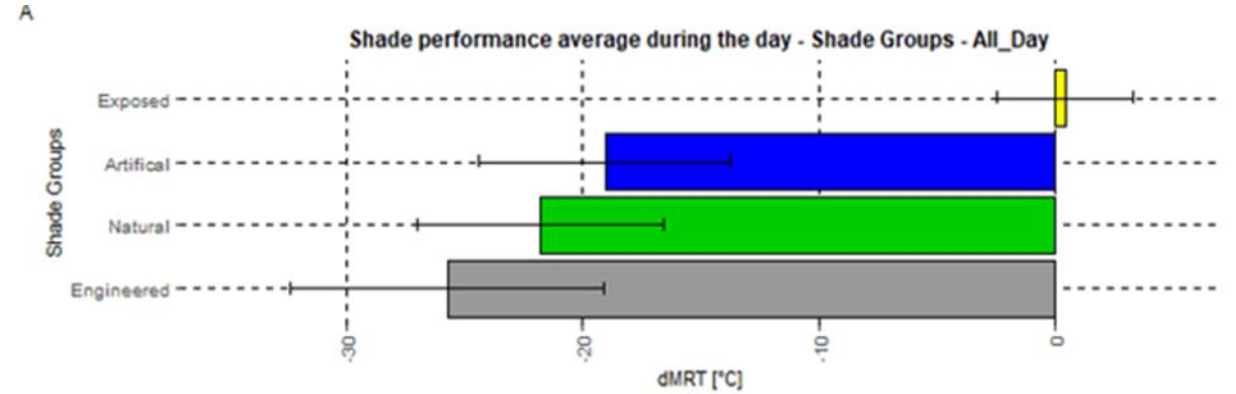
- Unpaved roads
- Paved roads
- Construction
- Windblown dust
- Unpaved parking lots
- Agricultural activities
 - <http://azdeq.gov/node/3952>

- **Ozone Sources of Pollutant:**

- Industrial solvents and coating use
- Residential/industrial fuel combustion
- Open burning/wildfires
- Cars and trucks
 - <http://azdeq.gov/node/4185>

HUE Projects

- Shade
- Cool Pavements & Parking Lots
- Air Quality Impacts
- City/Community Planning
- Adaptation/Mitigation for impacted communities
- Regional governance

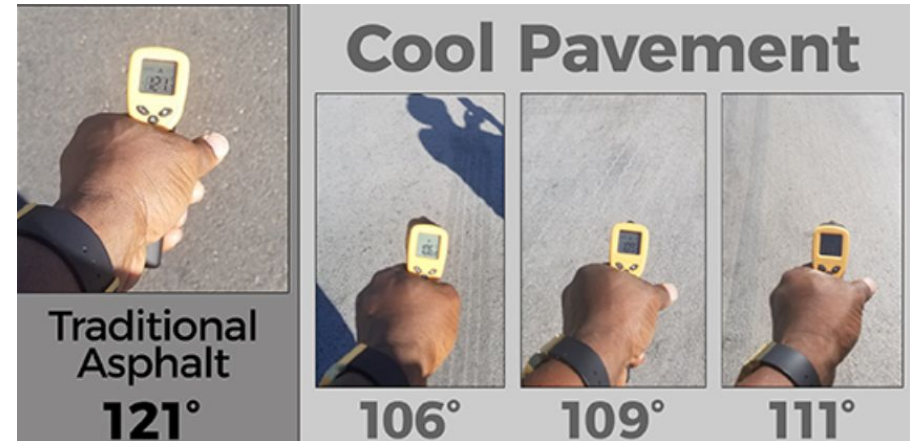


HUE Projects - Shade

Right Shade in the Right Place: Thermal assessment
of natural and engineered shade in Tempe

