

Fresno County Extreme Heat Vulnerability Analysis and Shade Adaptation Plan

Extreme Heat Working Group Meeting #2

10-28-25

Welcome and Introductions

Matthew Shimizu (Fresno COG) opened the meeting, emphasizing the importance of addressing extreme heat impacts on vulnerable populations and transportation infrastructure. The project, in collaboration with Dudek and VRPA Technologies, aims to gather data and community input to develop effective adaptation strategies for pedestrians, bicyclists, and transit riders that use local transportation facilities in the Fresno region. Team members from Dudek and VRPA Technologies introduced themselves and their roles in the project.

Matthew reported that as part of the vulnerability analysis, the team is identifying high-risk areas by examining transit dependency, temperature projections, health conditions, tree canopy coverage, socioeconomic factors, and pedestrian and bicyclist travel patterns. The Extreme Heat program aims to address rising temperatures by identifying vulnerable populations, assessing risk to the transportation users and infrastructure, and developing strategies that enhance community resilience, safety, and livability. The plan will deliver a countywide heat vulnerability assessment, strengthen regional coordination, and produce project designs for five priority locations, each with detailed fact sheets to support implementation. The plan will also identify the tree canopy and vegetation projects that Public Works Departments may use for implementation and inclusion in future capital improvement programs. Using local data on temperature, land use, and population vulnerability, the program will produce maps and strategies to help jurisdictions advance shade, cooling, and resiliency initiatives.

Project Overview and Progress

Rose Newberry (Dudek) provided a recap of the project's goals and progress since the first working group meeting. Key accomplishments include:

- Completion of the plan review
- Heat vulnerability assessment
- Active transportation analysis
- Ongoing community engagement
- Initial project template development

Plan Review Findings

The group discussed outcomes from reviewing local and regional plans focusing on heat mitigation (e.g., urban greening and trees, urban design and shade, physical shade

structures, or buildings and land use choices) and heat management (e.g., cooling centers, public health strategies).

The Plan review process revealed that there's a lot going on locally. The City of Fresno has very aggressive tree planting goals, Measure P funds for parks and green spaces, free bus rides to cooling centers on days above 105 degrees, and some new state tools for forecasting heat risks and getting public information out.

Challenges: It can be challenging to find the places and funding for planting the trees. There is some geographic inequity, as many rural areas are lacking the infrastructure needed to provide shade. There are also transportation barriers, such as getting to the cooling centers, especially when residents need to walk to a bus stop in the heat. And renters are being left behind, as they often don't have choices on how to cool their homes. They may be left with a very expensive and inefficient air conditioning unit that they have no control over, and are stuck with electricity bills, taking on an unfair burden.

Summary of challenges:

- Geographic inequities in shade infrastructure
- Transportation barriers to cooling centers
- Limited renter control over cooling options

Public Engagement Summary

Carolina Ilic (VRPA) shared a summary of outreach efforts across five regional locations, including pop-ups at the River Park Farmers Market, the Save Mart on Manning Avenue in Reedley, the Old Town Clovis Farmers Market in Clovis, the Selma Flea Market, and the Kerman Farmers Market, a survey, comment cards, and stickers/comments on maps. Key findings included: high public support for shade at sidewalks, bike routes, trails, and bus stops in urban and rural areas; strong preference for trees for their shade, aesthetic, and environmental benefits, and shade structures; emphasis on collaboration across agencies and organizations; the emotional toll of extreme heat; and priority areas for tree planting in areas such as Shaw Avenue, West Central Fresno, Clinton, Shields, McKinley, Ashlan, Olive, Church, Peach, and Dakota and in neighborhoods such as Reedley, Orange Cove, Southeast and Southwest Fresno, and the Eastside communities, and others.

There was a question by Preston Herr, City of Fresno, in relation to whether there were any questions from the public about trees being cut down without permission or replacement? Carolina reported that this particular topic did not come up during the outreach efforts.

Heat Vulnerability Analysis

Alexandria Reed (Dudek) stated that the purpose of the Heat Vulnerability analysis was to identify where populations with greater vulnerability to extreme heat are concentrated

across the county to help guide equitable shade and greening investments, especially in communities most exposed and least able to adapt. This work builds on the Fresno COG's climate resiliency plan, which focused on infrastructure risk. This analysis complements that by focusing on people and neighborhoods, looking at social, health, and environmental-based vulnerability using a four-part framework based on Hazard, Exposure, Sensitivity, and Adaptive Capacity.

Vulnerability is highest in urban and disadvantaged communities, especially in Fresno and Reedley. Data sources included CDC, American Communities Survey (ACS), and land surface temperature and tree canopy datasets. All datasets were standardized and combined at the census tract level, providing a useful scale for integrating demographic, health, and environmental data. The output is a health vulnerability index that allows the comparison of conditions across the county. A clear pattern emerges, showing that the highest vulnerability appears in the central and western urbanized areas, such as the City of Fresno and Reedley. These tracts tend to experience greater heat intensity, where in contrast, the eastern foothill and far western agriculture tracts generally have lower vulnerability, reflecting more open land cover, lower population density, and reduced exposure to extreme heat.

