Acterra Community-based Vulnerability Planning Pilot Project Report

East Palo Alto, California
2020

Prepared for:

OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

Caltrans

Prepared by:

Acterra ACTION FOR A HEALTHY PLANET

ecology and environment, inc.
Member of WSP

UPI

A project in partnership between the San Mateo County Office of Sustainability, Acterra, Climate Change Community Team of East Palo Alto, Ecology and Environment, Inc., a Member of WSP and Urban Permaculture Institute with funding from the California Department of Transportation.

ACTERRA COMMUNITY-BASED VULNERABILITY PLANNING PILOT PROJECT REPORT

PUBLISHED BY: Urban Permaculture Institute, Acterra, and Ecology and Environment, Inc., member of WSP

The Urban Permaculture Institute facilitates capacity building and learning experiences for individuals and communities to grow their resilience.

Acterra brings people together to create local solutions for a healthy planet. We focus on what you can do locally to address current environmental problems.

Ecology and Environment, Inc., member of WSP, works together with their clients to develop technically sound, science-based solutions to the leading environmental challenges of our time.

AUTHORED BY:

Pandora Thomas, Kevin Bayuk, Ei Samai, and Brandon Harrell, *Urban Permaculture Institute*
Fagamalama Violet Saena, *Acterra*
Trevor Clifford, *Ecology and Environment, Inc., member of WSP*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Purpose

There is compelling evidence that East Palo Alto (EPA) is among the most vulnerable communities in San Mateo County to climate change and sea-level rise. It is becoming more apparent that the community is facing many challenges from displacement to environmental problems. The rapidly increasing housing costs have had a detrimental impact, and the rise of the sea will add to the burden and exacerbate vulnerabilities.

To understand community vulnerability and adaptive capacity, Acterra, with support from San Mateo County Office of Sustainability and guidance from the EPA Climate Change Community Team, enabled a unique project to engage the community to assess vulnerabilities and identify adaptation strategies through a community-based planning methodology.

The Pilot Project sought to empower socially vulnerable communities in EPA to respond to climate change, sea-level rise, and other climate change-driven stressors, to develop the following outcomes:

1. Increase the commitment of key stakeholders to taking roles and responsibilities in sea-level rise and climate change-driven vulnerability planning by and for the EPA community.
2. Increase representation of socially vulnerable EPA community members in sea-level rise and climate change adaptation planning efforts by county and city.
3. Identify preliminary community-defined priorities and adaptation strategies.

This Pilot Project leverages a previous San Mateo County Community Resilience Grant, which created a Community Climate Change Team (CCCT) for EPA. The CCCT is a cross-sector group of community and city leaders responsible for advising on climate change issues through Acterra's Climate Resilient Communities Program.

The approach of the Pilot Project followed a "train-the-trainer" methodology where a select group of community members participated in an intensive capacity building program to learn an asset and vision-based methodology for uplifting community voice for climate change adaptation.

The CCCT selected a Core Team of committed community leaders for the facilitation capacity building. After the Core Team completed the preliminary capacity building sessions they took on the role of facilitators for a series of follow-on capacity building conversations (Community Vulnerability Assessment Sessions) for three separate community groups identified by their ethnic, age, or community-based organization affiliation the Latinx Community of EPA (coordinated by Nuestra Casa, a community- based organization), the Pacific Island Community (organized by Anamatangi Polynesian Voices community group), and Youth United for Community Action community- based organization.

Consultant support for the execution of this project was provided by Urban Permaculture Institute, Ecology and Environment, Inc., a member of WSP contracted by the San Mateo

County Office of Sustainability for the execution of the SB-1 Scope of Work and Community Adaptation Planning Pilot.

Summary of Findings

The most likely projected change for EPA centered around flooding due to rainfall and sea-level rise. The city has already been experiencing flooding from rainfall and this is projected to increase with climate change. With sea level rise, the city is exposed and vulnerable to flooding and inundation with some areas expected to be covered by 3 to 6 feet by 2030. Warmer and high heat days are projected to increase in the coming decades from annually experiencing 2 to 3 heat days by 2030 to as high as 6 heat days by 2070 (Climate Ready SMC Web Visualization Tool).

A predicted increase in flooding and high heat days will directly affect human health not only from heat stress but also because of the amplified vulnerability to possible outbreaks of vector-borne and water-borne diseases. Flooding events result in increased exposure to mold and poor air quality. Coastal flooding and erosion can greatly impact coastal areas and threaten the inundation of homes and increase displacement. The high heat days may trigger heat-related health problems for the elderly population.

The community recognizes that there are issues that need addressing to help their community to address vulnerabilities to both climate change and the current social, economic circumstances. To take action to curb the impacts and build resilience, efforts and investment should focus on housing, water insecurity, transportation, food security, safety, education, and economic opportunities for the local population. To successfully address the insecurities, there is a greater need and ask to help heal and build trust between the community leaders and the project in EPA by doing right by them during the engagement process.

To address capacity building and awareness, community planning fatigue, the project took action to implement a demonstration project to address flooding, drought, and food security with Youth United for Community Action. The demonstration was successful as it now stands as a hub for the community to learn, see, and touch small, but meaningful, adaptation strategies that can be community-driven and can be implemented at a household level.

The pilot recognizes the role and value of community organizations in EPA. Across the focus groups, community organizations are supporting families and providing services for the most vulnerable families with fewer resources. In this frame, it is critical for the community to be informed and have a deeper understanding of climate change and how it can impact their lives and further burden their ability to respond to extreme events and impacts of climate change.

Based on the pilot, it is evident that the community-level approach to assessment is crucial in understanding vulnerabilities, building trust when and where necessary and as a window to organize and build collaboration in the community to plan for climate change. So, this process needs more time and financial support to continue the conversation while elevating community capacity and expertise to build consensus on adaptation priorities.

1 INTRODUCTION

The Community Vulnerability Assessment Sessions took place in late November and early December 2019. Over 50 community members attended the sessions. The content and format for each of the sessions was designed by members of the Core Team, using the approach developed during the Core Team Capacity-Building Training.

The Climate Change Community Team (CCCT) plays an important role in planning and implementing activities under the project. The CCCT is a group of individuals (representing the city, community-based organizations, diverse communities (African American, Latinx, Pacific Islanders, youth, and churches) responsible for advising on climate change-related programs through Acterra's Climate Resilient Communities Project. The team brings considerable experience, expertise as well as institutional support to the program.

During the Pilot Project a "Core Team" of experts identified by the CCCT was trained to play a more active role leading key pilot activities. The concept was introduced after observation indicated that most members of CCCT were not in a position to carry out technical and operational fieldwork. Refer to Appendix C for full list of CCCT and Core Team Members. As is common in accelerated community capacity building and planning, a diversity of community-beneficial insights and outcomes emerged that are prerequisites to consensual, community-led planning. This document briefly summarizes some of the emerging insights from those sessions.

1.1 Latinx Community

Participants acknowledged that there have been shifts in population. EPA was once a Black majority community, and today it is Latinx majority. Participants shared that the Latinx population is shrinking as new racial groups are moving in. When probed about how they feel about population changes, they expressed that EPA lacks community cohesion and pride. The lack of cohesion makes community-driven planning difficult and time consuming. A discussion about the divisions *within* the Latinx community arose, further demonstrating the challenges in arriving at a community consensus or prioritization of resilience strategies. In the end, participants expressed the need for community cohesion and community pride whether that is through community groups or spaces in EPA. Priority for any adaptation work, whether on transportation, water security, or other resilience features, should focus on community cohesion as the main outcome.

1.2 Pacific Island Community

Violet Saena, of Acterra, presented facts and information on climate change and sea level rise. Groups were formed, and topics and strategies were discussed more in depth. Key findings from this process were that elders and natives need *more time* to process information. Discussing the impacts of climate change on the ocean and sea level rise brought up reflections on life on the islands of the Pacific, where this community is from, and was incredibly

challenging and also eye opening for the families and especially elders at the table. It was emotionally challenging because of past experiences with (flooding they experienced in the islands?) and fear of what may become in the future without preparedness.

The community highlighted the risks that climate change brings to their families both on the islands and in EPA, including disease outbreaks due to contaminated water and flu outbreaks due to weather shifts. Other priority risks highlighted by the community included income risks (many community members work and conduct business outdoors in gardening, landscaping, and labor). Heavy rainfall, wildfires, and excessive smoke from wildfires has led to loss of income. Seven (Islands) elders spoke about the lack of planting and farming in the islands because of drastic changes in the weather. Additional priorities included illness from smoke inhalation from forest fires, mold in homes (many families live in older homes that don't have working heating systems), and emergency disaster preparation (the community expressed that they are not prepared for any type of disaster and they feel scared and vulnerable).

The Pacific Island Community Consultation Meetings

1.3 Youth United for Community Action

The youth groups of EPA are inundated with invitations for surveys and "engagement" activities from the State, San Mateo County, and the City of EPA. They are experiencing fatigue and become immediately suspicious of planning "meetings." To combat this fatigue, Youth United for Community Action (YUCA) organized a hands-on, "take action" day to set the context for adaptation and resilience planning by creating a resilience artifact—a demonstration of a small-scale decentralized solution in action. At the house in EPA where YUCA runs its programs, youth participated in a demonstration project installation of a 1,350-gallon rainwater harvesting cistern and overflow infiltration rain garden. After completing the project, the youth engaged in a

discussion of how such decentralized solutions, when implemented in large numbers, would, in aggregate, have an enormously beneficial impact on flood mitigation, water security, and even food security.

Example of Multi-outcome Resilience Building: Installation of a water security feature at YUCA as a partnership of various generations, organizations, and sectors.

1.4 Summary of Community Planning Sessions Findings

Each of the community sub-groups, the Core Team, and Community Climate Change Team (CCCT) were invited into a process that assessed and mapped the resilience assets of the community and the areas of greatest risk and hazard exacerbated by climate change. These lists and maps consistently showed patterns related to:

- Water
- Housing
- Transportation
- Safety
- Food
- Education
- Economy

The repeating themes that emerged related to these areas are described here as articulated by the community. The next steps in the process to aggregate, analyze and rank the priorities and

affirm with the community members through additional cycles of convening and review require additional time and support to develop a complete and detailed set of priority community needs and recommendations related to these areas.

Water – A number of issues and opportunities related to water security, reliable potable water quality and flood mitigation were discussed by community members in diverse ways. Concerns and questions were raised about reliable access to drinking water in the case of disaster (flood, fire, etc.). Additionally certain community members shared their experience of not having access to or confidence in the quality of municipal supplied drinking water. Flooding in rain events was also related as a concern for homes and mobility in the neighborhoods. Some of the strategies discussed as priorities for this area described include:

- "Natural water drainage" [increase in flood prone areas]
- "Distribution of free water" [for potable use]
- "Water barrels" [rainwater harvesting to for emergency water supply and flood mitigation]

Housing – Housing security was articulated as a consistent priority at every convening in the process. Nearly every participant expressed concern about the cost of housing. Elders in the community expressed special concern about youth being displaced due to gentrification and the rapid increase in home and land values. Some strategies identified for this area included by community members:

- Increased access to and more mechanisms for "Affordable housing"
- An increase in "homeless shelter" capacity

Transportation – The community expressed a variety of concerns related to transportation in EPA. Increases in traffic, congestion, and travel times to get across town were highlighted as a primary concern along with the lack of adequate, safe and accessible walking paths for pedestrian mobility. A significant number of strategies were shared including the following:

- Better (and affordable) public transportation
- [More] and "Safer bike lanes"
- "More bike parking"
- "Bike giveaways"
- "Tolls" or surcharges on transient commuting to reduce traffic

Safety – A number of community members highlighted safety concerns as priorities for residents. Strategies articulated by the community to address safety included:

- "Street lighting"
- "Complete sidewalks"
- "Floodwater retention basins"
- [Accessible] "emergency equipment"

- “Notification system that warns the community of disasters”
- “Neighborhood [disaster] preparation and planning”

Food – Access to quality and nutritious food was highlighted as a priority for the community by participants. Strategies identified by the community to address this need included:

- “Grocery store” [with] “nutritional food options”
- “Farmers' market”
- “More places that feed the homeless”
- “Local supply” and “community gardens”

Education – In the design process for conceiving of resilience needs for EPA the community described a variety of needs related to education. The strategies shared tied to this need included:

- “More high schools”
- “More educational programs”
- [Education related to] “How to apply for grants and scholarships”, “financial education”
- “Higher ed programs”
- “Improved preschool programs that include cultural and community values (quality, relational, relatable)”
- “Teachers should reflect [the racial and ethnic diversity of] the children they're working with”

Economy – Many concerns about resilience were expressed that related to the economy. A variety of strategies were surfaced by the community including:

- More “locally owned restaurants” and eateries with “multicultural” cuisine
- More locally owned “retail stores” and services including “nail shop”, “night mart”, “flea market”, “bike shop”
- Community owned “public utilities”
- [Promotion of] “green jobs”

The process to develop this set of priorities, and more detail on the priorities is provided in this report.

2 THE CITY OF EAST PALO ALTO

Example of Honoring Community History and Assets: Resilient elders of EPA who are still organizing, serving, leading, and gardening after decades of joyous, tough, and heartbreaking times.

2.1 Context

EPA was originally home to Ohlone and Costanoan First Nations communities who were stewards of the land for thousands of years and managed natural climate change (as opposed to human-accelerated) events such as sea level rise.

Through the process of colonization, industrialization and rapid urbanization, the landscape of EPA has changed rapidly along with its residents' ability to know, steward, and partner with the complex natural systems around them. Activities such as ranching, shipping, setting up factories, and farming disrupted the natural systems at the same time political activities, such as missionization, settling, internment, redlining, land use planning, and redevelopment, created a turbulent landscape for communities. If resilience is defined as a community's ability to anticipate, prepare for, respond to, and recover from disruption, the residents of EPA are arguably some of the most resilient in the country.

