

# Heat Action Planning Guide

LINDO PARK-ROESLEY PARK NEIGHBORHOOD

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.



What makes  
my  
community  
**STRONG?**



# Heat Action Plan for Lindo Park-Roesley Park Neighborhood, South Phoenix





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# Executive Summary

## Nature's Cooling Systems Project for Heat Action Planning in Lindo Park-Roesley Park Neighborhood

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 process to identify both mitigation and adaptation strategies to reduce heat directly and improve the ability of residents to deal with heat. Community-based organization Puente Movement joined the project team after the Lindo Park-Roesley Park Neighborhood was selected as one of three communities 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 55, 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.

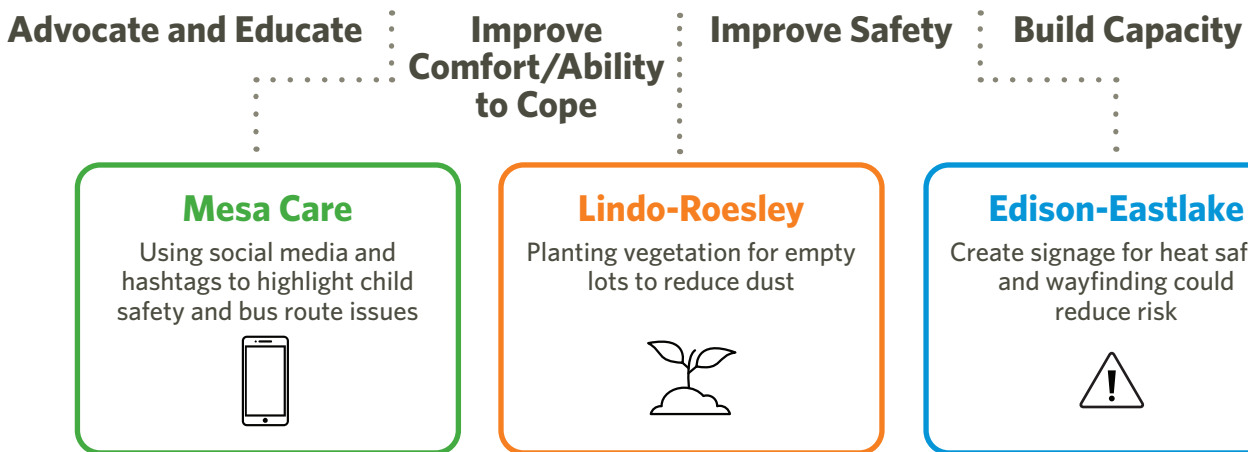
Primary concerns in the Lindo Park-Roesley Park Neighborhood that were identified by residents during workshops include:

1. Financial burden and lack of resources for tree planting and shade
2. Risk of heat-related illness and the need to create safety during the heat, especially for students and seniors living alone
3. Children often stay inside during the summer months
4. Vacant lots and dust
5. High electricity bills made worse by poor quality housing materials and lack of insulation in homes
6. Need to develop advocacy skills to promote the heat mitigation and adaptation strategies

Residents would like to see a fund developed that would help to maintain shade trees, assist with the financial burden of removing dead trees, and the purchase of replacement trees. Shade along walking routes, especially for children on their way to school, is a priority for Lindo Park-Roesley Park Neighborhood. Residents expressed an interest in approaching shade, water, and access to bus routes as a system, especially along 7th Avenue and Alta Vista and Roeser Road between 7th and 15th Avenues. Walking paths that have amenities like shade, drinking fountains, and benches would allow for protection from the heat while outdoors and the ability to rest and cool off on the way to a destination. Installing better insulation would also help to lower bills.

Heat Action Plans also include residents' proposals for improved communication with decision-makers and advocacy for urban heat solutions by 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 or programming in the Lindo Park-Roesley Park Neighborhood.

## Strategic Themes





# Who We Are

This neighborhood lies entirely south of the Salt River, from the northern bank of the Salt River to Southern Avenue in the south and from its western edge at 23rd Avenue to the east at 7th Avenue. The Lindo Park-Roesley Park Neighborhood thus is near, but not in, the planned Valley Metro Light Rail expansion along Central Avenue. The community is over two-thirds Latino but has a sizeable Black population (18%) as well. Beginning in the early part of the 20th century when Mexican immigrants moved to Phoenix they were largely conscripted to agricultural labor, and Latinos and Blacks were required to live south of the river (but these two groups were segregated from each other). Owing to the expansion of manufacturing in the 1950's, the area has mixed land uses, brownfields, and contaminated sites along with pockets of agriculture. Median household income in the Lindo Park-Roesley Park Neighborhood is \$37,345 and over half of the homes are owner-occupied.

Roesley Park is near the center of the neighborhood and Lindo Park is at the extreme western edge on Roeser

Road; CJ Jorgensen Elementary School is to the east on Roeser Road near the middle of the neighborhood. A community garden just south of the neighborhood (Spaces of Opportunity) has the goal of providing fresh produce for South Phoenix families.

Puente Movement, the Community-Based Organization that organized around Heat Action Planning in South Phoenix, worked with parents and children in the area to respond to the question of what green spaces mean to develop the poem (originally in Spanish on page 57.)

## Comments on Heat Action Planning

"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**

"There's no place to keep cool, so we all talk about all that kinda stuff, we talked about how it's a cycle, where the kids don't really go outside to play because it's too hot. So, they'd rather stay indoors and watch movies, and play on Xbox, watch Netflix, and that brings about illnesses, or obesity, and that kinda stuff."

