ADVANCEMENT PROJECT

KERN COUNTY'S FUTURE IN THE FACE OF CLIMATE CHANGE

POLICY BRIEF
APRIL 2019

ABOUT US

Since 2010, Building Healthy Communities—South Kern (South Kern BHC) has been diligently working through the Comunidades Unidas (United Communities) Action Team, led by Leadership Counsel for Justice and Accountability (LCJA), the Center on Race, Poverty and the Environment (CRPE), and the Central California Environmental Justice Network (CCEJN), to improve health and the environment for low-income county residents living in unincorporated communities.

In addition, a network of community representatives and organizations has worked to address the urgent health and safety needs of Kern County's most underserved neighborhoods. This network of equity advocates includes the leaders and members of Committee for a Better Arvin, Comite Progreso de Lamont, and Greenfield Walking Group.

Cover photo: Playground Flooding: Jasmene Del Aguila, Policy Advocate, Leadership Counsel for Justice and Accountability

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KERN COUNTY LANDSCAPE

Kern County is located on the southern end of the San Joaquin Valley (the Valley), a region in Central California that encompasses six other counties. The Valley, often referred to as the "the food basket of the world," is steeped in the agriculture and energy sector. Unfortunately, due to limited regulation and oversight, the County has compromised its air, water, and soil quality, leading to ongoing health impacts on its residents.

POPULATION DEMOGRAPHICS

Kern County (the County) is 8,132 square miles and is currently home to 900,000 residents. By 2035, the County will hold 1.3 million residents due to its 2 percent annual average population increase. The County's residents are largely people of color, with 52 percent Latino, followed by 36 percent white, 5 percent African Americans, 5 percent Asian, and the remaining 2 percent being other. Half of residents are 25 years or older; of those, over 26 percent have no high school degree, 27 percent have a high school degree, 24 percent have some college experience, and 23 percent have a higher education degree.

Kern County is also one of the poorest counties in California. Nearly a fourth of the population—23 percent—live below the Federal Poverty level which is $25,750 for a family of four as of January 2019. As of December 2018, the unemployment rate was 7.6 percent, much higher than the state level of 4.2 percent. The median income for households is $50,826.

CLIMATE CHANGE

Extensive bodies of research have proved that climate change is caused by human activity, and without intervention, its effects will have detrimental impacts to human health, the environment, and infrastructure. Climate change is the result of greenhouse gas (GHG) emissions—from sources such as carbon dioxide, methane, and nitrous oxide among others—released into the atmosphere. Most notably, carbon dioxide represents 83 percent of the GHGs emitted in the state of California, mostly due to the transportation and industrial sectors.[1] Greenhouse gases warm the earth by trapping the heat within the atmosphere, causing a rise in temperature. Taken together, this causes worldwide temperatures to increase and sea levels to rise, as well as variations in precipitation and extreme weather events like heat waves, intense storms, wildfires, and drought. Faced with this reality, state leaders have called for localities to take proactive measures in mitigating their GHG emissions and to plan for climate change. Planning for climate change is better known as climate adaptation, which involves adjusting to a future climate that is extreme and unpredictable.

STATE CLIMATE ADAPTATION AND ENVIRONMENTAL JUSTICE BILLS

In 2015, Senate Bill 379 (SB 379) required counties in California to incorporate a climate adaptation strategy into their General Plan by prompting localities to conduct a vulnerability assessment and set adaptation policies with feasible implementation measures. A vulnerability assessment accounts for how susceptible systems—natural, built, and human—in a region are to the adverse effects of climate change and identifies a plan to mitigate those effects. In the same year, Senate Bill 246 (SB 246) directed the Governor's Office of Planning and Research (OPR) to form the Integrated Climate Adaptation and Resilience Program. This program was designed to develop a cohesive and coordinated response to the impacts of climate change across the state. Finally, in 2016, Senate Bill 1000 (SB 1000)—the Planning for Healthy Communities Act—mandated jurisdictions to adopt or integrate an environmental justice element into their General Plan. The environmental justice element requires localities to reduce exposures to pollution, to improve air quality, and to reduce compounded health risks for disadvantaged communities.