The context in which the project took place must include the remarkable community-built assets and the resilience of its residents, especially given the structural and political abuse noted above. . Elders (members of the CCCT Core Team) mentioned some notable pieces of history at the start of the project, including Nairobi College, which taught the People's stories, and Club Afrique, where the city's "majority-minority" residents mingled. The elders remember a time in

EPA when the residents knew how to partner with the rich land to produce food and flowers, and sole proprietorships made up a significant portion of the local economy. **The pride and joy with which these social and financial assets were shared are important to recognize as foundations for continuing the story of resilience in EPA.**

To highlight the social cohesion that is in the cellular memory of its legacy residents, the following is an excerpt from *Reading Whiskey Gulch: The Meanings of Space and Urban Redevelopment in EPA* by Michael B. Kahan, Associate Director of the Program on Urban Studies at Stanford University:

> Shops in Whiskey Gulch were small, both financially and physically. The overwhelming majority were sole proprietorships, with an average of two employees per shop. Some establishments operated in spaces as small as two to three hundred square feet; only a few, such as the independent supermarket, the meat market, and the car wash, occupied more than ten thousand square feet. To many EPA residents, the strip was "a homey neighborhood shopping center" where, according to a local journalist, "merchants and customers greet one another, asking about family members or discussing which is the best kind of bird seed to buy.
>
> Newspapers frequently commented on the presence of "ethnic" food institutions such as rib joints and taquerias, but the multiculturalism of Whiskey Gulch went well beyond menus. African Americans constituted about a third of the business owners in Whiskey Gulch; Latino owners made up 19 percent and Asian Americans 17 percent. A number of the street's institutions over the years, such as the Club Afrique nightclub and the Nairobi Cultural Arts Center, reflected EPA's Afrocentric identity as "Nairobi." Whiskey Gulch also included ethnic institutions representing other portions of the population, such as Pacific Islander Outreach, founded to serve the city's growing population from Tonga and Samoa.
>
> In addition, Whiskey Gulch was home to a rich network of nonprofit institutions and organizations, such as the Ecumenical Hunger Program, the EPA Historical and Agricultural Society, and the addiction recovery program Free at Last. A number of the area's nonprofits represented original, entrepreneurial approaches to community needs—early exemplars of what came to be called social innovation. Plugged In, for example, was founded in 1992 to address the "digital divide" by providing computer access and training; Bill Clinton visited in April 2000 to highlight the program's success. Plugged In helped to develop another nonprofit, Open Voice, which created and ran a popular youth-oriented website in the late 1990s. Altogether there were ten nonprofits in the Whiskey Gulch neighborhood in 1998, and the density of their locations permitted unique collaborations. As local nonprofit leaders received their ninety-day relocation notices in late 1999, a journalist reported their concern that they would be unable to replace "the sense of community and collaboration that being in close proximity has allowed them to

foster. Often, staff at one agency will send clients over to another for additional help."

A number of scholars have described the importance of sites that offer a meeting place and a sense of community outside home and work. Ray Oldenburg has called these "Third Places" and argues that they offer personal benefits, including friendship, perspective, and novelty, as well as social benefits, such as political discussion, ritualized revelry, and public safety. He argues that small-town main streets of the mid-twentieth century included many such third places: bars, liquor stores, drug stores, post offices, and the street itself. Such places took on additional value in Silicon Valley, a landscape marked by "a paucity of public spaces." Oldenburg's analysis suggests that the merchants and customers in Whiskey Gulch exchanging advice about birdseed were doing more than chatting; they were building the community's assets, increasing what Robert Putnam has termed its social capital.[1]

It is with this backdrop of resilience, which was intentionally drawn out at the start of the partnership between Urban Permaculture Institute, community participants, and other partners, that the 2019 Pilot Project on Climate Resilience in EPA took place.

2.2 Climate Change and East Palo Alto

Fagamalama Violet Saena wrote in *Community Vulnerability and Adaptation to Climate Change in EPA* that "The analysis from the community case study shows that they are vulnerable to flooding, heat waves, extreme weather conditions affecting their health and causing displacement, which is an added burden to their livelihoods. The results clearly show that health-related issues are a priority concern for the community; and furthermore, the community highlighted increasing awareness of climate change as a strategy for adaptation."[2]

Similar to other Bay Area cities, EPA is subject to an array of risks associated with climate change, such as sea level rise and air quality issues. Additionally, as an economically and socially excluded community with deep historical wounds affecting the stability of daily life for most of the residents, the residents experience the effects of climate change first and worst. EPA is home to about 30,000 residents with many people of color. Hispanic and Latinx people make up about 63 percent of the city's demographics, while Black or African American people make up about 11 percent.[3] The median household income in EPA is about $59,000, while nearby Palo Alto residents have a median household income of about $148,000.[4]

[1] Kahan, Michael B. n.d. *Reading Whiskey Gulch: The Meanings of Space and Urban Redevelopment in EPA*. Associate Director of the Program on Urban Studies at Stanford University. https://arcade.stanford.edu/occasion/reading-whiskey-gulch-meanings-space-and-urban-redevelopment-east-palo-alto.
[2] Saena, Fagamalama Violet. Community Vulnerability and Adaptation to Climate Change in EPA. https ://pdfs.semanticscholar.org/b926/505e1731916b5061ae496790c8d062c8fd81.pdf.
[3] USCB (U.S. Census Bureau). n.d. U.S. Census Bureau QuickFacts: East Palo Alto city, California. Retrieved December 2, 2019, from https://www.census.gov/quickfacts/eastpaloaltocitycalifornia.
[4] Ibid.

EPA is quite vividly cut off from Silicon Valley with Highway 101 dividing the two cities. The city experiences high asthma-related incidents due to the vehicle traffic and emissions on Highway 101. Limited green space and large swaths of asphalt promote significant vulnerability to heat waves. With increasing temperatures, the ocean and the planet are warming, leading to changes in precipitation and sea levels.[5]

As a low-lying community located between both the San Francisco Bay and the San Francisquito Creek, flood events, like creek overflows and salt-water intrusion, are likely to occur at a more frequent scale then in the past. For example, updated 2015 FEMA maps added about 550 more properties into the EPA floodplain.[6] This forced many mortgage holders to purchase flood insurance for their homes.[7] In total, about 49 percent of EPA is located within a flood zone, which is a threat to the livelihood of thousands of residents. Compounding this, the lack of green space mentioned above limits natural sinks for water retention, causing annual rainfall or El Niño events to be quite catastrophic.

San Francisquito Creek Overflow Flooding in EPA 1998

With all these variables in mind, it is evident that EPA is at the forefront of environmental injustices. It is important to build community-based action so that the community can be ready

[5] Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland, 104 pp.
[6] Oswald, L. O. 2015. New FEMA maps show more of East Palo Alto at risk of flooding. December 16, 2015. Retrieved from http://peninsulapress.com/2015/12/12/east-palo-alto-flooding-risk/.
[7] Ibid.

for climate disasters, as well as grow the capacity of regional institutions to equitably invest in green infrastructure, social uplift, and economic power-building to combat these issues.

2.2.1 Climate Change in East Palo Alto - Flooding and Sea Level Rise

The City of EPA already experiences flooding from rainfall, the frequency and severity of which is projected to grow due to climate change. The map (right) indicates the potential for flooding due to a 100-year flood event from 1-3 feet, 3-6 feet, and greater than 15 feet. Between 2030 and 2070, the area of EPA exposed to 3-6 feet of flooding is projected to increase from 14 to 23 percent (Climate Ready SMC Web Visualization Tool).

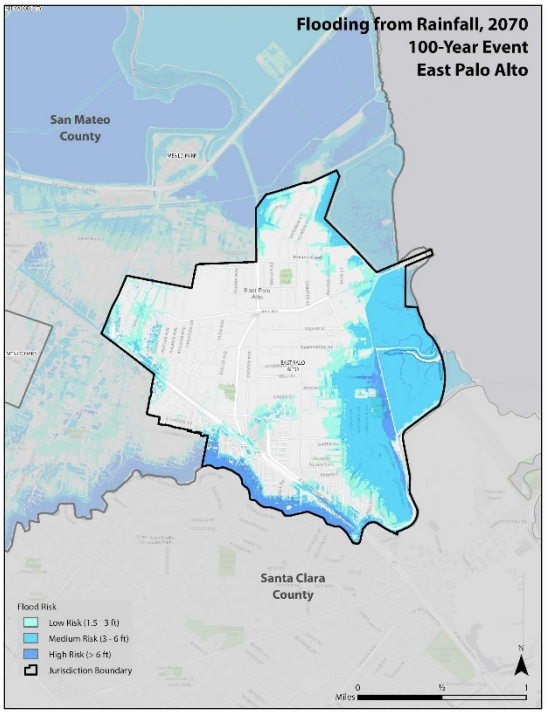

Figure 1. Flooding from Rainfall, 2070, 100-Year Event

Sea level rise is also projected to increase due to climate change, resulting in greater coastal flooding and erosion. This may permanently remove opportunities for recreation in coastal areas.

Flooding due to rain or sea level rise can have impacts on public health due to increases in water and vector-borne illnesses (e.g., Zika virus) to mold in buildings and decreased air quality. Persons with sensitive health systems (e.g., youth and senior citizens) may be particularly sensitive to these impacts.

Transportation networks and services may be disrupted due to flood events, impacting the ability of people to travel to work or school. Populations that rely on public transportation may be particularly vulnerable to the effects of flooding due to the need to make more transfers and walk further distances due to service outages.

According to the U.S. Census' American Community Survey, EPA residents currently own cars at a lower rate than the county average (9 percent of households have no vehicle, as compared to 6 percent; CHAPTER 6: TRANSPORTATION CITY OF EAST PALO ALTO: GENERAL PLAN 2035 | 6-2 Countywide), but are almost as likely to use a car to get to work and are less likely to take transit given the lack of convenient alternatives to the car. Comparing vehicle ownership rates to journey to work mode split data, shown in Table 6-1, it is clear that East Palo Alto exhibits a larger than average transit dependent population, but poor east (Source: American Community Survey, 2007-2011 5-year estimates) west transit connectivity and little bicycle and pedestrian infrastructure. This dynamic serves to discourage travel via non-car modes, and

commuting patterns are thus dominated by automobile travel, be it persons driving alone or as part of a carpool. (For footnote: https://www.ci.east-palo-alto.ca.us/DocumentCenter/View/3194)

2.2.2 Climate Change in East Palo Alto - High Heat Days

The City of EPA is projected to experience a greater number of high heat days per year in the coming decades. The City currently experiences approximately two high heat days per year, which is expected to increase to three days per year by 2030 and to six days per year by 2070; the map (right) shows the number of high heat days in EPA by 2070 (Climate Ready SMC Web Visualization Tool). High heat days are those days over 100 degrees Fahrenheit, which may have significant impacts on public health, the economy and the environment across the City.

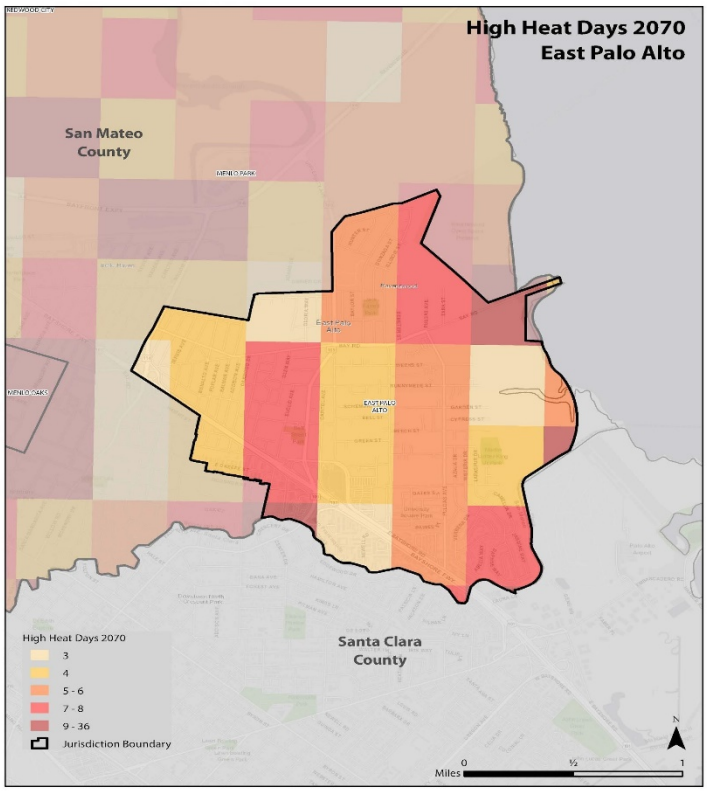

Figure 2. High Heat Days 2070

High heat days may cause heat-related illnesses (e.g., heat stress to fatal heat stroke) or worsen pre-existing conditions for heat-sensitive populations (e.g., senior citizens (65+), youth under five, the medically fragile). More than eight percent of the population in EPA does not have health insurance, challenging their ability to access health care for heat-related illnesses or the worsening of pre-existing conditions due to high heat days.

More than 10 percent of EPA spends greater than 50 percent of their gross monthly income on housing. High heat days increase the need to cool homes to be safe and comfortable, the cost of which may be too much for some residents, forcing them to choose between essential items (e.g., medicine) and air conditioning.

3 PILOT PROJECT

3.1 Pilot Project Partners

All of the community-based organization partners for this pilot are a part of CCCT. The CCCT was started by Violet Saena, from Acterra, to elevate the leadership of local community groups and individuals already working on climate change resilience initiatives in EPA. The CCCT coordinates activities, shares information and best practices to continue to uplift the work that is already happening, and supports resilience assets that are already in place in EPA.

Acterra is a San Francisco Bay Area 501(c)(3) nonprofit based in Palo Alto that brings people together to create local solutions for a healthy planet. It focuses on what can be done locally to address current environmental problems. Acterra engages people and companies in the Bay Area, with a focus on Santa Clara and San Mateo counties.

“We started listening to the community leaders and it was clear there was a big gap in adaptation planning.” - Violet Saena, Climate Resilient Communities Program Director, Acterra

Youth United for Community Action (YUCA) is a grassroots community organization created, led, and run by young people of color from low-income communities, which provides a safe space for young people to empower themselves and work on environmental and social justice issues to establish positive systemic change through grassroots community organizing.

“You don’t try to solve the climate crisis by extracting more wealth and selling clean air in a can to people who can afford it, or whatever the wonky, weird solution is.” - Ofelia Bello, Executive Director, YUCA

Anamatangi Polynesian Voices is a community organization created to teach language and culture revitalization to Polynesian youth in EPA, promoting mental health, leadership skills and civic engagement.

Nuestra Casa exists to uplift Latino families in EPA and the mid-peninsula through community education, leadership development, and advocacy. Its programs in EPA and its surrounding communities build leaders who transform the local community and are actively engaged in the local economy, school district, and civic life.

Urban Permaculture Institute helps lift up what we already know works, honors and reclaims what indigenous people know through lived experience, and remembers ourselves as nature.

3.2 Pilot Project Approach Details

The approach (methodology) used for this process is a “Community Driven” approach, as described below, and was co-designed by the CCCT of EPA, facilitated by Violet Saena, Acterra. The approach was created to equip a ***Core Team*** of community members (CCCT

members and others) with the skills to lead and guide community engagement sessions for gathering information for a "community vulnerability assessment" and ongoing resilience planning. An outcome from this process is a "community vulnerability assessment" identifying in the community's own words, the greatest resilience assets, priorities and challenges that they face in the face of the changing climate.

