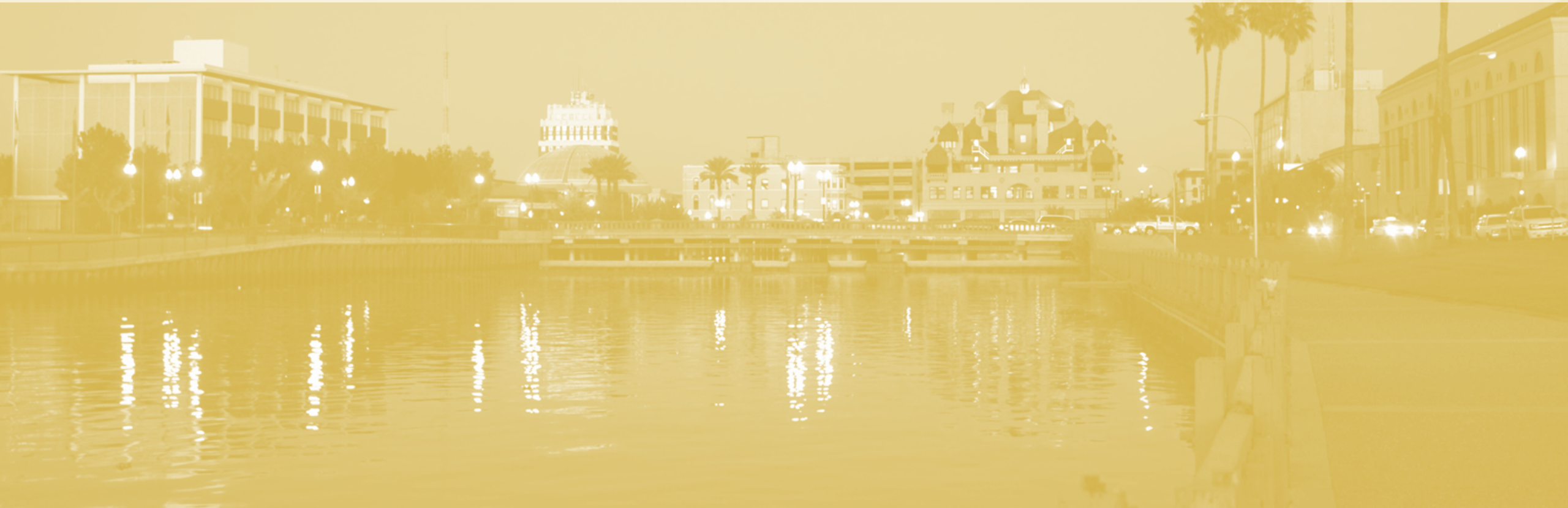
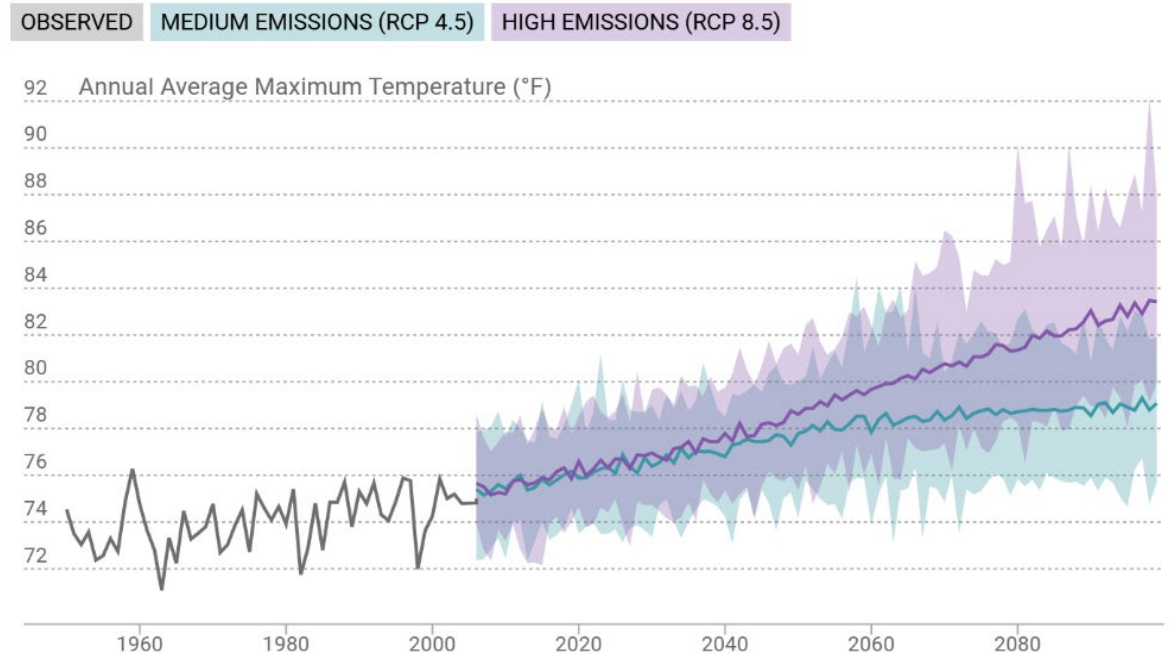


