SA Climate Ready & Cool Neighborhoods:

A Data-Driven Approach to Climate Action & Heat Mitigation

CITY OF SAN ANTONIO TEXAS

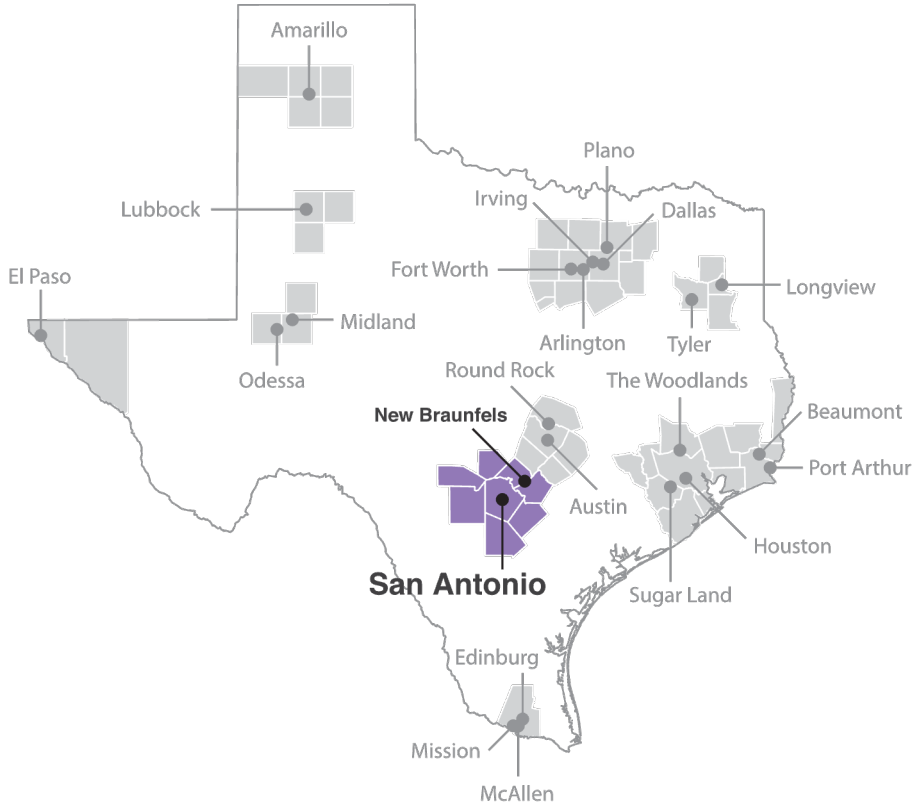
CRRC Annual Meeting

June 11, 2025

Douglas Melnick, Chief Sustainability Officer

San Antonio Background

- 2024 Population - 1.5M
- 7th largest city in the country
- Largest minority-majority city in the country
- One of the fastest growing cities in the country
- 17% of population below poverty level *(2018-22 ACS)*
- Military City USA



34
Median Age

>64%
Population
Hispanic or Latino

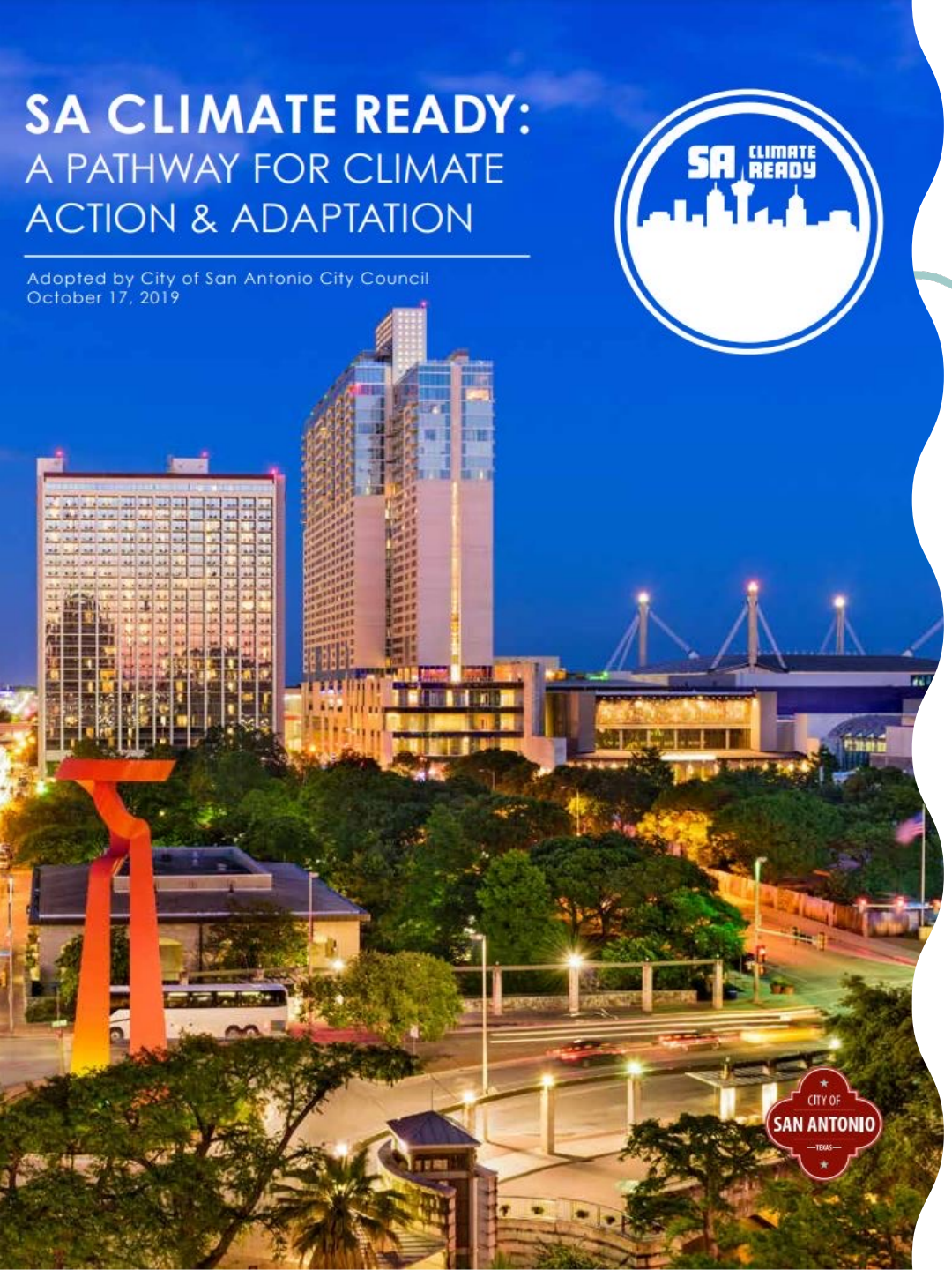
36%
Educational Attainment
(Associates Degree & Higher)

19.4%
Population Growth
(2010 - 2020)