> Governor's Office of Planning and Research (OPR) describes vulnerable communities as those that "experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality."[2]

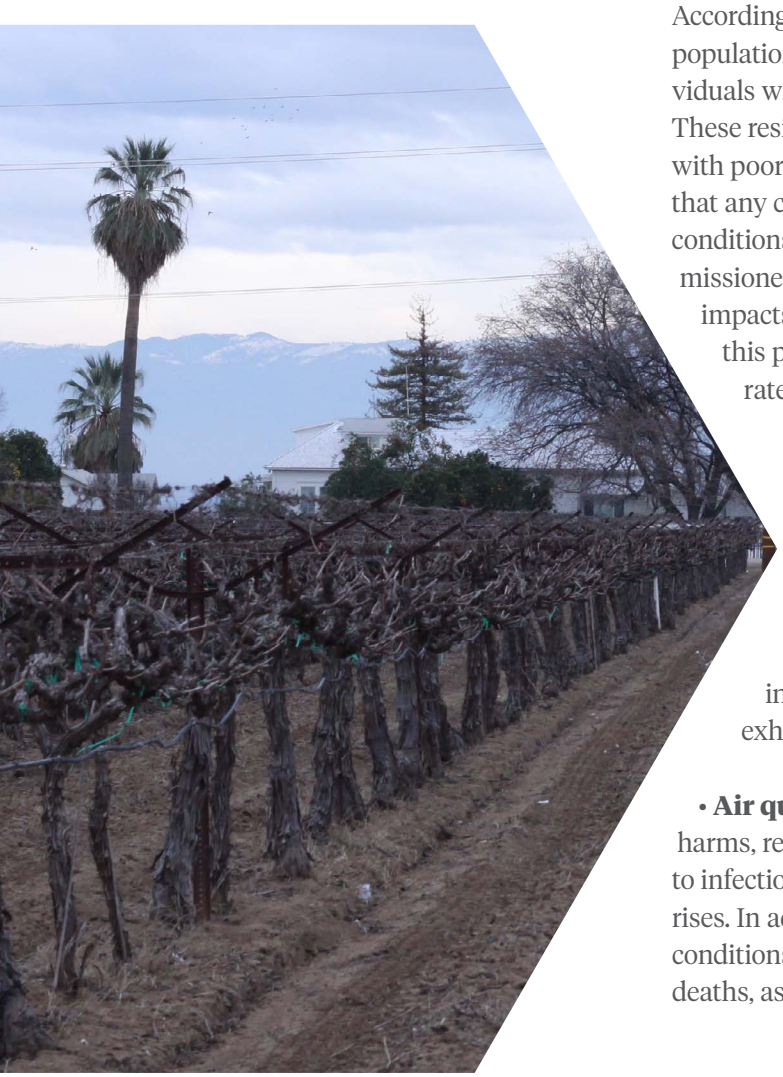
PROJECTED CLIMATE CHANGE IMPACTS IN KERN COUNTY

The State of California (the State) has invested in advanced climate modeling tools that are used to estimate the potential effects climate change will have in regions across the state. These tools take into account the impact climate change will have on infrastructure, the economy, and vulnerable demographics. As a result, it is predicted that Kern County will see higher daily temperatures, more heatwaves, increased wildfires, and a diminished snowpack within this century. Without action, the impact of climate change will exacerbate current environmental conditions such as droughts, flooding in certain communities, and wildfires.

PREDICTED CLIMATE CHANGE IN KERN COUNTY[3]

Issue	By 2050	By 2100
Temperature change	Increase in winter average temperatures by 3–4 degrees Fahrenheit Increase in summer average temperatures by 5–6 degrees Fahrenheit	Increase in winter average temperatures by 7–10 degrees Fahrenheit Increase in summer average temperatures by 9–11 degrees Fahrenheit
Heat Wave	Increase of 3 to 5 days of heat waves	Increase of 7 to 10 days of heat waves
Precipitation	Decline of 1–2 inches	Decline of up to 3.5 inches
Wildfire Risk	The eastern edge of the region is projected to experience an increase in wildfire risk of 4 to 6 times current fire season averages.	
Snowpack	The snowpack in the eastern elevated regions is projected to decrease by approximately 9 inches, resulting in snowpack that is less than 4 inches by 2090.	

HUMAN HEALTH IMPACTS OF CLIMATE CHANGE IN KERN COUNTY



According to the California Office of Health Equity, the most vulnerable populations in Kern County are children under the age of five, seniors, individuals with language barriers, the disabled, and low-income individuals.[4] These residents are especially vulnerable because they live in communities with poor infrastructure and limited access to adequate services—meaning that any changes in climate would greatly exacerbate their current living conditions. In 2018, State Senator Ricardo Lara—now State Insurance Commissioner—requested a compilation of the available research assessing the impacts that climate change will have on public health across the state;[5] this policy brief will focus on those factors and in Table 1 will incorporate data to evaluate which Kern County residents will be impacted.

