

Heat Action Planning Guide

EDISON-EASTLAKE COMMUNITY

Creating Urban Heat Solutions in the Valley of the Sun



This guide was created for the Nature's Cooling Systems Project, a partnership of The Nature Conservancy, Arizona State University's Urban Climate Research Center and Urban Resilience to Extremes Sustainability Research Network, Maricopa County Department of Public Health, Central Arizona Conservation Alliance, Phoenix Revitalization Corporation, RAILMesa, Puente Movement, and Center for Whole Communities.



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Heat Action Plan for Edison-Eastlake Community, Phoenix



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Executive Summary

Nature's Cooling Systems Project for Heat Action Planning in Edison-Eastlake Community

In Greater Phoenix, urban heat is impacting health, safety, and the economy and these impacts are expected to worsen over time. The number of days above 110°F are projected to more than double by 2060. In May 2017, The Nature Conservancy, Maricopa County Department of Public Health, Central Arizona Conservation Alliance, Urban Resilience to Extremes Sustainability Research Network, Arizona State University's Urban Climate Research Center, and Center for Whole Communities launched a participatory Heat Action Planning effort to identify both mitigation and adaptation strategies to reduce heat directly and improve the ability of residents to deal with heat. Community-based organization Phoenix Revitalization Corporation joined the project team after Edison-Eastlake Community was selected as one of three neighborhoods for Heat Action Planning. Beyond building a community Heat Action Plan and completing demonstration projects, this participatory process was designed to develop awareness of urban

heat and to build agency and relationships between neighborhoods, organizations, community leaders, and decision-makers for doing something about the issue of increasing heat. Storytelling wisdom and scientific evidence were used to understand the challenges that residents face during the hot summer months.

As a result of three workshops within each community, residents brought forth ideas that they would like to see implemented to increase their thermal comfort and safety during extreme heat days. As depicted on page 18, residents' ideas intersected around similar concepts, but specific solutions varied across neighborhoods. For example, all neighborhoods would like to add shade to their pedestrian corridors but preferences for the location of shade improvements differed. Some neighborhoods prioritized routes to public transportation, others prioritized routes used by children on their way to school, and others wanted to see shaded rest stops in

key places. Four overarching themes emerged across all three neighborhoods — **advocate and educate; improve comfort / ability to cope; improve safety; build capacity** — signaling that residents experience serious safety challenges in their day-to-day lives with heat and that community, business, and decision-making sectors can and should work to address those challenges.

Primary concerns in the Edison-Eastlake Community residents identified during workshops include:

1. Lack of shade on walking routes, at bus stops, and vacant lots
2. Lack of access to drinking water
3. Lack of services and amenities for people with disabilities and the elderly
4. Household costs of coping with heat, especially high electricity bills

Solutions envisioned by residents include access to drinking water at one-mile walking intervals; a complete streets approach with improved signaling where pedestrians are shielded from traffic along major streets; shade structures that can be moved around to shelter commuters from the sun at different times of the

day along with amenities like fans (similar to those found at light rail stations); trees or other vegetation installed at bus stops and parks; an expanded warning system that alerts people to hours that are unsafe to be outdoors; and a first aid certification program that would qualify residents as a “certified heat responder”. Heat Action Plans include residents’ proposals for who should be involved in creating cooler and heat-adapted neighborhoods and how those changes can be supported by decision-makers, community organizations, and others.

Heat Action Plans may be used by any resident or community leader to advocate for the integration of urban heat solutions into future changes and programming in the Edison-Eastlake Community.

Comments on Heat Action Planning

“I ride the bus and sometimes I go to the bus stop and it is really hot. Also, my apartment, it’s also really hot in there....I have to go to bus stations and there is no shade structure. There is nothing. There are no trees along the way...I wish that there were more trees where I live...because there is nothing.”

- Edison-Eastlake Resident

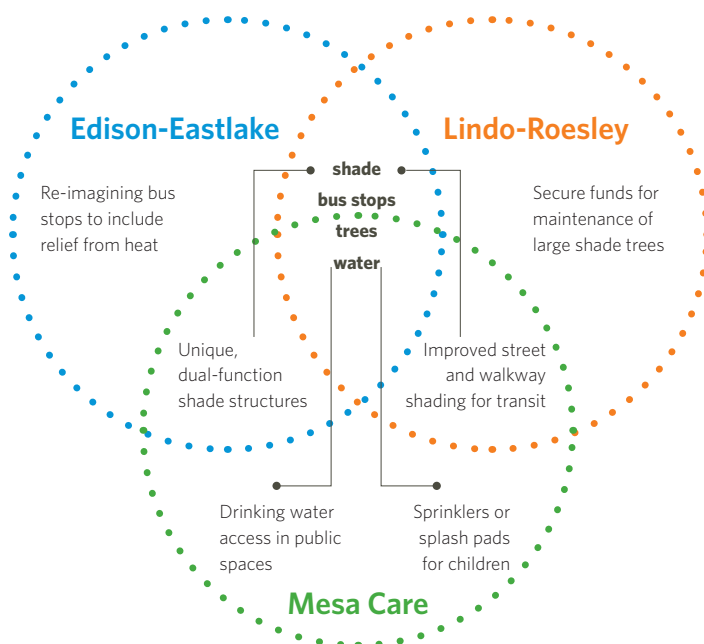
“With conversations with neighbors in South Phoenix, what is very interesting to me is that they say, “Oh it’s hot, that’s normal.” And I think that’s the interesting part of the conversation. It is hot, but it’s not normal. There is something that we can do.”