**S. Phoenix Resident**







## Everyone Tells Something to the Park

*The parks of the community are our Disneyland. If you live in an apartment, it's your yard where you can play freely. They are always available and there is space for us.*

*It is the way that we relax and we can walk, run, and breathe.*

*A park can be our community center where we see friends, family, and those who we wish to call family.*

*In these neighborhood parks we can enjoy a bit of nature, we can remember that in this concrete jungle there are places where we can touch the earth with our bare feet. You can run and not burn yourself. You can yell and not wake anyone up.*

*When I arrived in Phoenix the only place that I felt free was in the park, where I felt welcome.*

*When I don't want to talk to anyone, I just come here to walk. There is noise but the noise isn't mine. And when I want to see someone, or be with someone, or talk with someone that I don't know well, I come to the park and I find what I need.*

*It is the community gathering space that we don't have, it is the center where we have events and everyone knows what it is and where to find it. No one is intimidated and it's a place for everyone.*

*The park has happy, sad, and profound stories, and everyone tells something to the park.*

*The park is a prize for our children. Its convenience and open admission make the park something special at the center of our economy.*

*"Here in this neighborhood we've had some issues with the power (with Salt River Project - SRP) because everyone wants to crank up their AC, or have on all the fans, or have on their coolers, and it's too much power being used. So, the power falls off, the power, it's just too much. The SRP has control over the circuit over the heat, and there's no power. So sometimes this goes on for hours, it could be minutes, but we don't know how long it's going to last. So, we've had to make sure to keep our kids and our elderly people safe, and I think that's one of the concerns that we have. There's no pool areas in this neighborhood, the parks are hot, there's no shade over the playground."*

**- Resident, Lindo Park-Roesley Park**



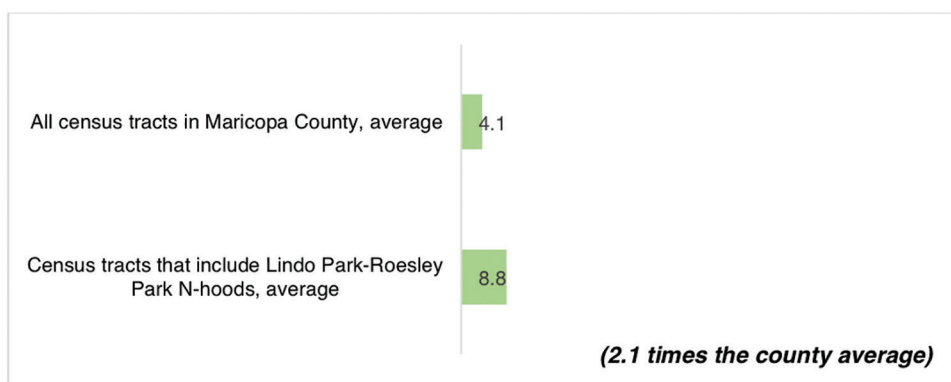
# Neighborhood Baselines

## Lindo Park-Roesley Park Neighborhood

The following data provide a baseline reference for the Lindo Park-Roesley Park Neighborhood. 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

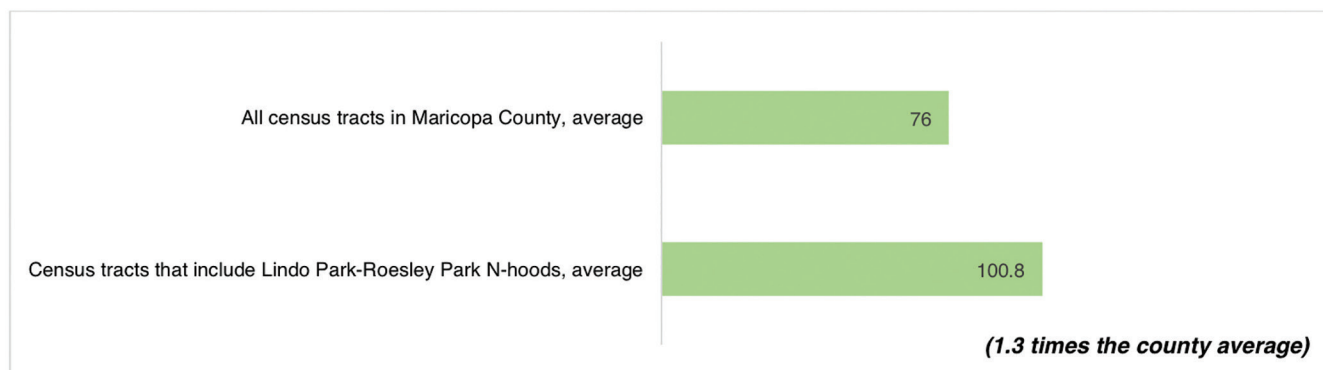
#### Average annual heat-associated death rate per 1,000,000 population, 2012-2017



**81.2%** of Maricopa County census tracts had lower heat-associated death rates than the Lindo/Roesely Park Neighborhoods, 2012-17

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

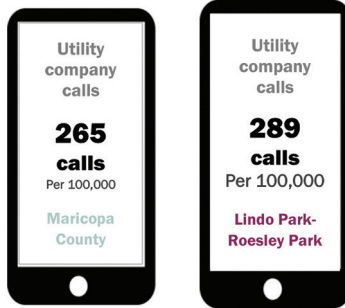
#### Average annual heat-related illness rate per 1,000,000 population, 2012-2017