CLIMATE CHANGE HEALTH-RELATED FACTORS[6]

- **Heat-related death and illnesses:** Increased average daily temperatures and heat waves will only serve to aggravate the health of individuals with underlying diseases. However, healthy individuals can also suffer from heat strokes, heat cramps, heat exhaustion, and hypothermia.

- **Air quality:** Ozone and particle pollution lead to developmental harms, reproductive harm, asthma attacks, lung cancer, and susceptibility to infection; these pollutants only worsen health conditions as temperature rises. In addition, wildfires that are more frequent diminish local air quality conditions. The results are increases in chronic bronchitis, premature deaths, asthma attacks, and absences from school.

• **Extreme weather events:** Every year, it appears as if a new record is set for the worst wildfire, storm, flood, or drought. These occurrences, however familiar, will only become more unpredictable in their severity. Without proper planning or preemptive action on behalf of residents and departments, these weather events could lead to serious injury or loss of life.

• **Vector-Borne Disease:** Animals and insects—such as, mosquitos, ticks, and fleas—are vectors to pathogens, diseases, and viruses, which cause people to get sick. Year-round warmer temperatures disrupt the seasonal patterns of insects and animals allowing them to grow in population and spread pathogens without interruption.

• **Water quality and access:** Contaminated groundwater sources, through pollutants entering the waterways, severely compromise water quality. On the other hand, drought conditions limit water available to residents and industry. Compromised water quality would make individuals sick by exposing them to microbes and toxins found in the water, whereas, drought conditions would limit the availability of water for certain residential communities.

• **Food-borne diseases and food security:** Food contamination happens when food is exposed to toxins, dirty water, or other pathogens due to poor care or storage. Warmer temperatures are a conducive environment for pathogens to thrive, increasing the likelihood of food contamination. Pests thrive under similar conditions, raising the probability that growers will apply more pesticides to fight off infestation. Drought and contaminated food would have the potential to cause individuals to get sick and increase the scarcity of foods.

• **Mental health and well-being:** Extreme weather events also have the potential to harm individuals through displacement, isolation, disability, and or death. The consequences of these events may lead to individuals suffering from chronic stress due to food, shelter, and economic insecurities, and at worst cause, individuals to suffer from Post-Traumatic Stress Disorder (PTSD).[7]

TABLE 1 CLIMATE CHANGE HEALTH IMPACTS AND VULNERABLE COMMUNITIES

Health Impacts	Health Inequities[8]	Vulnerable Communities
Heat-related death and illness	• From 2005–2010 there was an annual average of 193 heat-related emergency room visits. • In 2010, the County had approximately 48,620 outdoor workers whose occupation increased their risk of heat illness. • In 2009, approximately 11 percent of households were estimated to lack air conditioning. • In 2011, tree canopy—that provides shade and other environmental benefits—was present on 4 percent of the County's land area.	• Individuals with underlying health conditions • Outdoor field workers • Individuals with disabilities • Children • Seniors • Individuals with no air conditioning or economic hardships • Communities living without green spaces • Public transit users • Student athletes
Air quality	• In 2010, approximately 5 percent (41,391 residents) of the County's total population (839,631) lived in fire hazard zones of moderate to very high severity. Wildfires produce a lot of smoke by releasing small particulate matter pollution in the air. • In 2012, 14 percent of adults reported having been diagnosed with asthma.	• Individuals with underlying health conditions • Outdoor field workers • Children • Seniors • Public transit users
Extreme weather events	• In 2012, nearly 12 percent of residents aged five years and older had a mental or physical disability; these individuals are more susceptible to suffering from PTSD or other disorders after a weather-related emergency. • In 2010, there were approximately 36,428 people living in nursing homes, dormitories, and other group quarters for which institutional authorities would need to provide transportation in the event of an emergency. • In 2010, 10 percent of households (24,771) did not have a household member 14 years or older who spoke English proficiently, meaning they were linguistically isolated and therefore are more vulnerable during weather-related emergencies. • In 2010, roughly 7 percent of households did not own a vehicle that could be used for evacuation.	• Individuals with mental and or physical disabilities • Low-income residents • Individuals who are linguistically isolated • Individuals who rely only on public transit • Children • Seniors • Veterans • Renters