The "Community Driven" approach developed is part of a larger national movement led by grassroots leaders called "Community Driven Resiliency Planning." Community Driven Resiliency Planning complements public sector planning efforts but centers residents of vulnerable and impacted communities to be the ones who define for themselves the complex climate challenges they face, and the climate solutions most relevant to their unique assets and threats.[8]

As part of the approach, the Core Team went through six sessions of a ***capacity-building training*** preparing them to update, design and implement the "curriculum" they learned specifically for their communities. This initial curriculum, outlined below, allowed them to facilitate the "community vulnerability assessment" sessions. Also, the Core Team received specialized training and technical support around facilitation and choosing appropriate assessment and design activities for their communities.

Example of Capacity Building to Co-define Issues and Solutions: Neighborhood Mapping Session II To Practice Identifying "Small and Big" Opportunities for Nature-based Solutions.

[8] National Association of Climate Resiliency Planners. 2017. Community-Driven Climate Resilience Planning: A Framework. May 2017. Accessed 2 December 2019, from https://movementstrategy.org/b/wp-content/uploads/2017/05/WEB-CD-CRP_Updated-5.11.17.pdf.

An overview of the six sessions of Capacity-Building Training for Core Team members is provided below.

The Capacity-Building Training, led by the Urban Permaculture Institute, utilized a curriculum called “VAST Design”: VAST stands for: 1. Visioning, 2. Assessment, 3. Strategy Design, 4. Timeline Design.

1. **Visioning** is frequently the most difficult aspect of popular design. There are many methods to develop an explicit, aligned, and collective vision. For EPA, the Visioning activities started with an activity called “Sankofa” which allows participants to draw on ancestral and placed based knowledge and culturally relevant experiences. Once the group grounds by hearing each other’s Sankofa’s and stories, then stories are shared about the history of a place that leads to the group’s current vision for that place. The community defined history of place process often leads to community healing which can take time to process, but is integral to community cohesion.
2. **Assessment** takes the longest time in the design process. Together, we gather an assessment of existing conditions - assets and problems. And we placed these on maps. Base maps of existing conditions need to be adapted to the orientation of landmarks in the community doing design. Assessment also involves “power mapping” to discover how decision-making and development typically occur in a region as well as providing a comprehensive stakeholder analysis. A thorough understanding of the jurisdiction and motivation of each stakeholder is critical in the planning process and frequently requires advocacy literacy training.
3. **Strategy** design involves learning a mosaic of possible solutions that are tailor fit for the community and its issues. We always seek solutions or strategies that have multiple beneficial outcomes beyond just solving the problems such as food and water security, resilience, habitat, and beautification to name a few. We begin to place these strategies out onto the maps, matching them to the issues discovered before. We iterate through these steps, corresponding problems with solutions and enter all of this into a database where we begin to see something like a heatmap that, in a truly democratic way, starts to articulate the vision of the community. Once a strong pattern emerges, we move a set of strategies into a rationalization process where we determine the practicality and efficacy of strategies and begin to develop a plan to move forward. For some projects this looks like the hands of the community picking up shovels and building out small scale examples in the short term. These smaller projects can be learned from and replicated over time with little or no outside input. For larger and more complex projects, it might look like multi-stakeholder collaboration where biddable specs are sought for further development.
4. Finally, a preliminary **Timeline** is developed for the implementation of the strategies to begin to realize the vision the community has articulated. The timeline takes the strategies and organizes them by various characteristics, including time and resources. Grouping strategies into “project categories” enables certain local organizations (identified in assessment) to take stewardship or ownership of those strategies. Timeline

development involves measuring the efficacy and impact of proposed strategies and prioritizing those that create the greatest impact for the least amount of change.

The specific exercises that were adapted from the VAST process for the Core Team capacity-building training included the following:

- **A People's History of Place -** Community members reflect on their lived experience of being a resident of EPA. This exercise is an exploration of what an inter-generational group of community members remember about their community. We reflect on what we learn from the shared stories and begin to uncover the resilient responses to stressors and oppression as well as reveal connections across ethnic groups and generations that often lead to healing conversations. These conversations can be difficult but develop more community cohesion for the next steps of the process.
- **A People's Vision for a Resilient Place -** Community members lead a process of sharing visionary ideas, dreams and aspirations following the prompt of "what would be ideal in your vision for a resilient EPA?" These visions are collected and discussed. Oftentimes the visionary elements build on top of each other (or stack elements) for a more cohesive vision. This exercise is iterative - the more times community members practice this exercise, the more comprehensive the vision that emerges.
- **Principles of Resilience -** This exercise involves community members reflecting on what is working in their life, family and community and then responding to the prompt "What about these things makes them 'work'?" The resulting list becomes a set of guiding principles when we get to solution strategy development.
- **Orientation to Maps of Place -** This exercise orients community members to a base map of their community. Community members identify their homes and other community landmarks to develop a People's Base Map that is accessible and meaningful to community members. See Figure 3.
- **What's Working and What's Not Working -** Community members start with reflections of areas, places and elements that are "working and in alignment with their vision for a resilient community." These elements are plotted on community generated base maps. Then the community members are prompted to identify hazards, risks and areas and elements that are not contributing to their vision for a resilient community. The community often lists issues related to traffic, flooding, safety, water and more. During this conversation hazards and risks related to climate change are brought into the conversation. See Figure 4.
- **Solution Strategy Orientation -** Uplifting and building off both the community list of elements of an ideal resilient place and the lists and maps of "what is working" strategies are identified and discussed. Using videos, demonstration projects and community leader experiences strategies are listed and then assessed against how well they address the priority needs and visions of the community *as well as* how they address the risks and hazards related to climate change.
- **Solution Prioritization -** Using the evaluation of solutions, the community further assesses which strategies can be implemented right away (little things) and which ones take organizing, time, and community power to implement (big things). The community

typically makes a short list of pilot demonstration projects to get to work and build authentic engagement and organized community power.

After the six Capacity-Building Training sessions, the Core Team members designed and implemented their own Community Vulnerability Assessment Sessions. The findings and recommendations from these sessions are shared in the results section of this report.

The Core Components of the Acterra Pilot Core Team Community Planning Process are:

1. **Participant Recruitment**
2. **VAST Design Capacity-Building Training to Train Core Team**
3. **Core Team Develop Community Vulnerability Assessment sessions for their communities**
4. **Core Team Conduct Community Vulnerability Assessments sessions with their communities**
5. **Finalize Community Vulnerability Assessment findings**
6. **Community Event**
7. **Finalize Report**
8. **Awareness campaign presentation to City Council**

3.3 Curriculum and Specific Activities

Throughout the Pilot Project, there were two different curricula that were used. Urban Permaculture Institute adapted its existing curriculum to build capacity of the Core Team to have climate conversations grounded in broader community visions, assets, and needs. Then members of The Core Team adapted the curriculum they learned to fit the communities they serve for “Community Vulnerability Assessment Sessions.”

The Core Teams Capacity-Building Training’s pedagogy centered on culturally relevant, hands on activities and experiences that allowed participants to “co-create” the content throughout the experience. The group spent time outdoors, immersed in the setting that they were designing for. This type of pedagogy speaks directly to the multiple learning styles and needs of a diverse, multilingual, intergenerational group. It begins with the assets and skills of a group, then elevates and expands on them, while also introducing new content embedded in the experiences and ideas of the group (e.g., rainwater catchment systems as a strategy are already present in many EPA communities but often times not called “rainwater harvesting” or “flood mitigation”).

Tables 1 and 2 are examples of the Core Teams curriculum and the adapted curriculum that was created for the community sessions.

Table 1. Sample Agenda for the Core Team

Time	Topic	Learning Task/Activity	Lead, Notes and Materials
		Goals for session 1. Getting to know each other 2. Walking tour - shared history, shared vision for place 3. The places where we have lived. Legacy in place. 4. Vision for EPA rooted in resilience 5. What is working? 6. What is not working?	
20 mins	Opening and Grounding	Name / Introduction activity Land acknowledgement "Ball of String" - community connection activity ● Start in circle, pass the ball of string or yarn with instructions to catch, answer question(s), grab onto a piece, and pass onto the next person who hasn't received it ○ Example questions: name, skill, resource, need	Kevin
10 mins	Sankofa	Share the Sankofa image with the group. Ask who has seen this or knows what it means? Share that it is an Ghanaian principle which means "Go back and fetch it". Then ask them to think of either an ancestor or someone on whose shoulders they stand that brought them to this work. They turn to a partner and share their story. Facilitator then calls on individuals to share their Sankofa. End by discussing how our communities all have a legacy of earth care and healing that needs to be done and it is crucial to go back and fetch it.	Pandora
10 mins	Goals & Agreements	Review of goals of training Review written agreements (written beforehand) ● Add any relevant agreements the group would like to share	
10 mins	Course Orientation	Introduction of Course approach: Train the Trainers- Who here has facilitated? Iceberg activity ● Interactive, hands on activities that sees them as teachers and learners	Pandora Question:

Table 1. Sample Agenda for the Core Team

Time	Topic	Learning Task/Activity	Lead, Notes and Materials
		● Each day track activities so they can share them as well with others ● Draw an iceberg and fill out the top with typical methods used to share information with community ○ Examples: lectures, handouts, go online, ppt, posters ● Then ask, "Is this how people learn, get buy in, live something? What's below the water? What other methods could be used?" ○ Answers from session: singing, dancing, drumming, painting, interactive, storytelling, participatory, gardening, building, poetry, celebratory, kinesthetic, cultural, field trip, asset-based (build off of what people know) ○ learning pyramid - only a tiny percentage of information is retained through lectures ● How have you used the pyramid? Plant is the tip of the iceberg. So much happens underneath in the soil. This could lead to a systems conversation!	Should we share that they will be making their own resources of everything we do to refer to?
10 min	Assessment of place and Indigenous land use	Over of EPA History ● Land ● People ● Culture Close your eyes and imagine a time machine that takes you not just to yesterday or even last month, but 10,000 years ago. [PAUSE] Open your eyes. What do you see? ● Trees (Sequoias), animals ● 10K years ago, there were llamas, camels, mastodons, sloths, short faced bears, American lions, looked like the Serengeti, ● Sea level rose, the Puichon are experts at dealing with sea level rise because they've been doing it for so long. ● 500 years ago, what was here? Grizzly bears! This creek was the largest sighting of young Grizzlies. People, the Bay Area had one of the largest diversity of people the world has seen. ● 300 years ago, what was here? Missionaries. Genocide. White supremacist culture. All old growth oaks were cut down. Killed CA black panthers. Built plantations.	Kevin

Table 1. Sample Agenda for the Core Team

Time	Topic	Learning Task/Activity	Lead, Notes and Materials
		● 200 years: trees are drying out. “Scabbing over” built environment features take over the places where the water used to sink in and replenish.	
30 mins	Assessment of place Personal stories	Participants share their history of EPA ● For the last 100 years, we can ask elders, and stories still live in residents. ● This could be done by walking around or using imagination and stories to piece it together. ○ Stories: on poster Principles: ● On poster	We prepped them prior to class to bring a story, Kevin
60 min	Gallery Walk Brainstorm Vision for a resilient EPA	Participants reflect on and share what is working in EPA and how things could be. ● Poster paper on the wall with 3 questions: what’s working, not working, and would be ideal ● Instruct participants to write on sticky notes or directly on the paper (play music for vibes) ● Walk around twice (visit each paper twice) ● Debrief: what did you notice about how you filled out the papers? what came up for you?	Pandora Gallery Walk Questions: What is working well in EPA What is not working What would be ideal
20 min		Closing Circle: ● Review Activities of the Day and share one word about how they can share this experience with their communities	Pandora

Table 2. Sample Agenda for the Community Vulnerability Assessment Session

Time	Topic	Learning Task/Activity	Lead, Notes and Materials
		Goals for session	
20 mins	Icebreaker	Icebreaker will be determined by group size	Community lead
10 mins	Introduction	Introduction ● Nuestra Casa & Acterra's Role ● Purpose of the project: To develop adaptation strategies with stackable functions ○ Discuss how climate change is affecting EPA, for example: Wildfires, Sea Level Rise/ Flooding, etc. ● Discuss how green infrastructure can serve more than one need at once- this might have to be reiterated throughout the event many times	Community lead
10 mins	Gallery Walk	Gallery Walk - Have 5 stations with a facilitator if possible: ● Poster 1: What is the history of EPA? / ¿Cual es la historia de EPA? ● Poster 2: What is working? / ¿Qué está trabajando? ● Poster 3: What is not working? / ¿Qué no está trabajando? ● Poster 4: What would be ideal? / ¿Qué seria ideal? ● Map Station- Participants will use 11x17 maps of EPA to mark: ○ What is working? (Physical locations to be marked with a "circle") ○ What is not working? (Physical locations to be marked with an "x")	Community lead
30 mins	Lunch	Working Lunch - I've found videos in Spanish that showcase similar stackable function/green infrastructure projects like Elmer Ave. They showcase community empowerment, resilience and learning outcomes, etc. ● For reference, Elmer Ave: https://youtu.be/bwcK8IWawY0 (5:31 mins)	Community lead

Table 2. Sample Agenda for the Community Vulnerability Assessment Session

Time	Topic	Learning Task/Activity	Lead, Notes and Materials
		● School in Puerto Rico- embedding green infrastructure teachings in school curriculum: https://youtu.be/-0BwIHpF5CA (7:47 mins) ● Rain Garden in Puerto Rico- to help a small community deal with flooding from the beach: https://youtu.be/R35COoNb6dM (3:58 mins) ● Rainwater Capture in Sonora, MX- capturing water in the desert, increase vegetation, shade, etc.: https://youtu.be/bUhY-06CSNw (11:27 mins)	
45 mins	Strategy Design	Development of Strategies: ● Facilitators will group common themes from posters to help the participants develop strategies: ○ Acknowledge "What is the history of EPA," can we bring aspects of it back or can we protect today's history with stackable functions/ green infrastructure? ○ Acknowledge "What is working," can "what is working" be embedded into "what is not working," or "what would be ideal," or can we embed/ build stackable functions/ green infrastructure from it? ○ Acknowledge "What is not working," can stackable functions/ green infrastructure help make it better? ○ Acknowledge "What would be ideal," can stackable functions/ green infrastructure help us get the ideal?	Community lead

3.4 Maps and Resources

Community members used Figure 3 to identify key community landmarks and find their own homes and places of work to orient themselves to a plan view (i.e., a bird's eye view) of EPA. Once oriented to the map, community members, working in small teams and groups, began the process of identifying existing resilience assets ("what is working") and then critical areas where there are risks and hazards to resilience ("what is not working").