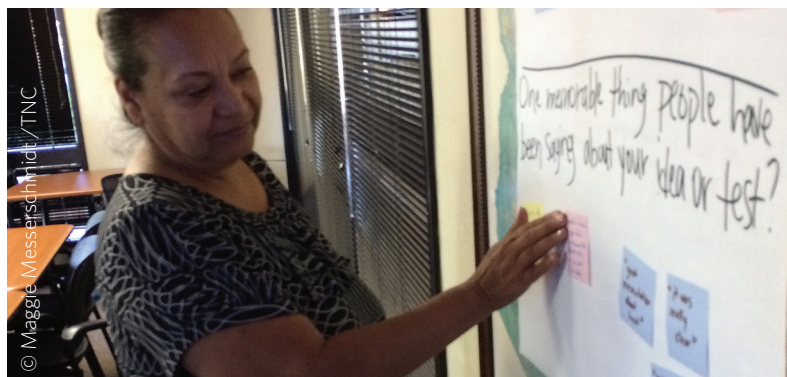
- Community Organizing Partner

“What makes this project unique is that we’re focused on improving quality of life, we’re not just recording facts about heat and shade, etc., you need people’s experiences to drive the process of change”

- Core Team Partner

Visions for a Cooler Neighborhood





Who We Are

This neighborhood is just east of downtown Phoenix and bordered on the north and east by Interstate 10 (extending from 16th Street in the west and the Union Pacific Railroad in the south). The neighborhood has a lot of vacant properties and three public housing sites, with one currently under construction. It has one park in the north and one park just outside the neighborhood boundary in the southwest. Edison Elementary School and St. Luke's Medical Center are both near the center of the neighborhood.

Historically, the Edison-Eastlake Community has been home to a majority Latino population and today more than three quarters of its residents are Latino. In the late 1930's to the 1950's it was subject to redlining such that none of the residents were able to get loans to buy their property. Thus, home ownership today is low (16%). As in other predominantly minority neighborhoods in Central and South Phoenix, a history

of neglect and discrimination against Latinos and other minorities led to the progressive impoverishment of the neighborhood (median household income in the neighborhood is just \$10,708).

From 1942 to 1963, four large public housing developments were built in Edison-Eastlake. However, recently the neighborhood has been selected to receive federal HUD funding for redevelopment as a Choice Neighborhoods community, meaning residents should have an important say in changes to be undertaken in their neighborhood in terms of housing, streets, public transit, and greening. This neighborhood has a relatively high sense of community: nearly two thirds of residents surveyed by the City of Phoenix Housing Department believe that in their neighborhood "people generally get along with each other" and over half feel that "people help each other out" and "we watch out for each other's children."



© Kristin Rothballer

Poem by: Martha Ortiz, 2019 Resident Leadership Council Member

*Uniting our voices in one vision
projecting our vision towards the future
we are a united community with our knowledge
of food, different cultures, and languages,
sharing ideas*

*We are an example for the generations
that follow what we see now tomorrow
will be different*

*A clean safe and green community
the children could run play and enjoy
the clean air without any danger*

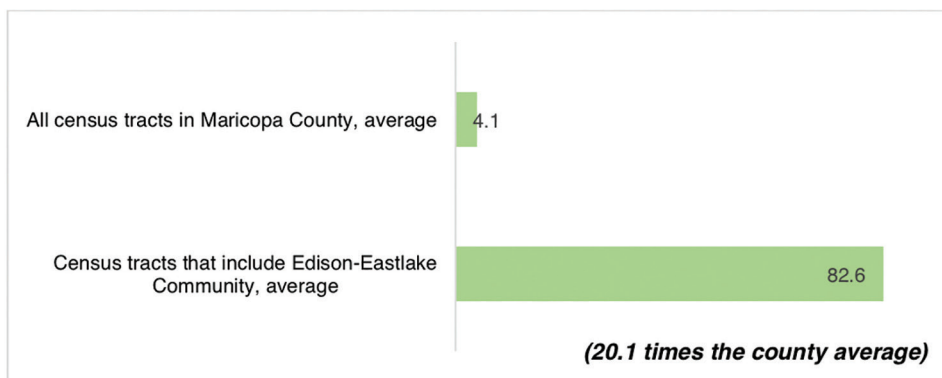
Neighborhood Baselines

Edison-Eastlake Community

The following data provide a baseline reference for the Edison-Eastlake Community. Tracking these indicators over time will help neighborhoods and those involved in planning decisions understand whether their heat mitigation and adaptation initiatives are helping to improve (or hurt) the current situation.

Health

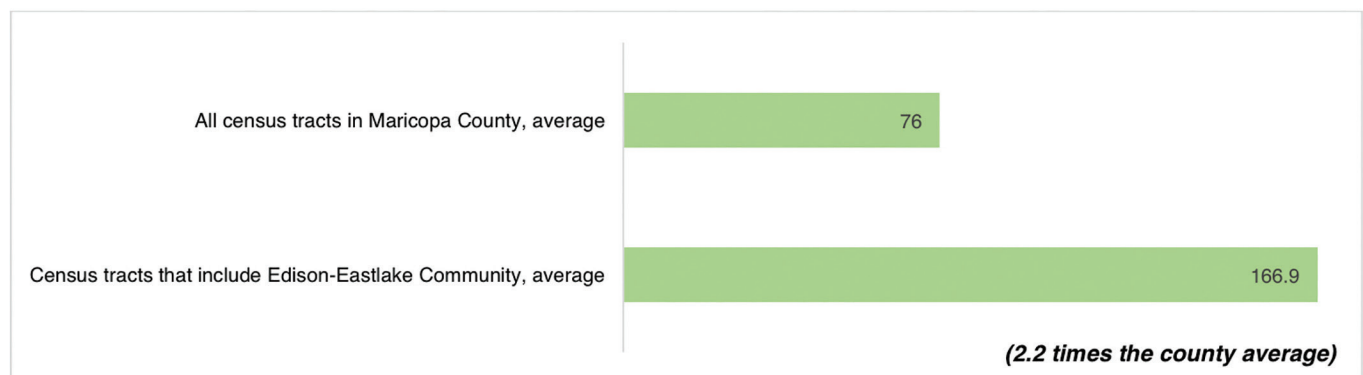
Average annual heat-associated death rate per 1,000,000 population, 2012-2017



99.4% of Maricopa County census tracts had lower heat-associated death rates than the Edison-Eastlake Neighborhood, 2012-17

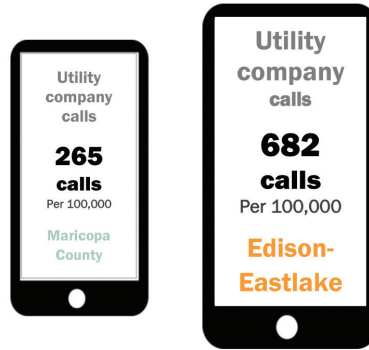
* Reasons for exceedingly high rates of heat deaths are not currently known.