Climate Hazards Overview



Climate Vulnerability Assessment Overview

- Focused on the City of Stockton
- Develop a **vulnerability assessment** for the City of Stockton's infrastructure and communities through geospatial analysis.
- **Climate data:**
 - Extreme heat, drought, and precipitation climate projections are downscaled through Cal-Adapt, developed by the State of California
 - Flooding data uses FEMA flood maps.
 - Wildfire uses CalFIRE's Fire Hazard Severity Zone maps.
 - Climate projections use the "business as usual" Representative Concentration Pathway (RCP) 8.5 scenario for global GHG emissions.
- **Asset data:** Sourced from the City of Stockton and State of California, and include:
 - Transportation (roads, highways, bridges, bike lanes, etc.)
 - Water and stormwater infrastructure (treatment plants, mains, etc.)
 - Community facilities (hospitals, community centers, schools, etc.)
 - Communities (evaluated through Healthy Places Index and other indicators).



Extreme Heat

- San Joaquin County is projected to see a **significant rise in extreme heat days** – when the daily max temperature is above the 98th percentile of historical temperatures (1961-1990), or **101.6°F**
- Extreme heat is projected to increase from 5 days historically to **over 40 days annually by mid-century (2035-2064)**.
- Impacts:
 - Heat illness, heat stroke, and fatalities, particularly for vulnerable populations
 - Worsened drought and agricultural impacts
 - Disruptions to outdoor activity.
 - Infrastructure damage; power outages and rolling blackouts

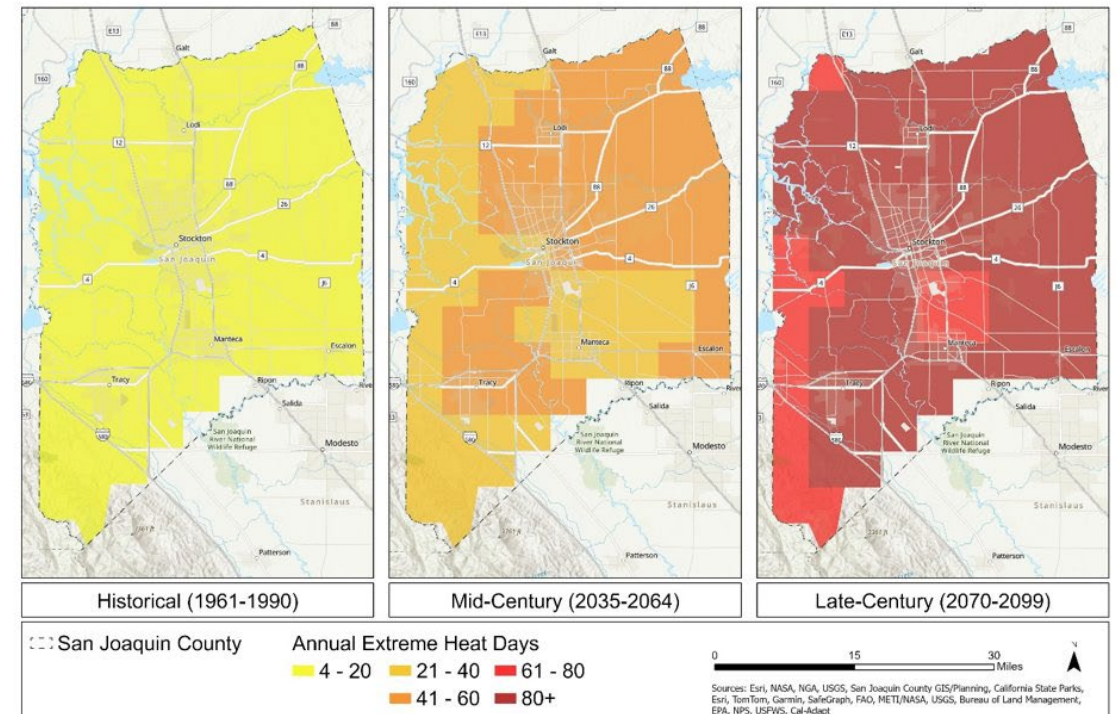


Image: RCP 8.5 Emissions Scenario for San Joaquin County (Cal Adapt)