The main takeaway is that vulnerability is concentrated in urban and disadvantaged communities. Knowing this can help the region determine where to prioritize greening and shade infrastructure projects.

Steve Haze asked about the Westside communities, such as the City of San Joaquin, or the unincorporated communities, such as Tranquility and Raisin City.

Rose Newberry responded that, in recognizing the differences in the county, the plan will segment out improvements broken down by west/east of Hwy 99, incorporated/unincorporated areas, and the Fresno-Clovis Metropolitan Area, so that 5 templates are selected to reflect representative areas of the County. This recognizes that agricultural communities have extreme vulnerability because of the people that work outside, but the nature of the environment is less built up, often not appearing in key indices, meaning that we need multiple ways of looking at the project areas.

Data Analysis and Project Screening

Erik Ruehr (VRPA Technologies) explained the project selection screening process. This included screening transportation projects and transit stops included in the 2024 Regional Active Transportation Plan and transit resiliency analysis; evaluating them based on heat vulnerability, transit connectivity, activity centers, and existing deficiencies; and

categorizing them into 5 geographic areas, including west/east of Hwy 99, incorporated/unincorporated areas, and Fresno-Clovis metro.

Projects were placed into a large spreadsheet and then rated as high, medium, or low, by category, adding up the scores to get a total score. Comments received through the outreach process were added to the spreadsheet not as a numerical score, but as an additional indicator of interest to move forward.

Steve Haze asked about unincorporated communities such as Tranquility, Raisin City, and Biola not hitting the threshold the way incorporated communities are.

Erik Ruehr responded that the active transportation projects came from the Active Transportation Plan and were categorized by incorporated areas and unincorporated areas. In the active transportation planning process, Fresno County advanced a number of projects from the unincorporated areas. So, a place like Tranquility or Raisin City would have been advanced into the active transportation plan and then entered into this planning process. The projects are listed on the project website, and the team is happy to follow up individually.

Project Template Selection and Feedback

Rose Newberry (Dudek) stated that the goal of the plan is to identify five types of representative projects that could be repeated across the county in similar kinds of areas for implementation to be useful. She described the five proposed template types:

1. Urban Commercial Corridors
2. Suburban Neighborhood Connectors
3. Transit Stops
4. Rural Town Main Streets
5. Community Trails and Pathway Corridors

Participants provided feedback for each template type via the “Mentimeter” polling app on heat-related challenges, barriers to adding shade, and priority users for each corridor type.

The following section summarizes outcomes of the Mentimeter exercises for each proposed template:

Urban Commercial Corridors

- Sparse shade and tree canopy due to utilities, small tree wells, and limited space.
- Extensive pavement and heat buildup creating unwalkable, unattractive streetscapes.

- Maintenance and cost barriers preventing sustained tree care and equitable canopy distribution.

Suburban Neighborhood Connectors

- Incomplete or unsafe sidewalks that leave pedestrians and families exposed to heat.
- Private property boundaries and irrigation needs limiting new planting opportunities.
- Funding and maintenance gaps reducing the city's ability to expand or sustain trees.

Transit Stops

- Lack of shade structures or trees leading to extreme discomfort and heat exposure.
- Design and infrastructure conflicts (right-of-way, visibility, and utilities) hindering shade additions.
- Perception and maintenance challenges — fears of loitering, vandalism, or upkeep costs.

Community Trails

- Insufficient shade and hydration points along exposed trail networks.
- Environmental and maintenance constraints like weeds, dust, and irrigation limits.
- Accessibility and safety issues for families, elderly users, and people with disabilities.

Rural Main Streets

- Funding and water access constraints making retrofits expensive and complex.
- Permitting barriers (e.g., Caltrans) delaying or preventing planting projects.
- Low pedestrian activity reducing motivation for shade investments despite community benefits.

Discussion Highlights

As part of the general discussion as well as the group chat, comments were raised about:

- Inclusion of unincorporated communities like Tranquility and Raisin City
- Lack of shade infrastructure in older developments, such as Main streets
- Need to place a greater value in the planning process on urban design improvements (e.g., storefront canopies or awnings that provide shade during summer and protect from rain in the winter) and traffic-calming techniques
- Importance of safe routes to schools considering heat exposure for children
- Shade in parks and on city property

- Suggestion to use Orange Cove as a model for green space pathways, and Visalia and Sacramento as shade-friendly cities
- Access to shade planning resources, such as planning examples in Arizona and Las Vegas, and cool pavement efforts in Los Angeles
- Understanding that plans published by the Fresno COG are advisory for member agencies

Next Steps

Next steps include finalizing the selection of five representative projects across geographies and templates; hosting a public workshop in November focused on design solutions; developing a plant palette, shade infrastructure guide, and implementation strategies; and releasing the final plan in early to mid-2026, including a public comment period.