HUE Projects – Cool Pavements & Parking Lots

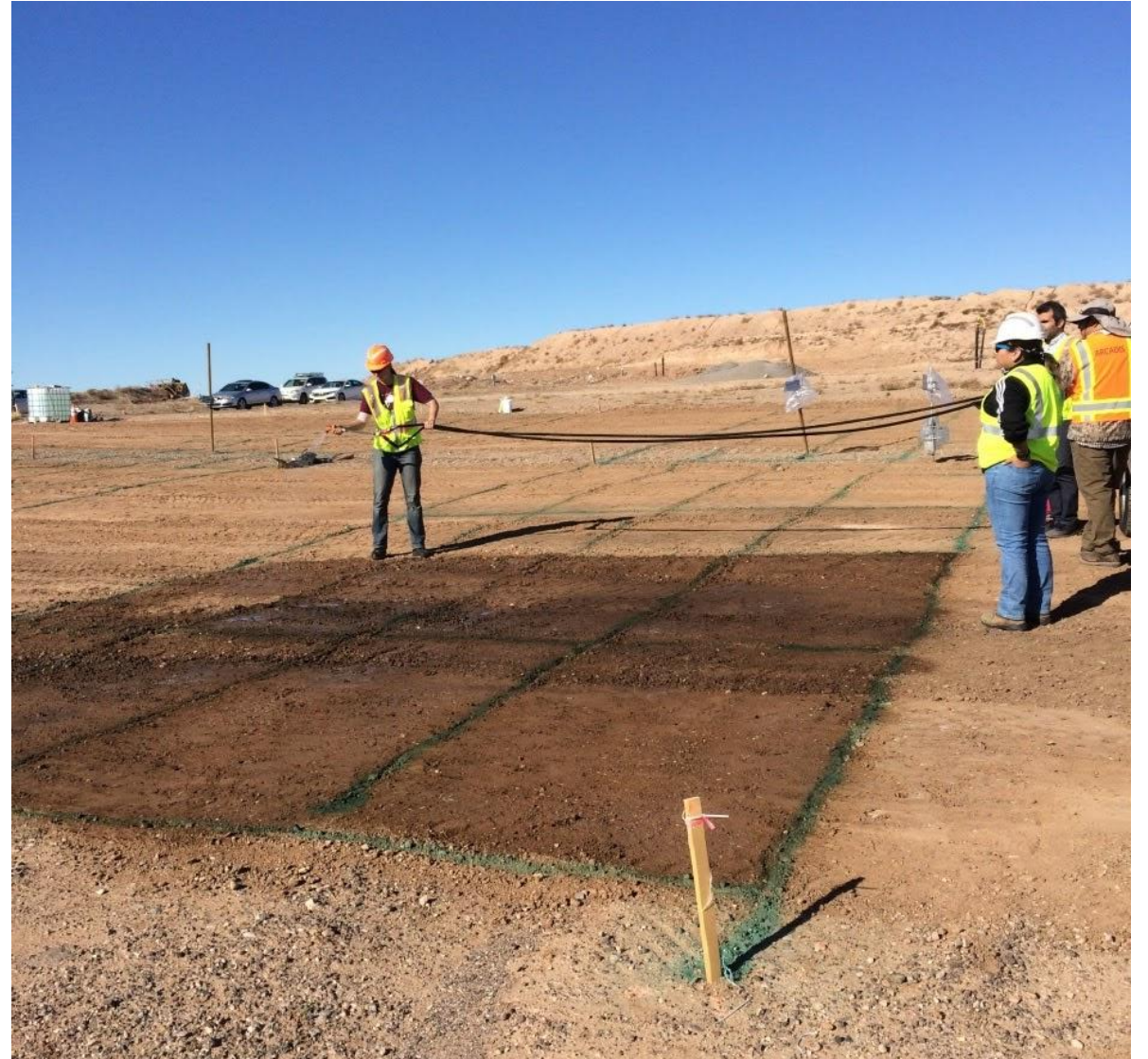
- Benefits of Reflective Parking Lot Coatings – County Parking Lot
- City of Phoenix Cool Seal Pavement Pilot
- Phoenix Zoo Parking Project



<https://www.phoenix.gov/streets/coolpavement>

HUE Projects – Air Quality Impacts

- Teleworking as a strategy to reduce ozone
- Asthma/Pollution/Climate Change education
- Photocatalysts on Solar Panels for NO_x Control
- Quantifying the AQ Benefit of a Novel Dust Suppression Technique