Average annual heat-associated illness rate per 1,000,000 population, 2012-2017



95% of Maricopa County census tracts had lower heat-related illness rates than the Edison-Eastlake neighborhood, 2012-17.

Utility Issues



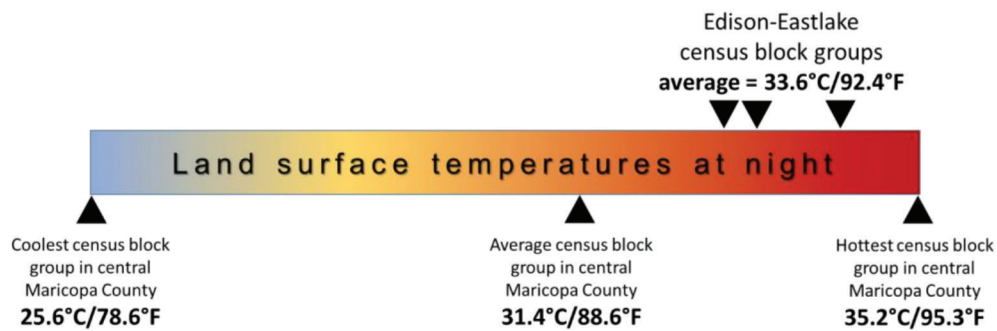
Environmental characteristics

Land surface temperature on 8/6/2014 at night

92.4 °F

33.6 °C

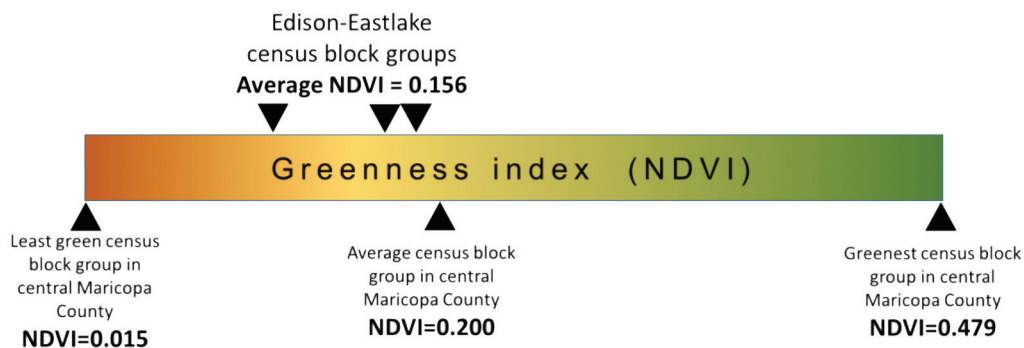
Regional land surface temperature comparison



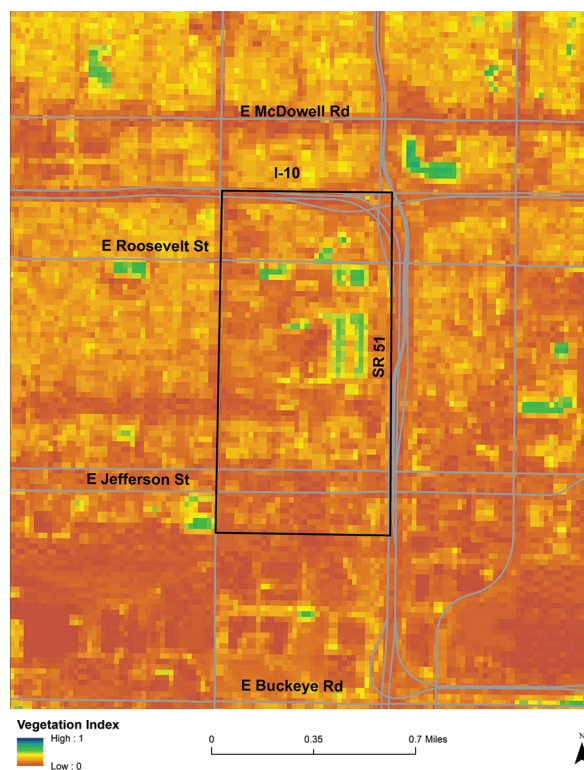
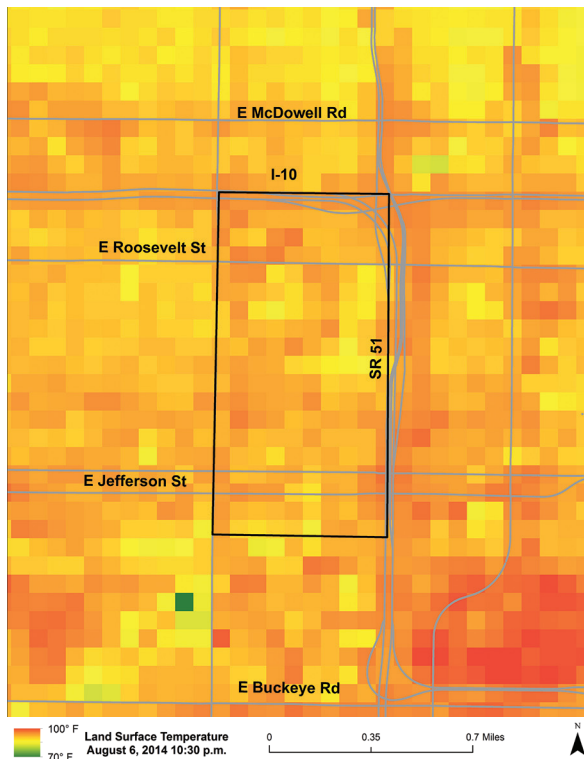
Tree coverage 5.3% ▪ County average 8.8%



Census Block Groups



Land Surface Temperature (top) and NDVI (bottom) within Edison-Eastlake Community.



Summary of Environmental Characteristics: Edison-Eastlake

Surface temperatures: All parts of the neighborhood rank among the hottest in central Maricopa County. In particular, the southern part of the neighborhood, below Van Buren Street, has especially high surface temperatures.