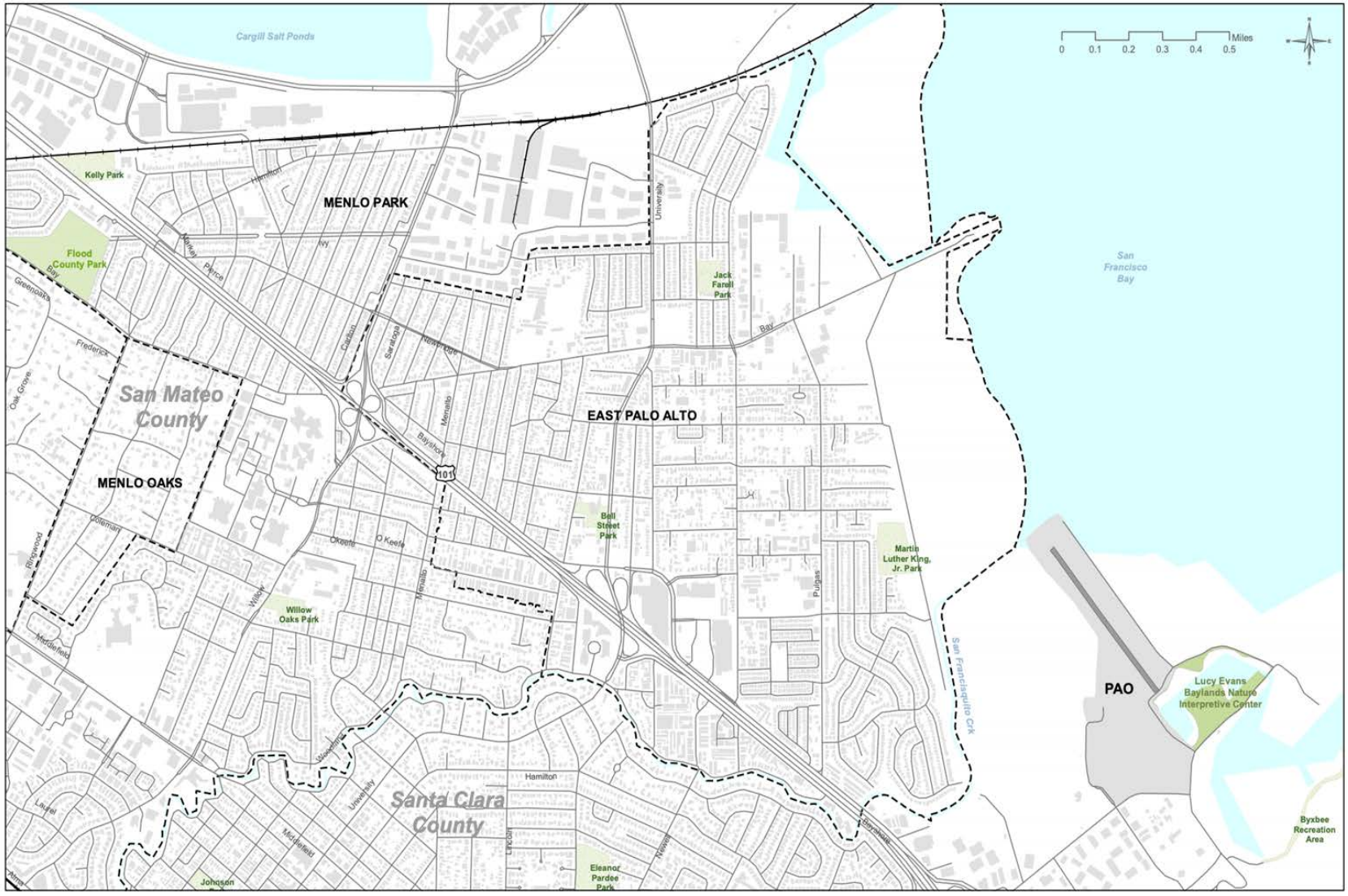

Figure 3. Base Map of East Palo Alto

East Palo Alto Youth during the community-based adaptation planning sessions.

3.5 Community-Based Mapping Activity Examples/Results

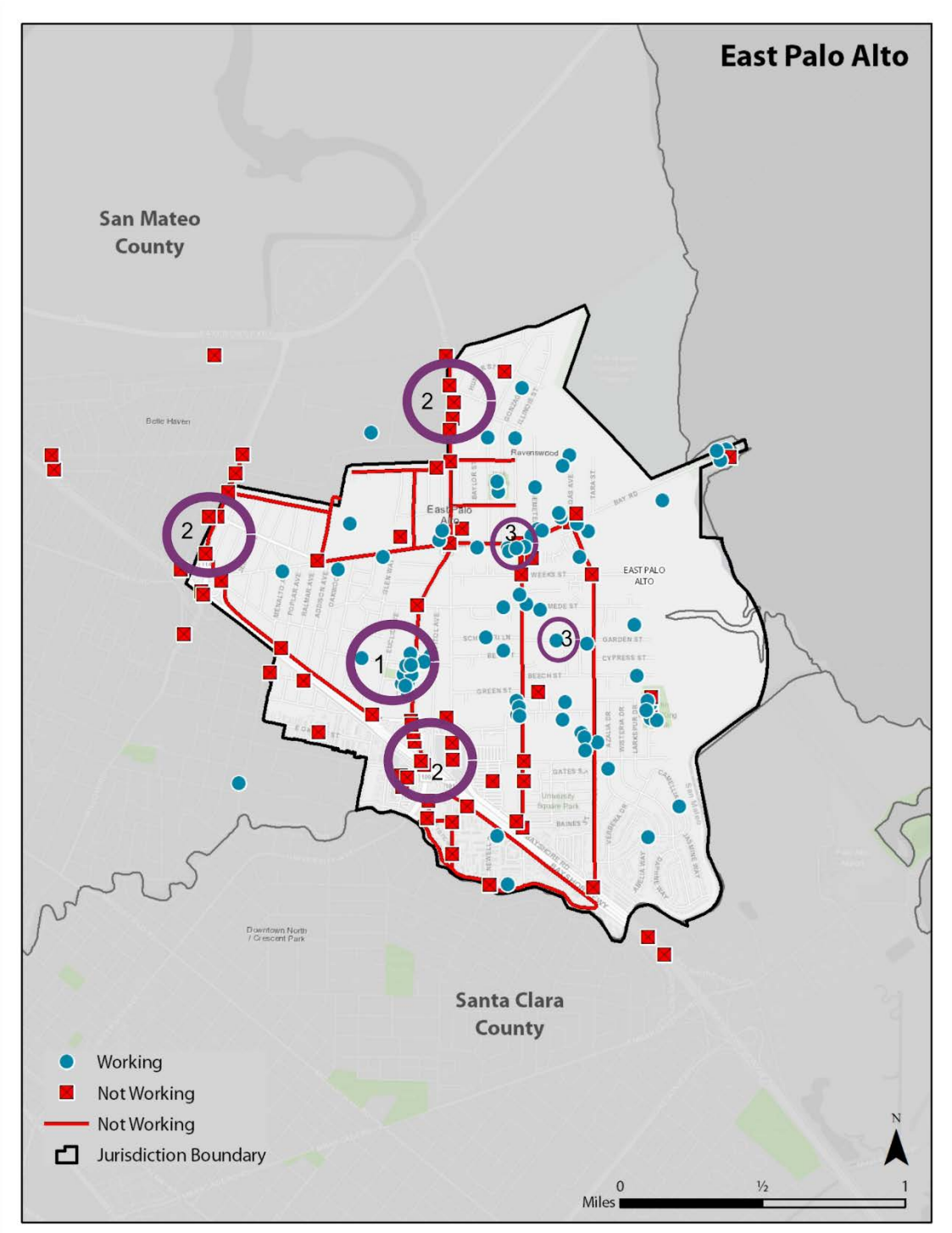

Figure 4. Assessment Map

Teams of community members plotted a variety of elements related to what is “working” and “not working” regarding their vision for a resilient EPA. This process is iterative and requires additional rounds and input from more community members. Strong patterns emerged in certain areas of the community. Some key examples include the following:

1. Bell Street Park and the surrounding vicinity. Community events and green recreation space is considered a vital health and resilience asset by the community (especially during high heat days when it is too warm to be inside without air conditioning). Several groups noted that nearby (not on University Avenue exactly) there are wider right of ways with less traffic (especially, just North of University) that are safe and reliable pathways for bike and pedestrian traffic in case of emergency.
2. Traffic congestion from commuters coming to tech office parks and other “big box” retailers was strongly identified undermining the resilience of the community. Significant travel times, poor air quality, and streets unsafe for biking and pedestrian traffic, create risks all the time and especially when it floods, if medical attention is needed, or during other acute events.
3. Certain community-based organizations were recognized as key resilience hubs for the community providing reliable refuge and support including Ravenswood Clinic and YUCA (see Appendix A for full list).

This process of identifying and mapping these repeating themes (patterns) of community identified resilience assets and risks should be repeated several times to contribute to priority adaptation and resilience planning. The CCCT is planning to continue this process and then surface priority projects to implement and or organize around, and advocate for, to the city of EPA.

Example of Iterative Community Conversations around Climate: Core team members leverage their social capital to invite new voices and partners to the assessment sessions they lead.

4 ASSESSMENT RESULTS

Planning processes often do not center on the existing needs and priorities of many of the most impacted communities, but instead include community voice towards the end of planning processes by having them give feedback or responding to what is not working or missing from those plans. Additionally, deficit-based community development ignores community assets and reiterates a "high-risk" labeling that community members may find irritating. *Building Systems of Support for Neighborhood Change* says, "There appears to be a growing consensus across the country that the most serious problems of America's poor communities can only be solved if poor people assume leadership for bringing about positive change -- beginning in their own neighborhoods."[9]

This pilot process centered the experiences, expertise and voices of communities in EPA and unearthed *their specific* adaptation priorities, needs and strategies.

Throughout the Core Team Training and Community Vulnerability Assessment sessions, community members across the different groups shared common issues and themes. While many of the issues and themes shared match the hazards and even strategies that traditional adaptation planning processes usually identify, many of them also reinforced the need that inspired the creation of the CCCT and the pilot process.

> *"The importance of assessing and planning for climate change impacts* ***speak directly to community specific adaptation priorities, needs and identified strategies."***

Core Team and Community Assessment Findings:

Issues shared across groups that highlight what is working well in EPA:

1. Community-based organizations serving the community
2. Walkable open space (where available)
3. Resilience assets such as social lending circles, tangible skills, and partnerships

Issues needed to be tackled shared across groups:

1. High cost of living
2. Homelessness and housing
3. Lack of parking
4. Lack of assistance for community members in need

Issues shared that reflect traditional adaptation planning topics:

1. Flooding

[9] Andrew H. Mott, 1997. Building Systems of Support for Neighborhood Change,≅ a report to the Charles Stewart Mott Foundation (Washington, DC: The Center for Community Change, 1997), p. 1.

2. Traffic
3. Pollution
4. Water insecurity

There is an extended list of what each community identified as strengths and weaknesses in Appendix A.

Table 3 is a categorized list of priority strategies compiled by the Core Team and CCCT as a part of the capacity-building training. The ideas were answers to the prompt, “What are possible strategies to make for a more resilient EPA, in alignment with the co-created vision for a resilient EPA?” Ideation includes strategies to address safety, food, water, transportation, housing and more. These become ideation anchor points for combining with additional strategies (an important part of capacity building). For example, when community members express an idea to have safer bike lanes (for more reliable access across town without using internal combustion engine cars contributing to global warming and climate change) they are then prompted with questions about how adding safer bike lanes implemented with green infrastructure or permaculture approaches such as bioswales might also contribute to mitigating flooding or other risks or vulnerabilities related to climate change. The community begins to “link up” / “stack” / “integrate” or “connect” climate strategies to daily life improvement strategies. The Core Team and the CCCT began this process and, with more time, would determine which strategies could be most effectively “stacked” to most efficiently utilize resources to meet multiple community needs.

Table 3. Priorities and Strategies Received from the Community during the Acterra/CCCT Capacity-Building Session

Safety	Food	Water	Youth	Education	Economy	Transportation	Housing	Nature	Change Process	Other
• Safer streets • Lights in the street • Disaster protection areas • Complete sidewalks • Floodwater retention basins • Emergency • equipment • Notification system that warns the community of disasters • Neighborhood preparation • Emergency plan prior to ER • Keep good morale in the face of emergency • Financial planning before the emergency	• Grocery store • More nutritional food options • Farmers' market x2 • More places that feed the homeless • Local supply	• Natural water drainage • Distribution of free water • Water barrels	• More youth engaged in the community • Youth centers • Finance education for youth • Youth shelters More youth programs • Remain in EPA after college	• Better education • More high schools x2 • More educational programs • How to apply for grants and scholarships • Higher ed programs • Promote and educate residents that home ownership combats gentrification (vested interest) • Improved preschool programs that include cultural and community values (quality, relational, relatable) • Financial education • Teachers should reflect the children they're working with	• Multicultural restaurants • Retail stores • More places to eat • Nail shop • A night mart / flea market • More community-owned businesses • Bike shops x2 • Own public utilities • Promote green jobs • Mom and pop stores	• Better public transportation (affordable) • Better transit (reliable buses, safer, more accessible) • Bike lanes • Safer bike lanes • Youth bus passes • More public transportation • Accessible community gardens • Decrease vehicle use • Invest in transportation solutions • More bikes, less • cars • More bike parking • Bike giveaways • Less traffic • Free bus shelter, senior, disable, family	• Affordable x2 • Homeless shelters	• Parks • More open spaces • Rose or botanical garden • Fruit Trees • More outdoor recreation • More trees • Gardens • Community flower garden • Marshes protecting us • Parks • Conservation for species • Throw away the airport, put gardens and fields	• Bonding community • More community events • More events related to EPA culture and history • Create a more inclusive community that factors in our diversity (cultures, ethnicity, generations, age, etc.) • Build on strengths • Gallery with EPA history • Growth and leadership • Change in city council, school board, planning commission, new city staff, PD • Promote city voting to make change (seniors, youth, nationalities, in all languages) • Keep communication simple • Promote women in EPA -> lead with examples • Accountability, increase business or property taxes on major corporations • Point out laws that go against us • Youth Commission as a part of the city council • EPA culture center	• Fun stuff x2 • "Everyone come as are. Don't answer homeless. Education for the (town or tour). Church raise them up to know the lord." • RV parking space • Swimming pool • Implement reach codes (energy) • Better planning • Support men • Tax the billionaire

Key to this process was starting with the “assets” of the community, what is already working well in EPA, and then assessing a vision that could build on existing resiliency.