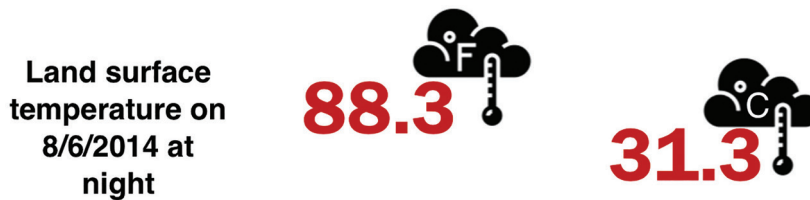
75.1% of Maricopa County census tracts had lower heat-related illness rates than the Lindo/Roesely Park Neighborhoods, 2012-17.



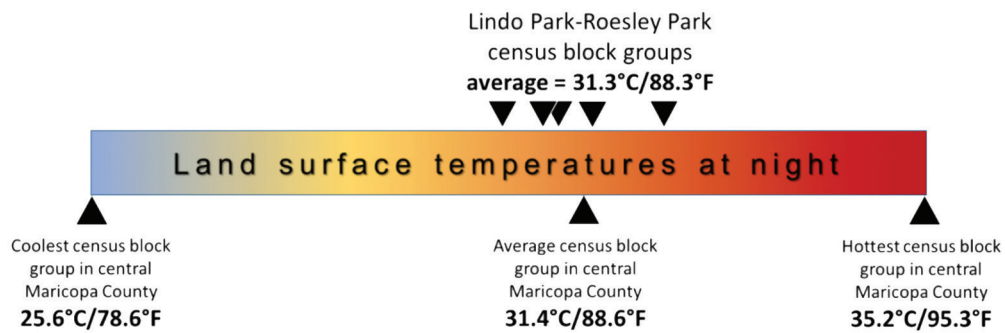
## Utility Issues



## Environmental characteristics



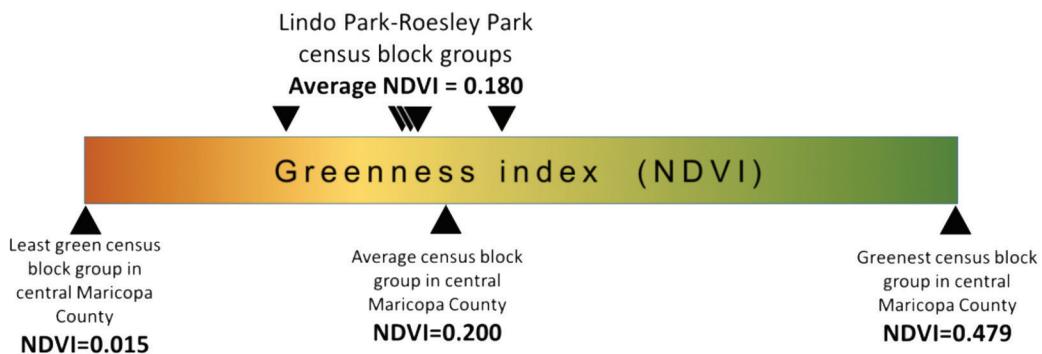
### Regional land surface temperature comparison



### Tree coverage 2.0% ▪ County average 8.8%

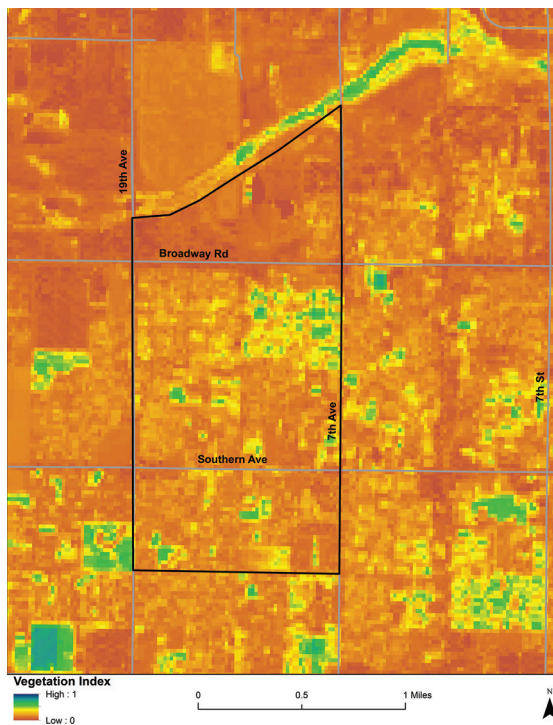
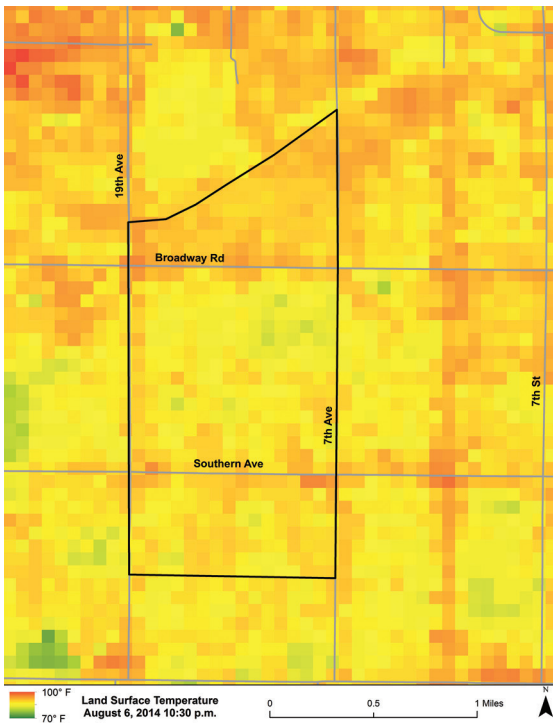