130
People
that move to San Antonio daily

2,000
Veterans
Transition out of the military here and 25% stay

160K
Students
Enrolled in 15 area colleges and universities

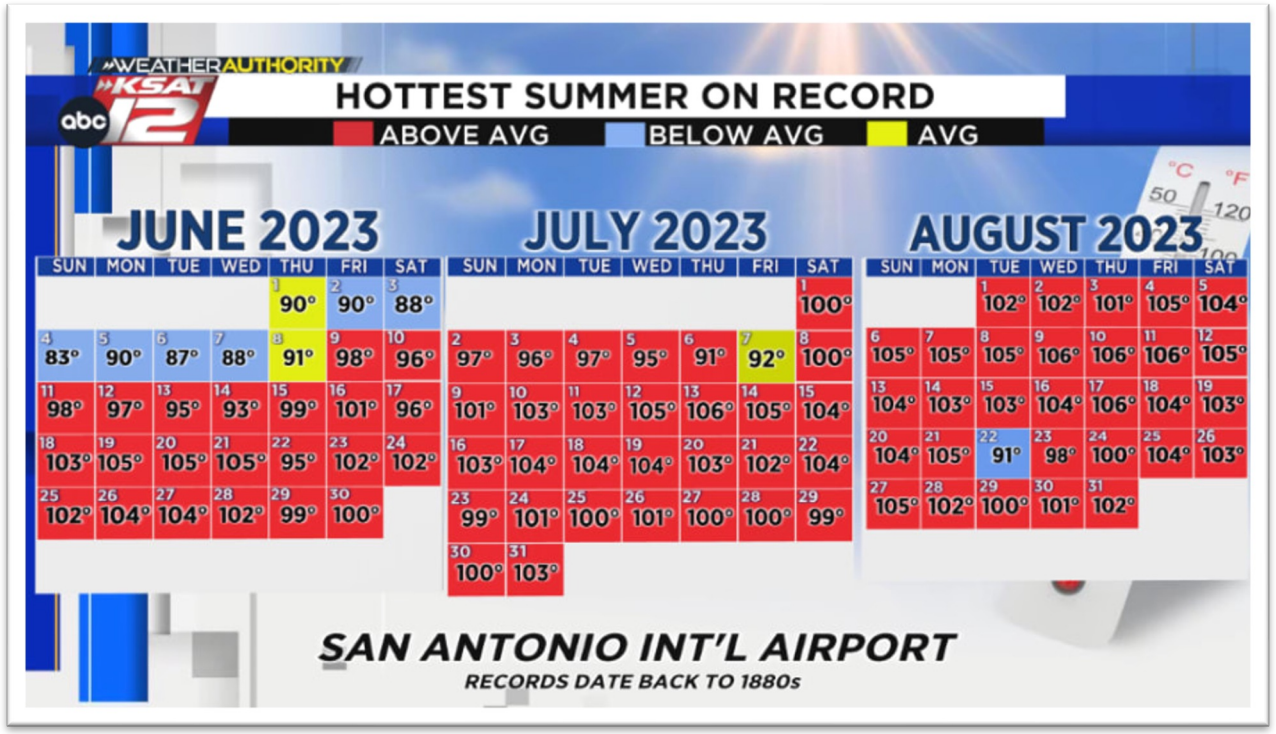


SA Climate Ready

- ❑ 2017: City Council set a goal to become carbon neutral by 2050 & to adapt to climate impacts.
- ❑ 2019: City Council approved the Climate Action and Adaptation Plan (CAAP).
- ❑ The CAAP is the City's roadmap to achieve carbon neutrality and to adapt to current and future climate impacts.

- CLEAN AIR
- PUBLIC HEALTH
- WATER QUALITY & CONSERVATION
- GOOD JOBS
- TRANSPORTATION CHOICES
- CLEAN & SECURE ENERGY
- RESILIENCE & EMERGENCY PREPAREDNESS

Record Breaking Heat



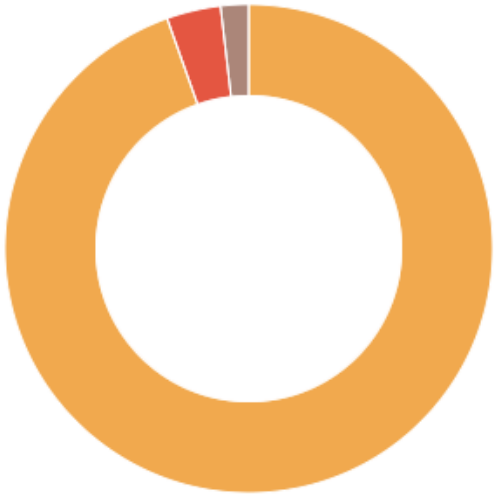
Year	Rank	Days >= 100 °F
2023	1	75
2022	3	58
2021	83	3
2020	12	36
2019	42	17
2018	25	27
2017	47	15
2016	75	6
2015	53	12
2014	45	16

2018 SA Climate Ready Mid-Century (2041-2070) Projections for days over 100 degrees – *61 days*

Hottest heat index ever recorded in SA - 117° F on June 4, 2024

Neighborhood Heat Survey

Have you noticed summers in your neighborhood getting hotter?