The Core Team sessions evaluated a set of potential decentralized strategies to deal with what they felt was not working and then assessed how those strategies align (or not) with the priorities of the community. Because this process takes a significant amount of time, the CCCT and Core Team have begun an iterative process that can, over time (even over years), reveal a community consensus for a resilient EPA.

Table 4 is an example of the community-derived assessment matrix used to assess certain strategies (starting with small scale decentralized resilience features—rain gardens, rainwater collection systems, bioswales, and curb cuts).

The community noted that no specific strategy aligned with all the visionary and aspirational ideals for a resilient EPA, but also discovered that certain strategies could be leveraged to support addressing their priorities. This process should be continued as the community surfaces additional strategies from the work they are already doing or from additional capacity building.

Table 4. Result from Practice "Stacking" of Nature-based Solutions and Community Visions

Our vision for an ideal resilient EPA?	Climate Change Adaptation/Resilience Solutions					
	Rain Gardens	Water Collection Systems	Bioswales	Curb Cuts	Strategy 5	Strategy 6
Nature restoration	✓		✓			
Community space	✓		✓			
Youth center						
Walkable neighborhoods	✓		✓	✓		
Culture center		✓				
Fun/entertainment						
Free transportation						
Food security through a robust local food economy (sustainable sources)						
Housing security						
Localized economy in general						
Pedestrian friendly sidewalks	✓		✓	✓		
Historical preservation (museums)						
Village						
Diverse cultural celebration						
Nature appreciation	✓		✓			
Circular economy						
More housing without displacement						
Diverse businesses						
Regional services						
Livelihood opportunities - economic/jobs	✓	✓	✓			
MOU with PUC and other non-local landowners						

Transportation

It is important to highlight the transportation sector to showcase experiences and views from the community lens. Transportation is responsible for about 63 percent of EPA's total Greenhouse Gas (GHG) emissions. If broken down between emissions from highways and local travel, of the total 87,001 metric tons of carbon dioxide equivalent (CO2e), only 23 percent of the transportation emissions are from local roads while 77 percent are from State highways.[10]

Community observations include an increase of traffic congestion from the commuters passing through EPA which has significantly increased travel time within the city (only 2.5 square miles). As a result, concerns about poor air quality and public safety, are on the minds of community members. Congestion has increased poor air quality, especially in areas where schools and homes are near the local roads and highways. Concerned parents fear for their children who use bicycles and scooters for transportation to school and around the community. The lack of protective bicycle infrastructure puts bicyclists at risk for accidents. Caretakers and family members fear for the safety of elders due to the lack of signalized crosswalks, lack of respect for the pedestrian right of way, and ineffective no left or right turn signage that often goes ignored.

The community feels that the increased traffic from transient commuters and shoppers is likely impacting the community health, especially children's health. EPA has the highest rate of asthma attacks compared to the rest of San Mateo County. [11]

In addition to these health and safety-related issues connected to transportation, sea-level rise and extreme weather events will only add more congestion burden to EPA's existing transportation infrastructure. Flooding events within the last two decades impacted the community by cutting off the Woodlands and the Gardens neighborhoods from traveling to safety. Elders shared personal stories about conditions they faced during those flooding events, from using small boats to escape the flooding, to stories about being stranded and isolated with no knowledge of a disaster plan, how to respond, nor knowledge of resources available. It is important to note that EPA roads and neighborhoods still flood today during heavy rainfall and are not reliable to travel through for days at a time. The vulnerability of local roads and highways to sea-level rise will hinder the community's ability to travel for work, school, and to obtain basic needs and emergency resources from health and social services providers due to those services being located outside of immediate residential neighborhoods, or at opposite ends of the city. EPA's westside is home to a large apartment renter community, which is isolated from the greater community by Highway's 101. The community is located at the banks of the San Francisquito Creek.

In this respect the community recognizes the urgency and the need to prioritize investment into transportation solutions in the near future to alleviate the existing burdens and vulnerabilities from traffic, air pollution and to increase local actions to mitigate climate change. The City also recognizes the urgency and the need to address the Transportation sector which is prioritized in

[10] KEMA. 2011. City of East Palo Alto Climate Action Plan. City of East Palo Alto Redevelopment Agency.
[11] ibid

the Climate Action Plan and existing adopted policies. Out of the desire to prevent displacement of businesses and residents and, the community of EPA has expressed and stressed the importance of implementing solutions that will protect residents from displacement. As EPA experiences a higher cost of living, increasing land values, and gentrification, there is fear in the community that infrastructure implementation without policy protections would only exacerbate those issues.

Table 5 summarizes community perspectives and proposed strategies to address existing transportation issues in EPA.

Table 5. Summary of Transportation Issues in East Palo Alto

Local Circumstances	Impacts	Community Proposed Strategies
1. Increased Traffic 2. Unsafe Roads 3. Limited sidewalks and Pathways 4. Vulnerable to flooding from heavy rainfall periods and sea-level rise	• Air Pollution • Poor air quality impacting community health especially the children • Increased travel time in the city • Unsafe streets for biking and pedestrians • Disruption of mobility • Accessibility to services may be interrupted	• Affordable and efficient public transportation services • Accessibility to reliable transit services in EPA • Safer Bike Lanes • Reliable shared transportation services for schools in EPA • Provide safer and wider sidewalks to encourage safe walking in the community • Cleaner vehicles • Toll for transient commuters to encourage carpooling • Reliable bus services for people with disability, seniors, and their families • Implementation of green infrastructure that slows, spreads and sinks stormwater

4.1 Community Vulnerability Assessment Sessions:

4.1.1 Demonstration Project at Youth United for Community Action

As a custom adaptation to the capacity building approach, YUCA requested a “hands on” introduction to adaptation and resilience planning. This resulted in the development of a demonstration rooftop rainwater harvesting cistern and multifunctional rain garden project. At the YUCA community house where youth gather every day for after school organizing and leadership development activities, a 1,350-gallon cistern was connected to a 250 square foot roof surface. Approximately 2550 gallons will run through the tank per year at 17 inches of rainfall per year. The youth excavated a rain garden to accommodate the overflow from the cistern in extreme or excessive rain events. The youth engaged in active discussion about how this demonstration project works to mitigate flooding from extreme storm events and can also be used to sequester carbon, provide for wildlife habitat and food security. In a visionary exercise to extrapolate the impact of such demonstration projects, the youth discussed the possibility of implementing thousands of such cisterns throughout the community and neighboring communities and what that could mean for water security, in terms of availability in drought times and post natural disaster, and meaningful flood mitigation along San Francisquito Creek. The youth, some of whom had participated during the CCCT Core Team sessions, then commented on places where they see risks related to climate change in their neighborhood and what types of strategies they would like to see to address those challenges and opportunities.

4.1.2 Stacking Solutions and Nature-Based Adaptation Strategies

During both the Core Team Capacity Building and Community Vulnerability Assessment Sessions community members gravitated to resilience strategies that stacked solutions and prioritized nature-based solutions. For example, when discussing visions for a resilient bayfront and the strategies of levees, the community aligned on the idea of activating the bayfront to have places for community to walk, gather, and experience the ethnic pride and diversity of EPA (e.g., locally owned food truck enterprises). Whenever assessing problems of local flooding, the community was most inspired by bioswales, rain gardens, rainwater harvesting and other approaches that could integrate food production and more safe community greenspace (e.g., floodable parks and urban farms). Every time transportation hazards were discussed the emphasis was placed on walkable neighborhoods with flood mitigation integrated into multifunctional green space. This community emphasis led to a report (developed during the timeline of and inspired by the Pilot Project) by Stanford students on Rain Gardens in EPA (see Appendix B).

4.1.3 Capacity Building for Communities

During the training and community consultations the need for more education and awareness building on issues related to climate change and sea level rise was echoed numerous times. The process provided a climate lens to already complex existing community conditions. There is a lack of climate change education content that is culturally relevant, hands-on, and includes an asset-based approach. Through this training the community members were exposed to new information and approaches built upon their own experiences and priorities. The process supports communities to understand the changes they faced and take informed and appropriate actions that can result in climate resilient development in an ongoing basis.

The process acknowledges that there is a need for more culturally relevant and hands on approaches needed for communities to build their capacity to plan and implement adaptation actions. It is intended to address the institutional limitations for community-based organizations and support for information access as well as technical knowledge (in all required languages) in relation to adaptation planning. This is most effectively achieved by continuing to connect communities through programs with local governments including the city and the county, research institutions, and other organizations that have the required knowledge and skills.

The Pacific Island Community frequently echoed their concern about the limited resources and programs in the city to prepare for disasters. The question that was raised many times was “does the city has a disaster management plan?” and if yes, “how do we deal with flooding and fires?” Acterra invited a member of the Community Emergency Response Team (CERT) Team to share their programs, which allowed the PI community to learn about the existing community disaster preparedness programs and how to get involved. However the community feels concerned about limited resources. They have extremely limited capacity and understanding on how to prepare for natural disasters and extreme weather conditions impacting their lives. They are limited in terms of available programs to respond that are appropriate and accessible to the Pacific Island community. Increasing capacity will require programs to address barriers with language, culture and financial instability.

5 RECOMMENDATIONS

1. **Time Constraints**: The project leveraged existing foundations of the CCCT and the relationships the partners had with their constituents. Acterra staff, CCCT, and partner organizations all did an incredible amount of work to convene community members for meaningful conversations. Their efforts paid off and the conversation arrived at a place of opportunity for moving forward toward healing that could be the foundation for social, economic, and climate resilience. This place may not necessarily match the vision funders, project managers, and consultants had at the start of the project. Parameters of the 6-month time frame did not allow for both the journey of transformative conversations and the destination predetermined by the project's scope. In order to tap into deeper roots with which the resilience conversation can thrive, we moved at the speed of trust, for which predetermined destination was at times the opportunity cost. To minimize these types of impossible choices for future projects, we would recommend partnering with the community earlier in the grant making process, sharing design decisions, and being agile with emergent needs.

2. **Planning Fatigue**: As the sessions gathered momentum, one of the partners shared an insight that proved to be pivotal. Their community has been asked to participate in a plethora of planning and other input sessions. They were fatigued by presentations and participatory conversations on a variety of topics. To inspire engagement and excitement, we needed to do something tangible and more gratifying. This is common for community leaders and members in the Bay Area, who are facing struggles in housing, immigration, economic development, education, health, transportation, and more. They are frequently asked to attend meetings, fill out surveys, show up for workshops, and recruit their friends. The product of their input may or may not be available to them for some time, if at all. "Grasstop" leaders who have access to elected officials and other positionally empowered roles at outreach may or may not be able to deliver solutions that solve the pressing issues the community surfaces, with the invisible price tag being their personal and organizational reputation. This project ran the risk of repeating that pattern lest we pivoted. We were able to: a) earn trust to receive this insight from a partner and b) be responsive by pivoting toward a hands-on project element. We would recommend both for future projects in EPA.

3. **Relevance**: As mentioned above, the residents of EPA are facing a myriad of social and environmental issues. Community members are watching their neighbors get evicted, saying goodbye to adult children and grandchildren who cannot afford to live nearby, and worrying about chronic health issues *today.* The mainstream framing of Climate Change that puts dangers in the near or far future is not as relevant as housing, jobs, brain drain, isolation, cultural loss, and other immediate struggles. We were able to build a strong foundation for future partnership by first seeking to understand then later be asked to share. Our sessions together applied best practices in adult learning and cultural responsiveness to graft new branches on top of the stories and queries of the

participants. A recommendation for replicating this project would be to start the conversation with what matters most to participants, then finding the places of relevance for Climate Resilience content.

4. **Fair Compensation:** Compensating community leaders and participants is one of the ways the values of inclusion and equity are operationalized. As a gesture, it says we value their time and recognize their insights in their areas of expertise. As a practice, it aligns values and action. As a commitment, it builds institutional trust and fragrant reputation. We would recommend analyzing the budget of future community impacting and involving projects in this community for the percentage and rate of compensation as a data point for discussion around operationalizing equity. For example, a follow up project might fund additional rounds of input from more community members on what's working and not working in EPA to build a vision that is more representative of a larger cross-section of the city. Participatory Budgeting, practiced by numerous cities and funders including San Francisco, could be a way to bring equity into the project earlier on in the design process. (Footnote: https://www.publicdeliberation.net/cgi/viewcontent.cgi?article=1435&context=jpd)

5. **Acknowledge and support "Emergence within Processes":** We must find the relevance to engage community and when community is authentically engaged, several patterns typically emerge as they did in EPA. The first is that issues that might be considered outside of scope for those not in that community will likely emerge as important and urgent. There is no such thing as a single issue for any one of us, much less communities like EPA. The ask for compartmentalized and linear thinking gets constantly confronted by this reality. In this case, for example, an issue that was deemed critical by the participants of the focus groups was chronic health problems arising from compounding issues such as air quality, moisture and mold, lack of economic security, water quality, and housing stress. The second emergent pattern was that "community" has not one voice but many voices, some of them parallel and some conflictual. Individuals having the freedom to disagree with other people of similar demographics is a marker of meaningful diversity, inclusion, and equity work. Needing to represent as a unified, monolithic collective voice can often suppress the creative tension necessary to heal, build, and grow. Our recommendation is to expect these types of emergent patterns and to design grants and projects accordingly. For the first pattern of interwoven issues, adopting a contribution model of impact, rather than an attribution model, might be a solution. For the second pattern of heterogeneity within community, sliding toward partnership and shared leadership with community would allow for more nuances to be detected and protected. More generally, we would recommend groups and institutions to level up Emergent Strategy practices. (Footnote for contribution vs attribution: https://www.cdc.gov/dhdsp/pubs/docs/april_2011_cb.pdf. Footnote for Emergent Strategy Practices: https://interactioninstitute.org/emergent-strategy/)

6. **Asset and Vision Lenses**: There is a fair amount of literature online about why and how regarding Asset-based Community Development (ABCD) so we will only highlight a few points relevant to this project:

    a) deficit-based planning, empty-vessel or banking method of community education, and transactional exchange models severely limit medium- and long-term outcomes;

    b) starting with assets shows respect for the community, especially important in Black, Indigenous, Person of Color (BIPOC) communities with strong family hierarchies and reverence for elders;

    c) arriving at a place of shared vision is itself an outcome, especially for communities with a long history of tension; and

    d) vision-based collective power can not only change cities but history. We initiated an inventory of assets and visions in EPA. The energy and enthusiasm the process inspired could and should be leveraged to take the next step toward community resilience.