### Census Block Groups





## Land Surface Temperature (top) and NDVI (bottom) within Lindo Park-Roesley Park



## Summary of Environmental Characteristics: Lindo Park-Roesley Park

**Surface temperatures:** The neighborhood as a whole has surface temperatures similar to the regional average. However, the northern part of the neighborhood, above Broadway Road, has surface temperatures that rank in the hottest 25% of central Maricopa County. Conversely, the eastern part of the neighborhood, between Broadway Road and Southern Avenue, is comparatively cool.

**Vegetation coverage:** Most parts of the neighborhood are characterized by very high grass coverage compared to others in central Maricopa County. However, the entire neighborhood is also characterized by very low tree coverage. The northern and western parts of the neighborhood have some of the lowest tree coverage observed anywhere in the region.

**Greenness:** The neighborhood has a lower greenness score than the regional average. The part of the neighborhood north of Broadway Road has a greenness value that is in the lowest 10% of central Maricopa County.

## Methods

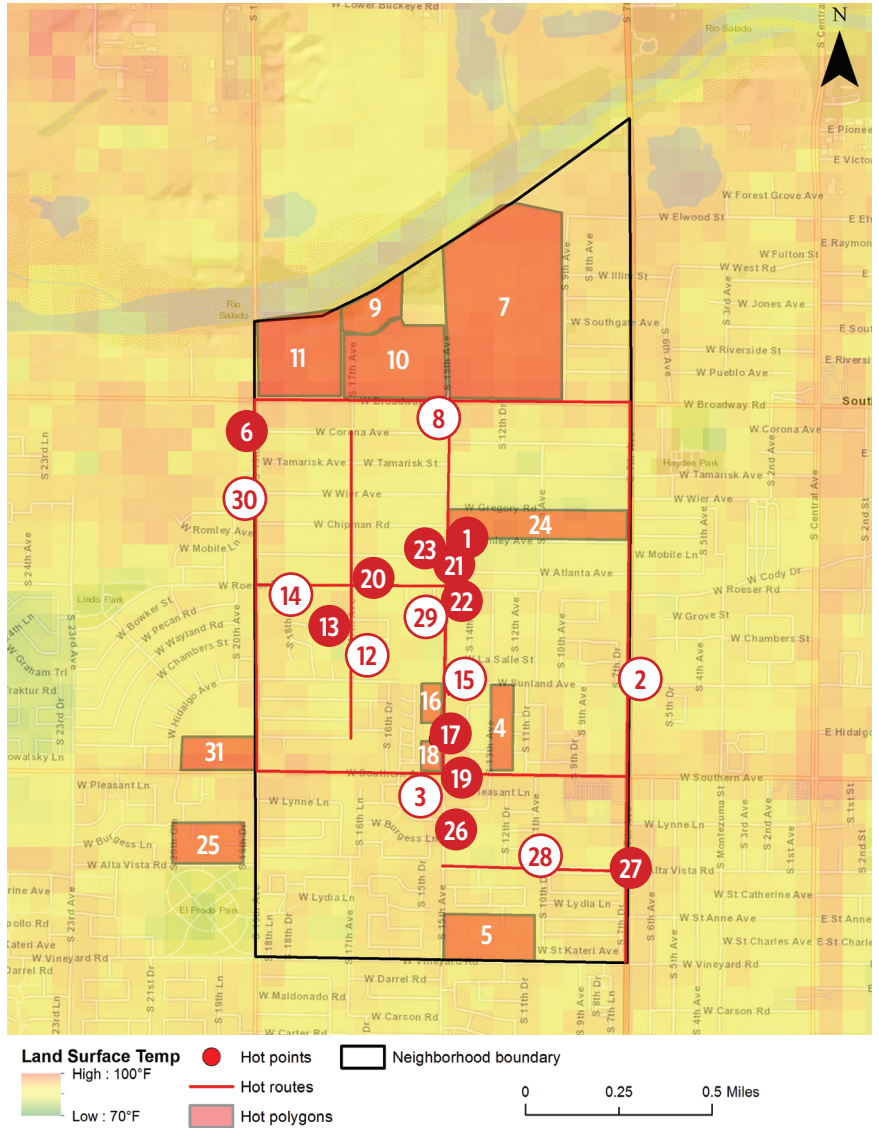
### Baseline data were sourced from the following databases:

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/>.