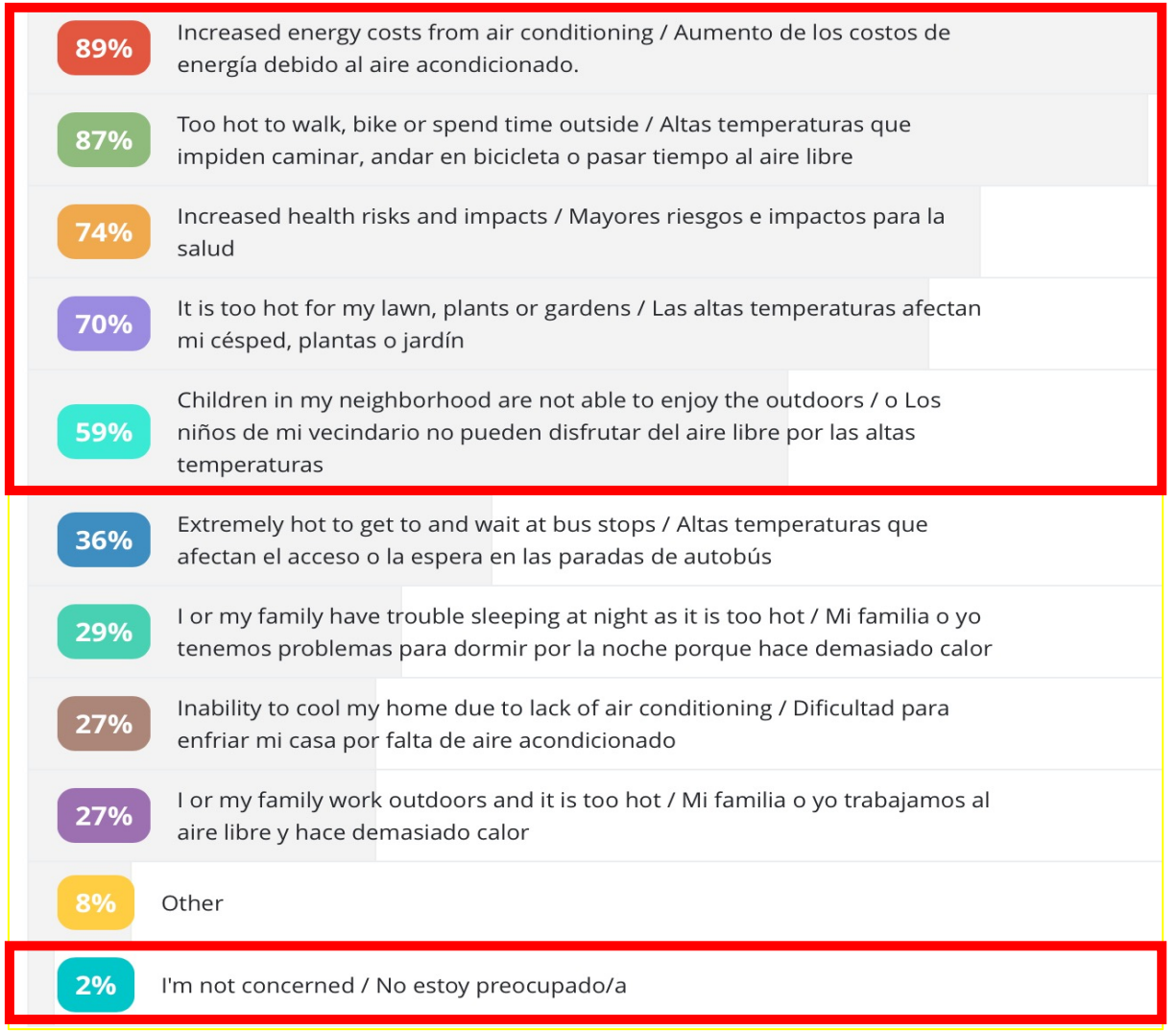


865 respondents

95 Yes / Si
%
4% No / No
2% I don't know/ No lo sé

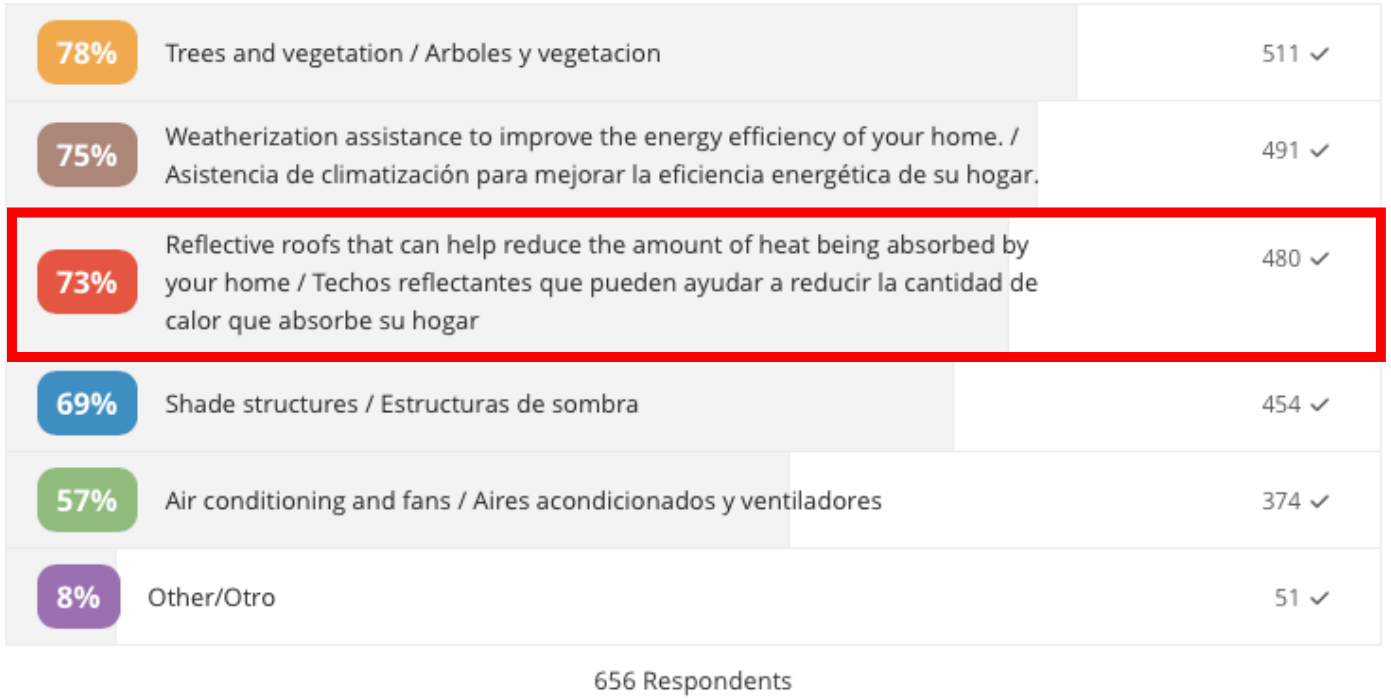
Neighborhood Heat Survey

What are your concerns about extreme heat?