Health Impacts	Health Inequities[8]	Vulnerable Communities
Vector-Borne Illnesses	● West Nile virus (WNV) can be a serious illness transmitted by mosquitos to people that can lead to symptoms that include fever, headaches, rash, muscle weakness, nausea, and vomiting. In rare cases, WNV can develop into neurological symptoms or can be fatal. In the last five years, there have been 72 reported cases of WNV in the County.	● Outdoor field workers ● Seniors ● Individuals with underlying health conditions ● Individuals who have received organ transplants
Reduced water quality and access	● In 2013, 36 percent of residents relied on groundwater for everyday use. Groundwater is obtained through Community Water Systems (CWS), smaller water systems. ● In 2013, 138,480 residents were consuming water from contaminated groundwater sources. The California State Water Resources Control Board found that many CWS' had been issued Maximum Contaminant Levels (MCL) violations—affecting 16 percent of the County's population.	● Low-income residents ● Residents reliant on polluted groundwater
Food-borne diseases and food security	● In 2016, 13.6 percent of Kern County residents were food insecure—meaning having limited or uncertain availability to nutritious food.[9]	● Low-income residents ● Outdoor field workers ● Children ● Seniors
Mental health and well-being	● From 2015–2017, 9.5 percent of adults in Kern County lived with serious, psychological distress. ● In 2015, 14 percent of Medicare beneficiaries in the County experienced depression.	● Individuals with mental and or physical disabilities ● Low-income residents ● Children ● Seniors ● Veterans

EQUITABLE AND INCLUSIVE CLIMATE ADAPTATION EFFORTS FOR VULNERABLE COMMUNITIES

For a jurisdiction to successfully conduct a vulnerability assessment, it must first identify the most vulnerable residents in its community. As OPR defined, those most vulnerable to climate change are those who have less capacity and fewer resources to adapt to and/or recover from climate change and individuals who have been discriminated against due to race, class, sexual orientation, national origin, and income inequality. Equity-focused environmental justice advocates from the Climate Justice Working Group (CJWG) recognize that the aforementioned groups have faced, "....a legacy of systemic, largely racialized, inequity that influences their living and working places, the quality of their air and water, and their economic opportunities."[10] CJWG often refers to these groups as "frontline communities" for their tendency to experience the first signs of extreme weather events and climate disturbances.[11]

As these definitions have underlined, vulnerable communities already face a series of inequities that are then compounded due to climate change. Therefore, it is germane that the climate adaptation process includes these communities and invests in them to support their resiliency. According to CJWG, investments must be targeted such that they propel vulnerable communities to be engaged in and benefit from a sustainable economy that is created due to climate adaptation efforts across the state.

Therefore, local policymakers should take affirmative steps to engage vulnerable residents and incorporate them in the development of climate adaptation policies and practices. These communities should also be included in the research, planning, and implementation of climate change strategies at all stages. A report produced for the Urban Sustainability Directors Network Equitable by the consultant group Raimi + Associates laid out the three main methods for how the county can plan equitably for climate adaptation, they include:[12]

• **Procedural:** Ensure decision-making processes are transparent, fair, and inclusive. Ensure that staff engaging the community are culturally-competent, meetings are held after work hours, interpretation services are provided, and multiple sessions are held to authentically engage front-line communities.

• **Distributional:** Distribute and prioritize resources equitably by investing more in vulnerable communities.

• **Structural:** Address the systems that keep replicating inequitable communities by analyzing internal policies and procedures that exclude vulnerable communities.

THE NEED FOR MITIGATION AND ADAPTATION

The agriculture and oil drilling industry has taken a toll on the region's natural environment and on residents' health. While state officials have stressed the importance of climate adaptation, significant attention should be paid to address current conditions in the context of mitigation and adaptation. The County's air quality and groundwater, for example, continue to be compromised and will only worsen as climate change progresses.