Vegetation coverage: The neighborhood has very low tree coverage compared to others in central Maricopa County. Some parts of the neighborhood benefit from a relatively high amount of grass coverage, including the central portion of the neighborhood between Van Buren and Roosevelt that has nearly twice the regional average grass cover.

Greenness: All parts of the neighborhood rank below the regional average in terms of greenness, with the southern part of the neighborhood, below Van Buren, especially lacking.

Methods

Baseline data were sourced from the following databases:

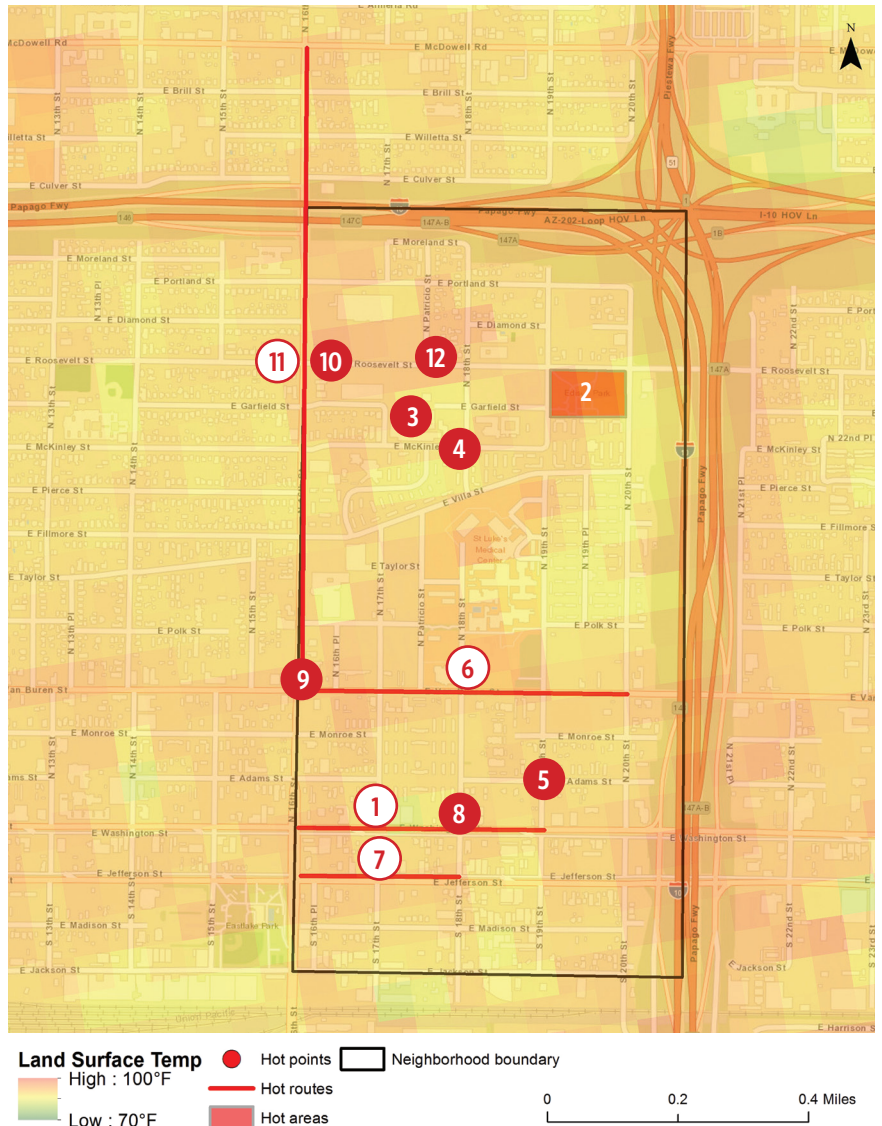
Maricopa County Department of Public Health (MCDPH) heat mortality surveillance, MCDPH heat morbidity surveillance, Arizona 2-1-1, NASA ASTER satellite imagery, NASA LANDSAT satellite imagery, the National Agriculture Imagery Program (NAIP), and the US Census Bureau. Some of the variables were measured at the census tract level, some were measured at the census block group level, and some were measured at the zip code level. Census tracts are regions that include 2,500 to 8,000 people. Census tracts are divided into multiple census block groups. Tracts and block groups were selected based on neighborhood boundary lines. Individuals were counted in these rate calculations if they had an address that could be geocoded to a Maricopa County census tract. Neighborhood-specific rates were calculated by average rates of census tracts included within the neighborhood's boundaries. To request additional public health data, contact the Maricopa County Department of Public Health, Office of Epidemiology at <https://www.maricopa.gov/3511/Request-Data>. Environmental data sets were provided by Arizona State University and can be made available through ASU's Urban Climate Research Center at <https://sustainability.asu.edu/urban-climate/>.

Edison-Eastlake Community Hot Spot Intervention Points

Hot spot maps were developed through a process of identifying areas where community members have experienced difficulty with the heat while moving through their neighborhood. The core team recommends that they be used to define points of intervention for improving thermal comfort.

ID NOTES

- 1 Hot route - Washington St. from 16th to 19th St
- 2 Edison Park - needs buildings and programming, needs light, benches and activation for safety
- 3 Edison Elementary School - for after school programs but not accessible when school is not in session
- 4 The hot, underutilized asphalt lot across the street across the street from 1741 E. McKinley
- 5 Adams and 18th st - street runoff pools here
- 6 Hot route - Van Buren corridor - 16th st to 20th st - scarce vegetation and shade
- 7 Hot route - Jefferson St. from 16th to 18th
- 8 18th St. & Washington NW corner
- 9 Van Buren & N. 16th St.
- 10 Hot Bus Stop on Roosevelt
- 11 N. 16th St. to McDowell Bus Stops
- 12 Roosevelt St. and Patricio St.