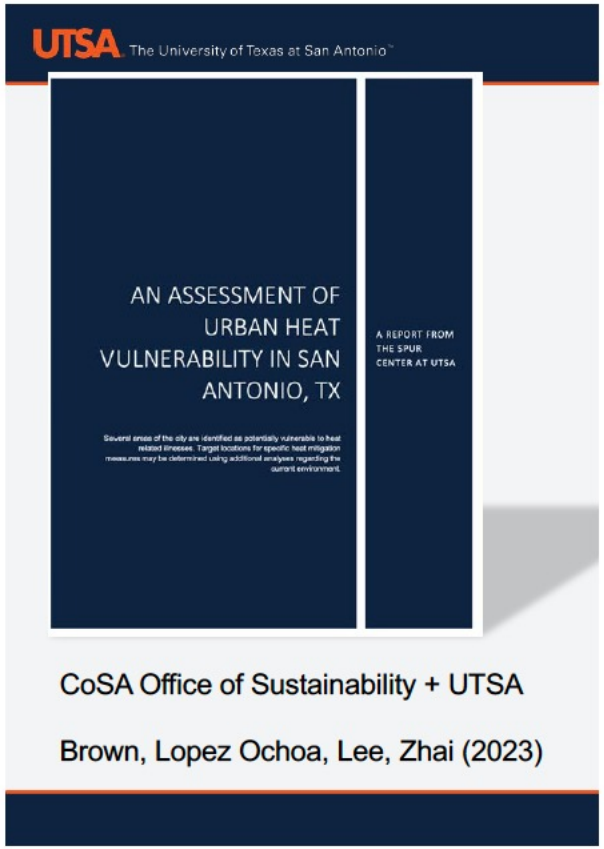


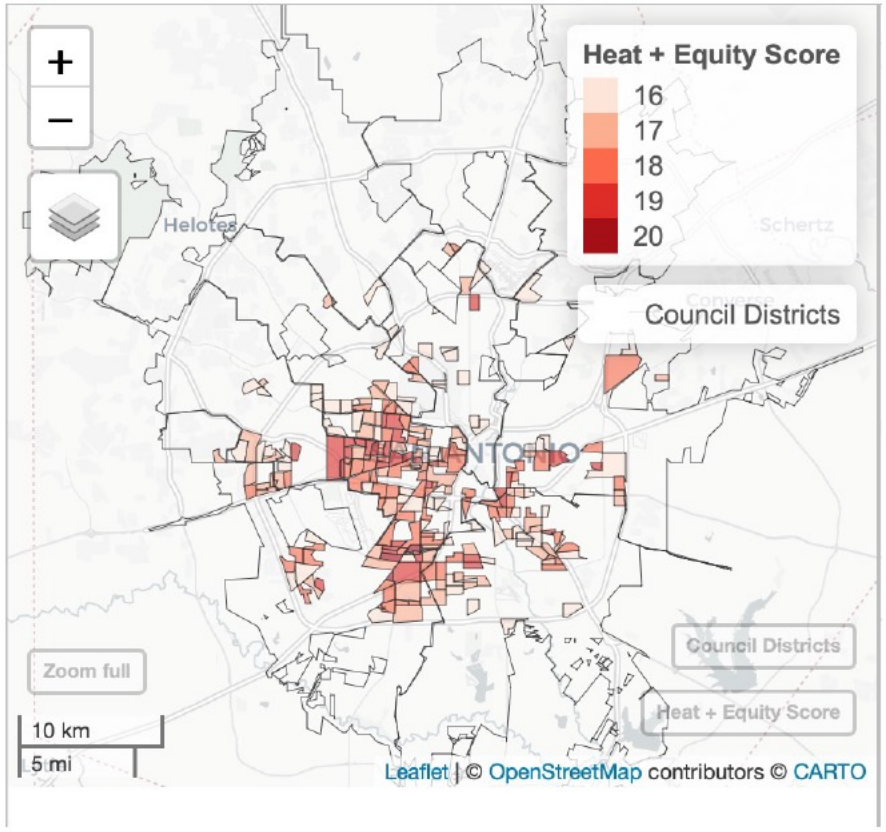
Neighborhood Heat Survey

Would you be interested in financial incentives for the following?



Heat Mapping



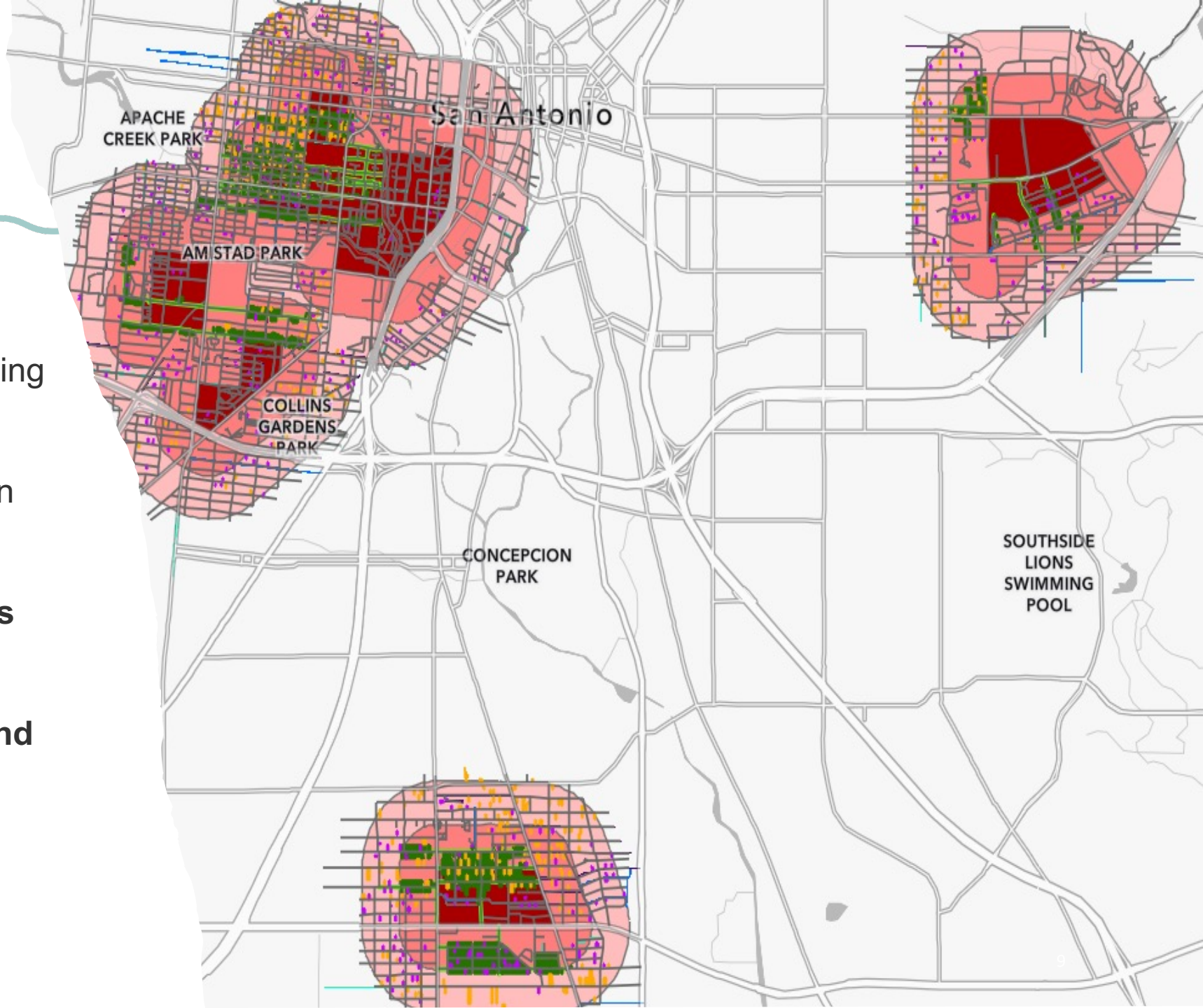


The City partnered with the University of Texas at San Antonio's Sustainable Pervasive Urban Resilience (SPUR) Center to help direct resources toward the areas most impacted by extreme heat. UTSA faculty used the program operated by the USGS and NASA to measure relative heat, then combined this data with other factors, such as income and race, to determine urban heat vulnerability across the city.