Street Flooding: Jasmene Del Aguila, Policy Advocate, Leadership Counsel for Justice and Accountability

THE NEED TO IMPROVE CURRENT ENVIRONMENTAL STANDARDS

AIR CONTAMINATION

The American Lung Association ranked Bakersfield as one of the top three cities having the worst ozone—better known as smog—and long-term and short-term particle pollution in the country.[13] Ozone and particle pollution is typically released by tailpipes and dirty truck exhaust. Frequent exposure may lead to developmental harms, reproductive harm, asthma attacks, lung cancer, and an increased susceptibility to infection. According to a representative of the San Joaquin Valley Air Pollution Control District, roughly 226,000 trucks operate within the Valley; many of these trucks are older and run on diesel or are older farm tractors that do not meet emission standards.[14] In 2006, economists and air quality experts estimated that San Joaquin Valley residents would realize $3 billion—or $1,000 per person—in economic benefits if ozone and particle pollution were reduced. These gains largely result from cost-savings associated with fewer health illnesses such as chronic bronchitis, hospital admissions, and asthma attacks.[15]

The County is second in the state for the most pesticides applied—28.9 million pounds in 2016—within its boundaries.[16] Pesticide usage is concentrated in the regions surrounding Bakersfield, with the southern and northwest regions heavily applying pesticides, according to 2016 data from the California Environmental Health Tracking Program. Harm caused by pesticides can arise from short- and long-term exposure, depending on the length and toxicity. Pesticide exposure has adverse effects that can result in cancer, decreased immune system, hormone disruption, and birth defects. Pesticide drift—when recently applied pesticides drift in the wind of in water into nearby farms, schools, and communities—is of major concern to residents.

GROUNDWATER CONTAMINATION

Contaminated groundwater has been a pervasive issue in Kern County—affecting a third of residents who rely on groundwater for everyday use.[17] Many Community Water Systems (CWS)—smaller water systems—operate within the county due to its rural landscape and are heavily reliant on groundwater sources.[18] Kern County's CWS ranked first in the state for having the most violations for exceeding maximum contaminant levels for a high concentration of chemicals—such arsenic, uranium, and nitrate—in their water sources.[19]

Percolation ponds are open bodies of produced water, water that is used during the extraction of oil, that are left to be disposed of through evaporation and percolation through the soil.[20] These ponds have the tendency to contaminate groundwater sources and to sit openly—to the determinant of local farmers and residents. According to the Central Valley Regional Water Quality Control Board (CVRWQCB), which oversees the practice of percolation ponds it takes about 12 gallons of water for each gallon of oil to be produced. Of the counties in the Central Valley, Kern County has the most active percolation ponds—516 ponds—with Fresno coming in second with 16 ponds. Put otherwise, 95 percent of the active percolation ponds in the Central Valley are located in Kern County. While the CVRWQCB claims these percolation pits are safe and nonthreatening to local water sources, a local farmer has documented evidence of these pits contaminating the local groundwater sources that they rely on for their farm.[21]

NEED FOR CLIMATE-RESILIENT INFRASTRUCTURE

In recent years, the County has had to scale back its maintenance and capital project spending due to deficit-mitigation efforts—which has taken a toll on the quality of its current infrastructure. According to a report card produced by the American Society of Civil Engineers (ASCE),[22] Kern County received mediocre and poor grades for the management of their infrastructure systems. The ASCE specifically graded the County's drinking water systems (C), parks (D+), railroads (C+), roads (C-), public transit (D+), and wastewater (C). The lack of funding and better management of systems are often the reasons cited for poor infrastructure.

There are signs that private industry is already assessing the changes they need to make to their business plan to account for climate change. The Climate Change Consortium for Specialty Crops,[23]—made up of growers, researchers, and industry representatives—have called for cost benefit analysis of climate adaptation efforts after their initial assessment found the changes in temperature to be the vulnerability of the agriculture industry. For example, the reduction in water supply due to decreased snowpack, increased plant heat stress, decreases in nighttime cooling, and shifts in pollinator cycles all pose a threat to the vibrancy of Kern County's agriculture industry.

Without mitigation or adaptive planning, the effects of climate change can result in the damage to existing property and result in costly infrastructure repairs. Moreover, the County cannot go on neglecting infrastructure needs forever; at some point, there needs to be significant investments made to upgrade its systems. With that in mind, there is a window of opportunity for the County to ensure that future maintenance and infrastructure projects are climate resilient and responsive to vulnerable communities. These upgrades would go a long way toward saving the County resources in the future.