# Lindo Park-Roesley Park Hot Spot Intervention Points

## ID NOTES

- 1 Roesley Park - No Trees
- 2 7th Ave
- 3 Southern - S 7th Ave to S 19th Ave
- 4 Hot Spot
- 5 Hot Spot
- 6 Carniceria Mexico Lindo - Humo y mal olor/ Smokey and bad smell
- 7 Hot Spot
- 8 Hot Spot - W Broadway S 19th Ave to 7th Ave
- 9 Cerrado - Closed to the public
- 10 Industrial
- 11 Industrial
- 12 Walk to School
- 13 C J Jorgensen Elementary School
- 14 Walk to School - W Roeser S 19th to S 15th St
- 15 Hot Spot - 15th Ave W Roeser to W Southern
- 16 Vacant
- 17 Way of Life Church Parking Lot
- 18 Vacant
- 19 Bus Stop
- 20 Bus Stop
- 21 Bus Stop
- 22 Must buy water here
- 23 Church
- 24 Horse Properties
- 25 New Community
- 26 John R Davis School - priority for shade
- 27 7th Ave & Alta Vista Rd - Bus Stop
- 28 Alta Vista from 7th Ave. to 15th Ave. - Priority route for cooling
- 29 Broadway to Southern - Priority route for cooling
- 30 19th Ave from Broadway to Southern - Priority route for cooling and traffic safety
- 31 Southern & 19th Ave. - Vacant lot behind Circle K





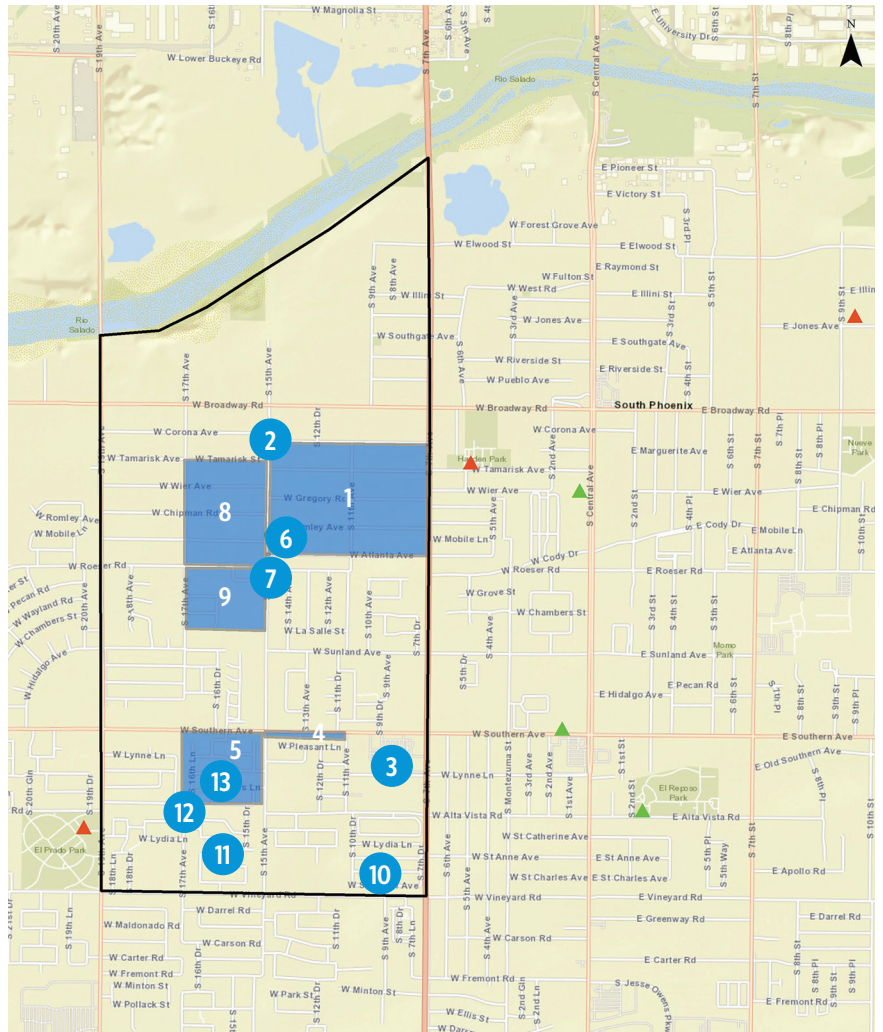
# Lindo Park-Roesley Park Cool Spots

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 1-acre lots; flood, irrigated
- 2 John's Rancho Market
- 3 Food City - grocery, courtesy ride home
- 4 New parkway - shaded
- 5 new community
- 6 Roesley park - Ramada
- 7 Soon's Market/liquor store
- 8 irrigated 1/4 acre lots
- 9 Ranch properties
- 10 Small HOA park - 8 trees, 2 benches
- 11 cool park, private HOA
- 12 cool park, private HOA
- 13 cool park, private HOA

"I am here [at the Heat Action Planning workshop] because I want to try to help so everything changes."



"Well, I'm a native Phoenician, been here all my life and I remember when I was little, I lived on 7th Avenue and Vineyard and we didn't even wear shoes in the summer. We would just run from shade to shade to get to the park, to the school for recreation in summer. But today, it just feels unbearable and I don't know if it's because I'm older...but it's like I can't remember it being so intensely hot here like it is today. I think it's probably the one thing I know, I clearly feel, Arizona feels much hotter than when I was a child."