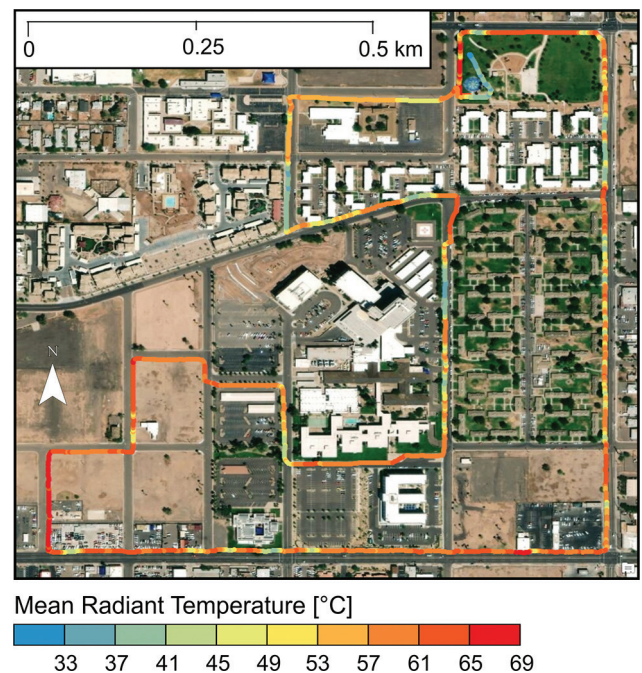
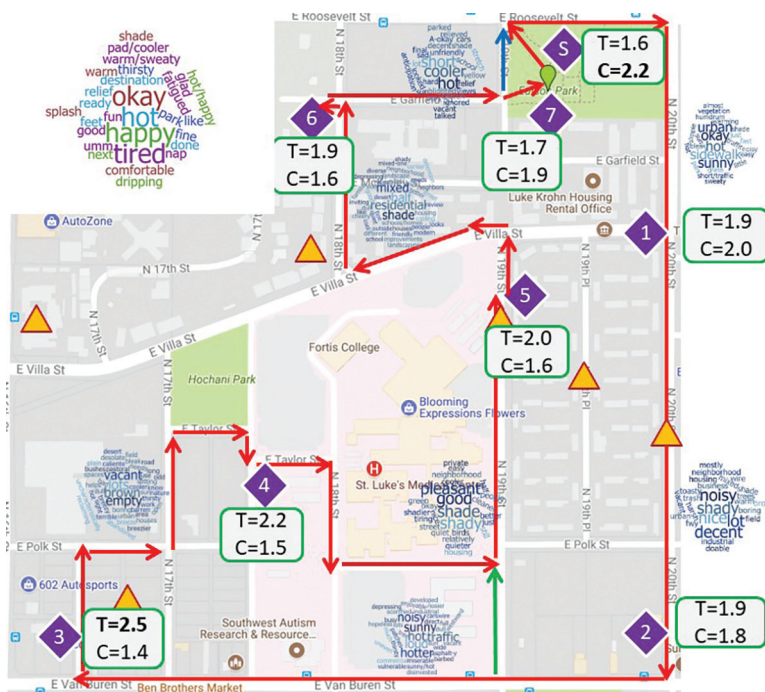


HeatMappers Walk Results in Edison-Eastlake Community

The map shows the results from the HeatMappers Walk, a public science event held in Edison-Eastlake Community on September 29th, 2018 at 4 p.m., a day which reached 105°F (40.5°C). This event was another attempt to understand “hot spots” in the neighborhood and learn what key factors influence residents’ perceptions of comfort and heat. The point with the highest/hottest thermal sensation vote and lowest comfort vote was at the corner of Van Buren and 16th Place. This point corresponds to a mean radiant

temperature reading of 148°F (64°C) and a surface temperature of 113°F (45°C). Meanwhile Edison Park, with a mean radiant temperature reading of 99°F (37°C) under tree shade, had the lowest/coolest thermal sensation vote and the highest comfort vote, and this held true even after participants walked the entire 2.4 mile/3.9 km route. Word clouds show descriptions that the public used to describe sites along the route.

Comfort (C): 0 (very uncomfortable) to 3 (very comfortable)
Thermal sensation vote (T): -4 (very cold) to +4 (very hot)



Edison-Eastlake Community Cool Spots

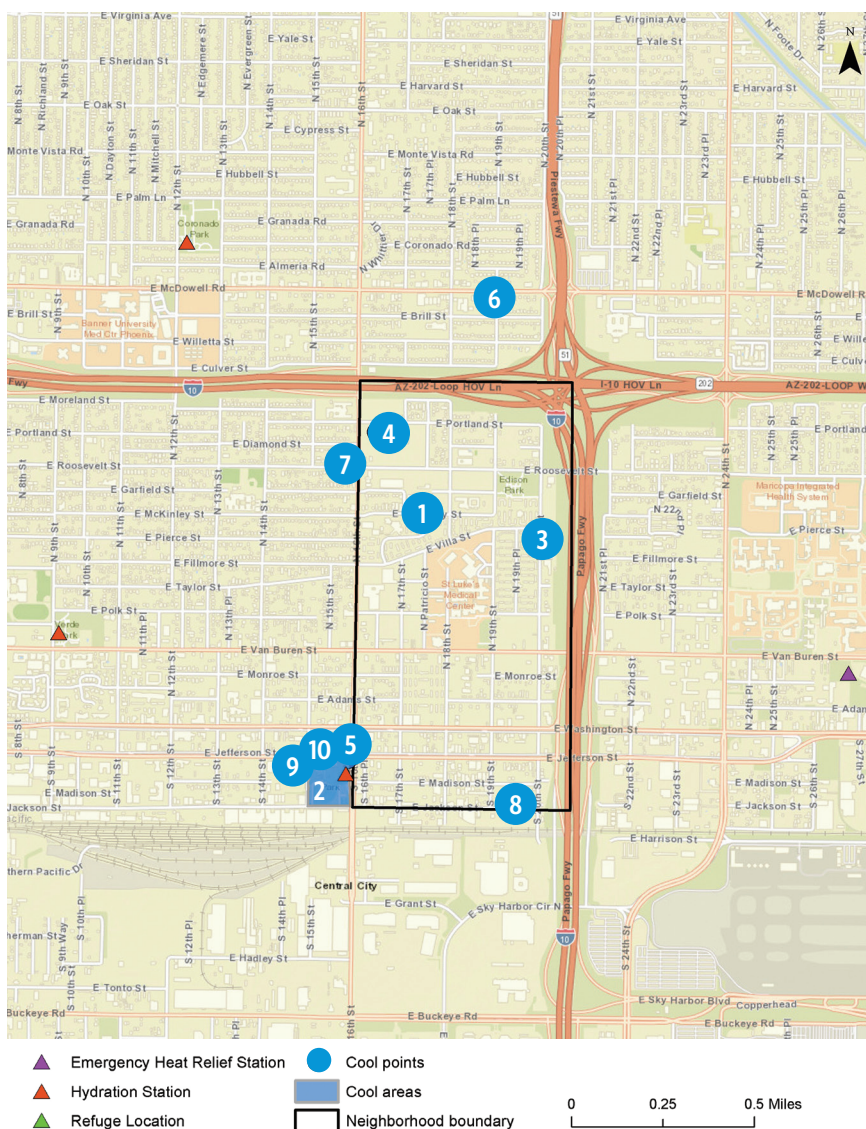
Cool spots represent cooling assets that residents identified during workshops or existing emergency heat relief stations, hydration stations, or cooling centers / refuge locations.