OPERATIONALIZING CLIMATE ADAPTATION PLANNING

A review of the programs and actions of various County departments reveals that little has been done to promote climate resiliency and to mitigate current environmental conditions. Most of the discussions around climate adaptation have occurred at the level of the Kern Council of Government (Kern COG), a body made up of representatives from the county's local cities and the county itself. The Kern COG focuses largely on transportation issues, but also has a focus on housing and air quality issues.

In essence, there is a gap at County level to prepare and protect county residents—especially those living in unincorporated communities—from impending climate changes. Now is the time for Kern County to adopt a proactive climate adaptation plan that will minimize the impacts of extreme heat, flooding, wildfires, and diminished water availability on its most vulnerable residents. Elements of the climate adaptation plan and its subsequent implementation measures should be incorporated in the General Plan Update. Table 2 lists the departments, including those overseeing public health programs and infrastructure projects, that should be included in the development of climate mitigation and adaptation efforts.

TABLE 2. KERN COUNTY DEPARTMENTS AND ROLES IN CLIMATE MITIGATION AND ADAPTATION PLANNING

Department	Role	Responsibility	Actions
County Administrative Office	Provides staff support to the Board of Supervisors, researches issues, and prepares reports and analyses.	Executes adopted policies, regulations, and direction by County Board of Supervisors.	Support climate adaptation efforts; Lead efforts to develop an estimate of the cost of climate adaptation-related infrastructure improvements and health programs.
Planning and Natural Resources	Provides consolidated land use planning and community development programs.	Prepares and administers Kern County and Metropolitan General Plan policies. Ensure compliances with zoning and land division ordinances and agriculture programs. Prepares California Environmental Quality Act (CEQA) documents. Regulates oil and gas permitting.	Lead on climate adaptation efforts; support as coordinator and facilitator among County departments. Update the General Plan with equitable adaptation policy measures. Review land use policies and programs to better align them with environmentally-sustainable practices.

Department	Role	Responsibility	Actions
Public Health	Provides a wide range of services to assist in the prevention of disease and the improvement of health, safety, and quality of life.	Operates public health programs such as, California Children's Services (CCS), restaurant health inspections, women's health, infant health and safety, sexually transmitted disease prevention, tobacco education, and obesity prevention education. Promotes healthy behaviors and disease prevention through marketing and community health education and engagement.	Support the County in its efforts to conduct a climate vulnerability assessment, specifically looking into the health and environmental needs of vulnerable communities and how those needs may be worsened due to climate change. Geographically map where the most vulnerable communities live.
Agriculture and Measurement Standards	Promotes and protects the County's agricultural industry and provides research and information services.	Enforces state and local laws and regulations pertaining to the agriculture industry, pesticides, and consumer protections.	Set higher standard for pesticides permitting and applications and promote agroecological practices.
Public Works	Provides public infrastructure, facilitates development, and delivers services for County residents.	Responsible for the planning, design, construction, maintenance, and operations of roads, bridges, traffic signals, sanitary landfills, recycling centers, wastewater treatment plants, and public transit. Provides road and building permit inspections, code compliance, engineering and surveying review of proposed land development, solid and hazardous waste disposal, and wastewater treatment.	Support the County in its efforts to conduct a climate vulnerability assessment, specifically looking into the infrastructure needs of vulnerable communities. Set climate adaptation standards for new infrastructure project development. Conduct a cost-benefit analysis of climate adaptation efforts. Estimate funding needed for climate-resilient infrastructure maintenance for current facilities and capital project spending for new projects.

Department	Role	Responsibility	Actions
General Services	Provides support services to other County departments.	Is responsible for administration, energy coordination, parks and recreation, construction services, communication, custodial services, purchasing, and property management.	Conduct an assessment of its infrastructure assets and determine climate adaptation upgrades and maintenance needs. Support the Public Works Department in their larger efforts.
Economic Development	Strives to improve employment opportunities for County residents through business development supports.	Responsible for collaborating with businesses and attracting new business in the County and linking the workforce to local industries.	Conduct an assessment of the workforce that is threatened by climate change. Prepare recommendations for linking vulnerable workers to industries and training programs focused on climate resiliency.

SUMMARY

The County has the opportunity to go beyond the minimum requirements of SB 379's General Plan requirement to ensure that it adequately prepares for the impacts climate change will have on the region, and in particular vulnerable communities. This effort calls for a cooperative approach between the County's decision-makers and community residents. It is critical that vulnerable communities be integrated into the planning process as they are experts of their own communities and know their needs best.