HUE Projects – City/Community Planning

- HeatReady Cities
- Edison/Eastlake modeling of impacts of changes to urban form
- Online Decision-Making Tool for Active Shade Management
- Waking Up Wall St: Creating a cool pedestrian thoroughfare
- Mesa CARE Resilience Hub



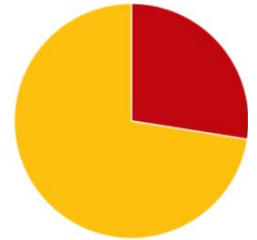
HUE Projects – Vulnerable Populations

- HeatReady Schools, HeatReady Neighborhoods
- Targeted Indoor Warning System
- Heat Awareness in Manufactured and RV Homes
- Revitalizing and Reimagining Outdoor Play and Learning Environments



◀ While **4.9 percent** of Maricopa County residents live in mobile homes,

trailer parks are the site of **27.5 percent** of indoor heat associated deaths ▶



Play Space Redesign

How: Collaborating on Designs

Evolving Future

Current

Norris Design



Input from students, parents, teachers from ASU Design Studio with Dr. Cheng.

• Water Path
• lot of Plants
• Shade

* I like
Nature play as
well. ☺



HUE Projects – Regional Governance

AZ Heat Preparedness and Resilience Group

- Ensure cities and counties have the weather data they need
- Share approaches to heat relief and share communications strategies and resources
- Connect cities and counties to regional and state resources and information



POLITICS

Coronavirus could worsen death toll of summer heat waves, health officials warn

Long and intense heat waves are nothing new in Southern California and the Southwest, but amid COVID-19, public health experts are warning they could become deadlier for people self-isolating in homes they can't keep cool.

May 5, 2020

Los Angeles Times, May 8, 2020

<https://sustainability.asu.edu/sustainable-cities/az-heat-resilience-workgroup/>

Questions?

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HUE 2021 RFP for Sustainable Cities Network



Liza Oz-Golden, AICP
Healthy Urban Environments
June 21, 2021

Proposal Overview

Priority will be given to proposals that

- Demonstrate practical, real-world implications or solutions which can be implemented and evaluated within the project's duration of 1 year.
- Seek to leverage and amplify emerging or existing efforts which would benefit from additional financial, technical and logistical support from HUE.
- Priority will be given to cities that have not yet received a HUE grant.

Topical Areas

- Mitigating dust from vacant lots and alleys for improving particulate matter (PM) concentrations
- Modifying landscaping practices and design choices for reducing air pollution emissions and providing thermal comfort
- Encouraging alternative forms of transportation for improving air quality

Topical Areas

- How does heat mitigation or adaptation get integrated into development and/or municipal planning processes
- Understanding the effects of heat and air pollution on asthma and interventions to reduce impacts
- Characterizing and/or mitigating the impacts of outdoor air pollution and extreme heat on indoor exposures

Topical Areas

- Using a systems view to evaluate what green infrastructure interventions work best to lower air pollution and urban heat
- Communication warning systems for highly vulnerable populations to the effects of Heat + Air Pollution (elderly, asthma, cardiovascular, athletes especially high school students)

Project Themes

- Training and Evaluation
- Demonstration Projects
- Technology Development

Project Teams

1.

Team members from one or more non-university based organizations or stakeholder groups

2.

At least one relevant researcher, or research group, based at ASU

Formatting

Project Justification

Solutions Outcomes

Project Team

Budget

Proposal Guidelines



Deadline

August 30, 2021



Anticipated project Start

September 15, 2021



Funding

Funding is limited to \$50,000 of direct expenses to be spent within 12 months (although we will allow expenditures to continue in a one-year no-cost extension).



Proposal

One to two pages of text maximum, not including references. Times New Roman or Arial font size 12.



Any question?

<https://sustainability-innovation.asu.edu/hue/>

Liza Golden, AICP

Project Manager

Healthy Urban Environments

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