Drought

- San Joaquin County is projected to experience **longer stretches of dry days**—up to **147 consecutive days annually by mid-century**.
- The 2011–2016 drought led to **\$3.8 billion in agricultural losses**, much of which was concentrated in and around San Joaquin County—highlighting the region’s vulnerability to prolonged dry periods.
- Impacts:
 - Stressed water resources and water use restrictions
 - Tree mortalities and reduced ecosystem health
 - Reduced crop productivity, contribute to agricultural job losses
 - Drought-related dust exposure can increase Valley Fever, a respiratory illness for which the San Joaquin Valley has the highest rates in California

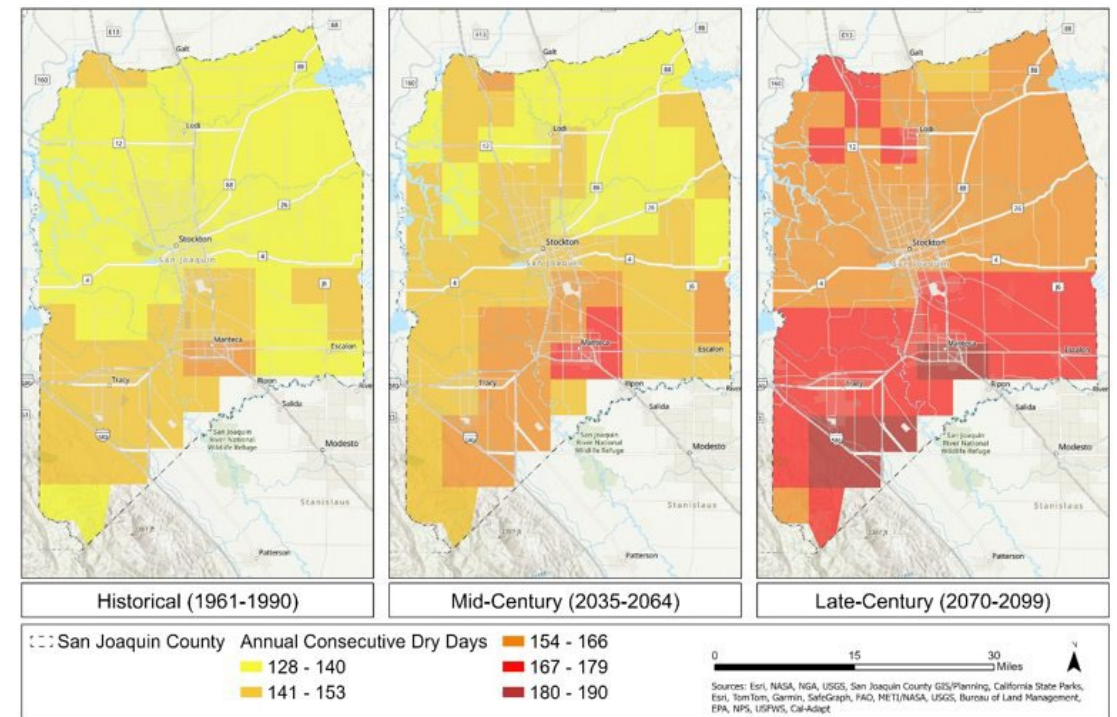


Image: RCP 8.5 Emissions Scenario for San Joaquin County (Cal Adapt)

Precipitation, Sea Level Rise, and Flooding

- By the end of the century, **southern Stockton** is projected to experience some of the **highest one-day precipitation totals** in San Joaquin County, increasing flood risk.
- By the end of the century, sea levels could rise as much as 7-10 feet, **threatening San Joaquin County's levee system**.
- Impacts:
 - Risks to public safety
 - Property damage, particularly for buildings suffering reoccurring floods
 - Infrastructure damage
 - Transportation disruptions
 - Salt-water intrusion into drinking water supply
 - Higher insurance costs
 - Population displacement, particularly for vulnerable populations