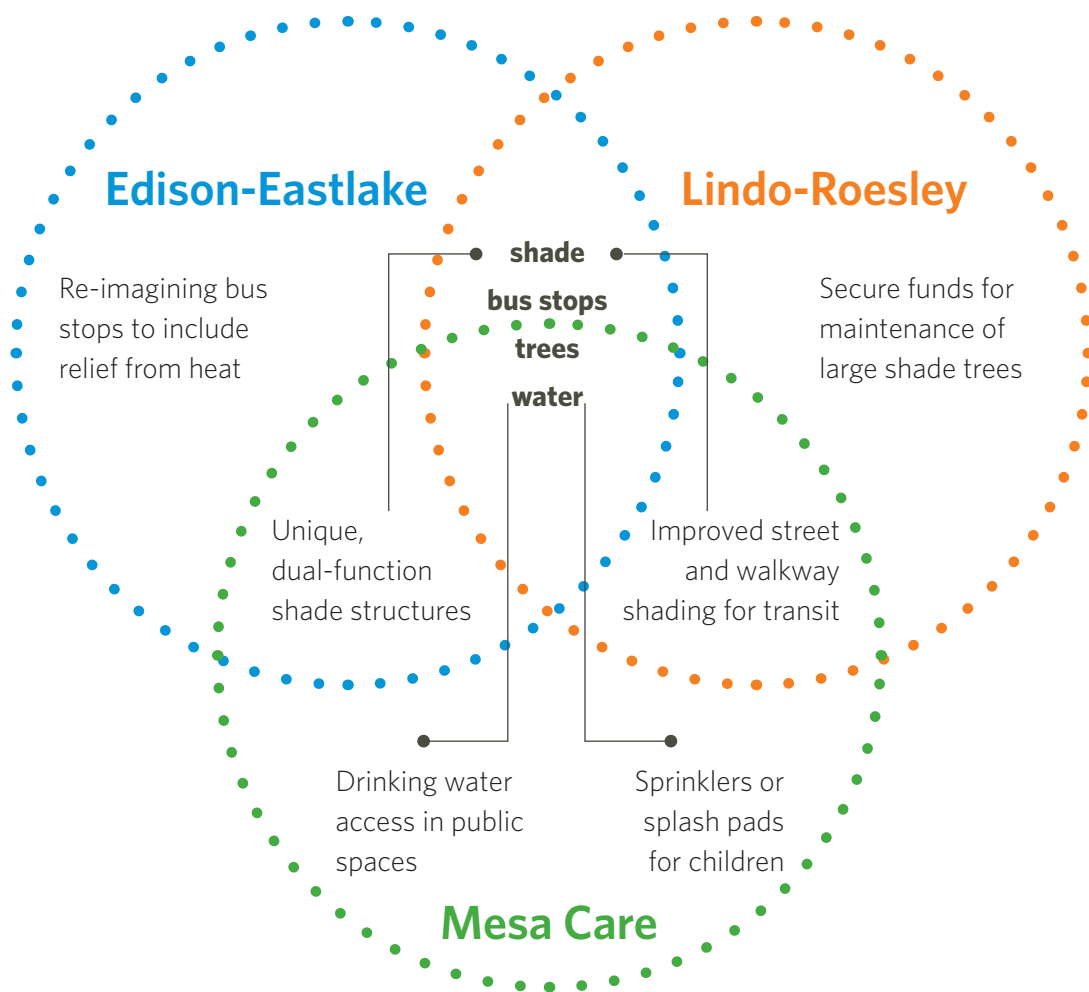
# Resident Visions for a Cooler Neighborhood

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.





# Lindo Park-Roesley Park in South Phoenix:

## Primary Concerns:

1. Financial burden and lack of resources for tree planting and shade
2. The risk of heat-related illness and the need for safety during the heat, especially for students and seniors living alone
3. Children often stay inside during the summer months
4. Vacant lots and resulting dust

6. High electricity bills made worse by poor quality housing materials and lack of insulation in homes
7. Need to develop advocacy skills to promote the heat mitigation and adaptation strategies

## Solution Story

This community is steeped in farming history and their heat mitigation and adaptation strategies reflect the importance of vegetation, mature trees, and indigenous methods of working with the land and environment. The Lindo Park-Roesley Park Neighborhood sees their community identity related to healing plants, collecting

water, trees that produce a harvest, “healthy roots,” and other ancestral solutions. There are mature trees in the neighborhood that are not thriving due to lack of maintenance and new trees are not desired until the old, dead trees can be removed. Residents would like to see a fund developed that would help to maintain these large shade trees, assist with the financial burden of removing the dead trees, and the purchase of replacement trees. This fund can also be used for people who own land but do not have resources to install shade features such as trees, benches, and engineered shade structures. Land owners could agree to install a rest stop on their property to encourage neighbors to cool down and stay safe before continuing on their way. The redirecting of stormwater, through small curb cuts, or a stormwater capture system, could irrigate these spaces. Local businesses could also participate in this effort. Porous ceramic vessels called “ollas” could help to reduce water use for vegetation by keeping surrounding soil moist.

Shade, flooding, and pedestrian access routes can be a combined issue for more systems thinking approaches. Shade along walking routes, especially for children on their way to school, is a priority for Lindo Park-Roesley Park. Stormwater management along Roeser Road has been problematic in the past but this may be an opportunity to redesign the area using low impact development principles and foster the growth of shade trees, too. Residents expressed the need for both cooling and safety; many streets do not have sidewalks. Bioswales could be constructed along with sidewalks for safety. Availability of drinking water in public spaces are greatly desired and a drinking fountain could be installed at Roesley Park, for example, along with the construction of the bathrooms at this park. Shade could also be “creative shade” made from recycled materials, such as clothing.