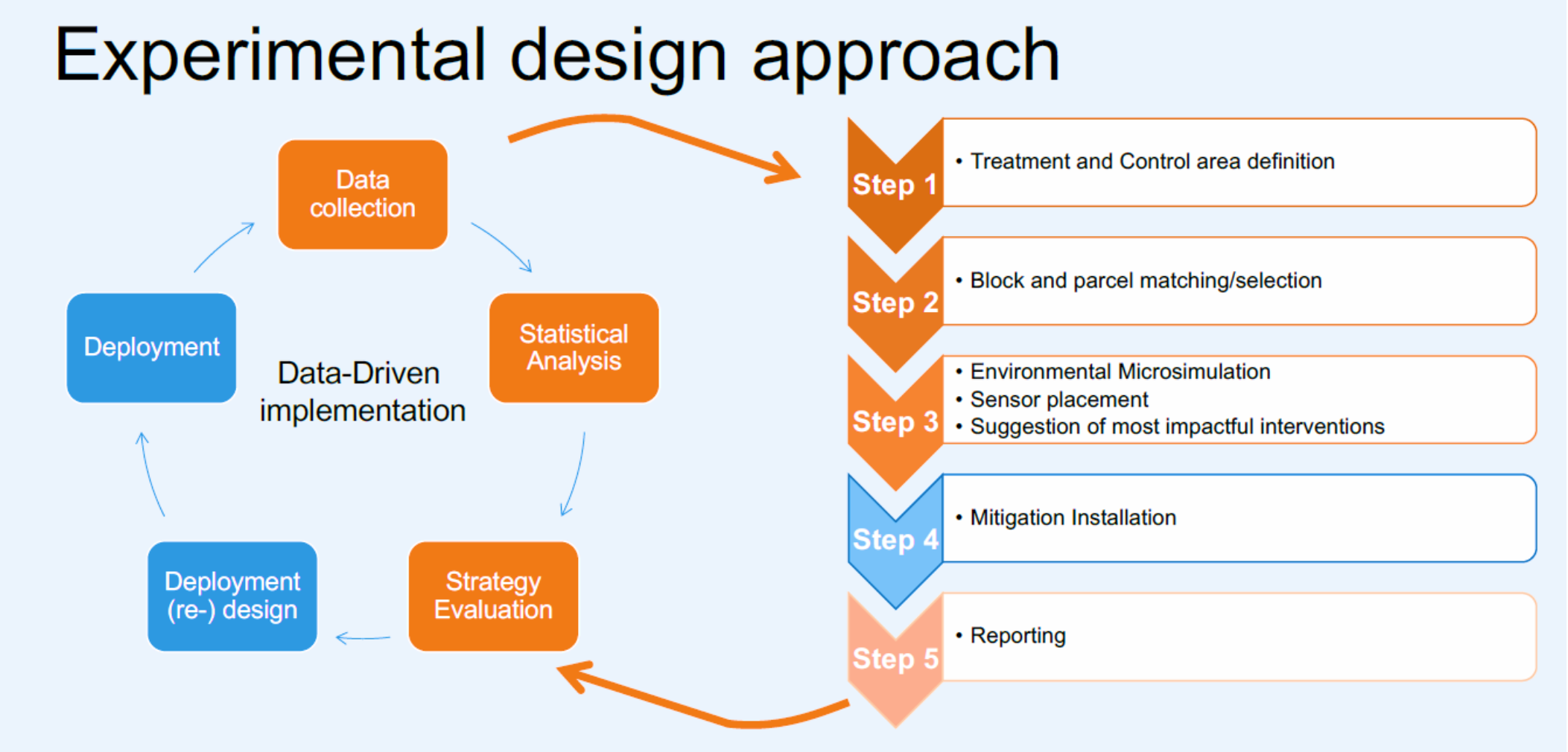
Cool Neighborhoods Program

- 4 neighborhoods
- Identified through UTSA Heat Mapping and Heat Vulnerability Assessment.
- Targeted deployment of City and partner agency heat-related mitigation initiatives to:

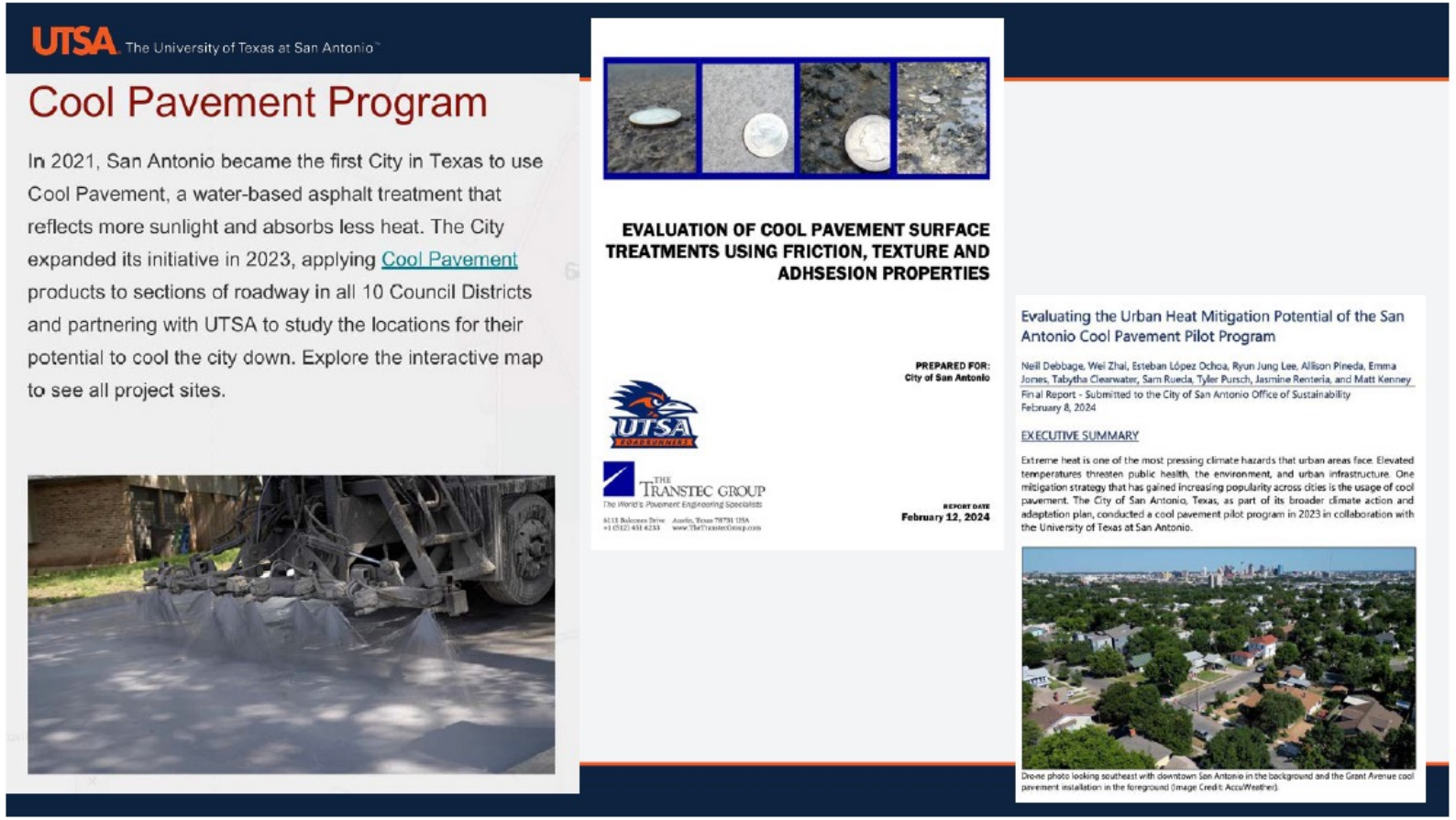
  - **maximize community benefits**
  - **leverage resources**
  - **create efficiency**
  - **promote interdepartmental and interagency coordination**
  - **evaluate effectiveness of solutions through UTSA monitoring technology and methodology.**