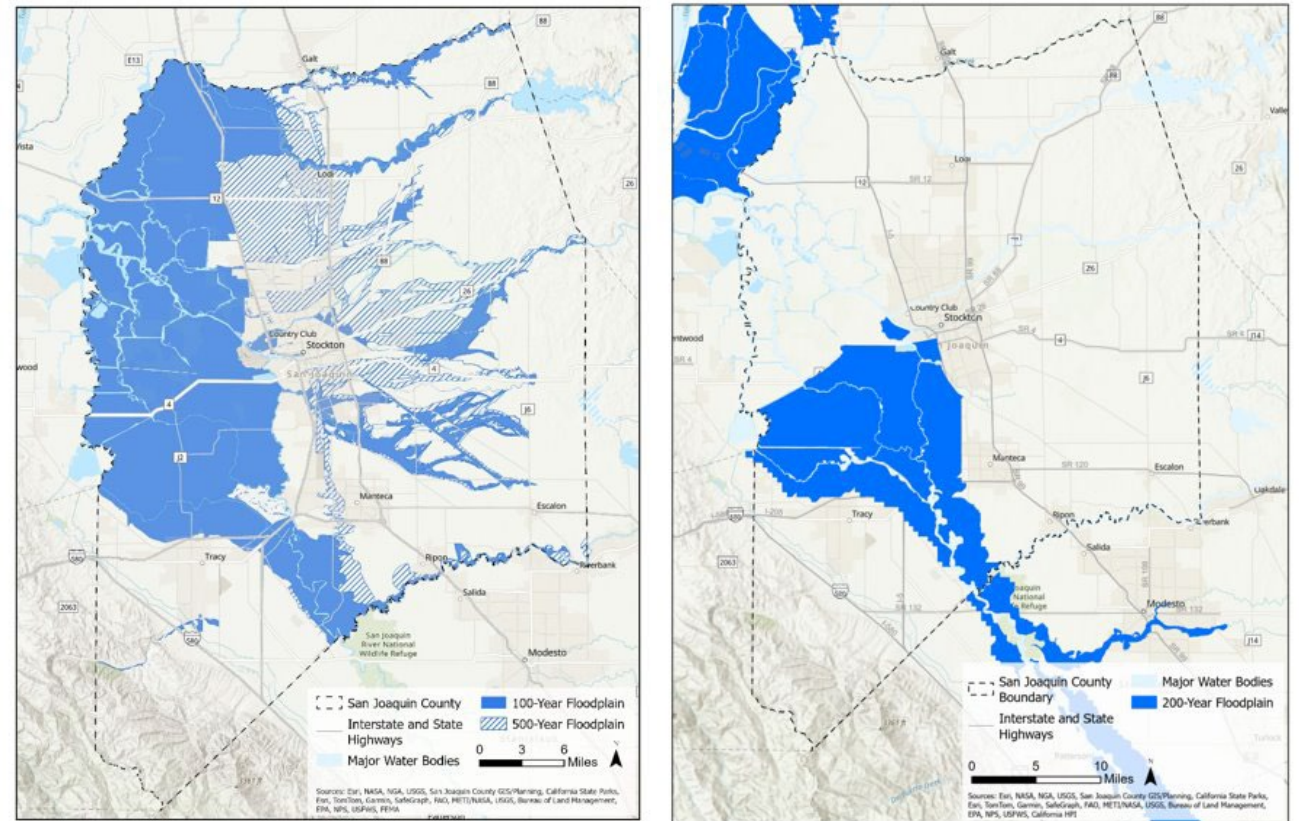
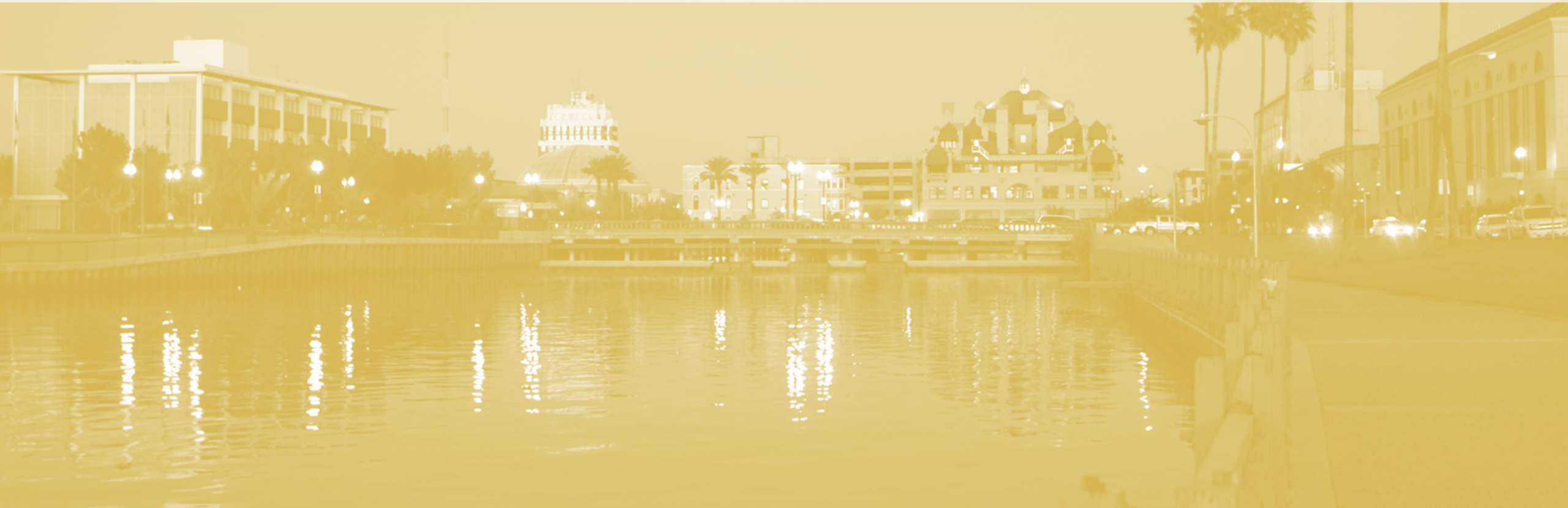