Residents expressed an interest in approaching shade, water, and access to bus route as a system, especially along 7th Avenue and Alta Vista and Roeser Road between 7th and 15th Avenues. Walking paths that have amenities like shade, drinking fountains, and benches would allow for protection from the heat

while outdoors, and the ability to rest and cool off on the way to their destination. The covered walking path on Southern Avenue should be replicated in other places, too. Wide streets could be made narrower and walkways with shade added in the gained space. Bus stops are a concern for residents now particularly since the pathways to the transit nodes are unshaded and the unsheltered bus stops, and the long wait for transit only increase exposure. Bus stops need some form of shade structure.

Reducing the risk of illness and creating safety during the heat, especially for students and seniors living alone, is a main concern. The elderly need more group programs, like an air-conditioned Senior Center, to keep them cool as many do not have air conditioning in their homes. Churches, of which there are many in this area, could open their doors to seniors during high heat events.

In this neighborhood, children often stay inside during the summer because the area has very little shade and activities are not free. Public pools are often

## Lindo Park-Roesley Park

“We reduced our outings, we reduced our walks, we have to reschedule appointments... change of work, change of routine... the heat is very harmful to our time.”

- South Phoenix Resident

“There’s no place to keep cool, so we all talk about all that kind of stuff, we talk about how it is a cycle, where the kids don’t really go outside to play because it’s too hot. So, they’d rather stay indoors and watch movies, and play on Xbox, watch Netflix, and that brings about illnesses, or obesity, and that kind of stuff.”

- South Phoenix Resident





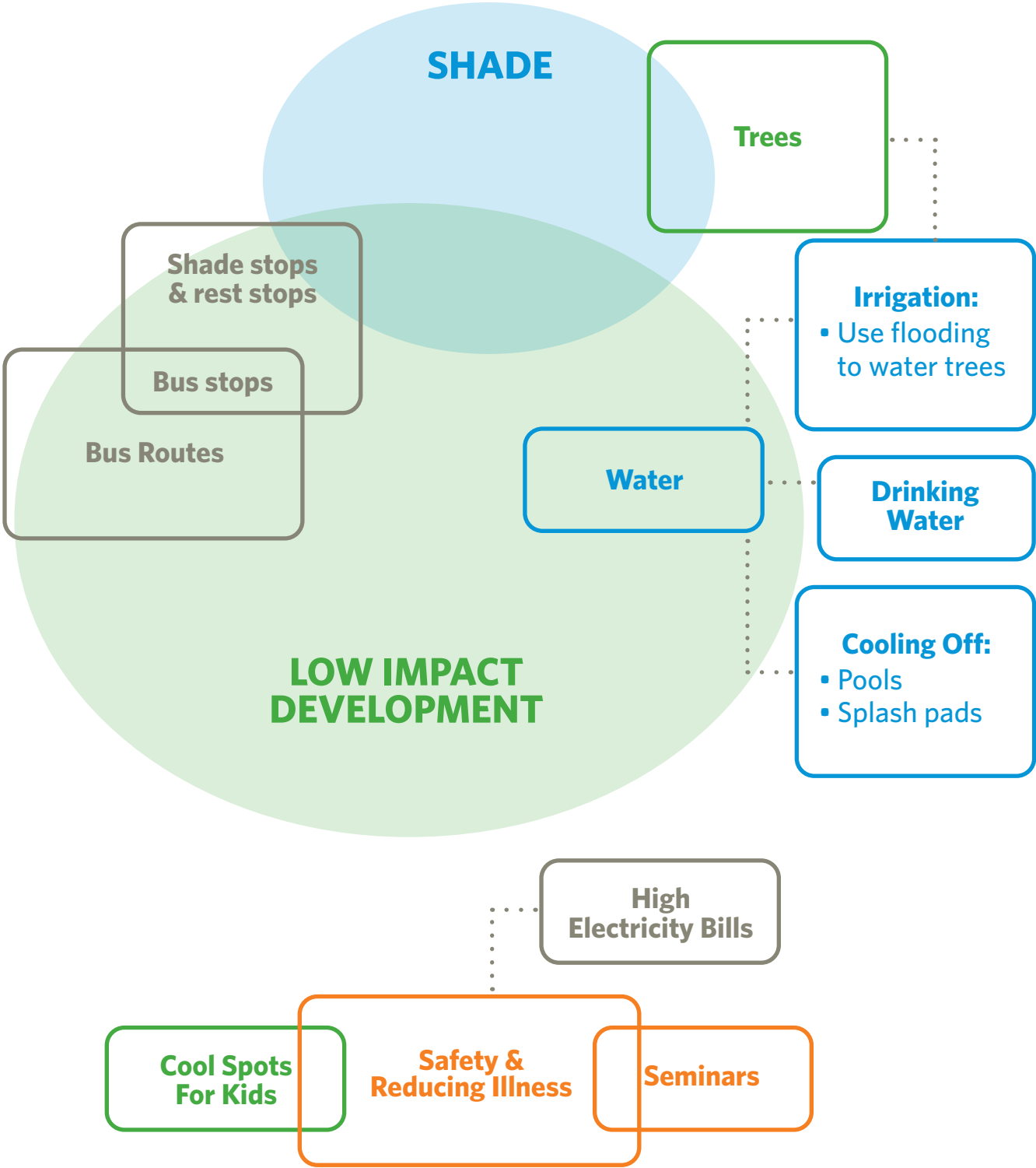
overcrowded and there are no public pools within the defined neighborhood boundary. Roosevelt Pool is close by at 7th St. and Alta Vista Road and El Prado Pool is at the boundary of the neighborhood at 19th Ave. and Alta Vista. More cool spots and places to cool down, especially for kids, are highly desired. This could be in the form of shaded parks, splash pads, or community centers that have air conditioning. Spaces of Opportunity or Roesley Park would be an ideal spot for a swimming pool and additional shade trees with ramadas.