SPECIFIC GENERAL PLAN RECOMMENDATIONS

• **Adopt a Climate Adaptation Definition and Strategy:** Establish a definition for climate adaptation that meets SB 379's requirements. In addition, the County should identify current and projected climate change impacts—especially environmental and health impacts of vulnerable communities—and the short- and longer-term adaptation options that could increase their resilience to impacts.

• **Prioritize Community Engagement:** Increase participation by low-income, immigrant, non-English speaking, racially and ethnically diverse, and special needs residents starting from the beginning of climate adaptation planning and implementation.

  • Build collaborative relationships between regional entities to promote complementary adaptation strategy development in the region.

• **Climate Change Mitigation:** Assess climate change impacts on various sectors and adopt mitigation strategies and practices throughout the County in the transportation, energy, and land use sectors, and in particular to protect vulnerable communities. Mitigation strategies include:

  • **Transportation:** Increase usage of non-motorized transportation and public transportation systems. Increase usage of zero or near-zero emission and fuel-efficient vehicles—including vehicles that use cleaner diesel fuel and biofuels.

  • **Energy Supply:** Improve energy supply and distribution efficiency and shift toward renewable heat and power sources like solar.

  • **Building:** Improve usage of efficient lighting and daylighting, electrical appliances, and heating and cooling devices.

  • **Outdoor Workers:** Assess and reduce impacts of climate change of the County's current workforce, particularly farmworkers. See also recommendations below on extreme heat.

  • **Economic development:** Identify economic development opportunities related to the emerging green sector and support pipelines that connect outdoor workers to those jobs.

• **Extreme Heat:** Develop and update an extreme heat adaptation plan to improve vulnerable communities and farmworkers' resilience to extreme heat.

  • Increase the number and access to cooling centers so that they are established throughout the County to protect vulnerable populations from extreme heat.

  • Require projects to consider present and future climate conditions in assessing project environmental impacts, including carbon emissions, extreme precipitation, and extreme heat. For example, in the building and permitting process, require applicants to evaluate their climate impacts by including their projects' heat impacts as part of the permitting process; grant permits, only to projects that minimize climate impacts.

  • Install and maintain functional air conditioning equipment in indoor community gathering spaces; permanent shade structures for outdoor community gathering spaces; and shade structures and misters at transit stops in vulnerable communities.

- Work with major outdoor employers to ensure that practices and trainings help reduce employee exposure to extreme heat.
- Reduce the urban heat island effect by increasing the number of trees and landscaped areas in disadvantaged communities.
- Assess the risks of and minimize energy cost increases for vulnerable communities burdened by extreme heat.

• **Air Quality:** Address linkage between climate emissions, toxic air contaminants, and criteria air pollutants in the County. Reduce pollution from these sources to reduce impacts on human health and the environment.

- Locate and map sources of air pollution, including mobile sources such as freeways and high-traffic volume roads, and major stationary sources such as distribution centers, rail yards, refineries and gasoline-dispensing facilities. Identify small-scale stationary sources and the most concentrated areas where air quality is most impacted for pollution reduction strategies.
- Create an effective, solid waste management plan to reduce source generation and to divert waste from landfills to achieve emission reductions.

• **Water Quality and Access:** Assess vulnerability to groundwater depletion/quality and source water security especially with respect to climate change and especially for vulnerable communities.

- Evaluate permitting policies and development trends to review allocation of water resources.
- Annually evaluate small public water systems compliance with drinking water standards and suspend permits to agencies found violating groundwater contaminant regulations until the problems have been addressed.

• **Flood Risk Reduction:** Prioritize infrastructure that helps mitigate the excess amount of storm water that results in flooding that accumulates around grade schools in rural towns in underserved communities.

- Conduct a countywide, flood risk and vulnerability assessment to determine which underserved communities are most vulnerable to and impacted by flood events with estimate costs and methods for resolving flooding issues in these communities. These assessments should be updated every four years.
- The County shall develop a flood control action plan based on the vulnerability assessment.
- Draw up an inventory of all structural and non-structural measures to prevent, control and reduce floods; analyze the existing scope of flooding and human activities based on a risk analysis that goes beyond national borders in the catchment area; and identify the inadequacies of the existing scope of the technical and nontechnical flood control and preventive measures.
- To achieve long-term goals of flood-related risk management, the action plan shall contain all identifiable approaches and best practice measures, as well as their costs, effects, and timetables including project rankings.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