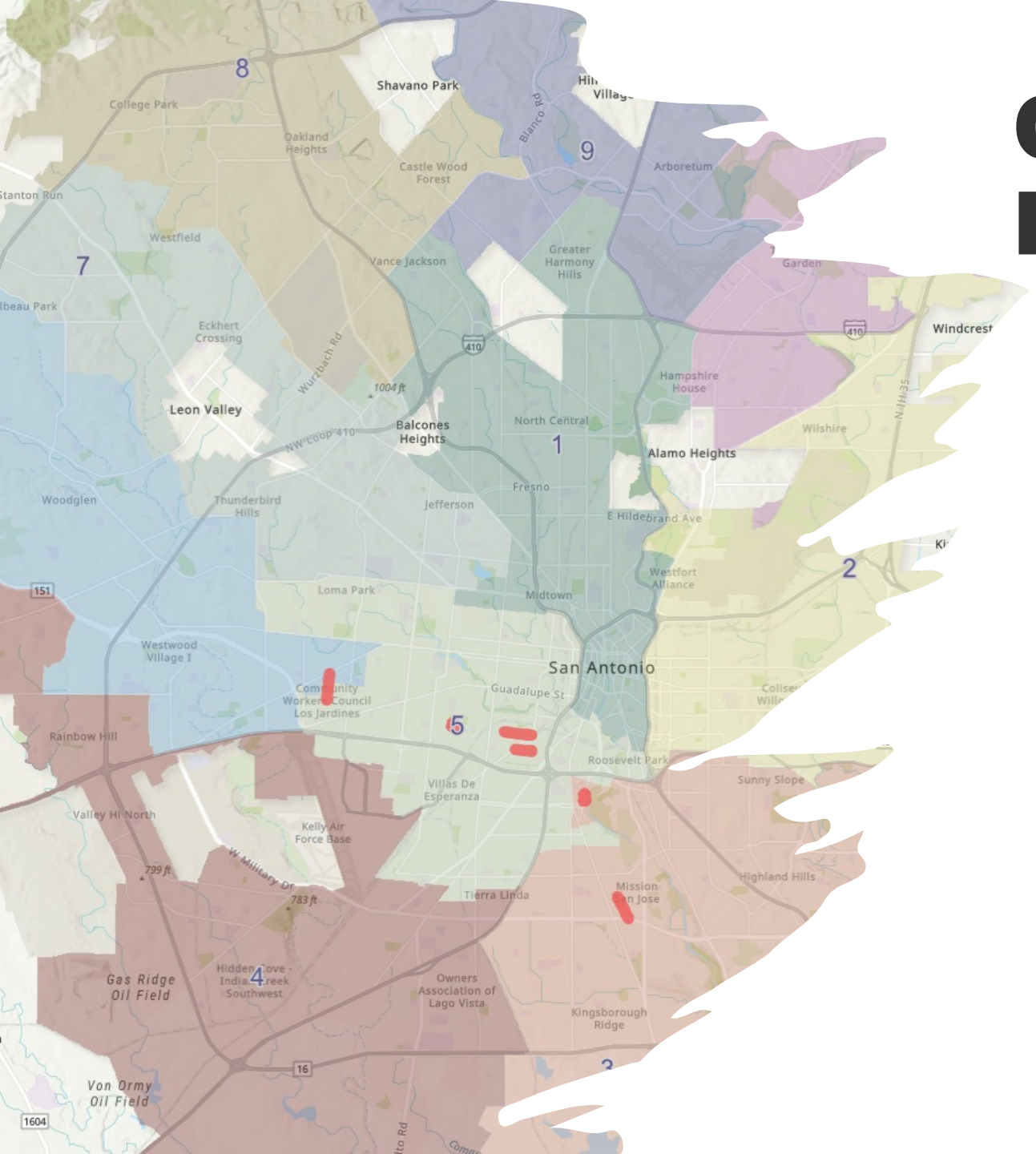
Cool Neighborhoods Methodology



Cool Pavement Program



Evaluate how the various cool pavement products were influencing **surface temperature**, **air temperature** and the **wet bulb globe temperature** relative to a representative non-treated street & **evaluate friction**, **texture** and **adhesion properties**.



Cool Pavement Pilot: Round One (2023)

Materials Tested

- Pave Tech - PlusTi
- GAF Streetbond - Durashield
- SealMasteer – SolarPave
- GuardTop* - Iron

Miles Installed: 2.7

** Temperatures not tested due to installation issues.*

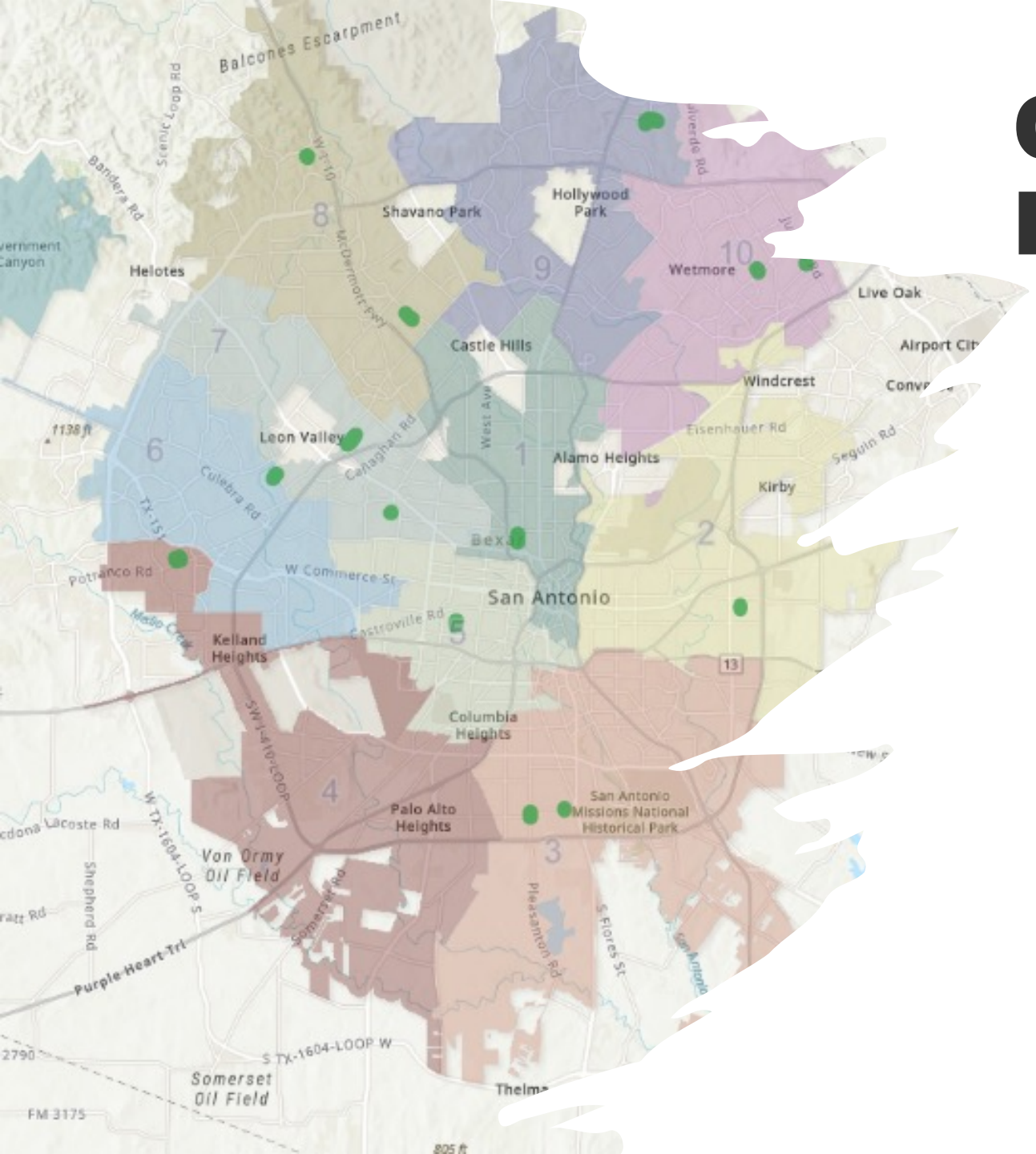
Cool Pavement Pilot: Round One 2023 Research Results

Temperature Findings

- 6 test sites citywide
- 3 products evaluated
- Surface temperature reductions averaged approximately 3.58°F .
- The findings raised additional questions for additional investigation.
    - What is the most appropriate control surface against which cool pavement performance should be evaluated?
    - How does the GuardTop product compare to the materials evaluated in this study?
    - Does tree canopy at each test site impact results?