    Our recommendation is to habitualize this way of working in EPA and elsewhere; though there may be more inertia, the longevity is well worth the effort.

6 CONCLUSIONS

The Acterra Community-Based Vulnerability Planning Pilot Project created significant and authentic community leadership in developing resilience and adaptation planning in EPA. It became self-evident throughout the training that this is the beginning of a process that will, if it remains authentically dedicated to community leadership and participation, take years or even generations to complete. That said, it is not the “end point” that is important but the process that enrolls community members and elders into taking action and planning together for a more resilient EPA. The CCCT continues to integrate the results and momentum from this Pilot Project into community power building, advocacy and additional demonstration projects like the project developed at the YUCA community center.

APPENDIX A
FULL CORE TEAM CAPACITY PLANNING SYLLABUS FOR THE ACTERRA GRANT PROPOSAL

Table A-1. Community Session Specific Assessment Responses

Organization	What's Working in our Community/ Community Assets	What's Not Working
Anamatangi Polynesian Voices	1. Community-based organizations: Examples: StreetCode, Anamatangi, YUCA, OEPA, El Concilio, ACTERRA, Bay Shore Christian Ministry, Nuestra Casa, College Track, YCS, YMCA, Fresh Start, Senior Center, Mohammed Ali Center, The Barbara Mouton Center, BGHAT, 2. Youth and young adult job training and engagement programs: Job Train & SEP 3. Project We Hope - Homeless shelter 4. Free At Last - youth substance abuse and adult rehabilitation 5. The Governor's state approval for ADU to increase access to housing - for future of housing crisis. This is a slow process but hopefully this can work 6. RFHC (RAVENSWOOD FAMILY HEALTH CENTER) health care provider for the community. More resources and materials translated. Many of the employees can speak the language, there is some access to health education. If more can be tailored for the community. 7. Families feel connected with Anamatangi. Thankful for Anamatangi's leadership, sensitivity, and easy process. Through working with Anamatangi, this careful process of leading and empowering families can gain more momentum. 8. Collecting stories of how climate change has affected the elders.	1. We need more time and engagement allowing PI Community to "grieve" the fact they're losing their islands and empower. 2. Some families are left in the shadows, and aren't confident with other agencies. 3. Symptoms of Redlining and Gentrification 4. Loss of community and culture from change in population 5. Traffic, carbon emissions pollution • 90% of the traffic caused in our city is brought on by local tech companies, people passing through our community. The community suffers from this. 6. Lack of communication/ shared resources between service providers and major CBOs 7. Pollution, environmental pollution, traffic pollution 5 • After effects of Romic (land still contaminated in many places), ground water contamination, Bay Lands still has a high level of mercury and heavy metals. 8. Cost of living is too high in EPA. 9. Unemployment • Families either work 24 hours a day - to make up for the family members who aren't working. • Family members only offered employment in local areas - part time. Both parents may only work part time, to be able to work in the local community. This only makes up one income, still way below the poverty line. 10. No Affordable Housing • There's no housing available and no resources for families. Waiting lists are 8+ plus years. 11. Drug and Alcohol Abuse 12. Violence and abuse (sexual abuse, domestic violence, gun violence in the community) 13. Food/water insecurity

Table A-1. Community Session Specific Assessment Responses

Organization	What's Working in our Community/ Community Assets	What's Not Working
		• Cost of living is high. Rent is high. This causes family to choose between rent and food. Daily amenities are put on hold, while families struggle to pay rent. The group also discussed not having access to food because they work long hours. Resources like Mama Dee's family has been able to provide resources. Food banks and partners are closed when the majority of families get off work. Mother in the groups work live in jobs that are 24 hours. Fathers also work long hours not able to access food. • Water insecurity is a big issue. Recently we've had a water moratorium in our city. We keep building to provide resources for new and upcoming construction, but this also causes a strain on the community and residents resources. 14. Constant flooding • EPA has flooded 13 times since 1910, with peak floods in 1955, 1958, 1967, 1982 and 1998, according to a 2006 report by the San Francisquito Creek Joint Powers Authority. The creek overtopped its banks again in 2012 and 2017, damaging property and, in 2013, damaging the dirt levee abutting an EPA neighborhood, which if breached could have taken lives. That flooding prompted a state of emergency in EPA, requiring emergency repairs to the levee. • Concerns by the community that repairs and levee strengthening only cover less that ½ of EPA. 15. Energy Insecurity • Rolling blackouts in EPA. We've grown up used to the rolling black outs which have tended to happen in the summer. 6 • Recently, PG&E has forced Public Safety Power Shutoffs, This also causes stress in our communities. Most of the

Table A-1. Community Session Specific Assessment Responses

Organization	What's Working in our Community/ Community Assets	What's Not Working
		planned outages have not hit our community, but would be a strain, and communities need to be prepared.
Nuestra Casa (Latinx Community)	1. Ravenswood Dentist 2. New people are coming to EPA 3. There are programs that help residents and the community 4. The parks are working well/park maintenance	1. Cars do not respect school buses when red lights are flashing 2. Ravenswood Dentist Street lights, there are streets that do not have lights 3. Parking Where low income residents are located/lived 4. Trash 5. A lot of traffic x2 6. Streets need improvement, a lot of trash on the street, traffic, People do not clean after their dogs 7. The cost of living is too high Concerns about safety, trash, affordability, and crime 8. Lack of education in how to bike safely, ex. Youth do not wear bike helmets 9. The police x2 Concerns about police 10. Traffic 11. homelessness, and crime 12. Homelessness 13. Lack of assistance

Table A-2. Community-Specific Recommendations

Anamatangi	1. Financial planning literacy 2. More resources for Seniors 3. Resources translated/human services provided in indigenous languages ○ Essential programming and information isn't translated in Tongan/Samoan/Fijian and Pacific Islander languages. 4. Funding and support for Pacific Islander families 5. Immigration Resources 6. Natural disaster preparedness (earthquakes, flooding, diseases, & droughts) 7. Solar for everyone 8. Housing: More affordable housing for residents, and seniors. a. Housing policies to help keep longtime resident stay. b. Use of land and local empty lots for use of ADU, and tiny homes. Work with Josh To's organization SOUP. 9. Congestion/Traffic/Pollution: 80% of the traffic is caused by outside commuters. Carpool resources within the community. a. Policies and ways to control traffic, carbon emissions in EPA. b. A toll for those who drive through EPA. c. Work with big companies to park cars and use buses. 10. Education: In 2014-15, EPA student sonly 17% of students met or exceeded standards in English and only 12% met that bar for math in Ravenswood School District, which serves EPA students in grades K-8. This shows a significant gap when compared to Silicon Valley schools' averages: 57% for English and 51% for math. 11. Rebuilding a strong cohesive sustainable Ravenswood District. So that our students our able to get quality education, and also be competitive. Through education we can have a better standard of living. a. Specialists in the schools that can help families and students with concerns about climate change, emergency preparedness, certifications, etc. b. More security at the local schools. c. With the occurrences of flooding, earthquakes, violence, and gun issues, security needs to be tighter for local school. Free Affordable Preschool/Childcare for parents. 12. Community Organizing: Community spaces available for organizations to convene. Language translations in Tongan Samoan and Fijian. Available resources for the community. Identify proper resources that need translation within the network. IE: CERT, Red Cross, Emergency Preparedness, etc.. Open the railroad that follows the Dumbarton and 84 to help with traffic and congestion.

Table A-2. Community-Specific Recommendations

	13. Please keep engaging pockets of the community that are left behind. Anamatangi is an example that is leading the PI community, and engaging powerful youth. Identifying organizations that help with more engagement, empowerment and action. Going Green: Plant trees, to improve the quality of air in EPA. Identifying organizations in the community working on projects helping with Bay clean up, green technology, Work with organization in EPA like Emerson Collective, ONE EPA, El Concilio, 'Anamatangi, Canopy, Soup, Fresh Approach, ACTERRA, Nuestra Casa, StreetCode for projects that can help combat climate change. Corporations: Raise taxes on corporations in EPA to help with necessary needs in community - IE: sidewalks, levies, flood control mechanisms. Building/supporting campaigns that help promote corporate responsibility. Wellness and Self Care: Healthier self-care options in the community. Community spaces that focus on healing, mediation, yoga, and nutrition. Thoughtful and healing places. More BGHAT in schools.
Nuestra Casa	1. Participants identified the need for social cohesion and pride 2. Participants acknowledged the increase in civic participation and engagement 3. Participants advocated for clean, and safe open spaces 4. Participants proposed school curriculum changes, and waste management mandates 5. Participants learned about stackable functions and green infrastructure 6. Participants acknowledge the need for environmental justice and adaptation measures

Recent Disruptions in EPA

Following incorporation (in 1983), EPA struggled to stay afloat financially. Before 1983, the unincorporated region relied on San Mateo County resources and the Sheriff's Office to fight crime. Post-incorporation presented its own set of struggles, as the city grappled with revenue issues. Shortages in funding coupled with a historically poor community hurt by blockbusting policies translated to high rates of violent crime and gang violence as the end of the millennium drew near. The area experienced erratic growth and frequent conflict, particularly between different ethnicities. The crack epidemic decimated the city, particularly the predominantly African American population. By 1992, the city had gained a reputation of being the U.S. "murder capital" and was the nation's leader in per capita murders that year with 42 for a population of just 24,000. The Police Department's well-documented cases of corruption and misconduct only diminished relations between residents and law enforcement, perpetuating violence.[12]

The city has approximately 30,000 people, and it’s mostly a black and brown community with a higher poverty rate than the national average, despite sitting in one of the richest counties in the United States.

EPA’s history of inadequate resources is grounded in racial, economic and political factors that disadvantaged EPA throughout the 20th century. Early land use decisions in San Mateo and neighboring counties directed toxic industrial uses to EPA, while neighboring jurisdictions captured the lion’s share of the region’s economic development. As a result, EPA has struggled for decades to build a sustainable tax base and establish a healthy jobs-housing balance. Water allocations dating back to the middle of the 20th century exacerbated these problems by limiting the city’s capacity to support economic development.[13]

While EPA isn't as threatened by toxic industrial chemical spills as it was during the days when Romic Environmental Technologies was operating there, it and the communities of Belle Haven and North Fair Oaks, which are made up of predominantly minority residents, are now being subjected to a different, chronic and devastating form of industrial pollution: a jobs-housing balance so skewed that it squeezes even middle-class renters out of their homes, makes children wheeze from the tailpipe exhaust of vehicles driven by people who can't afford to live near their jobs, and leaves huge swaths of Bay Area residents — especially people of color — only two choices: a grueling commute or substandard housing.[14]

[12] https://bos.smcgov.org/history-east-palo-alto
[13] https://www.siliconvalleycf.org/sites/default/files/publications/east-palo-alto-water-report-reader.pdf
[14] https://www.almanacnews.com/print/story/2019/09/18/uneven-ground-iii-chasing-equity-in-a-changing-climat

APPENDIX B
INVESTING IN RAIN GARDENS FOR STORMWATER MANAGEMENT IN EAST PALO ALTO, CALIFORNIA

Investing in Rain Gardens for Stormwater Management in East Palo Alto, California

Report By: Tony Moller & Manisha Rattu

Introduction

As an economically disadvantaged community, East Palo Alto (EPA) is subject to a huge array of risks associated with climate change. Limited green space and large swaths of asphalt promote significant vulnerability to heat waves. With increasing temperatures, the ocean and the planet are warming, leading to changes in precipitation and sea levels (IPCC 2007). As a low-lying community located between both the San Francisco Bay and the San Francisquito Creek, flood events, like creek overflows and salt-water intrusion, are likely to occur at a more frequent scale then previously determined. For example, updated 2015 Federal Emergency Management Agency (FEMA) maps added about 550 more properties into the EPA floodplain (Oswald 2015). This forced many mortgage holders to purchase flood insurance for their homes, despite living there for 15 years (Oswald 2015). In total, about 49 percent of EPA is located within a flood zone, which is a threat to the livelihood of thousands of residents. In addition, the lack of green spaces limits natural sinks for water retention, causing annual rainfall or El Niño events to be quite catastrophic.

EPA is home to about 30,000 residents with a majority of people of color. Hispanic and Latinx people make up about 63 percent of the city's demographics while Black or African American people make up about 11 percent (USCB n.d.). The median household income in EPA is about $59,000, while nearby Palo Alto residents have a median household income of about $148,000 (USCB n.d.). EPA is quite vividly cut off from Silicon Valley, with Highway 101 dividing the two cities. The city experiences high asthma-related incidents due to the vehicle

traffic and emissions on Highway 101. With all of these variables in mind, it is evident that EPA is at the forefront of environmental injustices. As a result, the community is more likely to be impacted by climate change than wealthier communities, like Palo Alto, which have the infrastructure and resources available to combat these issues. It is important to build community-based action so that the community can be ready for climate disasters.

Several projects are underway in the city of EPA that are aimed at restoring the coastal wetlands and the waterfront.

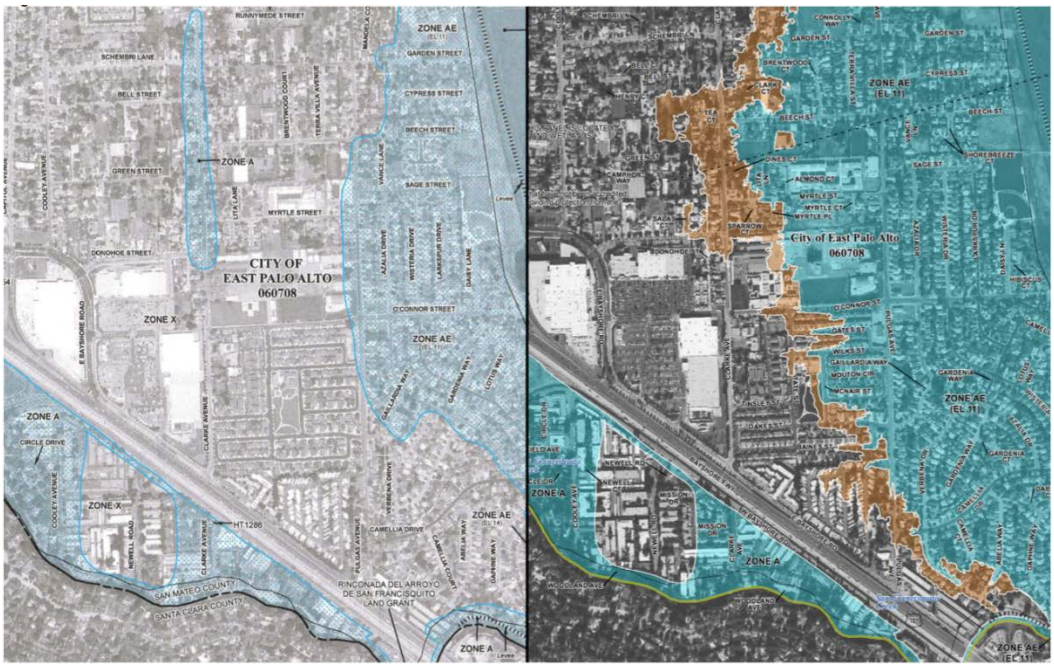

Figure 1. FEMA's flood boundary maps of East Palo Alto. The map on the left shows the previous flood boundaries, and the map on the right shows the new boundaries, with the blue regions indicating a flood that is likely to occur during a 100-year period and the orange indicating a flood that is likely in a 500-year period. (Map courtesy of FEMA)

East Palo Alto Flood Protection Measures

Heavy rainfall in winter months has brought on major flooding occurrences in EPA. The creek has overflowed at least 13 times since 1910, with peak floods in 1955, 1958, 1967, 1982 and 1998, according to a 2006 report by the San Francisquito Creek Joint Powers Authority

(Dremann 2018). In recent times, San Francisquito Creek overflowed in 2012 and 2017, calling for a state of emergency (Dremann 2018). The 1998 flood resulted in $40 million in damages, and a 100-year flood event could cause $800 million in damages (Dremann 2018). With increased population levels and reduced wetlands, the city is not equipped to battle another flood without changes to the infrastructure.