ID NOTES

- 1 Aeroterra Community Center - but not open to public, not open from S. side, not well known by residents, education and training resource
- 2 Eastlake Park - with community center and community pool (9 & 10)
- 3 Saint Philip-Deacon Catholic Church
- 4 Los Altos Ranch Market - seating inside with deli
- 5 Salvation Army Pop Up Tents - water distribution
- 6 McDowell Place Senior Center - neighborhood taxicab that charges \$1 - city car
- 7 Church's Chicken
- 8 East Jackson Street
- 9 Eastlake Community Center
- 10 Eastlake Swimming Pool

"The heat really does affect your psyche and your calmness. It makes you just angry."

- Resident, Edison-Eastlake





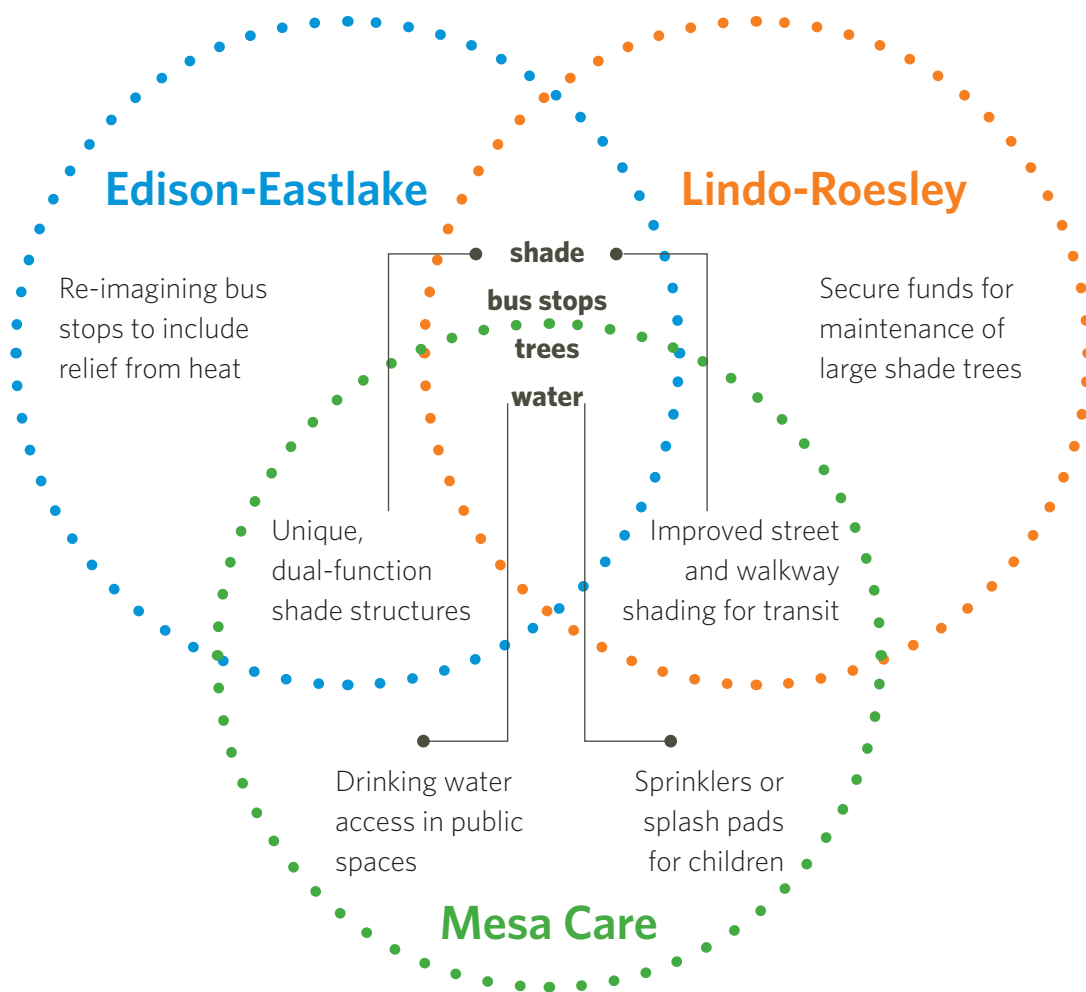
© Peter Conden

Resident Visions for a Cooler Neighborhood

As a result of three workshops within each community, the residents brought forth ideas that they would like to see implemented to increase their thermal comfort and safety during extreme heat days. The ideas were similar across different neighborhoods, but specific applications of solutions varied across neighborhoods. For example, all neighborhoods would like to add shade to their walksheds but preferences for shade implementation differed, as some neighborhoods prioritized routes to public transportation, others prioritized routes used by children on their way to

school, and others wanted to see shaded rest stops in key places.

Timing is an issue for the city decision-makers and residents alike. Residents would like to see improvements within a very short time, as in the next year. Yet, the planning and funding cycle for capital improvement projects can be five to ten years in the future. The adaptation and mitigation strategies developed from these workshops seek to balance a long time horizon with immediate, grave needs.