Performance Findings

- 7 test sites evaluated
- 4 products evaluated
- From the pavement preservation prospective, treatment with GAF seemed to provide the most desirable surface characteristics with improved skid resistance and friction over control sites.
- Seal Master and GuardTop occasionally dropped the surface properties below recommended thresholds in the wheelpath areas. It is expected for these properties to recover over a period of time with oxidation of applied treatment.



Cool Pavement Pilot: Round Two (2024)

Materials Tested

- GAF Streetbond - Durashield
- SealMaster – SolarPave
- GuardTop* - Iron

Miles Installed: 2.2

** Temperatures not tested due to installation issues.*

Cool Pavement Pilot: Round Two 2024 Research Results

Temperature Findings

- 5 test sites citywide
- 3 products evaluated
- Surface temperature reductions averaged approximately 6°F - 12°F in 2024.
- This large difference in surface temperature reductions between 2023 and 2024, resulted from control streets receiving fresh applications of asphalt slurry.
- Overall, the results from 2024 were in general agreement with the 2023 report and studies conducted in Phoenix and Los Angeles, which also documented the clear potential for cool pavement to reduce surface temperature while simultaneously highlighting its more modest impact on air temperature.

Performance Findings

- 5 test sites evaluated
- 3 products evaluated
- From the pavement preservation prospective, treatment with GAF seemed to provide the most desirable surface characteristics with improved skid resistance and friction over control sites. *
- Seal Master and GuardTop occasionally dropped the surface properties below recommended thresholds in the wheelpath areas. It is expected for these properties to recover over a period of time with oxidation of applied treatment.*

Cool Pavement Pilot: Round Three (2025)

Materials Tested*

- GAF Streetbond - Durashield
- SealMaster – SolarPave
- GuardTop - Iron

Miles Installed: 22.35

** Current RFP is in progress to determine final products.*

CITY OF SAN ANTONIO UNDER 1 ROOF PROGRAM

NEIGHBORHOOD & HOUSING SERVICES

PROGRAM PURPOSE

Improve energy efficiency and reduce utility bills

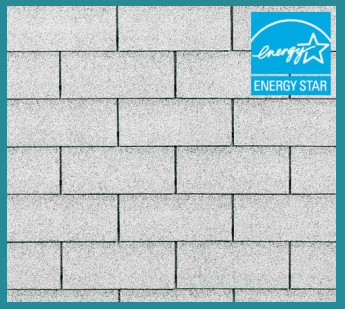
Maintain house integrity by addressing roofing needs

PROGRAM INCEPTION

FY 2016

ENERGY-EFFICIENT MATERIALS

Solarhide radiant barrier roofing underlayment



Owens Corning 3-tab shingle in Shasta White

Total Investment

$26M+

POST-INSTALLATION RESULTS

From 2018 study conducted by UTSA

Average Electricity Use Intensity dropped

7.3%

Average attic temperature dropped

10.1ºF

ROOFS REPLACED

2000+

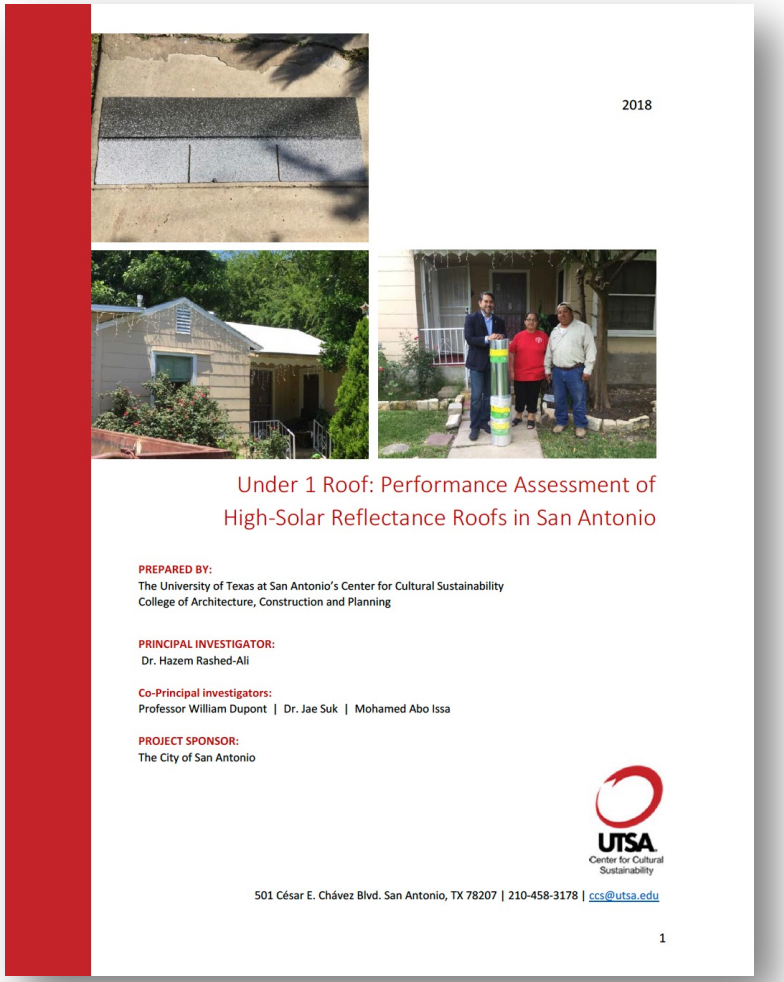
BEST PRACTICES

- Refer homes in need of structural repairs beyond roof replacement to appropriate programs
- File five-year restrictive covenant to ensure affordability and prevent homeowner displacement

HOMEOWNERS ASSISTED

- Income ≤80% of the AMI
- UHI Target Areas
- Veterans
- Seniors
- Disability Status

Under One Roof: Performance Results (2018)



Study Goals

- Monitor home attic temperatures pre- and post-installation of the cool roof to determine the impact of the roof on average attic temperatures.
- Collect and analyze home electricity use information to assess the impact of the cool roof installation on electricity use.
- Conduct a home-owner survey to identify any external factors that may have affected electricity use.