The city of EPA's current drainage system consists of a network of pipes that direct stormwater into a connected channel. To better understand the drainage system, please refer to Figure 2, which delineates EPA Drainage Sub-Areas. Table 1 provides information on the acreage of watersheds and mileage of pipes in each drainage area. Clearly, some areas have a more extensive drainage system than others. This also means that certain areas may be more impacted by storm events due to limited drainage capacity. Figure 3 reveals the network of pipes as of 2014.

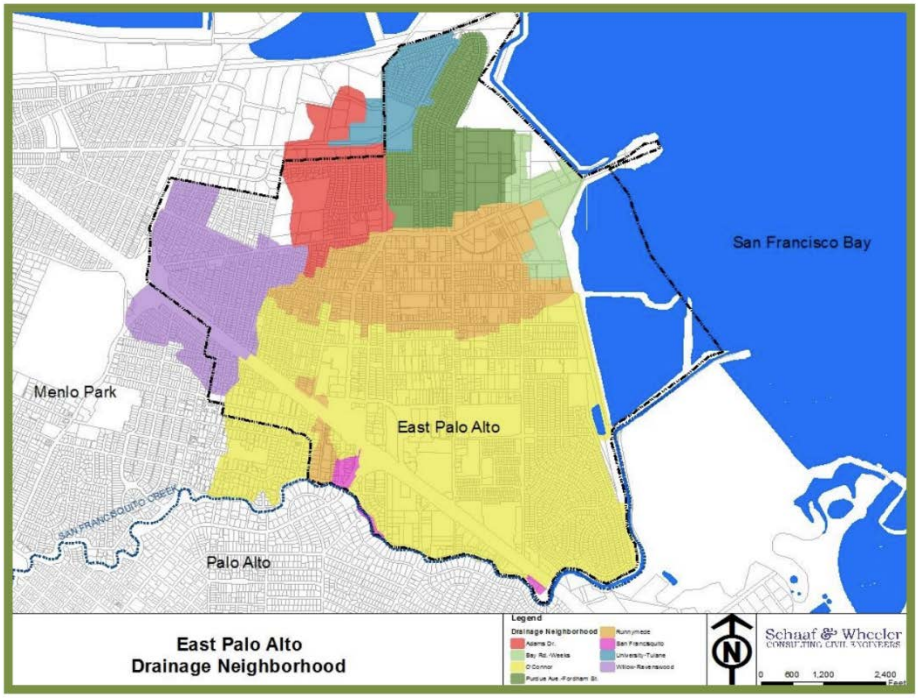

Figure 2: Map detailing different drainage neighborhoods in East Palo Alto, which are all named in .

Drainage Area	Area (acres)	Pipe (miles)
Adams Drive	78	0.6
Bay Road. - Weeks	42	0.3
O'Connor	635	10
Purdue - Fordham	122	1.1
Runnymede	129	4.2
San Francisquito	8	0.2
University - Tulane	43	0.3
Willow - Ravenswood	136	2.0
TOTAL	**1,229**	**18.7**

Table 1: Total acreage of watershed areas and mileage of storm , identified by drainage area.

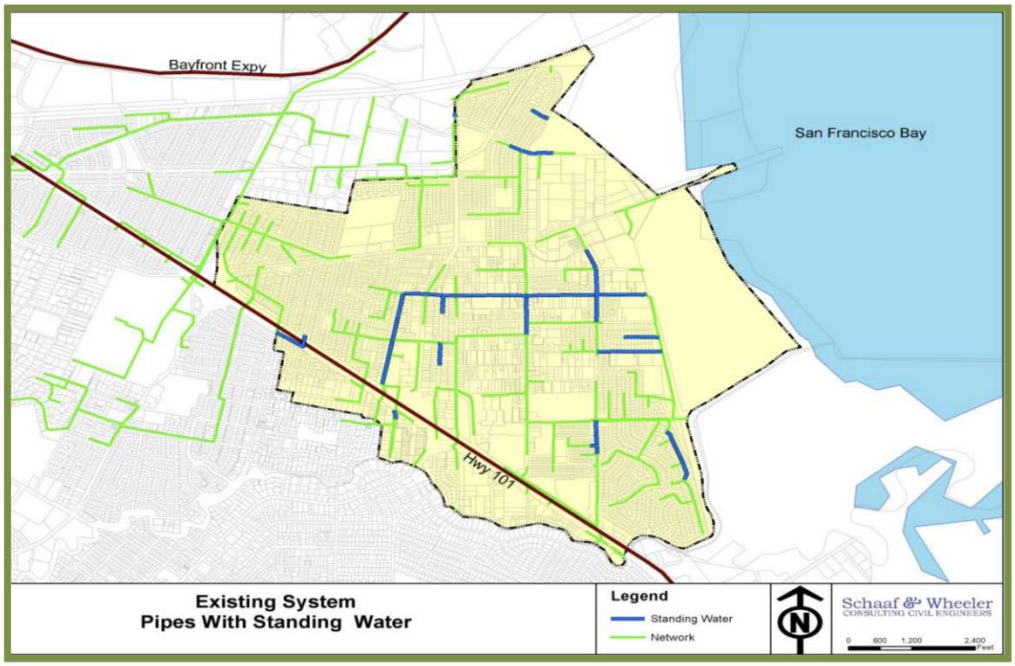

Figure 3: Map detailing the location of pipes with standing water within the entire network. Pipes with sediment not labeled.

The current flood protection mechanisms are limited to manmade systems that discharge to the San Francisquito Creek and the San Francisco Bay. The stormwater flows enter two pumps that then release the water into the Bay or the Creek. The O'Conner pump is operated by the city and was constructed in 1984 (EPA 2014). Most of its infrastructure is the same as when it was built. The station has a capacity of 200 cubic feet per second (CFS), but estimates for needed capacity are between 230 and 290 CFS (EPA 2014). The two stations are unable to withstand 10-year or 100-year storm events. Obviously, this causes the creek to overflow, which the city of EPA recognizes. In 2014, a Storm Drain Master Plan was released which is currently underway. The high-priority projects within this master plan are focused on developing a channel rehabilitation project, replacing the O'Connor pump station, and increasing pipe diameters along major roads. The proposed project sites are highlighted in Figure 4. The project is currently still seeking funding.

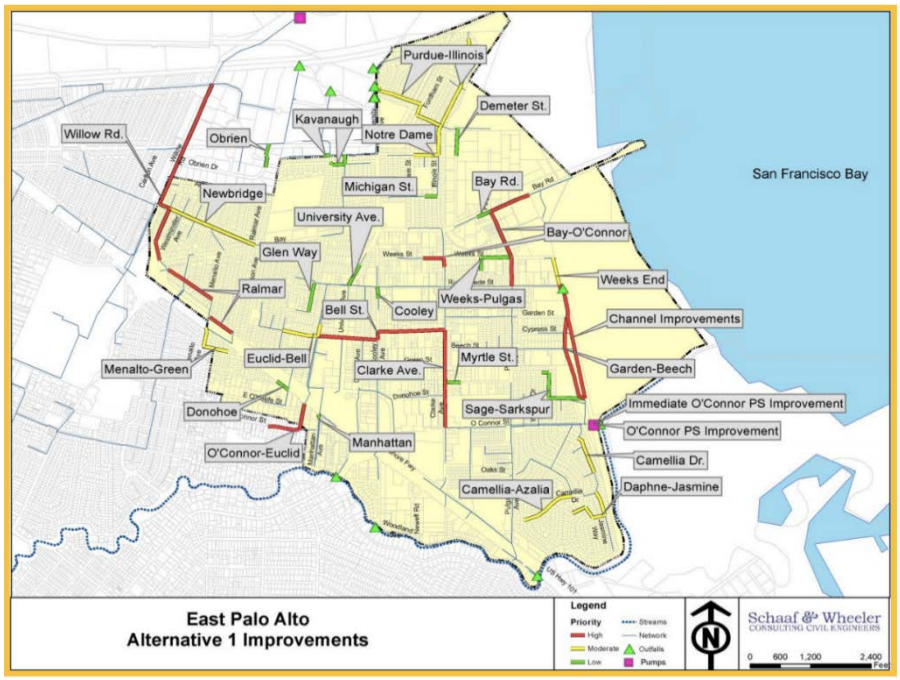

Figure 4: Master Plan Project Sites.

Why Rain Gardens?

Each year, nearly $2 billion in damages is caused by flooding in urban areas, which constitutes about 75 percent of the total flood damage in the United States (National Academy of Sciences 2019). Rain gardens, also called bioretention facilities or simply "green infrastructure," are being deployed in cities across the world to mitigate this risk. In their simplest form, rain gardens are depressed areas that have direct access to the water table through the soil, often planted with flood-tolerant plants (Figure 5). They can take the form of small parks or gardens, or be integrated into existing infrastructure as curb cuts, bioswales, or street trees. Occasionally, rain gardens include edible or useful plants, which can be planted to provide rotational fresh produce at all seasons. Although organizations like Fresh Approach are making strides to improve access to fresh produce for low-income communities in the South Bay, there is still a great deal of food insecurity in EPA. Planting edible perennials in rain gardens would have the dual benefit of assuaging the "food deserts" that arise from inadequate access to fresh food, and educating residents about the source of native food sources.

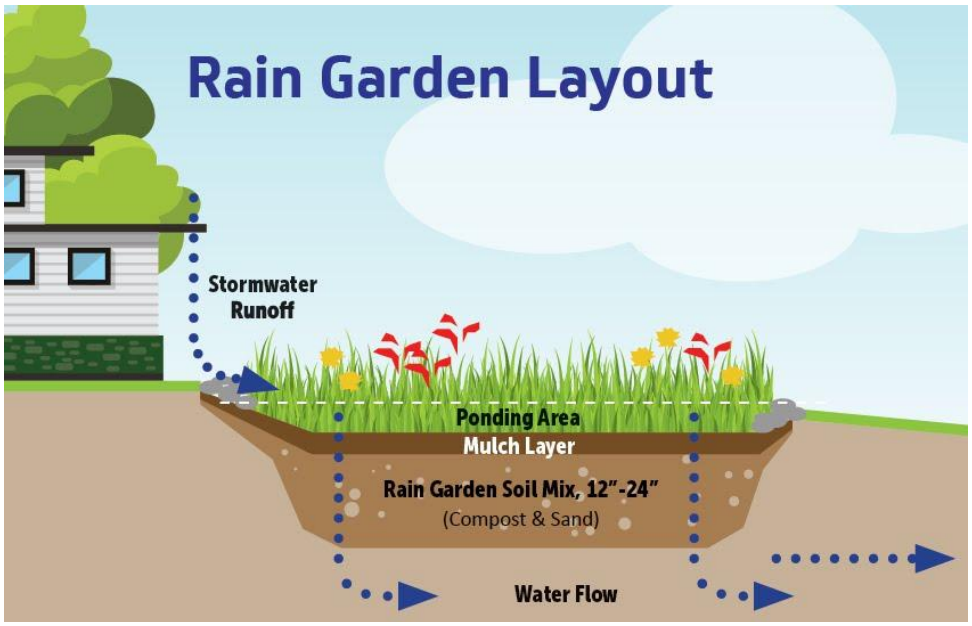

Figure 5: Diagram of a Rain Garden (Courtesy of Hillsborough County Board of Commissioners)

In a typical urban setting, rainwater strikes impermeable surfaces, such as concrete and asphalt, and runs off, accumulating toxins from engine exhaust and industrial byproducts. This contaminated water usually makes its way into storm drains, where it is eventually evacuated via surface flow to the nearest body of water. In areas with poor or overwhelmed flood infrastructure, runoff from hard surfaces can concentrate in low-lying areas from which it cannot drain, causing catastrophic flooding. To combat this, soil in rain gardens filters water both physically and electrostatically, and allows water to percolate safely into belowground watersheds as it is filtered.

Rain gardens and other green infrastructure are becoming increasingly common throughout the world's urban spaces because of the compound benefits they provide. The "grey infrastructure" seen in traditional urban flood control measures such as levees and storm pipes must be manually maintained, and has a high initial cost to build. Green infrastructure tends to have lower costs, to be more self-sustaining, and to be more aesthetically pleasing than its concrete counterparts, and is being employed in metropolitan areas across the United States (USEPA 2007).

EPA, an area with little green space and even less discretionary capital, would benefit greatly from the low-cost green spaces provided by rain gardens. Rain gardens, once planted, will grow on their own and require relatively little maintenance. Their filtering functionality will prevent contaminated stormwater from reaching the San Francisco Bay, and their absorption will protect EPA from flooding as climate change-driven storms worsen.

Success Stories

Numerous communities across the US have developed rain garden programs (with rebates) through partnerships with nonprofits, corporate interests, education institutions and government agencies. One such region is Southwestern Pennsylvania, which experiences high surges of combined sewage overflow and stormwater runoff. The Three Rivers Rain Garden Alliance's (TRRGA) mission is to install rain gardens while educating and building collaborations (RGA n.d.(a)). It is managed by the Audubon Society of Western Pennsylvania. Between July 2009 and September 2013, nearly three million gallons of rainfall were captured by these rain gardens in the greater Pittsburgh area (GBA n.d.). Since the scope of TRRGA is even larger, the number of gallons captured across the region is likely greater than 3 million. This project holds enormous potential for mitigating runoff while building collaborations rooted in education and outreach.