Residents perceived that the plethora of empty lots contributes to the prevalence of asthma in the community. During monsoon season, dust gets kicked up and adds to the poor air quality already present in the area. These empty lots could be used as potential cooling areas by planting vegetation and trees along the perimeters and should be prioritized if they have flood irrigation. The residents also expressed interest in a community water truck to assist with properties that are not flood irrigated. This community water truck would be managed by the community.

High electricity bills during the summer months are challenging for residents. Poor quality housing materials and lack of insulation in homes only exacerbates this issue. Adding trees that shade homes and installing better insulation would lower bills. Residents could benefit from understanding how to apply for reduced electricity rates or utility assistance in emergency situations and what the income qualification criteria for these programs are.

Residents felt strongly that they need to develop advocacy skills to promote the heat mitigation and adaptation strategies, as well as other concerns within the neighborhood. Elected officials and candidates for office need to be aware of the challenges faced by residents during the summer months. There is a desire for improved communication pathways to ensure that cooling features are included in projects underway but also for greater skills to proactively communicate to decision-makers the hot spots and hot problem areas within the community. The elected officials need to understand that this is a safety issue and a quality of life issue.

Residents' proposed heat solutions fell primarily into categories of shade, low impact development, safety and water, with variations on how and where to implement.





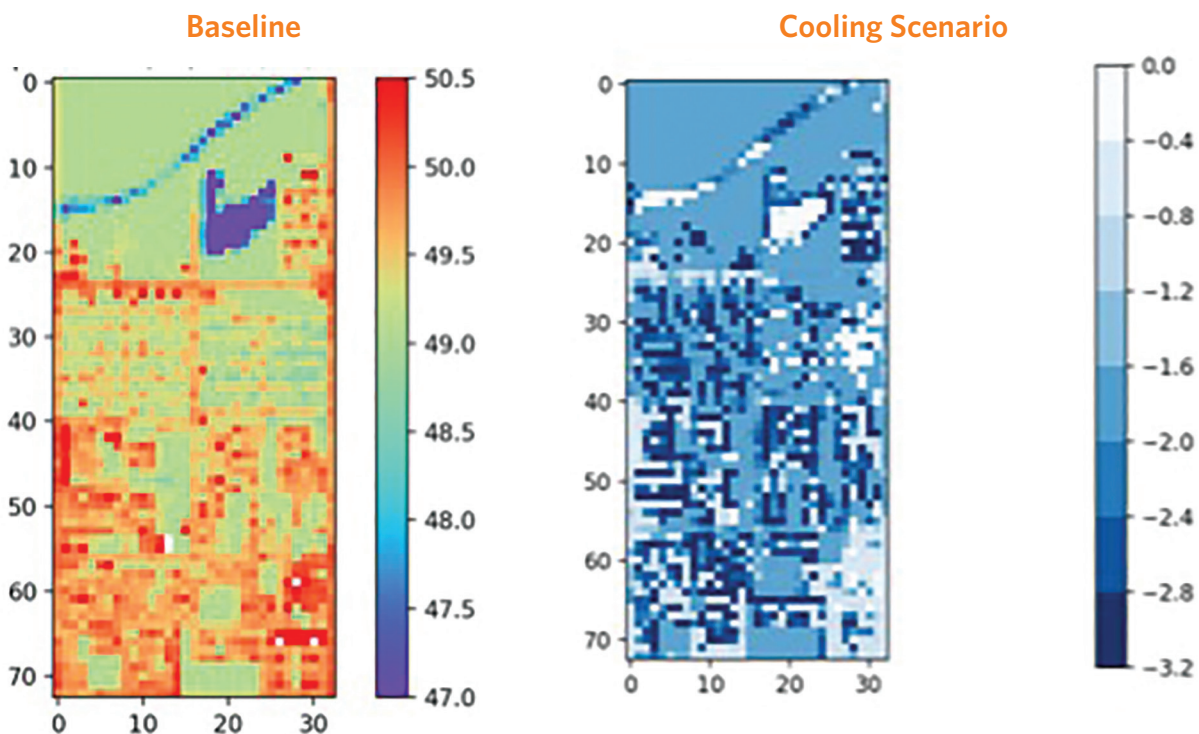
# Modeled Changes to Urban Heat

## Lindo Park-Roesley Park Neighborhood in South Phoenix

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.

Just by modestly increasing the tree canopy to 30%, we see widespread cooling across the South Phoenix neighborhood (as much as 6° F in some pockets near water, closer to 3° F more broadly). This cooling will certainly be more localized in reality; however, this map shows the potential for significant cooling in the neighborhood. This cooling could then be prioritized 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 Lindo Park-Roesley Park Neighborhood on June 20, 2017.

Simulated 4pm near surface air temperature (C) of the Lindo Park-Roesley Park Neighborhood with added trees on June 20, 2017.

# Drawings of a Cooler Neighborhood

## Cooler walking paths / Broadway (street section)

Improving right of way conditions can greatly improve safety of pedestrians in areas such as these.





Water park for children/Roesley Park (perspective)





## Pathways to schools / 17th Ave. & Roeser Rd. (plan)

Increased landscape as well as safer roadway crossings are necessary in high traffic areas to improve conditions for community members and their well-being.