Edison-Eastlake Community in Central Phoenix:

Primary Concerns:

1. Lack of shade on walking routes, at bus stops, and vacant lots
2. Access to drinking water
3. Services and amenities for people with disabilities and the elderly
4. Household costs of air conditioning

Solution Story

Residents in this Central Phoenix neighborhood are concerned about the lack of shade and subsequent exposure during extreme heat and the dearth of options for obtaining drinking water when leaving home. Further, residents are interested in learning how to handle heat health emergency situations and requested a preventative warning system beyond what is currently available and a first aid certification program specifically for heat situations. This community is particularly concerned about services and amenities for people with

disabilities and the elderly. It is a challenge for residents to manage the high cost of summer electricity bills and to keep indoor spaces cool enough while staying within their budget. Higher average temperatures for this neighborhood make this situation worse.

Another area of concern identified by residents are the hot walking routes around the Edison-Eastlake Community that have no vegetation or engineered shade, and are along vacant lots, which kick up dust during windy weather. Residents requested desert-appropriate trees be planted along identified highly used, and barren access routes. Sidewalks, many in disrepair, could be replaced with cooler materials. Access to drinking water at one-mile intervals will provide a needed heat safety element. A complete streets approach, with improved signaling, where pedestrians are shielded from traffic was highly requested along the major roads encircling the neighborhood.

Compounding the issue of unshaded streets, the majority of residents in this community rely on public transportation and, after a hot, dusty walk, have no reprieve once they get to the bus stop. A bus stop sign post does not offer any relief. In a complete re-imagining of what a bus stop could be, residents would like to have a structure that provides shade elements that can be moved around to shelter commuters from the sun at different times of the day, along with amenities like misters (already being tested within the City of Phoenix), fans (similar to those found at light rail stations), and drinking fountains. Seats at bus stops that can be reversed to take advantage of shade were also mentioned. The shade structure for a bus stop would not have to be made from solid material; an inverted “V” or angled roof over the stop that is covered in flowering vines and vegetation would provide shade and a sense of beauty to the community. To ensure safety, residents would like panic buttons, safety lights, and a configuration that allows for brief rest but discourages encampment. They felt that misuse of bus stops by some homeless people has limited or prevented bus stop use for their original purpose. Signage about heat training and safety

information, along with wayfinding, can be posted at bus stops. Trees or other vegetation installed at bus stops would require access to irrigation. Stormwater could be captured for this purpose for supplemental irrigation. A drinking fountain could be included in the planning stages.

Edison-Eastlake

“I ride the bus and sometimes I go to the bus stop and it is really hot. Also, my apartment, it’s also really hot in there....I have to go to bus stations and there is no shade structure. There is nothing. There are no trees along the way...I wish that there were more trees where I live, ...because there is nothing.”

- Edison-Eastlake Resident

“In the cars, they get really hot and we have the child seat for my grandson and when they buckle the child seat, it burnt his legs because it was really hot.”

- Edison-Eastlake Resident

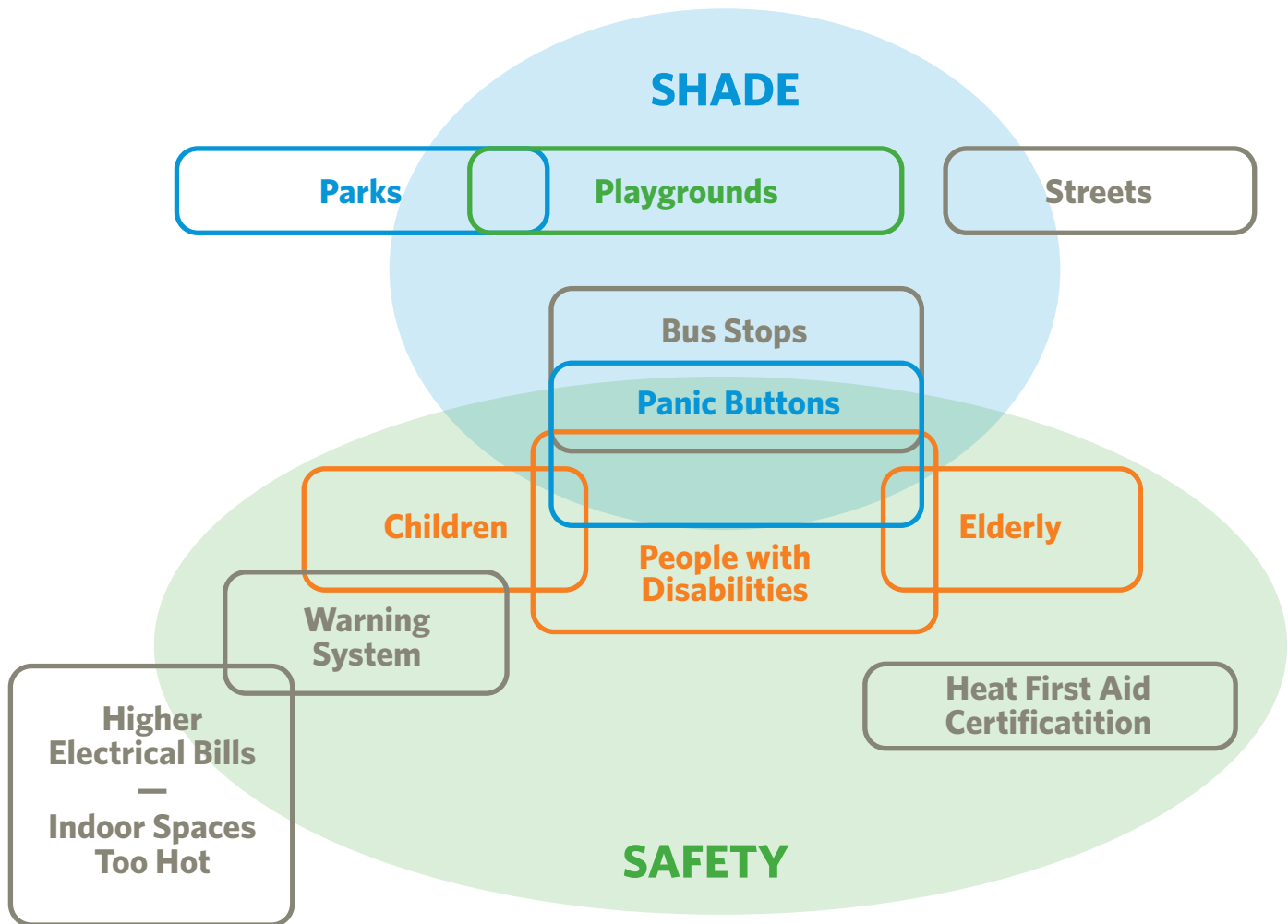
The current HUD Choice Neighborhood Plans call for a linear park to be installed along 19th St. Residents would like this park to have “talking spaces” where neighbors can catch up and chat with each other, lots of trees where people congregate and walk, seats at the edge of the proposed playground, shade structures, barbecue pits, and tables with a lot of seating to encourage the community to mingle with each other. Some residents recalled a time when sprinklers were available for the kids to play in during the summer months and would like to bring sprinklers back to different parts of the neighborhood. They requested that nearby pools stay open later because it is too hot to go to the pool midday and yet it is still hot in the early evening. Pools could open earlier in the morning, too.