Washington D.C. has also launched a rebate program for rain gardens, through the Department of Energy and Environment with funding from the Environmental Protection Agency. The Golden Triangle Business Improvement District is a non-profit that has supported the construction of 10 rain gardens, and is implementing 10 more in the central business district. They estimate that the 10 new rain gardens will capture 43,000 gallons of polluted runoff **per storm** (BID n.d.). They also estimate that the new tree and native vegetation plantings scheduled for fall 2019 will provide shade in areas with a lot of impervious surfaces and restore corridors for pollinators. The rebate incentivizes homeowners to implement rain gardens in residential areas as well. The commercial and residential construction of rain gardens highlights a multi-faceted approach to dealing with stormwater runoff.

In addition, San Francisco has developed a Sewer System Improvement Program (SSIP) which will develop 8 green infrastructure projects to manage stormwater runoff. One of these projects is the Sunset Boulevard Greenway which features rain gardens. The project is currently underway with completion expected by November 2020 (San Francisco Public Utilities Commission n.d.).

From large cities like San Francisco to entire regions in the state of Pennsylvania, rain gardens are seen as small-scale solutions with large-scale impacts. Rebate programs for the rain gardens indicate a commitment to making them accessible, and, hence, deployable. This sort of investment would not happen if rain gardens did not have significant benefits. When combined with other green infrastructure strategies, rain gardens can be incredibly useful for mitigating global warming effects like increased precipitation.

Implementation

EPA currently has several projects underway for addressing future climate change impacts, and it is important that a possible rain garden installation project work in conjunction with existing efforts. The San Francisquito Creek Joint Power Authority SAFER Bay project is an ongoing effort to increase flood protection while preserving access to public lands along the San Francisco Bay. The project, though still in review, would effectively create a flood barrier along the San Francisco Bay shore between the Menlo Park/Redwood City border to the outlet of San Francisquito Creek to the south (SFCJPA 2016). In addition to the SAFER Bay project, the South Bay Sponge project is working to create adapted green infrastructure along the South Bay shoreline to absorb storm surges and rising sea levels (RBA n.d.). The teams for both projects have already done a great deal of in-depth flood management planning for EPA—therefore, it may be useful to spearhead a rain garden team that can not only work with Acterra, but also in

conjunction with these long-range plans sponsored by the San Francisquito Creek Join Powers Authority and South Bay Sponge.

Because community inclusion is a core principle to Acterra's mission, the rain garden project could be implemented with help from local stakeholders near areas with high population densities and high flood vulnerabilities. These areas could include the properties bordering the Bay Trail and the neighborhood enclosed to the west by University Avenue and to the South by Bay Road. As will be further discussed in "Community Involvement," it is essential that as many as possible of the jobs created by this project go to residents of EPA.

Costs and Considerations

Implementing this project will take time and capital. Though rain gardens are cheaper to install than levees and belowground drains, they are not without initial input cost. A typical rain garden will cost $10-$15 per square foot, depending on the perennial plants used and the labor employed (RGA n.d.(b)). As stated previously, this project would ideally employ residents of EPA and pay them a competitive wage to maximize social benefit alongside environmental functionality. Because of this, the cost of installing rain gardens throughout EPA, either as a green belt in conjunction with the SAFER Bay Project or as isolated projects on existing public infrastructure, will run into the thousands of dollars. For instance, installing a ten-foot wide band of green infrastructure between a mile of the Bay Trail and vulnerable houses bordering it would cost between $528,000 and $792,000, including labor. Therefore, this project will need to be funded by large grant programs.

Another consideration is the possible redundancy of this project, given the existence of other projects previously mentioned undertaking similar missions. A possible avenue to avoid this would be to create a rebate program for individuals to create rain gardens on their own

private properties, allowing Acterra to engage with the community education component of the project. This could have the tandem effect of empowering EPA residents to take a hand in climate change adaptation, and to beautify the neighborhoods and homes of those who will be most affected by rising sea levels and changing storm patterns in years to come.

Community Involvement

A crucial component of this rain garden proposal is community involvement, youth engagement and employment, as well as building community resilience. The Climate Change Community Team (CCCT) in EPA is a group of residents, officials, youth, and community leaders who have expressed the need for a project that can help sustain these goals. Rain gardens is the project that the CCCT team and local non-profits such as Youth United for Community Action and the Urban Permaculture Institute came to agree upon as a top priority.

While the SAFER project and the South Bay Sponge projects have extensively involved community members in envisioning processes, this project will specifically employ community residents to implement the rain garden technologies that they helped design. This project places the power of climate change resiliency into the hands of those most impacted, the community members. This project allows them to take ownership of their own homes and neighborhoods and builds their capacity as climate resiliency leaders. To achieve this, the grant proposal should prioritize hiring contractors from EPA, and allocate a budget to compensate youth for their time and labor in the construction of rain gardens. This can then serve as a model for a business that allows young people to retrofit homeowner's yards into rain gardens.

Since residents will help with the implementation process, they can cater to local needs that may be overlooked in large-scale projects. One such need that may be overlooked is culturally and socially engaged spaces. EPA has a rich history of activism and social and

political organizing. The community would like to place plaques at various historic sites across the community to keep this memory alive. If possible, rain gardens can be placed in historic locations as an effort to preserve those sites and protect them from future flooding. This can serve as an educational opportunity that draws in ecology, design practices, social justice, climate adaptation, and wellness.

This rain garden proposal is a strategy rooted in community-driven climate resilience planning. Community-driven climate resilience planning rests on the community's capacity to 1) put forward a vision of climate resilience and assert a set of community priorities that flows from that vision, 2) assess community vulnerabilities and assets and develop (or select) appropriate solutions based on a community's unique experience, and 3) build community voice and power to get those climate solutions resourced and implemented (NACRP 2017). This planning recognizes that communities are quite knowledgeable about climate vulnerabilities and can work together to address those vulnerabilities as they adapt and evolve. This process also ensures that democratic values are upheld and not simply mimicked. And, most importantly, this process recognizes that societal problems are interconnected, and so are their solutions (NACRP 2017). As climate change continues to amplify, there must be a shift away from extractive industries. A just transition to a more equitable future is only possible by empowering communities to be leaders themselves. This rain garden proposal is EPA's continued attempts to envision a just future.

Equity

Environmental equity has to do with the notion that sources of potential environmental risk may be concentrated among racial and ethnic minorities and lower-income communities. Numerous studies have revealed the ties between environmental hazards and communities of

color (Ringquist 2007). EPA is at the forefront of inequities and injustices, as highlighted by its divide from Silicon Valley's wealth, historical trauma, and limited access to resources. The city of EPA has higher asthma rates, lower education levels, and limited public infrastructure than other communities in the county (Goebel et al. 2012). There are limited resources and capacity within the community which is why it is important to get funding for community-driven projects. These projects will directly improve the quality of life of EPA residents, while addressing equity concerns. Rain gardens can provide more green space to the community, help filtrate some of the toxins that are picked up from the roads and highways, and serve as a learning tool for young people in the community. The potential employment opportunities that this proposal provides can help uplift the lives of many young people who may not have access to other educational opportunities now, or must support their families financially. By ensuring that the places where people live, work and play are safe and healthy, and free of harmful toxins and other hazards, environmental inequities can be transformed into environmental justice.

Conclusion

As climate change worsens the present threat of flooding in urban areas across the world, poorer coastal cities such as EPA will be hit the hardest and will have the fewest resources with which to adapt. As part of its mission, Acterra strives to bring equity and environmental justice to those in their community, and a rain garden project would accomplish just that. Rain gardens provide flood control from stormwater, and can be easily integrated into existing infrastructure or undertaken as large projects in conjunction with other initiatives such as South Bay Sponge. Although they have relatively high initial input costs, rain gardens are easy to maintain, and have been successfully installed in cities throughout the United States. They are also a beautiful

addition to cityscapes and can help to reintroduce native species and therapeutic green space to areas dominated by grey infrastructure.

The integration of the EPA community into the design, construction, and maintenance of rain gardens would bring a revenue stream to the local economy and help to engage historically marginalized people with the effort to adapt to climate change. Involving residents in the implementation of a rain garden project would help to engage them with community mobilization and teach a skill set that could be used in other regions as well. Though the exact specifications of a rain garden project in EPA remain fluid, the concept exists as an exemplary framework for fostering both sustainability and community engagement in an at-risk community.

APPENDIX C
CLIMATE CHANGE COMMUNITY TEAM MEMBERS AND CORE TEAM MEMBERS (CTM)

Ofelia Bello (Chair) – Youth United for Community Action – CTM
Mele Latu (Co-chair)- One East Palo Alto
Uriel Hernandez (Resident and Planning Commissioner -CTM
Sharifa Wilson (Ravenswood School Board of Directors)
Honorable Regina Wallace (City Mayor)
Michelle Daher (Resident and City Staff)
Apololini Dee Uhila (Anamatangi Polynesian Voices) -CTM
Senita Uhilamoelagi (Anamatangi Polynesian Voices)- CTM
Najiha Al Asmar (Fresh Approach) -CTM
Julio Garcia (Nuestra Casa)
Pastor Virges (St Marks Church)
Romain Taniere (Community leader and CERT)
Glenda Savage (Sanitary District)
Duane Bay (EPA Can Do)
Ariane Bertrand (Emerson Collective)
Court Skinner (Resident)
Iliana Nicohlas (Acterra & Resident)-CTM
Heleine Grew (Youth Representative)
Karely Nunez (Youth Representative)
Jeff Poestch (Ravenswood Shore Business District)
Caitlin Macomber (YUCA)
Siteri Maravou (Ravenswood Health Clinic)

Bibliography

ASLA (American Society of Landscape Architects). 2017. The Evolving Practice of Ecological Landscape Design. August 8, 2017. Retrieved December 2, 2019, from https://thefield.asla.org/2017/08/01/the-evolving-practice-of-ecological-landscape-design.

BID (The Golden Triangle Business Improvement District). n.d. Rain Gardens. Golden Triangle. Retrieved December 2, 2019, from https://goldentriangledc.com/initiative/rain-gardens/.

Dremann, S. 2018. A flood next time? February 5, 2018. Retrieved December 2, 2019, from https://www.paloaltoonline.com/news/2018/02/03/a-flood-next-time.

Engemann, K., Pedersen, C. B., Arge, L., Tsirogiannis, C., and Preben Bo Mortensen, J.-C. S. 2019. Residential green space in childhood is associated with lower risk of psychiatric disorders from adolescence into adulthood. March 12, 2019. Retrieved December 2, 2019, from https://www.pnas.org/content/116/11/5188.

EPA (City of East Palo Alto). 2014. Storm Drain Master Plan. April 2014. Retrieved 2 December 2019, from http://ci.east-palo-alto.ca.us/DocumentCenter/View/2871.

EPA (City of East Palo Alto). 2019. Soak Up the Rain: Rain Gardens. October 11, 2019. Retrieved December 2, 2019, from https://www.epa.gov/soakuptherain/soak-rain-rain-gardens.

GBA (Green Building Alliance). n.d. Rain Gardens. Retrieved December 2, 2019, from https://www.go-gba.org/resources/green-building-methods/rain-gardens-2/.

Goebel, B., Newton, D., and Boone, A. 2012. Divided By a Highway, East Palo Alto Looks to Reconnect Its West Side. October 26, 2012. Retrieved December 2, 2019, from https://sf.streetsblog.org/2012/10/25/divided-by-a-highway-east-palo-alto-looks-to-reconnect-its-west-side/.

Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland, 104 pp.

KEMA. 2011. City of East Palo Alto Climate Action Plan. City of East Palo Alto Redevelopment Agency.

Kimpton. 2018. Greenspace and crime: An analysis of greenspace types, neighboring composition, and the temporal dimensions of crime. October 1, 2018. Retrieved December 2, 2019, from https://naaee.org/eepro/research/library/greenspace-and-crime-analysis-greenspace?field_eeresearch_social_environm_tid[0]=2442. (NAAEE)

NACRP (National Association of Climate Resiliency Planners). 2017. Community-Driven Climate Resilience Planning: A Framework. May 2017. Accessed 2 December 2019, from https://movementstrategy.org/b/wp-content/uploads/2017/05/WEB-CD-CRP_Updated-5.11.17.pdf.

National Academy of Sciences. 2019. Magnitude of Urban Flooding. Retrieved December 2, 2019, from https://www.ncbi.nlm.nih.gov/books/NBK541178/.

Oswald, L. O. 2015. New FEMA maps show more of East Palo Alto at risk of flooding. December 16, 2015. Retrieved from http://peninsulapress.com/2015/12/12/east-palo-alto-flooding-risk/.

RBA (Resilient By Design). n.d. South Bay Sponge. Retrieved December 2, 2019, from http://www.resilientbayarea.org/south-bay-sponge.

RGA (Rain Garden Alliance). n.d.(a) Rain garden FAQs. Retrieved December 2, 2019, from http://raingardenalliance.org/what/faqs#cost.

RGA (Rain Garden Alliance). n.d.(b) Three Rivers Rain Garden Alliance background and agreement. Retrieved December 2, 2019, from http://raingardenalliance.org/about/details.

Ringquist, E. J. 2007. Assessing evidence of environmental inequities: A meta-analysis. 2007. Accessed 2 December 2019, from https://onlinelibrary.wiley.com/doi/abs/10.1002/pam.20088?casa_token=ISkeXn37pEIAAAAA%3AvtgRwVSYrLxy3skIZn3tT6WsNggh9UPh3UGEPTOKbNDsxcmG6Yy2TrHwph78KIteQ_eCmSxDb1JtESk.

San Francisco Public Utilities Commission. Sunset Boulevard Greenway. n.d. Retrieved December 2, 2019, from https://www.sfwater.org/index.aspx?page=682.

SFCJPA (San Francisquito Creek Join Powers Authority). 2016. SAFER Bay Project. Retrieved December 2, 2019, from http://www.sfcjpa.org/documents/SAFER_Bay_Public_Draft_Feasibility_Report_Summary_Oct._2016_.pdf.

SPU (Street Edge Alternatives). n.d. Retrieved December 2, 2019, from https://www.seattle.gov/utilities/environment-and-conservation/projects/green-stormwater-infrastructure/completed-gsi-projects/street-edge-alternatives.

USCB (U.S. Census Bureau). n.d. U.S. Census Bureau QuickFacts: East Palo Alto city, California. Retrieved December 2, 2019, from https://www.census.gov/quickfacts/eastpaloaltocitycalifornia.

USEPA (U.S. Environmental Protection Agency). 2007. Reducing stormwater costs through low impact development (LID) strategies and practices.