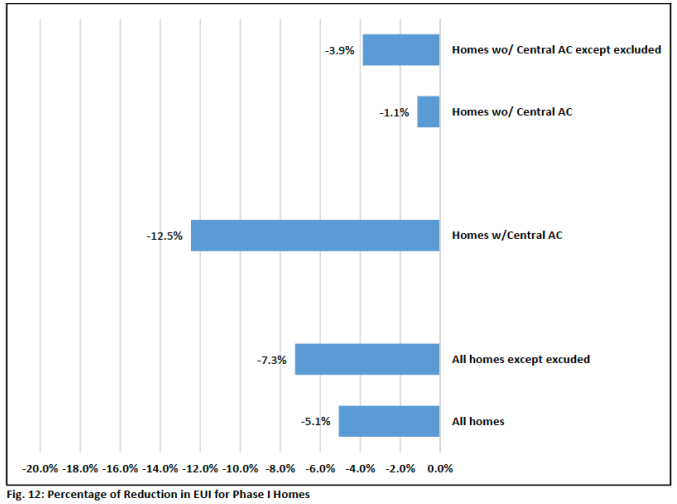


Fig. 12: Percentage of Reduction in EUI for Phase I Homes

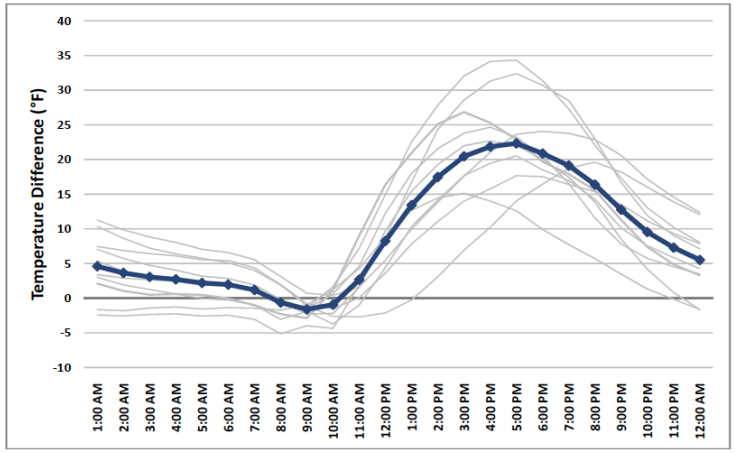


Fig 3. Average Summer Temperature Difference between Attic & Outdoor – Pre-Installation

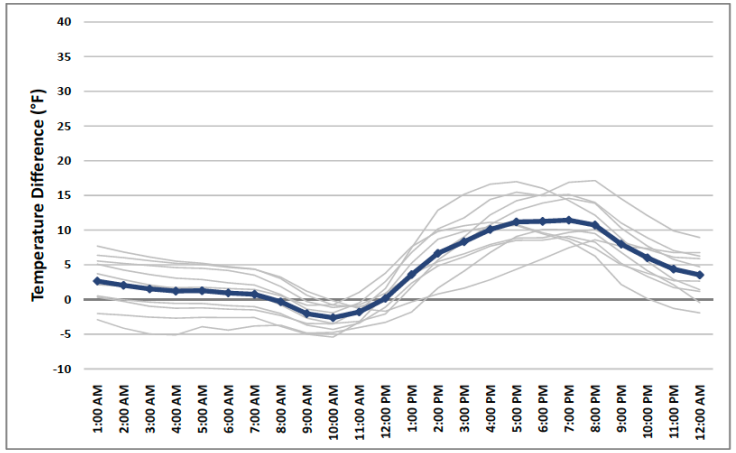
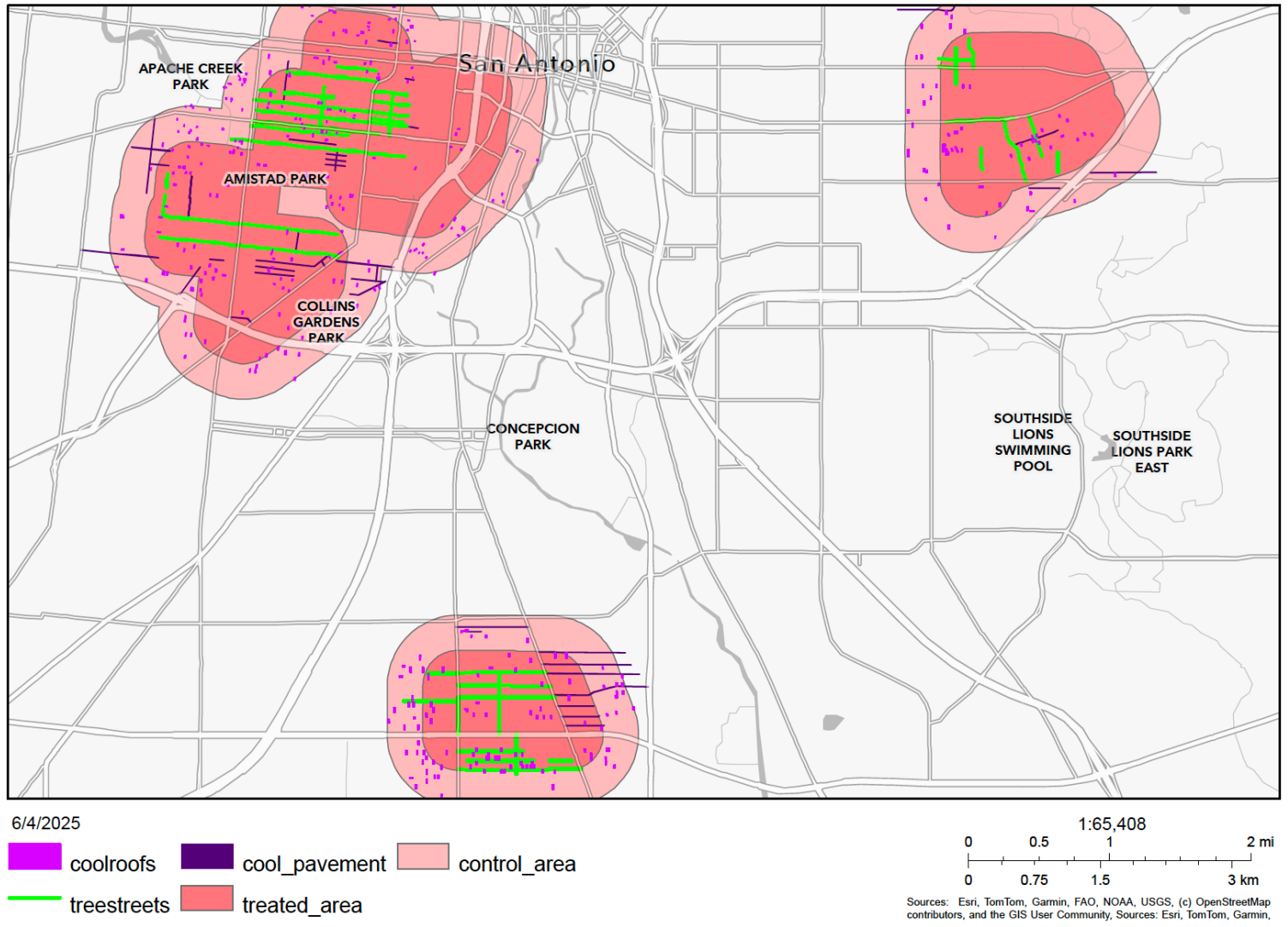


Fig 4. Average Summer Temperature Difference between Attic & Outdoor – Post-Installation



Cool Neighborhoods Next Steps

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THANK YOU!

CITY OF SAN ANTONIO TEXAS

SA – Climate Ready: Climate Action and Adaptation Plan (CAAP)

Mitigation and adaptation actions identified in the CAAP include:

MITIGATION

Increase carbon-free energy

Reduce building energy consumption

Reduce transportation energy consumption

Advance the circular economy

Promote biodiversity and healthy ecosystems

Educate and empower

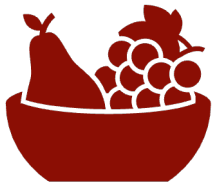
ADAPTATION

Increase infrastructure resilience

Strengthen public health systems

Enhance emergency management and community preparedness

Promote, restore, and protect green infrastructure and ecosystems



Protect local food security

Increase resilience awareness and outreach

Ensure equity in adaptation