To help keep neighbors safe from heat-related health issues, residents want an expanded warning system that alerts people to hours that are unsafe to be outdoors and other preventative measures. This could be part of an Arizona Heat Awareness Day and could be disseminated through text messaging and public service announcements on television. Heat distress symptoms could be posted in lobbies, laundry rooms, restrooms, and schools. Residents were surprised to learn that pavements can reach upwards of 150°F during the summer. Therefore, it would be unsafe to lay someone on the pavement if they felt ill. They requested a first aid certification program that would qualify residents as a “certified heat responder.” These heat responders would know how to distinguish between heat stress and heat stroke, and how to respond in emergency situations.

They could also educate neighbors on how to stay safe in extreme heat, to always carry water, and explain how extreme heat impacts your life. A version of this training could be for “end of school” training for K-12 students so they stay safe during the summer and do simple things like freezing water bottles before leaving home.

Residents of Edison-Eastlake would like to have grand entrances into their community that reflect neighborhood identity and character. Signage on bus stops and wayfinding signs could provide information and be done in a way that signals you are in the Edison-Eastlake Community, while assisting you in getting to your destination via the coolest or most shaded route.

Residents’ proposed heat solutions fell primarily into categories of shade and safety, with variations on how to implement.



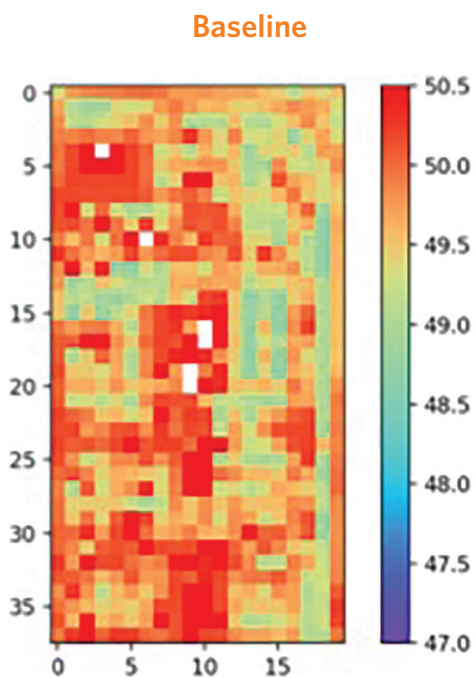
Modeled Changes to Urban Heat

Edison-Eastlake Community

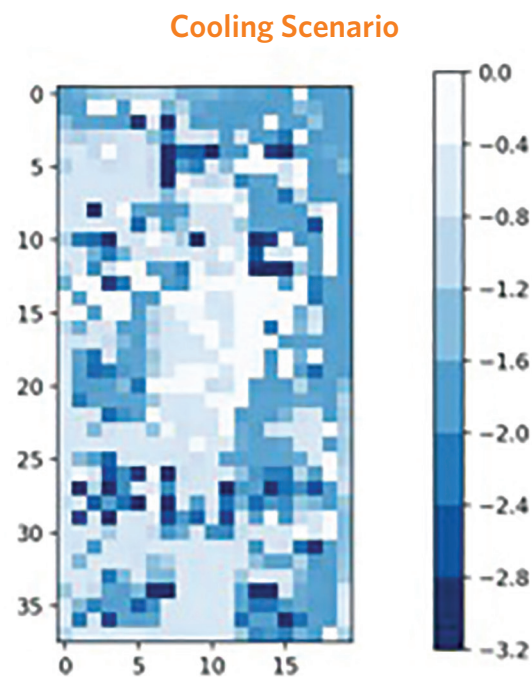
Using data from June 2017 and land cover data (2010 NAIP) to study the potential impact of these heat actions on the neighborhood, the existing land cover was simulated along with representations of proposed changes to the neighborhood. Specifically, the neighborhood was conceptualized with increased tree coverage. In this tree coverage scenario, we increased percentage of tree canopy within the neighborhood to 30%. These simulations are shown in the associated figures: the baseline, and then the cooling scenario which uses a “relative-to-baseline” legend to highlight the maximum cooling effect.

Similarly to Mesa and South Phoenix neighborhoods, increasing the tree canopy to 30%, we see widespread cooling across the Edison-Eastlake Community

(~2° F for most of the neighborhood). This cooling will certainly be more localized in reality; however, this map shows the potential for significant cooling in the neighborhood. Some areas already show significant cooling in certain pockets of Edison-Eastlake, specifically in areas that were some of the hottest in the baseline and had the least amount of shade (around the parking lot of the grocery store and near the hospital). This cooling could then be prioritized to these warmest locations, as well as near bus stops and along common active transit routes to provide increased shade for individuals spending time outdoors. Note: areas with no change in temperature are areas where the tree canopy in the 30 m by 30 m cell was at or above 30%.



Simulated 4pm near surface air temperature (C) of the Edison-Eastlake Community on June 20, 2017.



Simulated 4pm near surface air temperature (C) of the Edison-Eastlake Community with added trees on June 20, 2017.

Drawings of a Cooler Neighborhood

Walkability/Roosevelt (street section)



Walkability/shade/linear park (plan)

This graphic demonstrates changes that can be made in the public right of way that can aid in creating a cooler environment for pedestrians along this street.



Bus stop/shade/cooling/18th St Washington NW Corner (perspective)

An increase of shade at bus stops as well as the safety elements of accessible water and a blue light system can ensure that public transit users have a more comfortable experience.