Image: 100- and 500-year floodplain (FEMA) and 200-year floodplain (USACE)

Adaptation Actions



Multi-Hazard Resilience Actions

- Create **resilience hubs** to provide community support and climate adaptive services.
- Ensure critical facilities can operate and provide **refuge** during extreme heat and flooding events.
- Create a partnership agreement with ride share programs and the bus system to provide **free rides to resilience hubs/cooling facilities** during extreme heat events and other disasters.
- **Connect residents** with resources and programs to improve resilience of their homes to flooding and extreme heat.
- Establish a **multilingual climate hazards alert system**.
- Enhance **community resilience** to wildfire smoke and poor air quality.
- Establish a **dedicated fund** to support retrofitting and resilience upgrades.
- Use **nature-based solutions** to support groundwater recharge and stormwater mitigation.
- Upgrade **road and pedestrian surfaces** in areas with high vulnerability to extreme heat and flooding.

Hazard-Specific Actions

- **Extreme Heat**

- Develop an **extreme heat action plan** and conduct outreach campaigns to enhance community understanding of how to be prepared for extreme heat.
- Increase **tree canopy** and integrate **heat-resilient infrastructure** in heat-vulnerable neighborhoods

- **Flooding**

- Implement and expand **General Plan infrastructure flood resilience strategies**.

- **Drought**

- **Conserve water** by using smart metering and sensors on water distribution lines and prioritizing repairs in areas with older infrastructure.
- **Update codes** to allow greywater infrastructure, dual plumbing, and rainwater capture systems for on-site water reuse.
- Develop **drought-tolerant landscaping** where it doesn't yet exist, ideally with stormwater benefits, and implement a watering schedule to prevent watering during the hottest time of day

Government Operations Actions (Applicable to All Hazards)

- Establish an **adaptation strategy review process** with CAPAC oversight to monitor and track progress of climate strategy implementation.
- Pursue **funding** to implement adaptation projects.
- Enhance regional planning efforts by developing a **citywide ecosystem services inventory**.
- Conduct **climate vulnerability audits** for community-owned facilities and critical facilities.
- Ensure that **backup generators** at city facilities are properly placed, connected, maintained, and operated during hazard events (e.g., heatwaves, floods, power outages).
- Update the **2022 Wastewater Master Plan** and **2021 Water Master Plan** to integrate climate projections into utility planning.
- Ensure **wastewater treatment plants and sewer systems** are functional during heat and flood events
- Improve **asset monitoring systems** to identify deteriorating infrastructure.